FINAL ENVIRONMENTAL IMPACT STATEMENT

Commercial Campus at Fields Corner

NY 312 & PUGSLEY ROAD
TOWN OF SOUTHEAST
PUTNAM COUNTY, NY

VOLUME 3
NUMBERED
APPENDICES 1-1 to 17-3

Prepared for: Putnam Seabury Partners, L.P.
287 King Street
Chappaqua, NY 10514

Lead Agency: **Southeast Planning Board**

Prepared by:

Project 14012

Adopted: **July 27, 2020**

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Volume 3
Numbered Appendices

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6-2 Wetland Water Budget Analysis by Evans Associates, dated July 29, 2019

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8-1 Letter Regarding 2018 Water-Quality Sample Results by WSP, revision dated January 28, 2019

9-1 Installation, Management, and Monitoring Protocol for Upland Habitat Restoration Areas and Wetland Habitat Restoration by Evans Associates, dated August 2019

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APPENDIX I-1

Correspondence

Robert B. Peake, AICP

From: Moe DeSantis <MDeSantis@brewsterfiredepartment.org>
Sent: Wednesday, March 13, 2019 8:56 PM
To: David P. Lombardi, PE
Subject: Re: Commercial Campus at Fields Corner; Letter [JMC Project 14012]

David,

I was advised tonight by the Fire District to make a no comment on the project

Thx
Moe DeSantis
Chief
Brewster Fire Department
914-447-7123
mdesantis@brewsterfiredepartment.org

On Mar 11, 2019, at 11:50 AM, David P. Lombardi, PE <DLombardi@jmcpllc.com> wrote:

Chief DeSantis,

We will be submitting the FEIS for the project in one week. It would be very helpful if you could e-mail us your letter by Thursday if possible. Our office met with the Fire Commissioner and Building Inspector as you suggested.

If you have questions or require additional information please contact our office at (914) 273-5225.

Sincerely,

DAVID P. LOMBARDI, PE
Senior Project Manager

JMC
SITE DEVELOPMENT CONSULTANTS
120 Bedford Road • Armonk, NY 10504
V 914 273-5225, x220 • F 914 273-2102
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From: David P. Lombardi, PE
Sent: Monday, March 11, 2019 11:45 AM
To: 'mdesantis@brewsterfiredepartment.org' <mdesantis@brewsterfiredepartment.org>
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steinmetz.com>; 'Kate Roberts' <kroberts@zarin-steinmetz.com>; Joseph Sarchino, RLA <JSarchino@jmcpllc.com>; Richard J. Pearson, PE, PTOE <RPearson@jmcpllc.com>; Robert B. Peake, AICP <RPeake@jmcpllc.com>; Kevin Masciovecchio, EIT <KMasciovecchio@jmcpllc.com>
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We have also attached a Word file of an updated draft of your letter to JMC, dated 02/08/2019, for your review and use. Please edit the draft as desired so that you are comfortable with the letter and email us your final letter.

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<Drawing TTP-1_Townline Turnaround PlanR_PP 2019-02-07.pdf><ltPearson 02-08-2019.docx>

Town of Southeast

Building Department
One Main Street
Brewster, New York 10509
Tel. (845) 279-2123
Fax (845) 279-3137

Michael J. Levine
Building Inspector

Joe Hernandez
Assistant Building Inspector

January 22, 2019

Zarin & Steinmetz
Daniel M. Richmond
81 Main Street, Suite 415
White Plains, NY 10601

RE: Northeast Interstate Logistics Center
Campus at Fields Corner
Tax Map #45.-1....(the "Property")

Dear Mr. Richmond:

I am writing in response to your letter dated January 14, 2019. You are requesting confirmation of the proposed Use of the referenced property as Light Manufacturing, a Use permitted in the OP-3 Zoning District with a Special Permit. Further, you seek a determination that Warehousing Distribution Facilities are considered a Light Manufacturing Use under the Town Code.

The Commercial Zoning Schedule located in Chapter 138 Attachment 5 indicates that in the OP-3 Zone Light Manufacturing is an approvable Special Permit Use. While the definition of Light Manufacturing located in Chapter 138 Zoning does not specifically include Warehousing and Distribution Facilities as an industrial use, it does refer to the action of "processing and assemblage" which is consistent with a Warehouse and Distribution Facility. This interpretation is supported by the 2014 Town of Southeast Comprehensive plan Update, which includes "warehousing and distribution facilities" in the "Industrial and Light Industrial" land use category (see page 5-2, Table 5-1, and Figure 5-1). Further, the definition of Industrial Use in Chapter 138 Zoning states see "light manufacturing".

Based on this information and in concert with the Planning Board process for the project, the proposed Use in the OP-3 Zoning District is a permitted Use with the issuance of a Special Permit.

Sincerely,

Michael J. Levine
Building Inspector

STEPHEN W. COLEMAN
ENVIRONMENTAL CONSULTING, LLC

Environmental Planning & Site Analysis
Wetland Mitigation & Restoration Plans
Wetland Delineation & Assessment
Natural Resource Management
Pond & Lake Management
Wildlife & Plant Surveys
Breeding Bird Surveys
Landscape Design

MEMORANDUM

To: Thomas LaPerch, Chairman
Town of Southeast Planning Board
Members of the Planning Board
From; Stephen W. Coleman
Date: March 11, 2018
Re: Northeast Interstate Logistics Center, Campus at Fields Corner Tax Map # Section 45, Block 1 (the "Property") – confirmation of wetland boundary

A field site visit was held on 02-26-18 with the applicant's wetlands consultant, Beth Evans, Environmental Consulting LLC. Based upon review of the existing wetland areas and the recent flagging, the respective wetlands boundary as flagged is consistent with the criteria outlined in Chapter 78 of the Town Code. No further information is required at this time.

The respective wetlands are part of a NYSDEC wetlands and will be subject to field verification by NYSDEC field personnel. If any changes occur to the delineation based upon NYSDEC, the wetlands boundary will need to be re-surveyed to reflect these changes. The site plan will then need to be updated to reflect field changes and the corresponding wetland buffer limit lines.

Please let me know if you have questions or require additional information.

3 ASPEN COURT, OSSINING, NY 10562 • 914-494-5544/FAX 914-762-5260 •Steve.Coleman8@verizon.net

Robert B. Peake, AICP

From: Moe DeSantis <MDeSantis@brewsterfiredepartment.org>
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5/14/19
BC
cc
TB
TA
Planning

ROBERT L. LANGLEY, JR.
SHERIFF

PUTNAM COUNTY
OFFICE OF THE SHERIFF
AND
CORRECTIONAL FACILITY
THREE COUNTY CENTER
CARMEL, NEW YORK 10512
845-225-4300

MICHAEL F. CORRIGAN
UNDERSHERIFF
FBI/NA 183rd

May 8, 2019

Ann Fanizzi
2505 Morgan Drive
Carmel, NY 10512

Dear Ann Fanizzi,

I am in receipt of you letter regarding the proposed development of the Northeast Commercial Center on Pugsley Road in the Town of Southeast. A meeting took place at my office with a representative from the Town of Southeast and Patterson Town Supervisor Richard, in which we discussed in length the closure of Fields Corner Road. I was not in favor of closing Fields Corner Road as it does serve a valuable purpose. I suggested signage for local traffic only and no commercial vehicles except for the purpose of local residential delivery and that we would do traffic enforcement in the area. As a compromise all parties agreed to installing the gates as proposed and not actually securing them. I emphasized how the secondary roads become instrumental during severe storms as they tend to remain open while primary roads are closed due to trees and wires falling into them. Ultimately this will be a decision for the Patterson Town Board to make and my input is only a suggestion and or recommendation as the office of the sheriff does not have authority over the town.

Respectfully,

Robert L. Langley Jr.
Sheriff

30

5/13/19

ANN FANIZZI
2505 MORGAN DRIVE
CARMEL, NY 10512

RECEIVED
MAY 13 2019
Town of Southeast

Sheriff Robert L. Langley, Jr.
Putnam County Office of the Sheriff
Three County Center
Carmel, New York 10512

Dear Sheriff Langley:

I am a 30-year resident of Hunter's Glen, a community of approximately 400 households, on Fair Street and have been following the proposed development of the Northeast Commercial Center formerly Logistic Center, on Pugsley Road in the Town of Southeast. I read with interest your letter of April 4, 2019, concerning an "agreement reached between the Town of Patterson and Southeast" maintaining Pugsley/Fields Corners Road free of vehicular traffic except for emergency, police and residents of Patterson exclusively. However, in conversations with both Supervisor Hay and Councilwoman Eckardt, both denied that any agreement had been reached. This was confirmed subsequently by a letter from Patterson Supervisor Williams written on April 5th but not cc'd to you, expressing continued concerns and use of Pugsley Road. I am enclosing it for your information.

Given the prospective increased use of Rte 312 by semi-trailers, in addition to its present use by emergency, police, school and commuter vehicular traffic, Pugsley Road should remain open in its entire length especially since in the event that Rte 312 itself or Rte. 312 /Rte 6 intersection is blocked by an accident or congestion that road is the only alternate one between Rt. 312 and the four towns that occupy Fair St - Carmel, Southeast, Patterson and Kent. Personally, I am disappointed that the same concern you rightly expressed for that of emergency and police services access, was not extended to commuters of the four towns that might be affected by the very conditions of D level of service at the Pugsley/Rte 312 intersection during peak hours in the "build" condition, cited in Supervisor Williams' critical letter. However, I disagree with Supervisor Williams' scenario of exponential increases in truck and commuter traffic use impacting Patterson residents on Fields Corners Rd. as well as his advocacy of exclusive use by Patterson residents. For thirty years, Pugsley/Fields Corners was a town road albeit used sparsely by residents of the four towns and it should remain as such.

T

To facilitate safety for all, Pugsley/ Fields Corners Road should be improved, the cost of which should be borne by the developer, to accommodate all vehicles year round be they police, emergency or commuter. The installation of any impediment be it gate/barrier/crash bar to either ingress or egress by commuters of the four towns will potentially imperil health, safety and cause undue inconvenience. As in other town roads, prominent signage, as you suggest, should be sufficient.

I trust you will take these concerns into account as part of the continuing planning process for the Northeast Commercial Center (Logistics Center.)

Sincerely,

Ann Fanizzi
Encl.
cc: Chairman Tom LaPerch and Members of the Planning Board
Town of Southeast Supervisor Tony Hay and Members of Board
Town of Patterson Supervisor Rich Williams

PUTNAM COUNTY
OFFICE OF THE SHERIFF
AND
CORRECTIONAL FACILITY
THREE COUNTY CENTER
CARMEL, NEW YORK 10512
845-225-4300

ROBERT L. LANGLEY, JR.
SHERIFF

MICHAEL F. CORRIGAN
UNDERSHERIFF
FBI/NA 183RD

April 4, 2019

Daniel M. Richmond, Esq.
Zarin & Steinmentz
81 Main St., Suite 415
White Plains, NY 10601

After a lengthy meeting with a representative from the Town of Southeast and the Town of Patterson regarding the closing of Pugsley Road all parties came to an agreement. It is the position of the Putnam County Sheriff's Office that the proposed gates along with the turnaround shall be constructed as indicated on the original plans. The gates will remain opened and signage will be installed prohibiting commercial vehicles with the exception of local deliveries to resident's only and limiting traffic to residents only. This will be enforced and should enforcement not be a deterrent the gates will be secured and the roadway closed.

The proposal of installing a 12' high crash bar was never brought to the table during our meeting. It is the position of the Putnam County Sheriff's Office that the installations of a 12' high crash bar cannot and will not be considered an option. Firstly, this would create an issue for emergency fire apparatus and secondly, it would not be astatically pleasing with the environment along Pugsley Road.

Respectfully,

Robert L. Langley Jr.
Sheriff

Cc: Richard Williams Sr.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To: August 09, 2018
Consultation Code: 05E1NY00-2017-SLI-3341
Event Code: 05E1NY00-2018-E-08949
Project Name: Pugsley Road

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/

eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2017-SLI-3341

Event Code: 05E1NY00-2018-E-08949

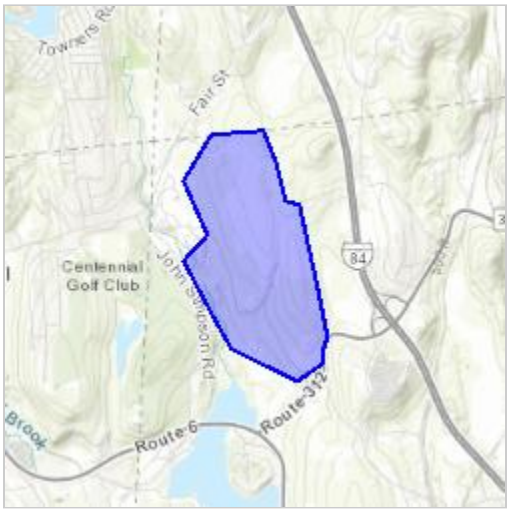
Project Name: Pugsley Road

Project Type: DEVELOPMENT

Project Description: Potential development

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.43033888479614N73.64255874920798W



Counties: Putnam, NY

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Bog Turtle *Clemmys muhlenbergii* Population: Wherever found, except GA, NC, SC, TN, VA No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6962 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/182/office/52410.pdf Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/182/office/52410.pdf	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

STATE OF NEW YORK
OFFICE OF THE ATTORNEY GENERAL

RECEIVED
MAY - 3 2019
Town of Southeast

LETITIA JAMES
ATTORNEY GENERAL

DIVISION OF SOCIAL JUSTICE
ENVIRONMENTAL PROTECTION BUREAU

April 29, 2019

By Email and Mail

Mr. Tom LaPerch
Planning Board Chairman
Town of Southeast Planning Board
1 Main Street
Brewster, NY 10509

Re: Northeast Interstate Logistics Center
Watershed Inspector General Comments

Dear Mr. LaPerch:

As requested by Ashley Ley, the Office of Watershed Inspector General (WIG or WIG Office) respectfully submits the following comments on the Draft Final Environmental Impact Statement (March 2019) for the proposed Northeast Interstate Logistics Center development (the Project). The WIG Office appreciates this opportunity to comment on the Project and looks forward to working with the Town, Watershed regulators, the Project sponsor, and other stakeholders as environmental review of the Project proceeds.

Respectfully Submitted,

Philip Bein
Watershed Inspector General
New York State Attorney General's Office
The Capitol
Albany, New York 12224
(518) 776-2413

Charles Silver, Ph.D.
Watershed Inspector General Scientist
NYS Office of the Attorney General
The Capitol
Albany, New York 12224
(518) 667-2395

Cc: Ashley Ley (AKRF). Town Planning Consultant

Northeast Interstate Logistics Center

NY Route 312 & Pugsley Road

Town of Southeast, Putnam County, NY

Review of the Draft Final Environmental Impact Statement

March 2019

Prepared by JMC, Inc.

By: Donald W. Lake, Jr. PE

on behalf of the Watershed Inspector General

April 29, 2019

These technical comments are based on my review of the following revised documents:

a. Draft Final Environmental Impact Statement (FEIS), March 2019, Volume I, containing 3 sections.
b. Draft FEIS Appendices, Volume 5A, Appendix Stormwater Pollution Prevention Plan (SWPPP), Volume 1, prepared by JMC, Inc., dated March 2019 (1,196 pages) and Volumes 5B & 5C, Volumes 2 & 3, Proposed Hydrologic Calculations, dated March 2019 (2,746 pages).
c. FEIS Site Plan Approval Drawings C-000 through C-908, 60 sheets, dated March 18, 2019.

These technical comments are being submitted to facilitate a timely review of the SWPPP.

Background

The proposed Northeast Interstate Logistics Center project is a distribution center that will receive, consolidate, repackage, assemble, refrigerate, store, label, and ship nonhazardous goods and materials. The project would discharge into the watershed of New York City's Middle Branch Reservoir, part of the City's Croton system, which has historically provided drinking water to almost one million New Yorkers each day.

The Watershed Inspector General (WIG) Office reviewed the draft environmental impact statement for the proposed project in August 2018. At that time, the project included the construction of 4 "High Cube Warehouses" (HCW) and associated infrastructure on 328 acres of wooded land. The revised, current project configuration reduces the HCW complex from 4 buildings to 2, the area of disturbance from 132 acres to 113.7 acres, and impervious area from 57.2 acres to 48.4 acres. The revised layout continues to disturb 0.05 acres of wetland and reduces DEC and Town wetland buffer areas from 11.7 acres to 8.45 acres (DEC 2.66 acres and Town 5.79 acres).

Resolution of July 2018 Comments

A review of the above documents and FEIS Volume 2, Correspondence, Comments and Responses indicate that JMC, Inc. did a thorough job of addressing most of our previous comments (WIG Document 108). However, the following previously identified issues require further revisions:

a. WIG Comment in 6-24, SWPPP, Preliminary Site Plan Approval Drawings: the soil boundaries from the web soil survey data must be placed on all site plan views, including the existing condition plan, proposed grading plan, and erosion control plan.

   FEIS Response: The soil boundaries are shown on the existing condition drawing.

   WIG Reply: General Permit GP-0-015-002, Part III.B.1.b requires that site maps and construction drawings show "locations of soil types and boundaries". These soil boundaries need to be included on all developed plan views to identify sensitive or easily erodible soils and for developing the erosion and sediment control plan. These boundaries need to be added as required to the Grading Plan Drawings C-201 to C-205.

b. WIG Comment in 6-56: Detail 2 shows a riser and anti-vortex device for a sediment basin. This detail needs to be deleted and replaced with a full design for a sediment basin that complies with the Sediment Basin standard on page 5.19 of the 2016 Blue Book. This will also require the hydrologic analysis for the 10-year storm, since all drainage areas will exceed 5 acres. In addition, all basins will require a skimmer dewatering device designed in accordance with that standard on page 5.10 of the 2016 Blue Book.

FEIS Response: states that a temporary sediment basin detail and dewatering detail have been added to the drawings.

WIG Reply: Sheet C-906 does present some generic information but does not include site specific details for sizing, dimensions, elevations, or volumes for the sediment storage zones and the dewatering zones as required. A table for these sediment basins or traps containing this information must be included. Also, the elevations shown in details 81 and 82 on C-906 do not match the elevations for this project.

c. WIG Comment in 6-60: SWPPP, Appendix A. Pond Pack 3.01: For the time of concentration (T_c) calculations, the manning coefficient for sheet flow (SF) was 0.24 for all watersheds but one. Based on the existing wooded areas on site, 0.40 (woods, light, from TR-55) is more appropriate. In addition, the shallow concentrated flow (SCF) used in these routings was taken as Unpaved as noted in TR-55, where the only choices are Paved and Unpaved. U.S. Department of Agriculture (USDA) NRCS National Engineering Handbook (NEH) Section 4 "Hydrology" offers 6 additional land descriptions for shallow concentrated flow. To compare, the velocity vector for Unpaved is 16.1 feet per second, whereas the velocity vector for SCF in Woodland is 5.0 feet per second. The slower rate leads to a longer T_c, which reduces the existing peak discharges for all frequency events. The current T_c for all events needs to be re-calculated, and the routings redone.

FEIS Response: "The time of concentration for all watersheds has been recalculated utilizing the appropriate manning coefficient for the cover types determined by the Project's environment consultant. Shallow concentrated flow is taken as unpaved in accordance with TR-20, which is all that is required as stated in the Stormwater Management Design Manual."

WIG Reply: This response does not satisfy the comment. TR-20, referenced for use on page 4-7 of the New York State Stormwater Management Design Manual, January 2015, incorporates a total of eight (8) different coefficients to use for shallow concentrated flow depending on land cover. As noted in the original comment, the appropriate coefficient for shallow concentrated flow should be applied to the T_c for the drainage areas and the model needs to be re-run.

Comments on March 2019 Revised Project

1. SWPPP Appendix H, "Sediment Basin Calculations" does not contain the necessary calculations to support the proposed sediment basin systems. At a minimum, the design calculations need to be presented to establish the volumes for the sediment storage zone and the dewatering storage zone. In addition, the sizing of the skimmer orifice and appurtenances need to be provided. (See the requirements in the NYS Standards and Specifications for Erosion and Sediment Control, November 2016, page 5-24 for the Design Details Data Sheet.) The table shown in Appendix H also displays dewatering zone elevations for Basins 3B-1 and 5 that do not agree with the surface water elevations shown on their respective drawings (C- 402 for Basin 3B-1, and C-404 for Basin 5). These discrepancies need to be resolved.

2. In addition to responding to our previous WIG comment (9-21) in Volume 2 of the FEIS, concerning cleared and grubbed vegetated waste material on site being chipped and composted offsite, this note also needs to be presented on the Erosion and Sediment Control Plan drawings, C401 – C405. The estimated acres of woodland to be cleared also need to be included on these drawings.

3. SWPPP, page 60, the earthwork quantities for each construction phase need to be included here and on Drawing C-421, Disturbance Authorization, Phasing of the Project and Sequence of Construction. Also delete General Note #12 on drawing C-421 since it is not relevant.

4. Drawing C-302, Building A, Cistern 3B-1 is labeled at 205 feet, but appears to scale out at 150 feet. This discrepancy needs to be reconciled. Also, several structures need rock outlet protection aprons: (a) Drawing C-302, conduit outlet structure ES B-2-1 needs a rock outlet protection apron; (b) all erosion and sediment control plan view drawings need a rock outlet protection apron added at the end of culverts where they are not currently shown; and (c) a construction detail for these rock outlet protection aprons also needs to be added on drawing C-905, next to Detail 80, for conduits outletting from a concrete headwall.

5. Drawing C-304, Building B, Cistern 1B-1 is labeled for 275 feet, but scales out at only approximately 200 feet. This discrepancy needs to be resolved.

6. The legend from "Stabilized Construction Entrance" on Drawing Series C-401 through C-405, Erosion and Sediment Control Plans needs to be changed to "Stabilized Construction Access" as shown in the New York State Standards for Erosion and Sediment Control, November 2016.

7. Drawing C-402, add the drainage area boundaries and required storage volumes for all sediment traps and basins.

8. Drawing C-205, Grading Plan "E", shows a small area of the infiltration basin IB 4A-1 at contour elevation 606. This is 2 feet lower than the rest of the basin floor, which should be level. Please reconcile this discrepancy.

9. There are two separate detail drawings (Drawing C-905, Detail 75 and Drawing C-906, Detail 84) showing the emergency spillways at the detention ponds. Based on the FEIS response to WIG comment (logged as 6-66), the emergency spillways in these drawings are no longer relevant. To correct this discrepancy, only one detail needs to be provided which coordinates the correct elevations and top widths of the respective basins.

10. Drawing C-905, Detail 77, the Outlet Control Structures table shows two anomalies. First, for Detention Basin 1A-1, the orifice is at elevation 611 while the outlet culvert elevation is at 612.75. Second, the Pond/Wetland 1B-1, has the orifice elevation at 628.5 and the culvert outlet elevation at 613.9, or 14.9 feet lower. These discrepancies need to be corrected.

11. Two identical Sediment Trap III details are presented. One on Drawing C-906 as Detail 84 and the other on Drawing C-908 as Detail 100. One of these details needs to be deleted.

12. Drawing C-906, Detail 86, Bio-Retention shows an 18" layer of soil for the system. The January 2015 New York State Stormwater Management Design Manual, page 6-48, requires a minimum of 30" or 2.5 feet as the soil depth for this practice. This design needs to conform to the NYS standards.

Water Quality

Appendix G in Volume 5A of the FEIS displays a pollutant load analysis. This analysis appears to be based on outdated information, and no references or citations were provided to document its source. In response, the WIG Office has prepared a pollutant load analysis based on the revised, current site configuration for the disturbed portion of the site, 113.7 acres, using the Simple Method.

The pollutant load concentrations and the stormwater management practice (SMP) total phosphorus (TP) pollutant removal efficiencies were based on information provided in the March 2015 East of Hudson (EOH) Watershed Corporation Stormwater Retrofit Project Design Manual. These values were modified based on the treatment train provided for the sub-areas and the isolation of the water quality treatment volume from the total storm runoff.

The revised, current stormwater management system is well designed. Using infiltration basins offline and allowing the larger storms to bypass and collect in detention ponds confines the stormwater effluent and eliminates the resuspension of captured phosphorous. The use of hydrodynamic structures upstream of all SMP conveyances act as a pretreatment for the infiltration basins, detention ponds, the pocket wetland, and the two cistern storage units that are used for rain harvesting. Also, two bio-retention cells act as pre-treatment for the pond/wetland system 3B-1 which receives runoff from two separate sub-areas.

The WIG Office calculated the existing TP load for the 113.7 acres of disturbed area at the site to be 14.9 pounds. For the post-developed condition, 32 sub-areas representing the 113.7 disturbed acres were analyzed. The land use data from the Pond Pack computer model used to calculate the runoff curve numbers for the sub-areas was also used to establish the event mean concentration for the pollutant loads. This analysis shows that 67.50 acres of new building construction and associated grading drains to the SMP's.

Of these 67.50 acres, 45.94 are impervious areas that produce a TP load and 4.07 acres are SMP ponds. SMP ponds are impervious, but do not produce any significant TP load. This leaves 46.2 pervious acres that are disturbed but will be reshaped and vegetated in the landscape. The 46.2 acres do not drain to any SMP.

The WIG Office calculated a post-developed TP load without treatment for the 67.5 acres of disturbed area to be 207.3 pounds in comparison to the existing TP load for this area of 8.84 pounds. To calculate the TP load after treatment, each of the 32 sub-areas was reviewed for their flow paths and treatment systems. When the pollutant removal efficiencies of the stormwater treatment systems were applied to the post-developed load for each of the 32 sub-areas, the final post-developed TP load with treatment for the 67.5 acres is 5.65 pounds. Adding the TP load from the 46.2 acres (4.33 pounds) of pervious area to the treated TP load, the total post-developed TP load for the 113.7-acre disturbed area is 9.98 (5.65 + 4.33) pounds, in comparison to the 14.9 pounds calculated in the existing condition. This is 4.92 pounds less than the existing TP condition of 14.9 pounds or a 33% reduction.

As noted previously, the Middle Branch Reservoir is phosphorous impaired. The June 2000, NYSDEC Phase II TMDL Report prepared for USEPA, establishes the Middle Branch Reservoir as impaired as shown in Table 2 on page 17. The allowable available load is 816 kilograms per year (kg/yr). This was developed after a Margin of Safety factor of 14% was applied to the calculated TMDL of 949 kg/yr. The actual current load, also shown in Table 2, is 1,020 kg/yr. Therefore, since the existing TP load exceeds the available load capacity of the receiving reservoir, it must be reduced.

For the Middle Branch Reservoir to meet water quality standards, phosphorous sources would have to reduce their TP load by 20%. This is calculated by taking the current load of 1020 kg/yr, and subtracting the available load of 816 kg/yr, which equals 204 kg/yr. This excess load is then divided by the current load to determine the percentage of reduction to be made to meet the water quality target. That is 204 kg/yr /1020 kg/yr = .20 or 20%. As shown above, this design exceeds the desired TMDL reductions for this watershed.

SUPERVISOR
Richard Williams Sr.
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Fax. (845) 878-6343
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TOWN CLERK
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townclerk@pattersonny.org

July 17, 2019

Mr. Thomas LaPerch, Chairman
Southeast Planning Board
1 Main Street
Brewster, NY 10509

Re: Commercial Campus at Fields Corners
a.k.a. Northeast Interstate Logistics Center

Dear Chairman LaPerch:

Please find enclosed a copy of the report prepared by Frederick P. Clark Associates, Inc. which examined the EIS for the above-mentioned project and the potential impact from increased vehicle use of Fields Corners Road. The Traffic Consultant's Report confirms what the Town of Patterson has maintained; that the EIS is deficient as it does not fully evaluate or acknowledge the impact on roads in the Town of Patterson caused by the increase in traffic generated by the project. These impacts caused by traffic generated by the Project need to be mitigated, and that mitigation needs to be identified in the environmental impact statement prepared for the project. Proposing an overhead bar to mitigate the increase in traffic caused by commuters using Fields Corners Road as a shortcut to avoid the traffic congestion at the Route 312 intersection is an absurd means of mitigating the potential increase in traffic and will have no effect on 90% of all the vehicles accessing the site. We look forward to reviewing a revised FEIS which demonstrates that the potential traffic impact will be avoided, or proposes substantial mitigation to address the impacts from the increase traffic on Fields Corners Road.

Sincerely yours,

Richard Williams Sr.
SUPERVISOR

cc: Town Board
Hogan & Rossi

FREDERICK P. CLARK ASSOCIATES, INC.
PLANNING, TRANSPORTATION, ENVIRONMENT AND DEVELOPMENT
RYE, NEW YORK FAIRFIELD, CONNECTICUT

A HARDESTY & HANOVER COMPANY *– www.HardestyHanover.com*

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July 1, 2019

Supervisor Richard Williams, Sr.
Town of Patterson
1142 Route 311
P.O. Box 470
Patterson, New York 12563

Subject: **Traffic Review – Commercial Campus at Fields Corner Road (Northeast Interstate Logistics Center) – NYS Route 312 at Pugsley Road, Southeast, New York**

Dear Supervisor Williams:

As requested, we have reviewed the Draft Environmental Impact Statement (DEIS) and Final Environmental Impact Statement (FEIS) Traffic Sections to understand the proposed development in the Town of Southeast and potential impacts and need for mitigation in the Town of Patterson and specifically along Fields Corner Road, Pugsley Road and Fair Street.

It is noted that between the DEIS and FEIS the development plan was reduced in size which also reduces the level of site traffic to be generated and added to area roadways.

The Applicant provided a sensitivity analysis at the following Patterson intersections:

- Fair Street at Fields Corner Road;
- Fair Street at Bullet Hole Road; and,
- Fair Street at NYS Route 311.

New counts and capacity analyses completed by our office confirm the Applicant's baseline traffic data and capacity analysis results on Fair Street at the Fields Corner Road intersection.

In the Traffic Study the Applicant estimated that this development will add approximately 25 vehicles to Fields Corner Road during peak hours. However, there is no estimate of traffic from this development on a daily basis. This is not considered a significant level of new traffic; however, almost the entire length of this roadway is narrow with a reduced pavement width, limited sightlines and poor pavement conditions to function at more than a local rural roadway serving local residents.

In the DEIS and FEIS the Applicant did not provide sufficient information to determine the anticipated level of site traffic to use Pugsley Road and Fields Corner Road during peak hours and throughout the day and specifically how potential traffic congestion along NYS Route 312 will impact the use of all local roads to the north of the planned development in the Town of Southeast.

It is anticipated that a significant number of employees and customers to the proposed facility will avoid NYS Route 312 and certainly avoid the U.S. Route 6 intersection with NYS Route 312 to reach Carmel and Patterson located to the northwest of the Subject Property and will likely use Pugsley Road and Fields Corner Road to access Fair Street.

The Traffic Studies did not appropriately address potential impacts in the Town of Patterson and in our opinion did not provide appropriate support information to indicate the estimated low levels of site traffic, which would drive on Pugsley Road and Fields Corner Road to the north of the Subject Property.

In the analyses prepared by the Applicant for the intersection of NYS Route 312 at Pugsley Road, with maintaining STOP sign control and two different alternatives of road improvements at this intersection did indicate that with a STOP sign control maintained at this intersection it will not function and will result in significant delays and congestion. Assuming a traffic signal is installed, with some level of road improvements, this intersection will operate potentially at Level of Service "D" or better. However, the analyses do not provide any specific details on vehicle queuing and impacts of traffic conditions along NYS Route 312 at this improved intersection at Pugsley Road and potential impacts related to the Interstate 84 signalized intersections or at the U.S. Route 6 intersection. These roads currently experience traffic delays and congestion during certain time periods and with the proposed development, which will include a significant level of truck traffic, these intersections along NYS Route 312 will experience more delay, which will force patrons and employees of the proposed development to use Pugsley Road and Fields Corner Road to either access the site or depart from the site.

Pugsley Road and Fields Corner Road, north of the site, simply cannot accommodate the level of traffic expected to be on these roads if this project is developed as planned. The Applicant has not offered any mitigation other than to improve Pugsley Road in the Town of Southeast and install a height barrier restriction to minimize the number of trucks traveling to the north of the Subject Property into the Town of Patterson.

We agree with the assessment that Fields Corner Road should be closed to any traffic from this development since the road, as in its current condition, cannot accommodate any additional traffic without significant improvements to the road to support two-lane, two-way traffic, improved pavement conditions, safety improvements, as well as drainage improvements. These improvements are

needed for the entire length of this roadway in Patterson if the roadway was not to be closed. However, these improvements should maintain the rural character of this roadway.

If the height restriction or closure of the roadway is not implemented by the Applicant then this Applicant should offer appropriate road improvements to support the expected increase in traffic into Patterson. Further, with the increase in traffic on Fields Corner Road the realistic impact to other intersections to the north along Fair Street and other key intersections with in the Town of Patterson should be provided.

The following sections provide a summary of roadway and traffic conditions, which should be addressed by the Applicant.

Sincerely,

Michael A. Galante
Managing Principal

Enclosure

g:\821.000 commercial campus at fields corners, southeast, ny\word\ccf19-000.mag.docx: cg: td

SUMMARY

In June 2018 a Draft Environmental Impact Statement (DEIS), prepared by JMC, was accepted by the Town of Southeast. It detailed the proposal to construct a 1,125,000 S.F. logistics center to be known as Northeast Interstate Logistics Center. Using the most conservative site traffic generation the Applicant completed a "Sensitivity Analysis," which included a weekday morning and weekday afternoon peak hour of site traffic at the same time as the peak hours of the nearby roadways. The Applicant estimated a total of 472, 506, and 146 employee/retail vehicle trips would be generated during the weekday morning and weekday afternoon and Saturday midday peak hours, respectively. To mitigate the impact of these vehicle trips the Applicant proposed to provide an emergency access gate on Pugsley Road and Fields Corners Road at the Town line, with gravel turnarounds to be provided.

After the acceptance of the DEIS the public made comments against the gate to be installed, since it will prohibit residents from using Fields Corner Road/Pugsley Road to reach NYS Route 312. The Applicant adjusted their proposal and released a draft Final Environmental Impact Statement, dated March 2019. In the FEIS it is noted that the Applicant drafted a Preferred Alternative Plan, down-sizing the proposed square footage to 933,100 S.F., an approximate reduction of 17 percent from the DEIS Plan.

With this new Preferred Alternative Plan, the Applicant estimated that this development would now generate 384, 445, and 120 employee/retail vehicle trips during the weekday morning, weekday afternoon and Saturday midday peak hours, respectively. The Applicant no longer proposes to close off the site from Patterson with an emergency gate, but instead proposed to erect a height restrictive barrier to prevent trucks from departing to the north along Fields Corner Road/Pugsley Road. According to the Patterson Sensitivity Study performed by JMC, 6 percent of this traffic is now expected to arrive from and depart to the north along Fields Corner Road, generating 22, 26, and 7 vehicle trips at the intersection of Fair Street and Fields Corner Road during the weekday morning, weekday afternoon and Saturday midday peak hours, respectively.

It is our understanding that the Town of Patterson's position is not to install a gate, which would restrict traffic for its residents and also the Town is not in favor of the overhead height restriction since it will only restrict a certain number of large trucks and continue to permit a significant number of passenger vehicles and potentially small trucks to use Pugsley Road and Fields Corner Road to the north of the proposed development in the Town of Southeast. Therefore, the Applicant should improve Fields Corner Road for its entire length in the Town of Patterson to accommodate the anticipated and site traffic, but maintain the rural character of this roadway.

After careful review of the traffic data provided in the DEIS and FEIS the Applicant has not provided sufficient information to identify the actual level of site traffic to be added to Pugsley Road and Fields Corner Road to the north of the Subject Property. This road is clearly a relief valve for motorists avoiding NYS Route 312, the Interstate 84 Interchange and certainly the U.S. Route 6 signalized intersection with NYS Route 312. NYS Route 312 to the west of Pugsley Road to the intersection with U.S. Route 6 and U.S. Route 6 to the north into Carmel and eventually the Town of Patterson via other roadways currently experiences significant traffic delays and will experience additional delays with this development in place. The Applicant has limited its mitigation to NYS Route 312 at Pugsley Road in the vicinity of this intersection. However, if the improvements at the Pugsley Road intersection are not approved by the New York State Department of Transportation (NYSDOT) this section of NYS Route 312 will experience significant delays and motorists from the proposed development will use Pugsley Road and Fields Corner Road to the north to access Fair Street to avoid the entire area within the Town of Southeast to access roads in Patterson and eventually NYS Route 311 to access Interstate 84 to travel in a northwest direction away from the site.

EXISTING CONDITIONS

In this section of this report it summarizes roadways serving the Subject Property specific to Patterson, existing and future traffic volumes on roads in Patterson.

Roadways

The site is located along both sides of Pugsley Road/Fields Corner Road in the Town of Southeast. Pugsley Road/Fields Corner Road will be improved by the Applicant within the Town of Southeast, which is discussed further in another section of this report.

Pugsley Road is a north-south, Town-maintained roadway beginning at a T-type intersection with NYS Route 312. It continues in a northerly direction intersecting with Barrett Road and continues north as at Fields Corner Road into the Town of Patterson. It continues in Patterson and terminates at a T-type intersection with Fair Street, which is also designated Putnam County Route 60.

In the Town of Southeast Pugsley Road is a narrow paved/unimproved local roadway with a pavement width of approximately 10 to 15 feet. This road has no pavement markings, curbing or shoulder areas.

Fields Corner Road is a continuation of Pugsley Road into the Town of Patterson. It is an unimproved/gravel roadway. It has a roadway width 17 to 24 feet and does not provide any pavement markings, curbing or shoulders areas. Both Pugsley Road and Fields Corner Road in Southeast are essentially one-lane, two-way, local roadways, which cannot accommodate any volumes higher than currently found on this roadway. It serves a limited number of residential homes; however, it generally passes through a heavily wooded area. This road does function as a through road between NYS Route 312 and Fair Street to the north. Motorists using this roadway can avoid traffic congestion found on NYS 312 at the intersection with U.S. Route 6, John Simpson Road, which is designated Putnam County Route 57 and other County and local roadways to the west of the Study Area.

Figure 1 provides a graphic illustration of the site location and its relation to area roadways in both Southeast and Patterson. Figure 2 provides a graphic illustration of the intersection of Fields Corner Road at Fair Street and includes Bullet Hole Road to the north. Photographs of the Fair Street/Fields Corner Road at the northerly section of Fields Corner Road are attached.

Traffic Volumes

Traffic counts were conducted by JMC during the following time periods in 2017 and 2018:

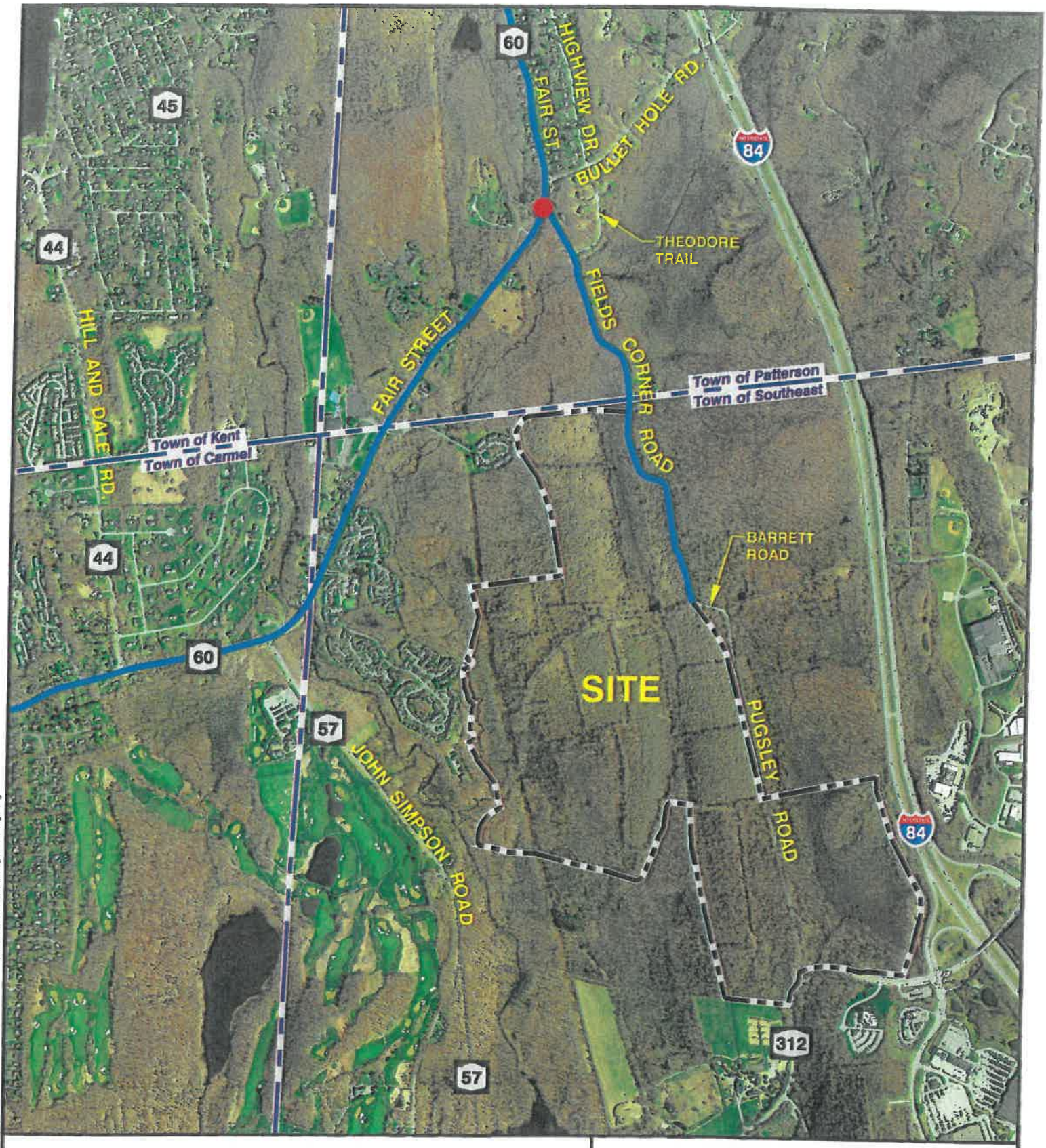
- Weekday morning – 7:00 to 9:00 A.M.;
- Weekday afternoon – 4:00 to 6:00 P.M.; and,
- Saturday midday – 11:00 A.M. to 2:00 P.M.

At the NYS Route 312/Pugsley Road intersection it was also counted during the following time periods:

- Weekday – 7:00 A.M. to 7:00 P.M.

Based on the results recorded in the FEIS, Fair Street, north of Fields Corner Road, had a two-way volume of 699, 676 and 449 vehicles during the weekday morning, weekday afternoon and Saturday midday peak hours, respectively. South of Fields Corner Road, Fair Street had a two-way volume of 697, 671 and 450 vehicles during the three peak hours noted above. Fields Corner Road, east of Fair Street, had a two-way volume 14, 17 and 9 vehicles during the three peak hours noted above.

Fair Street, north of Bullet Hole Road, had a two-way volume of 626, 585 and 383 vehicles during the weekday morning, weekday afternoon and Saturday midday peak hours, respectively. South of Bullet Hole Road, Fair Street, had a two-way volume of 699, 676 and 449 vehicles during the three peak hours noted above. Bullet Hole Road, east of Fair Street, had a two-way volume 149, 173 and 140 vehicles during the three peak hours noted above.



LEGEND:

Study Area Intersection

Key Roadways

SITE LOCATION MAP

COMMERCIAL CAMPUS AT FIELDS CORNER

(Northeast Interstate Logistics Center)

NYS Rt. 312 at Pugsley Rd. - Southeast, NY

N

FREDERICK P. CLARK ASSOCIATES

A HARDESTY & HANOVER COMPANY

Scale in Feet

1,400 1,050 700 350 0 1,400

1

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LEGEND:

Traffic Lane

CURRENT STREET SYSTEM CHARACTERISTICS

COMMERCIAL CAMPUS AT FIELDS CORNER
(Northeast Interstate Logistics Center)
NYS Rt. 312 at Pugsley Rd. - Southeast, NY

N

FREDERICK P. CLARK ASSOCIATES
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Scale in Feet
100 75 50 25 0 100

2

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NYS Route 311, north of Fair Street, had a two-way volume of 864, 969 and 790 vehicles during the weekday morning, weekday afternoon and Saturday midday peak hours. South of Fair Street, NYS Route 311 has a two-way volume of 724, 842 and 717 vehicles during the three peak hours noted above. Fair Street, east of NYS 311, had a two-way volume 420, 411 and 610 vehicles during the three peak hours noted above.

To verify the two-way volumes portrayed in the FEIS, Frederick P. Clark Associates conducted a turning movement count at Fair Street and Fields Corner Road. Fair Street, North of Fields Corner Road, had a two-way volume of 610, 660 and 473 during the weekday morning, weekday afternoon and Saturday midday peak hours, respectively. South of Fields Corner Road, Fair Street, had a two-way volume of 605, 663, and 475 vehicles during the three peak hours noted above. Fields Corner Road, east of Fair Street has a two-way volume of 9, 11 and 14 during the three peak hours noted above. These volumes are similar to those collected in 2018 by JMC and concludes that volumes portrayed in the FEIS capacity analysis are reliable. Table 1 provides a detailed summary of the recorded two-way volumes on area roadways near the subject property.

Figure 3 graphically illustrates the weekday peak hour volumes at the Fair Street/Fields Corner Road intersection counts conducted by Frederick P. Clark Associates. Photographs of this intersection and the Fields Corner Road/Theodore Trail intersection are included for reference.

Table 1
2018/2019 TWO-WAY TRAFFIC VOLUMES – PEAK HOURS
Commercial Campus at Fields Corner
(Northeast Interstate Logistics Center)
NYS Route 312 at Pugsley Road
Southeast, New York

LOCATION	VEHICLES		
	Weekday Morning	Weekday Afternoon	Saturday Midday
2018 Two-way Volumes from FEIS Patterson Sensitivity Study			
Fair Street, North of Fields Corner Road	699	676	449
Fair Street, South of Fields Corner Road	697	671	450
Fields Corner Road, East of Fair Street	14	17	9
Fair Street, North of Bullet Hole Road	626	585	383
Fair Street, South of Bullet Hole Road	699	676	449
Bullet Hole Road, East of Fair Street	149	173	140
NYS 311, North of Fair Street	864	969	790
NYS 311, South of Fair Street	724	842	717
Fair Street, East of NYS 311	420	411	610
2019 Two-way Volumes Collected by Frederick P. Clark Associates			
Fair Street, North of Fields Corner Road	610	660	473
Fair Street, South of Fields Corner Road	605	663	475
Fields Corner Road, East of Fair Street	9	11	14

Source: Manual turning movement counts conducted by JMC on Thursday, September 27, 2018 and Saturday, September 29, 2018.
Manual turning movement counts conducted by Frederick P. Clark Associates on Wednesday, May 15 and Saturday, May 28, 2019.

Frederick P. Clark Associates
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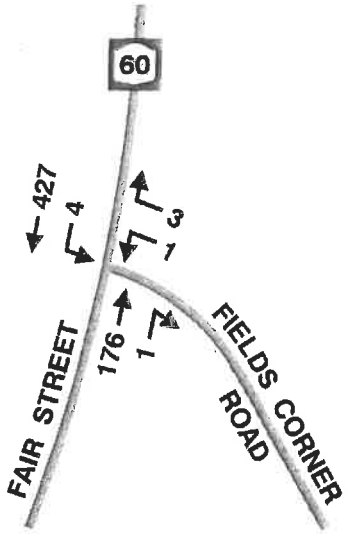
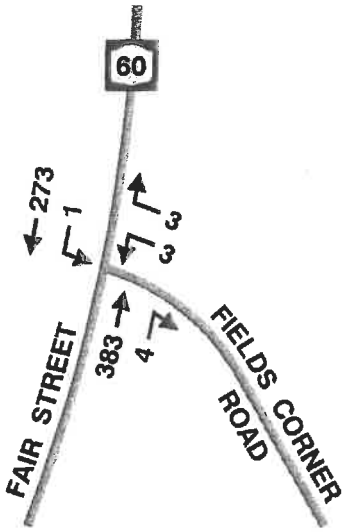
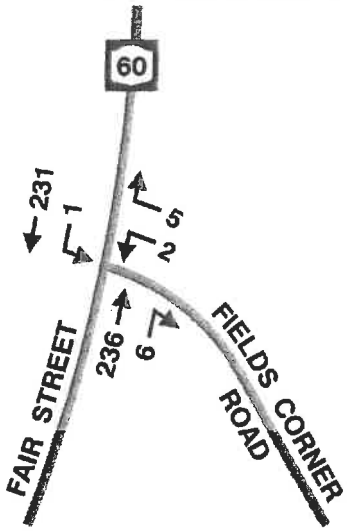


Weekday Morning Peak Hour
(7:00 to 8:00 A.M.)



Weekday Afternoon Peak Hour
(5:00 to 6:00 P.M.)



Saturday Midday Peak Hour
(11:45 A.M. to 12:45 P.M.)

NOTE:
Manual turning movement counts conducted by Frederick Clark Associates on Wednesday, May 15, 2019 from 7:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M. and Saturday, May 18, 2019 from 10:00 A.M. to 2 P.M.

2019 EXISTING TRAFFIC VOLUMES

COMMERCIAL CAMPUS AT FIELDS CORNER
(Northeast Interstate Logistics Center)
NYS Rt. 312 at Pugsley Rd. - Southeast, NY

N

FREDERICK P. CLARK ASSOCIATES
A HARDESTY & HANOVER COMPANY

Not to Scale

3

5/22/19

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FUTURE TRAFFIC CONDITIONS

This section describes the future 2023 traffic conditions for the Patterson Study Area. It includes a description of the 2023 no-build traffic volumes, estimates for site traffic generation, distribution and assignment of the site traffic, future build traffic volumes, the results of capacity analyses and site access provisions and improvements. The capacity analyses are completed for a no-build and build condition, which provides a basis for determining potential impact, if any, to area roads and the need for mitigation.

Applicants Proposed Roadway Improvements

The Applicant only proposed to improve Pugsley Road and Fields Corner Road in the Town of Southeast, which would serve as direct access to the proposed development. The Applicant indicated that a majority of the site traffic and a majority of both truck traffic, visitor traffic and employee traffic would use NYS Route 312 to access the site. Originally, the Applicant proposed to install a gate at the Town line between Southeast and Patterson. Therefore, in the DEIS Traffic Report it did not project any use of Fields Corner Road for site traffic to access their street. However, the emergency gate proposal was eliminated and a height restriction bar was proposed to be installed to prohibit trucks from using Pugsley Road to the north of the development area in the Town of Southeast and prohibit access to Fields Corner Road to access Fair Street by all truck traffic destined from the proposed development.

With modifications to restrict access to the north of the Subject Property in Southeast the Applicant determined that the proposed development would shift 6 percent of the site traffic to the north on Pugsley Road to Fields Corner Road to access Fair Street. Based on the Applicant's sensitivity analysis and limiting site traffic to employees and retail trips, it is estimated that 22 and 26 vehicle trip ends (two-way) would be shifted to Fields Corner Road during the weekday morning and weekday afternoon peak hours, respectively. For a Saturday condition, it was estimated by the Applicant that 7 trips would be added to Fields Corner Road during the one hour period.

As part of the documentation prepared by the Applicant and submitted to the Town of Southeast for consideration in the DEIS and FEIS process it was proposed that the Applicant would need to reconstruct both Pugsley Road and Barrett Road to provide appropriate lane widths for two-lane travel and modify roadway grades and turning radii, as appropriate to bring these roads up to current design standards. The Applicant also noted that a portion of Fields Corner Road, which is immediately north of the Barrett Road intersection would be improved to eliminate the existing curves near the intersection of Pugsley Road, Barrett Road and Fields Corner Road; however, this section of road would be maintained as a gravel road.

In both the DEIS and FEIS the Applicant failed to acknowledge that Pugsley Road and Fields Corner Road need significant improvements to accommodate any additional traffic from this proposed development. These roads cannot accommodate any additional traffic in its current condition as rural local roads. The impacts would be significant and would require significant improvements by the Applicant to accommodate its traffic.

To eliminate this concern the Applicant should close the road at the Town line or near the Town line to prohibit any through traffic to continue to the north on Fields Corner Road to access Fair Street. The Applicant has limited its mitigation plan to roadways in Southeast and specifically Pugsley Road and Fields Corner Road and improvements at the NYS Route 312 intersection with Pugsley Road.

Capacity Analysis Results – Existing, No-Build and Build Conditions

The following is a summary of the results of analyses completed by the Applicant for an existing, no-build and build condition at the Patterson Study Area Intersections for each of the time periods included FEIS analysis.

1. *Fair Street and Fields Corner Road*

   Existing – Results of the analysis for this condition indicate that this intersection currently operates at a Level of Service "C," B," and "B" or better for the westbound lane during the weekday morning, weekday afternoon, and Saturday midday peak hours, respectively. The

southbound left-turn movement from Fair Street operates at a Level of Service of "A" during all three peak hours.

No-Build – The analysis for this condition indicate that this intersection will operate at a Level of Service "C," B," and "B" or better for the westbound lane during the weekday morning, weekday afternoon, and Saturday midday peak hours, respectively. The southbound left-turn movement from Fair Street will operate at a Level of Service of "A" during all three peak hours.

Build – Results of the analysis indicate Levels of Service for the westbound lane will remain the same as the no-build condition with little to no increase in vehicle delay for all three peak hours.

2. *Fair Street and Bullet Hole Road*

Existing – Results of the analysis for this condition indicate that this intersection currently operates at a Level of Service "B," B," and "B" or better for the westbound lane during the weekday morning, weekday afternoon, and Saturday midday peak hours, respectively. The southbound left-turn movement from Fair Street operates at a Level of Service of "A" during all three peak hours.

No-Build – The analysis for this condition indicate that this intersection will operate at a Level of Service "B," B," and "B" or better for the westbound lane during the weekday morning, weekday afternoon, and Saturday midday peak hours, respectively. The southbound left-turn movement from Fair Street will operate at a Level of Service of "A" during all three peak hours.

Build – Results of the analysis indicate Levels of Service for the westbound lane will remain the same as the no-build condition with little to no increase in vehicle delay for all three peak hours.

3. *Fair Street and NYS Route 311*

Existing – Results of the analysis for this condition indicate that this intersection currently operates at a Level of Service "F," F," and "D" or better for the westbound lane during the weekday morning, weekday afternoon, and Saturday midday peak hours, respectively. The southbound left-turn movement from Fair Street operates at a Level of Service of "A" during all three peak hours.

No-Build – The analysis for this condition indicate that this intersection will operate at a Level of Service "F," F," and "D" or better for the westbound lane during the weekday morning, weekday afternoon, and Saturday midday peak hours, respectively. The southbound left-turn movement from Fair Street will operate at a Level of Service of "A" during all three peak hours.
Build – Results of the analysis indicate Levels of Service for the westbound lane will remain the same as the no-build condition with little to no increase in vehicle delay for all three peak hours.

Table 2 provided by Clark Associates provides a more detailed summary of the results of the Applicant's capacity analyses for the Study Area Intersections, as described above. This table provides Level of Service, average vehicle delay and volume to capacity ratio for each lane group, approach, intersection overall, lane and movement during each of the peak hours for the existing, no-build and build conditions. It also provides a more detailed summary of the results of the Storage/Queue analyses for the Study Area Intersections for each lane and movement during each of the peak hours for the existing, no-build and build conditions and a project assessment between the no-build and build conditions, which identifies the potential impact.

The results of the analyses indicate that the proposed development, with their site traffic estimates, will have a minimal impact on operations of the three locations. However, the Fair Street/NYS Route 311 intersection is already operating with delays during peak hours and are unrelated to this development.

NYS Route 312 at Pugsley Road – Applicant's Proposed Improvement Plan

The Applicant has conducted a significant level of analyses to determine the appropriate mitigation for the intersection of NYS Route 312 at Pugsley Road. In its current condition the Pugsley Road approach is located at a dangerous location on NYS Route 312 due to the alignment of NYS Route 312 and the angle of the Pugsley Road intersection. Pugsley Road at this point is an unimproved roadway, with narrow pavement width, not a fully paved road and generally in poor condition. Signs indicate a seasonal use and maintenance of this road.

Table 2
CAPACITY AND STORAGE/QUEUE ANALYSIS RESULTS – MEASURE OF EFFECTIVENESS (MOE) AND IMPACT ASSESSMENT – PEAK HOURS
Commercial Campus at Fields Corner
(Northeast Interstate Logistics Center)
NYS Route 312 at Pugsley Road
Southeast, New York

				2018 EXISTING CONDITIONS (BASELINE)									2023 NO-BUILD CONDITIONS (BASE)									2023 BUILD CONDITIONS									PROJECT IMPACTS (NO-BUILD TO BUILD)					
				Weekday Morning			Weekday Afternoon			Saturday Midday			Weekday Morning			Weekday Afternoon			Saturday Midday			Weekday Morning			Weekday Afternoon			Saturday Midday			Weekday Morning		Weekday Afternoon		Saturday Midday	
INTERSECTION	CONTROL TYPE	STORAGE/ LINK LENGTH	PHYSICAL UNITS	LOS/ Delay	V/C Ratio	Queue Length	LOS/ Delay	V/C Ratio	Queue Length	LOS/ Delay	V/C Ratio	Queue Length	LOS/ Delay	V/C Ratio	Queue Length	LOS/ Delay	V/C Ratio	Queue Length	LOS/ Delay	V/C Ratio	Queue Length	LOS/ Delay	V/C Ratio	Queue Length	LOS/ Delay	V/C Ratio	Queue Length	LOS/ Delay	V/C Ratio	Queue Length	Change in LOS	Project Delay (Seconds)	Change in LOS	Project Delay (Seconds)	Change in LOS	Project Delay (Seconds)
Fair Street at Fields	TWSC	593	WB Ln1	C/16.9	0.025	3	B/13.2	0.025	3	B/12.2	0.011	0	C/18.0	0.028	3	B/13.8	0.027	3	B/12.7	0.012	0	C/18.1	0.063	5	B/14.5	0.085	8	B/12.3	0.018	3	No	0.1	No	0.7	No	-0.4
Corners Road		307	SB LT	A/8.7	0.007	0	A/8.2	0.004	0	A/7.8	0.003	0	A/8.8	0.007	0	A/8.3	0.004	0	A/7.8	0.003	0	A/8.9	0.019	3	A/8.3	0.007	0	A/7.8	0.005	0	No	0.1	No	0.0	No	0.0
Fair Street at Bullet	TWSC	622	WB Ln1	B/13.4	0.189	18	B/12.6	0.113	10	B/10.8	0.085	8	B/14.1	0.209	20	B/13.1	0.125	10	B/11.1	0.095	8	B/14.2	0.212	20	B/13.3	0.128	10	B/11.1	0.095	8	No	0.1	No	0.2	No	0.0
Hole Road		-	Ln2	A/9.5	0.033	3	B/10.4	0.031	3	A/9.6	0.034	3	A/9.6	0.035	3	B/10.6	0.033	3	A/9.7	0.036	3	A/9.7	0.035	3	B/10.7	0.034	3	A/9.7	0.036	3	No	0.1	No	0.1	No	0.0
		1551	SB LT	A/8.0	0.016	0	A/8.7	0.027	3	A/7.9	0.013	0	A/8.1	0.017	3	A/8.8	0.029	3	A/8.0	0.015	0	A/8.1	0.018	3	A/8.9	0.030	3	A/8.0	0.015	0	No	0.2	No	0.1	No	0.0
NYS 311 at Fair	TWSC	470	WB Ln1	E/38.0	0.651	105	E/44.0	0.745	140	C/22.1	0.459	58	F/53.4	0.774	145	F/69.5	0.893	200	D/26.8	0.548	78	F/58.5	0.805	155	F/73.0	0.915	213	D/27.3	0.556	80	No	5.1	No	3.5	No	0.5
Street		476	SB LT	A/8.6	0.155	12.5	A/8.9	0.125	10	A/8.6	0.097	8	A/8.7	0.172	15	A/9.1	0.143	13	A/8.7	0.115	10	A/8.7	0.179	15	A/9.1	0.145	13	A/8.7	0.117	10	No	0.0	No	0.0	No	0.0

Notes:

- Synchro 10.0/HCM 6th Edition results are used for capacity analysis.
- Level of Service determining parameter is called the service measure.
- For TWSC Intersections: Level of Service/Average Control delay per vehicle (seconds/vehicle).
- ITE publication for Traffic Access and Impact Studies for site development "A Recommended Practice" indicated that overall Level of Service ratings of A to D are normally considered acceptable for signalized intersections (Level C or better are considered desirable). Levels of Service E and F are normally undesirable.
- V/C ratio indicates the amount of congestion for each Lane Group, Movement and Lane. Any V/C ratio greater than or equal to one indicates that the Lane Group, Movement and Lane are operating at above capacity.
- The Queue Length rows show the 95th percentile maximum queue length in feet.
- The Queue Length is for each lane. The total queue length is divided by the number of lanes and the lane utilization factor.
- The 95th percentile queue is the maximum back of the queue with the 95th percentile traffic volumes.
- Storage Link Length in feet for signalized intersections and in cars for TWSC and AWSC intersections.
- **Bolded** 95th percentile queue exceeds the storage available.
- TWSC = Two-Way STOP Control.
- Physical Units consist of the following:
  1. TWSC Intersections: Critical Lane and Critical Movement.

NB = Northbound EB = Eastbound SB = Southbound WB = Westbound
L = Left Turn T = Through R = Right Turn APP. = Approach Ln = Lane

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The Applicant has an improvement plan for Pugsley Road, which is needed to accommodate any additional traffic and specifically the proposed development. The Applicant has analyzed maintaining a STOP sign on the Pugsley Road approach to NYS Route 312 and the results of these analyses clearly indicate significant delay under existing conditions and more significant delay if site traffic was to be added to an improved Pugsley Road; however, with a STOP sign control at NYS Route 312. This option is not a choice for consideration. Other significant roadway improvements are needed. With and without these improvements, roadways to the north in Patterson will be impacted.

The Applicant also analyzed alternatives to the NYS Route 312/Pugsley Road intersection, which included signalization and additional approach lanes on both NYS Route 312 and Pugsley Road. To accommodate site traffic this intersection and NYS Route 312 and Pugsley Road will require roadway improvements.

With the additional lanes and signalization this intersection will operate at improved Levels of Service. However, the Applicant will need both Town and NYSDOT approvals to implement these improvements. It is unclear if these improvements have any conceptual approval by both the Town and NYSDOT.

Without these improvements a much higher level of site traffic will travel north on Pugsley Road into Patterson to avoid traffic congestion on NYS Route 312.

Findings

In June 2018 a Draft Environmental Impact Statement (DEIS), prepared by JMC, was accepted by the Town of Southeast. It detailed the proposal to construct a 1,125,000 S.F. logistics center to be known as Northeast Interstate Logistics Center. Using the most conservative site traffic generation the Applicant completed a "Sensitivity Analysis," which included a weekday morning and weekday afternoon peak hour of site traffic at the same time as the peak hours of the nearby roadways. The Applicant estimated a total of 472, 506, and 146 employee/retail vehicle trips would be generated during the weekday morning and weekday afternoon and Saturday midday peak hours, respectively. To mitigate the impact of these vehicle trips the Applicant proposed to provide an emergency access gate on Pugsley Road and Fields Corners Road at the Town line, with gravel turnarounds to be provided.

After the acceptance of the DEIS the public made comments against the gate to be installed, since it will prohibit residents from using Fields Corner Road/Pugsley Road to reach NYS Route 312. The Applicant adjusted their proposal and released a draft Final Environmental Impact Statement, dated March 2019. In the FEIS it is noted that the Applicant drafted a Preferred Alternative Plan, down-sizing the proposed square footage to 933,100 S.F., an approximate reduction of 17 percent from the DEIS Plan.

With this new Preferred Alternative Plan, the Applicant estimated that this development would now generate 384, 445, and 120 employee/retail vehicle trips during the weekday morning, weekday afternoon and Saturday midday peak hours, respectively. The Applicant no longer proposes to close off the site from Patterson with an emergency gate, but instead proposed to erect a height restrictive barrier to prevent trucks from departing to the north along Fields Corner Road/Pugsley Road. According to the Patterson Sensitivity Study performed by JMC, 6 percent of this traffic is now expected to arrive from and depart to the north along Fields Corner Road, generating 22, 26, and 7 vehicle trips at the intersection of Fair Street and Fields Corner Road during the weekday morning, weekday afternoon and Saturday midday peak hours, respectively.

Table 3

CAPACITY AND STORAGE/QUEUE ANALYSIS RESULTS – MEASURE OF EFFECTIVENESS (MOE) AND IMPACT ASSESSMENT – PEAK HOURS – PUGSLEY ROAD AT NYS 312 BUILD ALTERNATIVES COMPARISON

Commercial Campus at Fields Corner

(Northeast Interstate Logistics Center)

NYS Route 312 at Pugsley Road

Southeast, New York

			2018 EXISTING CONDITIONS (BASELINE)						2023 NO–BUILD CONDITIONS (BASE)						2023 BUILD CONDITIONS						PROJECT IMPACTS (NO-BUILD TO BUILD)					
			Weekday Morning		Weekday Afternoon		Saturday Midday		Weekday Morning		Weekday Afternoon		Saturday Midday		Weekday Morning		Weekday Afternoon		Saturday Midday		Weekday Morning		Weekday Afternoon		Saturday Midday	
INTERSECTION	CONTROL TYPE	PHYSICAL UNITS	LOS/ Delay	Queue Length	LOS/ Delay	Queue Length	LOS/ Delay	Queue Length	LOS/ Delay	Queue Length	LOS/ Delay	Queue Length	LOS/ Delay	Queue Length	LOS/ Delay	Queue Length	LOS/ Delay	Queue Length	LOS/ Delay	Queue Length	Change in LOS	Project Delay (Seconds)	Change in LOS	Project Delay (Seconds)	Change in LOS	Project Delay (Seconds)
NYS 312 at Pugsley Road - Stop Controlled	TWSC	EB LT	A/0.0	--	A/0.0	--	A/0.0	--	A/0.0	--	A/0.0	--	A/0.0	--	B/14.5	13	B/13.0	3	B/11.9	3	A to B	14.5	A to B	13.0	A to B	13.0
		SB Ln1	F/51.8	5	F/54.7	5	F/58.1	8	F/75.7	8	F/112.5	10	F/121.1	13	F/2448.1	146	F/6591.6	1260	F/458.7	138	No	2372.4	No	6479.1	No	6479.1
NYS 312 at Pugsley Road - TS Alternative A	TWSC to Traffic Signal A	EB LT/APP.	A/0.0	--	A/0.0	--	A/0.0	--	A/0.0	--	A/0.0	--	A/0.0	--	A/2.9	71	A/5.0	97	A/3.1	132	No	2.9	No	5.0	No	3.1
		SB Ln1/APP.	F/51.8	5	F/54.7	5	F/58.1	8	F/75.7	8	F/112.5	10	F/121.1	13	D/53.6	64	D/52.5	64	D/40.3	30	F to D	-22.1	F to D	-60.0	F to D	-60.0
		Overall	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B/11.4	--	B/17.1	--	A/5.9	--	N/A	N/A	N/A	N/A	N/A	N/A
NYS 312 at Pugsley Road - TS Alternative B	TWSC to Traffic Signal B	EB LT/APP.	A/0.0	--	A/0.0	--	A/0.0	--	A/0.0	--	A/0.0	--	A/0.0	--	A/3.8	97	A/7.7	240	A/3.1	97	No	3.8	No	7.7	No	7.7
		SB Ln1/APP.	F/51.8	5	F/54.7	5	F/58.1	8	F/75.7	8	F/112.5	10	F/121.1	13	D/39.3	64	D/40.7	145	D/38.5	36	F to D	-36.4	F to D	-71.8	F to D	-82.6
		Overall	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A/7.7	--	B/11.6	--	A/3.8	--	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

Traffic Signal A Improvements include two eastbound through lanes and a eastbound left turn only bay, one westbound through lane and one westbound right turn only lane, and two southbound left turn bays and one southbound right turn bay.

Traffic Signal B Improvements include two eastbound through lanes and a eastbound left turn only bay, one westbound through lane and one westbound shared through/right turn lane, and one southbound left turn bay and one southbound shared left/right turn bay. This alternative would incorporate a protected eastbound left turn phase.

It is our understanding that the Town of Patterson's position is not to install a gate, which would restrict traffic for its residents and also the Town is not in favor of the overhead height restriction since it will only restrict a certain number of large trucks and continue to permit a significant number of passenger vehicles and potentially small trucks to use Pugsley Road and Fields Corner Road to the north of the proposed development in the Town of Southeast. Therefore, the Applicant should improve Fields Corner Road for its entire length in the Town of Patterson to accommodate the anticipated and site traffic, but maintain the rural character of this roadway.

After careful review of the traffic data provided in the DEIS and FEIS the Applicant has not provided sufficient information to identify the actual level of site traffic to be added to Pugsley Road and Fields Corner Road to the north of the Subject Property. This road is clearly a relief valve for motorists avoiding NYS Route 312, the Interstate 84 Interchange and certainly the U.S. Route 6 signalized intersection with NYS Route 312. NYS Route 312 to the west of Pugsley Road to the intersection with U.S. Route 6 and U.S. Route 6 to the north into Carmel and eventually the Town of Patterson via other roadways currently experiences significant traffic delays and will experience additional delays with this development in place. The Applicant has limited its mitigation to NYS Route 312 at Pugsley Road in the vicinity of this intersection. However, if the improvements at the Pugsley Road intersection are not approved by the New York State Department of Transportation (NYSDOT) this section of NYS Route 312 will experience significant delays and motorists from the proposed development will use Pugsley Road and Fields Corner Road to the north to access Fair Street to avoid the entire area within the Town of Southeast to access roads in Patterson and eventually NYS Route 311 to access Interstate 84 to travel in a northwest direction away from the site.

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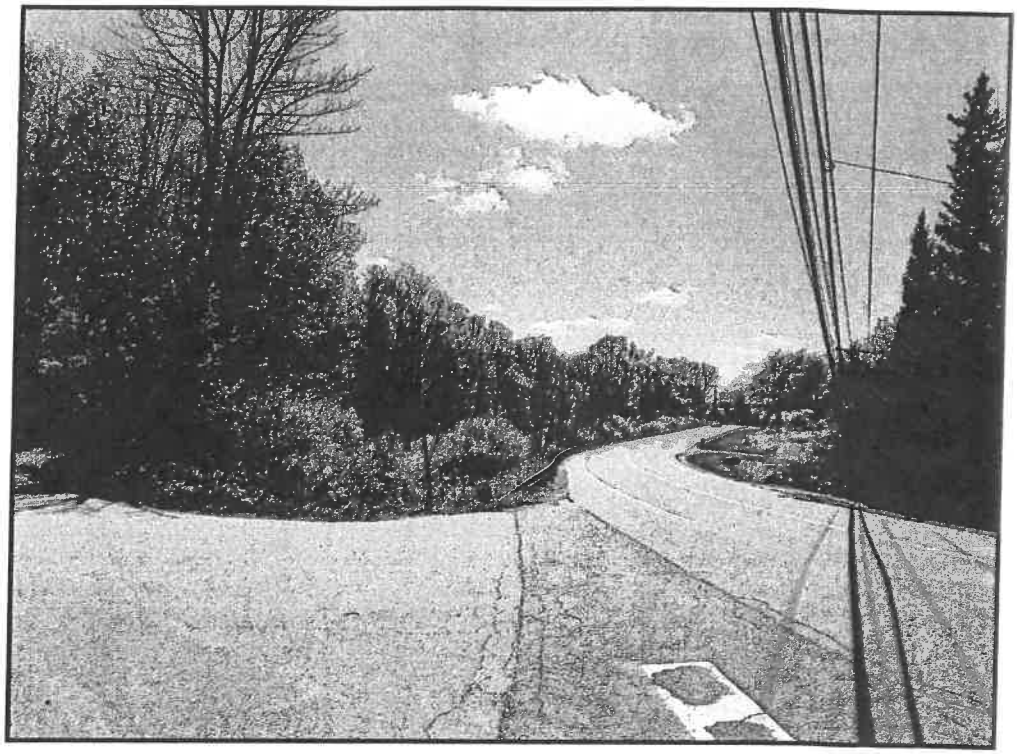
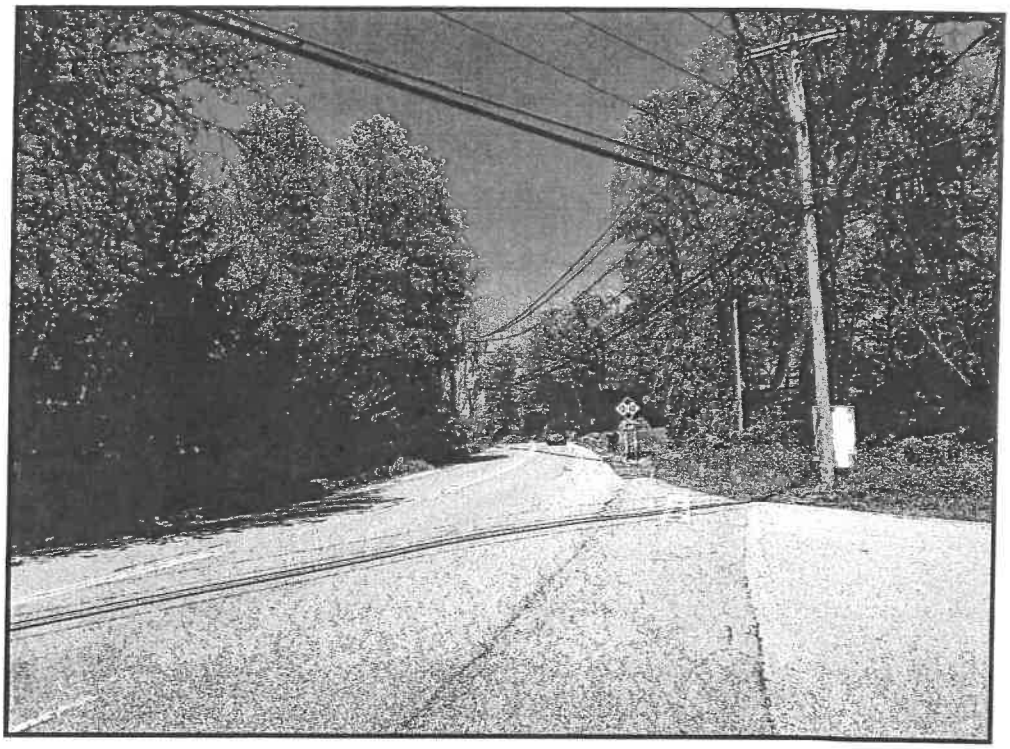


Fair Street at Fields Corners Road, Looking West

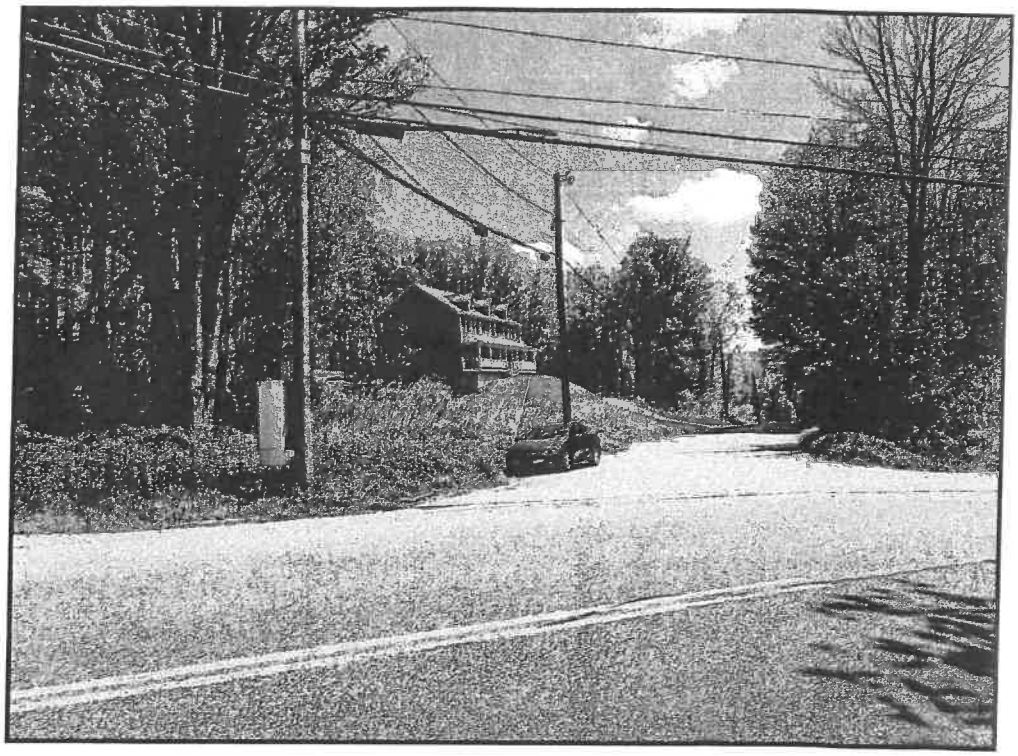


Fair Street at Fields Corners Road, Looking East

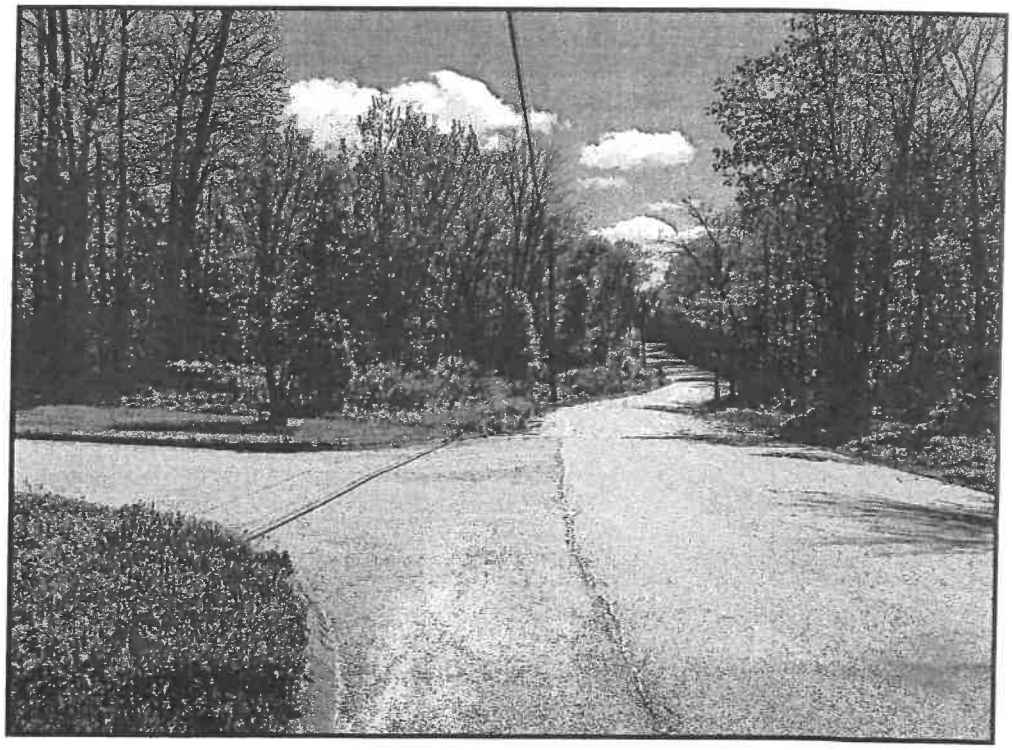
May 22, 2019
Frederick P. Clark Associates, Inc.

File: G:\821.000 Commercial Campus at Fields Corners, Southeast, NY\Word\TrafficPhotos.doc

Exhibit 1



Fields Corners Road at Fair Street, Looking South



Fields Corners Road at Theodore Trail, Looking South

May 22, 2019
Frederick P. Clark Associates, Inc.

File: G:\821.000 Commercial Campus at Fields Corners, Southeast, NY\Word\TrafficPhotos.doc

Exhibit 2

Fields Corners Road at Theodore Trail, Looking North

Theodore Trail at Fields Corners Road, Looking East

May 22, 2019
Frederick P. Clark Associates, Inc.

File: G:\821.000 Commercial Campus at Fields Corners, Southeast, NY\Word\TrafficPhotos.doc

Exhibit 3

Environmental, Planning, and Engineering Consultants
34 South Broadway
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White Plains, NY 10601
tel: 914 949-7336
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www.akrf.com

Memorandum

To:	Town of Southeast Planning Board
From:	AKRF, Inc. (A. Russo and A. Auld)
Date:	September 5, 2019
Re:	Commercial Campus at Fields Corner – Frederick P. Clark Traffic Review Report

AKRF, Inc. reviewed the Traffic Review Report ("TRR") dated July 1, 2019 as prepared by Frederick P. Clark Associates, Inc. ("FP Clark") on behalf of the Town of Patterson for the proposed Commercial Campus at Fields Corner project.

Presented below are key points and comments/concerns presented in the TRR, followed by AKRF's opinions and responses. Also presented are general comments on the TRR by AKRF.

RESPONSES TO KEY POINTS PRESENTED IN THE TRR

1. **Comment/Concern:** *FP Clark is concerned that Pugsley Road and Fields Corner Road would be utilized as a bypass for drivers to access Carmel and Patterson. There is also concerns regarding trucks utilizing north of the site along Pugsley Road to access Patterson.*

   AKRF Response: AKRF does not concur with the conclusion that Pugsley Road will be used as a bypass to Route 312. As presented in the draft FEIS, the Applicant would make numerous improvements along Route 312, including at the intersection of Route 312 and Pugsley Road. Based on the conclusions presented in the draft FEIS, level of service, delay and queues along the Route 312 corridor would improve with the proposed improvements in place. Therefore drivers would not have an incentive to bypass Route 312 with an alternative route (e.g, Pugsley Road and Fields Corner Road). AKRF has recommended that if Fields Corner Road is to be open for any portion of the year (i.e. open seasonally), a Traffic Monitoring Plan (TMP) be developed and implemented to ensure that trucks and employee vehicles are not utilizing the road. Employee vehicles could be monitored utilizing a decal or placard system to identify any employee vehicles utilizing Fields Corner Road. Additionally, a TMP would also monitor the hours trucks are traveling to/from the site, monitor for idling and overnight truck parking on-site. The monitoring plan and its results would be reviewed by Town Officials/Building Inspector to address any violations with the property owner. Additionally, the Applicant is pursuing the installation of vehicle height clearance bars to restrict the number of trucks utilizing Pugsley Road north of the site.

2. **Comment/Concern:** *The analysis did not provide any specific details on vehicle queuing, including the Patterson Analysis study area intersections.*

AKRF Response: **AKRF partially concurs with this comment.** While the TIS appendix has been updated to include tables which present the results of the queue analyses, including the Patterson locations, a discussion of the queues should be provided to identify which locations would be impacted based on the queue impact criteria. AKRF will review this information once it has been provided by the Applicant.

3. **Comment/Concern:** *There would be Potential Impacts to the Paterson intersections studied based on the 25 anticipated project generated vehicles to be added to Fields Corner Road during peak hours.*

   AKRF Response: **AKRF does not concur with this comment.** The addition of 25 peak hour trips equate to less than one vehicle per minute and would have a no significant impact on traffic operations. In addition, the capacity (LOS) and queue analyses for the Paterson Sensitivity Analyses presented in the FEIS do not show any impacts. Implementation of the TMP as outlined above will ensure that trucks, as well as employee vehicles, will not utilize Fields Corner Road as a bypass to access Carmel and Patterson, thereby reducing even further the number of vehicles that would be potentially added to Fields Corner Road.

GENERAL COMMENTS ON THE TRR

1. Page 1 of the TRR "Summary" section does not appear to reference the correct total number of project generated trips based on the 933,100 SF development program as presented in the FEIS.

APPENDIX II-1A, II-1B

FEIS vs. DEIS Comparison Text and Table II-2

APPENDIX II-1A

FEIS versus DEIS Impacts Comparison

This appendix summarizes the differences between the DEIS plan and the FEIS plan.

A. Bulk Parameters/Development Intensity

- The Preferred Alternative Plan proposes two (2) buildings (Figure 1-2) instead of the four (4) proposed in the DEIS Plan, and provides an approximately 17% reduction in the square footage of the buildings, proposing a total of 933,100 square feet (s.f.) versus the 1,124,575 s.f. of the DEIS Plan, a 191,475 s.f. reduction.

- Sixty-five percent (65%) of the Applicant's 328-acre property would remain undisturbed under the Preferred Alternative Plan, compared with 59% for the DEIS Plan.

- The Applicant has proposed to place "no-development" restrictions on more than fifty percent (50%) of its property, restricting approximately 172 acres of the overall 328 acre property, including all of its property within the RC District. The no-development restrictions would prohibit any future building development in these locations (see Figure 1-7).

- Town-defined open space would comprise approximately 85% of the approximately 229-acre OP-3 portion of the Applicant's property under the Preferred Alternative Plan.

- Total impervious area is 48.4 acres, a reduction of 8.8 acres from the DEIS Plan, which had an impervious area of 57.2 acres versus the existing site conditions.

B. Zoning

- Unlike the DEIS Plan, the Preferred Alternative Plan does not require any zoning text or zoning map amendments, with no rezoning proposed of any portion of the Applicant's property that is in the Town's RC "Rural Commercial District" (Figure 1-5). The Preferred Alternative qualifies as a "Light Manufacturing" use under the Town Code, and, accordingly, is a use specifically allowable by Special Permit in the OP-3 District.

- No buildings would be situated in the RC District; rather, all buildings would be situated on the proposed Lots 2 and 3, which are wholly within the OP-3 District (Figure 1-3).

C. Visual

- Under the Preferred Alternative, Building A, which is closest to Route 312, would be almost two-and-a-half (2½) times as far from Route 312 as the DEIS Plan, located approximately 2,150 feet from Route 312, versus 965 feet for Building 1 in the DEIS Plan. Distance, topography and dense existing vegetation would obscure Building A's visibility from Route 312 and preserves the rural character of this area.

- Unlike the DEIS Plan, in which the proposed buildings were situated on top of two ridgelines, the Applicant proposes to construct Building A below the top of the ridgeline, which is proposed to remain, and to construct Building B on a ridgeline but below the existing grades. These conditions further reduce the buildings' visibility along the ridgeline, and, as a result, the project is minimally visible off-site.

- The nearest building to the Twin Brook Manor residences would be twice as far under the Preferred Alternative Plan as compared to the DEIS Plan, relocated to approximately 1,210 feet distant from Twin Brook Manor as opposed to approximately 600 feet for the DEIS Plan.

- To even further obstruct potential views of Building B from Twin Brook Manor, an approximately twelve foot (12') high berm is proposed on its north side.

- The project would be imperceptible from the vast majority of units within Hunters Glen and imperceptible from Twin Brook Manor during the leaves on condition, and would be minimally, if at all, perceptible from most of the units in those communities during the winter. Any visual impacts would be minimized by the preservation of substantial areas of existing mature trees and habitat as well as additional proposed evergreen landscaping planted on the Hunters Glen and Twin Brook Manor properties, subject to approval of their respective boards, in the "gaps" where the buildings might be visible.

D. <u>Ridgelines</u>

- The ridgeline associated with the southernmost buildings (Buildings 1 and 2 in the DEIS and Building A in the FEIS) has 40% less disturbance and 75% fewer trees removed under the Preferred Alternative Plan. The impacts to the northernly ridgeline have also been reduced, with 9% less disturbance and 3% fewer trees removed under the Preferred Alternative Plan.

E. <u>Noise Reduction</u>

- To further reduce potential noise, light and visual impacts on Hunters Glen, under the Preferred Alternative Plan, trucks would no longer be able to circulate around the buildings, with only employee parking situated on the side facing Hunters Glen.

- Trucking activity is concentrated on the sides of the buildings facing away from the condo communities with the buildings acting as a sound barrier to these communities. The buildings have been reoriented so that all of the loading docks face away from Hunters Glen and Twin Brook, eliminating the need for trucks to

circulate around the buildings. The buildings would also help buffer the noise from the existing approximately 9,000 daily truck trips on nearby I-84. Any faint truck sounds that could be audible outside the residences in those developments would be similar in nature, but not as loud, as the peak truck noise from I-84, and would not wake up a person sleeping even with an open window.

- The Applicant is willing to commit to a maximum of 46 dBA from the rooftop HVAC units, which is below the Town Noise Ordinance night-time $L_{eq(1\ hr)}$ of 55 dBA, and. is willing to provide a monitoring report, submitted after the buildings are complete, to confirm that the noise levels for the HVAC units are 46 dBA or less.

F. <u>Lighting</u>

- No general illumination wall-pack lighting is proposed for any portion of Building B facing nearby residences, and the parking lot light poles would be reduced from 30 to 20 feet high, and fully shielded such that there would be no light spillage off of the property towards Hunters Glen or Twin Brook Manor. The proposed lighting would be dark sky compliant.

G. <u>Traffic</u>

- The Preferred Alternative would result in a significant reduction in the traffic generated by the project, reflecting the proposed reduction in development.

- Traffic data from the GAP facility in Fishkill and the Matrix Facility in Newburgh indicate that the reduced project could generate substantially (up to 85%) less traffic than was set forth in the DEIS. During the peak weekday PM Rush Hour along Route 312, trips could be reduced by 336 trips, from 360 to 24. During the weekday peak AM hour of the project generation (i.e., Shift Change), which would occur prior to the peak AM Rush Hour along Route 312, the project generated

volumes could be projected to be reduced by 355 trips, from 472 to 117. Additionally, based on the local counts, approximately 60% of the trucks would be tractor trailers and 40% would be trailer cab or straight box trucks.

- Traffic mitigation for the project, in conjunction with NYSDOT improvements currently under construction, would generally improve operations along Route 312.

- Traffic mitigation measures for the project include the widening of Route 312 to four lanes between Pugsley Road and the I-84 Eastbound intersection; improved traffic signalization that responds better to existing conditions and facilitates better traffic movements, together with NYSDOT improvements currently under construction; the intersection of Pugsley Road and Route 312 would be substantially improved with additional turn lanes on Route 312 and Pugsley Road, as well as an additional thru lane along Route 312 eastbound, and possibly Route 312 westbound (subject to the NYSDOT preference of improvement alternatives); and limiting further traffic generation from the Property as the result of the Applicant's willingness to subject approximately 172 acres to no-development restrictions, or more than half of the Applicant's property and all its property within the RC Zone.

- A series of land exchanges are proposed to enable the modification of the right-of-way necessary for improvements to Pugsley Road and Route 312 (Drawing PE-1 in Appendix Volume 4.A, Part M). The Town would abandon the Barrett Road right-of-way to the Applicant, as discussed in Response 4-140, to enable the project to be moved 600 feet farther away from Twin Brook Manor than the DEIS Plan.

- To prevent truck traffic from traveling to or leaving the site through Patterson, truck access to Fields Corner Road would be restricted. The Applicant would abide by the Town's preferred means for implementing this restriction. As currently preferred by the Town, the site plans propose two height restriction

bars and two turnaround areas along Fields Corner Road within the Town of Southeast. Signs would be installed to prohibit commercial vehicles and enforced with a camera to record violations and violators.

- The Town would require a Traffic Monitoring Plan (TMP) to be completed by the Applicant and submitted to the Town Planning Board within six (6) months of the occupancy of the first of the two buildings completed, and within six (6) months of the full development and occupancy of the Proposed Project. The final details of the TMP would be included in the Statement of Findings. The Applicant would work with the Town to correct operations if necessary, in the unanticipated event that actual operations substantially differ from those detailed in this FEIS.

- Barrett Road would need to be abandoned to allow for the consolidation of the DEIS Plan's Buildings 3 and 4 into the Preferred Alternative's reduced Building B, and to provide access to Building B.

- Because of the reduction from the four proposed buildings under the DEIS Plan to two proposed buildings under the FEIS Plan, the site's two access driveways have been modified such that one driveway serves Building A and the other driveway serves Building B. Each driveway will have two entry lanes. One lane would be dedicated for employees to enter and exit the site. The employees may use a keycard for access without having to stop at the security gate, allowing for a faster employee access to the site. The other lane would be for trucks and visitors, who would be channeled to stop at the security gate of each building before entering and exiting. A truck turnaround is provided at each driveway such that those vehicles that do not intend to access the site are able to turn around and exit the way they came into the Campus property from Route 312 for greater convenience.

H. <u>Stormwater Management</u>

- The Preferred Alternative Plan incorporates modifications to the Stormwater Management Plan (SWPPP) design in response to comments from the NYCDEP, NYSDEC, and the New York State Watershed Inspector General (WIG), and to ensure that the proposed project would add no additional phosphorus to the Middle Branch Reservoir or otherwise adversely impact the Watershed.

- The modified SWPPP provides redundancies to enhance water quality and mitigate stormwater runoff rates from the development areas, including a combination of stormwater infiltration basins in a series with wet detention basins (micropool extended detention basins or pocket ponds) and micropool detention basins in series with pond/wetland systems, the utilization of hydrodynamic separators for pretreatment prior to being discharged into stormwater management areas, cisterns, open channels, bioretention areas and level-spreader discharges. The vegetated swales and other overland conveyances of stormwater runoff would result in additional infiltration for runoff reduction and water quality that is not considered in the SWPPP's hydrologic model, resulting in a conservative analysis.

- No road salt would be stored on site. An outside contractor would clear snow after a storm and would comply with all pertinent NYCDEP regulations regarding any materials used for snowmelt and use the minimum amount necessary.

I. <u>Operations</u>

- Like most warehouse/distribution facilities, the Commercial Campus at Fields Corner would have strict anti-idling policies, which each individual tenant's warehouse manager is charged with enforcing. If a truck driver is idling at a facility, the shipping and receiving supervisor would tell them to shut off. A driver's lounge would be provided with chairs, table, TV, and a bathroom with a toilet and a sink, for drivers who need a quick break or are waiting to be reloaded. The driver's lounge would have a separate entrance from the warehouse, and the drivers would

not be permitted into the warehouse. Outlets are to be provided at each building so that truck's engine warmers can be plugged in during the coldest winter weather, rather than having their engines running for any extended period of time.

- As a matter of practice, warehouse/distribution facilities do not provide an overnight facility and truck drivers are not permitted to sleep overnight in their trucks at warehouse/distribution facilities. The Town intends to require as conditions of Special Permit and Site Plan Approval that no overnight facilities or overnight sleeping be permitted at the Preferred Alternative facility.

- The building would operate 24/7/360, but the fact is that within the industry, the majority of commercial activity occurs during the traditional business day and is reduced by approximately half during the second (evening) shift. During the third (night) shift, the activity is limited to in-building cleaning, maintenance, repair and restocking activity much like a grocery store prepares for the next business day. Based on truck counts at the Gap Distribution Center in Fishkill and at the Matrix Distribution Center in Newburgh, truck traffic is concentrated to the first shift, tapering into the second shift.

- The Town intends to require as conditions of Special Permit and Site Plan Approval that no trucks access the site between the hours of 11:00 PM to 6:00 AM Monday through Saturday, and on Sunday trucks would only be permitted to access the site between the hours of 10:00 AM to 5:00 PM.

J. <u>Wetlands/Wildlife</u>

- Impacts to wetlands remain at a permanent 0.05 acre encroachment into the wetland and would occur only at the existing on-site road crossing (improvements at the Barrett Road wetland crossing between Wetlands 4 and 5, and impacting the northern portion of Wetland 4); otherwise only minor encroachments into the adjacent areas are proposed, with 2.08 acres of disturbance to NYSDEC

wetland buffers (which are also regulated by the Town), and 5.23 acres of disturbance to Town-only regulated wetland buffers. This is a reduction versus the DEIS Plan of 2.44 acres and 5.37 acres, respectively.

- A comprehensive upland habitat restoration (13 acres) and wetland mitigation program (1.5 acres) is proposed for the site. This would be accomplished through replacing degraded upland habitat lost to development (buildings, parking, and roads) with restored habitat areas using a variety of native species, and restoration of both wetland and upland habitat types to support wildlife species of concern which potentially occur on the site (see Appendices 9-1 and 9-3). Once the restoration is completed, the wetland would be a more diverse and robust habitat for wetland dependent wildlife species that use the central wetland corridor. In addition, approximately 172 acres of the site will remain undisturbed and protected by a no-development restriction which prohibits future building development. Once the restoration is completed, the central wetland corridor of the site would be a more diverse and robust habitat for wetland dependent wildlife species.

- A herpetofauna survey undertaken by the Mid-Atlantic Center for Herpetology and Conservation (MACHAC) confirmed that the central wetland corridor, which includes the northern portion of Wetland 4 to be impacted, does not contain Bog Turtles, which are a threatened/endangered species.

K. <u>Fiscal/Economic Benefits</u>

- The subject property currently pays approximated $143,000 for property taxes on undeveloped land. Without development, this annual tax would stay the same in perpetuity subject only to annual tax escalation.

- Revenue generated by the subject property based on the proposed development would over the first fifteen years be $31,894,781 under a Putnam County Industrial Development Agency (IDA) Payment in Lieu of Taxes (PILOT) payment program.

- During the initial fifteen years which includes when the PILOT program is in place, $23,785,000 in PILOT payments for the Brewster School District would be generated above what would be paid in property taxes if the site were to remain undeveloped. Over the initial 15 years which includes when the PILOT program is in place the PILOT payments for the project will generate a revenue of $31,894,781 for local taxing jurisdictions. With no PILOT in place and the property paying fully assessed real estate taxes, $40,889,223 would be paid in real estate taxes for the first 15 years. Therefore, with a PILOT the project would pay approximately 75% of what it would pay without a PILOT program. Consequently, even with the PILOT, the project would generate substantial revenue during the first fifteen years.

- The proposed project would generate an estimated $73,500,000 of annual economic output including 551 new on-site jobs during the anticipated day shift and 115 new indirect jobs. (Although a total of 1,040 jobs are projected over the 24-hour period, the 551 jobs on the anticipated day shift were used in the economic analysis (See Appendix 10-1) as a conservative number, but with water/septic demand and the traffic analysis taking into account all three shifts.) This economic output is anticipated to have a favorable and lasting impact on the local economy.

TABLE II-2

TABLE OF DEVELOPMENT PLANS COMPARISON

CONDITIONS		APPROVED / PLANNED MIXED USE[1]		DEIS		FEIS PREFERRED ALTERNATIVE		COMMENTS
Uses	Residential	143 Single Family Homes		N/A		N/A		Plan evolved from resident, office, retail driven mixed-use development to a business center focusing on warehouse and distribution space.
	Office	237,000 sf		N/A		N/A		
	Warehouse/Distribution	N/A		1,124,575 sf		933,100 sf		17% reduction in Gross Floor Area
Land Use	Zoning	Approved Vested Rights thru 2020		Required Rezoning RC Land		As-of-Right with Special Permit		Preferred Alternative permitted under OP-3 zone with Special Permit.
	Waiver	Not Specified		Retaining Walls & Slopes Over 30 feet		None		
	Special Permit	Not Specified		Yes		Yes		
	Permitted	See "Uses" Above		4,505,012 sf		4,505,012 sf		
	Requested	See "Uses" Above		1,124,575 sf		933,100 sf		Preferred Alternative is 40% of permitted density
	Impervious	33%		17%		15%		55% permitted. Preferred Alternative is 15%, or less than one third of permitted
	Open Space	67%		82%		85%		45% required. Preferred Alternative is approximately 85%.
	No-Development Area	None		None		172 Acres		
	Undisturbed of 328 Acres	58%		59%		65%		
Metrics	Building Setbacks	525' / 465'		1,415' / 600'		1,415' / 1,210'		Setbacks from Hunters Glen and Twin Brook Condos; 50' required to property line
	Building Setback to Route 312	150'		965'		2,150'		From closest building.
Wetlands	Wetland Disturbance	2.19 acres		0.05 acres		0.05 acres		Direct disturbance to existing wetlands at existing crossing, mitigation proposed.
	State Buffer Disturbance	24.6 acres		2.44 acres		2.08 acres		Mitigation proposed
	Town Buffer Disturbance	Not Specified		5.37 acres		5.23 acres		Mitigation proposed
Noise	Noise	Not Specified		46 dBA		46 dBA		40-50 dBA is deemed "quiet" by national standards. Current background is in the 40+/-db range. Town ordinance requires under max 55 db.
Utilities	Sanitary	Sewer Plant		Septic		Septic		
	Water	172,820 gpd		29,000 gpd		27,600 gpd		
Traffic at Route 312/ Pugsley Road Intersection				**No-Build Traffic**	**Project Traffic**	**No-Build Traffic**	**Project Traffic**	
	Peak AM hour of streets	680[2]		1,956	191	1,956	159	Site Traffic Based on ITE 10th Edition Code 150 Warehouse
	Peak PM hour of streets	699[2]		2,375	214	2,375	177	Site Traffic Based on ITE 10th Edition Code 150 Warehouse
	Daily-Trucks By Manual (Trips)	Not Specified		Not Specified	255 (510)	Not Specified	212 (424)	Trucks (truck trips) based on national data
	Daily-Trucks by Experience (Trips)	Not Specified		Not Specified	Not Specified	Not Specified	65 (130)	Trucks (truck trips) based on GAP and Matrix current traffic. 38% are without trailers.
Economic Impact						**With PILOT**	**Fully Assessed**	
	Existing Real Estate Taxes	$140,000		$143,000		$143,000	$143,000	Current Taxes
	Property Taxes 15 yrs.	$81,000,000		Not Specified		$31,894,781	$40,889,223	Commercial development begins at 50% PILOT and increases to 100% over 10 years
	8.6% to Town	$6,966,000		Not Specified		$2,742,951	$3,516,473	
	10% to County	$8,100,000		Not Specified		$3,189,478	$4,088,922	
	81.4% to schools	$65,934,000		Not Specified		$25,952,740	$33,283,828	
	School-aged children	125		0		0		Number of school-aged children generated by 143 Single Family Homes; average cost per student in Brewster Central School District is approximately $26,636.
		15-Year Cost to Schools	**School Surplus**	**15-Year Cost to Schools**	**School Tax Surplus**	**15-Year Cost to Schools**	**School Tax Surplus**	
		$49,942,500	$15,991,500	0	Not Specified	0	$25,952,740	
	Annual direct	Not Specified		$59,800,000		$49,603,826		On-site salaries and value added services
	Construction Jobs	Not Specified		818		653		Direct, indirect and induced.
	Permanent Jobs/Day Shift	Not Specified		665		551		
	Permanent Jobs/24-Hours	Not Specified		1133		1040		

Notes:
(1) The Approved / Planned Mixed Use is a phases included in the 1992 DEIS, which is less than the full development analyzed in the 1988 DEIS.
(2) Peak hour volumes for the Approved / Planned Mixed Use Development do not include phase 3.

APPENDIX II-1

Implan Model Construction Employment Backup by Phillips Preiss

Total Impact Summary Data

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	486.119196929644	29260649.3479495	37473960.1501657	64800000
Indirect Effect	56.0573967318637	2857401.49870428	4536294.0460907	9097569.70447198
Induced Effect	111.017483326806	4425160.04439451	8657020.25597878	14762729.680668
Total Effect	653.19	36,543,211	50,667,274	88,660,299

APPENDIX 2-1

Summary of Operations by CBRE, dated 03/11/2019

COMMERCIAL REAL ESTATE SERVICES

Mike Wood
Director Project Management | Industrial

CBRE, Inc.
Project Management

250 Pehle Ave. Suite 600
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C +1 610 223 1800

Mike.Wood@cbre.com
www.cbre.us

Logistics Center Operational Review and Assessment - 3/11/2019:

I have over thirty-eight (38) years of project management experience in the area of supply chain, distribution facilities, warehouses, and consumer product manufacturing. A copy of my resume is attached. As a project manager, I have directly managed the day-to-day operations for manufacturing, packaging, maintenance, quality assurance, engineer, construction, safety services, contract manufacturing, product development and research functions. My role as a project manager enables the adaptation of operational practices to meet dynamic business demands. I have been involved with and functioned as project director for twenty-four (24) warehouse/distribution facilities over the past eighteen (18) years. As such, I am fully familiar with the operational needs, requirements, and practices of warehouse/distribution facilities.

The Commercial Campus at Field Corners ("CCFC") has retained me to provide guidance on the operations of warehouse/distribution facilities based upon my professional expertise in this field. I have become familiar with their project, including by reviewing CCFC's proposed subdivision plat and project layout, and understand that they are proposing to construct an approximately one-million square foot warehouse/distribution facility comprised of four (4) separate buildings.

This memorandum sets forth general responses to operational questions CCFC has posed to me about the operations of warehouse/distribution facilities and how they may relate to its project.

General Operation of Warehouse/Distribution Facilities

Warehouse/distribution facilities typically are a 24-hour operation. The operation is generally broken down into three (3) shifts: 6:00/7:00 am to 2:00/3:00 pm, 2:00/3:00 pm to 10:00/11:00 pm, and 10:00/11:00 pm to 6:00 am. Almost all trucking activity (i.e., pickups and deliveries) occurs during the 16-hour window of the first two (2) shifts. Very little, if any, truck activity would occur at a warehouse/distribution facility during the third shift of 11:00 pm to 6:00 am. This third, overnight, shift is mainly for internal operations at the facility. Operations during this time typically involve preparation for shipping, stocking shelves, and re-arranging the product within the facility.

During the two (2) day shifts (i.e., 6:00 am to 11:00 pm) trucks arrive at a facility at a scheduled time. Facilities are equipped with dynamic loading docks to ensure quick turnaround for trucks to get into and out of the facilities. Warehouse/distribution facilities generally intend to process truck loads as quickly as possible and only want trailers to remain on-site for as long as it takes to unload and reload them. Each individual tenant at a warehouse/distribution facility usually has a full-time shipping and receiving supervisor during trucking operations. This supervisor is charged with making sure that trucks enter and exit the site as quickly as possible, at the scheduled times. These supervisors also can be designated to monitor and enforce any policies or procedures of the facility.

Most warehouse/distribution facilities, for instance, have strict anti-idling policies, which the supervisor is charged with enforcing. If a truck driver is idling at a facility, the shipping and receiving supervisor will tell them to shut off. Some tenants also hire additional security for their facility, commonly referred to as Loss Prevention Associates, who can also assist in enforcing policies and procedures. Some facilities provide heat blocks and plug-ins for trucks to prevent the trucks' fuel from gelling during extreme weather conditions. Truck fleet operators and carriers that service warehouse/distribution facilities, independent of the tenants, also can monitor truck activities through wireless systems to ensure compliance with the facility's policies.

I am aware that there have been concerns about the use of compression release engine brakes at the site (otherwise referred to as "jake brakes"). In fact, trucks are operated at such low momentum at a warehouse/distribution facility site that jake brakes are not used. Based on CCFC's project layout, there is no reason to expect that jake brakes would ever be used at the site. I also understand there have been concerns expressed about back up beepers. Although trucks cannot turn off their back-up beepers, this sound does not travel significantly. In fact, in all of my experience with warehouses and distribution facilities, I have never heard of a neighboring land user complaining about back up beepers.

While the goal at every warehouse/distribution facility is to get truckers in and out of the site as quickly as possible, it is standard practice for a tenant to provide a basic lounge for truck drivers to use while their trucks are being unloaded and reloaded. This is a low cost to the tenant, as typically the trucking lounge is just an 8'x8' room with chairs, a vending machine and a small bathroom. Warehouse/distribution facilities never provide an overnight facility and truck drivers never sleep overnight in their trucks at the facility.

For the security of their own facility, most tenants want a full perimeter fence surrounding their facility. This burden is typically shifted to tenants as an obligation in the lease. Certain tenants will also install a trailer control center at its front gate. Sometimes, rather than having a person at the gate 24/7, these control centers contain a voice box and camera that security personnel within the actual building can use to observe and permit entry remotely (if the truck is authorized for delivery or pick-up).

There are a range of different jobs at warehouse/distribution facilities, with both full-time and part-time positions. These jobs include, but are not limited to: managers, supervisors, security, inventory controllers, clerks, IT technicians, forklift drivers, order pickers, package handlers, quality assurance technicians, electricians, and mechanics. Full-time employees receive typical benefits including paid vacation and health benefits. Long term trends for the types of jobs and number of jobs at these facilities are largely unknown. This is because, even currently, jobs and amount of automation technology at these facilities vary significantly based upon the type of facility. It is important to note that, even with automation, warehouse/distribution facilities will still need significant staffing, including employees to operate machines, input data, program, and maintain the equipment.

Warehouse/Distribution Facility Buildings

The typical fire suppression system used in warehouse/distribution facilities are Early Suppression Fast Response (ESFR) sprinklers. This is standard and accommodates the high storage height of

modern-day warehouse/distribution facilities. Furthermore, this meets the standards and is more than adequate for CCFC's proposed warehouse/distribution facility.

In most warehouse/distribution facilities, the only floor drains needed are for janitorial purposes. These are standard drains, typical for cleaning rest rooms, break rooms, and floors.

With respect to lighting in the rear of warehouse/distribution facilities, so long as no trucks or persons need access to the rear of the building, lights are not necessarily needed at night. Rather, facilities can use reflective strips on the ground. Where lighting is necessary -- for instance in the area where trucks enter and exit -- lower foot candles and fixtures equipped with housings that direct the light downward are often used to minimize lighting on the site.

Storage at Warehouse/Distribution Facilities

Warehouse/distribution facilities are used to store and facilitate the delivery of commercial and consumer goods. To avoid any noise impacts that refrigerated storage of food may have, facilities often put the refrigeration systems on the ground outside the buildings, rather than on the roof. Consumer goods which are technically classified as hazardous materials are also often times stored at warehouse/distribution facilities. These materials include things like nail polish remover, perfumes, maintenance supplies, televisions, and computers. All of these materials, both while in the facility and being transported to/from the facility in trucks, are required to be properly packaged as required by law.

Warehouse/distribution facilities also have very limited, but necessary needs for small outdoor storage areas. For instance, some facilities require empty pallet storage. Consumer goods are rarely, if ever, stored outside long-term, although there may be a need to temporarily stage them outside. A total of 5,000 SF of designated outdoor storage space for each building would be more than adequate to meet these needs. Often times, facilities are also required to screen these outdoor storage areas. This burden is sometimes shifted to the tenant as a tenant obligation in the lease.

Furthermore, operations of warehouse/distribution facilities require that trailers be parked in designated parking areas for longer periods of time. This is because sometimes a truck drops off a trailer that is emptied but is not required to be refilled or re-used right away. There are also times, mainly during peak times of the year (i.e. near Christmas) when a full trailer is dropped off at the facility but there is no internal capacity at the facility until other shipments go out. The trailer needs to be left in a designated spot until other shipments go out. Storing materials outside a warehouse/distribution facility in trailers in not preferred because it is inefficient and costlier to the operation.

Michael E. Wood
CBRE, Inc.
Project Management

Mike Wood

Director Project Management | Industrial

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Experience

Mike Wood is a seasoned technical leader achieving substantial engineering and construction successes for world class food and beverage companies. With over 25 years of managing manufacturing operations and directing capital project implementations, he is well versed in knowing how to integrate equipment, machinery, and processes with new building construction for winning food and beverage facility startups.

Mike has guided a substantial number of new product roll-outs and new manufacturing technology applications through successful commercialization and startup. Possessing a strong background in process engineering, facility maintenance, workforce management, and product quality assurance, coupled with a chemical engineering degree, enables Mike to bring a genuine operations perspective to the design and construction of technically complex facilities. Mike has provided insight into practical solutions and sound implementation pathways for many successful strategic asset placements.

Beyond food and beverage, Mike has spent an additional 12 years in supply chain providing project management expertise for the planning and implementation of distribution centers across the United States.

Mike's advanced technical knowledge across all aspects of the project life cycle and construction work flow processes, coupled with his chemical engineering background along with direct P&L experience, drives a strong focus on teamwork and technical detail for optimizing value to deliver the best outcome for the client's business.

Value Delivered

- $400+ Million Construction Management & Oversight for Green Field Facilities, Distribution Center Retrofits, Complex Plant Overhauls, Process Equipment Assets, and Packaging Line Innovations
- 3.3+ Million Square Feet Greenfield and Facility Expansions
- 25 New Food & Beverage Product Commercialization and Roll-Out
- 18 Food & Beverage Packaging Lines
- $30+ Million of Annual Cost Savings to Ongoing Operations

Clients Represented

- ABB Optical
- Advanced Auto Parts
- ASICS
- AT&T
- Campbell's Soup Company
- Comcast
- Genesco – Journeys Group
- Gordsman
- J. Crew
- LL Beam
- Maxwell House – Kraft Foods
- McKesson
- Medline
- Michaels Stores
- Pepsi Cola Company
- Petco
- PetSmart
- ResMed
- Schindler
- Snapple
- Starbucks
- Tetley USA
- Tropicana Products
- ULTA Beauty
- Urban Outfitters

Mike Wood

Director Project Management | Industrial

CBRE

Project Management Highlights

Greenfield Distribution Facilities - Building Construction and MHS Installation:
700,000 SF, PA | Michaels Stores
700,000 SF, IL | Michaels Stores
700,000 SF, WA | Michaels Stores

Greenfield Distribution Facilities - Building Integration and MHS Installation:
650,000 SF, IN | ULTA Cosmetics
1,000,000 SF, CA | Medline
700,000 SF, NV | Petco
980,000 SF, PA | PetSmart

Existing Building Distribution Facilities - Building Modifications and MHS Installation:
850,000 SF Retrofit, NJ | Petco
207,000 SF Building Expansion, NJ | Journeys
110,000 SF Building Expansion, VA | J. CREW
300,000 SF Retrofit, SC | Urban Outfitters
500,000 SF Retrofit, CA | Famous Footwear
300,000 SF, GA | ResMed
450,000 SF, MS | AT&T

Manufacturing and Processing:
85,000 SF Retrofit, NJ Automated Coffee Roastery | Tetley
60,000 SF Retrofit, NJ Tea Extraction Process | Snapple/Tetley
20,000 SF Retrofit, NY Botanical Extraction Aroma Recovery | PepsiCo
40,000 SF Retrofit, PA Hot-Fill Beverage HTST Process | Tropicana/Campbell's/Premium Beverage
10,000 SF Retrofit, NJ Caffeine Refinery | Maxwell House

New Product Packaging Lines:
Round Tea Bag Lines | Tetley
Coffee Singles | Tetley
BBQ Ribs | Tetley
Coffee Can Lines | Tetley
Coffee Vacuum Bag Lines | Tetley
Automated Case Palletizing | Premium Beverage
Twister Fruit Drink | Tropicana
V-8 Splash | Campbell's
Bulk Bag Super Sack | Maxwell House/PepsiCo/Tetley

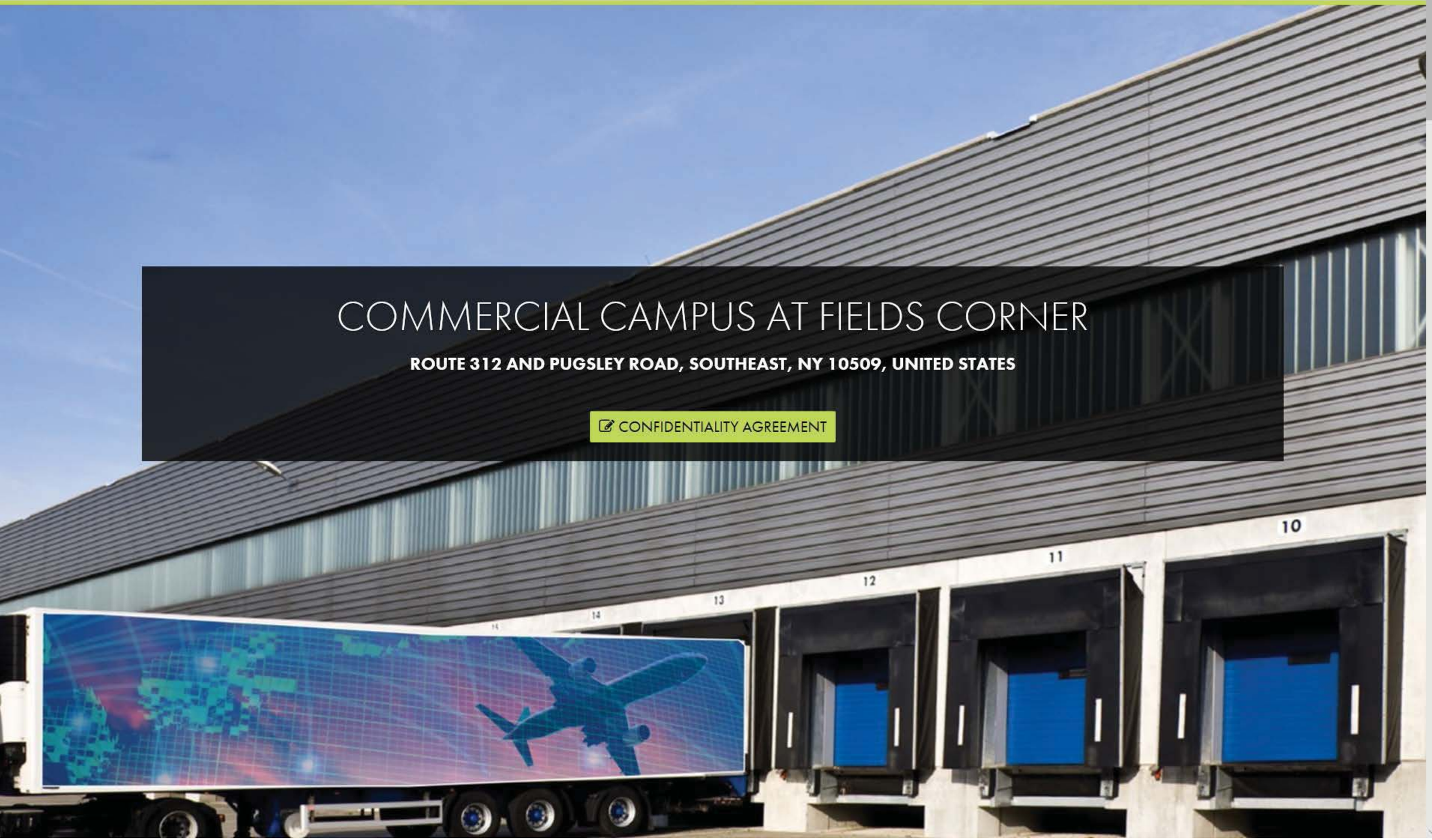
Environmental:
Asbestos Removal, NJ
Air Emissions Mitigation, NJ
Plant Effluent Mitigation, NJ, PA
E. Coli Contamination Mitigation, PA
Wetlands Mitigation, OH
Wetlands Mitigation, NJ
Ephemeral Stream Mitigation, VA
Workplace Air Quality Solvent Mitigation, NJ
Contaminated Soil Mitigation, MA

Education

- Bachelor of Chemical Engineering, Manhattan College, Riverdale, NY

APPENDIX 2-2

Online Marketing Materials by CBRE, Accessed 11/12/2019



COMMERCIAL CAMPUS AT FIELDS CORNER

ROUTE 312 AND PUGSLEY ROAD, SOUTHEAST, NY 10509, UNITED STATES

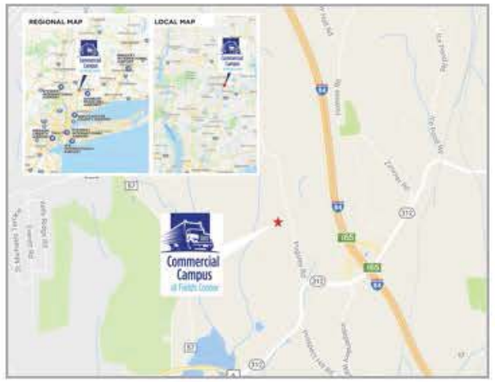
CONFIDENTIALITY AGREEMENT

THE OFFERING

CBRE, Inc., as exclusive broker, is pleased to present to qualified investors and developers the opportunity to acquire the fee-simple interest in the Commercial Campus at Field Corners ("Property"). The Property will consist of two (2) state-of-the-art building industrial buildings totaling 933,100 SF on 229 Acres. The Commercial Campus at Fields Corner will provide industrial occupiers two (2) building sites to meet their operational and logistical requirements: Building A will comprise 303,100 SF on a 64.51 acres and Building B will comprise 630,000 SF on 164.43 acres. Each building is easily divisible for multi-tenancies. The Property is zoned as-of-right to accommodate the planned development. The Final Environmental Impact Statement ("FEIS") has been submitted to the Town of Southeast pending final review and acceptance. It is anticipated Seller's SEQRA process will be completed by Q1 2020 with the issuance of findings. Construction may commence in 2020 with scheduled delivery of the buildings in calendar 2021.

The Property located at NYS Route 312 & Pugsley Road, Town of Southeast, Putnam County, NY just north of New York City is within the New York-Newark-Jersey City-NJ-PA Metropolitan Statistical Area (MSA) with a population exceeding 20 Million. Neighboring core-based statistical areas are easily accessible and include densely populated Westchester County with a population of 980,244, Fairfield County with a population of 943,823 and New Haven County with 857,620. The property is strategically located along toll-free Interstate 84 just 1 mile from the four-way interchange at Exit 65 (Route 312/I-84) and 3.9 miles from Exit 68 (confluence of I-684/I-84) providing quick and convenient truck access to the northeast interstate system. Local, regional and the northeast corridor markets from Boston to Virginia can be easily served from this extraordinary location.

PROPERTY OVERVIEW



LOCATION

The Commercial Campus at Fields Corner is situated on ± 229 acres along Interstate I-84 exit 65 within the Town of Southeast in Putnam County, New York. Exit 65, also known as the Route 312/Carmel exit is a full four (4) way interchange. The major Interchange at the confluence of I-684 and I-84 is 3.9 miles away making the location ideal for a logistics center. The major metropolitan markets of New York (66 miles), Boston (168 miles), and Philadelphia (157 miles) are readily accessible via the interstate system. This ideal location permits access to the northeast megalopolis corridor in a single day. This region accounts for 20% of the United States Gross Domestic Product (GDP).

DESCRIPTION

Commercial Campus at Fields Corner is a planned development of two state-of-the-art buildings totaling 933,100 square feet of modern high bay warehouse space. The buildings will be designed to meet the unique needs of 21st Century occupiers to support their supply chain operations. Each building can be customized to meet tenant(s) specific operational, technological, and qualitative requirements including: structural, floor slab, column spacing, HVAC refrigeration, electrical, security, drive-in access, office and environmental sustainability requirements. These sites are ready for design build/build-to-suit solutions for today's logistics space users. The two buildings measure 303,100 SF and 630,000 SF and can be multi-tenanted. The Commercial Campus at Fields Corner will be the largest availabe prime warehouse distribution space in the northern suburbs of New York City.

TRANSPORTATION

Train and airports service the area. The Southeast Metro-North train station is only a 1.3-mile drive from the Property. Train service provides frequents stops in and White Plains en route to Grand Central Terminal in New York City. The Westchester County Airport and Stewart Airport in Orange County are less than 30 minutes away. Stewart Airport is now under the control of the Port Authority of New York with significant plans for expansion of service. LaGuardia, JFK and Newark are less than one and one-half hours away.

MARKET ANALYSIS

OCCUPIER INCENTIVES

Putnam County Incentives –Occupier Incentives may be available through the Putnam County IDA and Empire State Development.

The Mission of the Putnam County IDA is to retain the present industrial tax base and help attract clean, environmentally sensitive manufacturing and industrial interests to the County.

The IDA has a wide range of incentives to offer qualified businesses including bonds, the elimination of mortgage recording tax, and property and sales tax abatements.

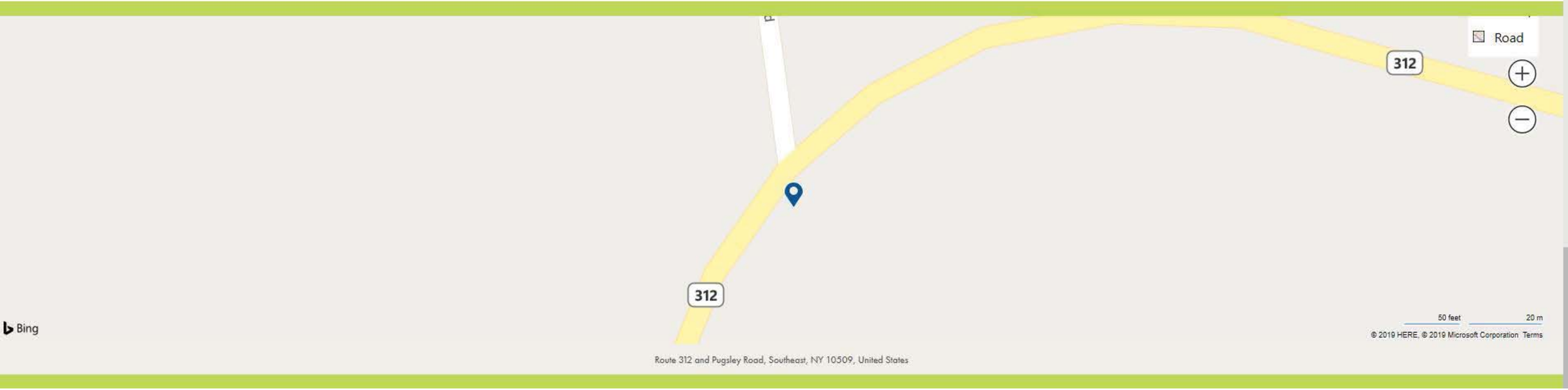
PHOTO GALLERY

GET FINANCING

NEED FINANCING?

Since 2015, CBRE has completed over 6,000 commercial and multifamily lending assignments and helped our clients secure over $100 billion in financing. With an active network of over 500 capital sources, we can turn your financing strategy into a winning advantage.

Start your financing quote now.



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Powered by Real Capital Markets.

Please provide the following information so we may track your interest in **Commercial Campus at Fields Corner**. Your information will be kept confidential.

First Name

Last Name

Email

Industry Role

Principal

☐ I agree to the CBRE Terms of Use, Data Disclaimer, and Privacy Policy.

Submit

APPENDIX 3-1

Stipulation of Settlement, dated December 10, 2010

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF WESTCHESTER

PUTNAM SEABURY PARTNERS, L.P.,	:	Index No. 09-13084
Plaintiff,	:	COMPLIANCE PART
- against -	:	Assigned Judge: Hon. Joan B. Lefkowitz
THE TOWN OF SOUTHEAST, THE TOWN OF SOUTHEAST TOWN BOARD and THE PLANNING BOARD OF THE TOWN OF SOUTHEAST,	:	**STIPULATION OF SETTLEMENT**
Defendants.	:	

WHEREAS, the Town of Southeast Planning Board (the "Planning Board") conferred Final Subdivision and Resubdivision Plat Conditional Approval (the "Plat Approval") to Putnam Seabury Partners, L.P., for property designated as tax parcels 45-1-4, 45-1-5, 45-1-8, 45-1-12, and 45-1-13 in the Town of Southeast, New York (the "Campus Property") on or about June 8, 2006; and

WHEREAS, the Plat Approval included, *inter alia*, a 143-unit Campus at Field Corners Subdivision Project (the "Campus Project"); and

WHEREAS, as a condition precedent to Plat Approval, and in anticipation of the construction of the Campus Project, Plaintiff was required to provide Defendants with: (a) $855,000.00 in Inspection Fees; and (ii) $858,000.00 in Recreation Fees; and

WHEREAS, Defendants acknowledge receipt from Plaintiff of the required Inspection Fees and Recreation Fees; and

WHEREAS, Plaintiff was also required to provide Defendants with a seventeen million dollar ($17,000,000.00) security bond in connection with the construction of the Campus Project infrastructure (the "Performance Bond"); and

WHEREAS, Plaintiff filed the plats that were the subject of the Plat Approvals in the Office of the Putnam County Clerk on or about June 8, 2006 (the "Campus Subdivision Plats"); and

WHEREAS, unprecedented economic circumstances prevented the commencement of construction of the Campus Project following the filing of the Campus Subdivision Plats; and

WHEREAS, the Parties had varying perspectives regarding the handling, maintenance and use of Inspection Fees, Recreation Fees, and the Performance Bond during the time that Plaintiff was unable to implement the Campus Project; and

WHEREAS, Plaintiff commenced the subject suit by serving and filing a Summons and Complaint on or about June 5, 2009, seeking relief, including, but not limited to: (i) compelling Defendants to refund the Inspection Fees and Recreation Fees to Plaintiff; and (ii) declaring that the absence of a Performance Bond for the Campus Project will not affect the filed Plat; and

WHEREAS, Defendants served an Answer to the Complaint and interposed a Counterclaim on or about July 1, 2009; and

WHEREAS, Plaintiff served an Answer to Defendants' Counterclaim on or about July 6, 2009; and

WHEREAS, following discovery and Plaintiff's filing of a Motion for Summary Judgment, the Parties desire to amicably settle the instant Action; and

WHEREAS, the Town has reviewed the terms of the Stipulation pursuant to the New York State Environmental Quality Review Act ("SEQRA"), and has found that this Stipulation poses no potential significant adverse environmental impacts; and

WHEREAS, the Parties agree to the dismissal of the instant litigation, without prejudice, subject to the terms and conditions herein, including, but not limited to, the Court's ordering of Plaintiff's right to revive this suit pursuant to Paragraphs 5 and 11 of this Stipulation without regard to any potential defense that such suit is not timely; and

WHEREAS, each Party represents that the person signing on behalf of the respective entities is duly authorized to execute this Agreement on behalf of such entities; and

WHEREAS, each Party represents for itself that all necessary corporate, administrative and internal legal actions to duly approve the making and performance of this Stipulation have been taken and that no further corporate, administrative or other internal approval is necessary,

NOW, THEREFORE, IT IS HEREBY STIPULATED AND AGREED, by and among the undersigned Parties, in consideration of the mutual promises contained herein, that:

1. Defendants acknowledge and recognize that up and until December 31, 2020, Plaintiff has vested rights to the Campus Subdivision Plats, which entitle it to implement, construct and otherwise effectuate all plans shown thereon, including, but not limited to, the Campus Project (the "Vesting Period"). During the Vesting Period, Defendants, together with their agencies, agents, or employees, shall take any and all actions necessary to maintain the Campus Subdivision Plats, including, but not limited to, issuing any and all necessary extensions of any and all permits or approvals previously issued by Defendants, including, but not limited to, such as the Town Freshwater Wetland Permit, Town Architectural Review Board approval, Town Board consent to

formation of Water Works and Sewer Works Corporations, and the Town Board's approval of street names for the Project. During the Vesting Period, neither Defendants nor any of their agencies, agents, or employees shall take any action that would in any way compromise, diminish, or in any way detract from the Campus Subdivision Plats. All Town of Southeast ("Town") local laws, ordinances, and enactments, and all other Town zoning, planning, environmental rules, requirements or regulations, which are in effect at the time of the filing of the Campus Subdivision Plats, shall remain applicable to said Plats throughout the Vesting Period. Any action(s) by Defendants at any time that in any way compromises, diminishes, or in any way detracts from the Campus Subdivision Plats shall obligate Defendants to return the Inspection Fees and Recreation Fees to Plaintiff.

2. Plaintiff shall not be required to post a Performance Bond until such time as it applies for a Building Permit in connection with the Campus Project and/or provides Defendants with thirty (30) days written notice that it intends to commence construction of the infrastructure for the Campus Project ("Notice of Construction"). At such time as Plaintiff is required to post a Performance Bond, such Bond shall be in the amount of seventeen million dollars ($17,000,000.00), which amount shall not be adjusted for inflation.

3. Plaintiff shall not be required to provide the Town with any additional Inspection Fees or Recreation Fees for the Campus Project.

4. No earlier than December 31, 2014, Plaintiff may exercise a right to abandon, vacate and/or terminate the Campus Subdivision Plat ("Plaintiff's Option to Terminate"). Within sixty (60) days of their receipt of written notice of the exercise of Plaintiff's Option to Terminate, Defendants shall be required to return the Inspection Fees to Plaintiff.

5. Until the earlier of either (i) Notice of Construction, or (ii) the expiration of the Vesting Period, Plaintiff shall have the right to revive, recommence and/or re-initiate the instant

action in the event that the assessed values established in connection with the Campus Property, including all portions thereof, is/are greater than eighty-five percent (85%) of the assessed values in connection with said Property for tax year 2010 (State, County, Town, and School). In the event that Plaintiff exercises its right to revive this suit pursuant to this Paragraph, Defendants shall not be permitted to raise or benefit from any defense or claim that such suit is not timely or contravenes any potentially applicable statute of limitations. It is understood and agreed that Paragraphs 1 and 2 of this Stipulation shall survive in full force and effect any exercise by Plaintiff of its right to revive this suit under this Paragraph.

6. The agreements, terms, covenants and conditions of this Stipulation shall run with the Campus Property and Campus Project, and, to the fullest extent permitted by law and equity, shall be binding upon and shall inure to the benefit of the Parties, their respective successors, heirs, legal representatives, and/or assigns.

7. This Stipulation may be executed in counterparts, and shall be fully enforceable against each Party as if all Parties had signed the same document.

8. Upon the execution of the Stipulation by both Parties, either Party may file this Stipulation in Court, and the instant action shall be dismissed without prejudice, subject to the terms and conditions of this Stipulation, including, but not limited to, Paragraphs 5 and 11 herein.

9. This Stipulation shall be binding upon and shall inure to the benefit of the Parties and their successors and assigns as permitted in this Stipulation.

10. This Stipulation shall be interpreted, construed, applied and enforced in accordance with the laws of the State of New York.

11. Nothing herein shall prevent either Party from availing itself of any available legal or equitable remedy in connection with any violation of this Stipulation, including, but not

limited to, reviving this suit. In the event that either Party revives this suit pursuant to this Paragraph, the other Party shall not be permitted to raise or benefit from any defense or claim that such suit is not timely or contravenes any potentially applicable statute of limitations.

12. If any provision of this Stipulation is held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect the remainder of such provision or any other provisions hereof.

Dated: White Plains, New York
December 10th, 2010

WILLIS H. STEPHENS, JR., ESQ.

By: _____
WILLIS H. STEPHENS, JR., ESQ.
328 Clock Tower Commons
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(845) 279-4226
Attorneys for Defendants

ZARIN & STEINMETZ

By: _____
MICHAEL D. ZARIN, ESQ.
81 Main Street, Suite 415
White Plains, New York 10601
(914) 682-7800
Attorneys for Plaintiff

SO ORDERED:

(S) HON. JOAN B. LEFKOWITZ

_____
HON.

Dec 21, 2010

APPENDIX 6-2

Wetland Water Budget Analysis
by Evans Associates, dated July 29, 2019

WETLAND WATER BUDGET ANALYSIS

Prepared for the

Final Environmental Impact Statement

Proposed Commercial Campus at Fields Corner Site
Route 312 and Pugsley Road
Town of Southeast, Putnam County, New York

July 29, 2019

Prepared by:
Evans Associates Environmental Consulting, Inc.
162 Falls Road
Bethany, Connecticut 06524

EXISTING SITE CONDITIONS

Portions of DEC Freshwater Wetlands LC-18 and LC-28 are located on the subject property, in addition to several areas of locally regulated wetland in the southern portion of the site (see Wetlands Survey and NYCDEP Water Course Map). Three types of freshwater wetlands are found on the Commercial Campus at Fields Corner site: seasonally flooded wetlands, temporarily flooded wetlands, and saturated wetlands. Seasonally flooded wetlands typically have some standing water for extended periods during the growing season, but usually do not have standing water at the surface at the end of the growing season. Temporarily flooded wetlands have standing water for brief periods during the growing season, but otherwise have groundwater well below the surface (6-18"). Saturated wetlands have saturated soils for extended periods during the growing season, but rarely have standing surface water. Wetlands 2, 4, 5, and 6 are all best characterized as seasonally flooded wetlands. Wetland 1 is a temporarily flooded drainage corridor wetland that supports a small farm pond. Finally, Wetland 3 is a saturated wetland with primary hydrologic input from shallow subsurface drainage perched above the dense subsoil layer associated with the drumlin soils to the east. Each wetland is identified by its hydrology, and each has a different hydroperiod. The hydroperiod is the seasonal pattern of water levels in the wetland.

Hydrologic processes govern the hydroperiod, which in turn plays a significant part in determining the characteristic vegetation and fauna associated with freshwater wetlands. Generally, smaller, more frequent precipitation events, commonly known as the one and two-year storms, are the events that have the most influence on the hydrology of wetland systems in the glaciated northeast. Larger, less frequent storms may have temporary impacts on the hydrology of wetlands, but generally do not determine the type of wetland that is found.

COMPONENTS OF A WATER BUDGET ANALYSIS

The hydrologic processes that make up the components of a freshwater wetland water budget are precipitation **(P)**, surface water inflow **(SWI)**, surface water outflow **(SWO)**, groundwater inflow **(GWI)**, groundwater outflow **(GWO)**, evapotranspiration **(ET),** and the change of storage volume within the wetland **(ΔS)**. The relationship between these components is expressed as an equation, or water budget, where:

$$P + SWI + GWI = ET + SWO + GWO + \Delta S$$

Water budgets for individual wetlands are inherently imprecise because climatic conditions are highly variable over time, and these variations have a direct effect on the hydrologic processes influencing the wetland. However, evaluating the basic components of a water budget and knowing the hydroperiod of a wetland system can be helpful in predicting the potential impacts of hydrologic alterations due to development within the watershed or drainage area of the wetland.

Precipitation

Precipitation is considered a constant in this analysis, since all the wetlands on the site receive the same amount of precipitation. According to the National Weather Service records[1], average annual precipitation for Brewster, New York is approximately 51". Yearly fluctuations in precipitation amounts can be as much as 10% (5 inches) of the average, resulting in drought years, average years, and extremely wet years.

Surface water and groundwater flow

Soils and topography have a significant influence on how surface water moves through a landscape. Factors such as dense soil layers, steep slopes, or shallow bedrock can result in increased runoff rates and the total volume of surface water flowing to a wetland. Similarly, deep, well drained or porous soils in flat areas or basins tend to slow and store surface water and reduce rates of runoff.

The upland soils on the site have all developed in glacial till, and depth to bedrock is generally greater than 25 feet in the center of the site, where the development is proposed. The topography in the center of the site is dominated by two drumlins, which are elongated oval glacial landforms. These landforms generally have well drained soils at the surface, on top of a dense subsoil layer which restricts downward water movement and results in a shallow, perched, groundwater table that fluctuates seasonally. The shallow groundwater in these landforms tends to discharge at the base of the slopes as seeps or springs, which in turn support the hydrology of wetlands that form in the flatter areas, as well as provide base flow for the streams that form in the steeper areas.

The south eastern portion of the site, at the base of the eastern drumlin, is part of a large depressional wetland system that has developed on a till plain between drumlins following the last glaciation. The center of the basin has filled with deep organic soils (muck) which are saturated to the surface by the regional groundwater table. This wetland system has a watershed of over 400 acres contributing surface and groundwater, and discharges excess water to a perennial stream channel which flows in a culvert under Route 312 near the Pugsley Road intersection.

Evapotranspiration

The composition of the vegetative cover and the seasonal fluctuations in temperature combine to determine how much water is lost from a wetland system through evapotranspiration. Changing the vegetative cover in or near a wetland can influence evapotranspiration, particularly when tree cover is lost. In this case, no development-related changes are proposed to the vegetation within the wetlands so no change in evapotranspiration is anticipated.

Changes in storage of water in a wetland

Long term changes in the volume of water stored in a wetland can have profound impacts on the composition of the wetland. Increases in the depth or frequency of flooding in a forested wetland can cause tree die off and changes in the vegetation. Similarly, dramatically decreasing the volume of water

---

[1] (https://www.weather.gov/gid/AnnualPrecipitationHistory)

reaching a wetland causes saturated soils to dry out, and often leads to the encroachment of upland plant species. It is the changes in the storage of water in wetlands that are the focus of this analysis.

PROPOSED SITE CONDITIONS

Since the development has been kept outside of the wetlands themselves, changes in the wetland water budgets on this site are predicted to result from changes in the drainage area flowing to the wetland (surface water inflow) and changes in the groundwater recharge (groundwater inflow) occurring within the immediate watershed of the wetland.

Therefore, in order to predict potential impacts to wetlands resulting from construction of the project, it is first necessary to quantify the proposed changes in drainage area and hydrology within each watershed. This report focuses on Wetlands 4, 5, and 6 as these wetlands are in the closest proximity to the proposed construction (Wetlands 4 and 5) or contain the most sensitive habitat (Wetland 6). Wetlands 1, 2, and 3 are not evaluated, as they are sufficiently distant from the proposed development to avoid changes in their hydrology. As part of the stormwater management design for the project, pre and post-development drainage maps have been prepared and were used to quantify the changes to the areas of the watersheds. Also, a pre and post-development Catchments Summary was prepared in association with the drainage maps. Finally, the hydrograph volumes for the 1-year and 2-year storm events were used to analyze the changes to the volume of surface water and shallow groundwater sustaining the wetlands.

Watershed Area and Water Budget Analysis for Wetlands 4 and 5

The two on-site wetlands in the center of the property (Wetland 4 and Wetland 5), west of Pugsley Road and Fields Corner Road, comprise portions of DEC wetland LC-18. The two wetlands are connected by a culvert beneath Barrett Road. The primary sources of hydrologic input to these centrally located wetlands are interception of the underlying groundwater table and discharge from perched, subsurface, lateral groundwater drainage from the surrounding drumlin landscape features. Evidence of wetland hydrology includes flowing or ponded water, drainage channels, and the presence of seeps.

As illustrated on the Existing Drainage Area Map, drawing DA-1, the existing watershed area areas for Wetland 4 (EDA–3) and the southerly portion of Wetland 5 is 76.87 acres, and includes a small area on the east side of Field Corners Road. Under the proposed conditions, illustrated on the Proposed Drainage Area Map, drawing DA–2, a portion (7.75 acres or 10.1%) of the drainage area contributing surface flow to Wetland 4 under existing conditions would be diverted to discharge to the stormwater basins in the southern portion of the site which are designed to contribute flow to the stream on the south side of Route 312, which carries discharge from Wetland 6. The resulting reduction in drainage area is offset by a proposed 6% to 12% increase in the volume of water reaching Wetland 4 during the one and two-year storm events following completion of the project.

Under the proposed conditions, treated stormwater will be detained in the basins for up to four days prior to release to the wetland, which will attenuate the rate of discharge. This controlled discharge

avoids the potential impacts of flooding of the wetland immediately following the storm, and avoids potential downstream bank erosion which could occur if the increased volume and rate of runoff was not controlled.

The existing watershed area for the remainder of Wetland 5 (EDA–2), which flows to the north, is 21.72 acres. The primary hydrologic input for this portion of Wetland 5 is shallow subsurface drainage perched above the dense subsoil layer associated with the drumlin soils to the west of Field Corners Road. There is not a well-defined stream channel within the on-site portion of this wetland, but rather a braided pattern of discontinuous, intermittent stream channels. Following construction, the drainage area contributing to this wetland will be reduced by 1.46 acres (6.7%) resulting in a 6.7% reduction in the volume of surface water and shallow groundwater reaching the wetland during both the 1-year and 2-year storms. However, this reduction in volume of water is not anticipated to have an adverse impact on this seasonally flooded wetland system, since the wetland soils will remain saturated between storm events.

Watershed Area and Water Budget Analysis for Wetland 6

The on-site portion of DEC Freshwater Wetland LC-28 (Wetland 6) is in the southeast corner of the site, east of Pugsley Road, and north of Route 312. The topography within the wetland is relatively flat, with steeply sloping uplands between Pugsley Road and the wetland boundary. The wetland has hummocky microtopography, especially in interior portions. The deep muck soils in the interior portion of Wetland 6 are indicative of a permanently saturated, groundwater fed basin wetland system which ultimately discharges through a well-defined stream channel that flows under Route 312 before turning west.

As illustrated on the Existing Drainage Area Map, drawing DA-1, the existing watershed area for Wetland 6 (EDA–4A and EDA-4E) on or near the site is 69.13 acres. However, according to USGS Streamstats[2] Wetland 6 has a total drainage area of 435 acres contributing to the hydrology of the wetland basin north of the Route 312 culvert. Therefore, the on-site portion of the watershed is approximately 16% of the total watershed.

Under the proposed conditions, illustrated on the Proposed Drainage Area Map, drawing DA – 2, the on-site watershed to Wetland 6 will be reduced by 9.62 acres (14%), which in turn will result in a slight reduction (8.5% for the 1-year storm and 9.2% for the 2-year storm) in the volume of surface water and shallow groundwater reaching Wetland 6 from the site. However, when the entire watershed area of Wetland 6 (435 acres) is considered, the project-related loss of watershed area is only 2% of the total. The remaining 98% of the watershed to Wetland 6 will remain, so the slight reduction in runoff reaching the wetland from the site is not likely to impact the hydrologic cycling within the wetland basin, which is supported primarily by deeper, regional groundwater.

---

[2] (https://streamstats.usgs.gov/ss/)

SUMMARY

Given the seasonal fluctuations in precipitation and temperature, and the variability in year to year total precipitation, wetlands in the temperate northeast are well adapted to changes in hydrologic input. By implementing the stormwater management practices required to handle runoff water quantity and water quality from the proposed project, the project is designed to mimic existing drainage patterns as closely as possible. In our professional opinion, based on this analysis, the changes in drainage patterns which will result from the project are not significant when compared to the overall watershed for the site, and annual variability in hydrologic input.

Existing Topography, Wetland and Watercourses

Wetlands Survey

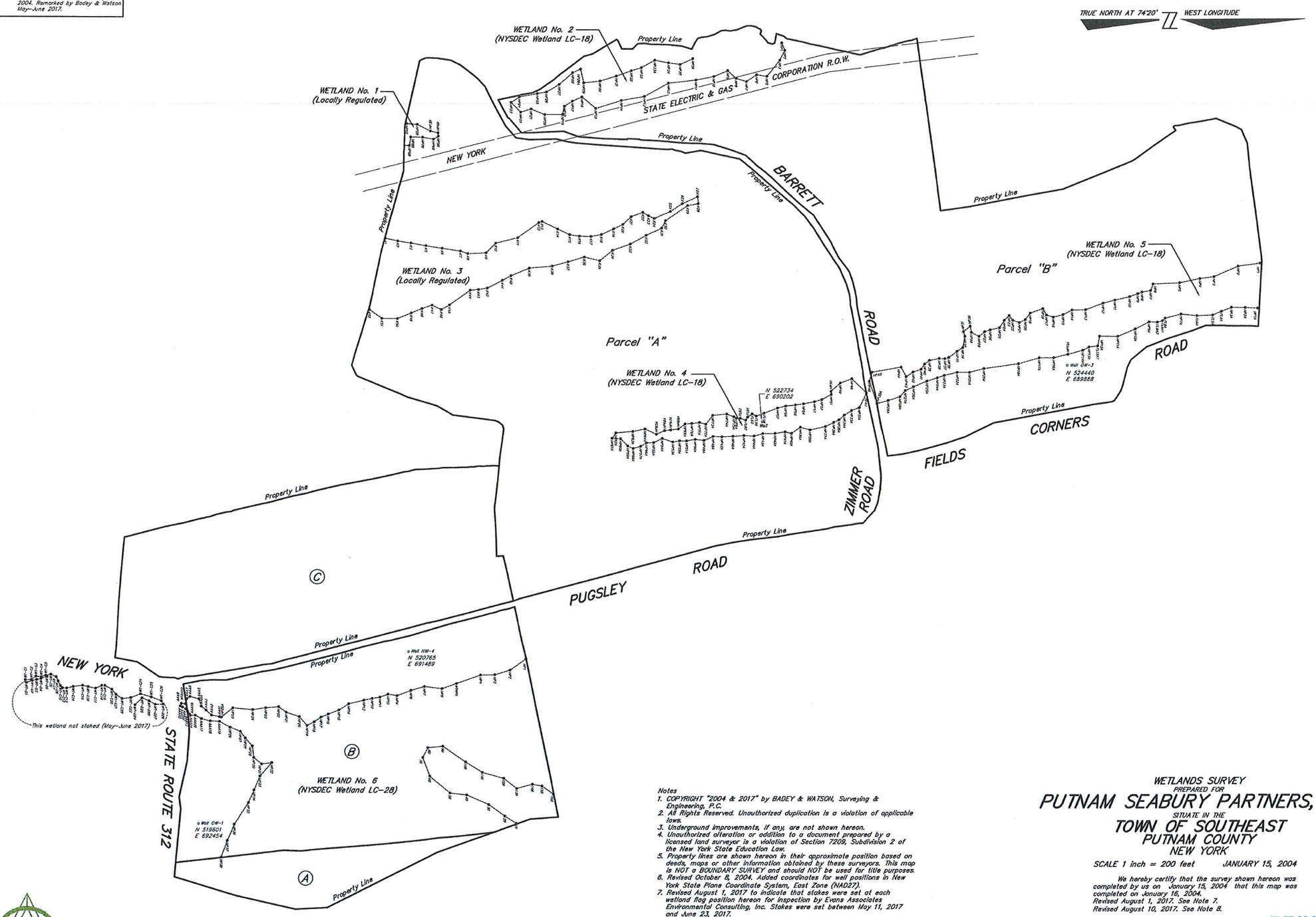
NYCDEP Watercourse Map

GEOGRAPHIC INDEX 41–25–52.5 –73–38–25.5

WETLANDS LEGEND

Flag
A50 Wetland Boundary
Flag No.

Wetland boundary flags as set or inspected by Evans Associates Environmental Consulting, Inc. as of December 19, 2004, and located by Badey & Watson as of January 15, 2004. Remarked by Badey & Watson May–June 2017.



Notes
1. COPYRIGHT "2004 & 2017" by BADEY & WATSON, Surveying & Engineering, P.C.
2. All Rights Reserved. Unauthorized duplication is a violation of applicable laws.
3. Underground improvements, if any, are not shown hereon.
4. Unauthorized alteration or addition to a document prepared by a licensed land surveyor is a violation of Section 7209, Subdivision 2 of the New York State Education Law.
5. Property lines are shown hereon in their approximate position based on deeds, maps or other information obtained by these surveyors. This map is NOT a BOUNDARY SURVEY and should NOT be used for title purposes.
6. Revised October 8, 2004. Added coordinates for well positions in New York State Plane Coordinate System, East Zone (NAD27).
7. Revised August 1, 2017 to indicate that stakes were set at each wetland flag position hereon for inspection by Evans Associates Environmental Consulting, Inc. Stakes were set between May 11, 2017 and June 23, 2017.
8. Revised August 10, 2017. Revised wetland labels. Survey not brought to date.

WETLANDS SURVEY
PREPARED FOR
PUTNAM SEABURY PARTNERS, L.P.
SITUATE IN THE
TOWN OF SOUTHEAST
PUTNAM COUNTY
NEW YORK

SCALE 1 inch = 200 feet JANUARY 15, 2004

We hereby certify that the survey shown hereon was completed by us on January 15, 2004 that this map was completed on January 16, 2004.
Revised August 1, 2017. See Note 7.
Revised August 10, 2017. See Note 8.

STATE OF NEW YORK · STEVEN R. WILSON · 49789 · LICENSED LAND SURVEYOR

BADEY & WATSON
Surveying & Engineering, P.C.
by
NEW YORK STATE LICENSED LAND SURVEYOR
LICENSE No. 49789

PRINTED
AUG 10 2017
BADEY & WATSON Surveying & Engineering, P.C.

BADEY & WATSON
Surveying & Engineering, P.C.
3065 Route 9
Cold Spring, NY 10516
www.Badey-Watson.com
845.265.5217
845.265.4428 (Fax)
877.3.141593 (Toll Free)

Drawing Name: WL16323___ROA_V04 Layout: WETLAND W.O. No. 16323, 23548 Checked by SRW Spell checked by MKH/NTK Drawn by MKH/NTK On XX–XX–XX 45.–1–4, 5, 8, 12 & 13

FILE No. 50–914DS

LEGEND

- PROPERTY LINE
- WETLAND BOUNDARY
- 100-FOOT NYSDEC WETLAND BUFFER LINE
- EXISTING STONE WALL
- EXISTING TREE LINE
- EXISTING WATER BODY
- DEP WATERCOURSE

NOTES:

1. EXTENT OF DEP REGULATED WATERCOURSES DETERMINED DURING SEPTEMBER 23, 2004 SITE WALK WITH MATT GIANNETTA, AND APRIL 24, 2018 SITE WALK WITH MARY GALASSO AND JASON COPPOLA.

2. THE BOUNDARIES OF THE NYSDEC WETLANDS WERE VERIFIED BY DOUG GAUGLER ON MAY 5, 2004 AND BY KELLY McKEAN ON MARCH 20, 2018.

WETLANDS LEGEND

Flag
ASO Wetland Boundary
Flag No.

Wetland boundary flags as set or inspected by Evans Associates Environmental Consulting, Inc. as of December 19, 2003, and located by Badey & Watson as of January 15, 2004, and confirmed by Evans Associates along with Steve Coleman on February 26, 2018.

GRAPHIC SCALE

250 0 125 250 500 1000

(IN FEET)
1 inch = 250 ft.

North

REVISIONS: NO.	ISSUE	DATE

LAND SURVEYOR:

Surveying & Engineering, P.C.
3365 Route 9
Cold Spring, New York 10516
(877) 314-1583 Toll-Free
(845) 265-4428 (Fax)
(845) 265-5017
(845) 225-3017
(914) 628-1800
(914) 739-3377

ENVIRONMENTAL CONSULTANT:

EVANS ASSOCIATES
ENVIRONMENTAL CONSULTING, INC.
205 Amity Road
Bethany, Connecticut 06524
T. (203) 393-0690
F. (203) 393-0196

DWG. TITLE:

NYCDEP WATERCOURSE MAP

PROJECT NAME:

NORTHEAST INTERSTATE LOGISTICS CENTER
Pugsley Road
Town of Southeast, N.Y.

Date:	April 25, 2018
Dwn. by:	ALP
Checked by:	BE
Doc. ID:	Campus_DEP_Watercourses
EAEC Proj. No.:	38
DWG. NO.:	WC-1

Existing Drainage Area Map

EXISTING DRAINAGE LEGEND

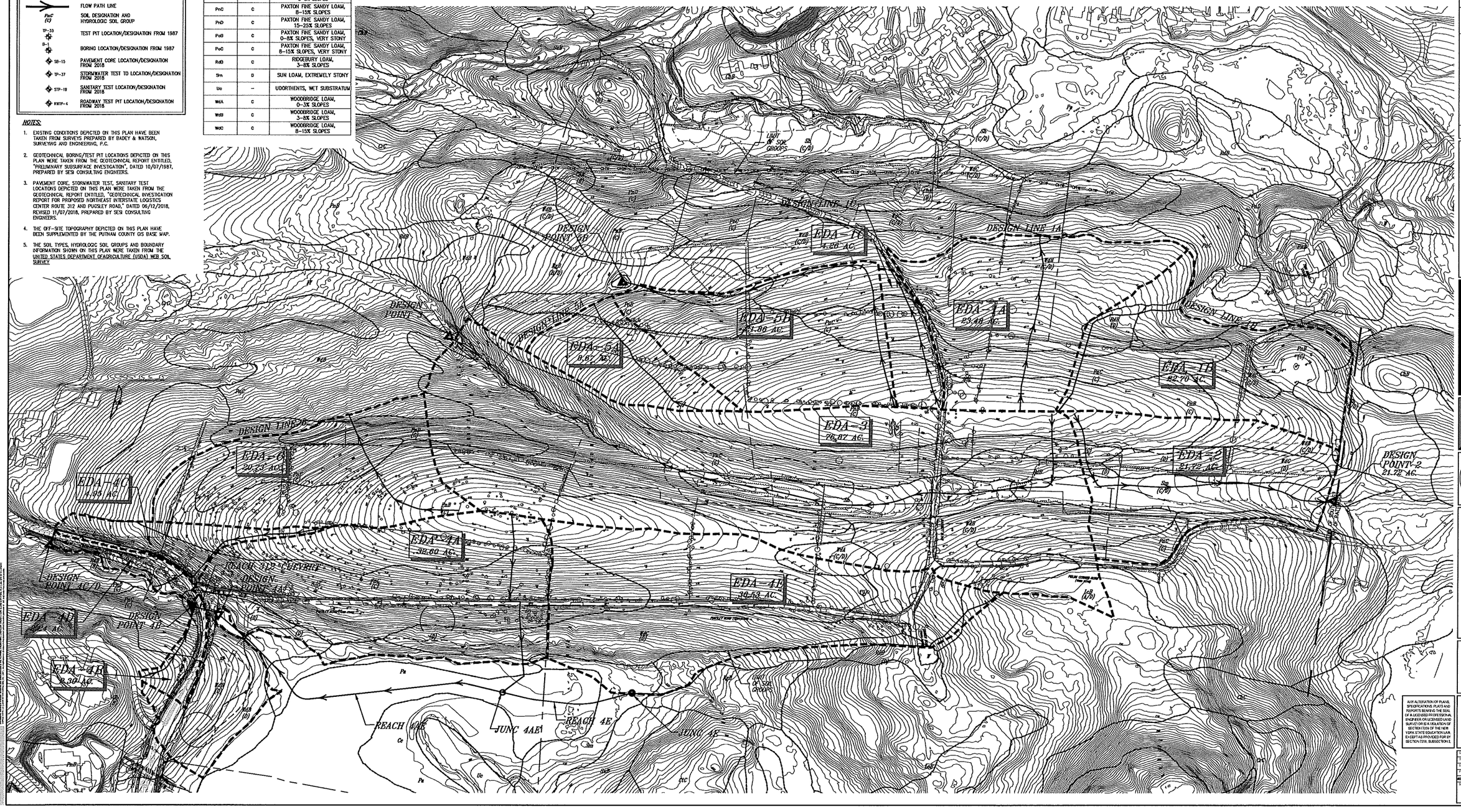
- EXISTING/PROPOSED PROPERTY LINE
- ADJACENT PROPERTY LINE
- EXISTING WETLAND LINE AND DELINEATION
- EXISTING NYSDEC WETLAND BUFFER
- EXISTING TOWN WETLAND BUFFER
- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- DRAINAGE AREA BOUNDARY
- LIMIT OF SOIL GROUPS LINE
- FLOW PATH LINE
- PaC (C) — SOIL DESIGNATION AND HYDROLOGIC SOIL GROUP
- TP-33 — TEST PIT LOCATION/DESIGNATION FROM 1987
- B-1 — BORING LOCATION/DESIGNATION FROM 1987
- SB-15 — PAVEMENT CORE LOCATION/DESIGNATION FROM 2018
- TP-37 — STORMWATER TEST TO LOCATION/DESIGNATION FROM 2018
- STP-19 — SANITARY TEST LOCATION/DESIGNATION FROM 2018
- RWTP-4 — ROADWAY TEST PIT LOCATION/DESIGNATION FROM 2018

SOIL TYPE TABLE

DESIGNATION	HYDROLOGIC GROUP	DESCRIPTION
Ce	D	CATDEN MUCK, 0 TO 2 PERCENT SLOPES
ChB	B	CHARLTON FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
ChE	B	CHARLTON LOAM, 23 TO 35 PERCENT SLOPES
CrC	C	CHARLTON–CHATFIELD COMPLEX, 0 TO 15 PERCENT SLOPES, VERY ROCKY
Ff	–	FLUVAQUENTS–UDFLUVENTS COMPLEX, FREQUENTLY FLOODED
PnB	D	PAXTON FINE SANDY LOAM, 3–8% SLOPES
PnC	C	PAXTON FINE SANDY LOAM, 8–15% SLOPES
PnD	C	PAXTON FINE SANDY LOAM, 15–25% SLOPES
PoB	C	PAXTON FINE SANDY LOAM, 0–8% SLOPES, VERY STONY
PoC	C	PAXTON FINE SANDY LOAM, 8–15% SLOPES, VERY STONY
RdB	C	RIDGEBURY LOAM, 3–8% SLOPES
Sm	D	SUN LOAM, EXTREMELY STONY
Uo	–	UDORTHENTS, WET SUBSTRATUM
WdA	C	WOODBRIDGE LOAM, 0–3% SLOPES
WdB	C	WOODBRIDGE LOAM, 3–8% SLOPES
WdC	C	WOODBRIDGE LOAM, 8–15% SLOPES

NOTES:

1. EXISTING CONDITIONS DEPICTED ON THIS PLAN HAVE BEEN TAKEN FROM SURVEYS PREPARED BY BADEY & WATSON, SURVEYING AND ENGINEERING, P.C.
2. GEOTECHNICAL BORING/TEST PIT LOCATIONS DEPICTED ON THIS PLAN WERE TAKEN FROM THE GEOTECHNICAL REPORT ENTITLED, "PRELIMINARY SUBSURFACE INVESTIGATION", DATED 10/07/1987, PREPARED BY SESI CONSULTING ENGINEERS.
3. PAVEMENT CORE, STORMWATER TEST, SANITARY TEST LOCATIONS DEPICTED ON THIS PLAN WERE TAKEN FROM THE GEOTECHNICAL REPORT ENTITLED, "GEOTECHNICAL INVESTIGATION REPORT FOR PROPOSED NORTHEAST INTERSTATE LOGISTICS CENTER ROUTE 312 AND PUGSLEY ROAD," DATED 06/12/2018, REVISED 11/07/2018, PREPARED BY SESI CONSULTING ENGINEERS.
4. THE OFF-SITE TOPOGRAPHY DEPICTED ON THIS PLAN HAVE BEEN SUPPLEMENTED BY THE PUTNAM COUNTY GIS BASE MAP.
5. THE SOIL TYPES, HYDROLOGIC SOIL GROUPS AND BOUNDARY INFORMATION SHOWN ON THIS PLAN WERE TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) WEB SOIL SURVEY



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No.	Revision	Date	By
2	FOR COMMENTS/PRICE SUBMISSION	02/26/2019	RBG

Printed Copies Obsolete

APPLICANT/OWNER:
PUTNAM SEABURY PARTNERS, L.P.
287 KING STREET
CHAPPAQUA, NY 10514

JMC

EXISTING DRAINAGE AREA MAP

COMMERCIAL CAMPUS AT FIELDS CORNER
NY 312 & PUGSLEY ROAD
TOWN OF SOUTHEAST, NEW YORK

Drawn: EB Approved: AJP
Date: 1" = 100'
Date: 11/06/2017
Project No: 14052
AS-BUILT: DR SCALE ON DWG
Drawing No: DA-1

Proposed Drainage Area Map

EXISTING DRAINAGE LEGEND

- EXISTING/PROPOSED PROPERTY LINE
- ADJACENT PROPERTY LINE
- EXISTING WETLAND LINE AND DELINEATION
- EXISTING NYSDEC WETLAND BUFFER
- EXISTING TOWN WETLAND BUFFER
- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED FINISHED GRADE
- PROPOSED BUILDING LINE
- PROPOSED CONCRETE CURB
- MH — PROPOSED MANHOLE (MH)
- DI — PROPOSED DRAIN INLET (DI)
- DRAINAGE AREA BOUNDARY
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Fl	–	FLUVAQUENTS-UDIFLUVENTS COMPLEX, FREQUENTLY FLOODED
PrB	D	PAXTON FINE SANDY LOAM, 3-8% SLOPES
PrC	C	PAXTON FINE SANDY LOAM, 8-15% SLOPES
PrD	C	PAXTON FINE SANDY LOAM, 15-25% SLOPES
PoB	C	PAXTON FINE SANDY LOAM, 0-8% SLOPES, VERY STONY
PoC	C	PAXTON FINE SANDY LOAM, 8-15% SLOPES, VERY STONY
RdB	C	RIDGEBURY LOAM, 3-8% SLOPES
Sm	D	SUN LOAM, EXTREMELY STONY
Uc	–	UDORTHENTS, WET SUBSTRATUM
WaA	C	WOODBRIDGE LOAM, 0-3% SLOPES
WaB	C	WOODBRIDGE LOAM, 3-8% SLOPES
WaC	C	WOODBRIDGE LOAM, 8-15% SLOPES

NOTES:

1. EXISTING CONDITIONS DEPICTED ON THIS PLAN HAVE BEEN TAKEN FROM SURVEYS PREPARED BY BADEY & WATSON, SURVEYING AND ENGINEERING, P.C.
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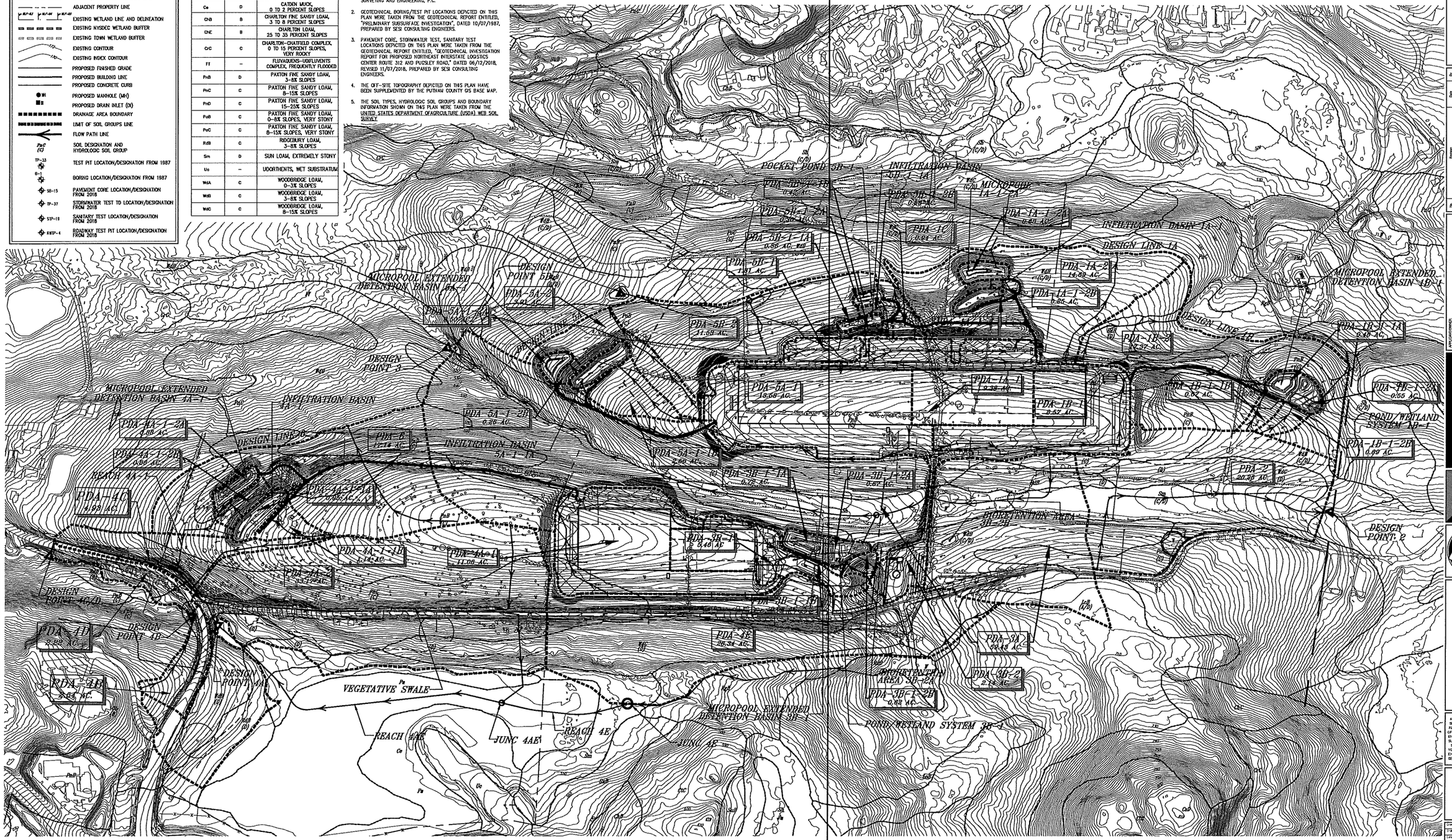


Rev	Date	Revision
1	02/07/2019	PER SDEC COMMENTS SUBMISSION
2	03/15/2019	PER SDEC COMMENTS SUBMISSION

PROPERTY OF JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING

APPLICANT/OWNER:
PUTNAM SEABURY PARTNERS, L.P.
287 KING STREET
CHAPPAQUA, NY 10514

JMC

PROPOSED DRAINAGE AREA MAP

COMMERCIAL CAMPUS AT FIELDS CORNER
NY 312 & PUDSLEY ROAD
TOWN OF SOUTHEAST, NEW YORK

ANY ALTERATION OF PLANS, SPECIFICATIONS, PLATS AND REPORTS BEARING THE SEAL OF A LICENSED PROFESSIONAL ENGINEER OR LICENSED LAND SURVEYOR IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW. EXCEPT AS PROVIDED FOR BY SECTION 7209, SUBSECTION 2.

Drawn:	BB
Approved:	RJP
Scale:	1" = 150'
Date:	11/08/2017
Project No:	14052
KO-DRAWING	139 RAILROAD
PLAN	
Drawing No:	DA-2

APPENDIX 8-1

Letter Regarding 2018 Water Quality Sample Results by WSP, revision dated January 28, 2019

June 27, 2018
(Revised: January 28, 2019)

Mr. Harvey Schulweis
Putnam Seabury Partners, LP
287 King Street
Chappaqua, NY 10514

Via Electronic Transmission

RE: 2018 Water-Quality Sample Results
Wells OW-3 and NW-4
Commercial Campus at Fields Corner
Southeast, New York

Dear Mr. Schulweis:

The following are the results from the water samples collected from wells OW-3 and NW-4 by LBG Hydrogeologic & Engineering Services, P.C., member of WSP (LBGHES) at the Commercial Campus at Fields Corner property in Southeast, New York (figure 1). The water samples were taken to Envirotest Laboratories in Newburgh, New York for analysis for parameters listed in the New York State Department of Health (NYSDOH) Sanitary Code, Part 5, Subpart 5-1 for non-community, public water-supply wells. Water samples were also collected and analyzed for microscopic particulate analysis (MPA), giardia and cryptosporidium because the wells are located within 200 feet of a surface-water feature.

Water samples were collected from wells OW-3 and NW-4 on May 1-2, 2018. The pumps in the wells were started on May 1 and the MPA filtration units were then connected to allow the MPA samples to filter overnight to complete the required 8 to 24 hours of filtration. The following morning on May 2, the MPA sampling units were disconnected from the wells and the remaining Part 5 samples were collected. The samples were taken to Envirotest Laboratories immediately after collection.

Copies of the laboratory reports for the May 2 samples collected from wells OW-3 and NW-4 are included in Appendix I. The sample results from both wells meet all NYSDOH drinking water standards with the exception of the presence of total coliform reported in well NW-4. In addition, a trace detection of toluene was reported in the sample from OW-3 at 1.02 micrograms per liter (ug/L). The detection is below the NYSDOH drinking water standard maximum contaminant level (MCL) of 5 ug/L for toluene. Traces of toluene are found in electrical tape adhesive and the plastic coating on electrical wiring, both of which were needed to set the temporary well pump in OW-3. It is likely the trace detection resulted from those materials. The MPA samples collected from OW-3 and NW-4 both reported a low risk for potential groundwater under the direct influence of surface water (GWUDI) and no giardia or cryptosporidium were detected.

LBG HYDROGEOLOGIC & ENGINEERING SERVICES, P.C.
MEMBER OF WSP
4 Research Drive, Suite 204
Shelton, CT 06484

Tel.: +1 (203) 929-8555
wsp.com

To address the presence of total coliform in NW-4 and the trace toluene detection in OW-3, the wells were resampled on June 13. Copies of the laboratory reports from the resampling event are included in Appendix II. The results from the June 13 resampling event reported the sample from NW-4 was absent for total coliform and no toluene was detected in the sample from well OW-3. The resample results indicate confirm that both wells meet all NYSDOH drinking water standards.

Should you have any questions, please contact Stacy at (475) 882-1723.

Kind regards,

LBG Hydrogeologic & Engineering Services, P.C.

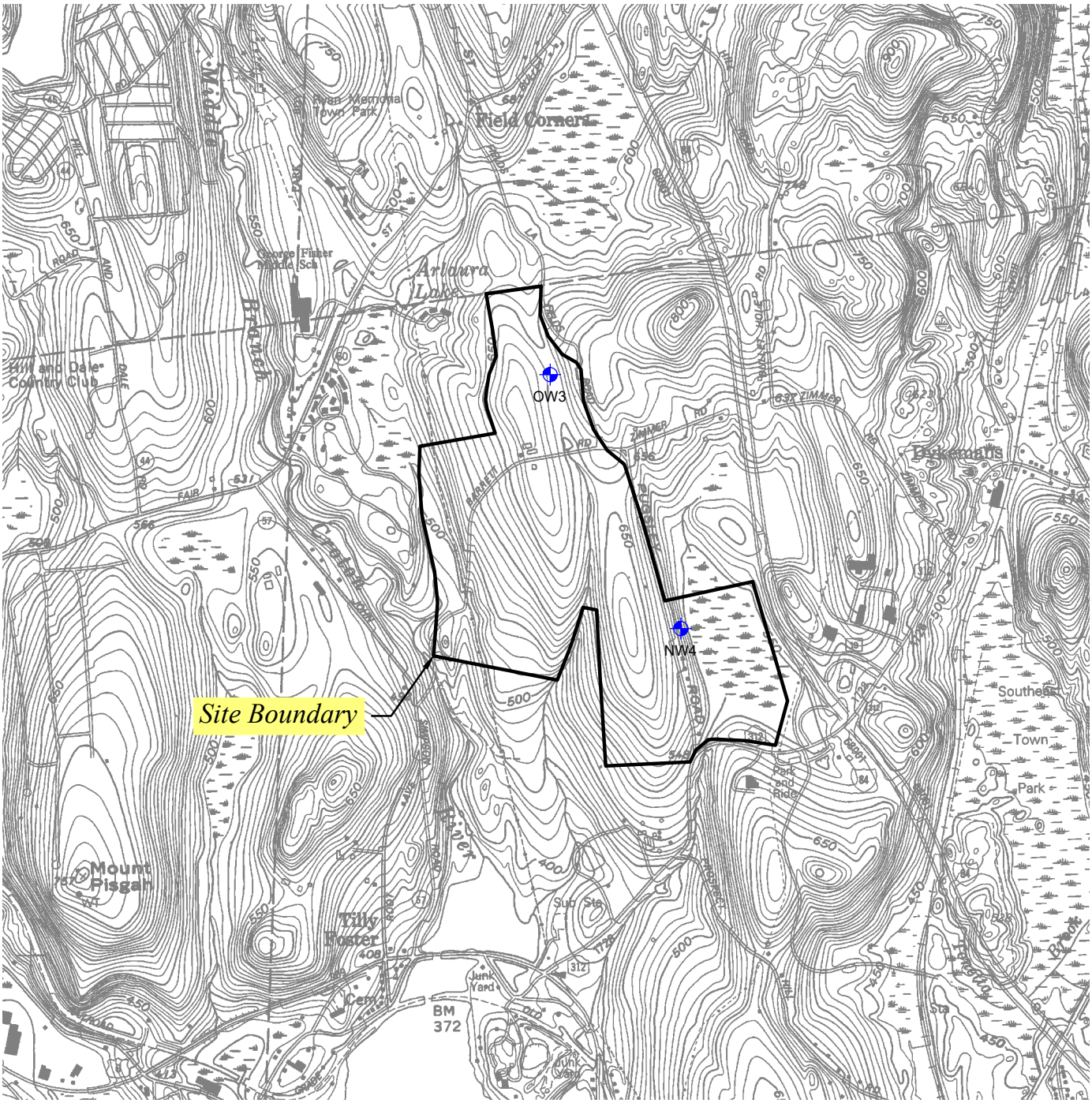
Stacy Stieber, CPG, PG (NY)
Lead Hydrogeologist

Reviewed by:

Thomas P. Cusack, CPG, PG (NY)
Senior Supervising Hydrogeologist

SS:cmm
Enclosures
H:\Northeast Interstate Logistics\2018 Water-Quality Summary - Updated January 2019.docx

FIGURE



SOURCE: USGS DIGITAL QUADRANGLE LAKE CARMEL AND BREWSTER, NEW YORK.

LEGEND

PROPERTY BOUNDARY

PUMPING WELL (1992 and 2004) PROPOSED AS SUPPLY WELL FOR COMMERCIAL CAMPUS AT FIELDS CORNER

QUADRANGLE LOCATION

0 2000

SCALE IN FEET

COMMERCIAL CAMPUS AT FIELDS CORNER SOUTHEAST, NEW YORK

SITE LOCATION MAP

DATE	REVISED

PREPARED BY:
LBG HYDROGEOLOGIC & ENGINEERING SERVICES, P.C.
Professional Geologists & Environmental Engineers
Member of WSP
4 Research Drive
Suite 204
Shelton, Connecticut 06484
(203) 929-8555

DRAWN:	RAC	CHECKED:	SS	DATE:	01/28/19	FIGURE:	1

O:\DWG\Campfl\01_2019\F1_SLM.dwg, Layout1, 1/28/2019 3:42:18 PM, AcroPlotTempDWF14440.pc3

APPENDIX I

EnviroTest Laboratories Inc.

ANALYTICAL REPORT

Job Number: 420-136146-1

SDG Number: Northeast Interstate

Job Description: WSP USA

For:
WSP USA
4 Research Drive
Shelton, CT 06464

Attention: Stacy Stieber

Debra Bayer
Customer Service Manager
dbayer@envirotestlaboratories.com

06/04/2018

NYSDOH ELAP does not certify for all parameters. EnviroTest Laboratories does hold certification for all analytes where certification is offered by ELAP unless otherwise specified in the Certification Information section of this report. Pursuant to NELAP, this report may not be reproduced, except in full, without written approval of the laboratory. EnviroTest Laboratories Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our laboratory. All questions regarding this report should be directed to the EnviroTest Customer Service Representative.

EnviroTest Laboratories, Inc. Certifications and Approvals: NYSDOH 10142, NJDEP NY015, CTDOPH PH-0554

METHOD SUMMARY

Client: WSP USA

Job Number: 420-136146-1
SDG Number: Northeast Interstate

Description	Lab Location	Method	Preparation Method
Matrix: Water			
General Sub Contract Method		Subcontract	

Lab References:

=

Method References:

SAMPLE SUMMARY

Client: WSP USA

Job Number: 420-136146-1
SDG Number: Northeast Interstate

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
420-136146-1	NW-4	Drinking Water	05/02/2018 0910	05/02/2018 1200
420-136146-2	OW-3	Drinking Water	05/02/2018 1030	05/02/2018 1200

EnviroTest Laboratories Inc.

CHAIN OF CUSTODY

315 Fullerton Avenue
Newburgh, NY 12550
TEL (845) 562-0890
FAX (845) 562-0841

136146 (1 of 5)

CUSTOMER NAME: WSP USA
ADDRESS: 4 Research Dr. Suite #204
CITY, STATE, ZIP: Shelton, CT 06484
NAME OF CONTACT: Stacy Stieber
PHONE NO.: 203-929-8555
PROJECT LOCATION: Southeast, NY
PROJECT NUMBER / PO NO.: Northeast Interstate

REPORT TYPE
STANDARD ☒ ISRA ☐
NJ REG ☐
NYASP A ☐ B ☐ CLP ☐
OTHER _____

TURNAROUND
☒ NORMAL _____
☐ QUICK _____
☐ VERBAL _____

REPORT # (Lab Use Only)

SAMPLE TEMP. 2.4 C
SAMPLE REC'D ON ICE ☐ Y ☐ N
ph CHECK ☐ Y ☐ N
CHLORINE (RESIDUAL) ☐ Y ☐ N
REVIEWED BY: _____

NY PUBLIC WATER SUPPLIES
SOURCE ID ___ ___ ___
ELAP TYPE ___ ___ ___
FEDERAL ID ___ ___ ___ ___ ___ ___

Matrix
DW = DRINKING WATER S = SOIL O = OIL
WW = WASTE WATER SL = SLUDGE GW = GROUND WATER

NOTE: SAMPLE TEMPERATURE UPON RECEIPT MUST BE 4° ± 2°C.

LAB USE ONLY

ETL #	SAMPLING DATE	TIME AM PM	COMP	GRAB	MATRIX	CLIENT I.D.	Total Number of Containers	40ml Glass HCL	Liter Amber HCL	250ml Amber Sulfuric	Liter Amber Organic Washed	250ml Plastic Nitric Acid	250ml Plastic Sodium Hydroxide	Liter Plastic	250ml Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	250ml Plastic NAOH/ZN ACC	40ml Glass Sulfuric	40ml Glass	DO	MPA 8/5	ANALYSIS REQUESTED
	5/2/18	0910		X	DW	NW-4	1															1	MPA w/ G+C
	5/2/18	1030		X	DW	OW-3	1															1	MPA w/ G+C

420-136146-A-1
NW-4
Location: Water Sample Coolers
Date Sampled: 5/2/2018 420-1190747

SAMPLES SUBMITTED FOR ANALYSIS WILL BE SUBJECT TO THE ETL TERMS AND CONDITIONS OF SALE UNLESS ALTERNATE TERMS ARE AGREED IN WRITING.

RELINQUISHED BY	COMPANY WSP	DATE 5/2/18	TIME 1200	RECEIVED BY Janine Rader	COMPANY ETL	DATE 5/2/18	TIME 1200
SAMPLED BY	COMPANY WSP	DATE 5/2/18	TIME 0910	RECEIVED BY	COMPANY	DATE	TIME
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME

COMMENTS _____

136146 (2 of 5)

ANALYTICAL SERVICES, INC. (ASI)
Microbiological Testing, Research and Consulting

136146 #1 (1 of 2)

sent to ASI
ae
5/2/18

130 Allen Brook Ln., Williston, VT 05495 USA
1.800.723.4432 / 802.878.5138 Fax: 802.878.6765

SAMPLE COLLECTION DATA SHEET

MICROSCOPIC PARTICULATE ANALYSIS (MPA)

NOTE: SAMPLES ARE ACCEPTED MONDAY – THURSDAY ONLY.

Please notify ASI that sampling is taking place, so our lab staff will know when to expect it back for processing.

☒ MPA **with** IFA Staining Procedure for *Giardia/Cryptosporidium* ☐ MPA **without** Staining Procedure for *Giardia/Cryptosporidium*

Client Sample ID:	NW-4
Sample Site:	Northeast
Sampler's Name:	Jonathan Strickland
Sampling Firm:	WSP

Water Type:	☒ Raw ☐ Finished ☐ Other _____
Water Source:	☒ Well ☐ Spring ☐ River ☐ Lake/Reservoir ☐ Other
Distance From Nearest Surface Water Source:	0 ☒ Feet ☐ Yards ☐ Miles

Treatment Chemicals	☐ Chlorine ☐ $KMnO_4$ ☐ Polymer-Type: _____ ☐ Alum ☐ Carbon ☐ Other _____ ☒ None
Filtration Type	☐ Rapid Sand ☐ Mixed media ☐ Slow Sand ☒ None ☐ Pressure filter ☐ Cartridge ☐ Other_____

Sampling Data	Start	End
Time Zone Sample collected in:	(Eastern) Central Mountain Pacific	
Date:	5/1/18	5/2/18
Time (24hr. clock):	1350	0940
Turbidity (NTU):	5.7	0
pH:	6.45	7.83
Meter Reading(Gal/Ft^3)	0022739.9	0024119.3

Please filter for 8-24 hours, but do not go over 24 hours; collect between 500-1440 gallons at 1 GPM max

(1 gallon = 3.785 liters)	Total Volume Sampled: Liters

Sampler's Signature: _____

I certify that the above information is correct and that this sample was collected in accordance with the EPA Consensus Method for MPA.

Please call Analytical Services, Inc. Client Services at (800) 723-4432 with questions.

LAB USE ONLY	ASI Sample ID#	

Analytical Services, Inc.

136146 (3 of 5)

136146 #1

CHAIN OF CUSTODY RECORD

(Sent to ASI 05/2/18)

Ship to: Analytical Services, Inc., 130 Allen Brook Lane, Williston, VT 05495, Attn: Sample Management
Phone: 1-800-723-4432 or 802-878-5138 • Fax: 802-878-6765 *Web site: www.analyticalservices.com*

Submitted By: WSP USA 4 Research Dr. Suite #204 Shelton CT 06484 Stacy Stricker Phone: 203-929-8555 Email:	Report To: SAME Phone: Email:
Project Name: Northeast Interstate Job Site: Southeast, NY P.O. Number:	Invoice To: SAME Phone: Email:

Sample Identification*	Sample Collection Date (Start)	Time (Start)	Sampler Initials	Sample Matrix (check one): Water - Raw	Water - Finished	Waste Water	Biosolids	Soil/Sediment	Other	Analysis Requested	Lab Use Only Temp (°C)
NW-4	5/1/18	1350	US	x						MDA w/ C+G	

*Sample ID should match ID written on the sample containers and data sheets. Sample ID will appear on the report for identification.

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
[signature]	5/2/18 1200	[signature]	05/02/18 1200

Field Comments:

Lab Comments:

White – To accompany samples • Yellow – Sampler Copy

136146 (4 of 5)

ANALYTICAL SERVICES, INC. (ASI)
Microbiological Testing, Research and Consulting

136146 #2 (1 of 2 sent to ASI; AE 5/2/18)

130 Allen Brook Ln., Williston, VT 05495 USA
1.800.723.4432 / 802.878.5138 Fax: 802.878.6765

SAMPLE COLLECTION DATA SHEET
MICROSCOPIC PARTICULATE ANALYSIS (MPA)
NOTE: SAMPLES ARE ACCEPTED MONDAY – THURSDAY ONLY.
Please notify ASI that sampling is taking place, so our lab staff will know when to expect it back for processing.

☒ MPA **with** IFA Staining Procedure for *Giardia/Cryptosporidium* ☐ MPA **without** Staining Procedure for *Giardia/Cryptosporidium*

Client Sample ID:	OW-3
Sample Site:	Northeast
Sampler's Name:	Jonathan Strickland
Sampling Firm:	WSP

Water Type:	☒ Raw ☐ Finished ☐ Other _____
Water Source:	☒ Well ☐ Spring ☐ River ☐ Lake/Reservoir ☐ Other
Distance From Nearest Surface Water Source:	~~500~~ 0 ☒ Feet ☐ Yards ☐ Miles

Treatment Chemicals	☐ Chlorine ☐ $KMnO_4$ ☐ Polymer-Type: _____ ☐ Alum ☐ Carbon ☐ Other _____ ☒ None
Filtration Type	☐ Rapid Sand ☐ Mixed media ☐ Slow Sand ☒ None ☐ Pressure filter ☐ Cartridge ☐ Other_____

Sampling Data	Start	End
Time Zone Sample collected in:	(Eastern) Central Mountain Pacific	
Date:	5/1/18	5/2/18
Time (24hr. clock):	1445	1030
Turbidity (NTU):	10.3	0
pH:	7.23	7.40
Meter Reading(Gal/Ft^3)	0015575.1	0016118

Please filter for 8-24 hours, but do not go over 24 hours; collect between 500-1440 gallons at 1 GPM max

(1 gallon = 3.785 liters)	Total Volume Sampled: Liters

Sampler's Signature: _____
I certify that the above information is correct and that this sample was collected in accordance with the EPA Consensus Method for MPA.

Please call Analytical Services, Inc. Client Services at (800) 723-4432 with questions.

LAB USE ONLY	ASI Sample ID#

136146 (5 of 5)

sent to ASI

QE 5/21

Analytical Services, Inc.

CHAIN OF CUSTODY RECORD

Ship to: Analytical Services, Inc., 130 Allen Brook Lane, Williston, VT 05495, Attn: Sample Management
Phone: 1-800-723-4432 or 802-878-5138 • Fax: 802-878-6765 *Web site: www.analyticalservices.com*

Submitted By: WSP USA 4 Research Dr. Suite #204 Shelton, CT 06484 Stacy Stieber Phone: 203-929-8555 Email: stacy.stieber@wsp.com	Report To: SAME Phone: Email:
Project Name: Northeast Interstate Job Site: Southeast, NY P.O. Number:	Invoice To: SAME Phone: Email:

Sample Identification*	Sample Collection: Date (Start)	Time (Start)	Sampler Initials	Sample Matrix (check one): Water - Raw	Water - Finished	Waste Water	Biosolids	Soil/Sediment	Other	Analysis Requested	Lab Use Only: Temp (°C)
OW-3	5/1/18	1445	JB	X						MPA w/ C + G	

*Sample ID should match ID written on the sample containers and data sheets. Sample ID will appear on the report for identification.

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
[signature]	5/2/18 12:00	[signature]	05/02/18 12:00

Field Comments:

Lab Comments:

White – To accompany samples • Yellow – Sampler Copy

LOGIN SAMPLE RECEIPT CHECK LIST

Client: WSP USA

Job Number: 420-136146-1
SDG Number: Northeast Interstate

Login Number: **136146**

Question	T/F/NA	Comment
Samples were collected by ETL employee as per SOP-SAM-1	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is recorded.	True	2.4 C
Cooler Temp. is within method specified range.(0-6 C PW, 0-8 C NPW, or BAC <10 C	True	
If false, was sample received on ice within 6 hours of collection.	NA	
Based on above criteria cooler temperature is acceptable.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	NA	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

ANALYTICAL SERVICES, INC.
Microbiological Testing, Research and Consulting

130 Allen Brook Ln., PO Box 515, Williston, VT 05495 USA
1.800.723.4432 / 802.878.5138 Fax: 802.878.6765
www.analyticalservices.com

6/1/2018

Ron Bayer
EnviroTest Laboratories
315 Fullerton Ave.
Newburgh, NY 12550

Subj.: ASI Report 60140

Dear Ron,

Enclosed please find the results of Microscopic Particulate Analysis (MPA) performed by Analytical Services, Inc. (ASI).

Sample(s) covered in this report were received at ASI on: 5/3/2018

This report contains the following number of pages (total): 5

This report concerns only the samples referenced herein. These results were generated under ASI's quality system, which is in accordance with the NELAC (TNI) standard. Deviations, if any, are noted.

Exceptions: NA

This report shall not be reproduced, except in full, without ASI's written permission.

Thank you for using ASI for your microbiological testing needs. If you have any questions, please contact us at 800-723-4432.

Sincerely,
ANALYTICAL SERVICES, INC. (ASI)

Harry D. Christman, Ph.D.
Technical Director

Microscopic Particulate Analysis (MPA)

Sample Information

Client	EnviroTest Laboratories	Volume Sampled (gal)	1379.4
Site	Northeast	Filter Color	Dark Gray
Water Type	Raw/Well	Sediment Volume (mL)	3.5
Client Sample ID	NW-4	Analysis Start	5/3/18 12:57
ASI Sample #	60140-01	Analysis End	6/1/18

MPA Data (data per 100 gal.)

Vol. Examined at 150x (gal.)	100	Detection Limit at 150X =	1.0
Vol. Examined at 300x (gal.)	NA	Detection Limit at 300X =	NA
Amorphous Debris	Uniform	Iron Bacteria	ND
Vegetative Debris w/ chlorophyll	ND	Crustaceans	ND
Veg. Debris w/o chlorophyll	ND	Crustacean Parts/Eggs	ND
Diatoms w/ chlorophyll (300X)	ND	Water Mites	ND
Diatoms w/o chlorophyll (300X)	ND	Gastrotrichs	ND
Other Algae (300X, see below)	ND	Tardigrades	ND
Rotifers	ND	Nematodes/N. Eggs	ND
Rotifer Eggs	ND	Invertebrate Eggs	ND
Spores	ND	Annelids	ND
Pollen	9	Amoeba	ND
Insects/Larvae	ND	Protozoa (300X, non-Crypto/Giardia)	2

Cryptosporidium and Giardia Data

		RESULTS	
Volume Examined (gal.)	197.06	per Vol. Examined	Per 100gal
	Cryptosporidium Oocysts:	0	<0.51
	Giardia Cysts:	0	<0.51

MPA Risk Rating Score (per EPA Consensus Method)

Numerical Score	0	Risk Rating	Low

Other

Algae Observed	NA
Comments	

Methods: MPA - SOP based on EPA Consensus Method (EPA 910/9-92-029)

Cryptosporidium & Giardia - SOP based on purification, staining & exam procedures in EPA 1623/1623.1

Notes MPA Risk Rating Tables were developed by USEPA Region from limited data; interpret with caution.

MPA Risk Rating Score - if less than 100 gallons was examined, interpret with caution.

Microscopic Particulate Analysis (MPA)

Sample Information

Client	EnviroTest Laboratories	Volume Sampled (gal)	1036.7
Site	Northeast	Filter Color	Light Gray Brown
Water Type	Raw/Well	Sediment Volume (mL)	2
Client Sample ID	OW-3	Analysis Start	5/3/18 13:10
ASI Sample #	60140-02	Analysis End	6/1/18

MPA Data (data per 100 gal.)

Vol. Examined at 150x (gal.)	100	Detection Limit at 150X =	1.0
Vol. Examined at 300x (gal.)	NA	Detection Limit at 300X =	NA
Amorphous Debris	Uniform	Iron Bacteria	ND
Vegetative Debris w/ chlorophyll	ND	Crustaceans	ND
Veg. Debris w/o chlorophyll	3	Crustacean Parts/Eggs	ND
Diatoms w/ chlorophyll (300X)	ND	Water Mites	ND
Diatoms w/o chlorophyll (300X)	ND	Gastrotrichs	ND
Other Algae (300X, see below)	ND	Tardigrades	ND
Rotifers	ND	Nematodes/N. Eggs	ND
Rotifer Eggs	ND	Invertebrate Eggs	ND
Spores	ND	Annelids	ND
Pollen	5	Amoeba	ND
Insects/Larvae	ND	Protozoa (300X, non-Crypto/Giardia)	ND

Cryptosporidium and Giardia Data

			RESULTS	
Volume Examined (gal.)	259.18		per Vol. Examined	Per 100gal
		Cryptosporidium Oocysts:	0	<0.39
		Giardia Cysts:	0	<0.39

MPA Risk Rating Score (per EPA Consensus Method)

Numerical Score	0	Risk Rating	Low

Other

Algae Observed	NA
Comments	

Methods: MPA - SOP based on EPA Consensus Method (EPA 910/9-92-029)

Cryptosporidium & Giardia - SOP based on purification, staining & exam procedures in EPA 1623/1623.1

Notes MPA Risk Rating Tables were developed by USEPA Region 10 from limited data; interpret with caution.

MPA Risk Rating Score - if less than 100 gallons was examined, interpret with caution.

136146 (3 of 5)

136146 #1

(Sent to ASI. QB 5/2/18)

Analytical Services, Inc.

CHAIN OF CUSTODY RECORD

Ship to: Analytical Services, Inc., 130 Allen Brook Lane, Williston, VT 05495, Attn: Sample Management
Phone: 1-800-723-4432 or 802-878-5138 • Fax: 802-878-6765 *Web site: www.analyticalservices.com*

Submitted By: WSP, USA 4 Research Dr. Suite #204 Shelton, CT 06484 Stacy Stieber Phone: 203-529-5555 Email:	Report To: SAMC Phone: Email:
Project Name: Northeast Interstate	Invoice To: SAMC
Job Site: Southeast, NY	
P.O. Number:	Phone: Email:

Sample Identification*	Sample Collection: Date (Start)	Time (Start)	Sampler Initials	Sample Matrix (check one): Water - Raw	Water - Finished	Waste Water	Biosolids	Soil/Sediment	Other	Analysis Requested	Lab Use Only: Temp (°C)
NW-4	5/1/18	1350	JS	x						MDA w/ C+G	7.6

*Sample ID should match ID written on the sample containers and data sheets. Sample ID will appear on the report for identification.

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
[signature]	5/2/18 1200	Lisa Hunter	05/02/18 1200
A Ellmendorf ETL	5/2/18 1340	[signature]	5/3/18 9:40

Field Comments:

Lab Comments:

White – To accompany samples • Yellow – Sampler Copy

136146 (5 of 5)

136146 #2 Page 2 of 2

sent to ASI. QE 5/2/18

Analytical Services, Inc.

CHAIN OF CUSTODY RECORD

Ship to: Analytical Services, Inc., 130 Allen Brook Lane, Williston, VT 05495, Attn: Sample Management
Phone: 1-800-723-4432 or 802-878-5138 • Fax: 802-878-6765 *Web site: www.analyticalservices.com*

Submitted By: WSP USA 4 Research Dr. Suite #201 Shelton, CT 06484 Stacy Stieber Phone: 203-929-8555 Email: stacy.stieber@wsp.com	Report To: SAME Phone: Email:
Project Name: Northeast Interstate	Invoice To: SAME
Job Site: Southeast, NY	
P.O. Number:	Phone: Email:

Sample Identification*	Sample Collection: Date (Start)	Time (Start)	Sampler Initials	Sample Matrix (check one): Water - Raw	Water - Finished	Waste Water	Biosolids	Soil/Sediment	Other	Analysis Requested	Lab Use Only: Temp (°C)
OW-3	5/1/18	1445	JB	X						MPA w/ C + G	6.3

*Sample ID should match ID written on the sample containers and data sheets. Sample ID will appear on the report for identification.

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
	5/2/18 12:00		05/02/18 12:00
A Elmendorf ETL	5/2/18 1340		5/3/18 9:40

Field Comments:

Lab Comments:

White – To accompany samples • Yellow – Sampler Copy

EnviroTest Laboratories Inc.

ANALYTICAL REPORT

Job Number: 420-136151-1

SDG Number: Northeast Interstate

Job Description: WSP USA

For:
WSP USA
4 Research Drive
Shelton, CT 06464

Attention: Stacy Stieber

Debra Bayer

Customer Service Manager

dbayer@envirotestlaboratories.com

06/01/2018

Revision: 1

NYSDOH ELAP does not certify for all parameters. EnviroTest Laboratories does hold certification for all analytes where certification is offered by ELAP unless otherwise specified in the Certification Information section of this report. Pursuant to NELAP, this report may not be reproduced, except in full, without written approval of the laboratory. EnviroTest Laboratories Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our laboratory. All questions regarding this report should be directed to the EnviroTest Customer Service Representative.

EnviroTest Laboratories, Inc. Certifications and Approvals: NYSDOH 10142, NJDEP NY015, CTDOPH PH-0554

Job Narrative
420-J136151-1

Comments
This report replaces the report issued May 23, 2018. Due to computer error, the Hg and LI did not report on original report.
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

Metals
No analytical or quality issues were noted.

General Chemistry
Method SM 4500 H+ B: The holding time for pH is 15 minutes, the samples were received outside of the holding time.

No other analytical or quality issues were noted.

Biology
No analytical or quality issues were noted.

METHOD SUMMARY

Client: WSP USA

Job Number: 420-136151-1
SDG Number: Northeast Interstate

Description	Lab Location	Method	Preparation Method
Matrix: Water			
ICP Metals by 200.7	EnvTest	EPA 200.7 Rev 4.4	
200 Series Drinking Water Prep Determination Step	EnvTest		EPA 200.7/200.8
ICPMS Metals by 200.8	EnvTest	EPA 200.8 Rev.5.4	
200 Series Drinking Water Prep Determination Step	EnvTest		EPA 200.7/200.8
Total Metals Digestion for 200.8	EnvTest		EPA 200.8 Rev.5.4
Mercury in Water by CVAA	EnvTest	EPA 245.1 Rev.3.0	
Digestion for CVAA Mercury in Waters	EnvTest		EPA 245.1
Anions by Ion Chromatography	EnvTest	MCAWW 300.0	
Anions by Ion Chromatography	EnvTest	EPA 300.0 Rev. 2.1	
EPA 504.1 EDB	Pace Mell	EPA 504.1	
EPA 505 Pesticide/PCB	Pace Mell	EPA 505	
EPA 515 Chlorinated Acids	Pace Mell	EPA 515	
Purgeable Organic Compounds in Water by GC/MS	EnvTest	EPA-DW 524.2	
EPA 525.2 Semivolatile Organics	Pace Mell	EPA 525.2	
EPA 531.1 Carbamate Pesticides in Drinki	Pace Mell	EPA 531.1	
Heterotropic Plate Count	EnvTest	IDEXX SIMPLATE	
Odor, Threshold Test	EnvTest	SM20 SM 2150B	
Alkalinity, Titration Method	EnvTest	SM22 SM 2320B--2011	
Corrosivity LSI Calculation	EnvTest	SM20 SM 2330B	
Hardness by Calculation	EnvTest	SM20 SM 2340B-97,-11	
pH	EnvTest	SM19 SM 4500 H+ B	
Total Coliform and Escherichia coli by Colilert - Presence/Absence	EnvTest	SMWW SM 9223	
Apparent Color	EnvTest	SM21 SM2120B-2011	
Turbidity	EnvTest	SM21 SM2130B-2011	
Total Dissolved Solids (Dried at 180 °C)	EnvTest	SM22 SM2540C-2011	
Cyanide, Total: Colorimetric Method	EnvTest	SM22 SM4500 CNE 2011	
Cyanide: Distillation	EnvTest		SM22 SM4500 CNC 2011
Nitrite by Colormetric	EnvTest	SM20 SM4500 NO2 B-11	

Lab References:

EnvTest = EnviroTest

Pace Mell = Pace Mellville

METHOD SUMMARY

Client: WSP USA

Job Number: 420-136151-1
SDG Number: Northeast Interstate

Description	Lab Location	Method	Preparation Method

Method References:

EPA = US Environmental Protection Agency

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

IDEXX =

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM19 = "Standard Methods For The Examination Of Water And Wastewater", 19Th Edition, 1995."

SM20 = "Standard Methods For The Examination Of Water And Wastewater", 20th Edition."

SM21 = "Standard Methods For The Examination Of Water And Wastewater", 21st Edition

SM22 = "Standard Methods for the Examination of Water and Wastewater", 22nd Edition

SMWW = "Standard Methods for the Examination of Water and Wastewater"

METHOD / ANALYST SUMMARY

Client: WSP USA

Job Number: 420-136151-1
SDG Number: Northeast Interstate

Method	Analyst	Analyst ID
EPA-DW 524.2	Andersen, Eric C	ECA
EPA 200.7 Rev 4.4	Sirico, Derek	DS
EPA 200.8 Rev.5.4	Sirico, Derek	DS
EPA 245.1 Rev.3.0	Sirico, Derek	DS
SM20 SM 2340B-97,-11	Sirico, Derek	DS
MCAWW 300.0	Luis, Carlos	CL
EPA 300.0 Rev. 2.1	Luis, Carlos	CL
IDEXX SIMPLATE	Lacy, Megan	ML
SM20 SM 2150B	Lacy, Megan	ML
SM22 SM 2320B--2011	Gonda, Nicholas	NG
SM20 SM 2330B	Cusack, Renee	RC
SM19 SM 4500 H+ B	Lacy, Megan	ML
SMWW SM 9223	Lacy, Megan	ML
SM21 SM2120B-2011	Lacy, Megan	ML
SM21 SM2130B-2011	Lacy, Megan	ML
SM22 SM2540C-2011	Mastrobuono, Danielle	DM
SM22 SM4500 CNE 2011	Molchon, Renee	RM
SM20 SM4500 NO2 B-11	Mastrobuono, Danielle	DM

SAMPLE SUMMARY

Client: WSP USA

Job Number: 420-136151-1
SDG Number: Northeast Interstate

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
420-136151-1	NW-4	Drinking Water	05/02/2018 1000	05/02/2018 1200

Client: WSP USA

Job Number: 420-136151-1
Sdg Number: Northeast Interstate

Client Sample ID: **NW-4**

Lab Sample ID: 420-136151-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1000
Date Received: 05/02/2018 1200

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 05/04/2018 2059
Date Prepared: N/A

Analysis Batch: 420-120868

Instrument ID: HP
Lab File ID: V050422.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,1,1,2-Tetrachloroethane	<0.500		0.500
1,1,1-Trichloroethane	<0.500		0.500
1,1,2,2-Tetrachloroethane	<0.500		0.500
1,1,2-Trichloroethane	<0.500		0.500
1,1-Dichloroethane	<0.500		0.500
1,1-Dichloroethene	<0.500		0.500
1,1-Dichloropropene	<0.500		0.500
1,2,3-Trichlorobenzene	<0.500		0.500
1,2,3-Trichloropropane	<0.500		0.500
1,2,4-Trichlorobenzene	<0.500		0.500
1,2,4-Trimethylbenzene	<0.500		0.500
1,2-Dichloroethane	<0.500		0.500
1,2-Dichlorobenzene	<0.500		0.500
1,2-Dichloropropane	<0.500		0.500
1,3-Dichloropropane	<0.500		0.500
1,4-Dichlorobenzene	<0.500		0.500
2,2-Dichloropropane	<0.500		0.500
Benzene	<0.500		0.500
Bromobenzene	<0.500		0.500
Bromochloromethane	<0.500		0.500
Bromomethane	<0.500		0.500
n-Butylbenzene	<0.500		0.500
cis-1,2-Dichloroethene	<0.500		0.500
cis-1,3-Dichloropropene	<0.500		0.500
Carbon tetrachloride	<0.500		0.500
Chlorobenzene	<0.500		0.500
Chloroethane	<0.500		0.500
Chloromethane	<0.500		0.500
Dibromomethane	<0.500		0.500
Ethylbenzene	<0.500		0.500
Dichlorodifluoromethane	<0.500		0.500
Hexachlorobutadiene	<0.500		0.500
Isopropylbenzene	<0.500		0.500
p-Isopropyltoluene	<0.500		0.500
Methylene Chloride	<0.500		0.500
m-Xylene & p-Xylene	<1.00		1.00
Methyl tert-butyl ether	<0.500		0.500
o-Xylene	<0.500		0.500
Tetrachloroethene	<0.500		0.500
Toluene	<0.500		0.500
trans-1,2-Dichloroethene	<0.500		0.500
trans-1,3-Dichloropropene	<0.500		0.500
Trichloroethene	<0.500		0.500
tert-Butylbenzene	<0.500		0.500

Client: WSP USA

Job Number: 420-136151-1
Sdg Number: Northeast Interstate

Client Sample ID: **NW-4**

Lab Sample ID: 420-136151-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1000
Date Received: 05/02/2018 1200

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 05/04/2018 2059
Date Prepared: N/A

Analysis Batch: 420-120868

Instrument ID: HP
Lab File ID: V050422.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Trichlorofluoromethane	<0.500		0.500
Vinyl chloride	<0.500		0.500
Xylenes, Total	<1.50		1.50
Styrene	<0.500		0.500
sec-Butylbenzene	<0.500		0.500
1,3,5-Trimethylbenzene	<0.500		0.500
N-Propylbenzene	<0.500		0.500
1,3-Dichlorobenzene	<0.500		0.500
2-Chlorotoluene	<0.500		0.500
4-Chlorotoluene	<0.500		0.500

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	107	71 - 120
Toluene-d8 (Surr)	96	79 - 121
1,2-Dichloroethane-d4 (Surr)	89	70 - 128

Client: WSP USA

Job Number: 420-136151-1
Sdg Number: Northeast Interstate

Client Sample ID: **NW-4**

Lab Sample ID:	420-136151-1	Date Sampled:	05/02/2018 1000
Client Matrix:	Drinking Water	Date Received:	05/02/2018 1200

200.7 Rev 4.4 ICP Metals by 200.7

Method:	200.7 Rev 4.4	Analysis Batch: 420-120901		Instrument ID:	Thermo ICP
Preparation:	200.7/200.8	Prep Batch: 420-120883		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	05/07/2018 1439			Final Weight/Volume:	50 mL
Date Prepared:	05/07/2018 0905				

Analyte	Result (ug/L)	Qualifier	RL
Iron	<60.0		60.0
Manganese	<10.0		10.0
Sodium	15100		200
Zinc	<20.0		20.0

Client: WSP USA

Job Number: 420-136151-1
Sdg Number: Northeast Interstate

Client Sample ID: **NW-4**

Lab Sample ID:	420-136151-1	Date Sampled:	05/02/2018 1000
Client Matrix:	Drinking Water	Date Received:	05/02/2018 1200

200.8 Rev.5.4 ICPMS Metals by 200.8

Method:	200.8 Rev.5.4	Analysis Batch: 420-120915	Instrument ID:	Perkin Elmer ELAN
Preparation:	200.7/200.8	Prep Batch: 420-120883	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50 mL
Date Analyzed:	05/07/2018 1426		Final Weight/Volume:	50 mL
Date Prepared:	05/07/2018 0905			

Analyte	Result (ug/L)	Qualifier	RL
Lead	<1.00		1.00
Arsenic	<1.40		1.40
Beryllium	<0.300		0.300
Cadmium	<1.00		1.00
Chromium	<7.00		7.00
Antimony	<0.400		0.400
Thallium	<0.300		0.300
Barium	60.6		2.00
Selenium	<2.00		2.00

Method:	200.8 Rev.5.4	Analysis Batch: 420-121010	Instrument ID:	Perkin Elmer ELAN
Preparation:	200.8 Rev.5.4	Prep Batch: 420-120938	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50 mL
Date Analyzed:	05/10/2018 1234		Final Weight/Volume:	50 mL
Date Prepared:	05/07/2018 1100			

Analyte	Result (ug/L)	Qualifier	RL
Silver	<1.00		1.00

Method:	200.8 Rev.5.4	Analysis Batch: 420-121010	Instrument ID:	Perkin Elmer ELAN
Preparation:	200.7/200.8	Prep Batch: 420-120883	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50 mL
Date Analyzed:	05/10/2018 1252		Final Weight/Volume:	50 mL
Date Prepared:	05/07/2018 0905			

Analyte	Result (ug/L)	Qualifier	RL
Nickel	1.33		0.500

Client: WSP USA

Job Number: 420-136151-1
Sdg Number: Northeast Interstate

Client Sample ID: **NW-4**

Lab Sample ID:	420-136151-1	Date Sampled:	05/02/2018 1000
Client Matrix:	Drinking Water	Date Received:	05/02/2018 1200

245.1 Rev.3.0 Mercury in Water by CVAA

Method:	245.1 Rev.3.0	Analysis Batch: 420-121151	Instrument ID:	Perkin Elmer FIMS
Preparation:	245.1	Prep Batch: 420-121079	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/16/2018 1227		Final Weight/Volume:	25 mL
Date Prepared:	05/14/2018 1000			

Analyte	Result (ug/L)	Qualifier	RL
Mercury	<0.200		0.200

SM 2340B-97,-11 Hardness by Calculation

Method:	SM 2340B-97,-11	Analysis Batch: 420-120921	Instrument ID:	None
Preparation:	N/A		Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	
Date Analyzed:	05/07/2018 1439		Final Weight/Volume:	
Date Prepared:	N/A			

Analyte	Result (mg/L)	Qualifier	RL
Calcium hardness as calcium carbonate	148		1.25

Client: WSP USA

Job Number: 420-136151-1
Sdg Number: Northeast Interstate

Biology

Client Sample ID: **NW-4**

Lab Sample ID: 420-136151-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1000
Date Received: 05/02/2018 1200

Analyte	Result	Qual	Units	Dil	Method
Coliform, Total	Present	g	CFU/100mL	1.0	SM 9223
Anly Batch:		Date Analyzed	05/02/2018 1451		
Escherichia coli	Absent		CFU/100mL	1.0	SM 9223
Anly Batch:		Date Analyzed	05/02/2018 1451		

Analyte	Result	Qual	Units	RL	Dil	Method
Heterotrophic Plate Count	6.00		CFU/mL	2.00	1.0	SIMPLATE
Anly Batch:		Date Analyzed	05/02/2018 1505			

General Chemistry

Client: WSP USA

Job Number: 420-136151-1
Sdg Number: Northeast Interstate

General Chemistry

Client Sample ID: **NW-4**

Lab Sample ID: 420-136151-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1000
Date Received: 05/02/2018 1200

Analyte	Result	Qual	Units	RL	Dil	Method
Nitrate as N	<0.250		mg/L	0.250	1.0	300.0
Anly Batch:		Date Analyzed	05/02/2018 2212			

Analyte	Result	Qual	Units	Dil	Method
Langelier Index	0.460		NONE	1.0	SM 2330B
Anly Batch:		Date Analyzed	05/18/2018 1117		

Client: WSP USA

Job Number: 420-136151-1
Sdg Number: Northeast Interstate

General Chemistry

Client Sample ID: **NW-4**

Lab Sample ID: 420-136151-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1000
Date Received: 05/02/2018 1200

Analyte		Result	Qual	Units	RL	Dil	Method
Alkalinity		127		mg/L	5.00	1.0	SM 2320B--2011
	Anly Batch:		Date Analyzed	05/14/2018 1133			
Total Dissolved Solids		288		mg/L	5.00	1.0	SM2540C-2011
	Anly Batch:		Date Analyzed	05/08/2018 1149			
Sulfate		23.1		mg/L	5.00	1.0	300.0 Rev. 2.1
	Anly Batch:		Date Analyzed	05/02/2018 2212			
Fluoride		<0.500		mg/L	0.500	1.0	300.0 Rev. 2.1
	Anly Batch:		Date Analyzed	05/02/2018 2212			
Chloride		65.6		mg/L	30.0	20	300.0 Rev. 2.1
	Anly Batch:		Date Analyzed	05/04/2018 2000			
Cyanide, Total		<0.00500		mg/L	0.00500	1.0	SM4500 CNE 201
	Anly Batch:		Date Analyzed	05/08/2018 1615			
	Prep Batch:		Date Prepared:	05/07/2018 0915			
Apparent Color		<2.00		Pt-Co	2.00	1.0	SM2120B-2011
	Anly Batch:		Date Analyzed	05/04/2018 0903			
pH@color measurement		8.00		SU	2.00	1.0	SM2120B-2011
	Anly Batch:		Date Analyzed	05/04/2018 0903			
Turbidity		0.218		NTU	0.100	1.0	SM2130B-2011
	Anly Batch:		Date Analyzed	05/03/2018 1522			
Odor		1.00		T.O.N.	1.00	1.0	SM 2150B
	Anly Batch:		Date Analyzed	05/03/2018 1750			
Temp @ Odor Measurement		60.0		Degrees C	5.00	1.0	SM 2150B
	Anly Batch:		Date Analyzed	05/03/2018 1750			
pH		8.00	H	SU	0.200	1.0	SM 4500 H+ B
	Anly Batch:		Date Analyzed	05/02/2018 1859			
Temp @ pH Measurement		22.9		Degrees C	5.00	1.0	SM 4500 H+ B
	Anly Batch:		Date Analyzed	05/02/2018 1859			
Nitrite as N		<0.0100		mg/L	0.0100	1.0	SM4500 NO2 B-11
	Anly Batch:		Date Analyzed	05/03/2018 1855			

DATA REPORTING QUALIFIERS

Client: WSP USA

Job Number:
Sdg Number: Northeast Interstate

Lab Section	Qualifier	Description
General Chemistry		
	H	Sample was prepped or analyzed beyond the specified holding time
Biology		
	g	Result fails applicable NYS drinking water standards

Certification Information

Client: WSP USA

Job Number:

Sdg Number: Northeast Interstate

The following analytes are Not Part of the ELAP scope of accreditation:

Sulfur, Tungsten, Bicarbonate Alkalinity, 7 Day BOD 5210C, 28 Day BOD, Soluble BOD, Carbon Dioxide, Carbonate Alkalinity, CBOD Soluble, Chlorine, Cyanide (WAD), Ferrous Iron, Ferric Iron, Total Nitrogen, Total Organic Nitrogen, Dissolved Oxygen, pH, Solids (Fixed), Solids (Percent), Solids (Percent Moisture), Solids (Percent Volatile), Solids (Volatile Suspended), Temperature, TKN (Soluble), COD (Soluble), Total Inorganic Carbon, 2-Aminopyridine, 3-Picoline, 1-Methyl-2-pyrrilidinone, Aziridine, Dimethyl sulfoxide, 1-Chlorohexane, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, p-Diethylbenzene, Iron Bacteria, Salmonella, & Sulfur Reducing Bacteria.

The following analytes are Not Part of ELAP Potable Water scope of accreditation:

Phosphorus (365.3), Nitrate-Nitrite (10-107-4-1C, 353.2), m-Xylene & p-Xylene (502.2, 524), o-Xylene (502.2, 524), Fecal Coliform (9222D), Sulfide (SM4500SD), Acenaphthene (525.2), Acenaphthylene (525.2), Fluoranthene (525.2), Fluorene (525.2), Phenanthrene (525.2), Anthracene (525.2), Pyrene (525.2), Benzo[a]anthracene (525.2), Benzo[b]fluoranthene (525.2), Benzo[g,h,i]perylene (525.2), Benzo[k]fluoranthene (525.2), Indeno[1,2,3-cd]pyrene (525.2), & Dibenz(a,h)anthracene (525.2).

The following analytes are Not Part of ELAP Solid and Hazardous Waste scope of accreditation:

Ammonia (SM 4500NH3G), TKN (351.2), Phosphorus (365.3), 1,2-Dichloro-1,1,2-trifluoroethane (8260), & Chlorodifluoromethane (8260).

The following analytes are Not Part of ELAP Non Potable Water scope of accreditation:

Dissolved Organic Carbon (5310C), Mecoprop (8151A), & MCPA (8151A).

Definitions and Glossary

Client: WSP USA

Job Number:

Sdg Number: Northeast Interstate

Abbreviation	These commonly used abbreviations may or may not be present in this report.
%R	Percent Recovery
DL, RA, RE	Indicates a Dilution, Reanalysis or Reextraction.
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit - an estimate of the minimum amount of a substance that an analytical process can reliably detect. A MDL is analyte- and matrix-specific and may be laboratory-dependent.
ND	Not detected at the reporting limit (or MDL if shown).
QC	Quality Control
RL	Reporting Limit - the minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence.
RPD	Relative Percent Difference - a measure of the relative difference between two points.

EnviroTest Laboratories, Inc.

CHAIN OF CUSTODY

136151

REPORT# (Lab Use Only)

Lab Name: EnviroTest Laboratories
Address & Phone: 315 Fullerton Avenue, Newburgh, New York 12550 845-562-0890

PROJECT REFERENCE: Northeast Interstate	PROJECT NO.	PROJECT LOCATION: NY
ENVIROTEST PROJECT MANAGER: Debra Bayer	P.O. NUMBER	TOWN: Southeast
CLIENT (SITE) PM: Stacy Stieber	CLIENT PHONE: 475-882-1723	CLIENT FAX
CLIENT NAME: WSP USA	stacy.stieber@wsp.com	
CLIENT ADDRESS: 4 Research Drive, Suite 301, Shelton, CT 06484		
COMPANY CONTRACTING THIS WORK (if applicable):		

PAGE 1 of 1

TURNAROUND TIME: NORMAL X; QUICK ____; VERBAL ____

#OF COOLERS: 1

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	D (Drinking Water) or W (Waste Water) Indicate	SOLID OR SEMISOLID	OTHER Specify	MPA/C/G Rig	40ml Vials HCl	40ml Sodium Thio.	250ml Amber Sodium Thio.	Liter Amber HCl/Na2SO3	250ml Plastic Nitric Acid	60ml Mon/Sod.Thio(liquid)	Liter Plastic	250ml Plastic Sodium Hyd.	125ml Plastic Sterile/~~Thio.~~	250ml Amber Unpres.	250ml Plastic Unpres (no air)	REMARKS
5/2/18	10:00	NW-4						X	3	4	1	2	1	1	4	1	2	1	2	Table 8B (Sb,As,Ba,Be,Cd,Cr,Cn,Hg,Ni
																				Se,Tl,F)
																				Table 8C (NO3,NO2)
																				Table 8D (Cl,Fe,Mn,Ag,Na,SO4,Zn,Odor,Color)
																				524.2 (POC,MTBE,Vinyl Chloride)
																				SOCs (504,505,515,525,531)
								2-Liter Amber Unpres.												Additional Tests (Total coliform
																				thru Zinc)
																				~~MPA/Crypto/Giardia~~ 5/2/18 DE

RELINQUISHED BY: (SIGNATURE)	COMPANY: WSP	DATE: 5/2/18	TIME: 12:00	RECEIVED BY: (SIGNATURE)	COMPANY	DATE	TIME
SAMPLED BY: (SIGNATURE)	COMPANY: WSP	DATE: 5/2/18	TIME: 10:00	RECEIVED BY: (SIGNATURE)	COMPANY	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	COMPANY	DATE	TIME	RECEIVED BY: (SIGNATURE)	COMPANY	DATE	TIME

SUBCONTACT: PACE-SOC; ASI-MPA/C/G

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES NO	Cooler Temp.	LABORATORY REMARKS: ICE X pH____ CL2____ Reviewed by____
Lisa Marble	05/02/18	12:00		2.7	

420-136151-A-1
NW-4
Location: Water Sample Coolers
Date Sampled: 5/2/2018 420-1190800

06/01/2018

LOGIN SAMPLE RECEIPT CHECK LIST

Client: WSP USA

Job Number: 420-136151-1
SDG Number: Northeast Interstate

Login Number: **136151**

Question	T/F/NA	Comment
Samples were collected by ETL employee as per SOP-SAM-1	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is recorded.	True	2.7 C
Cooler Temp. is within method specified range.(0-6 C PW, 0-8 C NPW, or BAC <10 C	True	
If false, was sample received on ice within 6 hours of collection.	NA	
Based on above criteria cooler temperature is acceptable.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

EnviroTest Laboratories Inc.

ANALYTICAL REPORT

Job Number: 420-136148-1

SDG Number: Northeast Interstate

Job Description: WSP USA

For:
WSP USA
4 Research Drive
Shelton, CT 06464

Attention: Stacy Stieber

Debra Bayer
Customer Service Manager
dbayer@envirotestlaboratories.com
05/25/2018

NYSDOH ELAP does not certify for all parameters. EnviroTest Laboratories does hold certification for all analytes where certification is offered by ELAP unless otherwise specified in the Certification Information section of this report. Pursuant to NELAP, this report may not be reproduced, except in full, without written approval of the laboratory. EnviroTest Laboratories Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our laboratory. All questions regarding this report should be directed to the EnviroTest Customer Service Representative.

EnviroTest Laboratories, Inc. Certifications and Approvals: NYSDOH 10142, NJDEP NY015, CTDOPH PH-0554

METHOD SUMMARY

Client: WSP USA

Job Number: 420-136148-1
SDG Number: Northeast Interstate

Description	Lab Location	Method	Preparation Method
Matrix: Water			
ICP Metals by 200.7	EnvTest	EPA 200.7 Rev 4.4	
200 Series Drinking Water Prep Determination Step	EnvTest		EPA 200.7/200.8
ICPMS Metals by 200.8	EnvTest	EPA 200.8 Rev.5.4	
200 Series Drinking Water Prep Determination Step	EnvTest		EPA 200.7/200.8
Total Metals Digestion for 200.8	EnvTest		EPA 200.8 Rev.5.4
Mercury in Water by CVAA	EnvTest	EPA 245.1 Rev.3.0	
Digestion for CVAA Mercury in Waters	EnvTest		EPA 245.1
Anions by Ion Chromatography	EnvTest	MCAWW 300.0	
Anions by Ion Chromatography	EnvTest	EPA 300.0 Rev. 2.1	
EPA 504.1 EDB	Pace Mell	EPA 504.1	
EPA 505 Pesticide/PCB	Pace Mell	EPA 505	
EPA 515 Chlorinated Acids	Pace Mell	EPA 515	
Purgeable Organic Compounds in Water by GC/MS	EnvTest	EPA-DW 524.2	
EPA 525.2 Semivolatile Organics	Pace Mell	EPA 525.2	
EPA 531.1 Carbamate Pesticides in Drinki	Pace Mell	EPA 531.1	
Heterotropic Plate Count	EnvTest	IDEXX SIMPLATE	
Odor, Threshold Test	EnvTest	SM20 SM 2150B	
Alkalinity, Titration Method	EnvTest	SM22 SM 2320B--2011	
Corrosivity LSI Calculation	EnvTest	SM20 SM 2330B	
Hardness by Calculation	EnvTest	SM20 SM 2340B-97,-11	
pH	EnvTest	SM19 SM 4500 H+ B	
Total Coliform and Escherichia coli by Colilert - Presence/Absence	EnvTest	SMWW SM 9223	
Apparent Color	EnvTest	SM21 SM2120B-2011	
Turbidity	EnvTest	SM21 SM2130B-2011	
Total Dissolved Solids (Dried at 180 °C)	EnvTest	SM22 SM2540C-2011	
Cyanide, Total: Colorimetric Method	EnvTest	SM22 SM4500 CNE 2011	
Cyanide: Distillation	EnvTest		SM22 SM4500 CNC 2011
Nitrite by Colormetric	EnvTest	SM20 SM4500 NO2 B-11	

Lab References:

EnvTest = EnviroTest

Pace Mell = Pace Mellville

METHOD SUMMARY

Client: WSP USA

Job Number: 420-136148-1
SDG Number: Northeast Interstate

Description	Lab Location	Method	Preparation Method

Method References:

EPA = US Environmental Protection Agency

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

IDEXX =

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM19 = "Standard Methods For The Examination Of Water And Wastewater", 19Th Edition, 1995."

SM20 = "Standard Methods For The Examination Of Water And Wastewater", 20th Edition."

SM21 = "Standard Methods For The Examination Of Water And Wastewater", 21st Edition

SM22 = "Standard Methods for the Examination of Water and Wastewater", 22nd Edition

SMWW = "Standard Methods for the Examination of Water and Wastewater"

METHOD / ANALYST SUMMARY

Client: WSP USA

Job Number: 420-136148-1
SDG Number: Northeast Interstate

Method	Analyst	Analyst ID
EPA-DW 524.2	Andersen, Eric C	ECA
EPA 200.7 Rev 4.4	Sirico, Derek	DS
EPA 200.8 Rev.5.4	Sirico, Derek	DS
EPA 245.1 Rev.3.0	Sirico, Derek	DS
SM20 SM 2340B-97,-11	Sirico, Derek	DS
MCAWW 300.0	Luis, Carlos	CL
EPA 300.0 Rev. 2.1	Luis, Carlos	CL
IDEXX SIMPLATE	Lacy, Megan	ML
SM20 SM 2150B	Lacy, Megan	ML
SM22 SM 2320B--2011	Gonda, Nicholas	NG
SM20 SM 2330B	Cusack, Renee	RC
SM19 SM 4500 H+ B	Lacy, Megan	ML
SMWW SM 9223	Lacy, Megan	ML
SM21 SM2120B-2011	Lacy, Megan	ML
SM21 SM2130B-2011	Lacy, Megan	ML
SM22 SM2540C-2011	Mastrobuono, Danielle	DM
SM22 SM4500 CNE 2011	Molchon, Renee	RM
SM20 SM4500 NO2 B-11	Mastrobuono, Danielle	DM

SAMPLE SUMMARY

Client: WSP USA

Job Number: 420-136148-1
SDG Number: Northeast Interstate

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
420-136148-1	OW-3	Drinking Water	05/02/2018 1045	05/02/2018 1200

Client: WSP USA

Job Number: 420-136148-1
Sdg Number: Northeast Interstate

Client Sample ID: **OW-3**

Lab Sample ID: 420-136148-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1045
Date Received: 05/02/2018 1200

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 05/04/2018 2021
Date Prepared: N/A

Analysis Batch: 420-120868

Instrument ID: HP
Lab File ID: V050421.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,1,1,2-Tetrachloroethane	<0.500		0.500
1,1,1-Trichloroethane	<0.500		0.500
1,1,2,2-Tetrachloroethane	<0.500		0.500
1,1,2-Trichloroethane	<0.500		0.500
1,1-Dichloroethane	<0.500		0.500
1,1-Dichloroethene	<0.500		0.500
1,1-Dichloropropene	<0.500		0.500
1,2,3-Trichlorobenzene	<0.500		0.500
1,2,3-Trichloropropane	<0.500		0.500
1,2,4-Trichlorobenzene	<0.500		0.500
1,2,4-Trimethylbenzene	<0.500		0.500
1,2-Dichloroethane	<0.500		0.500
1,2-Dichlorobenzene	<0.500		0.500
1,2-Dichloropropane	<0.500		0.500
1,3-Dichloropropane	<0.500		0.500
1,4-Dichlorobenzene	<0.500		0.500
2,2-Dichloropropane	<0.500		0.500
Benzene	<0.500		0.500
Bromobenzene	<0.500		0.500
Bromochloromethane	<0.500		0.500
Bromomethane	<0.500		0.500
n-Butylbenzene	<0.500		0.500
cis-1,2-Dichloroethene	<0.500		0.500
cis-1,3-Dichloropropene	<0.500		0.500
Carbon tetrachloride	<0.500		0.500
Chlorobenzene	<0.500		0.500
Chloroethane	<0.500		0.500
Chloromethane	<0.500		0.500
Dibromomethane	<0.500		0.500
Ethylbenzene	<0.500		0.500
Dichlorodifluoromethane	<0.500		0.500
Hexachlorobutadiene	<0.500		0.500
Isopropylbenzene	<0.500		0.500
p-Isopropyltoluene	<0.500		0.500
Methylene Chloride	<0.500		0.500
m-Xylene & p-Xylene	<1.00		1.00
Methyl tert-butyl ether	<0.500		0.500
o-Xylene	<0.500		0.500
Tetrachloroethene	<0.500		0.500
Toluene	1.02		0.500
trans-1,2-Dichloroethene	<0.500		0.500
trans-1,3-Dichloropropene	<0.500		0.500
Trichloroethene	<0.500		0.500
tert-Butylbenzene	<0.500		0.500

Client: WSP USA

Job Number: 420-136148-1
Sdg Number: Northeast Interstate

Client Sample ID: **OW-3**

Lab Sample ID: 420-136148-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1045
Date Received: 05/02/2018 1200

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 05/04/2018 2021
Date Prepared: N/A

Analysis Batch: 420-120868

Instrument ID: HP
Lab File ID: V050421.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Trichlorofluoromethane	<0.500		0.500
Vinyl chloride	<0.500		0.500
Xylenes, Total	<1.50		1.50
Styrene	<0.500		0.500
sec-Butylbenzene	<0.500		0.500
1,3,5-Trimethylbenzene	<0.500		0.500
N-Propylbenzene	<0.500		0.500
1,3-Dichlorobenzene	<0.500		0.500
2-Chlorotoluene	<0.500		0.500
4-Chlorotoluene	<0.500		0.500

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	106	71 - 120
Toluene-d8 (Surr)	97	79 - 121
1,2-Dichloroethane-d4 (Surr)	89	70 - 128

Client: WSP USA

Job Number: 420-136148-1
Sdg Number: Northeast Interstate

Client Sample ID: **OW-3**

Lab Sample ID:	420-136148-1	Date Sampled:	05/02/2018 1045
Client Matrix:	Drinking Water	Date Received:	05/02/2018 1200

200.7 Rev 4.4 ICP Metals by 200.7

Method:	200.7 Rev 4.4	Analysis Batch: 420-120901		Instrument ID:	Thermo ICP
Preparation:	200.7/200.8	Prep Batch: 420-120883		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	05/07/2018 1433			Final Weight/Volume:	50 mL
Date Prepared:	05/07/2018 0905				

Analyte	Result (ug/L)	Qualifier	RL
Iron	<60.0		60.0
Manganese	<10.0		10.0
Sodium	9390		200
Zinc	<20.0		20.0

Client: WSP USA

Job Number: 420-136148-1
Sdg Number: Northeast Interstate

Client Sample ID: **OW-3**

Lab Sample ID:	420-136148-1	Date Sampled:	05/02/2018 1045
Client Matrix:	Drinking Water	Date Received:	05/02/2018 1200

200.8 Rev.5.4 ICPMS Metals by 200.8

Method:	200.8 Rev.5.4	Analysis Batch: 420-120915	Instrument ID:	Perkin Elmer ELAN
Preparation:	200.7/200.8	Prep Batch: 420-120883	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50 mL
Date Analyzed:	05/07/2018 1420		Final Weight/Volume:	50 mL
Date Prepared:	05/07/2018 0905			

Analyte	Result (ug/L)	Qualifier	RL
Lead	<1.00		1.00
Arsenic	<1.40		1.40
Beryllium	<0.300		0.300
Cadmium	<1.00		1.00
Chromium	<7.00		7.00
Antimony	<0.400		0.400
Thallium	<0.300		0.300
Barium	40.5		2.00
Selenium	<2.00		2.00

Method:	200.8 Rev.5.4	Analysis Batch: 420-121010	Instrument ID:	Perkin Elmer ELAN
Preparation:	200.8 Rev.5.4	Prep Batch: 420-120938	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50 mL
Date Analyzed:	05/10/2018 1233		Final Weight/Volume:	50 mL
Date Prepared:	05/07/2018 1100			

Analyte	Result (ug/L)	Qualifier	RL
Silver	<1.00		1.00

Method:	200.8 Rev.5.4	Analysis Batch: 420-121010	Instrument ID:	Perkin Elmer ELAN
Preparation:	200.7/200.8	Prep Batch: 420-120883	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50 mL
Date Analyzed:	05/10/2018 1242		Final Weight/Volume:	50 mL
Date Prepared:	05/07/2018 0905			

Analyte	Result (ug/L)	Qualifier	RL
Nickel	1.19		0.500

Client: WSP USA

Job Number: 420-136148-1
Sdg Number: Northeast Interstate

Client Sample ID: **OW-3**

Lab Sample ID:	420-136148-1	Date Sampled:	05/02/2018 1045
Client Matrix:	Drinking Water	Date Received:	05/02/2018 1200

245.1 Rev.3.0 Mercury in Water by CVAA

Method:	245.1 Rev.3.0	Analysis Batch: 420-121151	Instrument ID:	Perkin Elmer FIMS
Preparation:	245.1	Prep Batch: 420-121079	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/16/2018 1224		Final Weight/Volume:	25 mL
Date Prepared:	05/14/2018 1000			

Analyte	Result (ug/L)	Qualifier	RL
Mercury	<0.200		0.200

SM 2340B-97,-11 Hardness by Calculation

Method:	SM 2340B-97,-11	Analysis Batch: 420-120921	Instrument ID:	None
Preparation:	N/A		Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	
Date Analyzed:	05/07/2018 1433		Final Weight/Volume:	
Date Prepared:	N/A			

Analyte	Result (mg/L)	Qualifier	RL
Calcium hardness as calcium carbonate	85.9		1.25

Client: WSP USA

Job Number: 420-136148-1
Sdg Number: Northeast Interstate

Biology

Client Sample ID: **OW-3**

Lab Sample ID: 420-136148-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1045
Date Received: 05/02/2018 1200

Analyte	Result	Qual	Units	Dil	Method
Coliform, Total	Absent		CFU/100mL	1.0	SM 9223
Anly Batch:		Date Analyzed	05/02/2018 1451		
Escherichia coli	Absent		CFU/100mL	1.0	SM 9223
Anly Batch:		Date Analyzed	05/02/2018 1451		

Analyte	Result	Qual	Units	RL	Dil	Method
Heterotrophic Plate Count	2.00		CFU/mL	2.00	1.0	SIMPLATE
Anly Batch:		Date Analyzed	05/02/2018 1505			

General Chemistry

General Chemistry

Client Sample ID: **OW-3**

Lab Sample ID: 420-136148-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1045
Date Received: 05/02/2018 1200

Analyte	Result	Qual	Units	RL	Dil	Method
Nitrate as N	1.16		mg/L	0.250	1.0	300.0

Anly Batch: Date Analyzed 05/02/2018 2158

Analyte	Result	Qual	Units	Dil	Method
Langelier Index	-0.160		NONE	1.0	SM 2330B

Anly Batch: Date Analyzed 05/18/2018 1117

Client: WSP USA

Job Number: 420-136148-1
Sdg Number: Northeast Interstate

General Chemistry

Client Sample ID: **OW-3**

Lab Sample ID: 420-136148-1
Client Matrix: Drinking Water

Date Sampled: 05/02/2018 1045
Date Received: 05/02/2018 1200

Analyte		Result	Qual	Units	RL	Dil	Method
Alkalinity		117		mg/L	5.00	1.0	SM 2320B--2011
	Anly Batch:		Date Analyzed	05/14/2018 1133			
Total Dissolved Solids		210		mg/L	5.00	1.0	SM2540C-2011
	Anly Batch:		Date Analyzed	05/08/2018 1149			
Sulfate		12.3		mg/L	5.00	1.0	300.0 Rev. 2.1
	Anly Batch:		Date Analyzed	05/02/2018 2158			
Fluoride		<0.500		mg/L	0.500	1.0	300.0 Rev. 2.1
	Anly Batch:		Date Analyzed	05/02/2018 2158			
Chloride		19.7		mg/L	7.50	5.0	300.0 Rev. 2.1
	Anly Batch:		Date Analyzed	05/04/2018 1918			
Cyanide, Total		<0.00500		mg/L	0.00500	1.0	SM4500 CNE 201
	Anly Batch:		Date Analyzed	05/08/2018 1615			
	Prep Batch:		Date Prepared:	05/07/2018 0915			
Apparent Color		2.00		Pt-Co	2.00	1.0	SM2120B-2011
	Anly Batch:		Date Analyzed	05/04/2018 0903			
pH@color measurement		7.63		SU	2.00	1.0	SM2120B-2011
	Anly Batch:		Date Analyzed	05/04/2018 0903			
Turbidity		0.745		NTU	0.100	1.0	SM2130B-2011
	Anly Batch:		Date Analyzed	05/03/2018 1522			
Odor		1.00		T.O.N.	1.00	1.0	SM 2150B
	Anly Batch:		Date Analyzed	05/03/2018 1750			
Temp @ Odor Measurement		60.0		Degrees C	5.00	1.0	SM 2150B
	Anly Batch:		Date Analyzed	05/03/2018 1750			
pH		7.63	H	SU	0.200	1.0	SM 4500 H+ B
	Anly Batch:		Date Analyzed	05/02/2018 1859			
Temp @ pH Measurement		21.9		Degrees C	5.00	1.0	SM 4500 H+ B
	Anly Batch:		Date Analyzed	05/02/2018 1859			
Nitrite as N		<0.0100		mg/L	0.0100	1.0	SM4500 NO2 B-11
	Anly Batch:		Date Analyzed	05/03/2018 1855			

DATA REPORTING QUALIFIERS

Client: WSP USA

Job Number:
Sdg Number: Northeast Interstate

Lab Section	Qualifier	Description
General Chemistry		
	H	Sample was prepped or analyzed beyond the specified holding time

Certification Information

Client: WSP USA

Job Number:

Sdg Number: Northeast Interstate

The following analytes are Not Part of the ELAP scope of accreditation:

Sulfur, Tungsten, Bicarbonate Alkalinity, 7 Day BOD 5210C, 28 Day BOD, Soluble BOD, Carbon Dioxide, Carbonate Alkalinity, CBOD Soluble, Chlorine, Cyanide (WAD), Ferrous Iron, Ferric Iron, Total Nitrogen, Total Organic Nitrogen, Dissolved Oxygen, pH, Solids (Fixed), Solids (Percent), Solids (Percent Moisture), Solids (Percent Volatile), Solids (Volatile Suspended), Temperature, TKN (Soluble), COD (Soluble), Total Inorganic Carbon, 2-Aminopyridine, 3-Picoline, 1-Methyl-2-pyrrilidinone, Aziridine, Dimethyl sulfoxide, 1-Chlorohexane, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, p-Diethylbenzene, Iron Bacteria, Salmonella, & Sulfur Reducing Bacteria.

The following analytes are Not Part of ELAP Potable Water scope of accreditation:

Phosphorus (365.3), Nitrate-Nitrite (10-107-4-1C, 353.2), m-Xylene & p-Xylene (502.2, 524), o-Xylene (502.2, 524), Fecal Coliform (9222D), Sulfide (SM4500SD), Acenaphthene (525.2), Acenaphthylene (525.2), Fluoranthene (525.2), Fluorene (525.2), Phenanthrene (525.2), Anthracene (525.2), Pyrene (525.2), Benzo[a]anthracene (525.2), Benzo[b]fluoranthene (525.2), Benzo[g,h,i]perylene (525.2), Benzo[k]fluoranthene (525.2), Indeno[1,2,3-cd]pyrene (525.2), & Dibenz(a,h)anthracene (525.2).

The following analytes are Not Part of ELAP Solid and Hazardous Waste scope of accreditation:

Ammonia (SM 4500NH3G), TKN (351.2), Phosphorus (365.3), 1,2-Dichloro-1,1,2-trifluoroethane (8260), & Chlorodifluoromethane (8260).

The following analytes are Not Part of ELAP Non Potable Water scope of accreditation:

Dissolved Organic Carbon (5310C), Mecoprop (8151A), & MCPA (8151A).

Definitions and Glossary

Client: WSP USA

Job Number:

Sdg Number: Northeast Interstate

Abbreviation	These commonly used abbreviations may or may not be present in this report.
%R	Percent Recovery
DL, RA, RE	Indicates a Dilution, Reanalysis or Reextraction.
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit - an estimate of the minimum amount of a substance that an analytical process can reliably detect. A MDL is analyte- and matrix-specific and may be laboratory-dependent.
ND	Not detected at the reporting limit (or MDL if shown).
QC	Quality Control
RL	Reporting Limit - the minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence.
RPD	Relative Percent Difference - a measure of the relative difference between two points.

EnviroTest Laboratories, Inc.

CHAIN OF CUSTODY

136148

REPORT# (Lab Use Only)

Lab Name: EnviroTest Laboratories
Address & Phone: 315 Fullerton Avenue, Newburgh, New York 12550 845-562-0890

PROJECT REFERENCE: Northeast Interstate	PROJECT NO.	PROJECT LOCATION: NY
ENVIROTEST PROJECT MANAGER: Debra Bayer	P.O. NUMBER	TOWN: Southeast
CLIENT (SITE) PM: Stacy Stieber	CLIENT PHONE: 475-882-1723	CLIENT FAX
CLIENT NAME: WSP USA	stacy.stieber@wsp.com	
CLIENT ADDRESS: 4 Research Drive, Suite 301, Shelton, CT 06484		
COMPANY CONTRACTING THIS WORK (if applicable):		

PAGE 1 of 1

TURNAROUND TIME: NORMAL ✓ / QUICK ___ / VERBAL ___

#OF COOLERS: 1

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	D (Drinking Water) or W (Waste Water) Indicate	SOLID OR SEMISOLID	OTHER Specify	MPA/C/G Rig	40ml Vials HCl	40ml Sodium Thio.	250ml Amber Sodium Thio.	Liter Amber HCl/Na2SO3	250ml Plastic Nitric Acid	60ml Mon/Sod.Thio(liquid)	Liter Plastic	250ml Plastic Sodium Hyd.	125ml Plastic Sterile/Thio.	250ml Amber Unpres.	250ml Plastic Unpres (no air)	REMARKS
5/2/18	1045	OW-3						1	3	4	1	2	1	1	4	1	2	1	2	Table 8B (Sb,As,Ba,Be,Cd,Cr,Cn,Hg,Ni
																				Se,Tl,F)
																				Table 8C (NO3,NO2)
																				Table 8D (Cl,Fe,Mn,Ag,Na,SO4,Zn,Odor,Color)
																				524.2 (POC,MTBE,Vinyl Chloride)
																				SOCs (504,505,515,525,531)
								2-Liter Amber Unpres.												Additional Tests (Total coliform
																				thru Zinc)
																				~~MPA/Crypto/Giardia~~ 5/2/18 03

RELINQUISHED BY: (SIGNATURE)	COMPANY: WSP	DATE: 5/2/18	TIME: 12:00	RECEIVED BY: (SIGNATURE)	COMPANY	DATE	TIME
SAMPLED BY: (SIGNATURE)	COMPANY: WSP	DATE: 5/2/18	TIME: 1045	RECEIVED BY: (SIGNATURE)	COMPANY	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	COMPANY	DATE	TIME	RECEIVED BY: (SIGNATURE)	COMPANY	DATE	TIME

SUBCONTACT: PACE-SOC; ASI-MPA/C/G

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES NO	Cooler Temp.	LABORATORY REMARKS: ICE ✓ pH ___ CL2 ___ Received by ___
	05/02/18	12:00		2.7	

420-136148-A-1

OW-3
Location Water Sample Coolers
Date Sampled 5/2/2018

420-1190770

05/25/2018

LOGIN SAMPLE RECEIPT CHECK LIST

Client: WSP USA

Job Number: 420-136148-1
SDG Number: Northeast Interstate

Login Number: **136148**

Question	T/F/NA	Comment
Samples were collected by ETL employee as per SOP-SAM-1	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is recorded.	True	2.7 C
Cooler Temp. is within method specified range.(0-6 C PW, 0-8 C NPW, or BAC <10 C	True	
If false, was sample received on ice within 6 hours of collection.	NA	
Based on above criteria cooler temperature is acceptable.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

May 17, 2018

Renee Cusack
EnviroTest Laboratories, INC
315 Fullerton Avenue
Newburgh, NY 12550

RE: Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

Dear Renee Cusack:
Enclosed are the analytical results for sample(s) received by the laboratory on May 03, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

Samples were subcontracted to Microbac Laboratories, 61 Louisa Viens, Dayville, CT 06241 for 525 analysis.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paige Doherty

Paige Doherty
paige.doherty@pacelabs.com
(631)694-3040
Project Manager

Enclosures

cc: Debra Bayer, EnviroTest Laboratories, INC
Ron Bayer, EnviroTest Laboratories, INC
Paige Doherty, Pace Analytical Melville
Laura Marciano, EnviroTest Laboratories, INC

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

cc: Janine Rader, EnviroTest Laboratories, INC
Meredith Ruthven, EnviroTest Laboratories, INC

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Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

CERTIFICATIONS

Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747
New York Certification #: 10478 Primary Accrediting Body
New Jersey Certification #: NY158
Pennsylvania Certification #: 68-00350
Connecticut Certification #: PH-0435
Maryland Certification #: 208
Rhode Island Certification #: LAO00340
Massachusetts Certification #: M-NY026
New Hampshire Certification #: 2987

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575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

ANALYTICAL RESULTS

Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

Sample: NW-4 **Lab ID: 7050323001** Collected: 05/02/18 10:00 Received: 05/03/18 10:10 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504.1 GCS EDB and DBCP	Analytical Method: EPA 504.1 Preparation Method: EPA 504.1							
1,2-Dibromo-3-chloropropane	**<0.010**	ug/L	0.010	1	05/08/18 15:16	05/09/18 01:18	96-12-8	
1,2-Dibromoethane (EDB)	**<0.010**	ug/L	0.010	1	05/08/18 15:16	05/09/18 01:18	106-93-4	
505 GCS Pesticides/PCBs	Analytical Method: EPA 505 Preparation Method: EPA 505							
Alachlor	**<0.20**	ug/L	0.20	1	05/07/18 17:01	05/08/18 01:53	15972-60-8	
Aldrin	**<0.025**	ug/L	0.025	1	05/07/18 17:01	05/08/18 01:53	309-00-2	
gamma-BHC (Lindane)	**<0.020**	ug/L	0.020	1	05/07/18 17:01	05/08/18 01:53	58-89-9	
Chlordane (Technical)	**<0.20**	ug/L	0.20	1	05/07/18 17:01	05/08/18 01:53	57-74-9	
Dieldrin	**<0.050**	ug/L	0.050	1	05/07/18 17:01	05/08/18 01:53	60-57-1	
Endrin	**<0.010**	ug/L	0.010	1	05/07/18 17:01	05/08/18 01:53	72-20-8	
Heptachlor	**<0.025**	ug/L	0.025	1	05/07/18 17:01	05/08/18 01:53	76-44-8	
Heptachlor epoxide	**<0.020**	ug/L	0.020	1	05/07/18 17:01	05/08/18 01:53	1024-57-3	
Hexachlorobenzene	**<0.10**	ug/L	0.10	1	05/07/18 17:01	05/08/18 01:53	118-74-1	
Hexachlorocyclopentadiene	**<0.10**	ug/L	0.10	1	05/07/18 17:01	05/08/18 01:53	77-47-4	
Methoxychlor	**<0.10**	ug/L	0.10	1	05/07/18 17:01	05/08/18 01:53	72-43-5	
PCB Screen	**<0.40**	ug/L	0.40	1	05/07/18 17:01	05/08/18 01:53		
Toxaphene	**<1.0**	ug/L	1.0	1	05/07/18 17:01	05/08/18 01:53	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	103	%	30-150	1	05/07/18 17:01	05/08/18 01:53	877-09-8	
Decachlorobiphenyl (S)	89	%	30-150	1	05/07/18 17:01	05/08/18 01:53	2051-24-3	
515.3 Chlorinated Herbicides	Analytical Method: EPA 515.3 Preparation Method: EPA 515.3							
2,4-D	**<0.10**	ug/L	0.10	1	05/03/18 15:07	05/09/18 12:13	94-75-7	
Dalapon	**<0.70**	ug/L	0.70	1	05/03/18 15:07	05/09/18 12:13	75-99-0	
Dicamba	**<1.0**	ug/L	1.0	1	05/03/18 15:07	05/09/18 12:13	1918-00-9	
Dinoseb	**<0.20**	ug/L	0.20	1	05/03/18 15:07	05/09/18 12:13	88-85-7	
Pentachlorophenol	**<0.040**	ug/L	0.040	1	05/03/18 15:07	05/09/18 12:13	87-86-5	
Picloram	**<0.10**	ug/L	0.10	1	05/03/18 15:07	05/09/18 12:13	1918-02-1	
2,4,5-TP (Silvex)	**<0.13**	ug/L	0.13	1	05/03/18 15:07	05/09/18 12:13	93-72-1	
Surrogates								
2,4-DCAA (S)	101	%	70-130	1	05/03/18 15:07	05/09/18 12:13	19719-28-9	
531.1 HPLC Carbamates	Analytical Method: EPA 531.1							
Aldicarb	**<0.50**	ug/L	0.50	1		05/05/18 14:38	116-06-3	
Aldicarb sulfone	**<0.80**	ug/L	0.80	1		05/05/18 14:38	1646-88-4	
Aldicarb sulfoxide	**<0.50**	ug/L	0.50	1		05/05/18 14:38	1646-87-3	
Carbofuran	**<0.90**	ug/L	0.90	1		05/05/18 14:38	1563-66-2	
3-Hydroxycarbofuran	**<1.0**	ug/L	1.0	1		05/05/18 14:38	16655-82-6	
Methomyl	**<1.0**	ug/L	1.0	1		05/05/18 14:38	16752-77-5	
Oxamyl	**<1.0**	ug/L	1.0	1		05/05/18 14:38	23135-22-0	
Carbaryl	**<1.0**	ug/L	1.0	1		05/05/18 14:38	63-25-2	

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575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

QUALITY CONTROL DATA

Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

QC Batch: 65557 | Analysis Method: EPA 531.1
QC Batch Method: EPA 531.1 | Analysis Description: 531.1 HPLC Carbamate
Associated Lab Samples: 7050323001

METHOD BLANK: 300470 | Matrix: Water
Associated Lab Samples: 7050323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
3-Hydroxycarbofuran	ug/L	<1.0	1.0	05/04/18 20:07	
Aldicarb	ug/L	<0.50	0.50	05/04/18 20:07	
Aldicarb sulfone	ug/L	<0.80	0.80	05/04/18 20:07	
Aldicarb sulfoxide	ug/L	<0.50	0.50	05/04/18 20:07	
Carbaryl	ug/L	<1.0	1.0	05/04/18 20:07	
Carbofuran	ug/L	<0.90	0.90	05/04/18 20:07	
Methomyl	ug/L	<1.0	1.0	05/04/18 20:07	
Oxamyl	ug/L	<1.0	1.0	05/04/18 20:07	

LABORATORY CONTROL SAMPLE: 300471

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
3-Hydroxycarbofuran	ug/L	3.8	3.7	98	80-120	
Aldicarb	ug/L	3.8	4.1	108	80-120	
Aldicarb sulfone	ug/L	3.8	3.6	97	80-120	
Aldicarb sulfoxide	ug/L	3.8	3.8	100	80-120	
Carbaryl	ug/L	3.8	3.7	98	80-120	
Carbofuran	ug/L	3.8	4.0	108	80-120	
Methomyl	ug/L	3.8	3.5	94	80-120	
Oxamyl	ug/L	3.8	3.5	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 300565 300566

Parameter	Units	7049781002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
3-Hydroxycarbofuran	ug/L	<1.0	3.8	3.8	3.3	3.9	88	103	65-135	16	
Aldicarb	ug/L	<0.50	3.8	3.8	3.6	4.1	95	109	65-135	13	
Aldicarb sulfone	ug/L	<0.80	3.8	3.8	3.3	4.0	88	106	65-135	18	
Aldicarb sulfoxide	ug/L	<0.50	3.8	3.8	3.4	4.1	90	109	65-135	19	
Carbaryl	ug/L	<1.0	3.8	3.8	3.3	3.8	85	100	65-135	16	
Carbofuran	ug/L	<0.90	3.8	3.8	4.0	4.1	107	111	65-135	3	
Methomyl	ug/L	<1.0	3.8	3.8	3.4	4.0	90	106	65-135	17	
Oxamyl	ug/L	<1.0	3.8	3.8	3.4	4.0	89	107	65-135	18	

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REPORT OF LABORATORY ANALYSIS

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Melville, NY 11747
(631)694-3040

QUALITY CONTROL DATA

Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

QC Batch: 66490 | Analysis Method: EPA 504.1
QC Batch Method: EPA 504.1 | Analysis Description: 504 EDB DBCP
Associated Lab Samples: 7050323001

METHOD BLANK: 304814 | Matrix: Water
Associated Lab Samples: 7050323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	<0.010	0.010	05/08/18 17:10	
1,2-Dibromoethane (EDB)	ug/L	<0.010	0.010	05/08/18 17:10	

LABORATORY CONTROL SAMPLE: 304815

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	.071	0.069	97	70-130	
1,2-Dibromoethane (EDB)	ug/L	.071	0.064	89	70-130	

LABORATORY CONTROL SAMPLE: 304816

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	.071	0.067	94	70-130	
1,2-Dibromoethane (EDB)	ug/L	.071	0.061	86	70-130	

LABORATORY CONTROL SAMPLE: 304828

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	.01	<0.010	97	70-130	
1,2-Dibromoethane (EDB)	ug/L	.01	<0.010	77	70-130	

MATRIX SPIKE SAMPLE: 304823

Parameter	Units	7050052001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	<0.010	.071	0.068	96	65-135	
1,2-Dibromoethane (EDB)	ug/L	<0.010	.071	0.060	76	65-135	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

QC Batch: 66305 | Analysis Method: EPA 505
QC Batch Method: EPA 505 | Analysis Description: 505 GCS Pesticides
Associated Lab Samples: 7050323001

METHOD BLANK: 304159 | Matrix: Water
Associated Lab Samples: 7050323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alachlor	ug/L	<0.20	0.20	05/07/18 19:37	
Aldrin	ug/L	<0.025	0.025	05/07/18 19:37	
Chlordane (Technical)	ug/L	<0.20	0.20	05/07/18 19:37	
Dieldrin	ug/L	<0.050	0.050	05/07/18 19:37	
Endrin	ug/L	<0.010	0.010	05/07/18 19:37	
gamma-BHC (Lindane)	ug/L	<0.020	0.020	05/07/18 19:37	
Heptachlor	ug/L	<0.025	0.025	05/07/18 19:37	
Heptachlor epoxide	ug/L	<0.020	0.020	05/07/18 19:37	
Hexachlorobenzene	ug/L	<0.10	0.10	05/07/18 19:37	
Hexachlorocyclopentadiene	ug/L	<0.10	0.10	05/07/18 19:37	
Methoxychlor	ug/L	<0.10	0.10	05/07/18 19:37	
PCB Screen	ug/L	<0.40	0.40	05/07/18 19:37	
Toxaphene	ug/L	<1.0	1.0	05/07/18 19:37	
Decachlorobiphenyl (S)	%	100	30-150	05/07/18 19:37	
Tetrachloro-m-xylene (S)	%	97	30-150	05/07/18 19:37	

LABORATORY CONTROL SAMPLE: 304160

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alachlor	ug/L	.48	0.44	93	70-130	
Aldrin	ug/L	.048	0.045	94	70-130	
Chlordane (Technical)	ug/L		<0.20			
Dieldrin	ug/L	.048	<0.050	89	70-130	
Endrin	ug/L	.048	0.039	83	70-130	
gamma-BHC (Lindane)	ug/L	.048	0.062	130	70-130	
Heptachlor	ug/L	.048	0.044	93	70-130	
Heptachlor epoxide	ug/L	.048	0.042	89	70-130	
Hexachlorobenzene	ug/L	.048	<0.10	95	70-130	
Hexachlorocyclopentadiene	ug/L	.048	<0.10	80	70-130	
Methoxychlor	ug/L	.24	0.19	82	70-130	
PCB Screen	ug/L		<0.40			
Toxaphene	ug/L		<1.0			
Decachlorobiphenyl (S)	%			96	30-150	
Tetrachloro-m-xylene (S)	%			104	30-150	

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QUALITY CONTROL DATA

Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

LABORATORY CONTROL SAMPLE: 304363

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alachlor	ug/L		<0.20			
Aldrin	ug/L		<0.025			
Chlordane (Technical)	ug/L		<0.20			
Dieldrin	ug/L		<0.050			
Endrin	ug/L		<0.010			
gamma-BHC (Lindane)	ug/L		<0.020			
Heptachlor	ug/L		<0.025			
Heptachlor epoxide	ug/L		<0.020			
Hexachlorobenzene	ug/L		<0.10			
Hexachlorocyclopentadiene	ug/L		<0.10			
Methoxychlor	ug/L		<0.10			
PCB Screen	ug/L		<0.40			
Toxaphene	ug/L	18.3	18.6	102	70-130	
Decachlorobiphenyl (S)	%			106	30-150	
Tetrachloro-m-xylene (S)	%			103	30-150	

MATRIX SPIKE SAMPLE: 304214

Parameter	Units	7050298001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Alachlor	ug/L	<0.20		<0.20			
Aldrin	ug/L	<0.025		<0.025			
Chlordane (Technical)	ug/L	<0.20		<0.20			
Dieldrin	ug/L	<0.050		<0.050			
Endrin	ug/L	<0.010		<0.010			
gamma-BHC (Lindane)	ug/L	<0.020		<0.020			
Heptachlor	ug/L	<0.025		<0.025			
Heptachlor epoxide	ug/L	<0.020		<0.020			
Hexachlorobenzene	ug/L	<0.10		<0.10			
Hexachlorocyclopentadiene	ug/L	<0.10		<0.10			
Methoxychlor	ug/L	<0.10		0.43			
PCB Screen	ug/L	<0.40		<0.40			
Toxaphene	ug/L	<1.0	18.3	13.4	73	65-135	
Decachlorobiphenyl (S)	%				125	30-150	
Tetrachloro-m-xylene (S)	%				99	30-150	

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QUALITY CONTROL DATA

Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

QC Batch: 66014
QC Batch Method: EPA 515.3
Analysis Method: EPA 515.3
Analysis Description: 5153 GCS Herbicides
Associated Lab Samples: 7050323001

METHOD BLANK: 302594
Matrix: Water
Associated Lab Samples: 7050323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,5-TP (Silvex)	ug/L	<0.13	0.13	05/09/18 03:15	
2,4-D	ug/L	<0.10	0.10	05/09/18 03:15	
Dalapon	ug/L	<0.70	0.70	05/09/18 03:15	
Dicamba	ug/L	<1.0	1.0	05/09/18 03:15	
Dinoseb	ug/L	<0.20	0.20	05/09/18 03:15	
Pentachlorophenol	ug/L	<0.040	0.040	05/09/18 03:15	
Picloram	ug/L	<0.10	0.10	05/09/18 03:15	
2,4-DCAA (S)	%	113	70-130	05/09/18 03:15	

LABORATORY CONTROL SAMPLE: 302595

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-TP (Silvex)	ug/L	.2	0.23	113	70-130	
2,4-D	ug/L	.6	0.56	93	70-130	
Dalapon	ug/L	2	2.2	110	70-130	
Dicamba	ug/L	.2	<1.0	112	70-130	
Dinoseb	ug/L	.4	0.47	118	70-130	
Pentachlorophenol	ug/L	.2	0.22	111	70-130	
Picloram	ug/L	.2	0.20	100	70-130	
2,4-DCAA (S)	%			112	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 302596 302597

Parameter	Units	7049985001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
2,4,5-TP (Silvex)	ug/L	<0.13	.2	.2	0.20	0.20	99	98	65-135	1	
2,4-D	ug/L	<0.10	.6	.6	0.54	0.56	89	93	65-135	4	
Dalapon	ug/L	<0.70	2	2	2.0	2.1	99	107	65-135	7	
Dicamba	ug/L	<1.0	.2	.2	<1.0	<1.0	96	92	65-135		
Dinoseb	ug/L	<0.20	.4	.4	0.42	0.43	104	107	65-135	4	
Pentachlorophenol	ug/L	<0.040	.2	.2	0.18	0.18	90	91	65-135	1	
Picloram	ug/L	<0.10	.2	.2	0.18	0.17	73	65	65-135	9	
2,4-DCAA (S)	%						96	93	70-130		

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REPORT OF LABORATORY ANALYSIS

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575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

QUALIFIERS

Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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(631)694-3040

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 420-136151-1 - SOC 5/2
Pace Project No.: 7050323

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
7050323001	**NW-4**	EPA 504.1	66490	EPA 504.1	66567
7050323001	**NW-4**	EPA 505	66305	EPA 505	66428
7050323001	**NW-4**	EPA 515.3	66014	EPA 515.3	66197
7050323001	**NW-4**	EPA 531.1	65557		

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WO#: 7050323

7050323

Chain of Custody Record

EnviroTest Laboratories Inc.

Client Contact: Shipping/Receiving	Sampler:	Lab PM: Bayer, Debra	Carrier Tracking No(s):
	Phone:	E-Mail: dbayer@envirotestlaboratories.com	

COC No: 420-9791.1

Page: Page 1 of 1

Company: Pace Analytical Mellville

STL Job #: 420-136151-1

Address: 575 Broadhollow Road, ,

City: Melville

State, Zip: NY, 11747

Phone:

Email:

Project Name: WSP USA

Site:

Due Date Requested: 5/14/2018

TAT Requested (days): Std TAT 5/2/18 DS

PO #:

WO #:

Project #: 42002340

SSOW#:

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Other:

Sample Identification Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT/ 515 Chlorinated Acids	SUBCONTRACT/ 504 EPA 504.1 EDB/DBCP	SUBCONTRACT/ 531.1 Carbamate Pesticides in DW	SUBCONTRACT/ 525.2 Semivolatile Organics	~~SUBCONTRACT/ 900 GA/GB/RA 226/RA 228~~	~~SUBCONTRACT/ Total Uranium~~	~~SUBCONTRACT/ Radon~~	SUBCONTRACT/ 505	~~SUBCONTRACT/ 547~~	~~SUBCONTRACT/ 548~~	~~SUBCONTRACT/ 549~~	~~SUBCONTRACT/ Dioxin~~		Total Number of containers	Special Instructions/Note:
			Preservation Code:																		
NW-4 (420-136151-1)	5/2/18	10:00	DW	Water			X	X	X	X	X	X	X	X	X	X	X	X		8	001
				5/2/18 DS																	

NY spikes 5/2/18 DS

5/2/18 DS

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: A Elmendorf	Date/Time: 5-2-18 1500	Company: ETL	Received by: Hanelli Williams	Date/Time: 5/3/18 10:10	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Pace Analytical®
Long Island Laboratory

Sample Condition Upon Receipt

Client Name: Envirotest

Projec WO#:7050323
PM: PD Due Date: 05/17/18
CLIENT: EnviroTest

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other

Tracking #: 772137346888

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals intact: ☐ Yes ☐ No

Temperature Blank Present: ☑ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ Ziploc ☐ None ☐ Other

Type of Ice: (Wet) Blue None

Thermometer Used: TH091 Correction Factor: 0.0

☐ Samples on ice, cooling process has begun

Cooler Temperature (°C): 4.6 Cooler Temperature Corrected (°C): 4.6 Date/Time 5035A kits placed in freezer _____

Temp should be above freezing to 6.0°C

USDA Regulated Soil (☐ N/A, water sample) Date and Initials of person examining contents: 5/3/18 (W)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check map)? ☐ YES ☐ NO

Did samples orignate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-LI-C-010) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present:	☑ Yes	☐ No		1.
Chain of Custody Filled Out:	☑ Yes	☐ No		2.
Chain of Custody Relinquished:	☑ Yes	☐ No		3.
Sampler Name & Signature on COC:	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time:	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72hr):	☐ Yes	☑ No		6.
Rush Turn Around Time Requested:	☐ Yes	☑ No		7.
Sufficient Volume: (Triple volume provided for MS/MSD)	☑ Yes	☐ No		8.
Correct Containers Used:	☑ Yes	☐ No		9.
-Pace Containers Used:	☑ Yes	☐ No		
Containers Intact:	☑ Yes	☐ No		10.
Filtered volume received for Dissolved tests	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix SL WT OIL	☑ Yes	☐ No		12.
All containers needing preservation have been checked. pH paper Lot #	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl, NaOH>9 Sulfide, NAOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water). Per Method, VOA pH is checked after analysis	☐ Yes	☐ No	☑ N/A	Initial when completed: / Lot # of added preservative: / Date/Time preservative added:
Samples checked for dechlorination: KI starch test strips Lot # Residual chlorine strips Lot #	☐ Yes	☐ No	☑ N/A	14. Positive for Res. Chlorine? Y N
Headspace in VOA Vials (>6mm):	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Present:	☐ Yes	☐ No	☑ N/A	16.
Trip Blank Custody Seals Present	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if applicable): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

* PM (Project Manager) review is documented electronically in LIMS.

MICROBAC®

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8E0769

Pace Analytical - Melville

Paige Doherty
575 Broad Hollow Road
Melville, NY 11747

Project Name: 7050323

Project / PO Number: 7050323PD
Received: 05/08/2018
Reported: 05/15/2018

Analytical Testing Parameters

Client Sample ID:	NW-4		
Sample Matrix:	Drinking Water	**Collected By:**	Customer
Lab Sample ID:	D8E0769-01	**Collection Date:**	05/02/2018 10:00

Semi-Volatile Organic Compounds - GC/MS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 525.2, Rv 2.0			**Method Notes:** A26					
Atrazine	<0.095	3.00 MCL	0.095	ug/L		05/11/18 1030	05/14/18 2119	CDT
Benzo[a]pyrene	<0.019	0.200 MCL	0.019	ug/L		05/11/18 1030	05/14/18 2119	CDT
Butachlor	<0.095		0.095	ug/L		05/11/18 1030	05/14/18 2119	CDT
bis(2-Ethylhexyl)adipate	<0.571	400 MCL	0.571	ug/L		05/11/18 1030	05/14/18 2119	CDT
bis(2-Ethylhexyl)phthalate	<0.571	6.00 MCL	0.571	ug/L		05/11/18 1030	05/14/18 2119	CDT
Metolachlor	<0.095		0.095	ug/L		05/11/18 1030	05/14/18 2119	CDT
Metribuzin	<0.095		0.095	ug/L		05/11/18 1030	05/14/18 2119	CDT
Propachlor (Ramrod)	<0.095		0.095	ug/L		05/11/18 1030	05/14/18 2119	CDT
Simazine	<0.067	4.00 MCL	0.067	ug/L		05/11/18 1030	05/14/18 2119	CDT
Surrogate: 1,3-Dimethyl-2-nitrobenzene	102	Limit: 70-130		% Rec		05/11/18 1030	05/14/18 2119	CDT
Surrogate: Pyrene-d10	96.5	Limit: 70-130		% Rec		05/11/18 1030	05/14/18 2119	CDT
Surrogate: Triphenyl phosphate	114	Limit: 70-130		% Rec		05/11/18 1030	05/14/18 2119	CDT

*Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.*

Definitions

A26: Sample was not preserved to the pH required by the method.
MCL: US EPA Maximum Contaminant Level
RL: Reporting Limit

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville
11549 New York State Department of Health

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:

M Montgomery

Melisa L. Montgomery
QA Officer
Reported: 05/15/2018 17:03

Chain of Custody

D8E0769

Pace Analytical - Melville

Pace Analytical®
www.pacelabs.com

Workorder: 7050323 **Workorder Name:** 420-136151-1 - SOC 5/2 **Results Requested By:** 5/17/2018 SLB

Report / Invoice To

Paige Doherty
Pace Analytical Melville
575 Broad Hollow Road
Melville, NY 11747
Phone (631)694-3040
Email: paige.doherty@pacelabs.com

Subcontract To

Microbac Laboratories
61 Louisa Viens
Dayville, CT 06241

P.O. 7050323PD

State of Sample Origin: NY

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: NA2S2O3						Requested Analysis: Subbed - 525												LAB USE ONLY
1	NW-4	5/2/2018 10:00	7050323001	Drinking Water	2						X												
2																							
3																							
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	5/7/18 1840		
2				
3			[illegible]	5/8/18 1130

Comments

Cooler Temperature on Receipt 2.0 °C **Custody Seal** Y or **Received on Ice** Y or **Samples Intact** Y or

Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

May 17, 2018

Renee Cusack
EnviroTest Laboratories, INC
315 Fullerton Avenue
Newburgh, NY 12550

RE: Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

Dear Renee Cusack:
Enclosed are the analytical results for sample(s) received by the laboratory on May 03, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

Samples were subcontracted to Microbac Laboratories, 61 Louisa Viens, Dayville, CT 06241 for 525 analysis.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paige Doherty

Paige Doherty
paige.doherty@pacelabs.com
(631)694-3040
Project Manager

Enclosures

cc: Debra Bayer, EnviroTest Laboratories, INC
Ron Bayer, EnviroTest Laboratories, INC
Paige Doherty, Pace Analytical Melville
Laura Marciano, EnviroTest Laboratories, INC

REPORT OF LABORATORY ANALYSIS

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cc: Janine Rader, EnviroTest Laboratories, INC
Meredith Ruthven, EnviroTest Laboratories, INC

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CERTIFICATIONS

Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747
New York Certification #: 10478 Primary Accrediting Body
New Jersey Certification #: NY158
Pennsylvania Certification #: 68-00350
Connecticut Certification #: PH-0435
Maryland Certification #: 208
Rhode Island Certification #: LAO00340
Massachusetts Certification #: M-NY026
New Hampshire Certification #: 2987

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ANALYTICAL RESULTS

Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

Sample: OW-3 **Lab ID: 7050321001** Collected: 05/02/18 10:45 Received: 05/03/18 10:10 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504.1 GCS EDB and DBCP	Analytical Method: EPA 504.1 Preparation Method: EPA 504.1							
1,2-Dibromo-3-chloropropane	**<0.010**	ug/L	0.010	1	05/08/18 15:16	05/09/18 00:54	96-12-8	
1,2-Dibromoethane (EDB)	**<0.010**	ug/L	0.010	1	05/08/18 15:16	05/09/18 00:54	106-93-4	
505 GCS Pesticides/PCBs	Analytical Method: EPA 505 Preparation Method: EPA 505							
Alachlor	**<0.20**	ug/L	0.20	1	05/07/18 17:01	05/08/18 01:31	15972-60-8	
Aldrin	**<0.025**	ug/L	0.025	1	05/07/18 17:01	05/08/18 01:31	309-00-2	
gamma-BHC (Lindane)	**<0.020**	ug/L	0.020	1	05/07/18 17:01	05/08/18 01:31	58-89-9	
Chlordane (Technical)	**<0.20**	ug/L	0.20	1	05/07/18 17:01	05/08/18 01:31	57-74-9	
Dieldrin	**<0.050**	ug/L	0.050	1	05/07/18 17:01	05/08/18 01:31	60-57-1	
Endrin	**<0.010**	ug/L	0.010	1	05/07/18 17:01	05/08/18 01:31	72-20-8	
Heptachlor	**<0.025**	ug/L	0.025	1	05/07/18 17:01	05/08/18 01:31	76-44-8	
Heptachlor epoxide	**<0.020**	ug/L	0.020	1	05/07/18 17:01	05/08/18 01:31	1024-57-3	
Hexachlorobenzene	**<0.10**	ug/L	0.10	1	05/07/18 17:01	05/08/18 01:31	118-74-1	
Hexachlorocyclopentadiene	**<0.10**	ug/L	0.10	1	05/07/18 17:01	05/08/18 01:31	77-47-4	
Methoxychlor	**<0.10**	ug/L	0.10	1	05/07/18 17:01	05/08/18 01:31	72-43-5	
PCB Screen	**<0.40**	ug/L	0.40	1	05/07/18 17:01	05/08/18 01:31		
Toxaphene	**<1.0**	ug/L	1.0	1	05/07/18 17:01	05/08/18 01:31	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	100	%	30-150	1	05/07/18 17:01	05/08/18 01:31	877-09-8	
Decachlorobiphenyl (S)	97	%	30-150	1	05/07/18 17:01	05/08/18 01:31	2051-24-3	
515.3 Chlorinated Herbicides	Analytical Method: EPA 515.3 Preparation Method: EPA 515.3							
2,4-D	**<0.10**	ug/L	0.10	1	05/03/18 15:07	05/09/18 11:43	94-75-7	
Dalapon	**<0.70**	ug/L	0.70	1	05/03/18 15:07	05/09/18 11:43	75-99-0	
Dicamba	**<1.0**	ug/L	1.0	1	05/03/18 15:07	05/09/18 11:43	1918-00-9	
Dinoseb	**<0.20**	ug/L	0.20	1	05/03/18 15:07	05/09/18 11:43	88-85-7	
Pentachlorophenol	**<0.040**	ug/L	0.040	1	05/03/18 15:07	05/09/18 11:43	87-86-5	
Picloram	**<0.10**	ug/L	0.10	1	05/03/18 15:07	05/09/18 11:43	1918-02-1	
2,4,5-TP (Silvex)	**<0.13**	ug/L	0.13	1	05/03/18 15:07	05/09/18 11:43	93-72-1	
Surrogates								
2,4-DCAA (S)	94	%	70-130	1	05/03/18 15:07	05/09/18 11:43	19719-28-9	
531.1 HPLC Carbamates	Analytical Method: EPA 531.1							
Aldicarb	**<0.50**	ug/L	0.50	1		05/05/18 13:45	116-06-3	
Aldicarb sulfone	**<0.80**	ug/L	0.80	1		05/05/18 13:45	1646-88-4	
Aldicarb sulfoxide	**<0.50**	ug/L	0.50	1		05/05/18 13:45	1646-87-3	
Carbofuran	**<0.90**	ug/L	0.90	1		05/05/18 13:45	1563-66-2	
3-Hydroxycarbofuran	**<1.0**	ug/L	1.0	1		05/05/18 13:45	16655-82-6	
Methomyl	**<1.0**	ug/L	1.0	1		05/05/18 13:45	16752-77-5	
Oxamyl	**<1.0**	ug/L	1.0	1		05/05/18 13:45	23135-22-0	
Carbaryl	**<1.0**	ug/L	1.0	1		05/05/18 13:45	63-25-2	

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QUALITY CONTROL DATA

Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

QC Batch: 65557
QC Batch Method: EPA 531.1
Analysis Method: EPA 531.1
Analysis Description: 531.1 HPLC Carbamate
Associated Lab Samples: 7050321001

METHOD BLANK: 300470
Matrix: Water
Associated Lab Samples: 7050321001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
3-Hydroxycarbofuran	ug/L	<1.0	1.0	05/04/18 20:07	
Aldicarb	ug/L	<0.50	0.50	05/04/18 20:07	
Aldicarb sulfone	ug/L	<0.80	0.80	05/04/18 20:07	
Aldicarb sulfoxide	ug/L	<0.50	0.50	05/04/18 20:07	
Carbaryl	ug/L	<1.0	1.0	05/04/18 20:07	
Carbofuran	ug/L	<0.90	0.90	05/04/18 20:07	
Methomyl	ug/L	<1.0	1.0	05/04/18 20:07	
Oxamyl	ug/L	<1.0	1.0	05/04/18 20:07	

LABORATORY CONTROL SAMPLE: 300471

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
3-Hydroxycarbofuran	ug/L	3.8	3.7	98	80-120	
Aldicarb	ug/L	3.8	4.1	108	80-120	
Aldicarb sulfone	ug/L	3.8	3.6	97	80-120	
Aldicarb sulfoxide	ug/L	3.8	3.8	100	80-120	
Carbaryl	ug/L	3.8	3.7	98	80-120	
Carbofuran	ug/L	3.8	4.0	108	80-120	
Methomyl	ug/L	3.8	3.5	94	80-120	
Oxamyl	ug/L	3.8	3.5	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 300565 300566

Parameter	Units	7049781002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
3-Hydroxycarbofuran	ug/L	<1.0	3.8	3.8	3.3	3.9	88	103	65-135	16	
Aldicarb	ug/L	<0.50	3.8	3.8	3.6	4.1	95	109	65-135	13	
Aldicarb sulfone	ug/L	<0.80	3.8	3.8	3.3	4.0	88	106	65-135	18	
Aldicarb sulfoxide	ug/L	<0.50	3.8	3.8	3.4	4.1	90	109	65-135	19	
Carbaryl	ug/L	<1.0	3.8	3.8	3.3	3.8	85	100	65-135	16	
Carbofuran	ug/L	<0.90	3.8	3.8	4.0	4.1	107	111	65-135	3	
Methomyl	ug/L	<1.0	3.8	3.8	3.4	4.0	90	106	65-135	17	
Oxamyl	ug/L	<1.0	3.8	3.8	3.4	4.0	89	107	65-135	18	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

QC Batch: 66490 | Analysis Method: EPA 504.1
QC Batch Method: EPA 504.1 | Analysis Description: 504 EDB DBCP
Associated Lab Samples: 7050321001

METHOD BLANK: 304814 | Matrix: Water
Associated Lab Samples: 7050321001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	<0.010	0.010	05/08/18 17:10	
1,2-Dibromoethane (EDB)	ug/L	<0.010	0.010	05/08/18 17:10	

LABORATORY CONTROL SAMPLE: 304815

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	.071	0.069	97	70-130	
1,2-Dibromoethane (EDB)	ug/L	.071	0.064	89	70-130	

LABORATORY CONTROL SAMPLE: 304816

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	.071	0.067	94	70-130	
1,2-Dibromoethane (EDB)	ug/L	.071	0.061	86	70-130	

LABORATORY CONTROL SAMPLE: 304828

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	.01	<0.010	97	70-130	
1,2-Dibromoethane (EDB)	ug/L	.01	<0.010	77	70-130	

MATRIX SPIKE SAMPLE: 304823

Parameter	Units	7050052001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/L	<0.010	.071	0.068	96	65-135	
1,2-Dibromoethane (EDB)	ug/L	<0.010	.071	0.060	76	65-135	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

QC Batch: 66305
QC Batch Method: EPA 505
Analysis Method: EPA 505
Analysis Description: 505 GCS Pesticides
Associated Lab Samples: 7050321001

METHOD BLANK: 304159
Matrix: Water
Associated Lab Samples: 7050321001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alachlor	ug/L	<0.20	0.20	05/07/18 19:37	
Aldrin	ug/L	<0.025	0.025	05/07/18 19:37	
Chlordane (Technical)	ug/L	<0.20	0.20	05/07/18 19:37	
Dieldrin	ug/L	<0.050	0.050	05/07/18 19:37	
Endrin	ug/L	<0.010	0.010	05/07/18 19:37	
gamma-BHC (Lindane)	ug/L	<0.020	0.020	05/07/18 19:37	
Heptachlor	ug/L	<0.025	0.025	05/07/18 19:37	
Heptachlor epoxide	ug/L	<0.020	0.020	05/07/18 19:37	
Hexachlorobenzene	ug/L	<0.10	0.10	05/07/18 19:37	
Hexachlorocyclopentadiene	ug/L	<0.10	0.10	05/07/18 19:37	
Methoxychlor	ug/L	<0.10	0.10	05/07/18 19:37	
PCB Screen	ug/L	<0.40	0.40	05/07/18 19:37	
Toxaphene	ug/L	<1.0	1.0	05/07/18 19:37	
Decachlorobiphenyl (S)	%	100	30-150	05/07/18 19:37	
Tetrachloro-m-xylene (S)	%	97	30-150	05/07/18 19:37	

LABORATORY CONTROL SAMPLE: 304160

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alachlor	ug/L	.48	0.44	93	70-130	
Aldrin	ug/L	.048	0.045	94	70-130	
Chlordane (Technical)	ug/L		<0.20			
Dieldrin	ug/L	.048	<0.050	89	70-130	
Endrin	ug/L	.048	0.039	83	70-130	
gamma-BHC (Lindane)	ug/L	.048	0.062	130	70-130	
Heptachlor	ug/L	.048	0.044	93	70-130	
Heptachlor epoxide	ug/L	.048	0.042	89	70-130	
Hexachlorobenzene	ug/L	.048	<0.10	95	70-130	
Hexachlorocyclopentadiene	ug/L	.048	<0.10	80	70-130	
Methoxychlor	ug/L	.24	0.19	82	70-130	
PCB Screen	ug/L		<0.40			
Toxaphene	ug/L		<1.0			
Decachlorobiphenyl (S)	%			96	30-150	
Tetrachloro-m-xylene (S)	%			104	30-150	

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QUALITY CONTROL DATA

Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

LABORATORY CONTROL SAMPLE: 304363

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alachlor	ug/L		<0.20			
Aldrin	ug/L		<0.025			
Chlordane (Technical)	ug/L		<0.20			
Dieldrin	ug/L		<0.050			
Endrin	ug/L		<0.010			
gamma-BHC (Lindane)	ug/L		<0.020			
Heptachlor	ug/L		<0.025			
Heptachlor epoxide	ug/L		<0.020			
Hexachlorobenzene	ug/L		<0.10			
Hexachlorocyclopentadiene	ug/L		<0.10			
Methoxychlor	ug/L		<0.10			
PCB Screen	ug/L		<0.40			
Toxaphene	ug/L	18.3	18.6	102	70-130	
Decachlorobiphenyl (S)	%			106	30-150	
Tetrachloro-m-xylene (S)	%			103	30-150	

MATRIX SPIKE SAMPLE: 304214

Parameter	Units	7050298001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Alachlor	ug/L	<0.20		<0.20			
Aldrin	ug/L	<0.025		<0.025			
Chlordane (Technical)	ug/L	<0.20		<0.20			
Dieldrin	ug/L	<0.050		<0.050			
Endrin	ug/L	<0.010		<0.010			
gamma-BHC (Lindane)	ug/L	<0.020		<0.020			
Heptachlor	ug/L	<0.025		<0.025			
Heptachlor epoxide	ug/L	<0.020		<0.020			
Hexachlorobenzene	ug/L	<0.10		<0.10			
Hexachlorocyclopentadiene	ug/L	<0.10		<0.10			
Methoxychlor	ug/L	<0.10		0.43			
PCB Screen	ug/L	<0.40		<0.40			
Toxaphene	ug/L	<1.0	18.3	13.4	73	65-135	
Decachlorobiphenyl (S)	%				125	30-150	
Tetrachloro-m-xylene (S)	%				99	30-150	

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QUALITY CONTROL DATA

Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

QC Batch: 66014 | Analysis Method: EPA 515.3
QC Batch Method: EPA 515.3 | Analysis Description: 5153 GCS Herbicides
Associated Lab Samples: 7050321001

METHOD BLANK: 302594 | Matrix: Water
Associated Lab Samples: 7050321001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,5-TP (Silvex)	ug/L	<0.13	0.13	05/09/18 03:15	
2,4-D	ug/L	<0.10	0.10	05/09/18 03:15	
Dalapon	ug/L	<0.70	0.70	05/09/18 03:15	
Dicamba	ug/L	<1.0	1.0	05/09/18 03:15	
Dinoseb	ug/L	<0.20	0.20	05/09/18 03:15	
Pentachlorophenol	ug/L	<0.040	0.040	05/09/18 03:15	
Picloram	ug/L	<0.10	0.10	05/09/18 03:15	
2,4-DCAA (S)	%	113	70-130	05/09/18 03:15	

LABORATORY CONTROL SAMPLE: 302595

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-TP (Silvex)	ug/L	.2	0.23	113	70-130	
2,4-D	ug/L	.6	0.56	93	70-130	
Dalapon	ug/L	2	2.2	110	70-130	
Dicamba	ug/L	.2	<1.0	112	70-130	
Dinoseb	ug/L	.4	0.47	118	70-130	
Pentachlorophenol	ug/L	.2	0.22	111	70-130	
Picloram	ug/L	.2	0.20	100	70-130	
2,4-DCAA (S)	%			112	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 302596 302597

Parameter	Units	7049985001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
2,4,5-TP (Silvex)	ug/L	<0.13	.2	.2	0.20	0.20	99	98	65-135	1	
2,4-D	ug/L	<0.10	.6	.6	0.54	0.56	89	93	65-135	4	
Dalapon	ug/L	<0.70	2	2	2.0	2.1	99	107	65-135	7	
Dicamba	ug/L	<1.0	.2	.2	<1.0	<1.0	96	92	65-135		
Dinoseb	ug/L	<0.20	.4	.4	0.42	0.43	104	107	65-135	4	
Pentachlorophenol	ug/L	<0.040	.2	.2	0.18	0.18	90	91	65-135	1	
Picloram	ug/L	<0.10	.2	.2	0.18	0.17	73	65	65-135	9	
2,4-DCAA (S)	%						96	93	70-130		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

QUALIFIERS

Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 420-136148-1 - SOC 5/2
Pace Project No.: 7050321

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
7050321001	**OW-3**	EPA 504.1	66490	EPA 504.1	66567
7050321001	**OW-3**	EPA 505	66305	EPA 505	66428
7050321001	**OW-3**	EPA 515.3	66014	EPA 515.3	66197
7050321001	**OW-3**	EPA 531.1	65557		

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WO#:7050321

7050321

Chain of Custody Record

EnviroTest Laboratories Inc.

Client Contact: Shipping/Receiving	Sampler:	Lab PM: Bayer, Debra	Carrier Tracking No(s):
	Phone:	E-Mail: dbayer@envirotestlaboratories.com	

COC No: 420-9790.1

Page: Page 1 of 1

Company: Pace Analytical Mellville

STL Job #: 420-136148-1

Address: 575 Broadhollow Road, ,

City: Melville

State, Zip: NY, 11747

Phone:

Email:

Project Name: WSP USA

Site:

Due Date Requested: 5/14/2018

TAT Requested (days): Std TAT 5/2/18 DB

PO #:

WO #:

Project #: 42002340

SSOW#:

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Other:

NY Spkes 5/2/18 DB

Sample Identification Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT/ 515 Chlorinated Acids	SUBCONTRACT/ 504 EPA 504.1 EDB/DBCP	SUBCONTRACT/ 531.1 Carbamate Pesticides in DW	SUBCONTRACT/ 525.2 Semivolatile Organics	SUBCONTRACT/ 900 GA/GB/RA 226/RA 228	SUBCONTRACT/ Total Uranium	SUBCONTRACT/ Radon	SUBCONTRACT/ 505	SUBCONTRACT/ 547	SUBCONTRACT/ 548	SUBCONTRACT/ 549	SUBCONTRACT/ Dioxin		Total Number of containers	Special Instructions/Note:
			Preservation Code:																		
OW-3 (420-136148-1)	5/2/18	10:45	G	Water			X	X	X	X	X	X	X	X	X	X	X	X		8	001
				5/2/18 DB																	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
A Almendarf	5-2-18 1500	ETL			

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Sample Condition Upon Receipt

Pace Analytical® Long Island Laboratory

Client Name: Envirotest

Proje WO#:7050321
PM: PD Due Date: 05/17/18
CLIENT: EnviroTest

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other

Tracking #: 772137346888

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals intact: ☑ Yes ☐ No

Temperature Blank Present: ☑ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ Ziploc ☐ None ☐ Other

Type of Ice: (Wet) Blue None

Thermometer Used: TH091 Correction Factor: 0.0

☐ Samples on ice, cooling process has begun

Cooler Temperature (°C): 4.6 Cooler Temperature Corrected (°C): 4.6 Date/Time 5035A kits placed in freezer _____

Temp should be above freezing to 6.0°C

USDA Regulated Soil (☑ N/A, water sample) Date and Initials of person examining contents: 5/3/18 (W)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check map)? ☐ YES ☐ NO

Did samples orignate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-LI-C-010) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present:	☑ Yes	☐ No		1.
Chain of Custody Filled Out:	☑ Yes	☐ No		2.
Chain of Custody Relinquished:	☑ Yes	☐ No		3.
Sampler Name & Signature on COC:	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time:	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72hr):	☐ Yes	☑ No		6.
Rush Turn Around Time Requested:	☐ Yes	☑ No		7.
Sufficient Volume: (Triple volume provided for MS/MSD)	☑ Yes	☐ No		8.
Correct Containers Used:	☑ Yes	☐ No		9.
-Pace Containers Used:	☑ Yes	☐ No		
Containers Intact:	☑ Yes	☐ No		10.
Filtered volume received for Dissolved tests	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels match COC:	☑ Yes	☐ No		12.
-Includes date/time/ID/Analysis Matrix SL WT OIL				
All containers needing preservation have been checked	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
pH paper Lot #				Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl, NaOH>9 Sulfide, NAOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water). Per Method, VOA pH is checked after analysis	☐ Yes	☐ No	☑ N/A	Initial when completed: / Lot # of added preservative: / Date/Time preservative added:
Samples checked for dechlorination:	☐ Yes	☐ No	☑ N/A	14.
KI starch test strips Lot #				Positive for Res. Chlorine? Y N
Residual chlorine strips Lot #				
Headspace in VOA Vials (>6mm):	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Present:	☐ Yes	☐ No	☑ N/A	16.
Trip Blank Custody Seals Present	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if applicable): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

* PM (Project Manager) review is documented electronically in LIMS.

MICROBAC®

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8E0773

Pace Analytical - Melville

Jennifer Aracri
575 Broad Hollow Road
Melville, NY 11747

Project Name: 7050321

Project / PO Number: 7050321PD
Received: 05/08/2018
Reported: 05/15/2018

Analytical Testing Parameters

Client Sample ID: OW-3
Sample Matrix: Drinking Water
Lab Sample ID: D8E0773-01
Collected By: Customer
Collection Date: 05/02/2018 10:45

Semi-Volatile Organic Compounds - GC/MS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 525.2, Rv 2.0			**Method Notes:** A26					
Atrazine	<0.093	3.00 MCL	0.093	ug/L		05/11/18 1030	05/14/18 2148	CDT
Benzo[a]pyrene	<0.019	0.200 MCL	0.019	ug/L		05/11/18 1030	05/14/18 2148	CDT
Butachlor	<0.093		0.093	ug/L		05/11/18 1030	05/14/18 2148	CDT
bis(2-Ethylhexyl)adipate	<0.561	400 MCL	0.561	ug/L		05/11/18 1030	05/14/18 2148	CDT
bis(2-Ethylhexyl)phthalate	<0.561	6.00 MCL	0.561	ug/L		05/11/18 1030	05/14/18 2148	CDT
Metolachlor	<0.093		0.093	ug/L		05/11/18 1030	05/14/18 2148	CDT
Metribuzin	<0.093		0.093	ug/L		05/11/18 1030	05/14/18 2148	CDT
Propachlor (Ramrod)	<0.093		0.093	ug/L		05/11/18 1030	05/14/18 2148	CDT
Simazine	<0.065	4.00 MCL	0.065	ug/L		05/11/18 1030	05/14/18 2148	CDT
Surrogate: 1,3-Dimethyl-2-nitrobenzene	101	Limit: 70-130		% Rec		05/11/18 1030	05/14/18 2148	CDT
Surrogate: Pyrene-d10	98.0	Limit: 70-130		% Rec		05/11/18 1030	05/14/18 2148	CDT
Surrogate: Triphenyl phosphate	125	Limit: 70-130		% Rec		05/11/18 1030	05/14/18 2148	CDT

*Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.*

Definitions

A26: Sample was not preserved to the pH required by the method.
MCL: US EPA Maximum Contaminant Level
RL: Reporting Limit

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville
11549 New York State Department of Health

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:

Melisa L. Montgomery
QA Officer
Reported: 05/15/2018 17:03

Chain of Custody

D8E0773

Pace Analytical - Melville

Pace Analytical®
www.pacelabs.com

Workorder: 7050321 **Workorder Name:** 420-136148-1 - SOC 5/2 **Results Requested By:** 5/17/2018 SLB

Report / Invoice To	Subcontract To
Paige Doherty Pace Analytical Melville 575 Broad Hollow Road Melville, NY 11747 Phone (631)694-3040 Email: paige.doherty@pacelabs.com	Microbac Laboratories 61 Louisa Viens Dayville, CT 06241 P.O. 7050321PD

State of Sample Origin: NY

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: NA2S2O3	Requested Analysis: Subbed - 525	LAB USE ONLY
1	OW-3	5/2/2018 10:45	7050321001	Drinking Water	2	X	
2							
3							
4							
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/7/18 1800		
2				
3			[signature]	5/8/18 1130

Comments

Cooler Temperature on Receipt 2.0 °C **Custody Seal** Y or **Received on Ice** Y or **Samples Intact** Y or

APPENDIX II

EnviroTest Laboratories Inc.

ANALYTICAL REPORT

Job Number: 420-138101-1

SDG Number: Northeast Interstate

Job Description: WSP USA

For:
WSP USA
4 Research Drive
Shelton, CT 06464

Attention: Stacy Stieber

Debra Bayer
Customer Service Manager
dbayer@envirotestlaboratories.com

06/24/2018

NYSDOH ELAP does not certify for all parameters. EnviroTest Laboratories does hold certification for all analytes where certification is offered by ELAP unless otherwise specified in the Certification Information section of this report. Pursuant to NELAP, this report may not be reproduced, except in full, without written approval of the laboratory. EnviroTest Laboratories Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our laboratory. All questions regarding this report should be directed to the EnviroTest Customer Service Representative.

EnviroTest Laboratories, Inc. Certifications and Approvals: NYSDOH 10142, NJDEP NY015, CTDOPH PH-0554

METHOD SUMMARY

Client: WSP USA

Job Number: 420-138101-1
SDG Number: Northeast Interstate

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Purgeable Organic Compounds in Water by GC/MS	EnvTest	EPA-DW 524.2	

Lab References:

EnvTest = EnviroTest

Method References:

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

METHOD / ANALYST SUMMARY

Client: WSP USA

Job Number: 420-138101-1
SDG Number: Northeast Interstate

Method	Analyst	Analyst ID
EPA-DW 524.2	Andersen, Eric C	ECA

SAMPLE SUMMARY

Client: WSP USA

Job Number: 420-138101-1
SDG Number: Northeast Interstate

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
420-138101-1	OW - 3	Drinking Water	06/13/2018 1445	06/13/2018 1530

Client: WSP USA

Job Number: 420-138101-1
Sdg Number: Northeast Interstate

Client Sample ID: **OW - 3**

Lab Sample ID: 420-138101-1
Client Matrix: Drinking Water

Date Sampled: 06/13/2018 1445
Date Received: 06/13/2018 1530

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 06/14/2018 1509
Date Prepared: N/A

Analysis Batch: 420-122010

Instrument ID: HP
Lab File ID: V061412.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Benzene	<0.500		0.500
Bromobenzene	<0.500		0.500
Bromochloromethane	<0.500		0.500
Bromomethane	<0.500		0.500
n-Butylbenzene	<0.500		0.500
sec-Butylbenzene	<0.500		0.500
tert-Butylbenzene	<0.500		0.500
Carbon tetrachloride	<0.500		0.500
Chlorobenzene	<0.500		0.500
Chloroethane	<0.500		0.500
Chloromethane	<0.500		0.500
2-Chlorotoluene	<0.500		0.500
4-Chlorotoluene	<0.500		0.500
Dibromomethane	<0.500		0.500
1,2-Dichlorobenzene	<0.500		0.500
1,3-Dichlorobenzene	<0.500		0.500
1,4-Dichlorobenzene	<0.500		0.500
Dichlorodifluoromethane	<0.500		0.500
1,1-Dichloroethane	<0.500		0.500
1,2-Dichloroethane	<0.500		0.500
1,1-Dichloroethene	<0.500		0.500
cis-1,2-Dichloroethene	<0.500		0.500
trans-1,2-Dichloroethene	<0.500		0.500
1,2-Dichloropropane	<0.500		0.500
1,3-Dichloropropane	<0.500		0.500
2,2-Dichloropropane	<0.500		0.500
1,1-Dichloropropene	<0.500		0.500
cis-1,3-Dichloropropene	<0.500		0.500
trans-1,3-Dichloropropene	<0.500		0.500
Ethylbenzene	<0.500		0.500
Hexachlorobutadiene	<0.500		0.500
Isopropylbenzene	<0.500		0.500
p-Isopropyltoluene	<0.500		0.500
Methylene Chloride	<0.500		0.500
n-Propylbenzene	<0.500		0.500
Styrene	<0.500		0.500
1,1,1,2-Tetrachloroethane	<0.500		0.500
1,1,2,2-Tetrachloroethane	<0.500		0.500
Tetrachloroethene	<0.500		0.500
Toluene	<0.500		0.500
1,2,3-Trichlorobenzene	<0.500		0.500
1,2,4-Trichlorobenzene	<0.500		0.500
1,1,1-Trichloroethane	<0.500		0.500
1,1,2-Trichloroethane	<0.500		0.500

Client: WSP USA

Job Number: 420-138101-1
Sdg Number: Northeast Interstate

Client Sample ID: **OW - 3**

Lab Sample ID: 420-138101-1
Client Matrix: Drinking Water

Date Sampled: 06/13/2018 1445
Date Received: 06/13/2018 1530

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 06/14/2018 1509
Date Prepared: N/A

Analysis Batch: 420-122010

Instrument ID: HP
Lab File ID: V061412.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Trichloroethene	<0.500		0.500
Trichlorofluoromethane	<0.500		0.500
1,2,3-Trichloropropane	<0.500		0.500
1,2,4-Trimethylbenzene	<0.500		0.500
1,3,5-Trimethylbenzene	<0.500		0.500
m-Xylene & p-Xylene	<1.00		1.00
o-Xylene	<0.500		0.500
Methyl tert-butyl ether	<0.500		0.500
Vinyl chloride	<0.500		0.500

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	106	70 - 128
4-Bromofluorobenzene	98	71 - 120
Toluene-d8 (Surr)	100	79 - 121

DATA REPORTING QUALIFIERS

Lab Section	Qualifier	Description

The following analytes are Not Part of the ELAP scope of accreditation:

Sulfur, Tungsten, Bicarbonate Alkalinity, 7 Day BOD 5210C, 28 Day BOD, Soluble BOD, Carbon Dioxide, Carbonate Alkalinity, CBOD Soluble, Chlorine, Cyanide (WAD), Ferrous Iron, Ferric Iron, Total Nitrogen, Total Organic Nitrogen, Dissolved Oxygen, pH, Solids (Fixed), Solids (Percent), Solids (Percent Moisture), Solids (Percent Volatile), Solids (Volatile Suspended), Temperature, TKN (Soluble), COD (Soluble), Total Inorganic Carbon, 2-Aminopyridine, 3-Picoline, 1-Methyl-2-pyrrilidinone, Aziridine, Dimethyl sulfoxide, 1-Chlorohexane, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, p-Diethylbenzene, Iron Bacteria, Salmonella, & Sulfur Reducing Bacteria.

The following analytes are Not Part of ELAP Potable Water scope of accreditation:

Phosphorus (365.3), Nitrate-Nitrite (10-107-4-1C, 353.2), m-Xylene & p-Xylene (502.2, 524), o-Xylene (502.2, 524), Fecal Coliform (9222D), Sulfide (SM4500SD), Acenaphthene (525.2), Acenaphthylene (525.2), Fluoranthene (525.2), Fluorene (525.2), Phenanthrene (525.2), Anthracene (525.2), Pyrene (525.2), Benzo[a]anthracene (525.2), Benzo[b]fluoranthene (525.2), Benzo[g,h,i]perylene (525.2), Benzo[k]fluoranthene (525.2), Indeno[1,2,3-cd]pyrene (525.2), & Dibenz(a,h)anthracene (525.2).

The following analytes are Not Part of ELAP Solid and Hazardous Waste scope of accreditation:

Ammonia (SM 4500NH3G), TKN (351.2), Phosphorus (365.3), 1,2-Dichloro-1,1,2-trifluoroethane (8260), & Chlorodifluoromethane (8260).

The following analytes are Not Part of ELAP Non Potable Water scope of accreditation:

Dissolved Organic Carbon (5310C), Mecoprop (8151A), & MCPA (8151A).

Definitions and Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
%R	Percent Recovery
DL, RA, RE	Indicates a Dilution, Reanalysis or Reextraction.
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit - an estimate of the minimum amount of a substance that an analytical process can reliably detect. A MDL is analyte- and matrix-specific and may be laboratory-dependent.
ND	Not detected at the reporting limit (or MDL if shown).
QC	Quality Control
RL	Reporting Limit - the minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence.
RPD	Relative Percent Difference - a measure of the relative difference between two points.

EnviroTest Laboratories Inc.

CHAIN OF CUSTODY

315 Fullerton Avenue
Newburgh, NY 12550
TEL (845) 562-0890
FAX (845) 562-0841

138101

CUSTOMER NAME: WSP USA
ADDRESS: 4 Research Dr. Suite 201
CITY, STATE, ZIP: Shelton CT 06484
NAME OF CONTACT: Stacy Stieber
PHONE NO.: 475-882-1723
PROJECT LOCATION: Southeast, NY
PROJECT NUMBER / PO NO.: Northeast Interstate

REPORT TYPE
STANDARD ☒ ISRA ☐
NJ REG ☐
NYASP A ☐ B ☐ CLP ☐
OTHER ____

TURNAROUND
☒ NORMAL ____
☐ QUICK ____
☐ VERBAL ____

REPORT # (Lab Use Only)
0.9°C IR#3
SAMPLE TEMP. ____ C
SAMPLE REC'D ON ICE ☒ Y ☐ N
ph CHECK ☐ Y ☐ N
CHLORINE (RESIDUAL) ☐ Y ☐ N
REVIEWED BY: ____

NY PUBLIC WATER SUPPLIES
SOURCE ID ____
ELAP TYPE ____
FEDERAL ID ____

Matrix
DW = DRINKING WATER S = SOIL O = OIL
WW = WASTE WATER SL = SLUDGE GW = GROUND WATER

NOTE: SAMPLE TEMPERATURE UPON RECEIPT MUST BE 4° ± 2°C.

ETL #	SAMPLING DATE	TIME AM PM	COMP	GRAB	MATRIX	CLIENT I.D.	Total Number of Containers	40ml Glass HCL	Liter Amber HCL	250ml Amber Sulfuric	Liter Amber Organic Washed	250ml Plastic Nitric Acid	250ml Plastic Sodium Hydroxide	Liter Plastic	250ml Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	250ml Plastic NAOH/ZN ACC	40ml Glass Sulfuric	40ml Glass	DO	ANALYSIS REQUESTED
	6/13/18	1445		X	DW	OW-3	3	3														VOC 524.2

LAB USE ONLY

420-138101-A-1
OW - 3
Date Sampled: 6/13/2018 420-1206755

SAMPLES SUBMITTED FOR ANALYSIS WILL BE SUBJECT TO THE ETL TERMS AND CONDITIONS OF SALE UNLESS ALTERNATE TERMS ARE AGREED IN WRITING.

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
Stacy Stieber	WSP	6/13/18	1530				
Stacy Stieber	WSP	6/13/18	1945				
				Lisa Frank	ETL	~~06/13/18~~ 06/13/18	15:30

COMMENTS: * Bill to Northeast Interstate

NYSDOH 10142 NJDEP NY015 CTDOPH PH-0554 EPA NY00049

LOGIN SAMPLE RECEIPT CHECK LIST

Client: WSP USA

Job Number: 420-138101-1
SDG Number: Northeast Interstate

Login Number: **138101**

Question	T/F/NA	Comment
Samples were collected by ETL employee as per SOP-SAM-1	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is recorded.	True	0.9 C
Cooler Temp. is within method specified range.(0-6 C PW, 0-8 C NPW, or BAC <10 C	True	
If false, was sample received on ice within 6 hours of collection.	NA	
Based on above criteria cooler temperature is acceptable.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	NA	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

EnviroTest Laboratories Inc.

ANALYTICAL REPORT

Job Number: 420-138105-1

SDG Number: Northeast Interstate

Job Description: WSP USA

For:
WSP USA
4 Research Drive
Shelton, CT 06464

Attention: Stacy Stieber

Debra Bayer
Customer Service Manager
dbayer@envirotestlaboratories.com

06/18/2018

NYSDOH ELAP does not certify for all parameters. EnviroTest Laboratories does hold certification for all analytes where certification is offered by ELAP unless otherwise specified in the Certification Information section of this report. Pursuant to NELAP, this report may not be reproduced, except in full, without written approval of the laboratory. EnviroTest Laboratories Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our laboratory. All questions regarding this report should be directed to the EnviroTest Customer Service Representative.

EnviroTest Laboratories, Inc. Certifications and Approvals: NYSDOH 10142, NJDEP NY015, CTDOPH PH-0554

METHOD SUMMARY

Client: WSP USA

Job Number: 420-138105-1
SDG Number: Northeast Interstate

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Total Coliform and Escherichia coli by Colilert - Presence/Absence	EnvTest	SMWW SM 9223	

Lab References:

EnvTest = EnviroTest

Method References:

SMWW = "Standard Methods for the Examination of Water and Wastewater"

METHOD / ANALYST SUMMARY

Client: WSP USA

Job Number: 420-138105-1
SDG Number: Northeast Interstate

Method	Analyst	Analyst ID
SMWW SM 9223	Santacroce, Nicholas	NS

SAMPLE SUMMARY

Client: WSP USA

Job Number: 420-138105-1
SDG Number: Northeast Interstate

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
420-138105-1	NW - 4	Drinking Water	06/13/2018 1420	06/13/2018 1530

Client: WSP USA

Job Number: 420-138105-1
Sdg Number: Northeast Interstate

Biology

Client Sample ID: **NW - 4**

Lab Sample ID: 420-138105-1
Client Matrix: Drinking Water

Date Sampled: 06/13/2018 1420
Date Received: 06/13/2018 1530

Analyte	Result	Qual	Units	Dil	Method
Coliform, Total	Absent		CFU/100mL	1.0	SM 9223
Anly Batch:		Date Analyzed	06/13/2018 1715		
Escherichia coli	Absent		CFU/100mL	1.0	SM 9223
Anly Batch:		Date Analyzed	06/13/2018 1715		

DATA REPORTING QUALIFIERS

Lab Section	Qualifier	Description

The following analytes are Not Part of the ELAP scope of accreditation:

Sulfur, Tungsten, Bicarbonate Alkalinity, 7 Day BOD 5210C, 28 Day BOD, Soluble BOD, Carbon Dioxide, Carbonate Alkalinity, CBOD Soluble, Chlorine, Cyanide (WAD), Ferrous Iron, Ferric Iron, Total Nitrogen, Total Organic Nitrogen, Dissolved Oxygen, pH, Solids (Fixed), Solids (Percent), Solids (Percent Moisture), Solids (Percent Volatile), Solids (Volatile Suspended), Temperature, TKN (Soluble), COD (Soluble), Total Inorganic Carbon, 2-Aminopyridine, 3-Picoline, 1-Methyl-2-pyrrilidinone, Aziridine, Dimethyl sulfoxide, 1-Chlorohexane, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, p-Diethylbenzene, Iron Bacteria, Salmonella, & Sulfur Reducing Bacteria.

The following analytes are Not Part of ELAP Potable Water scope of accreditation:

Phosphorus (365.3), Nitrate-Nitrite (10-107-4-1C, 353.2), m-Xylene & p-Xylene (502.2, 524), o-Xylene (502.2, 524), Fecal Coliform (9222D), Sulfide (SM4500SD), Acenaphthene (525.2), Acenaphthylene (525.2), Fluoranthene (525.2), Fluorene (525.2), Phenanthrene (525.2), Anthracene (525.2), Pyrene (525.2), Benzo[a]anthracene (525.2), Benzo[b]fluoranthene (525.2), Benzo[g,h,i]perylene (525.2), Benzo[k]fluoranthene (525.2), Indeno[1,2,3-cd]pyrene (525.2), & Dibenz(a,h)anthracene (525.2).

The following analytes are Not Part of ELAP Solid and Hazardous Waste scope of accreditation:

Ammonia (SM 4500NH3G), TKN (351.2), Phosphorus (365.3), 1,2-Dichloro-1,1,2-trifluoroethane (8260), & Chlorodifluoromethane (8260).

The following analytes are Not Part of ELAP Non Potable Water scope of accreditation:

Dissolved Organic Carbon (5310C), Mecoprop (8151A), & MCPA (8151A).

Definitions and Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
%R	Percent Recovery
DL, RA, RE	Indicates a Dilution, Reanalysis or Reextraction.
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit - an estimate of the minimum amount of a substance that an analytical process can reliably detect. A MDL is analyte- and matrix-specific and may be laboratory-dependent.
ND	Not detected at the reporting limit (or MDL if shown).
QC	Quality Control
RL	Reporting Limit - the minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence.
RPD	Relative Percent Difference - a measure of the relative difference between two points.

EnviroTest Laboratories Inc.

CHAIN OF CUSTODY

138105
~~136105~~

315 Fullerton Avenue
Newburgh, NY 12550
TEL (845) 562-0890
FAX (845) 562-0841

CUSTOMER NAME: WSP USA
ADDRESS: 4 Research Dr. Suite 201
CITY, STATE, ZIP: Shelton CT 06484
NAME OF CONTACT: Stacy Stieber
PHONE NO.: 475-882-1723
PROJECT LOCATION: Southeast, NY
PROJECT NUMBER / PO NO.: Northeast Interstate

REPORT TYPE
STANDARD ☒ ISRA ☐
NJ REG ☐
NYASP A ☐ B ☐ CLP ☐
OTHER _____

TURNAROUND
☒ NORMAL _____
☐ QUICK _____
☐ VERBAL _____

REPORT # (Lab Use Only)
IR#3

SAMPLE TEMP. 0.9° C
SAMPLE REC'D ON ICE ☒ Y ☐ N
ph CHECK ☐ Y ☐ N
CHLORINE (RESIDUAL) ☐ Y ☐ N
REVIEWED BY: _____

NY PUBLIC WATER SUPPLIES
SOURCE ID ___ ___ ___
ELAP TYPE ___ ___ ___
FEDERAL ID ___ ___ ___ ___ ___ ___ ___

Matrix
DW = DRINKING WATER S = SOIL O = OIL
WW = WASTE WATER SL = SLUDGE GW = GROUND WATER

NOTE: SAMPLE TEMPERATURE UPON RECEIPT MUST BE 4° ± 2°C.

ETL #	SAMPLING DATE	TIME AM PM	COMP	GRAB	MATRIX	CLIENT I.D.	Total Number of Containers	40ml Glass HCL	Liter Amber HCL	250ml Amber Sulfuric	Liter Amber Organic Washed	250ml Plastic Nitric Acid	250ml Plastic Sodium Hydroxide	Liter Plastic	250ml Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	250ml Plastic NAOH/ZN ACC	40ml Glass Sulfuric	40ml Glass	DO	ANALYSIS REQUESTED
	6/13/18	14:20		X	DW	NW-4	1										X					Total Coliform P/A

LAB USE ONLY

420-138105-A-1
NW - 4
Date Sampled 6/13/2018 420-1206777

SAMPLES SUBMITTED FOR ANALYSIS WILL BE SUBJECT TO THE ETL TERMS AND CONDITIONS OF SALE UNLESS ALTERNATE TERMS ARE AGREED IN WRITING.

RELINQUISHED BY: Stacy	COMPANY: WSP	DATE: 6/13/18	TIME: 13:30	RECEIVED BY	COMPANY	DATE	TIME
SAMPLED BY: Stacy	COMPANY: WSP	DATE: 6/13/18	TIME: 1420	RECEIVED BY	COMPANY	DATE	TIME
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY: [signature]	COMPANY: ETL	DATE: 06/13/18	TIME: 15:30

COMMENTS: *Bill to Northeast Interstate

NYSDOH 10142 NJDEP NY015 CTDOPH PH-0554 EPA NY00049

LOGIN SAMPLE RECEIPT CHECK LIST

Client: WSP USA

Job Number: 420-138105-1
SDG Number: Northeast Interstate

Login Number: **138105**

Question	T/F/NA	Comment
Samples were collected by ETL employee as per SOP-SAM-1	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is recorded.	True	0.9 C
Cooler Temp. is within method specified range.(0-6 C PW, 0-8 C NPW, or BAC <10 C	True	
If false, was sample received on ice within 6 hours of collection.	NA	
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COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
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Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	NA	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

APPENDIX 9-1

Installation, Management, and Monitoring Protocol for Upland Habitat Restoration Areas and Wetland Habitat Restoration by Evans Associates, dated August 2019

INSTALLATION, MANAGEMENT, AND MONITORING PROTOCOL FOR UPLAND HABITAT RESTORATION AREAS AND WETLAND HABITAT RESTORATION

Commercial Campus at Fields Corner
Town of Southeast
Putnam County, New York

August 2019

PREPARED BY:

EVANS ASSOCIATES ENVIRONMENTAL CONSULTING, INC.

162 FALLS ROAD

BETHANY, CONNECTICUT 06524

Tel: (203) 393-0690

Introduction

To compensate for unavoidable loss of wildlife habitat and wetland area on the Commercial Campus at Fields Corner site, a comprehensive upland habitat restoration (13 acres) and wetland mitigation program (1.5 acres) is proposed for the site. In addition, approximately 172 acres of the site will remain undisturbed and protected by a "No Development" restriction which prohibits future building development. See Drawings MP-1 "Overall Habitat Restoration & Wetland Mitigation Plan", MP-4 "Wetland & Wetland Buffer Restoration Plan", and MP-2 and MP-3 "Upland Habitat Restoration Planting Plans" (North and South), collectively, the restoration/mitigation plans, for details of the measures described below.

Objectives of Habitat Restoration and Wetland Mitigation

- Replace degraded upland habitat lost to development (buildings, parking, and roads) with restored habitat areas using a variety of native species.
- Restore both wetland and upland habitat types to support wildlife species of concern which potentially occur on the site.
- Plant restoration areas with native seed mixes and plugs to support pollinators and other wildlife.
- Enhance and protect existing wildlife corridors to avoid wildlife mortality in developed portions of the site.

Background Studies

An independent Habitat Assessment was prepared for this property by The Mid-Atlantic Center for Herpetology and Conservation (MACHAC).[1] The Habitat Assessment identified the following habitats on the site: meadows/old fields, deciduous woodlands, an open-canopy fishless pond, two closed-canopy fishless ponds, several watercourses and two areas of mixed emergent/scrub-shrub/wooded wetland. The Habitat Assessment identified 37 species of amphibians and reptiles (herpetofauna) that could potentially inhabit the site. Of these potential

[1] *Herpetofaunal Habitat Assessment of the Proposed Northeast Interstate Logistics Cente*r, survey conducted, and report prepared, by Brandon M. Ruhe of The Mid-Atlantic Center for Herpetology and Conservation (MACHAC), January 2019. See Appendix 9-2.

species, one (Bog Turtle) is protected by both the New York State Department of Environmental Conservation (NYSDEC), listed as a state "Endangered" species, and the United States Fish and Wildlife Service (USFWS), listed as a federally "Threatened" species. An additional seven potential species are listed as "Species of Special Concern" by the NYSDEC: Jefferson Salamander, Blue-spotted Salamander, Marbled Salamander, Spotted Turtle, Wood Turtle, Eastern Box Turtle, and Eastern Hog-nosed Snake. Three potential species, the Four-toed Salamander, Atlantic Coast Leopard Frog and, Eastern Musk Turtle, are considered "Species of Greatest Conservation Need", which is a conservation status rather than a regulatory status.

For each species, the Habitat Assessment identified "potentially suitable critical breeding habitat" as well as "potentially suitable critical upland habitat" on the site. In addition to protecting the critical breeding habitats on the site, the report also recommended "improving onsite habitats for species that may lose habitat as a result of development within the study area. For instance, Eastern Box Turtle habitat throughout the site may be improved through the reduction of non-native plants and the establishment of native meadow species."

In addition to the amphibians and reptiles mentioned in the MACHAC report, the proposed upland habitat restoration will also potentially benefit numerous species of insects, songbirds and small mammals which utilize meadow and woodland edge habitat. Due to loss of habitat to development and the spread of invasive plants, many of these species are also in documented decline. Since successful restoration of habitat requires active management and monitoring for a long period of time (5 – 10 years), the areas where restoration is proposed on the project site were chosen to be close to the proposed buildings, roads, and stormwater management areas to facilitate access for monitoring and maintenance. In addition, a total of 37 acres of the existing old field shrub/scrub habitat on Lot 1 will be protected in the existing condition as part of the "no-development" area.

Finally, the area where wetland restoration is proposed is immediately adjacent to the proposed Barrett Road widening. This area of emergent wetland and adjacent upland has been invaded by a dense stand of Phragmites as well as invasive shrubs such as multiflora rose and autumn olive. Restoration of this wetland will both improve habitat for wetland-dependent species and enhance the connectivity of the wetland corridor under the road by replacement of the existing 18" RCP culvert with a 48" open-bottom arch culvert to facilitate wildlife movement.

Site Preparation and Planting of Upland Habitat Restoration Areas

For habitat restoration efforts to be successful, it is important to properly prepare the site, particularly where invasive species have become established or dominant. Because the Commercial Campus at Fields Corner site is within the New York City Watershed, herbicide use is not appropriate as a means of eliminating the existing vegetation. Therefore, at least one year of intensive management and weed control should be anticipated prior to planting of the restoration seed mix and woody materials. The following steps are required for proper site preparation:

1. Delineate the perimeter of the area where habitat restoration will occur and install silt fencing along the *entire* perimeter. The silt fencing will serve two functions – to exclude reptiles (turtles and snakes) from the restoration site and to prevent sediment from leaving the site during site preparation.
2. Identify and mark any **native** trees or shrubs within the restoration area which are in good condition, and protect them from disturbance using construction fencing around the drip line of the canopy.
3. Using a brush hog mower with the blade set at 8" height, mow the remaining vegetation in the late winter or early spring (late February through March) or late fall (mid-October through November). Mow herbaceous vegetation around trees and shrubs to remain with a hand-held brush cutter or string trimmer. Once the vegetation has been mowed, check the area for reptiles or small mammals that may be trapped within the restoration area and remove them to an undisturbed area close to where they are found.
4. When vegetation begins to emerge in the spring, begin to till the areas that will be seeded as meadow using a deep plow or disk tiller. Repeat tilling every two to three weeks until weed seed germination is eliminated, or until the end of the growing season.
5. Collect representative soil samples from the restoration areas and have them tested for soil fertility and pH. Although native warm-season grasses generally do not require any fertilization, it is important to understand the soil quality in post-agricultural areas. Use of a Biotic Soil Media™ (BSM™) may be required to improve the agronomic potential of the soil to support a sustainable meadow.

6. Once tilling is no longer necessary, the soil should be compacted with a roller packer or soil finisher prior to seeding. The BSM™ should be applied to the soil surface, followed by the application of hydro-mulch containing the seed mixture in the spring (mid-April – mid-June). If spring planting is not possible, seeding can be done in the early fall (September to mid-October) when air temperatures remain above 50°F.

The proposed restoration areas will be sown with seed mixes containing native warm-season grasses and various forbs to support pollinators. The optimum seeding dates for these species is mid-spring to early summer (May and June), as they require minimum soil temperatures of 50°F and air temperatures above 60°F. Shrubs and trees can be planted in the spring or fall once the seed mixes have become established. Deer fencing is recommended to protect newly planted trees and shrubs.

Grasses and Forbs to be planted in the Upland Meadow Habitat Restoration Areas:

Common Name	**Botanical Name**
Big Bluestem	*Andropogon gerardii*
Little Bluestem	*Schizachyrium scoparium*
Switchgrass	*Panicum virgatum*
Deertongue	*Panicum clandestinum*
Indiangrass	*Sorghastrum nutans*
Virginia Wildrye	*Elymus virginicus*
Canada Wildrye	*Elymus canadensis*
Annual Ryegrass	*Lolium multiflorum*
Oats	*Avena sativa*
Partridge Pea	*Chamaecrista fasciculata*
Oxeye Sunflower	*Heliopsis helianthoides*
Showy Ticktrefoil	*Desmodium canadense*
Common Milkweed	*Asclepias syriaca*
Lanceleaf Coreopsis	*Coreopsis lanceolata*
Plains Coreopsis	*Coreopsis tinctoria*
Purple Coneflower	*Echinacea purpurea*
Blackeyed Susan	*Rudbeckia hirta*
Tall White Beardtongue	*Penstemon digitalis*
New England Aster	*Aster novae-angliae*
Smooth Blue Aster	*Aster laevis*
White Avens	*Geum cancadense*
Wild Bergamot	*Moranda fistulosa*
Boneset	*Eupatorium perfoliatum*
Roundhead Lespedeza	*Lespedeza capitata*
Narrowleaf Mountainmint	*Pycnanthemum tenuifolium*

White Snakeroot	*Eupatorium rugosum*
Blue Vervain	*Verbena hastata*

Management and Monitoring of Upland Habitat Restoration Areas

During the first two years of establishment of a native meadow, competition from weeds is the biggest obstacle to a successful restoration. This is particularly true during the first growing season, as many species of warm-season grass are slow to germinate. In order to ensure good vegetative cover, annual ryegrass and oats are added to the seed mixture for rapid germination and soil stabilization. Therefore, it is critical to monitor the vegetation in the restoration areas carefully during the first and second years. The following steps are recommended for successful establishment:

1. Mowing should be used to control weeds during the first two years. When vegetation in the restoration area reaches a height of 12" – 18", it should be mowed back to a height of 8". This will reduce competition for sunlight and water, and will prevent unwanted species from becoming established and setting seed. It will also prevent thick layers of mulch from accumulating, which can smother developing seedlings.
2. Mowing should be discontinued in mid to late August during the first year to avoid cutting the warm season grasses that are becoming established.
3. Monitoring should begin at the end of the first growing season at designated stations throughout the restoration area. Data should be collected on species present, percent cover, structural diversity, and weed encroachment. Photographs should be taken at each monitoring station periodically to document progress. Monitoring should continue for at least five years, or until the meadow habitat is well established and self-sustaining.
4. Hand pulling of weeds or invasive plants is also appropriate throughout meadow establishment.
5. Once vegetation is established in the restoration area and mowing is no longer necessary, the silt fence should be removed from the perimeter to allow wildlife to reenter the habitat.

Wetland Habitat Restoration

A wetland and wetland buffer area totaling approximately 1.54 acres is proposed to be restored as primary compensatory mitigation for the 0.05 acres of direct wetland impacts that would occur from the proposed project. This area comprises an emergent marsh/shrub-scrub complex wetland that has become overgrown with common reed (*Phragmites australis*) over the last 10 -15 years. This wetland is also being encroached upon by invasive shrubs such as multiflora rose *(Rosa multiflora)* and autumn olive (*Elaeagnus umbellata).* This wetland is directly adjacent to, and downstream from, the existing road crossing of Barrett Road, and would be impacted by the proposed road widening and installation of the retaining walls.

At the time of the excavation for the retaining walls, the area of common reed and surrounding invasive vegetation (such as multiflora rose shrubs) will be flagged by a qualified wetland biologist and the rhizomes and shrubs will be excavated and removed from the site. This work should be done in the late fall or winter to avoid disturbance to species which might be using the vegetation for nesting or cover during the warmer months. The area will then be solarized by placing black plastic over the remaining soils during the growing season. This will help to sterilize the soil where the invasive species were growing by the elimination of the seedlings and remaining rhizomes.

Following invasive vegetation removal, soil sterilization, and completion of the road construction, replacement plants (plugs and native seed mix) will be installed to match native emergent vegetation that is currently present in the wetland, such as tussock sedge *(Carex stricta)*, sensitive fern *(Onoclea sensibilis)*, and blue vervain *(Verbena hastata)*. Native shrubs will be planted adjacent to the wetland in areas where invasive shrubs are removed. The replacement plants shall be placed, or their placement observed, by a qualified environmental consultant in accordance with Drawings MP-2 and MP-3. The entire area planted with the emergent species, along with areas planted with shrubs, will be protected by temporary deer fencing for a period of three years to allow root systems to become well established. During and following restoration, these areas would be monitored and maintained for a period of five years to ensure the success of the restoration.

Management and Monitoring of Wetland Habitat Restoration and Adjacent Areas

Following the removal of the invasive plant species and the installation of the restoration plantings, the Environmental Monitor shall receive a list of the plant materials that have been

installed by the owner, along with the locations of invasive plant removal. The Environmental Monitor shall inspect the areas for compliance with the approved plans, and shall note any deficiencies in the installation of the plant materials so that these can be corrected at the earliest possible time. Once all of deficiencies have been corrected, the Environmental Monitor shall prepare and submit an initial compliance report to the appropriate regulatory agencies. The initial report shall include photographs of the restoration areas. Upon completion of the initial compliance report, the guarantee and monitoring periods shall commence, as outlined below.

Monitoring Period and Inspection Frequency

The wetland restoration areas shall be monitored for a period of five (5) years from the date of completion of the initial planting, which shall be noted in the initial compliance report. During the 5-year monitoring period, the Environmental Monitor shall inspect the restoration planting areas quarterly during the first two years, and yearly in the subsequent 3 years. The yearly inspections shall be during the growing season, between the dates of June 15 and October 1.

Assurances

The Permittee shall ensure that all restoration plantings have a minimum 85% survival and/or coverage rate, which must be met or exceeded at the end of the second growing season following the initial planting/seeding. If the 85% survival rate is not met at the end of the second growing season, the Permittee shall take all necessary measures to ensure the level of survival by the end of the next (third) growing season, including re-planting and reseeding if necessary. During all monitored growing seasons, the Permittee shall also remove any invasive plant species, such as multiflora rose, and autumn or Russian olive shrubs, mile-a-minute vines, common reed, or any other species listed by Invasive Species Council of the NYS DEC as invasive that may possibly occur within the restored areas.

Inspections and Reporting

The Environmental Monitor will be responsible for ensuring that the appropriate regulatory agencies receive an annual report on the status of the restoration plantings, no later than December 1st in each of the following five years after initial planting. During the monitoring period, the following shall be noted and adjusted or corrected as necessary:

1. ***Sediment loading and soil erosion***: All planted areas shall be monitored for soil stability and erosion problems. In the event that erosion occurs, it shall be repaired immediately by the Permittee, and accumulated sediments within the restoration areas shall be removed by hand and deposited in an appropriate upland area outside of the regulated wetland and wetland adjacent area. All erosion areas will be repaired with soil and seeded with an appropriate native seed mix. Any repairs associated with erosion and sedimentation within the wetland, planted areas, or newly stabilized areas, shall be noted in the monitoring reports.
2. ***Plant species composition and mortality***: After the initial planting, all planted areas shall be monitored for plant species and survival rates. The final species composition in the restoration areas can be influenced by a variety of factors, and therefore may change during the monitoring period. Reinforcement plantings and/or additional seeding may be necessary to compensate for losses following the initial planting. Removal and/or suppression of invasive species will also be carried out during the monitoring period to allow native plant materials to become established. Plant species (including native species which may colonize the site), survival rates, and invasive plant control measures taken shall be noted on the monitoring reports.
3. ***Wildlife usage***: The usage of the areas by wildlife shall be monitored and recorded. Any observed animal species, including songbirds, reptiles, amphibians, and mammals, shall be noted on the monitoring reports.

The reports shall also identify, if necessary, corrective measures that need to be taken by the Permittee to meet the plant survival and vegetative cover requirements. The Environmental Monitor should report any necessary corrective measures immediately to the Permittee, in addition to reporting them in the annual reports to the regulatory agencies.

REFERENCES

Oehler, J.D., D.F. Covell, S. Capel, and B. Long, eds. *Managing Grasslands, Shrublands and Young Forests for Wildlife: A Guide for the Northeast.* The Northeast Upland Habitat Technical Committee, Massachusetts Division of Fisheries & Wildlife. 2006.

Salon P.R. and C.F. Miller. 2012. *A Guide to Conservation Plantings on Critical Areas for the Northeast.* USDA, NRCS, Big Flats Plant Materials Center, Corning, NY

APPENDIX 9-2

Herpetofaunal Habitat Assessment by MACHAC, dated January 2019

Herpetofaunal Habitat Assessment of the Proposed Northeast Interstate Logistics Center

Prepared for
Evans Associates Environmental Consulting, Inc.

Brandon M. Ruhe

The Mid-Atlantic Center for Herpetology and Conservation
January 2019

MAC·HAC
The Mid-Atlantic Center for Herpetology and Conservation

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Appendix 2 - NRCS Soils Map
Appendix 3 - USFWS Bog Turtle Phase 1 Data Forms

INTRODUCTION

The Mid-Atlantic Center for Herpetology and Conservation (MACHAC) was retained by Evans Associates Environmental Consulting, Inc. (EAEC) to provide an opinion regarding the suitability of the proposed Northeast Interstate Logistics Center site in the Town of Southeast, Putnam County, New York, for rare amphibian and reptile inhabitance. Topographic maps and aerial photographs of the site were evaluated prior to an onsite habitat assessment. The habitat assessment was conducted on December 18, 2018 by Brandon M. Ruhe of MACHAC and assistant.

MACHAC is a non-profit organization that conducts amphibian and reptile research and conservation planning, including services for landowners and stakeholders regarding amphibian and reptile conservation and habitat restoration.

STUDY AREA

The study area is located in the Town of Southeast, Putnam County, New York. Refer to Figure 1 for an aerial photograph of the study area. EAEC described the study area, project background, and ecological communites present onsite in their March 2018 Biological Assessment Report. The following description was provided by EAEC:

> The site is located to the northwest of Interstate 84 and NYS 312, and comprises several parcels totaling approximately 327 acres of which a portions is proposed to be developed for the Northeast Interstate Logistics Center. The parcels encompass or are adjacent to Barrett Road and Pugsley Road (the portion of Pugsley Road that is north of Barrett Road is also referred to as Fields Corner Road). The surrounding areas contain a variety of land uses. In addition to interstate, state, and local roads, surroundings also include farms, residential homes or complexes, shopping centers/office buildings, a golf course, the Middle Branch Croton River, as well as undeveloped, mainly forested parcels.
>
> The uplands on the site were originally maintained as agricultural pastures, after use as a dairy farm, but are now mostly overgrown with trees and invasive shrubs and vines (i.e. autumn olive and multiflora rose shrubs, and mile-a-minute and oriental bittersweet vines, among others). No buildings remain on the property, although roads and utility poles are still present. Portions of DEC Freshwater Wetlands LC-18 and LC-28 are located on the subject property. The on-site portions of DEC wetland LC-18 comprise two wetlands in the center of the property, west of Pugsley Road and Fields Corner Road; the two wetlands are connected by a culvert beneath Barrett Road. The on-site portion of DEC Freshwater Wetland LC-28 is located in the southeast corner of the site, east of Pugsley Road, and north of Route 312. The watercourses associated with these three wetlands are Class C.
>
> The site was formally known as Campus at Field Corners, a mixed residential/commercial development, and wetlands were delineated in 2004 for that project. These previously-delineated wetland lines were re-staked by the surveyors during the summer of 2017, and both the Town Wetland Consultant (Steve Coleman) and DEC staff (Kelly McKean) have re-confirmed th wetland boundaries as accurate in 2018. The development that is currently proposed for the site involves large storage warehouses that are proposed to be located in the uplands of the site.

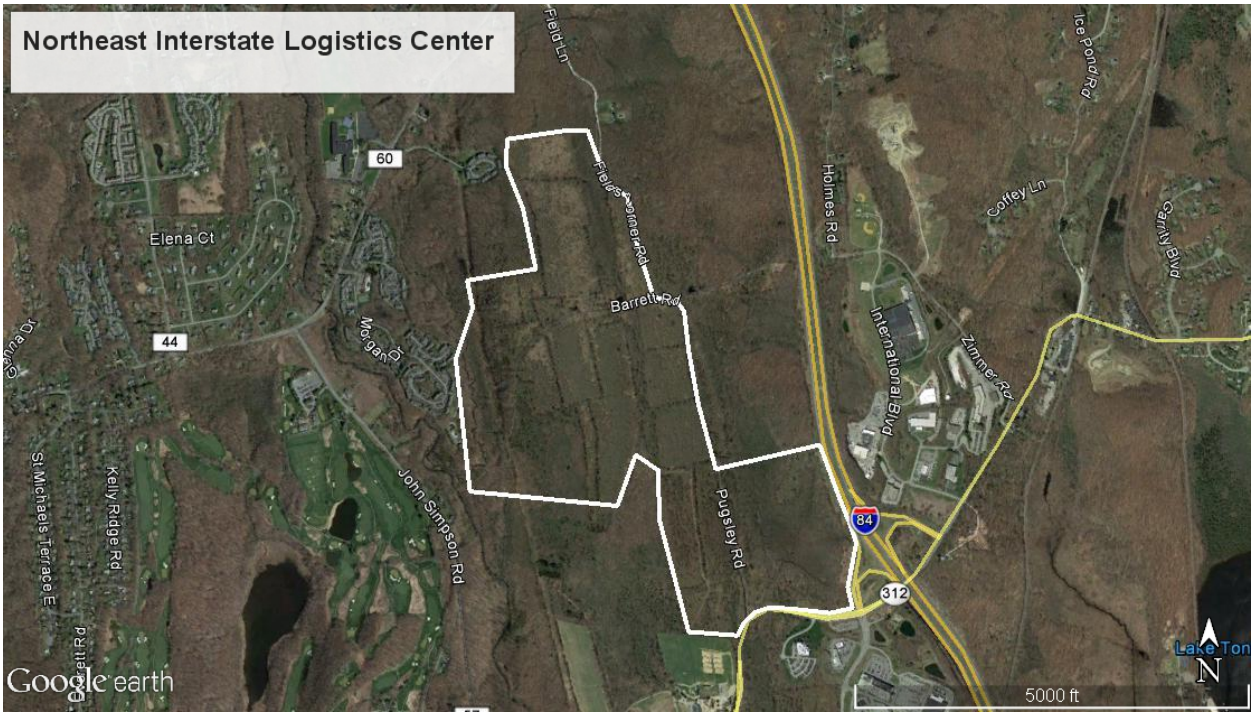

Figure 1. Northeast Interstate Logistics Center Study Area (white polygon).

METHODOLOGY

Topographic maps and aerial photographs of the site were evaluated prior to an onsite habitat assessment. The study area was assessed on December 18, 2018. Photographs and detailed notes were taken of habitats found during the habitat investigation. These habitats were compared to the life history requirements of herpetofauna found within proximity to the study area. A notional list of amphibians and reptiles that could inhabit the study area based on observed conditions was created as a result of this investigation and background work. It is important to note that habitat assessments determine the potential suitability of habitats within a study area, not the actual presence or inferred absence of species within those potential habitats.

RESULTS

Habitat-types of note found within the study area included: meadows/old fields, woodlands, open-canopy fishless pond, closed-canopy fishless ponds, watercourses (unnamed tributaries to the Middle Branch Croton River), an apparent central mixed emergent/scrub-shrub/wooded wetland (PEM/PSS/PFO) corridor, and a large apparent mixed emergent/scrub-shrub/wooded wetlands (PEM/PSS/PFO). Please note, MACHAC did not conduct wetlands or waters delineations and the presence of these habitats are based on surveyor opinion. Refer to Appendix 1 for representative habitat images taken onsite. Soils throughout the site ranged from loams to fine sandy loams and mucks (refer to Appendix 2 for an NRCS soils map of the general project area). Table 1 relates the potential species list created from the onsite habitat assessments. This potential list includes 37 species of amphibians and reptiles. Of these potential species, the Bog Turtle is protected by both the New York State Department of Environmental Conservation (NYSDEC), listed as an state “Endangered” species, and the United States Fish and Wildlife Service (USFWS), as a federally “Threatened” species. An additional 7 potential species are listed as “Species of Special Concern” by the NYSDEC: Jefferson Salamander, Blue-spotted Salamander, Marbled Salamander, Spotted Turtle, Wood Turtle, Eastern Box Turtle, and Eastern Hog-nosed Snake. Three

potential species, the Four-toed Salamander, Atlantic Coast Leopard Frog and, Eastern Musk Turtle, are considered "Species of Greatest Conservation Need", a conservation status rather than a regulatory status.

Table 1: Notational list of amphibians and reptiles potentially found within the study area. Bolded and green species are those species listed as "Species of Greatest Conservation Need" by the NYSDEC. Bolded and blue species are those species listed as "Species of Special Concern" by the NYSDEC. Bolded and red species are those species listed as both "Endangered" by the NYSDEC and "Threatened" by the USFWS. Please note, the naming convention follows Crother (2017) and may be different than the naming convention of the regulatory agencies which are typically slow to change scientific nomenclature due to procedural impediments.

Group	Common Name	Scientific Name
Salamanders	**Jefferson Salamander complex**	***Ambystoma jeffersonianum***
	Spotted Salamander	*Ambystoma maculatum*
	Blue-spotted Salamander complex	***Ambystoma laterale***
	Marbled Salamander	***Ambystoma opacum***
	Northern Dusky Salamander	*Desmognathus fuscus*
	Northern Two-lined Salamander	*Eurycea bisineata*
	Northern Spring Salamander	*Gyrinophilus porphyriticus*
	Four-toed Salamander	***Hemidactylium scutatum***
	Red-spotted Newt	*Notophthalmus viridescens*
	Northern Red-backed Salamander	*Plethodon cinereus*
	Northern Slimy Salamander	*Plethodon glutinosus*
Frogs	American Toad	*Anaxyrus americanus*
	Gray Treefrog	*Hyla versicolor*
	Bullfrog	*Lithobates catesbeianus*
	Green Frog	*Lithobates clamitans*
	Atlantic Coast Leopard Frog	***Lithobates kauffeldi***
	Pickerel Frog	*Lithobates palustris*
	Wood Frog	*Lithobates sylvaticus*
	Spring Peeper	*Pseudacris crucifer*
Turtles	Snapping Turtle	*Chelydra serpentina*
	Painted Turtle	*Chrysemys picta*
	Spotted Turtle	***Clemmys guttata***
	Wood Turtle	***Glyptemys insculpta***
	Bog Turtle	***Glyptemys muhlenbergii***
	Eastern Musk Turtle	***Sternotherus odoratus***
	Eastern Box Turtle	***Terrapene carolina***
Snakes	North American Racer	*Coluber constrictor*
	Ring-necked Snake	*Diadophis punctatus*
	Eastern Milksnake	*Lampropeltis triangulum*
	Eastern Hog-nosed Snale	***Heterodon platirhinos***
	Common Watersnake	*Nerodia sipedon*
	Smooth Greensnake	*Opheodrys vernalis*
	Eastern Ratsnake	*Pantherophis alleghaniensis*
	Dekay's Brownsnake	*Storeria dekayi*
	Red-bellied Snake	*Storeria occipitomaculata*
	Common Gartersnake	*Thamnophis sirtalis*
	Eastern Ribbonsnake	*Thamnophis saurita*

Jefferson Salamander Complex (Ambystoma jeffersonianum)

Species of Special Concern - NYSDEC

The Jefferson Salamander Complex (associated unisexual hybrids) requires both aquatic breeding habitats and terrestrial upland habitats. Breeding habitats include fishless ponds, seasonal forest pools, swamps, and marshes and are utilized by adults from late winter to early spring. After hatching, larvae will remain in the breeding habitats until metamorphosis occurs later in the summer. The species will occasionally breed in slow-moving streams that lack gamefish. Terrestrial habitats include woodlands and meadows within 1,600 meters of breeding habitats (Bishop 1941, Williams 1973, Downs, 1989). Potentially suitable breeding habitats were encountered onsite for this species in the form of 3 onsite fishless ponds and associated wetlands, and the large wetland located in the southeastern portion of the study area near the Route 312 and I-84 interchange (Figure 2). Potentially suitable upland habitats were observed in all undeveloped portions the study area within 1,600 meters of potential breeding habitats. The study area is within a region that contains both the Jefferson Salamander and its closely-related congener, the Blue-spotted Salamander. Both species can utilize similar breeding habitats but are typically not sympatric in breeding habitats. Refer to Calhoun and Klemens (2002), for best development practices involving seasonal breeding amphibians.

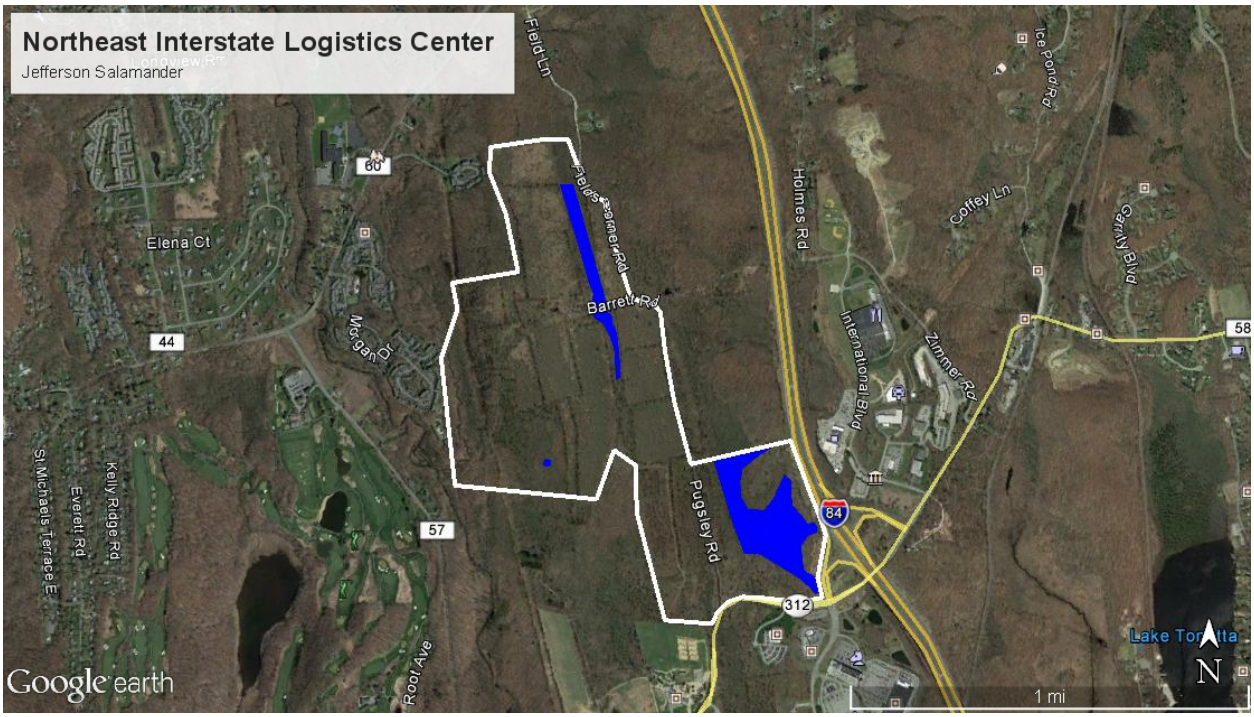

Figure 2: Potentially suitable breeding habitats (blue polygons) for the Jefferson Salamander within the study area. Note, the map depicts potentially suitable critical breeding habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions of the study area, within 1,600 meters of potential breeding habitats.

Blue-spotted Salamander Complex (Ambystoma laterale)

Species of Special Concern - NYSDEC

The Blue-spotted Salamander Complex (associated unisexual hybrids) requires both aquatic breeding habitats and terrestrial upland habitats. Breeding habitats include fishless ponds, seasonal forest pools, swamps, and marshes and are utilized by adults from late winter to early spring. After hatching, larvae will remain in the breeding habitats until metamorphosis occurs later in the summer. The species will occasionally breed in slow-moving streams that lack gamefish. Terrestrial habitats include woodlands and meadows within 300 meters of breeding habitats (Ryan and Calhoun 2014). Potentially suitable breeding habitats were encountered onsite for this species in the form of 3 onsite fishless ponds and associated wetlands, and the large wetland located in the southeastern portion of the study area near the Route 312 and I-84 interchange (Figure 3). Potentially suitable upland habitats were observed in all undeveloped portions of the study area within 300 meters of potential breeding habitats. The study area is within a region that contains both the Jefferson Salamander and its closely-related congener, the Blue-spotted Salamander. Both species can utilize similar breeding habitats but are typically not sympatric in breeding habitats. Refer to Calhoun and Klemens (2002), for best development practices involving seasonal breeding amphibians.

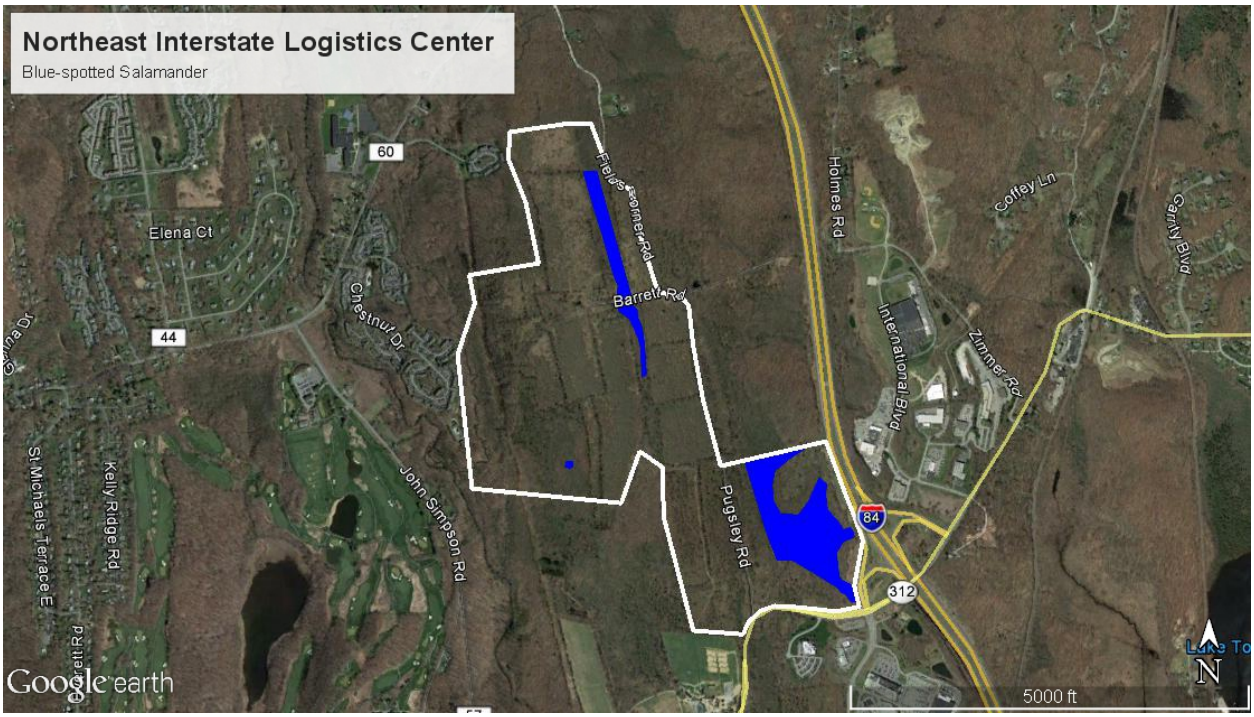

Figure 3: Potentially suitable breeding habitats (blue polygons) for the Blue-spotted Salamander within the study area. Note, the map depicts potentially suitable critical breeding habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions of the study area, within 300 meters of potential breeding habitats.

Marbled Salamander (Ambystoma opacum)

Species of Special Concern - NYSDEC

The Marbled Salamander requires both aquatic breeding habitats and terrestrial upland habitats. Breeding habitats include fishless ponds, seasonal forest pools, swamps, and marshes and are utilized by adults in late summer through fall. Females lay eggs in dry areas of breeding habitats that become inundated by fall rains. After hatching, larvae will remain in the breeding habitats until metamorphosis occurs typically in late spring. The species will occasionally breed in slow-moving streams that lack gamefish. Terrestrial habitats include woodlands and meadows within ±350 meters of breeding habitats (Scott et al. 2013). Potentially suitable breeding habitats were encountered onsite for this species in the form of 3 onsite fishless ponds and associated wetlands, and the large wetland located in the southeastern portion of the study area near the Route 312 and I-84 interchange (Figure 4). Potentially suitable upland habitats were observed in all undeveloped portions of the study area within 350 meters of potential breeding habitats. Refer to Calhoun and Klemens (2002), for best development practices involving seasonal breeding amphibians.

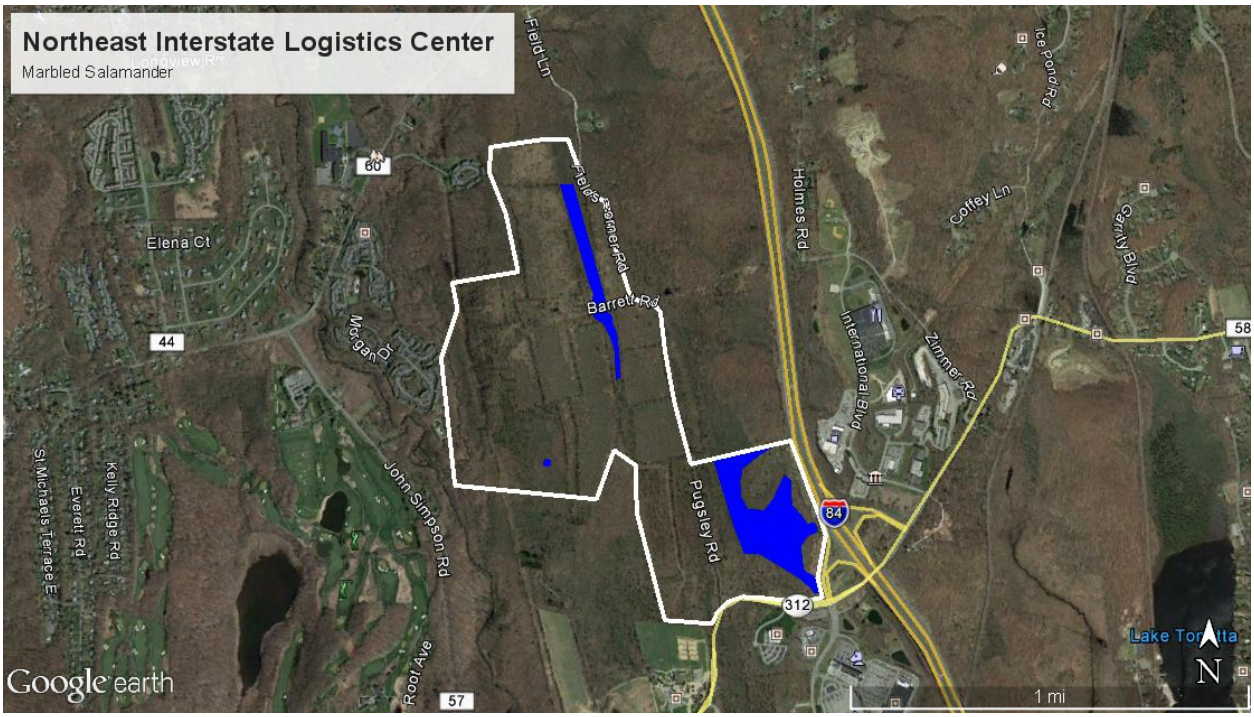

Figure 4: Potentially suitable breeding habitats (blue polygons) for the Marbled Salamander within the study area. Note, the map depicts potentially suitable critical breeding habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions of the study area, within 350 meters of potential breeding habitats.

Four-toed Salamander (Hemidactylium scutatum)

Species of Greatest Conservation Need - NYSDEC

The Four-toed Salamander requires both aquatic habitats for egg-deposition and terrestrial upland habitats for the majority of life history functions. Breeding habitats include fishless ponds, seasonal forest pools, swamps, wet meadows, fens, and marshes, and are utilized by females in late winter through spring. Females lay eggs in moss clumps, sedge clumps, and under debris such as bark, overhanging still or slowly moving water. After hatching, larvae will remain in the breeding habitats until metamorphosis occurs typically in mid- to late-spring. The species will occasionally breed in slow-moving streams that lack gamefish. Terrestrial habitats include woodlands and meadows within 350 meters of breeding habitats (Vitale 2013). Potentially suitable breeding habitats were encountered onsite for this species in the form of 3 onsite fishless ponds and associated wetlands, and the large wetland located in the southeastern portion of the study area near the Route 312 and I-84 interchange (Figure 5). Potentially suitable upland habitats were observed in all undeveloped portions of the study area, within 350 meters of potential breeding habitats. Refer to Calhoun and Klemens (2002), for best development practices involving seasonal breeding amphibians.

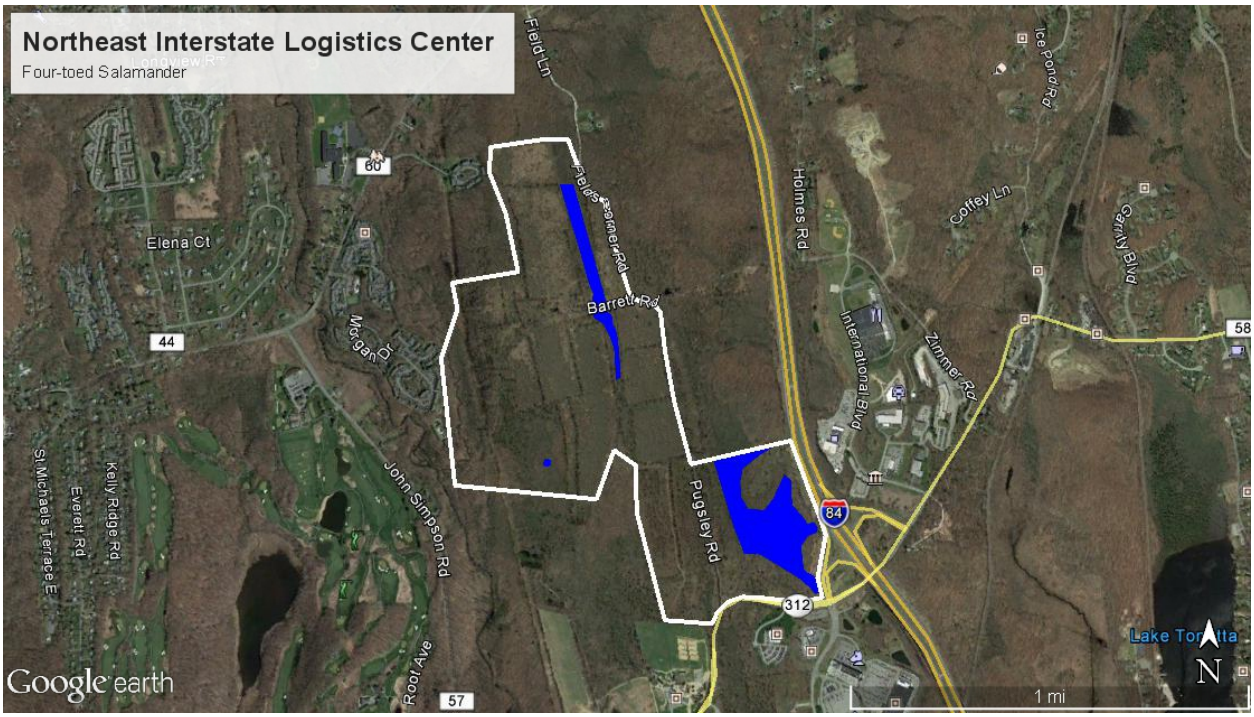

Figure 5: Potentially suitable breeding habitats (blue polygons) for the Four-toed Salamander within the study area. Note, the map depicts potentially suitable critical breeding habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions of the study area, within 350 meters of potential breeding habitats.

Atlantic Coast Leopard Frog (*Lithobates kauffeldi*)

Species of Greatest Conservation Need – NYSDEC

The Atlantic Coast Leopard Frog is a recently described species found in southeastern New York with known locations near the study area (Feinberg et al. 2014). The species breeds in ponds, lakes, marshes, swamps, and other wetlands from March through May. It is believed to utilize upland meadows and woodlands outside of the breeding season. Breeding habitats often have emergent or shrub littoral zones and species such as sedges, cat-tails, buttonbush, and common reed are present in many sites. Migration distances to breeding habitats are unknown as little is known about the frog in general. Potentially suitable breeding habitats were encountered onsite for this species in two locations: the pond along the former Barrett Road (emergent littoral zone) and associated common reed/sedge outflow (on south-side of former Barrett Road), and the large wetland located in the southeastern portion of the study area near the Route 312 and I-84 interchange (Figure 6). Potentially suitable upland habitats were observed in all undeveloped portions of the study area.

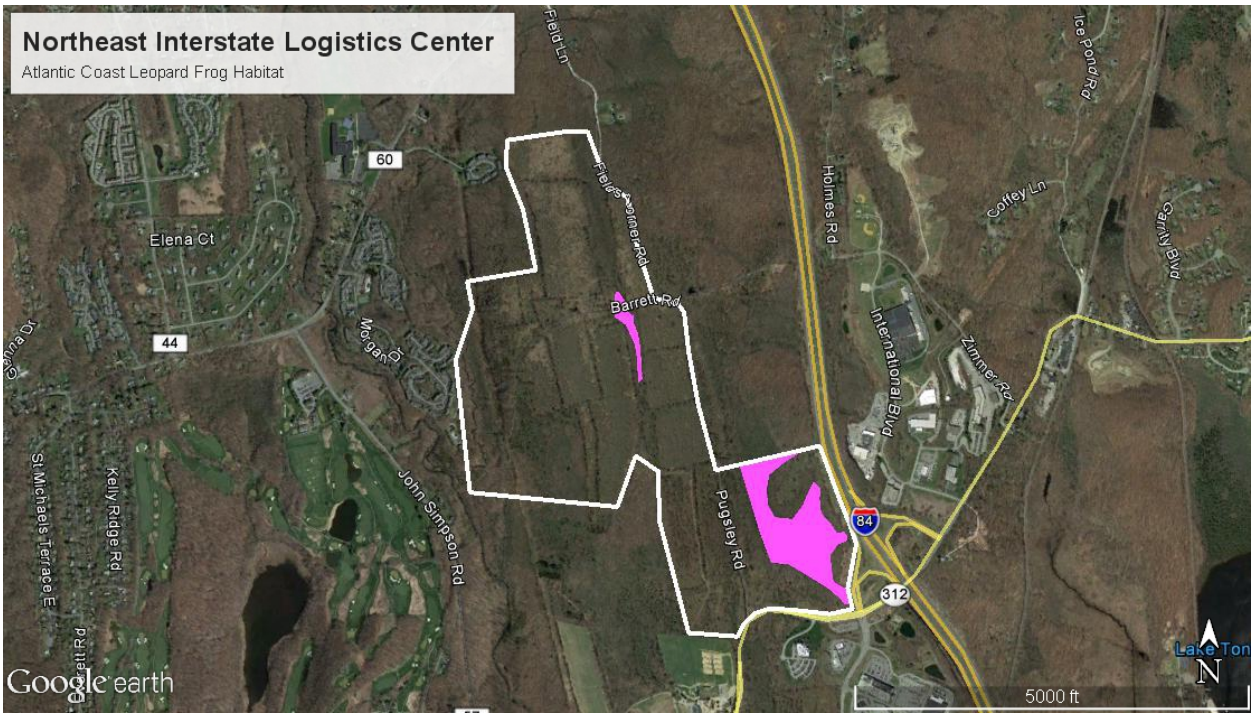

Figure 6: Potentially suitable breeding habitats (purple polygons) for the Atlantic Coast Leopard Frog within the study area. Note, the map depicts potentially suitable critical breeding habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions of the study area.

Spotted Turtle (*Clemmys guttata*)

Species of Special Concern – NYSDEC

The Spotted Turtle is a small semi-aquatic species that utilizes both aquatic and upland habitats. Spotted Turtles overwinter in ponds, swamps, marshes, seasonal forest pools, wet meadows, mucky seepages, ditches, and fens. Adults nest in habitats such as fields, meadows, and road edges. Adults may move up to 500 meters between habitats to forage, find mates, and nest (Ernst 1976, Hunter et al. 1992). Potentially suitable aquatic habitats were encountered onsite for this species in the form of 3 onsite fishless ponds and associated wetlands, and the large wetland located in the southeastern portion of the study area near the Route 312 and I-84 interchange (Figure 7). Potentially suitable upland habitats were observed in all undeveloped portions of the study area within 500 meters of aquatic habitats.

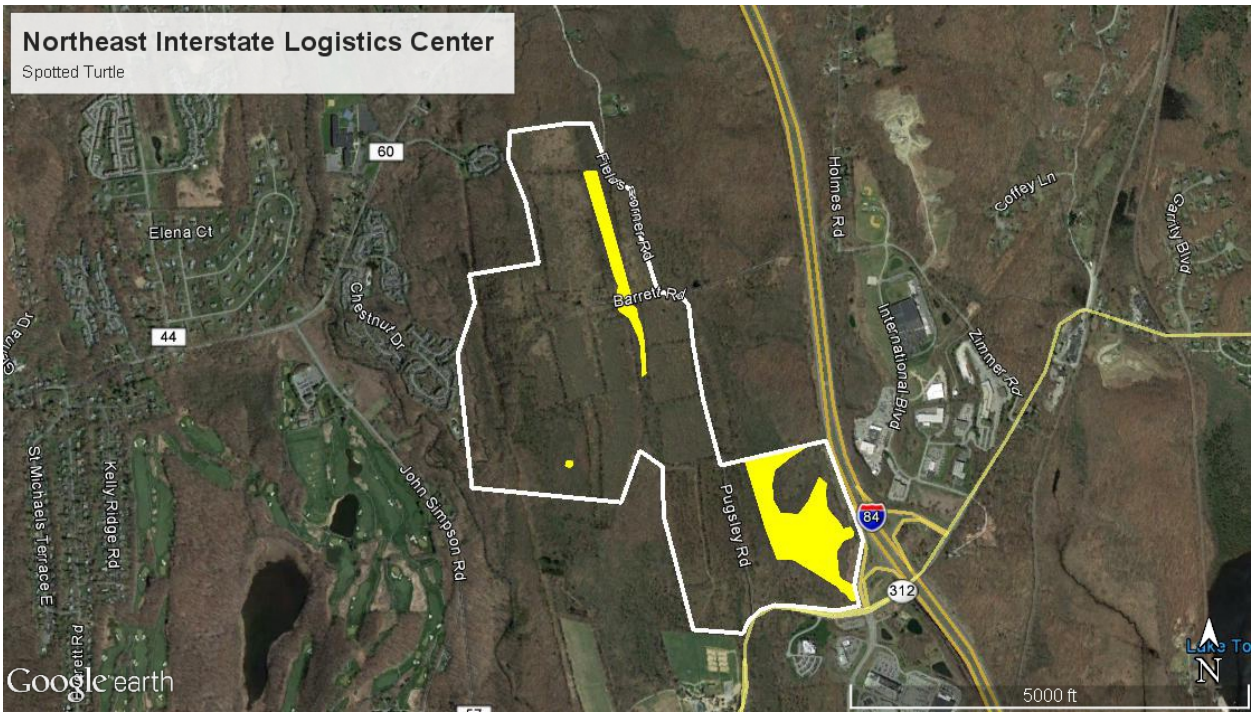

Figure 7: Potentially suitable aquatic habitats (yellow polygons) for the Spotted Turtle within the study area. Note, the map depicts potentially suitable aquatic habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions the study area within 500 meters of aquatic habitats.

Wood Turtle (*Glyptemys insculpta*)

Species of Special Concern – NYSDEC

The Wood Turtle is a large, semi-aquatic turtle that is typically found in streams and rivers and adjacent upland habitats such as woods and fields/meadows. Upland habitat use is typically restricted to within 200 meters of aquatic habitats, but adults have been known to make migrations in excess of 3.5 kilometers for foraging and nesting (Walde 1998, Ernst 2001). Females utilize old fields/meadows, road edges, and manicured lawns for nesting. Potentially suitable aquatic habitats were found in two portions of the study area, both unnamed tributaries to the Middle Branch Croton River (southeastern portion and along boundary of west-central study area). Refer to Figure 8 for aquatic habitat locations. Potentially suitable upland habitats were observed in all undeveloped portions of the study area, though typical upland habitat use for the species is within 200 meters of aquatic habitats.

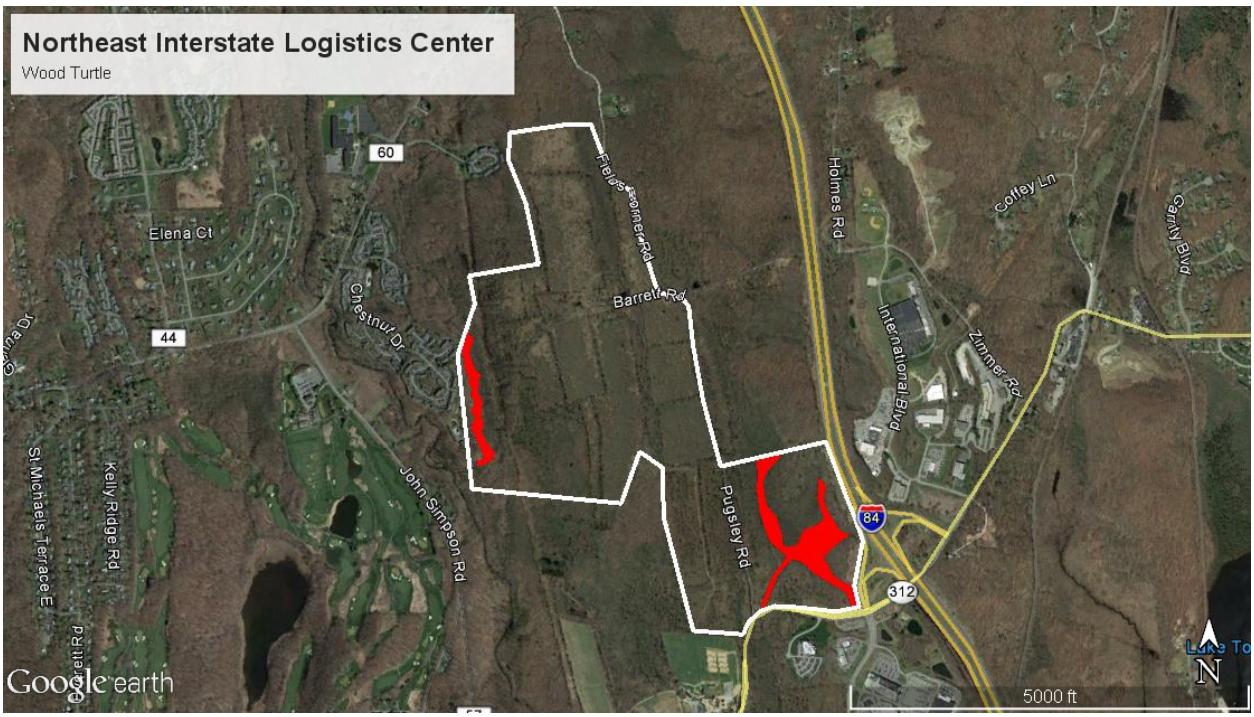

Figure 8: Potentially suitable aquatic habitats (red polygons) for the Wood Turtle within the study area. Note, the map depicts potentially suitable aquatic habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions the study area. Typical upland habitat use for the species is within 200 meters of aquatic habitats.

Bog Turtle (*Glyptemys muhlenbergii*)

Federally-Threatened (USFWS), State-Endangered (NYSDEC)

The Bog Turtle is a small, semi-aquatic turtle that utilizes groundwater-fed wetlands with saturated soils. Bog Turtles require emergent wetland habitats for nesting, but will regularly utilize scrub-shrub and forested wetlands for life history functions. Bog Turtles typically stay within aquatic habitats but will estivate in uplands, typically within 100 meters of the wetland edge. Bog Turtles have been tracked by the author making migrations between suitable habitats of >1 kilometer in Pennsylvania. Saturated soils, informally called "muck" (not to be confused with soils formally named mucks) are typically present at occupied sites and can be probed to depths >10 centimeters. Two potentially suitable Bog Turtle habitats were encountered within the study area (Figure 9). Refer to Appendix 3 for USFWS Bog Turtle Phase 1 Data Forms.

Habitat Area 1 (Figure 10) is located to the south of the former Barrett Road, below the Barrett Road pond. Common reed was found within the northern portion of Area 1 and transitioned into a sedge meadow dominated by tussock sedge (*Carex stricta*), with sensitive fern, mosses, and grasses. The common reed is apparently overtaking the tussock sedge meadow. Red maple trees were noted as encroaching the wetland and shading portions of the sedge meadow. The habitat area narrowed as traveling south and is mostly shaded in the lower section. Seepages, rivulets, and sub-surface flow were noted throughout the habitat area. Pockets of saturated soils were probed to >30 centimeters, with an average probable range of 15-20 centimeters. Habitat Area 1 core covers an estimated area of 0.6-0.8-hectare (1.5-2 acres).

Habitat Area 2 (Figure 11) is located in the southeastern portion of the study area, between Pugsley Road and I-84. The large wetland complex contains an estimated 23 acres of potentially suitable Bog Turtle habitat. The majority of the wetland has transitioned in scrub-shrub (dogwoods, winterberry, arrowwood, highbush blueberry) and forested (red maple and blackgum) cover types, but small emergent patches, dominated by tussock sedge and other sedges, were noted as interspersed throughout the wetland. Common reed dominated the center southeastern portion of the wetland, but some patches of lower emergent vegetation were noted. The wetland is a large groundwater collection basin and forms the headwater to an unnamed tributary to the Middle Branch Croton River. Groundwater emergence was noted throughout the wetland with numerous seepages, rivulets, channels, and subsurface flow. Mucky soils ranged from 10-76 centimeters in depth. Habitat Area 3 core covers an estimated area of ±9.3 hectares (±23 acres).

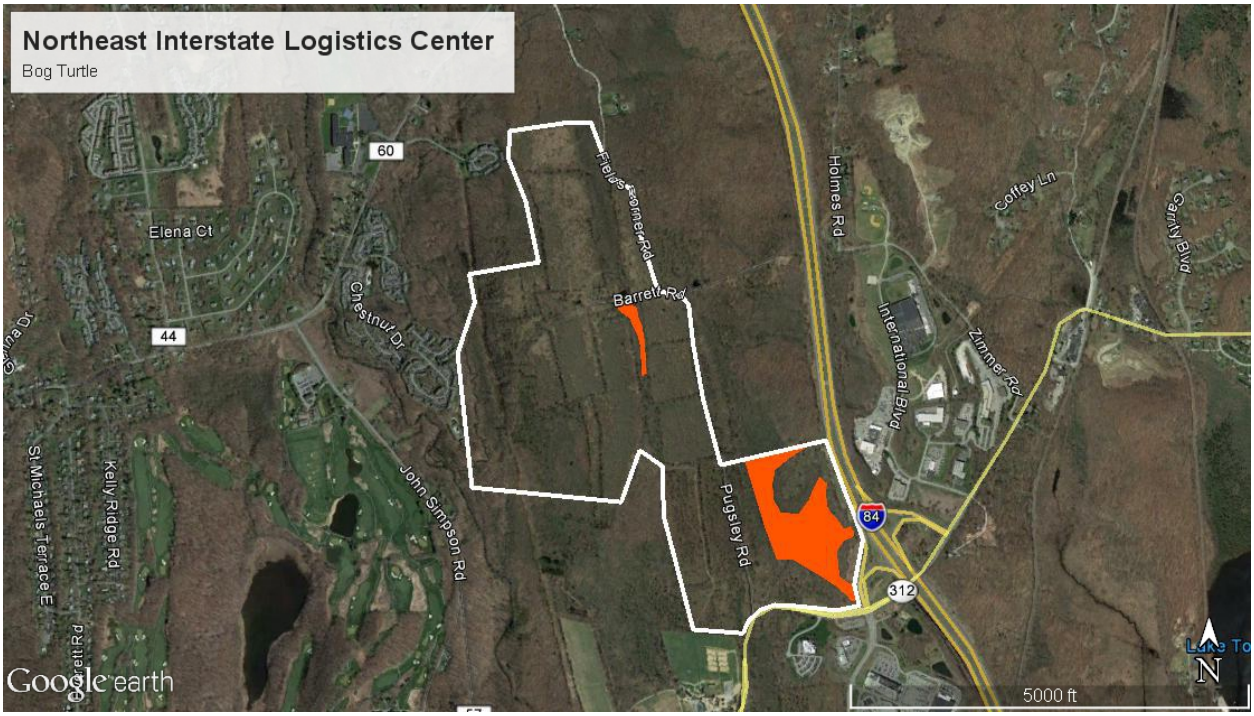

Figure 9: Potentially suitable aquatic habitats (orange polygons) for the Bog Turtle within the study area. Note, the map depicts potentially suitable aquatic habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions the study area. Typical upland habitat use for the species is within 100 meters of aquatic habitats.

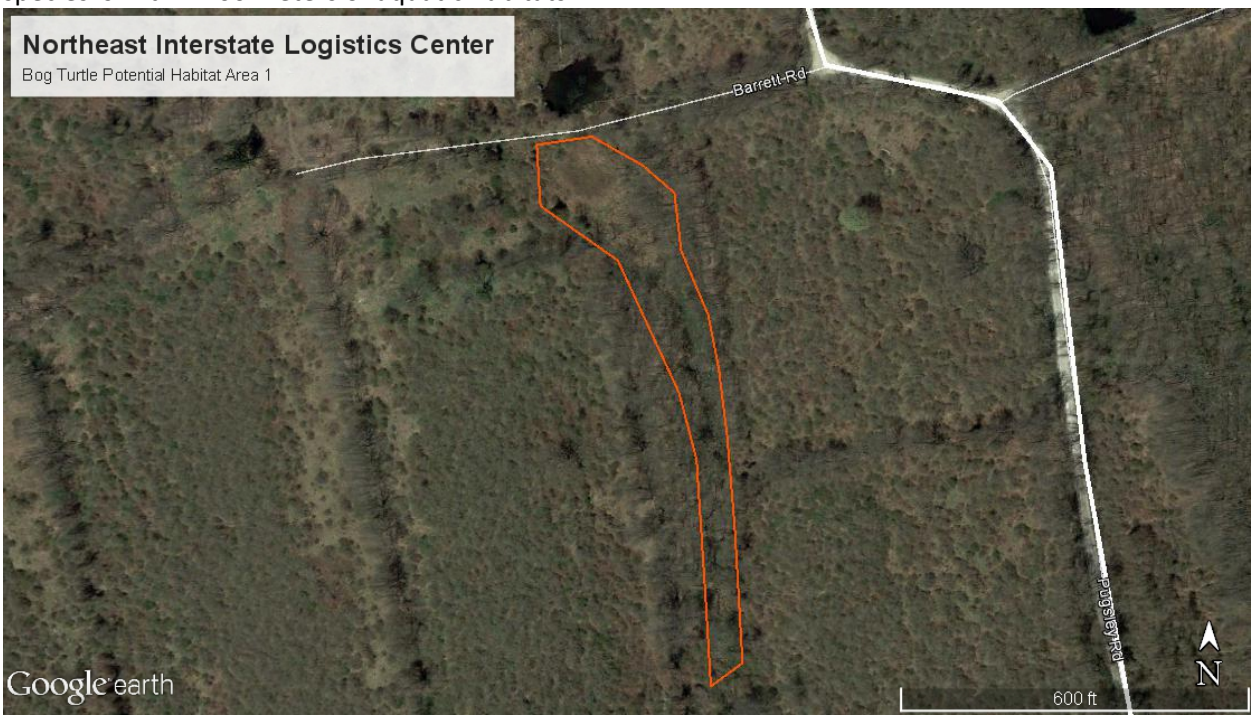

Figure 10: Habitat Area 1 (orange polygons) for the Bog Turtle within the study area. Note, the map depicts potentially suitable aquatic habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions the study area. Typical upland habitat use for the species is within 100 meters of aquatic habitats.

Figure 11: Habitat Area 2 (orange polygons) for the Bog Turtle within the study area. Note, the map depicts potentially suitable aquatic habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions the study area. Typical upland habitat use for the species is within 100 meters of aquatic habitats.

Eastern Musk Turtle (*Sternotherus odoratus*)

Species of Special Concern – NYSDEC

The Eastern Musk Turtle is a small, aquatic species typically found in permanent or semi-permanent aquatic habitats such as streams, rivers, ponds, lakes, swamps, and marshes. The species rarely forays into upland habitats with the exception of nesting females which have been found to typically nest within 50 meters of aquatic habitats such as fields/meadows, woodlands, road edges, and flower beds (Steen et al. 2012). Potentially suitable aquatic habitats were found in several portions of the study area: the central wetlands corridor and associated ponds to the north and south of the former Barrett Road and in both unnamed tributaries to the Middle Branch Croton River (southeastern portion and along boundary of west-central study area). Refer to Figure 12 for aquatic habitat locations. Potentially suitable upland habitats were observed in all undeveloped portions of the study area, though typical upland habitat use for the species is within 50 meters of aquatic habitats.

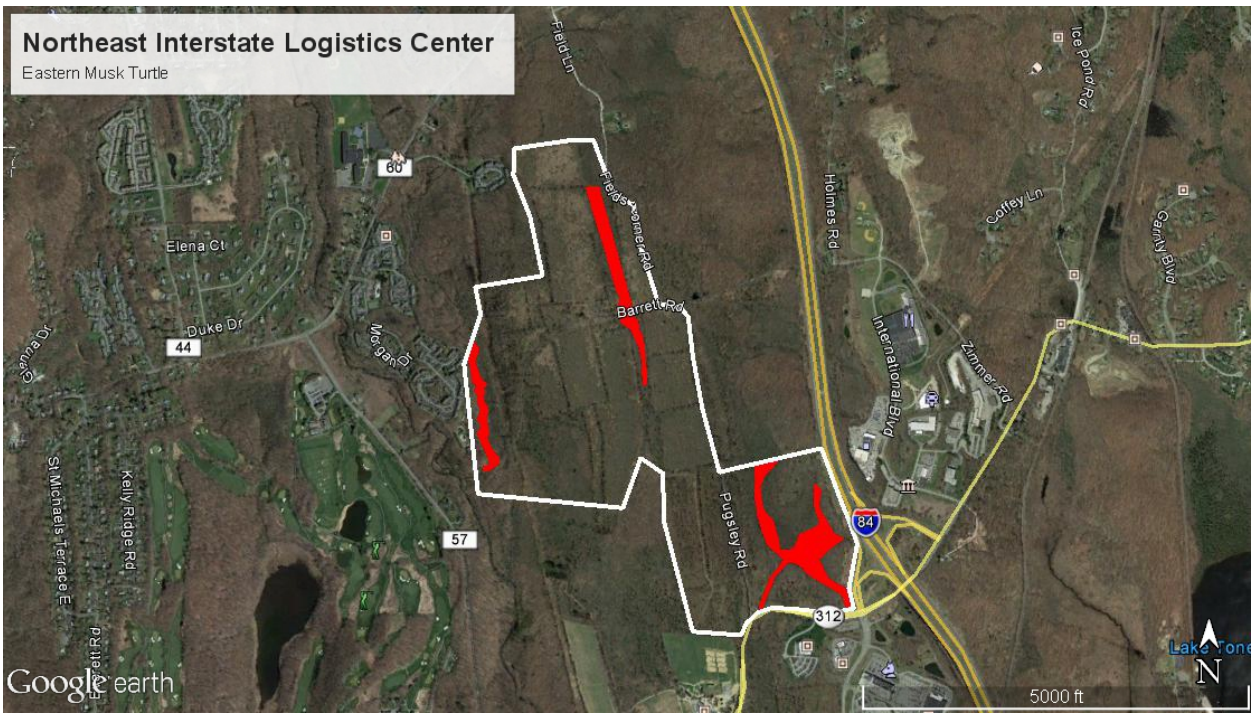

Figure 12: Potentially suitable aquatic habitats (red polygons) for the Eastern Musk Turtle within the study area. Note, the map depicts potentially suitable aquatic habitats only. Potentially suitable critical upland habitats were observed in all undeveloped portions the study area within 50 meters of aquatic habitats.

Eastern Box Turtle (*Terrapene carolina*)

Species of Special Concern – NYSDEC

The Eastern Box Turtle is a terrestrial species that typically utilizes upland habitat such as old fields/meadows, woodlands, and shrublands. The species will also occasionally utilize wetlands for foraging and overwintering. Home range size is typically several hectares, but may be as large as 19.2 hectares (±47.4 acres). Potentially suitable foraging habitat was found throughout the study area, in all habitat types. Potentially suitable critical nesting habitat was more limited, however, to old fields/meadows and edges of wooded habitats where conditions were more open and thus suitable for nesting. Several of the old fields within the study area (generally south of the former Barrett Road) have dense thickets of non-native vegetation, including oleasters (*Elaeagnus* spp.), honeysuckle, multi-flora rose, Japanese barberry, and mile-a-minute (Asiatic tearthumb). While some of these thickets may provide too much shade for successful nesting, they are suitable for other biological needs of the turtles. Additionally, a number of gaps in the thickets and open-edges were noted which could provide ample opportunities for nesting. Old fields/meadows to the north of the former Barrett Road maintain ideal conditions for Eastern Box Turtle nesting.

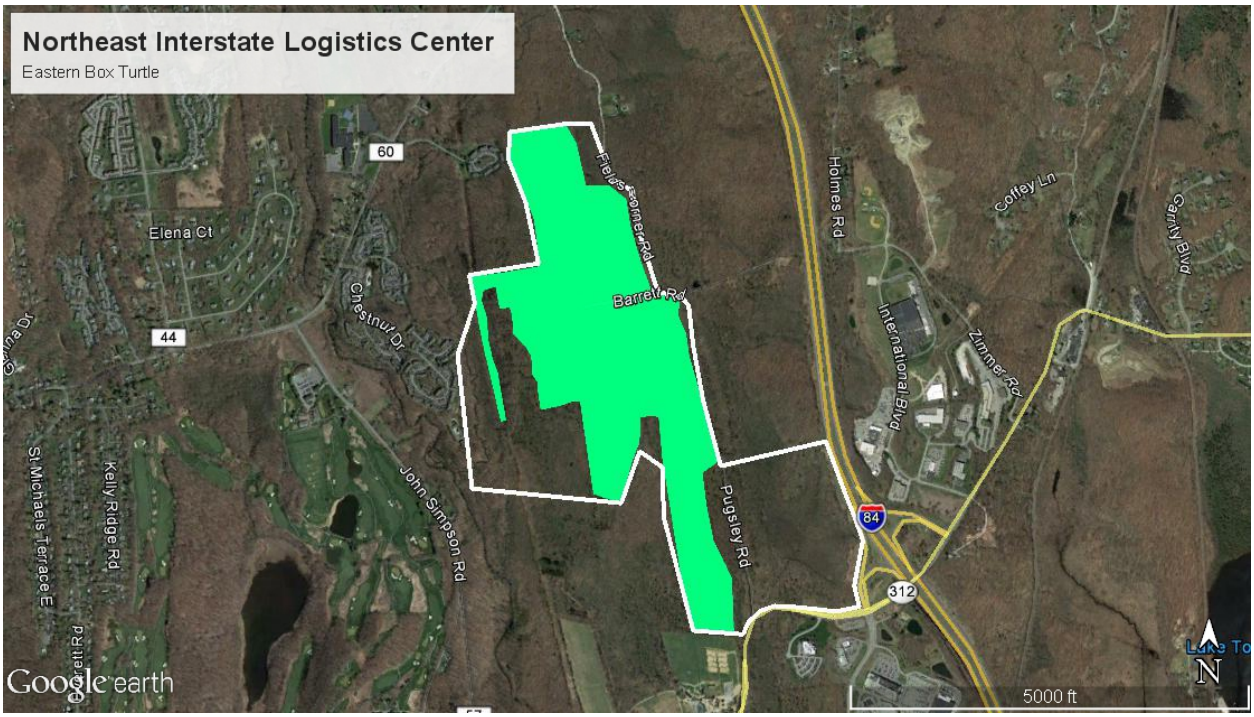

Figure 13: Potentially suitable aquatic habitats (green polygons) for the Eastern Box Turtle within the study area. Note, the map depicts potentially suitable critical nesting habitats only.

Eastern Hog-nosed Snake (*Heterodon platirhinos*)

Species of Special Concern – NYSDEC

The Eastern Hog-nosed Snake is cryptic species found in habitats such as sandy fields, sandy woodlands, rocky woods, rock outcrops, and ridgelines. These habitats are often near aquatic habitats that maintain its preferred prey of toads. The species has a patchy distribution and years and is rarely encountered compared to other species of snakes. Marginally suitable habitat was found within the study area in portions with sandy loams and old fields/meadows and adjacent woodlands. The species is closely associated with more xeric soils in sandy or rocky areas, but the species does regionally inhabit sites with sandy loams, such as those found within the study area. The various wetlands and ponds found onsite most likely provide ample breeding habitat for the American Toad, a favorite prey species of the Eastern Hog-nosed Snake.

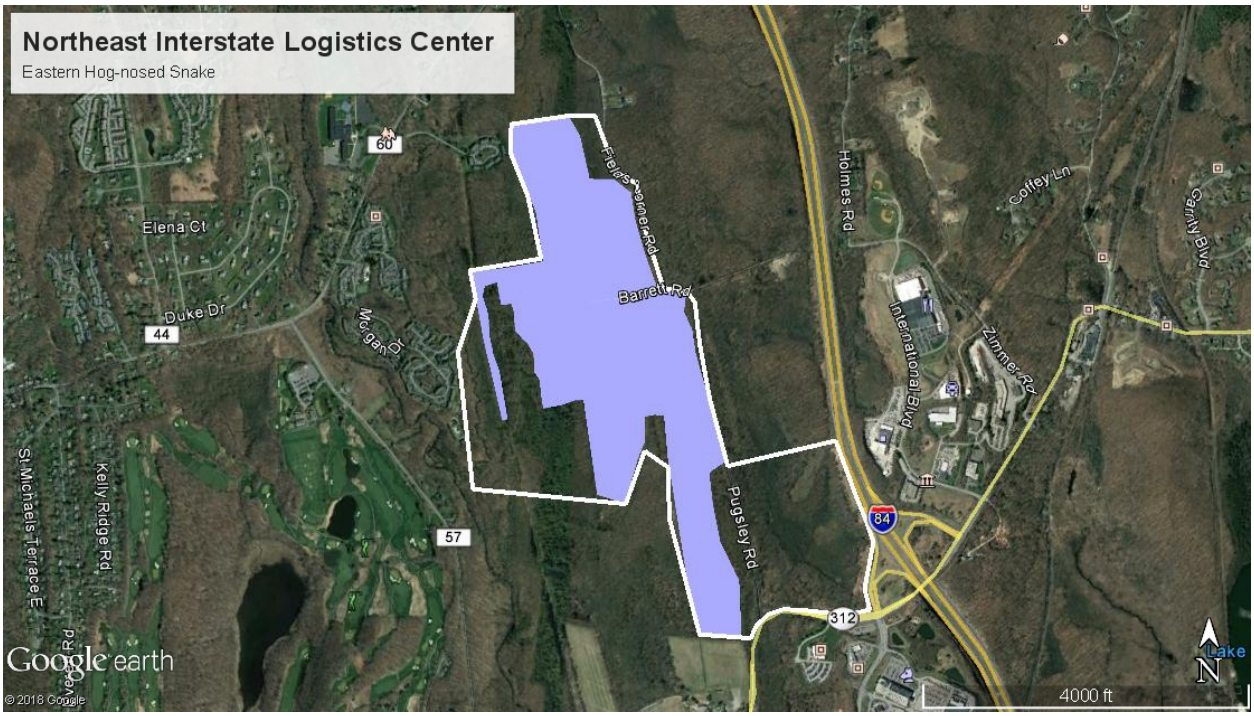

Figure 14: Potentially suitable aquatic habitats (blue polygons) for the Eastern Hog-nosed Snake within the study area.

OPINIONS AND RECOMMENDATIONS

Habitat investigations at the proposed Northeast Interstate Logistics Center resulted in the creation of a potential amphibian and reptile list totaling some 37 species, including species recognized as of conservation concern by the USFWS and NYSDEC. In the opinion of the surveyor, further consultation with the USFWS, NYSDEC, and Town of Southeast is suggested. Consultation will help determine if additional studies and planning is required as a result of the conditions found onsite for amphibians and reptiles. Additionally, the applicant should consider potential minimization strategies for reducing or eliminating impacts to habitats and rare species. These minimizations may include, but are not limited to, the following:

1) Engage presence/inferred absence surveys targeted for the species of conservation concern. If the surveys are of a sufficient duration and methodology and species of conservation concern are not detected, no further planning for these species need occur. Environmentally-conscious development of the site is, of course, encouraged where practicable.

2) Provide suitable buffers on critical habitats for species of concern based on the life history requirements of the species. This can be accomplished without engaging in further presence/inferred absence surveys (assumption of presence) or as a result of detecting certain species during presence/inferred absence surveys. Potential sources for this planning includes the aforementioned stakeholder agencies, professional herpetology planning organizations, and publications such as Calhoun and Klemens (2002) and Mitchell et al. (2006).

3) Consider improving onsite habitats for species that may lose habitat as a result of development within the study area. For instance, Eastern Box Turtle habitat throughout the site may be improved through the reduction of non-native plants and the establishment of native meadow species. Partnered with activities like occasional meadow management (such as rotational conservation mowing with a blade height set to 8 inches or above) and/or use of fencing to keep animals off constructed roads and workspaces (reducing mortality), the quality of Eastern Box Turtle habitats could be improved even if the overall area of habitat declines.

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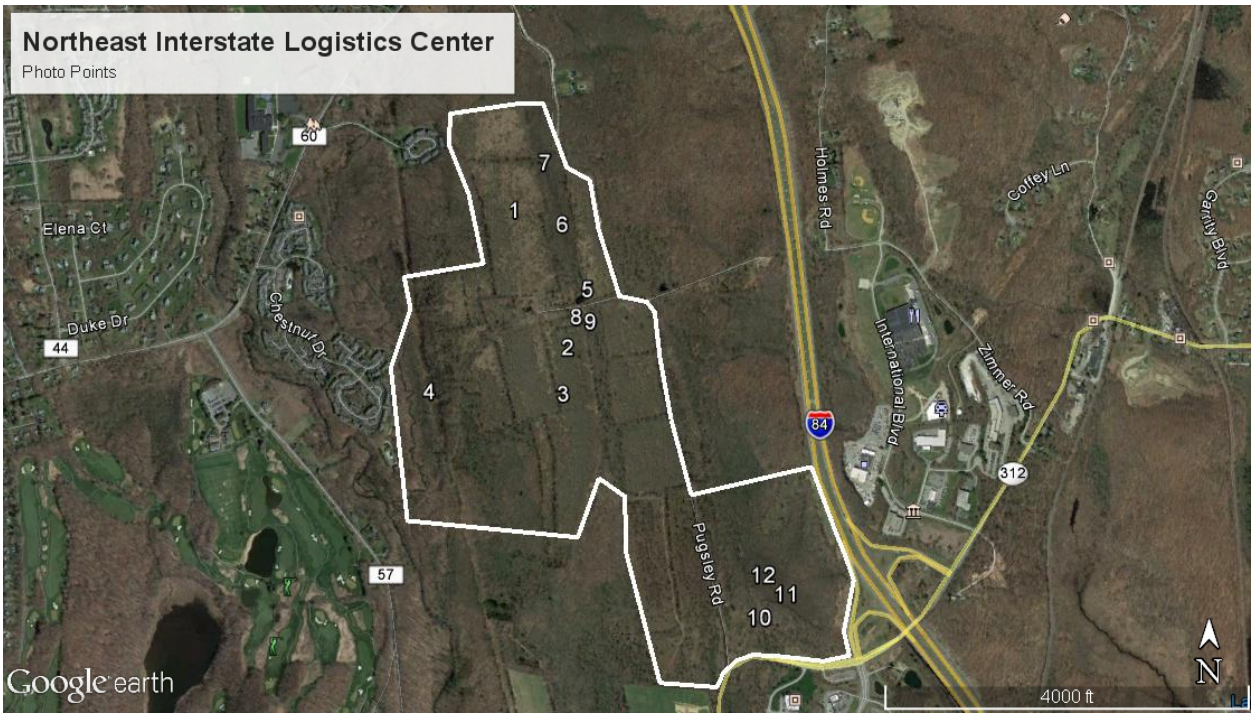
APPENDIX 1 – SITE PHOTOGRAPHS



Photographic Key: Numbers relate the photo point locations of the below figures. The directions in which the images were taken are listed within each photo caption.

Figure 1: View north of old field/meadow habitat north of former Barrett Road.

Figure 2: View south of old field/meadow habitat south of former Barrett Road.

Figure 3: View south of old field/meadow shrub thicket habitat south of former Barrett Road.

Figure 4: View west of wester UNT to the Middle Branch Croton River and floodplain and meadow habitat on overhead powerline ROW.

Figure 5: View north of fishless pond immediately north of the former Barrett Road.

Figure 6: View north of wooded wetland north of fishless pond above Barrett Road.

Figure 7: View north of fishless pond at northern edge of wetland corridor north of Barrett Road.

Figure 8: View north of potential Bog Turtle Wetland 1 south of former Barrett Road, showing common reed edge encroachment into tussock sedge wetland.

Figure 9: View south of potential Bog Turtle Wetland 1 south of former Barrett Road, showing emergent sedge wetland south of common reed stand.

Figure 10: View north of UNT to Middle Branch Croton River outflow of large wetland between Pugsley Road and I-84.

Figure 11: View east of emergent patch in potential Bog Turtle Wetland 2, within the large wetland complex located between Pugsley Road and I-84.

Figure 12: View north of cryptic fishless pools within forested portions of the large wetland located between Pugsley Road and I-84.

APPENDIX 2

United States Department of Agriculture

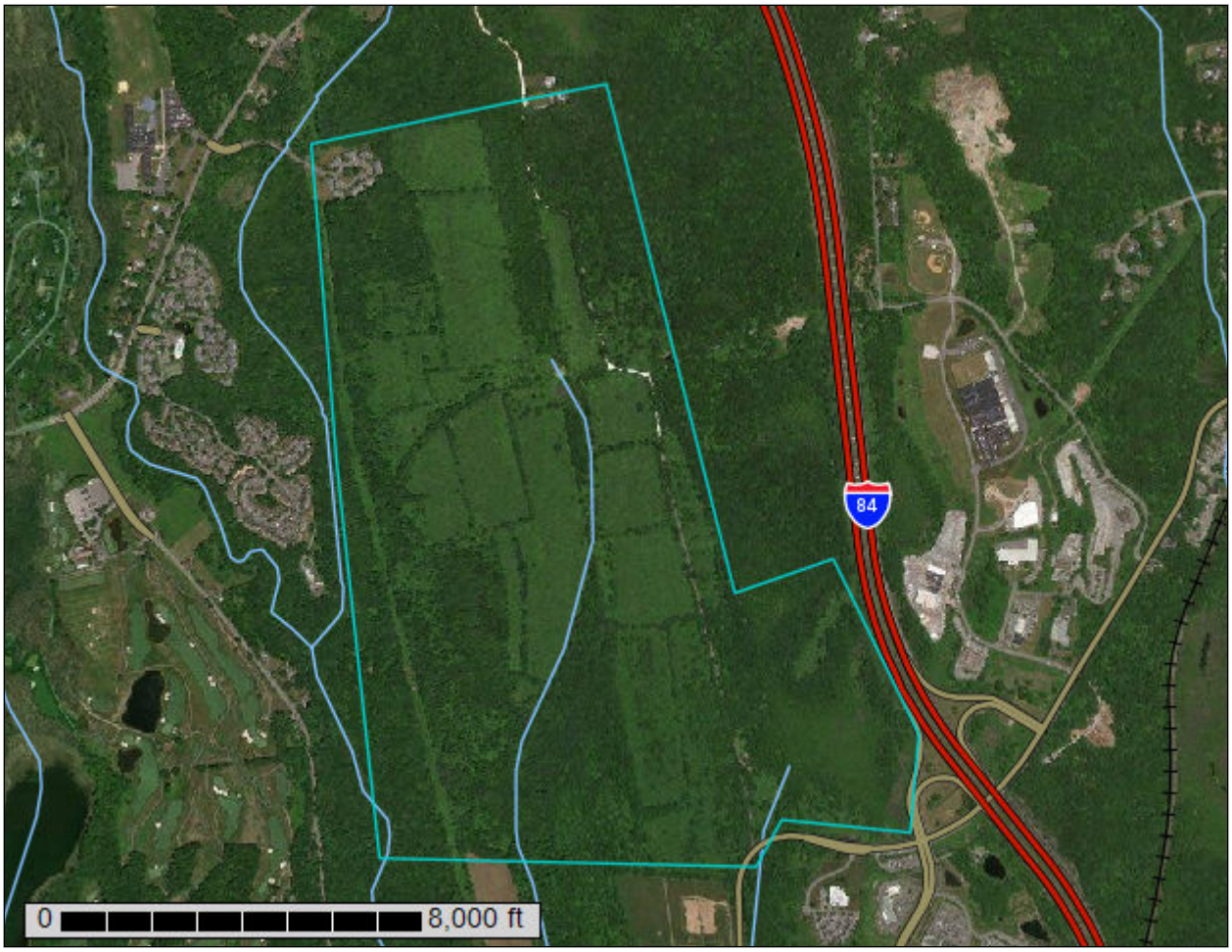
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Putnam County, New York



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Map Scale: 1:12,100 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Putnam County, New York
Survey Area Data: Version 15, Sep 3, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Oct 5, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ce	Catden muck, 0 to 2 percent slopes	21.3	4.3%
ChC	Charlton fine sandy loam, 8 to 15 percent slopes	1.4	0.3%
ChE	Charlton loam, 25 to 35 percent slopes	11.5	2.3%
ClB	Charlton fine sandy loam, 3 to 8 percent slopes, very stony	1.9	0.4%
ClE	Charlton loam, 25 to 35 percent slopes, very stony	0.3	0.1%
CrC	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	22.9	4.6%
Ff	Fluvaquents-Udifluvents complex, frequently flooded	3.4	0.7%
NcA	Natchaug muck, 0 to 2 percent slopes	14.8	2.9%
PnB	Paxton fine sandy loam, 3 to 8 percent slopes	106.6	21.3%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	97.4	19.5%
PnD	Paxton fine sandy loam, 15 to 25 percent slopes	9.2	1.8%
PoB	Paxton fine sandy loam, 0 to 8 percent slopes, very stony	5.6	1.1%
PoC	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	2.5	0.5%
RdB	Ridgebury complex, 3 to 8 percent slopes	15.2	3.0%
RgB	Ridgebury complex, 0 to 8 percent slopes, very stony	18.5	3.7%
Sh	Sun loam	17.8	3.6%
Sm	Sun loam, extremely stony	15.5	3.1%
SuB	Sutton loam, 3 to 8 percent slopes	1.0	0.2%
Ub	Udorthents, smoothed	3.2	0.6%
Uc	Udorthents, wet substratum	7.7	1.5%
W	Water	0.7	0.1%
WdA	Woodbridge loam, 0 to 3 percent slopes	2.0	0.4%
WdB	Woodbridge loam, 3 to 8 percent slopes	86.5	17.3%
WdC	Woodbridge loam, 8 to 15 percent slopes	33.4	6.7%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Totals for Area of Interest		**500.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Putnam County, New York

Ce—Catden muck, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t2qk
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Catden and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Catden

Setting

Landform: Swamps, bogs, marshes, kettles, depressions, fens, depressions, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed herbaceous organic material and/or highly decomposed woody organic material

Typical profile

Oa1 - 0 to 2 inches: muck
Oa2 - 2 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 26.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Alden

Percent of map unit: 5 percent

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Natchaug

Percent of map unit: 5 percent
Landform: Depressions, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Timakwa

Percent of map unit: 5 percent
Landform: Swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

ChC—Charlton fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wh0q
Elevation: 0 to 1,440 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Charlton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Ridges, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Paxton

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Sutton, fine sandy loam

Percent of map unit: 5 percent
Landform: Ground moraines, hills, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chatfield

Percent of map unit: 3 percent

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Canton

Percent of map unit: 2 percent
Landform: Ground moraines, ridges, hills
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope, nose slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

ChE—Charlton loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: 9tyn
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Till plains, hills, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid loamy till derived mainly from schist, gneiss, or granite

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 24 inches: sandy loam
H3 - 24 to 60 inches: sandy loam

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Chatfield
Percent of map unit: 5 percent
Hydric soil rating: No

Paxton
Percent of map unit: 5 percent
Hydric soil rating: No

Charlton, very stony
Percent of map unit: 3 percent
Hydric soil rating: No

Knickerbocker
Percent of map unit: 2 percent
Hydric soil rating: No

Riverhead
Percent of map unit: 2 percent
Hydric soil rating: No

Sutton
Percent of map unit: 2 percent
Hydric soil rating: No

Hollis
Percent of map unit: 1 percent
Hydric soil rating: No

CIB—Charlton fine sandy loam, 3 to 8 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2wh0r
Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Charlton, very stony, and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Very Stony

Setting

Landform: Ground moraines, ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Sutton, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Paxton, very stony

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex

Across-slope shape: Convex
Hydric soil rating: No

Chatfield, very stony
Percent of map unit: 3 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony
Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

CIE—Charlton loam, 25 to 35 percent slopes, very stony

Map Unit Setting
National map unit symbol: 9tys
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition
Charlton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting
Landform: Till plains, hills, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid loamy till derived mainly from schist, gneiss, or granite

Typical profile
H1 - 0 to 8 inches: loam
H2 - 8 to 24 inches: sandy loam
H3 - 24 to 60 inches: sandy loam

Properties and qualities
Slope: 25 to 35 percent
Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Chatfield
Percent of map unit: 5 percent
Hydric soil rating: No

Paxton
Percent of map unit: 5 percent
Hydric soil rating: No

Charlton, extremely stony
Percent of map unit: 3 percent
Hydric soil rating: No

Knickerbocker
Percent of map unit: 2 percent
Hydric soil rating: No

Riverhead
Percent of map unit: 2 percent
Hydric soil rating: No

Sutton
Percent of map unit: 2 percent
Hydric soil rating: No

Hollis
Percent of map unit: 1 percent
Hydric soil rating: No

CrC—Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky

Map Unit Setting
National map unit symbol: 2w698
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Charlton, very stony, and similar soils: 50 percent
Chatfield, very stony, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 3 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

Sutton, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hollis, very stony

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Ff—Fluvaquents-Udifluvents complex, frequently flooded

Map Unit Setting

National map unit symbol: 9tyz
Elevation: 100 to 3,000 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Fluvaquents and similar soils: 50 percent
Udifluvents and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvaquents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium with highly variable texture

Typical profile

H1 - 0 to 5 inches: gravelly silt loam
H2 - 5 to 70 inches: very gravelly silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Description of Udifluvents

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium with a wide range of texture

Typical profile

H1 - 0 to 4 inches: gravelly silt loam
H2 - 4 to 70 inches: very gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 19.98 in/hr)
Depth to water table: About 24 to 72 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Sun

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Hinckley

Percent of map unit: 2 percent
Hydric soil rating: No

Knickerbocker

Percent of map unit: 2 percent
Hydric soil rating: No

Riverhead

Percent of map unit: 2 percent
Hydric soil rating: No

Leicester

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Ridgebury

Percent of map unit: 2 percent

Landform: Depressions
Hydric soil rating: Yes

Carlisle
Percent of map unit: 1 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Palms
Percent of map unit: 1 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

NcA—Natchaug muck, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2w68z
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Natchaug and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Natchaug

Setting
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material over loamy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy till

Typical profile
Oa1 - 0 to 12 inches: muck
Oa2 - 12 to 31 inches: muck
2Cg1 - 31 to 39 inches: silt loam
2Cg2 - 39 to 79 inches: fine sandy loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.01 to 14.17 in/hr)

Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Very high (about 17.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Catden

Percent of map unit: 8 percent
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Limerick

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sun

Percent of map unit: 4 percent
Landform: Hills, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Halsey

Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

PnB—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qp

Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 6 percent
Landform: Drainageways, hills, ground moraines, depressions
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, base slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

PnC—Paxton fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w66y
Elevation: 0 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Paxton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Charlton
Percent of map unit: 7 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge
Percent of map unit: 6 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury
Percent of map unit: 2 percent
Landform: Hills, ground moraines, depressions, drainageways, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

PnD—Paxton fine sandy loam, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 2w67j
Elevation: 0 to 1,450 feet

Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 8 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge

Percent of map unit: 6 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 1 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

PoB—Paxton fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w673
Elevation: 0 to 1,340 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Very Stony

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Woodbridge, very stony

Percent of map unit: 8 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 4 percent
Landform: Ground moraines, hills, depressions, drainageways, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton, very stony

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

PoC—Paxton fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w677
Elevation: 0 to 1,330 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Very Stony

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Woodbridge, very stony

Percent of map unit: 8 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton, very stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 2 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

RdB—Ridgebury complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg2
Elevation: 10 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ridgebury, loam, and similar soils: 50 percent
Ridgebury, somewhat poorly drained, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Loam

Setting

Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: loam
Bw - 6 to 10 inches: gravelly fine sandy loam
Bg - 10 to 19 inches: gravelly fine sandy loam
Cd - 19 to 66 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Description of Ridgebury, Somewhat Poorly Drained

Setting

Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material
A - 1 to 7 inches: loam
Bw - 7 to 13 inches: loam
Bg - 13 to 21 inches: fine sandy loam
Cd - 21 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 15 to 35 inches to densic material
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Woodbridge, loam
Percent of map unit: 5 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Sun, very poorly drained
Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Leicester, loam
Percent of map unit: 3 percent
Landform: Depressions, ground moraines, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton
Percent of map unit: 2 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

RgB—Ridgebury complex, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2xfg3
Elevation: 110 to 1,200 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Ridgebury, loam, very stony, and similar soils: 50 percent
Ridgebury, somewhat poorly drained, very stony, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Loam, Very Stony

Setting

Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: loam
Bw - 6 to 10 inches: gravelly fine sandy loam
Bg - 10 to 19 inches: gravelly fine sandy loam
Cd - 19 to 66 inches: gravelly loam

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: Yes

Description of Ridgebury, Somewhat Poorly Drained, Very Stony

Setting

Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material
A - 1 to 7 inches: loam
Bw - 7 to 13 inches: loam
Bg - 13 to 21 inches: fine sandy loam
Cd - 21 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Woodbridge, loam, very stony

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Footslope, backslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Sun, very poorly drained, very stony

Percent of map unit: 5 percent

Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Ridgebury, loam, bouldery
Percent of map unit: 3 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton, very stony
Percent of map unit: 2 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Sh—Sun loam

Map Unit Setting
National map unit symbol: 9v04
Elevation: 600 to 1,800 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Sun and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sun

Setting
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till derived primarily from limestone and sandstone, with a component of schist, shale, or granitic rocks in some areas

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 27 inches: loam
H3 - 27 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Ridgebury

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Leicester

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Palms

Percent of map unit: 3 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Sun, stony

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Sm—Sun loam, extremely stony

Map Unit Setting

National map unit symbol: 9v05
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Sun and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sun

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till derived primarily from limestone and sandstone, with a component of schist, shale, or granitic rocks in some areas

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 27 inches: loam
H3 - 27 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Ridgebury

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Leicester

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Palms

Percent of map unit: 3 percent
Landform: Swamps, marshes

Hydric soil rating: Yes

Sun, non-stony

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

SuB—Sutton loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xffp
Elevation: 10 to 1,250 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sutton, loam, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sutton, Loam

Setting

Landform: Hills, ridges, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 9 inches: loam
Bw1 - 9 to 17 inches: fine sandy loam
Bw2 - 17 to 30 inches: sandy loam
C1 - 30 to 39 inches: sandy loam
C2 - 39 to 60 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 12 to 27 inches
Frequency of flooding: None
Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Charlton
Percent of map unit: 10 percent
Landform: Hills, ridges, ground moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Leicester, loam
Percent of map unit: 5 percent
Landform: Drainageways, hills, ground moraines, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Woodbridge, loam
Percent of map unit: 5 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, footslope, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Ub—Udorthents, smoothed

Map Unit Setting
National map unit symbol: 9v08
Elevation: 50 to 2,400 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition
Udorthents, smoothed, and similar soils: 80 percent

Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Smoothed

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 70 inches: very gravelly loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 18 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 4.6 inches)

Minor Components

Udorthents, wet substratum

Percent of map unit: 5 percent
Hydric soil rating: No

Urban land

Percent of map unit: 5 percent
Hydric soil rating: Unranked

Leicester

Percent of map unit: 2 percent
Hydric soil rating: No

Hollis

Percent of map unit: 2 percent
Hydric soil rating: No

Charlton

Percent of map unit: 2 percent
Hydric soil rating: No

Riverhead

Percent of map unit: 2 percent
Hydric soil rating: No

Sun

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Uc—Udorthents, wet substratum

Map Unit Setting

National map unit symbol: 9v09
Elevation: 50 to 2,400 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, wet substratum, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Wet Substratum

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 72 inches: very gravelly loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 4.6 inches)

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Urban land

Percent of map unit: 5 percent
Hydric soil rating: Unranked

Fredon

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Paxton

Percent of map unit: 2 percent
Hydric soil rating: No

Ipswich
Percent of map unit: 2 percent
Landform: Tidal marshes
Hydric soil rating: Yes

Raynham
Percent of map unit: 2 percent
Hydric soil rating: Yes

Hinckley
Percent of map unit: 2 percent
Hydric soil rating: No

W—Water

Map Unit Setting
National map unit symbol: 9v0r
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

WdA—Woodbridge loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2w68t
Elevation: 0 to 770 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Woodbridge, loam, and similar soils: 86 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Loam

Setting
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Crest

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 6 inches: loam
Bw1 - 6 to 18 inches: gravelly loam
Bw2 - 18 to 29 inches: gravelly loam
Cd - 29 to 65 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 7 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Sutton

Percent of map unit: 2 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: No

WdB—Woodbridge loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w688
Elevation: 0 to 1,280 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodbridge, loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Loam

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 6 inches: loam
Bw1 - 6 to 18 inches: gravelly loam
Bw2 - 18 to 29 inches: gravelly loam
Cd - 29 to 65 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D

Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 7 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton

Percent of map unit: 7 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Sutton

Percent of map unit: 1 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

WdC—Woodbridge loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w68p
Elevation: 10 to 1,000 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Woodbridge, loam, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Loam

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Footslope, backslope

Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 6 inches: loam
Bw1 - 6 to 18 inches: gravelly loam
Bw2 - 18 to 29 inches: gravelly loam
Cd - 29 to 65 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Paxton

Percent of map unit: 8 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 7 percent
Landform: Drumlins, drainageways, hills, ground moraines, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton

Percent of map unit: 2 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave

Across-slope shape: Linear
Hydric soil rating: No

Urban land
Percent of map unit: 1 percent
Hydric soil rating: Unranked

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APPENDIX 3a

Phase 1 Bog Turtle Habitat Survey Data Form
For the Northern Population Range
(Revised October 23, 2018)

Wetland ID: 1 - N of Barrett Road

General Info

Property/Project Name Northeast Interstate Logistics Center **County** Putnam

Entity Requesting Phase 1 Survey (landowner, developer, agency): EAEC Inc

Township/Municipality: Southeast

Lead Surveyor: Brandon Ruhe **Affiliation:** MACHAC

Other Assistants Present: C.A.U

Date/Condition

Date of Survey: 12/18/18 **Time In**:_____ **Time Out**:_____ **Air Temp**. 0 F ° C°

Last Precipitation: __ < 24 hours __ 1-7 days __ > 1 week x unknown **Drought conditions?** __ YES x NO __ Unknown

Drought Index* [1] (Circle): D0 D1 D2 D3 D4 **Notes** (*e.g.*, details about drought, flood, abnormally dry, seasonal conditions):

Wetland Info

Wetland ID: 1 N of Barrett Road **Wetland Size:** _____ acres, if known **# Wetlands w/in Project Area**[2]**:** _____

If estimating wetland size: __ < 0.1 acre __ 0.1-0.5 acre __ 1-2 acres __ 2-4 acres x 5+ acres __ 10+ acres

% Canopy Cover* [3] __ 0% __ ≤ 5 __ 6-20 __21-40 __41-60 x > 60

Hydrology and Soils (check all that apply):

x Springs/Seeps __ Springhouse x Trib/Stream x Pond __ Stormwater __ Iron Bacteria

x Rivulets (how many many) (<8 inches deep) __ Subsurface Tunnel/Rivulets __ Tire Ruts (_____inches deep)

x Saturated soils present? If yes, year-round? x Likely __ Unlikely __ Unknown

x Yes __ No water visible on surface? x Small Puddles/Depressions (<8 inches deep)

x Yes __ No Are there any signs of disturbance to *hydrology* (*e.g.*, drainage ditches, tile drainages, berms, culverts, fill material, ponds, roads, beaver impoundment, evidence of flooding)? If yes, describe (if possible, include how recent disturbance is*): Small farmponds located in northern and southern portions of wetland. Road located below southern pon.

For ditches that may be present, is there bog turtle habitat? If yes, describe:

__ Yes x No Are there any signs of disturbance to *vegetation* (*e.g.*, mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):

Soil types present*: Sm, Sh. Past agricultural use so soils disturbed historically.

[1] (*) Denotes reference to the **Supplemental Information** document that provides more details on this particular question.
[2] Each wetland must have a separate Phase 1 habitat assessment data form completed.
[3] Determine percent cover of abundant species for the wetland, not by wetland type. Abundant species are those that are

PEM Portion of Wetland: Approx. Acre(s) <0.1 Mucky soils depth (inches) <6

PSS Portion of Wetland: Approx. Acre(s) <0.1 Mucky soils depth (inches) <6

PFO Portion of Wetland: Approx. Acre(s) >90% Mucky soils depth (inches) <6

PO Portion of Wetland: Approx. Acre(s) <10%

Wetland Type/Vegetation

CIRCLE all vegetation* from list below that is dominant ≥ 20% for each wetland type listed above. Also, CIRCLE calciphiles[4] present even if not a dominant species.

Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	XRed Maple
Arrowhead	Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
Common Boneset	Purple Loosestrife	Sweetflag	XDogwood Spp.	Eastern Red Cedar	
Common Reed	Reed Canary Grass	Tearthumb Spp.	XMultiflora Rose	Poison Sumac	

Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?):

Landscape Info

Describe surrounding landscape (*e.g.*, wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Post-agricultural landscape now old fields, and woodlands. Old road to south.

How much of this wetland is located **off-site** (*i.e.*, outside the property boundaries or right-of-way)?

__ None of it – the entire wetland is within the property boundaries

X Some of it – _____ Acres or _____% of the wetland appears to be located off-site unknown

If part of this wetland continues off-site, how much of the **off-site portion** was surveyed (on foot)?

x None of it __ All of it __ Part of it (____ acres or ____% of the off-site portion)

Is there potential bog turtle habitat **off-site**? __ Yes x No __ Unknown If yes, how did you conclude this?

wetland moves down-gradient and is rocky to the north (offsite), aerials also show a closed-canopy

Species

Were any bog turtles observed? __ Yes x No If yes, how many?_____

Other herps observed? __ Yes x No If yes, which ones?

*Note that you must be permitted by the state you are conducting the survey in to handle bog turtles.

*Report bog turtle observations to your local FWS Field Office and state wildlife office within 48 hrs.

Lead Surveyor Opinion

x Yes __ No __ Unsure The **hydrology** criterion for bog turtle habitat is met.
x Yes __ No __ Unsure The **soils** criterion for bog turtle habitat is met.
__ Yes x No __ Unsure The **vegetation** criterion for bog turtle habitat is met.
__ Yes x No __ Unsure This wetland has potential bog turtle habitat (fair to good quality).
__ Yes x No __ Unsure This wetland has potential bog turtle habitat (low to very low quality).
__ Yes x No __ Unsure This wetland does **NOT** have potential bog turtle habitat.

Notes (How did you reach this opinion?):

Soils marginally mucky, rocky wetland, closed-canopy. Only emergent area is fringe along a pond fringe and not spring-fed at that point. No core habitat N of Barrett Road.

Lead Surveyor – please sign below certifying to the best of your knowledge that all of the information provided herein is accurate and complete.

Signature *Brandon M. Ruhe* **Date** 12/18/18

most prominent in the wetland and have the highest percent of coverage compared to other species.

[4] Pertinent to bog turtle sites found in Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania. See Supplemental Information – Suitable Vegetation section.

Phase 1 Bog Turtle Habitat Survey Data Form
For the Northern Population Range

Sketch wetland (or attach printed map with each wetland type carefully outlined; include all wetland types (PEM, PSS, PFO, POW), streams/ditches, north arrow and property/project borders, and areas of core bog turtle habitat. Include **color photos** for each wetland assessed when submitting to agencies.

See project plans and reports.

Additional space for notes, sketches, photos, etc.

APPENDIX 3b

Phase 1 Bog Turtle Habitat Survey Data Form
For the Northern Population Range
(Revised October 23, 2018)

Wetland ID: 2 - S of Barrett Road

General Info

Property/Project Name Northeast Interstate Logistics Center **County** Putnam

Entity Requesting Phase 1 Survey (landowner, developer, agency): EAEC Inc

Township/Municipality: Southeast

Lead Surveyor: Brandon M. Ruhe **Affiliation:** MACHAC

Other Assistants Present: C.A.U.

Date/Condition

Date of Survey: 12/18/18 **Time In**:_____ **Time Out**:_____ **Air Temp**. 0 C F ° C°

Last Precipitation: __ < 24 hours __ 1-7 days __ > 1 week x unknown **Drought conditions?** __ YES __ NO __ Unknown

Drought Index* [1] (Circle): D0 D1 D2 D3 D4 **Notes** (*e.g.*, details about drought, flood, abnormally dry, seasonal conditions):

Wetland Info

Wetland ID: 2 - S of Barrett Road **Wetland Size:** +/-2 acres, if known **# Wetlands w/in Project Area**[2]**:** _____

If estimating wetland size: __ < 0.1 acre __ 0.1-0.5 acre __ 1-2 acres __ 2-4 acres __ 5+ acres __ 10+ acres

% Canopy Cover* [3] __ 0% __ ≤ 5 __ 6-20 __21-40 x 41-60 __ > 60

Hydrology and Soils (check all that apply):

x Springs/Seeps __ Springhouse x Trib/Stream __ Pond __ Stormwater __ Iron Bacteria

x Rivulets (how many several) (<6 inches deep) x Subsurface Tunnel/Rivulets __ Tire Ruts (_____inches deep)

x Saturated soils present? If yes, year-round? x Likely __ Unlikely __ Unknown

x Yes __ No water visible on surface? x Small Puddles/Depressions (<6 inches deep)

x Yes __ No Are there any signs of disturbance to *hydrology* (*e.g.*, drainage ditches, tile drainages, berms, culverts, fill material, ponds, roads, beaver impoundment, evidence of flooding)? If yes, describe (if possible, include how recent disturbance is*): Road to north of wetland and water piped under Barrett Road through culvert from pond on north side of road.

For ditches that may be present, is there bog turtle habitat? If yes, describe:

__ Yes x No Are there any signs of disturbance to *vegetation* (*e.g.*, mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*): Site was historically pasture, however.

Soil types present*: Sm, Sh. Past agricultural landuse.

[1] (*) Denotes reference to the **Supplemental Information** document that provides more details on this particular question.
[2] Each wetland must have a separate Phase 1 habitat assessment data form completed.
[3] Determine percent cover of abundant species for the wetland, not by wetland type. Abundant species are those that are

PEM Portion of Wetland: Approx. Acre(s) <.7 Mucky soils depth (inches) <12

PSS Portion of Wetland: Approx. Acre(s) _____ Mucky soils depth (inches) _____

PFO Portion of Wetland: Approx. Acre(s) >1.3 Mucky soils depth (inches) <12

PO Portion of Wetland: Approx. Acre(s) _____

Wetland Type/Vegetation

CIRCLE all vegetation* from list below that is dominant ≥ 20% for each wetland type listed above. Also, CIRCLE calciphiles[4] present even if not a dominant species.

Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	X Tussock Sedge	Shrubby Cinquefoil	X Red Maple
Arrowhead	Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
X Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	

Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?):

Landscape Info

Describe surrounding landscape (*e.g.*, wetlands, forest, subdivision, agricultural field, fallow field, etc.):
old fields of former agricultural lands, woodlands

How much of this wetland is located **off-site** (*i.e.*, outside the property boundaries or right-of-way)?

x None of it – the entire wetland is within the property boundaries

__ Some of it – _____ Acres or _____% of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the **off-site portion** was surveyed (on foot)?

__ None of it __ All of it __ Part of it (____ acres or ____% of the off-site portion)

Is there potential bog turtle habitat **off-site**? __ Yes __ No __ Unknown If yes, how did you conclude this?

Species

Were any bog turtles observed? __ Yes x No If yes, how many?_____

Other herps observed? __ Yes x No If yes, which ones?

*Note that you must be permitted by the state you are conducting the survey in to handle bog turtles.

*Report bog turtle observations to your local FWS Field Office and state wildlife office within 48 hrs.

Lead Surveyor Opinion

x Yes __ No __ Unsure The **hydrology** criterion for bog turtle habitat is met.
x Yes __ No __ Unsure The **soils** criterion for bog turtle habitat is met.
x Yes __ No __ Unsure The **vegetation** criterion for bog turtle habitat is met.
__ Yes __ No __ Unsure This wetland has potential bog turtle habitat (fair to good quality).
x Yes __ No __ Unsure This wetland has potential bog turtle habitat (low to very low quality).
__ Yes __ No __ Unsure This wetland does **NOT** have potential bog turtle habitat.

Notes (How did you reach this opinion?):
Marginally suitable post-ag wetland, landscape mantains larger muck wetlands to east (Wetland 3 - Pugsley Road)

Lead Surveyor – please sign below certifying to the best of your knowledge that all of the information provided herein is accurate and complete.

Signature *Brandon M. Ruhe* **Date** 12/18/18

most prominent in the wetland and have the highest percent of coverage compared to other species.

[4] Pertinent to bog turtle sites found in Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania. See Supplemental Information – Suitable Vegetation section.

Phase 1 Bog Turtle Habitat Survey Data Form
For the Northern Population Range

Sketch wetland (or attach printed map with each wetland type carefully outlined; include all wetland types (PEM, PSS, PFO, POW), streams/ditches, north arrow and property/project borders, and areas of core bog turtle habitat. Include **color photos** for each wetland assessed when submitting to agencies.

Additional space for notes, sketches, photos, etc.

APPENDIX 3c

Phase 1 Bog Turtle Habitat Survey Data Form
For the Northern Population Range
(Revised October 23, 2018)

Wetland ID: 3 - E of Pugsley Road

General Info

Property/Project Name Northeast Interstate Logistics Center **County** Putnam

Entity Requesting Phase 1 Survey (landowner, developer, agency): EAEC, Inc.

Township/Municipality: Southeast

Lead Surveyor: Brandon M. Ruhe **Affiliation:** MACHAC

Other Assistants Present: C.A.U.

Date/Condition

Date of Survey: 12/18/18 **Time In**:_____ **Time Out**:_____ **Air Temp**. 0 C F ° C°

Last Precipitation: __ < 24 hours __ 1-7 days __ > 1 week x unknown **Drought conditions?** __ YES x NO __ Unknown

Drought Index* [1] (Circle): D0 D1 D2 D3 D4 **Notes** (*e.g.*, details about drought, flood, abnormally dry, seasonal conditions):

Wetland Info

Wetland ID: 3 - E of Pugsley Road **Wetland Size:** +/-23 acres, if known **# Wetlands w/in Project Area**[2]**:** _____

If estimating wetland size: __ < 0.1 acre __ 0.1-0.5 acre __ 1-2 acres __ 2-4 acres __ 5+ acres __ 10+ acres

% Canopy Cover* [3] __ 0% __ ≤ 5 __ 6-20 __21-40 __41-60 x > 60

Hydrology and Soils (check all that apply):

x Springs/Seeps __ Springhouse x Trib/Stream __ Pond x Stormwater __ Iron Bacteria

x Rivulets (how many many) (<12 inches deep) x Subsurface Tunnel/Rivulets __ Tire Ruts (_____inches deep)

x Saturated soils present? If yes, year-round? x Likely __ Unlikely __ Unknown

x Yes __ No water visible on surface? x Small Puddles/Depressions (<6 inches deep)

x Yes __ No Are there any signs of disturbance to *hydrology* (*e.g.*, drainage ditches, tile drainages, berms, culverts, fill material, ponds, roads, beaver impoundment, evidence of flooding)? If yes, describe (if possible, include how recent disturbance is*): Highway to east, peninsula of fill material in eastern part of wetland

For ditches that may be present, is there bog turtle habitat? If yes, describe:

__ Yes x No Are there any signs of disturbance to *vegetation* (*e.g.*, mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):

Soil types present*: Ce and NcA

[1] (*) Denotes reference to the **Supplemental Information** document that provides more details on this particular question.
[2] Each wetland must have a separate Phase 1 habitat assessment data form completed.
[3] Determine percent cover of abundant species for the wetland, not by wetland type. Abundant species are those that are

PEM Portion of Wetland: Approx. Acre(s) <2 Mucky soils depth (inches) <30

PSS Portion of Wetland: Approx. Acre(s) <5 Mucky soils depth (inches) <30

PFO Portion of Wetland: Approx. Acre(s) >16 Mucky soils depth (inches) <30

PO Portion of Wetland: Approx. Acre(s) _____

Wetland Type/Vegetation

CIRCLE all vegetation* from list below that is dominant ≥ 20% for each wetland type listed above. Also, CIRCLE calciphiles[4] present even if not a dominant species.

Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	X Tussock Sedge	Shrubby Cinquefoil	X Red Maple
Arrowhead	Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
Common Boneset	Purple Loosestrife	Sweetflag	X Dogwood Spp.	Eastern Red Cedar	
X Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	

Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?):

Landscape Info

Describe surrounding landscape (*e.g.*, wetlands, forest, subdivision, agricultural field, fallow field, etc.):
woods and rural road to west, highway to east and south, wetland and woods to north

How much of this wetland is located **off-site** (*i.e.*, outside the property boundaries or right-of-way)?

__ None of it – the entire wetland is within the property boundaries

x Some of it – _____ Acres or _____% of the wetland appears to be located off-site unknown, a large complex

If part of this wetland continues off-site, how much of the **off-site portion** was surveyed (on foot)?

x None of it __ All of it __ Part of it (____ acres or ____% of the off-site portion)

Is there potential bog turtle habitat **off-site**? __ Yes __ No x Unknown If yes, how did you conclude this?

Species

Were any bog turtles observed? __ Yes x No If yes, how many?_____

Other herps observed? __ Yes x No If yes, which ones?

*Note that you must be permitted by the state you are conducting the survey in to handle bog turtles.

*Report bog turtle observations to your local FWS Field Office and state wildlife office within 48 hrs.

Lead Surveyor Opinion

x Yes __ No __ Unsure The **hydrology** criterion for bog turtle habitat is met.
x Yes __ No __ Unsure The **soils** criterion for bog turtle habitat is met.
x Yes __ No __ Unsure The **vegetation** criterion for bog turtle habitat is met.
__ Yes __ No __ Unsure This wetland has potential bog turtle habitat (fair to good quality).
x Yes __ No __ Unsure This wetland has potential bog turtle habitat (low to very low quality).
__ Yes __ No __ Unsure This wetland does **NOT** have potential bog turtle habitat.

Notes (How did you reach this opinion?):
Habitat succession and invasive species have significantly degraded the quality of the wetland. Emergent areas are few and far between and interspersed throughout the large wetland.

Lead Surveyor – please sign below certifying to the best of your knowledge that all of the information provided herein is accurate and complete.

Signature *Brandon M. Ruhe* **Date** 12/18/18

most prominent in the wetland and have the highest percent of coverage compared to other species.

[4] Pertinent to bog turtle sites found in Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania. See Supplemental Information – Suitable Vegetation section.

Phase 1 Bog Turtle Habitat Survey Data Form
For the Northern Population Range

Sketch wetland (or attach printed map with each wetland type carefully outlined; include all wetland types (PEM, PSS, PFO, POW), streams/ditches, north arrow and property/project borders, and areas of core bog turtle habitat. Include **color photos** for each wetland assessed when submitting to agencies.

Additional space for notes, sketches, photos, etc.

APPENDIX 9-3

Invasive Species Field Manual by Evans Associates, dated July 2019

INVASIVE SPECIES FIELD MANUAL

Commercial Campus at Fields Corner

July 2019

PREPARED BY:
EVANS ASSOCIATES ENVIRONMENTAL CONSULTING, INC.
162 FALLS ROAD, BETHANY, CT 06524

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INTRODUCTION

An invasive plant is a non-native plant that is able to persist and proliferate outside of cultivation, resulting in ecological and/or economic harm. These plants readily colonize disturbed areas and habitat edges, of which there are many on the subject property. Once established in these areas, invasive plants often continue to spread to adjacent habitats. All invasive plant species are aggressive competitors with the ability to significantly reduce diversity of native plant and animal species.

The former farm fields on site were ideal habitat for invasive plants to take hold because of the high level of soil disturbance and abundant sunlight. In addition, travelled ways were present for vehicles to pass through the property, and mowing or brush-hog cutting likely occurred, creating an access for the spread of invasive seeds. These circumstances, coupled with accessibility by birds (also seed spreaders), created ideal conditions for the proliferation of invasive herbaceous, vine, and shrub species.

INVASIVE PLANT PREVENTION

On the subject site, invasive species are well established. However, in areas that are proposed to be cleared and replanted (especially mitigation areas), care should be taken to prevent invasive species from becoming re-established.

Invasive plants spread by a variety of mechanisms, including birds, wind, water, and human activities. Eliminating or reducing the establishment and spread of invasive plants requires a proactive approach, in which there are two key elements. First, new introductions, especially those that occur due to human activities, should be avoided to the maximum extent possible by making sure that equipment and machinery is clean and free of plant debris. Second, there should be an emphasis on early detection and eradication of new populations in recently disturbed areas. Control measures are more likely to be successful, and less expensive, on small, young populations rather than on larger, more established populations.

General Prevention

- Clean/brush off clothes, shoes, and all equipment before leaving an area with an established population or entering an undisturbed area to reduce likelihood of spread through seeds or plant pieces.
- Learn to ID plants in early stages of growth, as it is best to remove plants when they are young, before seeds form.
- Monitor areas where recent disturbance has occurred for evidence of invasive species becoming established.

INVASIVE PLANTS OF GREATEST CONCERN ON THE SUBJECT PROPERTY

The species listed below are the more common invasive plants that are located on the subject property. Within the proposed mitigation areas, invasive species are to be removed prior to planting. In addition, continued monitoring and control of invasive species will be necessary until the mitigation areas are established with native plantings. The most prevalent species on the site are discussed in this manual, however, several of the methods of eradication could also be used on other species if found on site. The invasive plants of greatest concern on the subject site are listed below and are described and discussed (including removal methods) in more detail.

Herb/Grass/Forb: Garlic mustard (*Alliaria petiolata*)
Japanese stilt-grass *(Microstegium vimineum)*
Common Reed *(Phragmites australis)*

Vine: Asiatic bittersweet/Oriental bittersweet *(Celastrus orbiculatus)*
Mile-a-minute *(Persicaria perfoliata/Polygonum perfoliatum)*

Shrubs: Japanese barberry *(Berberis thunbergii)*
Autumn olive (*Elaeagnus umbellata)* & Russian olive *(Elaeagnus angustifolia)*
Multiflora rose *(Rosa multiflora)*

IDENTIFICATION AND REMOVAL GUIDANCE

Brief descriptions of plant appearance are provided, including photos of the plants. Methods of removal are also provided. Early eradication of *new* populations is the best method of control and should be used when appropriate (for example, in mitigation areas that have been cleared of invasives). However, many of the plants on site are well developed and are part of established communities and will need more aggressive removal strategies. This manual attempts to address the preferred removal method(s) for each species; early eradication (mainly removal by hand) of smaller populations is emphasized, but other methods are mentioned to account for larger and better-established populations.

For the subject property, herbicide use is NOT recommended in areas in or near wetlands. If other methods are unsuccessful, however, attaining the permitting and personnel necessary for herbicide application may be required. Species-specific control methods (that include herbicide options) are included in the Appendix. These recommendations were taken from a New York State Department of Environmental Conservation document entitled "Inter-Agency Guidelines for Implementing Best Management Practices to Control Invasive Species on DEC Administered Lands of the Adirondack Park."[1]

[1] https://www.dec.ny.gov/docs/lands_forests_pdf/adkisg.pdf

Herb/Grass/Forb

Garlic mustard *(Alliaria petiolata)*

Appearance: A biennial plant occurring as a rosette of green leaves close to the ground in year one, and as a 2-3' tall, flowering plant with clusters of small white flowers in early spring the next year. The toothed, heart to triangular-shaped leaves give off a slight garlic odor when crushed.

Removal: Hand pull plants (with roots) before or while flowers are present (flowering occurs May to late June), prior to the appearance of seed pods. If seed pods are not present (plant is flowering or has not yet flowered), plant material may remain in place. If seed pods are present, pull plants/roots and place all parts (including seed pods) into thick black plastic bags and leave in the sun to cook until the seeds die. Seeds can remain viable in the soil for 5 years or more, so recurring annual inspections and plant removal may be necessary.

- First-year leaves remain green through the winter
- Single plants can produce thousands of seeds, and the seeds can remain viable in the seed pods after the rest of the plant has died back in the summer
- Goal is to prevent seed production (pull plants before seeds form) until seeds in the soil have been depleted

FIRST YEAR PLANT ROSETTES[iii]

SECOND YEAR PLANT[i] (APPROX. 2 FT. TALL)

EARLY SEED POD GROWTH[ii]

Garlic mustard (*Alliaria petiolata*)[iv,v,vi]

Herb/Grass/Forb

Japanese stilt-grass (*Microstegium vimineum*)

Appearance: An annual grass 6" to 3' in height, resembling a delicate bamboo. Leaves are alternate, green, and lance shaped, with off-center, silvery midrib. Thin flower stalks/seed heads emerge from the stem tips and leaf axils starting in the late summer (August) and continuing into fall; however, an additional, early (self-pollinated) summer seed crop is hidden inside the leaf sheaves. This species spreads by seed or through rooting at stem joints.

Removal: Hand pull plants (with roots) before or while flowers are present (flowering occurs late summer through fall), prior to the appearance of seeds. Mow or cut flowering plants to prevent the production of seeds. If seeds are present, pull plants/roots and place all parts (including seeds) into thick black plastic bags and leave in the sun to cook until the seeds die. Seeds remain viable in the soil for up to 5 years, so recurring annual inspections and plant removal may be necessary.

- Annual plant
- Adapted to low-light conditions
- Seeds are small and easily spread on footwear and vehicle tires
- An individual plant can produce up to 1,000 seeds, so control prior to plants setting seed is key

PHOTOS[vii,viii]

Herb/Grass/Forb

Common reed (*Phragmites australis*)

Appearance: A perennial grass that is generally 6 - 15' in height. This grass often occurs in dense stands of both live and dead, hollow stems. Leaves are blue-green to yellow-green, up to 20" long and 1-1.5" wide at their widest point. Leaves are arranged all along one side of the stem. Distinctive, "fluffy" seed heads (purplish to golden in color) emerge at the top of the stem in late July and early August. This species spreads by rhizomes (forming dense mats underground), by stolons (above-ground horizontal stems), and by seed.

Removal: Because the stand of common reed to be eradicated is located in a wetland (Wetland #4, which is part of Freshwater Wetland LC-18), herbicides are to be avoided. Other methods of common reed removal include cutting, burning, flooding, excavating, and solarization. Common reed is very difficult to eradicate, and often individual methods are not successful and/or must continue for several years. Herbicide is often needed. However, because of the sensitivity of the wetland habitat, the recommended method of eradication for the localized area of common reed is solarization (which includes cutting).

The stand should be cut at the end of July, when much of the energy supply is above ground (in stem and seed). The area is then covered with a sheet of black plastic that is anchored over the cut stand (cut material can be left beneath the plastic, or solarized in containment elsewhere). High temperatures beneath the plastic will eventually kill off the plants. When the plastic is removed the following year, the area should be reviewed for the appearance of small shoots/growth. These should be cut, or hand pulled. Monitoring of the area, and removal of any returning growth, needs to occur for several years.

If removal is not successful, and herbicide addition is deemed necessary, the proper authority must be contacted, permits must be acquired, and a qualified, licensed herbicide applicator must be hired to properly apply the herbicide.

Common reed *(Phragmites australis)*

On-site stand (Wetland 4) in winter and spring

Common reed above tussock sedge meadow (Wetland 4) in summer

Vine

Asiatic/Oriental bittersweet (*Celastrus orbiculatus*)

Appearance: A deciduous, perennial, woody vine. Young plants begin as thin, twining vines, but later can reach 60' or more in length, and stems can grow up to 4" in diameter. The twining stems can strangle or topple other plants, including shrubs and trees. Leaves are alternate, glossy, finely-toothed, elliptical to rounded, and 1.5 to 5" long. Female plants form inconspicuous greenish-white flowers, which later produce large numbers of seeds and fruit in clusters along the stem and leaves. When ripe, round yellow fruit capsules split open to reveal red fruits (each containing one or two seeds), which can remain through winter. Roots are orange in color.

Removal: Pull or dig young sprouts and seedlings (removing all roots). For larger vines, prior to seed production, repeatedly (every few weeks) cut plants at ground level (where appropriate, and if necessary, treat with herbicide in accordance with permit/instructions). Place all plant material (vines, leaves, fruits, and roots) into thick black plastic bags and dispose of in a dumpster, or burn. Seeds remain viable in the soil for several years, so follow-up monitoring is recommended.

PHOTOS[ix,x,xi]

Vine

Mile-a-minute (*Persicaria perfoliata/Polygonum perfoliatum*)

Appearance: An annual, herbaceous trailing vine that grows up to 6" per day, smothering other vegetation. Alternate leaves are triangular in shape, and barbed on the undersurface. Stems are highly branched and covered in curved spines/hooks. In-between the triangular-shaped leaves are ocreae (smaller-sized circular leaf "collars") around the stem, which bring rise to small, white flowers in mid-summer. Metallic blue fruits form in clusters in the late summer or early fall; each fruit containing a seed.

Removal: Pull or dig young vines (removing all roots), prior to seed formation. Hand pull with gloves, as barbs are numerous. If no fruits/seeds are present, pulled plants can remain in place. If fruits/seeds are present, place all plant material (vines, leaves, fruits, and roots) into thick black plastic bags, and leave until the plants/seeds are not-viable (thoroughly dried or rotted). For larger infestations, the addition of biological control (using beneficial weevils) may be helpful. Seeds remain viable in the soil for 7-9 years, so recurring annual inspections and plant removal are necessary.

PHOTOS[xii,xiii,xiv (clockwise)]

Shrubs – Introductory Notes

Shrubs are more easily removed by hand (the preferred method for areas of sensitive habitat) when found in the stages of early growth, rather than in the later stages. However, since many of the shrubs on site are well developed and too large to hand-pull or hand dig, other methods of removal may need to be considered. Mowing, cutting, biological control, controlled burning, and herbicide application are discussed below for the shrubs of concern (autumn/Russian olive, Japanese barberry, and multiflora rose) that are located on site. Shrubs are discussed individually following these notes.

Mowing/cutting: Methods are not effective on autumn/Russian olive (vigorous re-sprouting), unless followed by herbicide application; may be effective on Japanese barberry and multiflora rose populations, but mowing would need to occur prior to seed production and be repeated several times per year. This method is not specific to the shrubs; native species, if present, would also be mowed.

Biological: Goats can be an effective biological control for shrubs. However, they are not species specific and would consume all plants in the area. Also, the logistics of fencing and animal transportation would need to be considered.

Burning: Method is not effective on autumn/Russian olive (vigorous re-sprouting). Controlled burning has been proven effective on Japanese barberry populations, however follow-up procedures are generally necessary. Presumably, burning multiflora rose would have similar results.

Herbicide: Herbicide application in combination with one of the other methods (mowing, cutting, or burning) would be more effective at eradicating or reducing the invasive shrub populations on site. Should other methods fail, and it is determined that herbicide is necessary, the proper authority must be contacted, permits must be acquired, and a qualified, licensed herbicide applicator must be hired to properly apply the herbicide. Painting herbicide on cut stumps would be the recommended application technique in order to protect nearby native species.

Shrub

Japanese barberry (*Berberis thunbergii*)

Appearance: A dense, twiggy shrub ranging from about 3-8' high (average height 2-5'). Branches have thin, individual spines/thorns. Alternate leaves grow in tight clusters; leaves are small paddle, oval, or tear-drop shaped, narrowing toward the stem. Leaves emerge before most other tree/shrub leaves. Flowers are pale yellow, occurring in April-May, in clusters of 2-4 on the underside of branches, followed by bright red berries in late summer that can last into winter.

Removal: Pull or dig young plants and seedlings (removing all roots), ideally prior to seed formation. Hand pull with gloves, as barbs are numerous. A weed wrench may be necessary to remove larger plants/stronger roots. This plant can reproduce by seed or vegetatively (by root fragments in the soil sprouting to form new plants, or by roots that develop when a branch touches the ground). Therefore, whether or not seeds are present, place all plant material (branches, leaves, fruits, and roots) into thick black plastic bags and dispose of in a dumpster, or burn. Seeds, which are numerous, are eaten (and thereby transported) by birds and small mammals. Seeds remain viable in the soil for up to 10 years, so recurring annual inspections and plant removal is necessary.

YOUNG JAPANESE BARBERRY[xv]

Japanese barberry (*Berberis thunbergii*)

FLOWERING[xvi]

FRUITING[xvii,xviii]

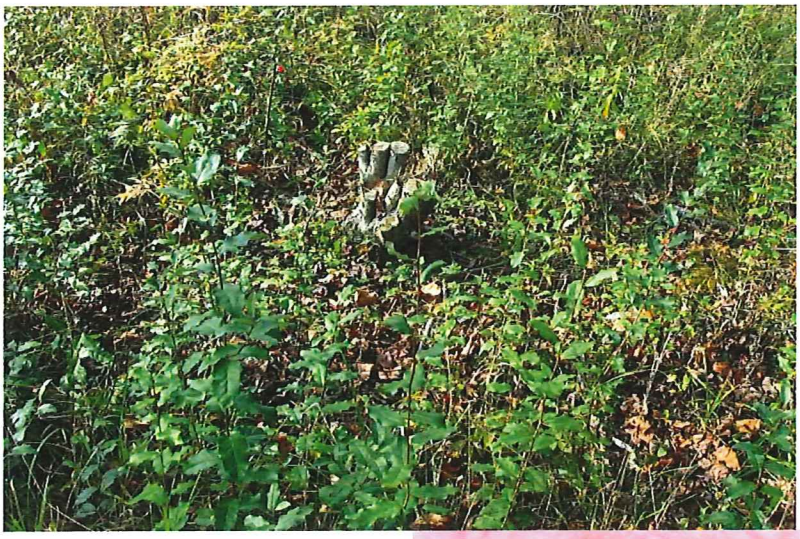
BUSHES[xix]

Shrub

Autumn olive (Elaeagnus umbellata) & Russian olive (Elaeagnus angustifolia)

Appearance: A deciduous shrub that grows up to 30' tall. Alternate leaves are dark green on top and shiny silver underneath. Stems may have lenticels and scattered thorns. Older plants will produce red (for autumn olive) or yellow (for Russian olive) berries (with seeds) in the fall.

Removal: Young plants/seedlings can be pulled, making sure to remove all roots. Hand pull with gloves, as thorns may be present. A weed wrench may be necessary to remove larger plants/stronger roots. If fruits/seeds are present, place fruits/seeds into thick black plastic bags and dispose of in a dumpster, or burn.



NUMEROUS SPROUTS FROM CUT STUMP[xx]

AUTUMN OLIVE SEEDLINGS

Autumn olive *(Elaeagnus umbellata)* & *Russian olive (Elaeagnus angustifolia)*

On-site Russian and autumn olive shrubs within the upland fields

Close-up view of autumn olive branches located on site

Shrub

Multiflora rose (*Rosa multiflora*)

Appearance: A perennial shrub with arching, thorny stems. Leaves are divided into 5-11 leaflets. Small, fringed structures (stipules) are located at the base of each leaf stalk; these stipules are the features that distinguish this species as invasive. White to pink flowers (about an inch in diameter) appear in May or June, developing into small, bright red fruits, or rose hips, in the summer; these rose hips remain on the plant through winter. Shrub reproduces by seed or by new plants that grow from the tips of arching branches that contact the ground.

Removal: Pull or dig young plants (removing entire root), ideally prior to seed formation. Hand pull with gloves, as thorns are numerous. A weed wrench may be necessary to remove larger plants/stronger roots. Repeated cutting or mowing (6 times per growing season for 3-4 years) when fruit/seeds are not present can also be effective. If fruits/seeds are present, do not mow; place extracted vegetation (including fruit/seeds) into thick black plastic bags and dispose of in a dumpster, or burn.

YOUNG MULTIFLORA ROSE[xxi]

Multiflora rose (*Rosa multiflora*)

FLOWERS[xxii]

FLOWERING SHRUB[xxiii]
STALKS[xxiv]

CLOSE-UP OF LEAF

FRUITS[xxv]

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APPENDIX

Selected information from:

Inter-Agency Guidelines for Implementing Best Management Practices to Control Invasive Species on DEC Administered Lands of the Adirondack Park

APPENDIX B. SPECIES-SPECIFIC CONTROL METHODS FOR TERRESTRIAL INVASIVE PLANTS

(entire document may be found at: https://www.dec.ny.gov/docs/lands_forests_pdf/adkisg.pdf)

HERBACEOUS PLANTS

GARLIC MUSTARD (*Alliaria petiolata*)

PLANT DESCRIPTION

Garlic mustard is a naturalized European biennial herb that typically invades partially shaded forested and roadside areas. It exudes an allelopathic compound from its root system that suppresses the growth of surrounding vegetation, creating a dense layer of garlic mustard that excludes other herbaceous species. Its seeds germinate in early spring and develop a basal rosette of leaves during the first year. Garlic mustard produces white, cross-shaped flowers between late April and June of the following spring. Plants die after producing seeds, which typically mature and disperse in August. Normally its seeds are dormant for 20 months and germinate the second spring after being formed. Seeds may remain viable for up to 7 years.

MANAGEMENT OPTIONS

1. Digging/Pulling.

Effectiveness:

Digging or hand pulling is an effective method for containing, suppressing, or locally eradicating early detection to medium sized infestations of garlic mustard. Plants should be removed before seed pods are mature to avoid inadvertent seed dispersal

Methods:

Dig or pull up each plant by the base to ensure that the entire root system is removed. Disturbed soil should be tamped down firmly after removing plants. Soil disturbance can bring existing garlic mustard seeds to the surface, thus creating a favorable environment for additional germination within the control site.

Cautions:

Care should be taken to minimize soil disturbance and remove all root tissues. Re-sprouting may occur from mature plant's root systems if not entirely removed.

Disposal:

Bag and remove all plant parts from site. Solarize and then dispose of in an approved landfill or incinerate with appropriate permits.

Sanitation:

Clean all clothing, boots, and equipment to prevent spread of propagules.

2. Cutting/Mowing

Effectiveness:

Cutting or mowing can be effective in containing or suppressing early detection to large sized populations of garlic mustard, depending on habitat. Dormant seeds in the soil are unaffected by this technique. Mowing or cutting will often need to be repeated annually to reduce an infestation to desired levels.

Methods:
Cut or mow garlic mustard stems when in flower (late spring/early summer) at ground level either manually or with motorized equipment. This technique usually results in high mortality of existing plants and will minimize re-sprouting. Repeat this a few weeks later and annually to reduce the infestation further.

Cautions:
Cuttings should be conducted annually for 5 to 7 years or until the seed bank is depleted. Do not cut or mow while seed pods are present or beginning to open as this will aid in seed dispersal.

Disposal:
Cut stems should be removed from the site when possible since they may produce viable seed even when cut. Bag and remove all plant parts from site. Solarize and then dispose of in an approved landfill or incinerate with appropriate permits. Mowed or mulched plant material can be left on-site to decompose.

Sanitation:
Clean all clothing, boots, and equipment to prevent spread of propagules.

3. Herbicide
Effectiveness:
Herbicide treatments can be effective in containing, suppressing, or locally eradicating early detection to medium sized infestations of garlic mustard. The timing and choice of application technique will determine control efficacy and should aim to minimize off-target effects.

Garlic mustard can be effectively controlled by both glyphosate and triclopyr based herbicides. Neither glyphosate nor triclopyr formulations will affect subsequent seedling emergence of garlic mustard or other plants.

Treatments:
Use glyphosate or triclopyr formulations only. The product should be applied after seedlings have emerged, but prior to flowering of second-year plants. Fall applications from late August into October can also be effective for the first-year rosettes, once the second-year plants have been pulled or senesced.

For spot treatments use any of the following application techniques:

a) Wiper application - sponge tip applicator with wick or cloth glove applicator
b) Foliar spray application - commercial-grade spray bottle with adjustable nozzle and/or backpack sprayer with adjustable nozzle

JAPANESE STILTGRASS (*Microstegium vimineum*)

PLANT DESCRIPTION

Japanese stiltgrass is an annual grass native to Asia. It grows one to three feet tall and has a small stem that resembles bamboo. The leaves are narrow and lance shaped with a prominent, silver strip that runs along the midrib on the upper surface. The inflorescence of Japanese stiltgrass is inconspicuous, appearing from late-summer to early-fall. Stiltgrass prefers moist soil and shaded areas. It can readily invade forest understories, marshes, floodplains, wetlands, etc. where it forms dense carpets of vegetation that exclude native plant species. Japanese stiltgrass spreads primarily through seed, which are easily transported by humans and natural vectors.

MANAGEMENT OPTIONS

1. Digging/Pulling

Effectiveness:

Digging or hand pulling is an effective method for containing, suppressing, or locally eradicating early detection to medium sized infestations of Japanese stiltgrass. Mechanical management should be performed prior to seed structure development.

Methods:

Slowly dig or pull each plant by the base to ensure the entire root system is removed. Disturbed soil should be tamped down firmly after removing plants. Soil disturbance can bring existing Japanese stiltgrass seeds to the surface, thus creating a favorable environment for additional germination within the control site.

Disposal:

Bag all plant parts and remove from site. Solarize and then dispose of in an approved landfill or incinerate with appropriate permits.

Cautions:

Care should be taken to minimize soil disturbance and remove all root tissues. Re-sprouting may occur from mature plant's root systems if not entirely removed. Additionally, digging disturbs the soil, may fragment rhizomes, and promotes germination of Japanese stiltgrass and other undesirable species from the soil seed bank.

Sanitation:

Clean all clothing, boots, and equipment to prevent spread of seed.

2. Cutting/Mowing

Effectiveness:

Cutting or mowing can be effective in containing or suppressing early detection to large sized infestations of Japanese stiltgrass. Dormant seeds in the soil are unaffected by this technique. Mowing or cutting may need to be repeated multiple times within a growing season to prevent seed production and dispersal.

Methods:

Cut or mow Japanese stiltgrass at ground level either manually or with motorized equipment just before its flowering period. Repeated mowing/cutting may be required within a growing season,

and the actions must be performed annually. Persistent mowing/cutting will prevent seed production/dispersal, but is unlikely to result in local eradication.

Disposal:
If possible, bag all cut plant parts and remove from site. Solarize, and dispose of in approved landfill or incinerate with appropriate permits. Mowed or mulched material can be left to decompose on site.

Sanitation:
Clean all clothing, boots, and equipment to prevent the spread of propagules.

3. Herbicide

Effectiveness:
Herbicide treatments can be effective in suppressing, containing, or locally eradicating early detection to large sized Japanese stiltgrass infestations. The timing and choice of application technique will determine control efficacy and should aim to minimize off-target effects.

Japanese stiltgrass can be effectively controlled by glyphosate based herbicides. Glyphosate based formulations will not affect subsequent seedling emergence of Japanese stiltgrass or other plants.

Treatments:
Use glyphosate formulations only. Apply herbicide directly to the foliage of Japanese stiltgrass using the selective application techniques identified below.

For spot treatments use any of the following application techniques:

a) Wiper application - sponge tip applicator with wick or cloth glove applicator
b) Foliar spray application - commercial-grade spray bottle with adjustable nozzle and/or backpack sprayer with adjustable nozzle

COMMON REED GRASS (*Phragmites australis ssp. australis*)

PLANT DESCRIPTION

Phragmites is a perennial grass that can grow to 14 feet in height. Flowering and seed set occur between July and September, resulting in a large feathery inflorescence, purple-hued turning to tan. Phragmites is capable of vigorous vegetative reproduction and often forms dense, virtually monospecific stands. The proportion of viable to non-viable seeds that Phragmites produces can vary depending on location. **Please note that identification of Phragmites should be done by a professional prior to treatment to distinguish the invasive non-native lineage from the non-invasive native.**

MANAGEMENT OPTIONS

1. Digging/Pulling

Effectiveness:

Digging or pulling can be effective in containing, suppressing, or locally eradicating early detection sized infestations of common reed. This is usually a very labor intensive control method that often has to be repeated for several years. Best results are often seen when infestations occur in sandy or mucky soils.

Methods:

Dig or pull up all common reed plants out from the soil by the rhizomes. Use a shovel or pitch fork for larger plants to ensure the removal of the entire root system. Tamp down or replace all disturbed or displaced soil after removal.

Disposal:

Bag and remove all plant parts from the site. Solarize and then dispose of in an approved landfill or incinerate with the appropriate permits.

Sanitation:

Clean all clothing, boots, and equipment to prevent spread of propagules.

2. Cutting /Mowing

Effectiveness:

Cutting or mowing can be effective in suppressing or containing early detection to small sized infestations. Cutting or mowing often needs to be repeated multiple times annually for several years in order to reduce the spread of plants.

Methods:

Cut or mow plants down to the ground at least 3 times during the growing season ensuring that no plants are allowed to go to seed. Common reed stems should be cut or mowed below the lowest leaf, leaving a 6" or shorter stump.

Cautions:

Common reed has the potential to re-sprout from both cut and/or mowed stem and rhizome fragments. Actions should be taken to leave all fragments on site following a cutting or mowing. Since common reed is a grass, an insufficient number of cuttings during a growing season, may increase stand density. A cutting regime may reduce smaller colonies if carried out annually for

several years. Manual or mechanical cuttings of large, high density, monospecific common reed stands, without the follow-up application of herbicide, is not recommended.

Disposal:
Cut or mowed material can be left on site to decompose. You can also solarize and dispose of cut or mowed material in an approved landfill or incinerate with appropriate permits. Do not attempt to compost rhizome or stem fragments.

Sanitation:
Clean all clothing, boots, and equipment to prevent spread of propagules.

3. Matting

Effectiveness:
Matting can be effective in containing, suppressing, or locally eradicating early detection to small sized infestations of common reed. Above ground plant parts usually die off within 3-10 days of being covered, depending on sun exposure. In order to entirely kill the belowground rhizome system, the plastic covering may need to be left in place for several years.

Methods:
First, cut or mow plants down to at least 6-8". After cutting a stand of common reed, anchor a sheet of black plastic, barrier matting, or a dark tarp over the cut area using sand bags or rocks. High temperatures under the plastic will eventually kill off the plants. This technique works best when the treated area is in direct sunlight. Plastic should be at least 6 millimeters thick. Runners or shoots that extend out from under the covering can be treated with a spot application of glyphosate. In order to prevent or reduce the likelihood of this from happening, also cover a buffer area of at least 5-10+ feet surrounding the infestation. The plastic covering can be removed the following year to assess whether the covered rhizome system has been killed. Common reed shoots may return and can either be re-covered or managed via another method.

Cautions:
Monitoring the site several times throughout the growing season is often required to determine if shoots are extending out from under the plastic. Tears or rips in the covering may also need to be patched to prevent re-sprouting.

Disposal:
Cut material can be left under the plastic or bagged and removed from site. If removed, solarize and then dispose of plant parts in an approved landfill or incinerate with appropriate permits.

Sanitation:
Clean all clothing, boots, and equipment to prevent spread of propagules.

4. Herbicide

Effectiveness:
Herbicide treatments can be effective in suppressing, containing, or locally eradicating small to large sized infestations of common reed. The timing and choice of application technique will determine control efficacy and should aim to minimize off-target effects.

Glyphosate and imazamox based herbicides can be effective in controlling common reed. Herbicide use is usually at least a 3-year process as infestations will most often need at least one or two "touch- up" applications. This is especially true in dense stands where subdominant plants are protected by a thick canopy and may not receive adequate herbicide coverage in the first application. It is not uncommon for small to medium sized infestations to require up to 5 years of "touch-up" treatments in order to achieve local eradication. Glyphosate formulations will not affect subsequent seedling emergence of common reed or other plants, while imazamox may provide some residual control.

Treatments:
Use glyphosate or imazamox formulations only. In wetlands, only formulations which include language approving the product's use in or around wetlands or aquatic sites may be used. Apply a foliar spray or wiper application near or during the tasseling stage when nutrients being transported to the rhizomes. Another effective treatment option is to cut or mow down the live stalks in early summer, allow at least 6 weeks of regrowth, and conduct a foliar spray to the regrowth of plants. It is imperative that enough time (at least 6 weeks) be given for plants to regrow so that enough plant surface area is present for proper coverage. Usually, previously cut plants will only reach about waist height after 6 weeks, as opposed to potentially 15 feet high without cutting, and will not go to tassel. However, since common reed is a grass, cutting will not only reduce spray height, but often stimulates increased stand density, increasing spray surface area. A third effective treatment option that can be used in tandem with the other treatment methods specified or for small or sparse infestations is to perform a cut stem injection of individual stems. Cut each stem within a few inches of the ground and using a stem injection system or unitary wash bottle to fill each hollow stem cavity with herbicide product. Although extremely effective, this technique is labor intensive and should not be performed entirely on medium to large infestations.

If time and available resources permit, the following spring, after an initial treatment of any kind, cut or mow down the dead standing stalks to stimulate the emergence and growth of other native plants previously suppressed. This will also help in locating and treating remaining common reed plants during "touch-up" treatments.

For spot treatments use any of the following application techniques:

a) Wiper application - sponge tip applicator with wick or cloth glove applicator
b) Cut stem injection application – stem injection system, commercial-grade spray bottle, wash bottle, or eye dropper
c) Foliar spray application - commercial-grade spray bottle with adjustable nozzle and/or backpack sprayer with adjustable nozzle

5. Excavation

Effectiveness:
Excavation can be effective in containing, suppressing, or locally eradicating early detection to small sized infestations of common reed. Associated costs and disturbance are usually the limiting factors with this control method.

Methods:
Excavate common reed plants below depth of rhizome using an excavating tractor and bury

contaminated soil at least 5 feet deep in a disposal pit. When working in wetlands only tracked equipment shall be used. Rubber-tired excavators can operate from adjacent pavement or upland areas.

Cautions:
The patch should be excavated to below the depth of rhizome structures. Follow-up monitoring later in the season and over the following years must be conducted to verify that all plants have been removed.

Disposal:
Removed contaminated soil can be buried at least 5 feet deep in a disposal pit. The disposal site should be monitored annually to ensure that no resprouting occurs.

Sanitation:
Clean all clothing, boots, and equipment to prevent spread of seed.

ORIENTAL BITTERSWEET (*Celastrus orbiculatus*)

Plant Description

Oriental bittersweet is a rapidly spreading deciduous, twining vine with alternate round, glossy leaves. It often twines around and drapes itself over other trees and shrubs in successional fields and along forest edges, often completely covering the supporting vegetation. In the shade it grows less vigorously, sometimes forming small tailing shrubs. The outer surfaces of its roots are characteristically bright orange. The branches are round, glabrous, light to dark brown, usually with noticeable lenticels. Small greenish flowers occur in clusters in the leaf axils. At maturity, globular, green to yellow fruits split open to reveal three red-orange, fleshy arils that contain the seeds. This species may be distinguished from the native American bittersweet (*Celastrus scandens)* by the location of its fruit. *C. orbiculatus* has small clusters in the leaf axils while *C. scanden* has clusters only at its branch tips. Oriental bittersweet has been shown to hybridize with American bittersweet which may lead to the loss of American bittersweet's genetic identity through introgression.

1.Digging/Pulling

Effectiveness:

Frequent digging or pulling can be effective in containing, suppressing, or locally eradicating early detection to small sized Oriental bittersweet infestations. Roots and runners will resprout unless they are completely removed, so management must be frequent enough to remove the entire root system.

Methods:

Dig or pull up each individual oriental bittersweet vine from the soil by the roots making sure to remove as much of the root system as possible. Use a digging tool or weed wrench for larger vines. Due to the persistence of the seed bank and oriental bittersweet's ability to spread by root suckering, mechanical control is usually a long-term project. It is most practical in a small plot, or in an area where chemical control is not an option. Pulling or digging plants is rarely successful unless all the root material can be removed. Even then, germination of seeds will continue for several growing seasons.

Cautions:

Any portions of the root system not removed can re-sprout. Because open soil can support rapid re-invasion, managers must monitor their efforts at least once per year and repeat control measures as needed. Do not pull or dig up plants that are in fruit as this may aide in seed dispersal.

Disposal:

All plant parts and contaminated soil should be burned or bagged and disposed of to prevent re-establishment. Solarize and then dispose of in an approved landfill or incinerate with the appropriate permits.

Sanitation:

Clean all clothing, boots, and equipment to prevent spread of propagules.

2.Herbicide

Effectiveness:

Herbicide treatments can be effective in containing, suppressing, or locally eradicating

early detection to medium sized infestations of Oriental bittersweet. The timing and choice of application technique will determine control efficacy and should aim to minimize off-target effects.

Oriental bittersweet can be effectively controlled by both glyphosate and triclopyr based herbicides. Neither glyphosate nor triclopyr formulations will affect subsequent seedling emergence of Oriental bittersweet or other plants.

Treatments:
Use glyphosate or triclopyr formulations only by one or more of the following means:

- A foliar spray of glyphosate or triclopyr can be effective in controlling infestations of Oriental bittersweet. These herbicides should be applied when plants are actively growing and transporting nutrients to the roots, but before fruit production. If the size of the infestation or the height of the plants inhibits effective spraying, mow or cut all vines in the early summer, allow at least 6 weeks of regrowth, and then spray the regrowth.

- A cut stump application of glyphosate or triclopyr applied immediately after cutting is also an effective means of controlling Oriental bittersweet. Use this method in areas where vines are established within or around non- target plants, or where vines have grown into the canopy. Cut stump treatments should be conducted during the growing season after full leaf expansion when nutrients are being actively transported to the roots. Delay in application after cutting may result in reduced effectiveness.

- A basal bark application of triclopyr applied to the lower trunk of each vine can also be effective in controlling Oriental bittersweet. A string trimmer or hand saw should be used to remove a band of the foliage from the main vine near the ground. A triclopyr based herbicide and a penetrant should then be applied to the exposed vine. If the Oriental bittersweet vines are twining around other host shrubs or trees, avoid applying herbicide to the host plant.

For spot treatments use any of the following application techniques:

a) Foliar spray application - commercial-grade spray bottle with adjustable nozzle and/or backpack sprayer with adjustable nozzle
b) Cut stump application - commercial-grade spray bottle with adjustable nozzle, backpack sprayer with adjustable nozzle, wash bottle, eye dropper, or paintbrush
c) Basal bark application – commercial-grade spray bottle with adjustable nozzle, backpack sprayer with adjustable nozzle, or paintbrush

HERBACEOUS VINES

MILE-A-MINUTE (*Persicaria perfoliata*)

PLANT DESCRIPTION
Mile-a-minute is an herbaceous, annual climbing vine that is native to Asia. It has triangular shaped leaves that are alternately arranged on the stem. The delicate, branched stem is covered with small recurved spines. Ocreae, or circular shaped leaves, can be found surrounding the stem near its nodes. Flowers are small and inconspicuous, but give rise to attractive metallic blue berries. Mile-a-minute spreads long distances via bird or water dispersed seeds. Once established, vines have can grow up to six inches per day. Large mats can quickly smother native vegetation and alter the quantity of light filtering through a forest canopy.

MANAGEMENT OPTIONS
1. Digging/Pulling
Effectiveness:
Digging or hand pulling is an effective method for containing, suppressing, or locally eradicating early detection to small sized infestations of mile-a-minute.

Methods:
Slowly dig up or pull each plant by the base to ensure the entire root system is removed. Control is easiest in early-summer before the sharp barbs have hardened. All mechanical control should be conducted prior to seed formation in mid to late summer. Disturbed soil should be tamped down firmly after removing plants. Soil disturbance can create a favorable environment for additional germination within the control site.

Disposal:
Bag all plant parts and remove from site. Solarize and then dispose of in an approved landfill or incinerate with appropriate permits.

Cautions:
Mile-a-minute is covered with sharp barbs. Wear gloves and protective clothing to shield yourself from injury. Pull all plants prior to seed formation in mid to late summer. Repeated treatments will be required to deplete the seed bank. Care should be taken to minimize soil disturbance and remove all tuberous roots. Mile-a-minute can begin producing fruit early in the growing season. Treatments should be performed prior to July to maximize efficacy and prevent the production of new propagules.

Sanitation:
Clean all clothing, boots, and equipment to prevent spread of seed.

2. Cutting/Mowing
Effectiveness:
Cutting or mowing can be effective in containing or suppressing early detection to medium sized infestations of mile-a-minute. Dormant seeds in the soil are unaffected by this technique. Mowing or cutting will often need to be repeated annually to reduce an infestation to desired levels.

Methods:
Cut or mow mile-a-minute stems when in flower (late spring/early summer) at ground level either manually or with motorized equipment. This technique usually results in high mortality of existing plants and will minimize re-sprouting. Repeat mowings/cutting may be required within a growing season, and the actions must be performed annually.

Disposal:
If possible, bag all cut plant parts and remove from site. Solarize, and dispose of in an approved landfill or incinerate with appropriate permits. Mowed or mulched material can be left to decompose on site.

Sanitation:
Clean all clothing, boots, and equipment to prevent the spread of propagules.

3. Herbicide

Effectiveness:
Herbicide treatments can be effective in suppressing, containing, or locally eradicating early detection to large sized mile-a-minute infestations. The timing and choice of application technique will determine control efficacy and should aim to minimize off-target effects.

Mile-a-minute can be effectively controlled using glyphosate or triclopyr based herbicides. These products will not affect subsequent seedling emergence of mile-a-minute or other plants.

Treatments:
Use glyphosate or triclopyr formulations only. Treat plants as close to the flowering period as possible, but prior to fruit formation. Selectively apply herbicide directly to the foliage of mile-a-minute to preserve the surrounding native vegetation.

For spot treatments use any of the following application techniques:

a) Wiper application - sponge tip applicator with wick or cloth glove applicator
b) Foliar spray application - commercial-grade spray bottle with adjustable nozzle and/or backpack sprayer with adjustable nozzle

WOODY SHRUBS

Due to similar biology and growth habit, many invasive woody shrubs are managed using the same techniques. The following species are approved for treatment using the general best management practices provided in this section:

Woody Shrubs Approved for Management	
Wineberry	*Rubus phoenicolasius*
Russian and autumn olive	*Elaeagnus umbellate & E. angustifolia*
Common and glossy buckthorn	*Rhamnus cathartica & Frangula alnus*
Multiflora and rugosa rose	*Rosa multiflora & Rosa rugosa*
Japanese and common barberry	*Berberis thunbergii & B. vulgaris*
Winged euonymous	*Euonymus alatus*
Scotch broom	*Cytisus scoparius*
Bush honeysuckles	*Lonicera spp.*

PLANT DESCRIPTIONS

WINEBERRY is a perennial shrub in the rose family that is native to Asia. Leaves are alternate and compound with three heart-shaped leaflets. Leaves are light-green on top and white below. Branches are long, arching, and covered with reddish-purple spines. Small greenish-white flowers appear in late spring to early summer, giving rise to edible red raspberry like fruits in mid-summer. Plants can spread long distances via animal and bird dispersed seed, but also spread locally by vegetative means. Wineberry prefers moist soil and full to partial sunlight, and can readily invade forest edges, fields, forest understories, and wetlands edges. Dense infestations exclude native vegetation and can impact recreational use.

> *NOTE: Wineberry closely resembles native raspberry species (Rubus spp.). The reddish hairs and stem, and white color of the ventral sides of the leaves can be used to distinguish wineberry from native raspberry. Extreme care should be taken to correctly identify wineberry before initiating control efforts.*

AUTUMN AND RUSSIAN OLIVE are deciduous shrubs that can reach up to 20 to 35-feet in height. The leaves of autumn olive are oval and alternately arranged on the stem, with a green upper surface and silver underside. The leaves of Russian olive are more elongate, resembling a willow, and are silver on both sides. Twigs of both species are gray and often armed with sharp thorns. Flowers have four petals, are fragrant, white to yellow, and appear in late-spring. The fruit of both species is a small, round berry. Autumn olive berries are typically red, while Russian olive fruit is yellow-orange. Both species prefer disturbed sites, where they establish and spread via seed.

COMMON AND GLOSSY BUCKTHORN are deciduous shrubs that can reach heights of 20-feet. Their main stem can grow up to 10 inches in diameter, but is more commonly 1-3 inches in shrub form. Leaves are dark-green and oval with toothed margins and distinct upcurved veins. Common buckthorn typically has 3-5 pairs of leaf veins, while glossy buckthorn has 8-9. The twigs of

common buckthorn are tipped with a spine, a characteristic that distinguishes it from glossy buckthorn. Small, round, black berries ripen in the fall and serve as the primary spread mechanism for these species.

MULTIFLORA AND RUGOSA ROSE are thorny, perennial shrubs that can grow up to 15-feet in height. Stems are long, flexible, green or reddish in color, and covered with numerous stiff, recurved thorns. Leaves are alternate and compound. Multiflora rose often has 5-11 one-inch leaflets, while rugosa rose has 7-9 (rarely 5). The leaf margins are toothed for both species. Invasive rose species bloom in late-spring or early-summer, producing numerous clusters of showy white or pink flowers. The flowers are small (1-inch wide) with five petals. In summer, flowers develop into small, hard red fruits that are approximately 1/4 inch in size.

JAPANESE AND COMMON BARBERRY are spiny deciduous shrubs that can exceed ten-feet in height. Leaves of Japanese barberry are small and oval with smooth margins, while common barberry has toothed margins. Japanese barberry has two common color morphs, a dark-green and deep-purple variety, while common is typically only green. Japanese barberry has a single spine at each node where the leaves meet the stem, while common barberry has three-spines. Flowers are very small, white to yellow in color, and bloom in April or May. Fruits are small oval bright-red berries that are approximate 1cm long. The inner roots and stem of barberry are vibrant yellow in color.

WINGED EUONYMOUS is a deciduous shrub that can grow up to 20-feet tall and wide. Its leaves are simple, opposite, and 1-3 inches long with smooth edges. Green during the summer, foliage transitions to a vibrant red in the fall. Stems are green to brown in color with four prominent wings. Plants bloom in May or early-June, producing small green flowers. Fruits mature in later summer into small, oval, bright red berries. Shrubs are adaptable to a variety of soil and light conditions, and can be found in forested wetlands, forest understories, riparian corridors, and right-of-ways.

SCOTCH BROOM is a perennial shrub that grows up to 10-feet tall. Leaves are small, alternate, and compound with 3-leaftlets. Stems are a prominent green and are five-sided. Shrubs bloom early in the season from late-May to June, producing small bright-yellow flowers along the length of the stem. Flowers give rise to fuzzy, flat seed pods that can be up to 1.5 inches long. Scotch broom can fix nitrogen, allowing it to become established in poor sites where it may form dense thickets that outcompete native shrubs and herbaceous species.

BUSH HONEYSUCKLES Exotic bush honeysuckles (Morrow's, Bell's, Amur, and Tatarian) are upright, multi-stemmed, oppositely branched, deciduous shrubs that reach up to 25-feet in height. The opposite leaves are simple and entire, and paired, axillary flowers are showy with white, pink, or yellow corollas. The fruits of *Lonicera spp.* are red, orange, or rarely yellow, fleshy berries. Exotic honeysuckles can be distinguished from native varieties by their hollow stems.

MANAGEMENT OPTIONS

1. Digging/Pulling

Effectiveness:

Frequent digging or pulling can be effective in containing, suppressing, or locally eradicating early detection to small infestations of invasive woody shrubs. Management should be performed prior to fruit formation to prevent seed dispersal.

Methods:
Dig or pull each individual shrub, taking care to remove as much of the root system as possible. Use a digging tool or weed wrench for larger individuals. Due to the persistence of the seed bank, mechanical control is usually a long-term project. It is most practical in a small area or where chemical control is not an option.

Cautions:
Portions of the root system that are not removed can re-sprout. Management must be conducted prior to seed set and should be repeated for multiple seasons to deplete the seed bank.

Disposal:
All plant parts and contaminated soil should be bagged and removed from the management site. Solarize and then dispose of plant material in an approved landfill or incinerate with the appropriate permits. Non-fruit bearing plants can be hung roots up and left on-site to decompose.

Sanitation:
Clean all clothing, boots, and equipment to prevent spread of propagules.

2. Cutting/Mowing
Effectiveness:
Cutting or mowing can be effective in containing or suppressing early detection to medium sized infestations of woody shrubs. Dormant seeds in the soil are unaffected by this technique. Mowing or cutting will need to be repeated annually to reduce an infestation to desired levels.

Methods:
Cut or mow stems when in flower (late spring/early summer) at ground level either manually or with motorized equipment. This technique can result in mortality of existing plants and may minimize re-sprouting. However, some shrubs are will respond positively to cutting and release numerous root suckers. Repeat mowings/cutting may be required within a growing season, and the actions must be performed annually.

Disposal:
If possible, bag all cut plant parts and remove from site. Solarize, and dispose of in approved landfill or incinerate with appropriate permits. Mowed or mulched material can be left to decompose on site.

Sanitation:
Clean all clothing, boots, and equipment to prevent the spread of propagules.

3. Herbicide
Effectiveness:
Herbicide treatments can be effective in containing, suppressing, or locally eradicating early detection to large sized infestations of woody shrubs. The timing and choice of application technique will determine control efficacy and should aim to minimize off-target impacts.

Woody shrubs can be effectively controlled by both glyphosate and triclopyr based herbicides. Neither glyphosate nor triclopyr formulations will affect subsequent seedling emergence of invasive woody shrubs or other plants.

Treatments:
Use glyphosate or triclopyr formulations only by one or more of the following means:

- A foliar spray of glyphosate or triclopyr has been found to be effective in controlling infestations of woody shrubs. These herbicides should be applied when plants are actively growing and transporting nutrients to the roots, but prior to fruit formation.

- A cut stump application using glyphosate or triclopyr is an effective and selective means to invasive woody shrubs. This technique is most effective on mature plants that have a larger cut-stump surface area. Use this method in areas where shrubs are located within close proximity to non-target plants. Cut stump treatments should be conducted when plants are actively growing and transporting nutrients to the roots, but prior to fruit formation. Delay in herbicide application after cutting may result in reduced effectiveness.

- A basal bark application of triclopyr applied to the lower trunk can also be effective in controlling invasive woody shrubs. A triclopyr based herbicide and a penetrant should be applied to the base of the trunk. Treatments are most effective when conducted close to peak flower, but prior to seed formation.

For spot treatments use any of the following application techniques:

a) Foliar spray application - commercial-grade spray bottle with adjustable nozzle and/or backpack sprayer with adjustable nozzle
b) Cut stump application - commercial-grade spray bottle with adjustable nozzle, backpack sprayer with adjustable nozzle, wash bottle, eye dropper, or paintbrush
c) Basal bark application – commercial-grade spray bottle with adjustable nozzle, backpack sprayer with adjustable nozzle, or paintbrush

APPENDIX 9-4

Herpetofaunal Presence/Probable Absence Surveys of the Proposed Commercial Campus at Fields Corner by MACHAC, dated August 2019

Herpetofaunal Presence / Probable Absence Surveys of the Proposed Commercial Campus at Fields Corner

Prepared for
Evans Associates Environmental Consulting, Inc.

Brandon M. Ruhe

The Mid-Atlantic Center for Herpetology and Conservation
August 2019

MAC HAC
The Mid-Atlantic Center for Herpetology and Conservation

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INTRODUCTION

The Mid-Atlantic Center for Herpetology and Conservation (MACHAC) was retained by Evans Associates Environmental Consulting, Inc. (EAEC) to provide an opinion regarding the suitability of the proposed Commercial Campus at Fields Corner (formerly referred to as the Northeast Interstate Logistics Center) site in the Town of Southeast, Putnam County, New York, for rare amphibian and reptile inhabitance. MACHAC is a non-profit organization that conducts amphibian and reptile research and conservation planning, including services for landowners and stakeholders regarding amphibian and reptile conservation and habitat restoration. Topographic maps and aerial photographs of the site were evaluated prior to an onsite habitat assessment. The habitat assessment was conducted on December 18, 2018 by Brandon M. Ruhe of MACHAC and assistant. The results of that survey were documented in a January 2019 report from MACHAC titled *Herpetofaunal Habitat Assessment of the Proposed Northeast Interstate Logistics Center*. In summary, potential habitat was identified in that report for 37 species of amphibians and reptiles, including 1 federally-threatened/state-endangered species and 7 state-listed species of special concern (Table 1). As a result of the habitat assessment, EAEC requested additional presence/probable absence surveys for listed species within the study area, particularly focusing on a central wetland corridor and adjacent woodlands and meadows.

STUDY AREA

The general study area is located in the Town of Southeast, Putnam County, New York. Refer to Figure 1 for an aerial photograph of the study area. EAEC described the study area, project background, and ecological communites present onsite in their March 2018 Biological Assessment Report. The following description was provided by EAEC:

> The site is located to the northwest of Interstate 84 and NYS 312, and comprises several parcels totaling approximately 327 acres of which a portions is proposed to be developed for the Northeast Interstate Logistics Center. The parcels encompass or are adjacent to Barrett Road and Pugsley Road (the portion of Pugsley Road that is north of Barrett Road is also referred to as Fields Corner Road). The surrounding areas contain a variety of land uses. In addition to interstate, state, and local roads, surroundings also include farms, residential homes or complexes, shopping centers/office buildings, a golf course, the Middle Branch Croton River, as well as undeveloped, mainly forested parcels.
>
> The uplands on the site were originally maintained as agricultural pastures, after use as a dairy farm, but are now mostly overgrown with trees and invasive shrubs and vines (i.e. autumn olive and multiflora rose shrubs, and mile-a-minute and oriental bittersweet vines, among others). No buildings remain on the property, although roads and utility poles are still present. Portions of DEC Freshwater Wetlands LC-18 and LC-28 are located on the subject property. The on-site portions of DEC wetland LC-18 comprise two wetlands in the center of the property, west of Pugsley Road and Fields Corner Road; the two wetlands are connected by a culvert beneath Barrett Road. The on-site portion of DEC Freshwater Wetland LC-28 is located in the southeast corner of the site, east of Pugsley Road, and north of Route 312. The watercourses associated with these three wetlands are Class C.
>
> The site was formally known as Campus at Field Corners, a mixed residential/commercial development, and wetlands were delineated in 2004 for that project. These previously-delineated wetland lines were re-staked by the surveyors during the summer of 2017, and both the Town Wetland Consultant (Steve Coleman)

and DEC staff (Kelly McKean) have re-confirmed the wetland boundaries as accurate in 2018. The development that is currently proposed for the site involves large storage warehouses that are proposed to be located in the uplands of the site.

Based upon the previous habitat assesment, an 85-acre corridor of higher quality habitat was selected for additional study (Figure 1). This area included: the two central fishless ponds, wooded wetlands, the central potential Bog Turtle habitat along Barrett Road, deciduous woods, and upland meadows with higher quality herbaceous cover (absence of thick invasive shrub layers that reduce turtle nesting success).

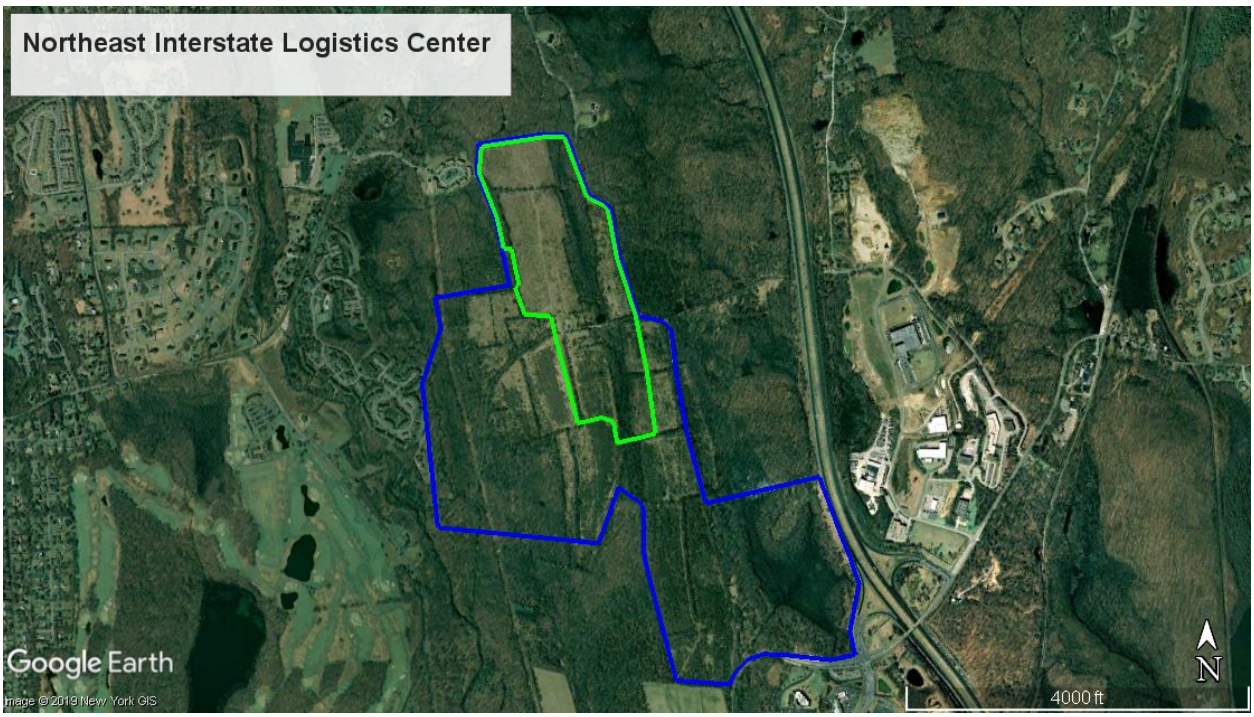

Figure 1. Commercial Campus at Fields Corner property (blue polygon) with the 2019 herpetofaunal study area delimited in green.

METHODOLOGY

Targeted surveys were conducted for the species of concern in Table 1 on suitable survey dates from May to July (11 total; Table 2). Targeted survey methods included: visual (surface active surveys, road-cruising, and cover objects), trapping, dip-netting, and auditory means. Three turtle traps (Pro-mar semi-oval) were set and checked from 5/3/2019 to 5/5/2019 in an attempt to detect Spotted Turtles and Eastern Musk Turtles in aquatic habitats of sufficient depth. Dip-net surveys for amphibian larvae were conducted on all 11 survey dates in an attempt to detect Blue-spotted Salamanders, Jefferson Salamanders, Marbled Salamanders, and Atlantic Coast Leopard Frogs. Auditory surveys for calling frogs were conducted on all 11 survey dates, with 4 calling surveys during both day and night in May. Visual methods included searching areas suitable for potential species (e.g. searching meadows for turtles and nests), flipping cover objects such as boards, logs and rocks, and walking/driving Barrett and Pugsley Roads were on rainy nights in May in an attempt to detect dispersing and foraging amphibians. Bog Turtle surveys were conducted on 4 visits in May and June at an effort of 4-person hours per acre of habitat (2 acres total). Bog Turtle surveys were led by Lori Erb and/or Brandon Ruhe, both United States Fish and Wildlife Service Qualified Surveyors. Bog Turtle surveys were conducted following the latest

federal guidelines and in a 2-acre area identified in the January 2019 report (U.S. Fish and Wildlife Service 2018). Opportunistic sampling for herpetofaunal diversity was conducted throughout the survey period on all dates. All gear, including boots and other field equipment, were disinfected thoroughly before and after each survey as per NEPARC guidelines (NEPARC 2014).

Table 1: Notational list of amphibians and reptiles potentially found within the study area. Bolded and green species are those species listed as "Species of Greatest Conservation Need" by the NYSDEC. Bolded and blue species are those species listed as "Species of Special Concern" by the NYSDEC. Bolded and red species are those species listed as both "Endangered" by the NYSDEC and "Threatened" by the USFWS. Please note, the naming convention follows Crother (2017) and may be different than the naming convention of the regulatory agencies which are typically slow to change scientific nomenclature due to procedural impediments.

Group	Common Name	Scientific Name
Salamanders	**Jefferson Salamander complex**	***Ambystoma jeffersonianum***
	Spotted Salamander	*Ambystoma maculatum*
	Blue-spotted Salamander complex	***Ambystoma laterale***
	Marbled Salamander	***Ambystoma opacum***
	Northern Dusky Salamander	*Desmognathus fuscus*
	Northern Two-lined Salamander	*Eurycea bisineata*
	Northern Spring Salamander	*Gyrinophilus porphyriticus*
	Four-toed Salamander	***Hemidactylium scutatum***
	Red-spotted Newt	*Notophthalmus viridescens*
	Northern Red-backed Salamander	*Plethodon cinereus*
	Northern Slimy Salamander	*Plethodon glutinosus*
Frogs	American Toad	*Anaxyrus americanus*
	Gray Treefrog	*Hyla versicolor*
	Bullfrog	*Lithobates catesbeianus*
	Green Frog	*Lithobates clamitans*
	Atlantic Coast Leopard Frog	***Lithobates kauffeldi***
	Pickerel Frog	*Lithobates palustris*
	Wood Frog	*Lithobates sylvaticus*
	Spring Peeper	*Pseudacris crucifer*
Turtles	Snapping Turtle	*Chelydra serpentine*
	Painted Turtle	*Chrysemys picta*
	Spotted Turtle	***Clemmys guttata***
	Wood Turtle	***Glyptemys insculpta***
	Bog Turtle	***Glyptemys muhlenbergii***
	Eastern Musk Turtle	***Sternotherus odoratus***
	Eastern Box Turtle	***Terrapene Carolina***
Snakes	North American Racer	*Coluber constrictor*
	Ring-necked Snake	*Diadophis punctatus*
	Eastern Milksnake	*Lampropeltis Triangulum*
	Eastern Hog-nosed Snake	***Heterodon platirhinos***
	Common Watersnake	*Nerodia sipedon*
	Smooth Greensnake	*Opheodrys vernalis*
	Eastern Ratsnake	*Pantherophis alleghaniensis*
	Dekay's Brownsnake	*Storeria dekayi*
	Red-bellied Snake	*Storeria occipitomaculata*
	Common Gartersnake	*Thamnophis sirtalis*
	Eastern Ribbonsnake	*Thamnophis saurita*

Table 2: 2019 survey dates, temperature, and Bog Turtle survey dates.

Date	Temp In (F)	Temp Out (F)	Bog Turtle Survey (Y/N)	Bog Turtle Survey Person Hours
5/3/2019	53	53	N	0.00
5/4/2019	56	65	Y	8.00
5/5/2019	57	55	N	0.00
5/18/2019	72	65	N	0.00
5/19/2019	67	75	Y	8.25
5/31/2019	67	78	Y	8.00
6/13/2019	60	58	N	0.00
6/14/2019	60	70	Y	8.00
6/21/2019	64	75	N	0.00
7/4/2019	68	85	N	0.00
7/5/2019	66	81	N	0.00

RESULTS

Surveys throughout the study period resulted in the detection of 20 species, or ±54% of the potential species list, within the study area (Table 3). Of the 11 targeted species of concern, 4 (±36% of the potential species of concern list) were encountered: Four-toed Salamander, Spotted Turtle, Wood Turtle, and Eastern Box Turtle. No Bog Turtles (USFWS-threatened and NYSDEC-Endangered) were detected through the effort. Individual terrestrial/semi-terrestrial turtle encounters were few, with only 2 Spotted Turtles, 1 Wood Turtle, and 2 Eastern Box Turtles encountered through 11 surveys, though this may in part be explained by the intensive agricultural land use for row crops at the site in recent decades (McCoard et al. 2016). Overall, herpetological diversity was low/moderate for the region, with snakes and salamanders poorly represented despite intensive surveys. As with the turtles, this may potentially also be a result of past intensive agricultural land use.

Spotted Salamander *(Ambystoma maculatum)*

The Spotted Salamander is the most wide-spread mole salamander in New York. As with other congeners in the area, the species requires both aquatic breeding habitats and terrestrial upland habitats. Breeding habitats include fishless ponds, seasonal forest pools, swamps, and marshes and are utilized by adults from late winter to early spring. After hatching, larvae will remain in the breeding habitats until metamorphosis occurs later in the summer. The species will occasionally breed in slow-moving streams that lack gamefish. Terrestrial habitats include woodlands and meadows near breeding habitats.

Spotted Salamanders adults, larvae, and egg masses were encountered on all surveys in association with the fishless pond along Barrett Road and the central wetland corridor. Curiously, no Spotted Salamander egg masses or larvae were observed in the fishless pond at the northern end of the central wetland corridor. Refer to Figure 2 for an aerial photograph of species observation locations and Figure 3 for a digital image of a specimen found onsite.

Table 3: Species detected within the central corridor investigation area.

Group	Common Name	Scientific Name
Salamanders	Spotted Salamander	*Ambystoma maculatum*
	Northern Dusky Salamander	*Desmognathus fuscus*
	Northern Two-lined Salamander	*Eurycea bisineata*
	Four-toed Salamander	***Hemidactylium scutatum***
	Northern Red-backed Salamander	*Plethodon cinereus*
Frogs	American Toad	*Anaxyrus americanus*
	Gray Treefrog	*Hyla versicolor*
	Bullfrog	*Lithobates catesbeianus*
	Green Frog	*Lithobates clamitans*
	Pickerel Frog	*Lithobates palustris*
	Wood Frog	*Lithobates sylvaticus*
	Spring Peeper	*Pseudacris crucifer*
Turtles	Snapping Turtle	*Chelydra serpentina*
	Painted Turtle	*Chrysemys picta*
	Spotted Turtle	***Clemmys guttata***
	Wood Turtle	***Glyptemys insculpta***
	Eastern Box Turtle	***Terrapene carolina***
Snakes	Ring-necked Snake	*Diadophis punctatus*
	Common Watersnake	*Nerodia sipedon*
	Common Gartersnake	*Thamnophis sirtalis*

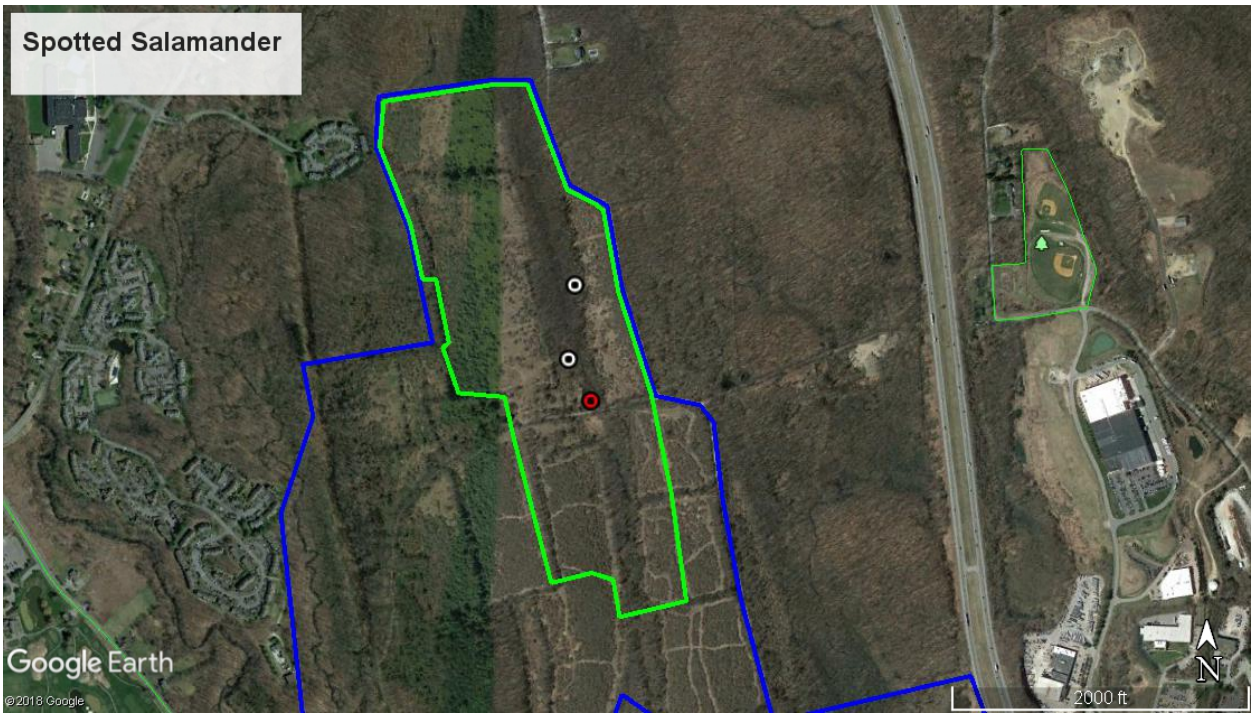

Figure 2: Spotted Salamander observation points (white dots) found within the study area (green polygon). The red dot indicates where egg masses and larvae were observed.

Figure 3: Spotted Salamander egg mass from May 5, 2019.

Northern Dusky Salamander *(Desmognathus fuscus)*

The Northern Dusky Salamander is a common stream-side salamander found throughout New York. Adults are closely associated with flowing aquatic habitats such as seepages, springs, and streams. Adults are typically found under debris such as stones and logs within and along aquatic habitats. Eggs are laid in chambers under objects or in voids adjacent to aquatic habitat. Females remain with the eggs as brood-guards until hatching.

Northern Dusky Salamanders were found within the central wetland corridor. Adults and a juvenile were found under rocks and logs. Refer to Figure 4 for an aerial photograph of species observation locations and Figure 5 for a digital image of a specimen found onsite.

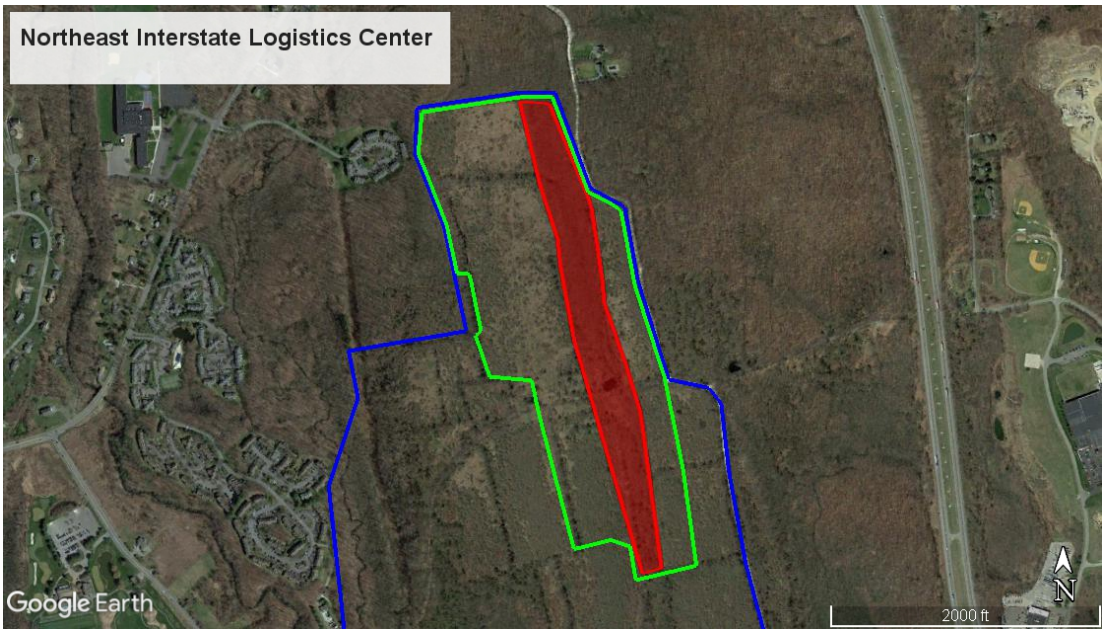

Figure 4: Northern Dusky Salamander habitat area (red polygon) found within the study area (green polygon).

Figure 5: Northern Dusky Salamander from May 5, 2019.

Northern Two-lined Salamander *(Eurycea bislineata)*

The Northern Two-lined Salamander is a common stream-side salamander found throughout New York. Adults are closely associated with flowing aquatic habitats such as seepages, springs, and streams. Adults are typically found under debris such as stones and logs within and along aquatic habitats. Eggs are typically laid under partially- or fully-submerged stones. Females remain with the eggs as brood-guards until hatching.

Northern Two-lined Salamanders were found throughout the central wetland corridor under rocks, logs, and other debris. Refer to Figure 6 for an aerial photograph of species observation locations and Figure 7 for a digital image of a specimen found onsite.

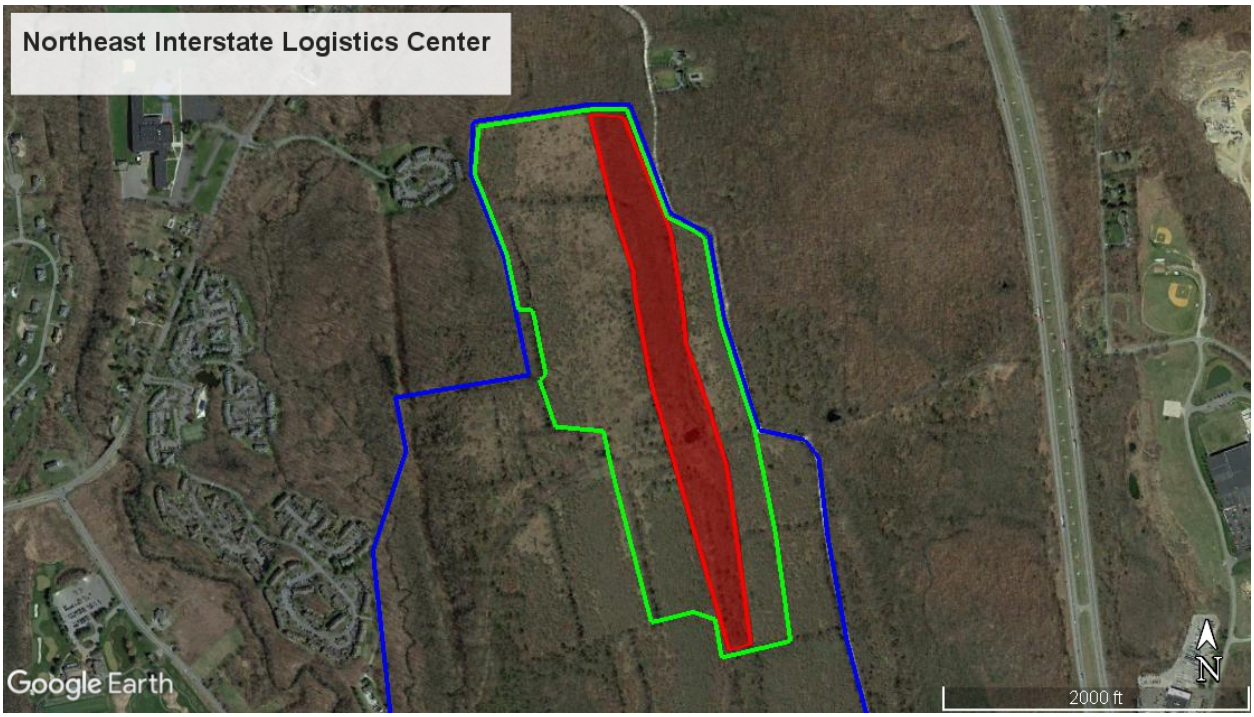

Figure 6: Northern Two-lined Salamander habitat area (red) found within the study area (green polygon).

Figure 7: Northern Two-lined Salamander from May 5, 2019.

Four-toed Salamander *(Hemidactylium scutatum)*

Species of Greatest Conservation Need - NYSDEC

The Four-toed Salamander requires both aquatic habitats for egg-deposition and terrestrial upland habitats for the majority of life history functions. Breeding habitats include fishless ponds, seasonal forest pools, swamps, wet meadows, fens, and marshes, and are utilized by females in late winter through spring. Females lay eggs in moss clumps, sedge clumps, and under debris such as bark, overhanging still or slowly moving water. After hatching, larvae will remain in the breeding habitats until metamorphosis occurs typically in mid- to late-spring. The species will occasionally breed in slow-moving streams that lack gamefish. Terrestrial habitats include woodlands and meadows within 350 meters of breeding habitats (Vitale 2013).

Four-toed Salamanders were encountered within the central wetland corridor in several locations during surveys conducted from May 3rd through May 5th. Communal nests with brood-guarding females were found in sedge clumps in the northern portion of the fishless pond along Barrett Road. Nests were also encountered in sphagnum moss and club moss clumps in wooded portions of the central wetland corridor. Refer to Figure 8 for an aerial photograph of Four-toed Salamander locations and Figure 9 for a digital image of a specimen found onsite. Refer to Calhoun and Klemens (2002), for best development practices involving seasonal breeding amphibians.

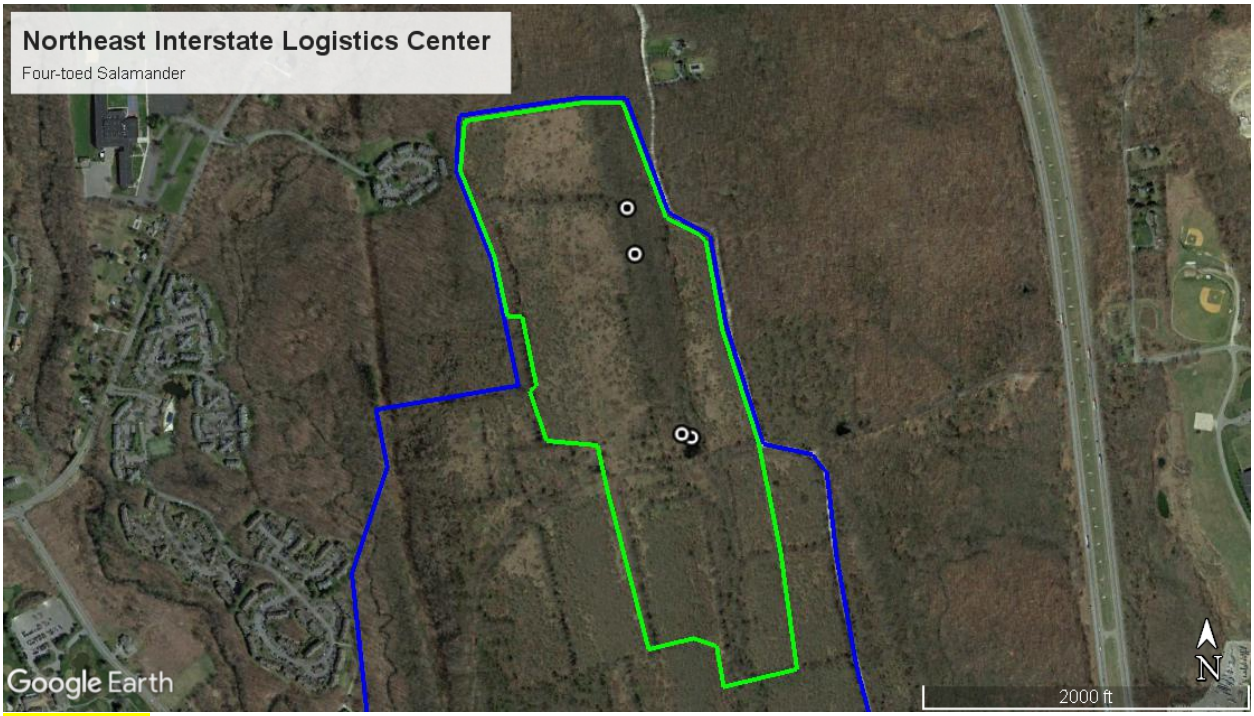

Figure 8: Four-toed Salamander nest locations (white dots) found within the study area (green polygon).

Figure 9: Image of adult female Four-Toed Salamander and nest from May 5, 2019.

Northern Red-backed Salamander *(Plethodon cinereus)*

The Northern Red-backed Salamander is the most common salamander in the eastern North America. A member of the woodland salamander family, the species is closely associated with woodlands and forest. Eggs are deposited under cover objects, such as logs and rocks, and in subterranean voids. Females will often stay with eggs as brood-guards until hatching.

Northern Red-backed Salamanders were rarely found within the site and only four adults were encountered during the survey in the central wetland corridor and in the woods along the central fields. Refer to Figure 10 for an aerial photograph of species observation locations and Figure 11 for a digital image of a specimen found onsite.

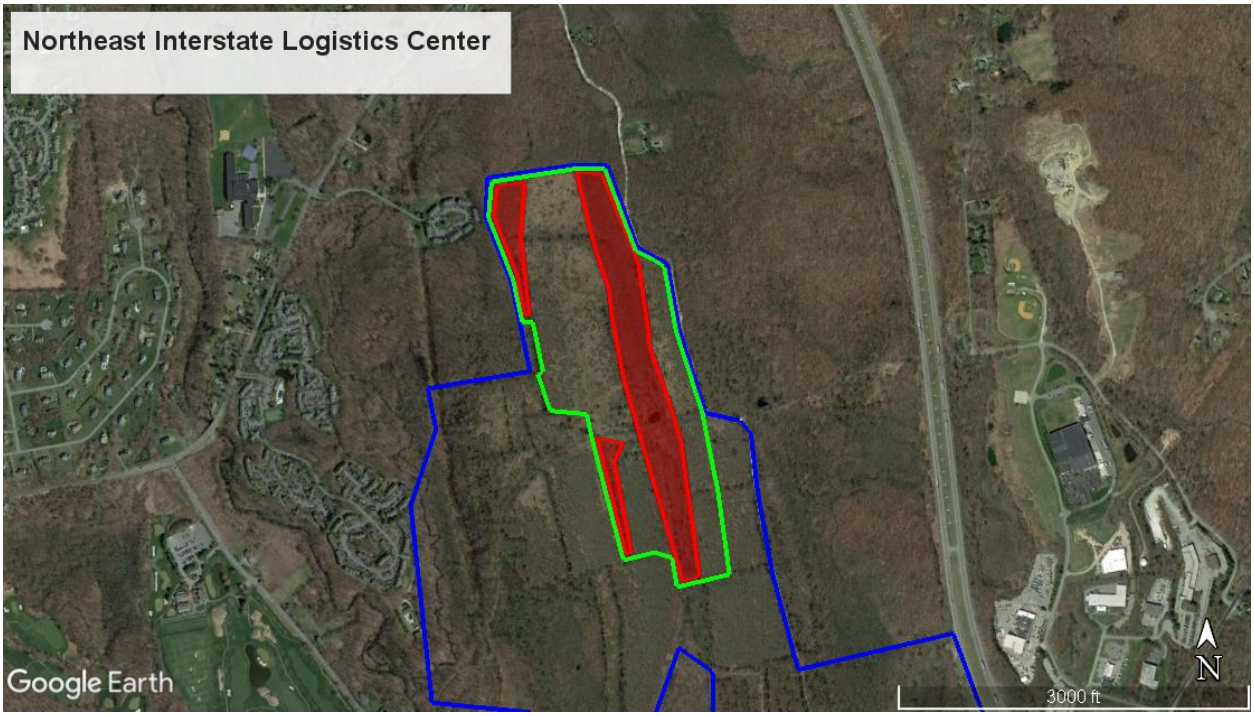

Figure 10: Red-backed Salamander locations (red polygons) found within the study area (green polygon).

Figure 11: Image of adult Northern Red-backed Salamander from May 5, 2019.

American Toad *(Anaxyrus americanus)*

The American Toad is a common frog found throughout New York. Adults can inhabit almost any habitat-type found within the state, including suburban and urban landscapes. Breeding habitats include wetlands, ponds, lakes, streams, rivers, flooded fields, and even tire-ruts. The breeding season typically occurs from April to May. The melodious call of adult males is one of the most-recognized frog calls in the northeastern United States. Tadpoles typically undergo metamorphosis from May to July.

American Toads were found throughout the site on all dates. All age classes were found during the survey. Adult breeding was observed in the fishless pond along Barrett Road, as evidenced by calling males, egg masses, and tadpoles. Refer to Figure 12 for an aerial photograph of species observation locations and Figure 13 for a digital image of a specimen found onsite.

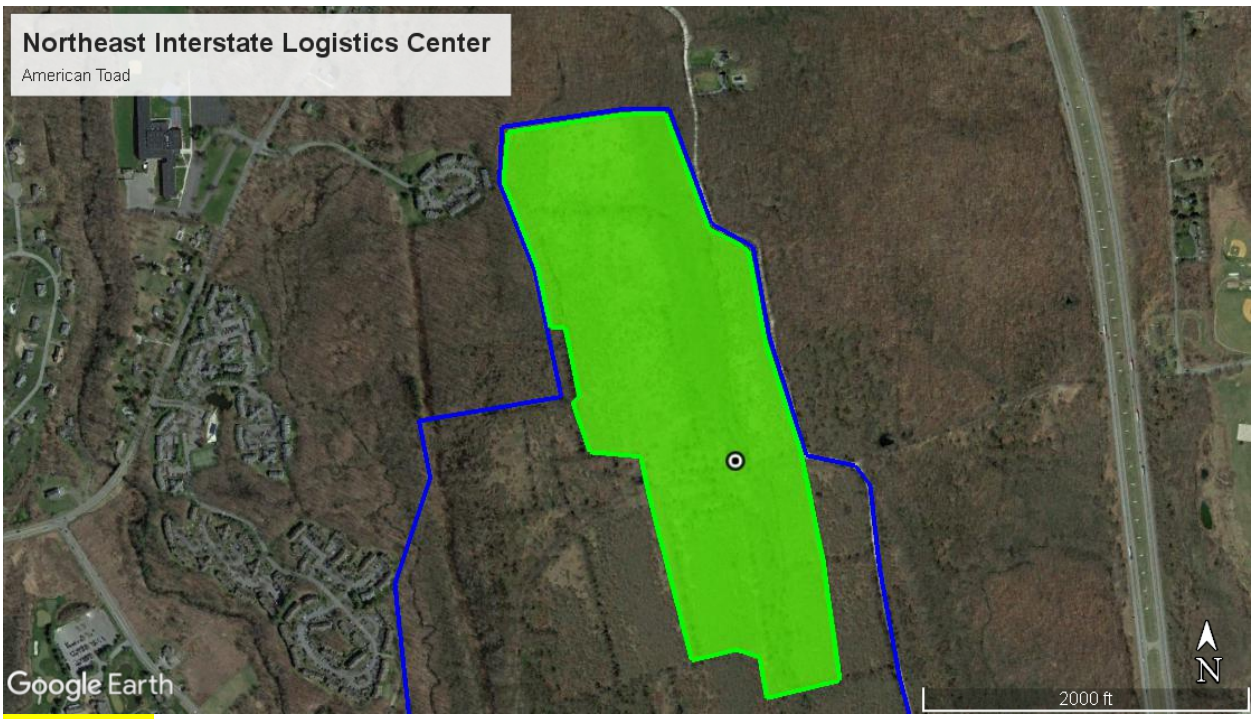

Figure 12: American Toad observations (green polygon) found within the study area and breeding location (white dot).

Figure 13: Image of American Toad from May 5, 2019.

Gray Treefrog *(Hyla versicolor)*

The Gray Treefrog is a common frog found throughout New York. Adults inhabit areas with trees and shrubs as the species is arboreal. The Gray Treefrog can persist in suburban and even urban habitats as long as trees and hedgerows are present. Breeding habitats include wetlands, ponds, lakes, detention basins, swimming pool covers, and even tire-ruts. The breeding season typically occurs from April to June. Tadpoles typically undergo metamorphosis from June to August.

Gray Treefrogs were found throughout the site on all dates. All age classes were found during the survey. Adult breeding was observed in the fishless pond along Barrett Road, as evidenced by calling males, egg masses, and tadpoles. Adult males were regularly heard calling from trees in all wooded portions of the site and along field edges. Refer to Figure 14 for an aerial photograph of species observation locations and Figure 15 for a digital image of a specimen found onsite.

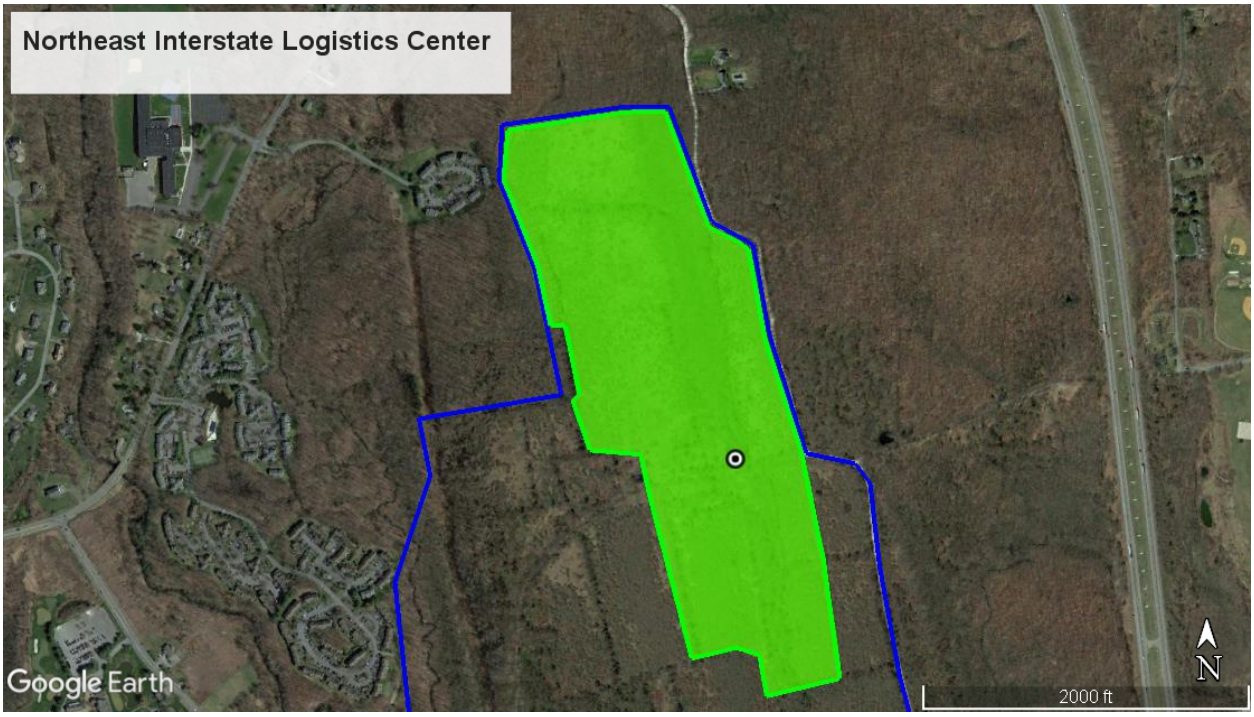

Figure 14: Gray Treefrog observations (green polygon) found within the study area and breeding location (white dot).

Figure 15: Image of Gray Treefrog from May 31, 2019.

Bullfrog *(Lithobates catesbeianus)*

The Bullfrog is a common frog found throughout New York. Adults are found in permanent bodies of water including large wetlands, ponds, lakes, streams, and rivers. The species even inhabits suburban and urban landscapes. Breeding occurs in these aquatic habitats. The Bullfrog breeding season typically occurs from June-August. Tadpoles typically undergo metamorphosis in two to three years.

Several Bullfrogs were found within the study area in the fishless pond along Barrett Road. Tadpoles were also encountered within this pond. An adult male Bullfrog was heard calling from the Barrett Road fishless pond on July 4, 2019. Refer to Figure 16 for an aerial photograph of species observation locations and Figure 17 for a digital image of a specimen found onsite.

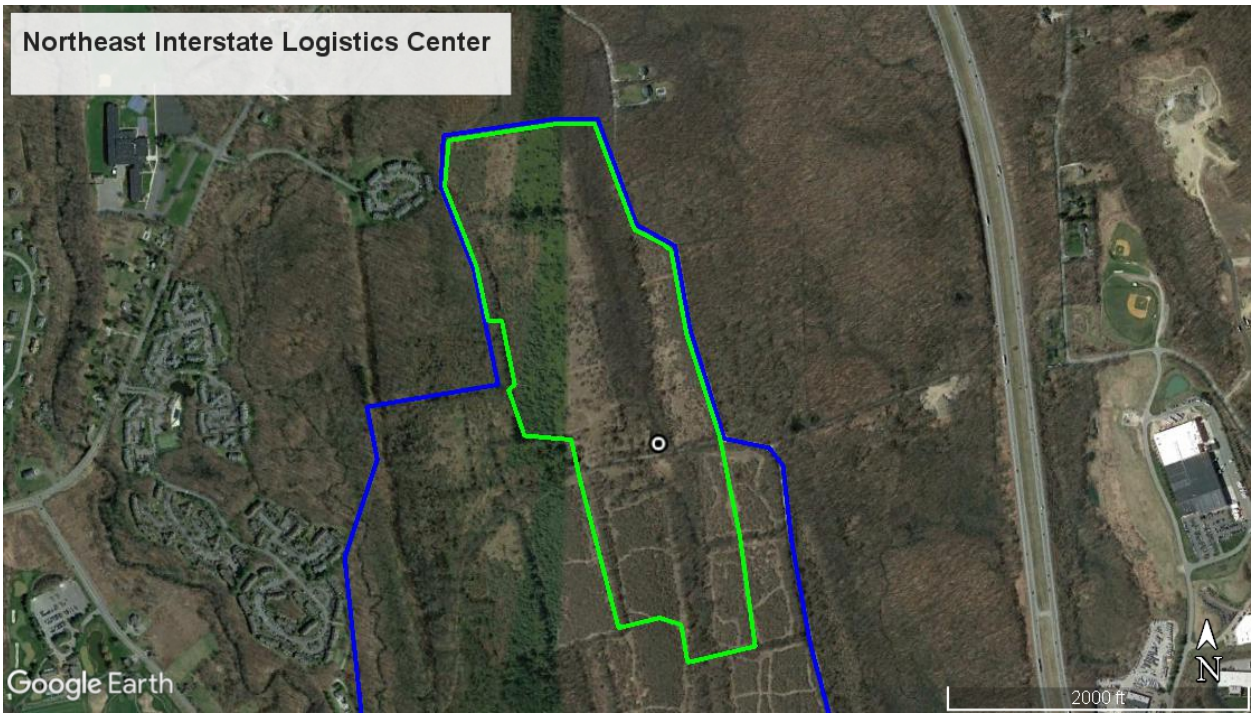

Figure 16: Bullfrog observations (white dot) within the study area and breeding location (white dot).

Figure 17: Image of Bullfrog from July 4, 2019.

Green Frog *(Lithobates clamitans)*

The Green Frog is a common frog found throughout New York. Adults are found in permanent and semi-permanent bodies of water including seasonal pools, wetlands, ponds, lakes, streams, and rivers. The species even inhabits suburban and urban landscapes. Breeding occurs in these aquatic habitats. Adults will occasionally venture into upland meadows and woodlands near aquatic habitats. The Green Frog breeding season spans from May-August. Tadpoles typically undergo metamorphosis within a year of hatching.

Green Frogs were found throughout central wetland corridor on all survey dates. Large numbers of calling adults and tadpoles were encountered within the Barrett Road fishless pond. Refer to Figure 18 for an aerial photograph of species observation locations and Figure 19 for a digital image of a specimen found onsite.

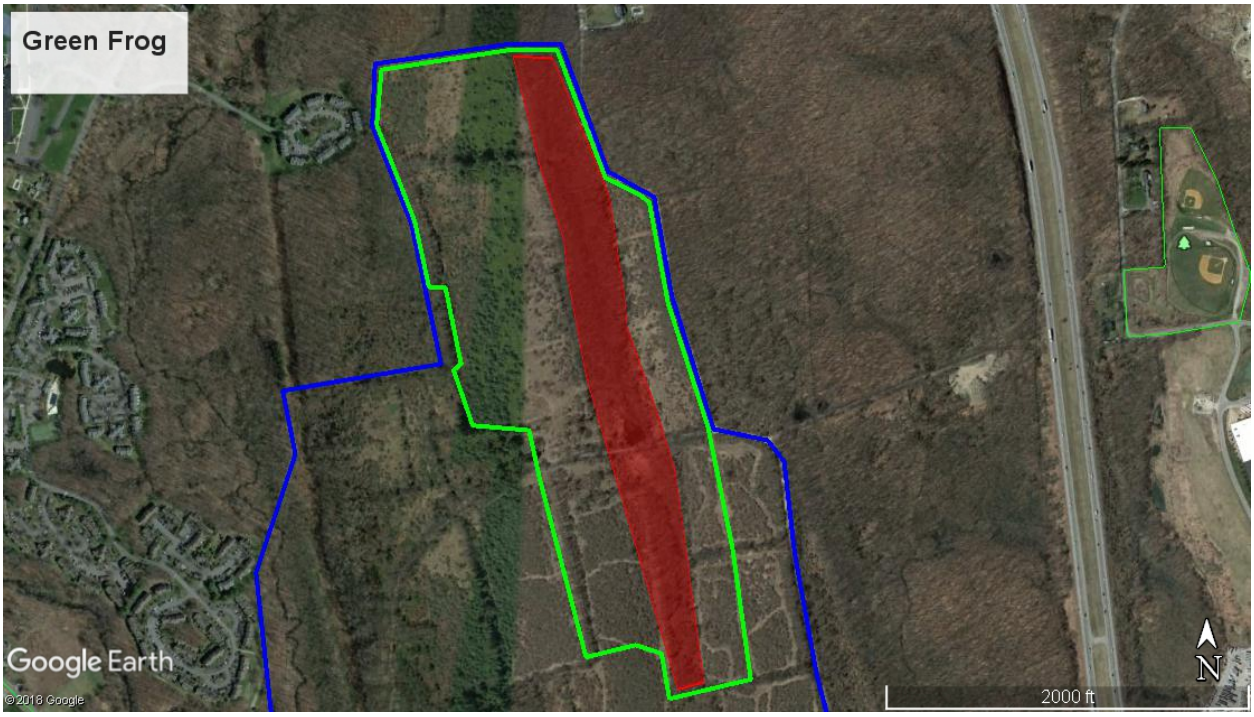

Figure 18: Green Frog locations (red polygon) found within the study area (green polygon).

Figure 19: Image of Green Frog from May 4, 2019.

Pickerel Frog *(Lithobates palustris)*

The Pickerel Frog is a common frog found throughout New York. Adults are found in and near permanent and semi-permanent bodies of water including seasonal pools, wetlands, ponds, lakes, streams, and rivers. The species even inhabits suburban and urban landscapes. Breeding occurs in these aquatic habitats. The Pickerel Frog breeding season is April-June. Tadpoles typically undergo metamorphosis within 100 days of hatching. Adults regularly venture into upland meadows and woodlands near aquatic habitats after breeding.

Pickerel Frogs were found throughout the site on all survey dates but primarily encountered in the central wetland corridor and adjacent fields. Calling males were heard during surveys conducted from May 3 – May 19, 2019. Refer to Figure 20 for an aerial photograph of species observation locations and Figure 21 for a digital image of a specimen found onsite.

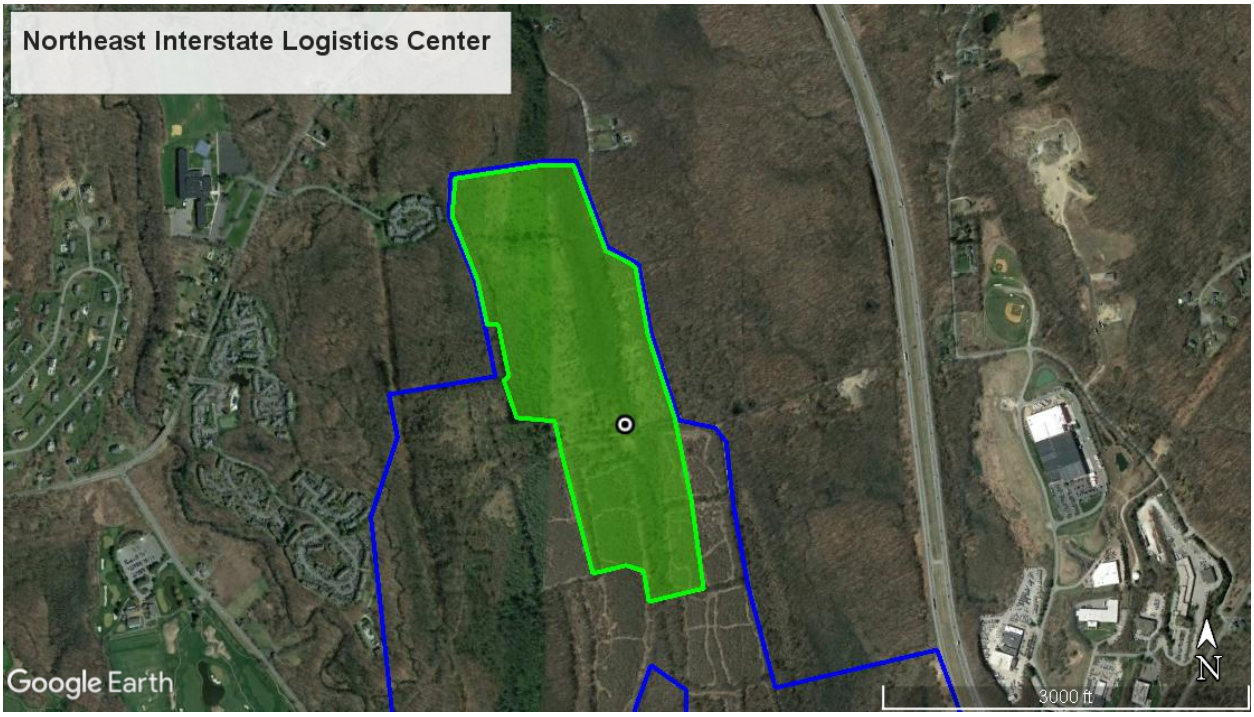

Figure 20: Pickerel Frog observations (green polygon) found within the study area and breeding location (white dot).

Figure 21: Image of Pickerel Frog from May 31, 2019.

Wood Frog *(Lithobates sylvaticus)*

The Pickerel Frog is a common frog found throughout New York. Adults are found near permanent and semi-permanent bodies of water that lack fish. The species is often considered a vernal pool indicator (Calhoun and Klemens 2002). The Wood Frog breeding season is weather-dependent, but generally falls between March and April in New York. Tadpoles typically undergo metamorphosis within 60 days of hatching. Adults spend the majority of the year in upland habitats (typically woodlands and meadows), often well-away from aquatic breeding habitats.

Wood Frogs were found throughout the site on nearly all survey dates but primarily encountered in the central wetland corridor and adjacent fields. Tadpoles and egg masses were found in the northern fishless pond and the fishless pond along Barrett Road. Refer to Figure 22 for an aerial photograph of species observation locations and Figure 23 for a digital image of a specimen found onsite.

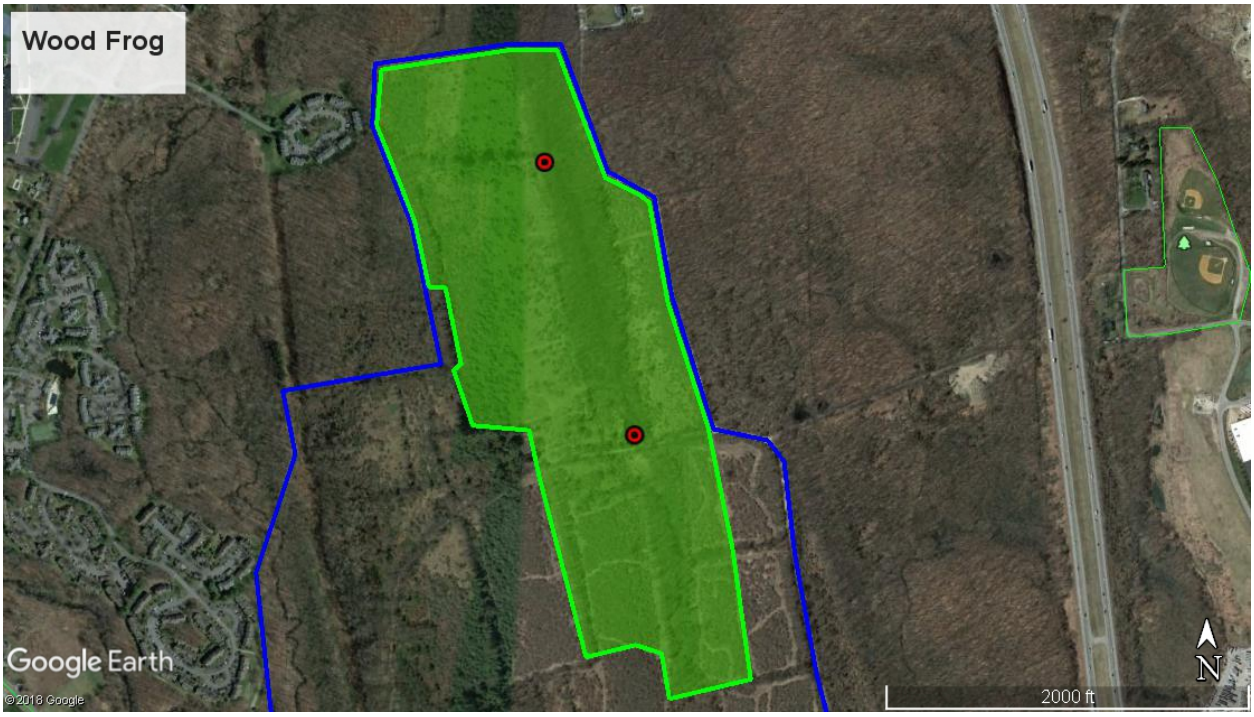

Figure 22: Wood Frog observations (green polygon) found within the study area and breeding locations (red dots).

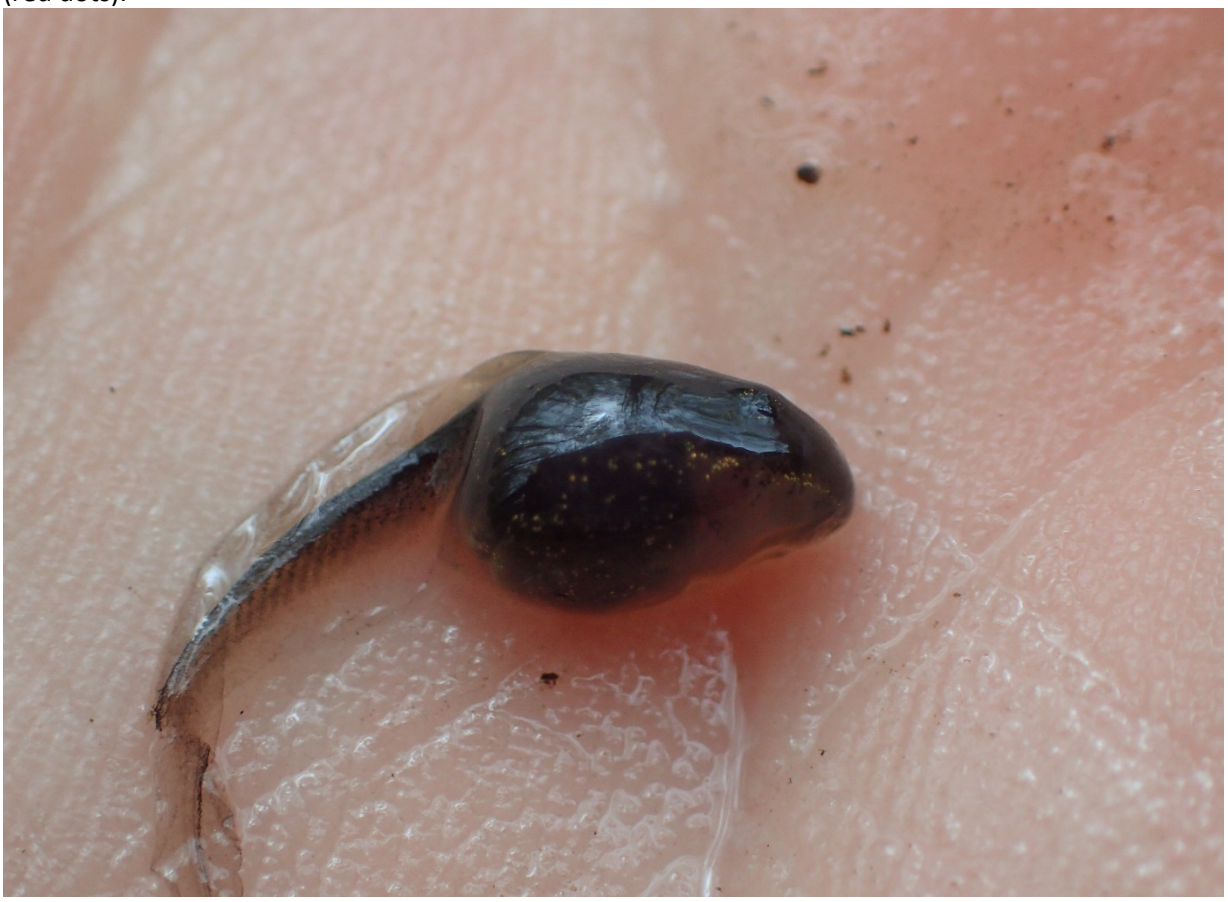

Figure 23: Image of Wood Frog tadpole from May 4, 2019.

Spring Peeper *(Pseudacris crucifer)*

The Spring Peeper is a common frog found throughout New York. Adults are found near permanent and seasonal water bodies, including those that have fish and even in urbanized landscapes. The spring Peeper breeding season is weather-dependent, but generally falls between March and June in New York, though adults may be heard calling throughout the active-season during rain events or certain weather conditions. Tadpoles typically undergo metamorphosis within 90 days of hatching. Adults spend the majority of the year in upland habitats (typically woodlands and meadows), often well-away from aquatic breeding habitats.

Spring Peepers were heard calling throughout the site on nearly all survey May and June survey dates in the central wetland corridor, primarily around the fishless pond north of Barrett Road. Refer to Figure 24 for an aerial photograph of species observation locations. No individuals were photographed through the course of the study, but recordings of the species were made on multiple dates in May.

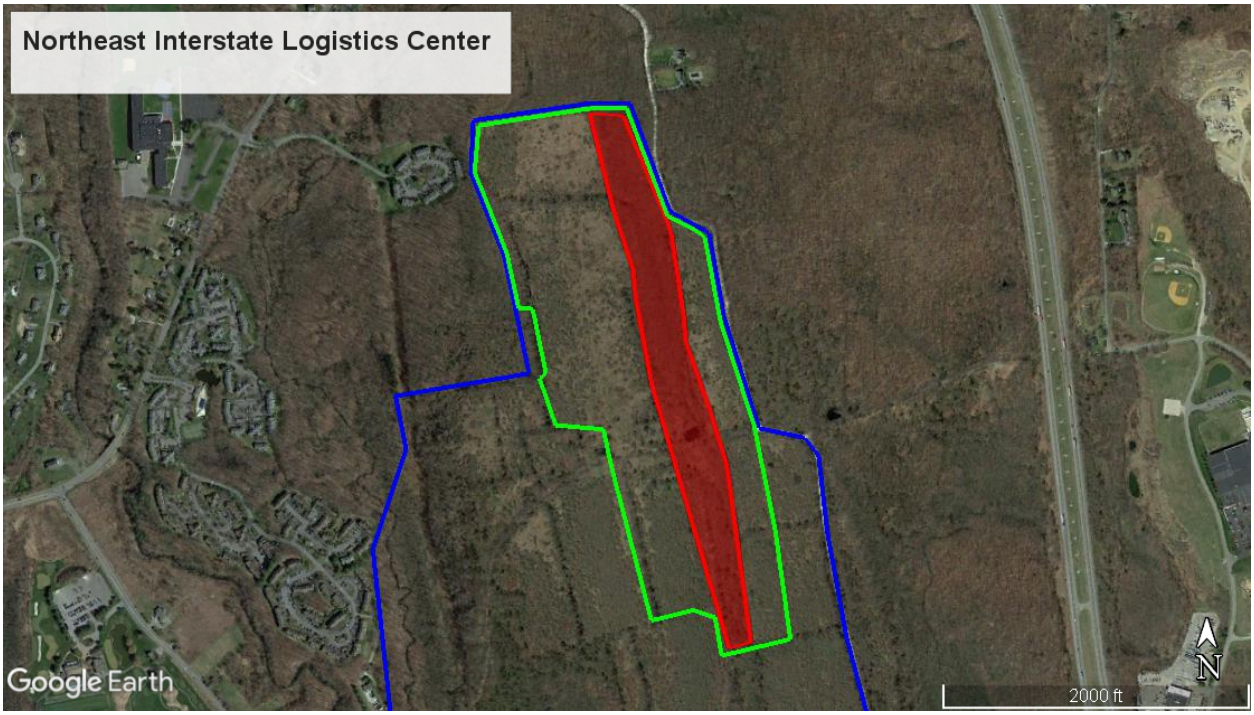

Figure 24: Spring Peeper observations (red polygon) found within the study area (green polygon).

Snapping Turtle *(Chelydra serpentina)*

The Snapping Turtle is a common turtle found throughout New York. Adults are found in permanent and seasonal water bodies, even in urbanized landscapes. The species will inhabit brackish habitats as well. Nesting typically occurs from May to the end of June in open habitats such as meadows, grassy areas along roads, and even residential lawns. Eggs typically hatch within 90 days of deposition. Adults rarely leave aquatic habitats.

Adult Snapping Turtles were observed on almost all survey dates in the central wetland corridor, primarily around the fishless pond north of Barrett Road. Refer to Figure 25 for an aerial photograph of species observation locations and Figure 26 for a digital image of a specimen found onsite.

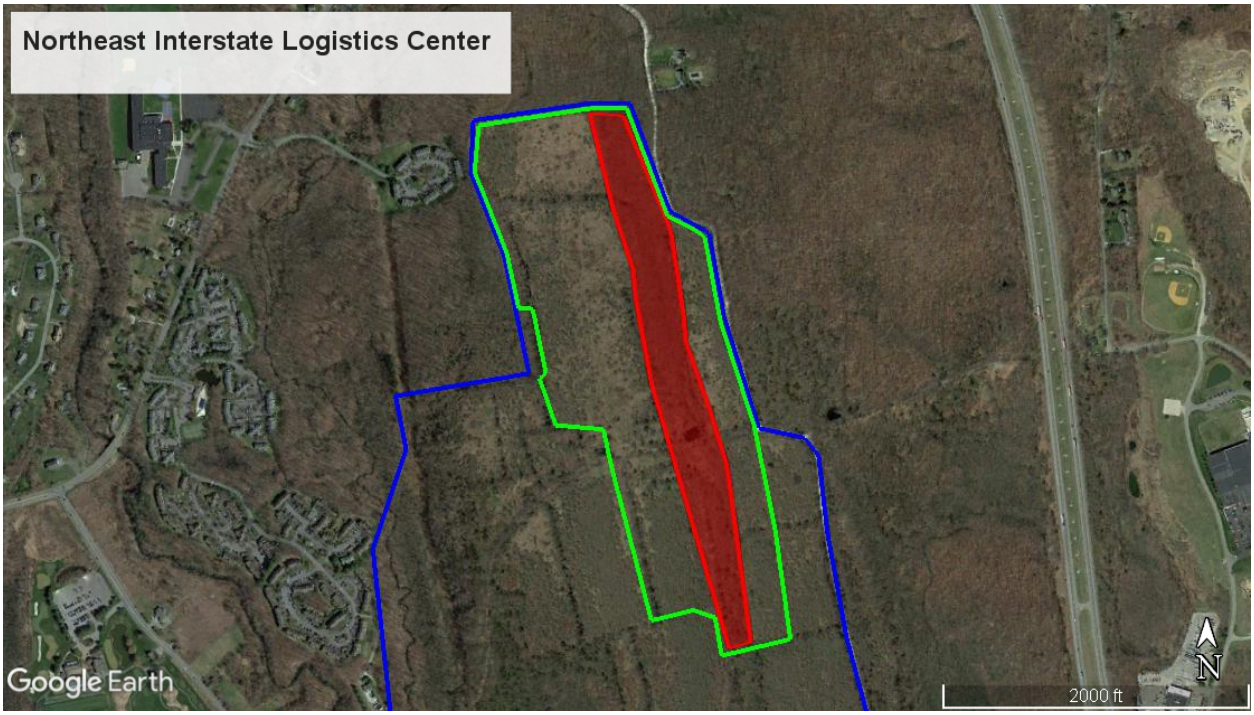

Figure 25: Snapping Turtle observations (red polygon) found within the study area (green polygon).

Figure 26: Image of Snapping Turtle from May 31, 2019.

Painted Turtle *(Chrysemys picta)*

The Painted Turtle is a common turtle found throughout New York. Adults are found in permanent and seasonal water bodies, even in urbanized landscapes. Nesting typically occurs from May to July in open habitats such as meadows, grassy areas along roads, and even residential lawns. Eggs typically hatch within 80 days of deposition. Adults rarely leave aquatic habitats but will migrate between open water habitats.

Adult and juvenile Painted Turtles were observed on all survey dates in the central wetland corridor, primarily around the fishless pond north of Barrett Road. A single adult female was encountered nesting in the east-facing field adjacent to the fishless pond. Refer to Figure 27 for an aerial photograph of species observation locations and Figure 28 for a digital image of a specimen found onsite.

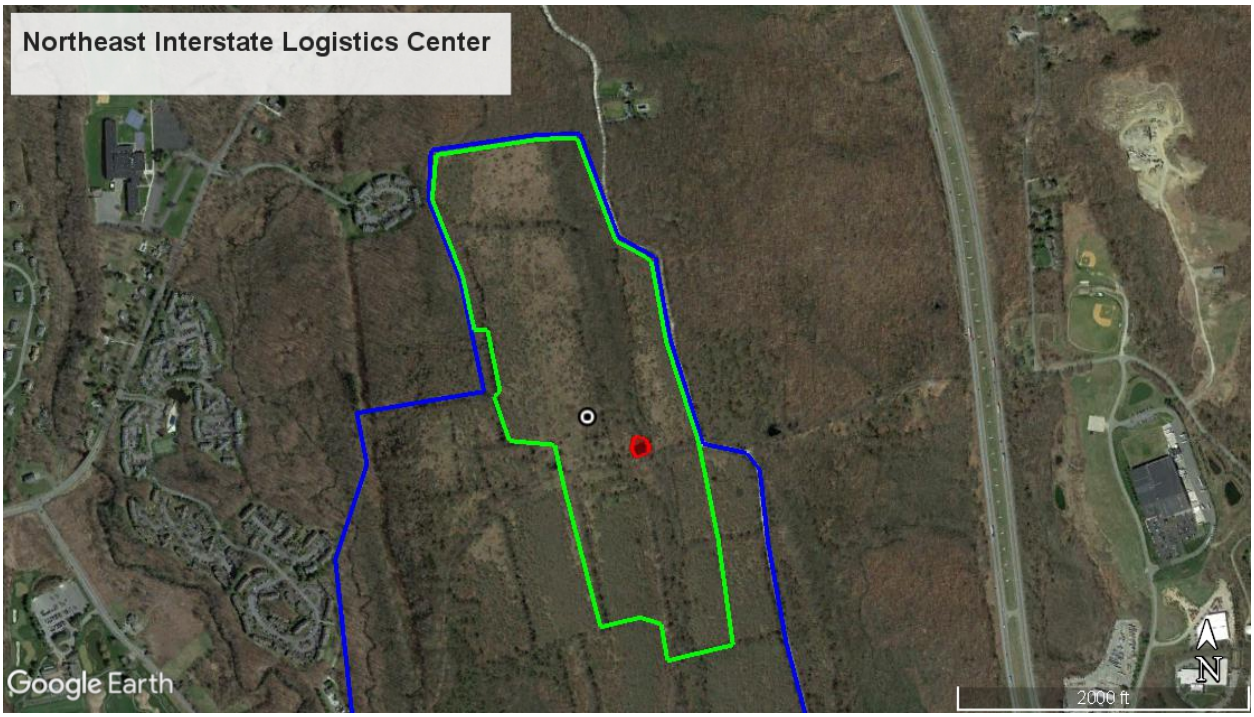

Figure 27: Observation locations of Painted Turtles. Red denotes the fishless pond along Barrett Road and the white dot indicates the location of the nesting female.

Figure 28: Painted Turtle from May 31, 2019.

Spotted Turtle (*Clemmys guttata*)

Species of Special Concern – NYSDEC

The Spotted Turtle is a small semi-aquatic species that utilizes both aquatic and upland habitats. Spotted Turtles overwinter in ponds, swamps, marshes, seasonal forest pools, wet meadows, mucky seepages, ditches, and fens. Adults nest in habitats such as fields, meadows, and road edges. Adults may move up to 500 meters between habitats to forage, find mates, and nest (Ernst 1976, Hunter et al. 1992).

Two Spotted Turtle adults were observed on May 4, 2019, within the fishless pond on the north side of Barrett Road. A single adult female was captured in a trap (set May 3rd) and a male was observed basking along the northern margin of the pond with >10 Painted Turtles (*Chrysemys picta* ssp.). Both turtles appeared worn and potentially of an old age. The adults were again observed basking in the pond on May 19, 2019, but telephoto images could not be used to identify if the individuals were same animals observed previously due to image blur and distance. Spotted Turtles were not observed in the pond after May 19th. Spotted Turtles may move quite often between habitat types through the course of an active season so it is possible that the turtles were either cryptically basking in vegetation after this point or moved to other portions of the property, or offsite, in search of other habitat types (Haxton and Berrill 1999). No depredated or active nests were encountered during the study. Refer to Figure 29 for an aerial photograph of Spotted Turtle locations and Figure 30 for a digital image of a specimen found onsite.

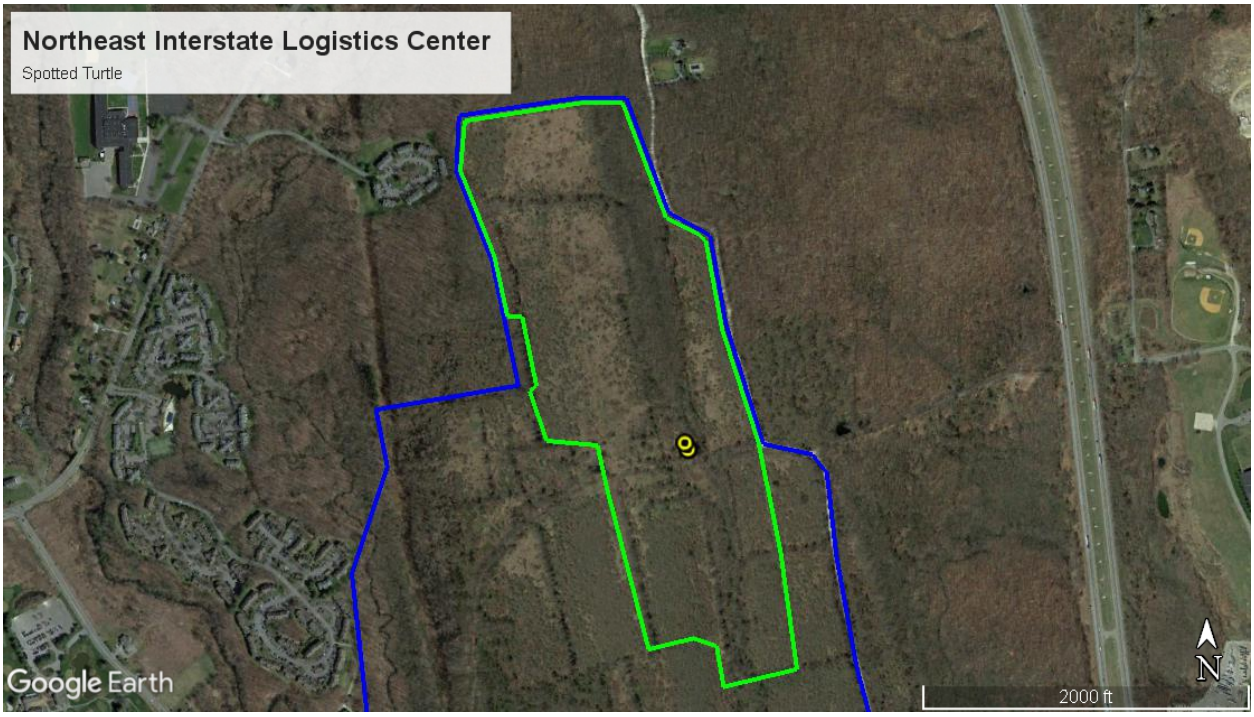

Figure 29: Spotted Turtle observations (yellow dots) found within the study area (green polygon).

Figure 30: Adult female Spotted Turtle captured on May 4, 2019 in Promar trap.

Wood Turtle (*Glyptemys insculpta*)

Species of Special Concern – NYSDEC

The Wood Turtle is a large, semi-aquatic turtle that is typically found in streams and rivers and adjacent upland habitats such as woods and fields/meadows. Upland habitat use is typically restricted to within 200 meters of aquatic habitats, but adults have been known to make migrations in excess of 3.5 kilometers for foraging and nesting (Walde 1998, Ernst 2001). Females utilize old fields/meadows, road edges, and manicured lawns for nesting.

A single adult female Wood Turtle was captured on June 14, 2019 in the northernmost field within the study area, which provides ideal nesting habitat for the species. The turtle was determined to be gravid (via finger palpation) are fairly worn, potentially indicating an old age. The northernmost field within the study area is situated approximately 650 feet to the southeast of the Middle Branch Croton River, within the typical annual movement range of adults (Walde 1998, Ernst 2001). No depredated or active nests were encountered during the study. Refer to Figure 31 for an aerial photograph of the Wood Turtle location and Figure 32 for a digital image of the specimen found onsite.

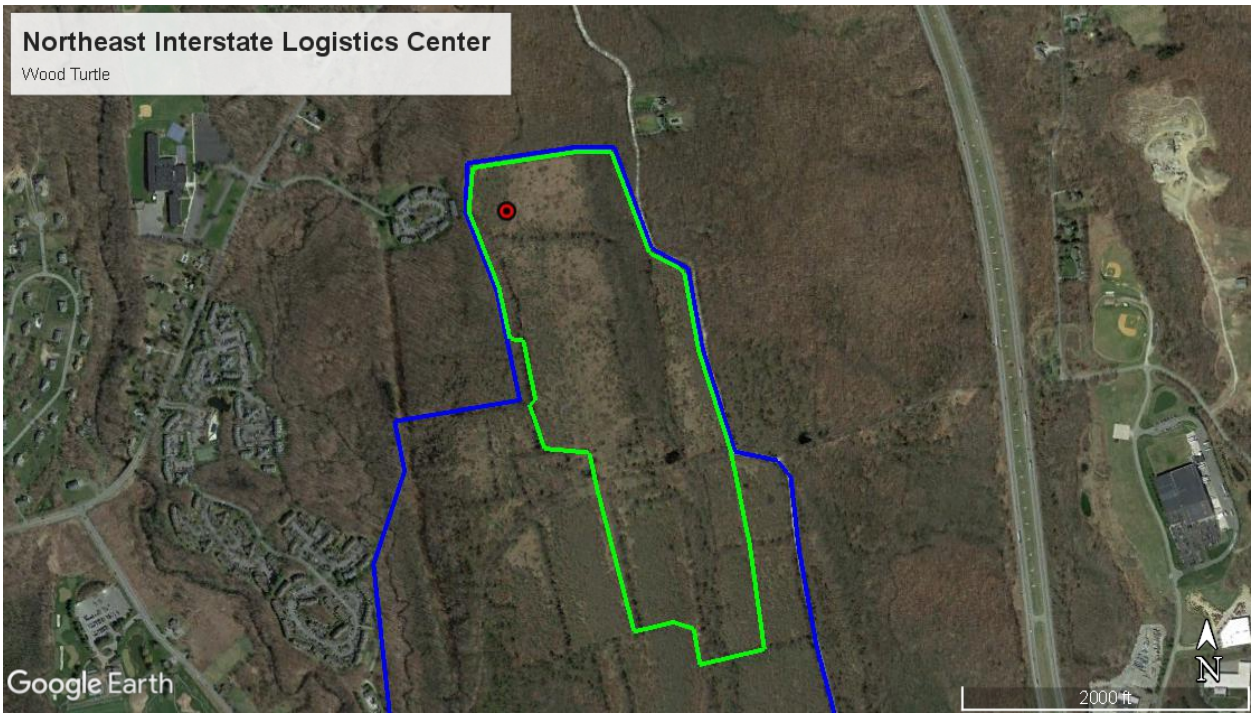

Figure 31: Wood Turtle observation (red dot) found within the study area (green polygon).

Figure 32: Adult female Wood Turtle captured on June 14, 2019.

Eastern Box Turtle (*Terrapene carolina*)

Species of Special Concern – NYSDEC

The Eastern Box Turtle is a terrestrial species that typically utilizes upland habitat such as old fields/meadows, woodlands, and shrublands. The species will also occasionally utilize wetlands for foraging and overwintering. Home range size is typically several hectares, but may be as large as 54 hectares (±133 acres) in some areas (Greenspan et al. 2015).

Two Eastern Box Turtles were captured within the study area on May 4, 2019, and July 5, 2019. Both turtles were old adult females with worn carapaces and smooth plastrons. Both turtles were found in the northern portion of the study area which provides ideal nesting habitat for the species. No depredated or active nests were encountered during the study. Refer to Figure 33 for an aerial photograph of the Eastern Box Turtle locations and Figure 34 for a digital image of a specimen found onsite.

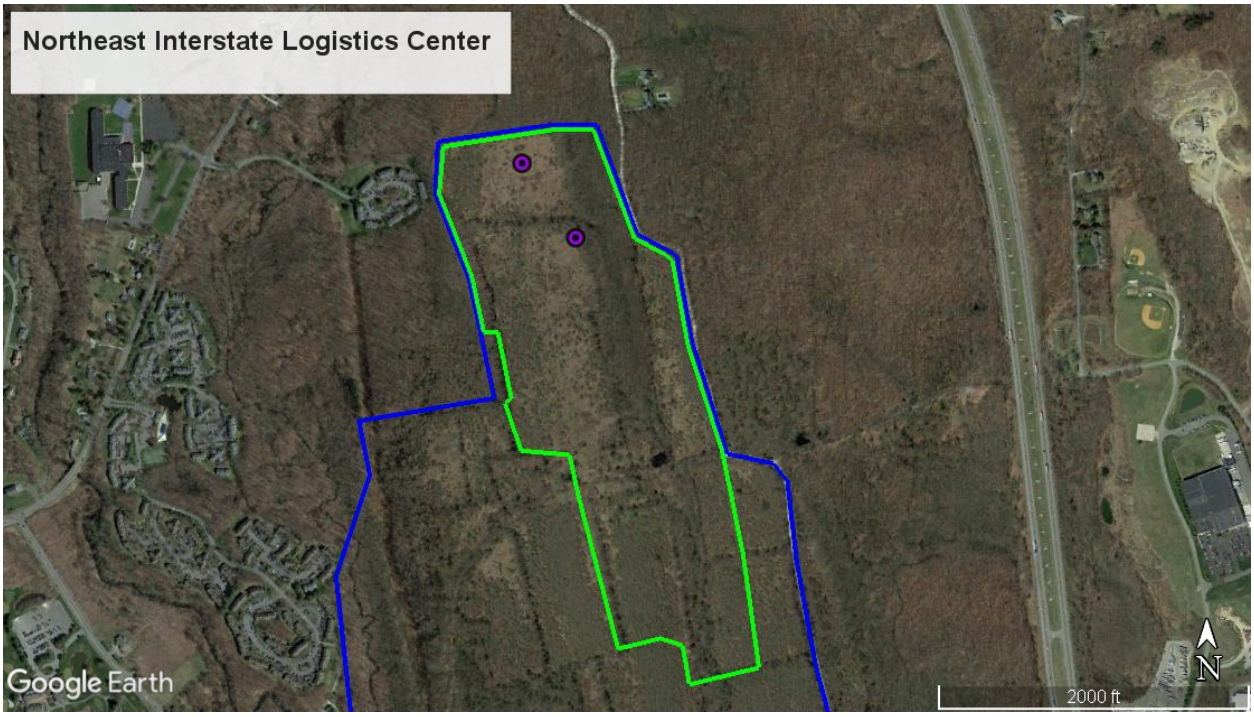

Figure 33: Eastern Box Turtle observations (purple dots) found within the study area (green polygon).

Figure 34: Adult female Eastern Box Turtle captured on May 4, 2019.

Ring-necked Snake (*Diadophis punctatus*)

The Ring-necked Snake is a common snake found throughout New York. Adults are found in or near moist habitats, even in urbanized landscapes. Ring-necked Snakes are rarely encountered on the surface and typically found under cover objects such as rocks, logs, and even refuse. Nesting typically occurs from June to July in open habitats such as meadows and canopy openings in wooded areas. Eggs typically hatch within 60 days of deposition.

Ring-necked Snakes were rarely encountered within the study area, with two observations in May and July associated with junk piles in old fields along Barrett Road (west of the fishless pond). Refer to Figure 35 for an aerial photograph of species observation locations and Figure 36 for a digital image of a specimen found onsite.

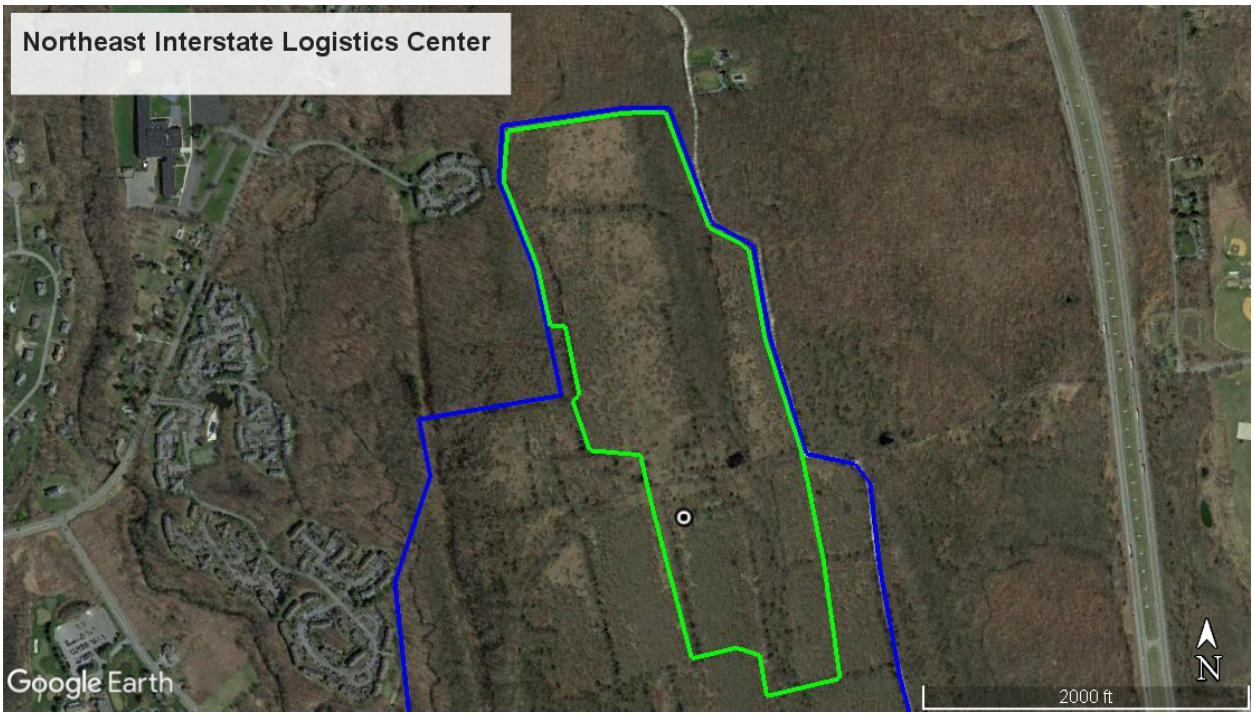

Figure 35: Location of Ring-necked Snake observations (white dot) within the study area (green polygon).

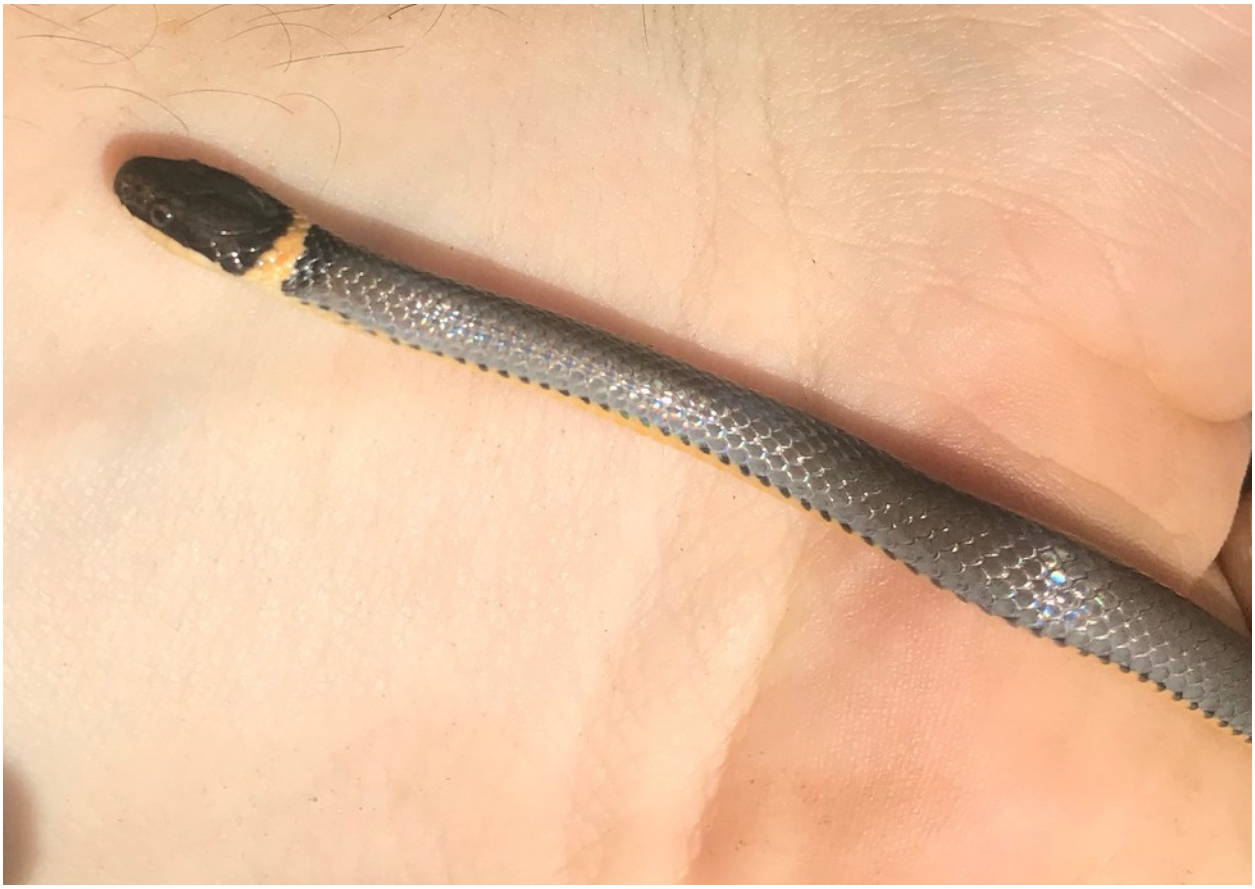

Figure 36: Ring-necked Snake from July 4, 2019.

Common Watersnake (*Nerodia sipedon*)

The Common Watersnake is a common snake found throughout New York. Adults are found in or near aquatic habitats, even in urbanized landscapes. Common Watersnakes are diurnal and regularly encountered actively searching for prey items such as fish and frogs. The species is ovoviviparous and adult females typically give birth to young in August.

An adult Common Watersnake and a single juvenile were observed in the fishless pond north of Barrett Road. Refer to Figure 37 for an aerial photograph of species observation locations and Figure 38 for a digital image of a specimen found onsite.

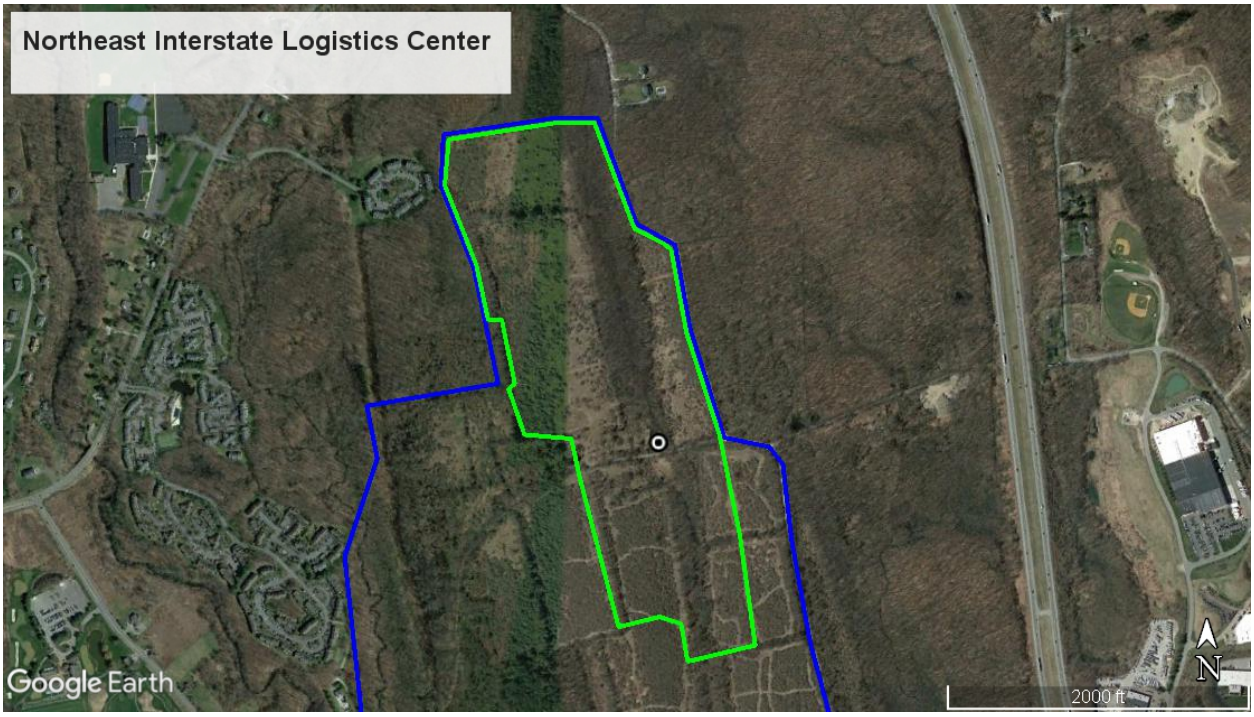

Figure 37: Location of Common Watersnake observations (white dot) within the study area (green polygon).

Figure 38: Common Watersnake from May 4, 2019.

Common Gartersnake (*Thamnophis sirtalis*)

The Common Gartersnake is a common snake found throughout New York. Adults are found in most upland habitat types, including urbanized landscapes. Common Gartersnakes are diurnal though individuals may be occasionally observed active at night. Prey items include many types of invertebrates and some vertebrates such as salamanders and frogs. The species is ovoviviparous and adult females typically give birth to young in August.

Adult Common Gartersnakes observed were observed on two occasions within the study area in the old field northwest of the fishless pond and associated with junk piles in a wooded strip along Barrett Road (west of the fishless pond). Refer to Figure 39 for an aerial photograph of species observation locations and Figure 40 for a digital image of a specimen found onsite.

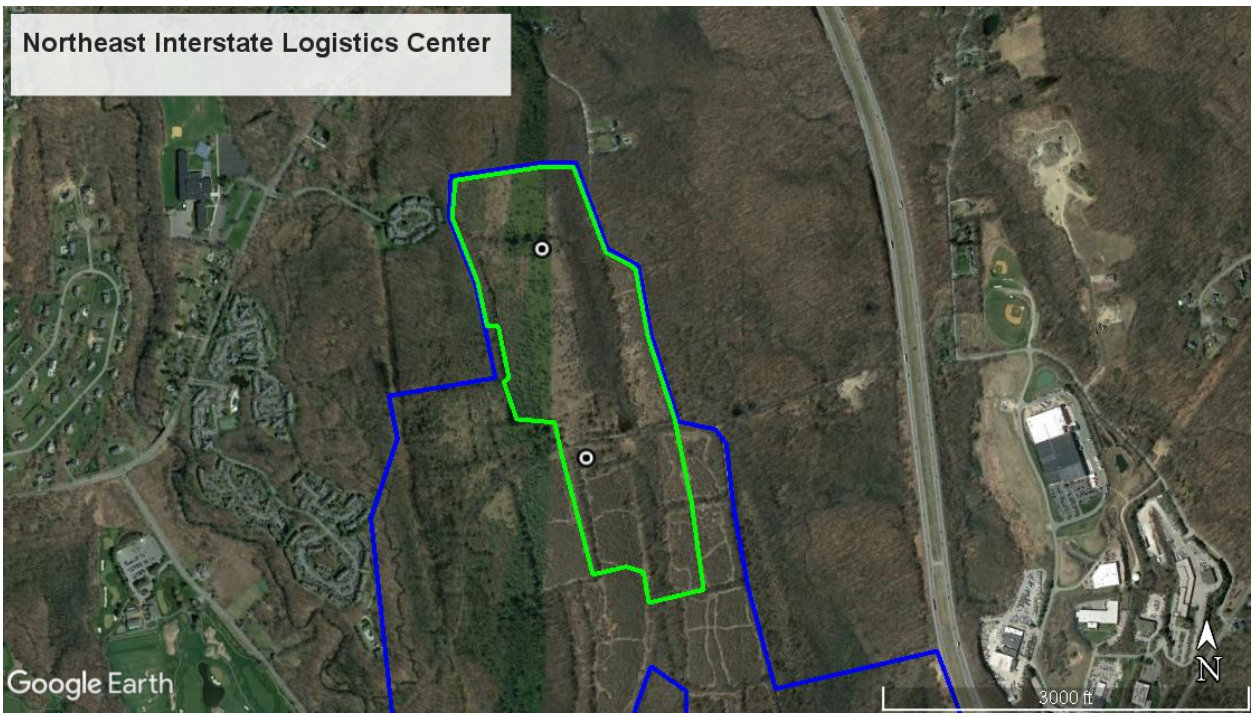

Figure 39: Location of Common Gartersnake observations (white dots) within the study area (green polygon).

Figure 40: Common Gartersnake from July 4, 2019.

OPINIONS AND RECOMMENDATIONS

Presence/probable absence surveys for amphibians and reptiles conducted at the central corridor of the Commercial Campus at Fields Corner site resulted in the observation of 20 species from May to July of 2019. No Bog Turtles were encountered during targeted surveys that followed the U.S. Fish and Wildlife Service's Bog Turtle Survey Guidelines (USFWS 2018). It is important to note that the large wetland (apparent fen) in the southeastern portion of the overall property was not surveyed for Bog Turtles as the proposed project avoids encroachments to that area (via EAEC). Four NYSDEC species of concern were documented within the study area: Four-toed Salamander (NYSDEC species greatest conservation need), Spotted Turtle (species of special concern), Wood Turtle (species of special concern), and Eastern Box Turtle (species of special concern). Surprisingly few individuals of each species were found within the site despite intensive surveying by skilled professionals, suggesting that the study area may not contain ideal habitats or robust populations of these species. Historical, intensive land use for agriculture has perhaps influenced this result. According to the NYSDEC (2010), "Species of Special Concern are those native species which are not yet recognized as endangered or threatened, but for which documented evidence exists relating to their continued welfare in NY State. The Special Concern category exists within NYSDEC rules and regulations, but such designation does not provide any additional protection. Special Concern species may be protected under other laws." Considering such, the following recommendations are suggested for minimizing impacts to species of concern herpetofauna found within the study area.

1) Provide suitable buffers on critical habitats for species of concern based on the life history requirements of the species. This can be accomplished without engaging in further presence/inferred absence surveys due to the knowledge gained about onsite distributions from the study. Potential sources for this planning includes the aforementioned stakeholder agencies, professional herpetology planning organizations, and publications such as Calhoun and Klemens (2002) and Mitchell et al. (2006). These buffers may or not be defined by local planning entities. Certain areas within the site contained species of concern and/or a higher density of species diversity. These areas specifically include the northern meadows and central wetland corridor.

2) If life history-based buffers are not feasible, certain minimization and mitigative actions may maintain onsite suitability for species of concern and, in certain instances, enhance habitats.

A) Consider improving onsite habitats for species that may lose habitat as a result of development within the study area. For instance, Wood Turtle and Eastern Box Turtle habitat throughout the site may be improved through the reduction of non-native plants and the establishment of native meadow species. Partnered with activities like occasional meadow management (such as rotational conservation mowing with a blade height set to 8 inches or above) and/or use of fencing to keep animals off constructed roads and workspaces (reducing mortality), the quality of Eastern Box Turtle habitats may be improved even if the overall area of habitat declines.

B) Install low barriers (e.g. walls, fence, or reverse curbing) between the final developed area (including ingress/egress roads) and any residual lands that may be species of concern habitat. This barrier would keep species of concern out of the industrial/commercial development and also reduce road mortality, which is a significant threat to herpetofauna. Temporary barriers, such as properly installed silt fence or silt sock, installed prior to construction can also limit species of concern entering the work area, providing the barrier is continuous.

C) An elevated road with wildlife passageways or a road with wildlife culverts should be considered, if feasible, in association with any improvements to Barrett Road. Wildlife passages or culverts, when used in combination with fencing or barriers, can significantly reduce road mortality of herpetofauna and allow for habitat connectivity and dispersal, particularly within natural corridors (Patrick et al. 2010, USDOT 2011).

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APPENDIX 10-1

Economic Impact Analysis memorandum by Phillips Preiss, dated February 26, 2019

PHILLIPS PREISS
PHILLIPS PREISS GRYGIEL LEHENY HUGHES LLC
Planning & Real Estate Consultants

MEMORANDUM

To: Robert B. Peake, AICP

From: Keenan Hughes, AICP

Date: February 26, 2019

Re: **Economic Impact Analysis**
Commercial Campus at Fields Corner, Town of Southeast, New York

---

The purpose of this memorandum is to summarize the economic impacts of the proposed Commercial Campus at Fields Corner in the Town of Southeast, Putnam County, New York. Proposed is a 933,100 square foot warehouse/distribution facility that will be built on an approximately 328-acre property located along the west side of Pugsley Road and Fields Corner Road.

Methodology

Impact Analysis for Planning (IMPLAN) modeling was utilized in order to accurately assess the project's construction and operations phase impacts within a specified geographic area. IMPLAN uses proprietary multipliers to evaluate the economic output, labor income and employment generated by a specific industry activity. In this analysis, the economic impacts were evaluated for the Putnam County geographic area.

The following types of economic impacts are considered in the IMPLAN model:

- *Direct Impacts*: Direct benefits are derived from short-term business activity, such as construction.
- *Indirect Impacts*: Indirect benefits relate to businesses that are directly impacted by the project, such as the purchase of supplies, materials, and other services provided to the project.
- *Induced Impacts*: Induced benefits include the spending and consumption of employees of businesses that are directly or indirectly affected by the project.

In performing this analysis, the project was broken down into two phases: construction phase and operations phase. The construction phase is the period of time from groundbreaking until the completion of the construction project. The operations phase refers to the annual impacts of the ongoing operations of the facility following its construction.

SUMMARY OF ECONOMIC IMPACTS

The following summarizes the economic impacts within Putnam County of the Commercial Campus at Field Corner for the construction and operations phases.

<u>Construction Phase</u>

According to the project sponsor, the estimated construction cost for the proposed development is approximately $64.8 million in hard costs.

33-41 Newark Street
Third Floor, Suite D
Hoboken, NJ 07030
201.420.6262
www.phillipspreiss.com

As shown in Table 1, it is estimated that approximately 486 jobs will be added to the local workforce during the construction phase. Of these construction jobs, approximately $29,260,649 in income will be paid to these workers. Indirectly, it is estimated that approximately $9,097,570 will be injected into the local economy from other firms conducting business related to the project. Induced output from spin-off effects (i.e. disposable income spending by project workers and workers associated with the project) will result in approximately $14,762,730 of economic activity.

In addition to the 486 construction jobs, approximately 56 indirect jobs will be created. These jobs will be at businesses providing goods and services to the project. Approximately 111 induced jobs will also be created, from businesses benefitting from the secondary spending by the project's construction workers.

Table 1: Summary of Economic Impacts - Construction Phase

	Direct Effect	Indirect Effect	Induced Effect	Totals
OUTPUT	$64,800,000	$9,097,570	$14,762,730	$88,660,300
LABOR WAGES	$29,260,649	$2,857,402	$4,425,160	$36,543,211
JOBS	486	56	111	653

Operations Phase

According to the project sponsor, the Commercial Campus at Fields Corner is expected to create approximately 551 permanent day-shift jobs when fully operational. The following describes the operations phase annual impacts which are summarized below in Table 2.

At full operation, it is anticipated that approximately $49,603,826 in direct economic output will be generated on an annual basis. Wages to be paid to the project's 551 employees will be $18,970,664 each year. Annual indirect output associated with firms conducting business with the project will result in $13,501,940. Regarding induced impacts, it is estimated that approximately $10,420,991 will be injected into the local economy annually from secondary spending by employees and businesses associated with the project. In addition, 115 jobs are estimated to be generated indirectly and 78 locally induced jobs are also projected.

Table 2: Summary of Economic Impacts - Operations Phase

	Direct Effect	Indirect Effect	Induced Effect	Totals
OUTPUT	$49,603,826	$13,501,940	$10,420,991	$73,526,757
LABOR WAGES	$18,970,664	$3,793,802	$3,123,981	$25,888,447
JOBS	551	115	79	744

The project would be a significant generator of quality jobs in the warehouse and distribution sector. Data show that warehouse/distribution centers provide a wide range of job opportunities on various skills and compensation levels. Typical warehouse jobs will have a salary range based on hourly rates of approximately $36,000 to $74,000 per year. Clerks and warehouse workers are on the lower end of the salary scale. Fork lift operators, material handlers and machine operators are in the middle range of the salary scale. Supervisors are within the higher end of the salary scale. Overtime may increase the average salary by approximately 10%. The jobs include benefits and two weeks of vacations. The national average for warehouse/distribution facility managers is in the $100,000-$110,000 range and with larger facilities, the national average for warehouse/distribution directors is in the $120,000-$130,000 range.

Conclusion

When aggregating direct, indirect and induced outputs from the construction phase, the project is expected to generate $88.7 million of economic output within Putnam County. During the operations phase, the project is estimated to annually generate $73.5 million in economic output.

During the construction period, labor income is expected to reach approximately $36.5 million in Putnam County. During the operations period, labor income is projected to total approximately $25.9 million on an annual basis.

Direct, indirect and induced jobs to be created during the construction phase are anticipated to reach 653 jobs in Putnam County and approximately 744 jobs will be generated by the operations of the facility.

APPENDIX 17-1

Remedial Action Report by CA Rich Environmental Specialists, dated November 2004

CA RICH
ENVIRONMENTAL SPECIALISTS

REMEDIAL ACTION
CAMPUS AT FIELD CORNERS
TOWN OF SOUTHEAST, NY

NOVEMBER 2004

PREPARED FOR:

SCHULWEIS REALTY, INC.
9 WEST 57TH STREET, 50TH FLOOR
NEW YORK, NY

PREPARED BY:

CA RICH CONSULTANTS, INC.
17 DUPONT STREET
PLAINVIEW, NY 11803

CA RICH
ENVIRONMENTAL SPECIALISTS

November 30, 2004

Schulweis Realty, Inc.
9 West 57th Street, 50th Floor
New York, NY 10019

Attention: Steven Caldwell,
Project Manager

Re: Remedial Action
Campus at Field Corners
Town of Southeast, NY

Dear Mr. Caldwell:

Please find our attached Summary Report for the above-captioned project. As discussed in the attached Report, the maintenance pit has been thoroughly cleaned and all of its contents properly disposed of off site. In addition, the 550-gallon underground storage tank along with the associated dispenser and all appurtenant piping has been properly removed from the site. Inspection of subsurface soils beneath the pit and tank revealed no evidence of subsurface contamination. As such, no further testing is required.

Thank you for this opportunity to provide you with our professional services. If you have questions or need for any additional detail, please feel free to call me, immediately.

Respectfully submitted,

CA RICH CONSULTANTS, INC.

Richard J. Izzo, CPG 9644
Associate

RJI/tk
Attachments

cc:.
Dan Richmond, Esq.

Hdrive/projects/field corners rems /rem cl

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3.0	CONCLUSIONS AND RECOMMENDATIONS	3

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1. Location of Remedial Action

APPENDICES

A. Building Department Permit
B. Certificate of Compliance
C. Waste Manifests

1.0 INTRODUCTION

This report summarizes the recent remedial activities, including clean-out and testing of a recently-discovered maintenance pit and removal of an out-of-service 550-gallon diesel underground storage tank (UST) at the Proposed Campus at Field Corners Project Site located near NYS Route 312 and Pugsley Road in the Town of Southeast, Putnam County, NY (the Site).

The pit and old UST were recently discovered in and adjacent to (respectively) an old maintenance shed at the Project Site. The pit is 32 square-feet in area and is four feet in depth. Several wooden planks are used as a cover for the pit. At the time of discovery, the pit contained approximately three feet of standing liquid characterized as water with a film of weathered, viscous oil floating on the surface. In addition, the pit was observed to contain wood planks, tires, automobile parts, rags, bottles, cans and other miscellaneous debris.

The UST was located immediately adjacent to the shed beneath an old diesel dispenser and associated three-foot by two-foot concrete slab. CA RICH accessed the UST on October 27, 2004, and measured 48 inches of liquid (mostly water with a small amount of oil) within the tank at that time. The general location of the pit and the removed UST are detailed on Figure 1.

2.0 SUMMARY OF REMEDIAL ACTIVITIES

2.1 Initial Liquid Removal

On October 27, 2004, Enviro Waste Oil Recovery Specialists of Mahopac, NY (Enviro Waste) were mobilized to the site with a 4,500-gallon capacity vacuum truck to remove the liquid from the pit and the tank. Enviro waste removed 500 gallons of liquid from the pit and 550 gallons of liquid from the UST for a total volume of 1,050 gallons. Based upon the volume of liquid removed from the UST and the level of liquid measured (filled to the top), it was estimated that the tank was 550-gallons in capacity. According to NYSDEC regulations, any Petroleum Storage Facility with a combined capacity less than 1,100 gallons is not regulated by the Department. Following removal of the liquid from the pit, CA RICH had planned to core a hole through the bottom of the pit and collect a soil sample to determine if there is any contamination in subsurface soils. However, because of the large volume of debris in the pit (estimated to be approximately 2 to 3 cubic yards) and the presence of approximately three inches of sludgy liquid remaining at the bottom of the pit that could not be removed by the vacuum truck, this testing was not possible on October 27th.

2.2 UST Removal and Pit Remediation/Testing

CA RICH returned to the site on November 16, 2004, along with Dutchess Environmental Construction of Mahopac, NY (Dutchess), to remove the UST and clean-out the pit. The tank was removed under Town of Southeast Building Department Permit No. 17707E (Appendix A). Two small trees located directly above the dispenser slab blocked access to the UST area and, as such, had to be removed. The trees were cut down and set aside. Following removal of the trees, the dispenser was removed from the slab and set aside for disposal. The front of the dispenser slab was then excavated using a track-mounted Cat 30 excavator so the slab could be removed. Upon excavation, it was determined that the slab was four feet thick and resting directly on top of the tank. Following further excavation, the slab was carefully separated from the tank and removed along with the associated fill pipe and vent pipe.

The top of the UST was then uncovered, confirming it to be 550-gallons in capacity and, as such, not regulated by NYSDEC. Approximately 50 gallons of Biosolve solution was pumped into the tank to dissolve any remaining residual product and sludge and prevent the generation of harmful or explosive vapors. The solution was then left to act within in the tank until the following day.

Once the tank was uncovered and treated with Biosolve, Dutchess began remediation of the pit. 16 reconditioned empty 55-gallon drums were dropped off at the property by Enviro Waste and staged on 6-mil polyethylene sheeting adjacent to the maintenance shed. The small excavator was used to remove the debris from the pit and place it into the drums. The grappling jaws of the Cat 30 were employed to reduce the size and shape of the recovered debris so that it could easily be packed into the drums. A total of eleven drums of debris were generated in this fashion leaving just a small volume of debris in the pit (too small to be practicably removed with the excavator) and three inches of sludge and liquid at the bottom of the pit. Both the pit and the tank area were secured until the following day.

On Wednesday, November 17, 2004, Enviro Waste returned to the site with their vacuum truck. A fresh air blower was hooked up to the UST and the atmosphere within the tank was purged. Following purging, testing of the tank interior for explosive levels of vapor was conducted. Once it was confirmed that no explosive vapors were present, the top of the tank was cut off with a carbide steel rotary saw. Enviro Waste then pumped-out the Biosolve solution. Speedy-dry absorbent was poured into the tank and the tank was then entered and cleaned. Following cleaning, the spent Speedy-dry was removed and placed into a 55-gallon drum for disposal.

Enviro Waste then attempted to pump out as much of the liquid and sludge within the pit as possible. The remaining sludge and debris was then manually shoveled into 5-gallon pails and placed in the drum for disposal. Following removal of the remaining sludge and debris, the interior of the pit was washed with a solution of Biosolve, detergent and water and repeatedly scrubbed with scrub brushes. The spent wash solution was then pumped out by Enviro Waste and a second wash was performed, followed by a fresh water rinse. Following removal of all wash/rinse water, any remaining residue was scrubbed with Speedy-dry. The spent Speedy-dry was then scraped up and placed into the 55-gallon drum for disposal.

Once the pit was clean, the bottom was visually inspected for any signs of cracks or holes. No evidence of any cracks, holes or other potential contaminant pathways was observed. It was observed, however, that the floor of the pit was slightly graded from north to south. The subsurface materials underlying the pit were then visually inspected by coring a 3-inch diameter hole through the cement bottom of the south (low) end of the pit. The floor of the pit was observed to be approximately six inches thick. Soil material underlying the floor of the pit was collected using a manually driven bucket auger and inspected for any evidence of contamination. The material underlying the pit is characterized as light brown medium sand and silt. No staining, odor or other evidence of contamination was observed in the sample recovered.

While the manual cleaning and testing of the pit was on-going, the 550-gallon UST was exhumed and set aside for inspection. Inspection of the interior of the tank revealed no evidence of leaks or holes. Soil material from the tank grave directly underlying the tank was excavated for visual inspection. The material within the tank grave is characterized as light brown medium sand and silt with some gravel and cobbles. No staining, odor or other evidence of contamination was observed. The excavation was allowed to remain open pending inspection by the Town of Southeast Fire Inspectors / Code Enforcement Officers.

At approximately 11:00 AM on Wednesday, November 17, 2004, Officers John Leather and Kenneth Clair of the Town of Southeast inspected the UST excavation and the exhumed tank. As no evidence of leakage was observed, Officers Leather and Clair verbally signed-off on the work performed and gave their permission for the excavation to be filled-in and the tank to be properly disposed of. The Town of Southeast subsequently issued a Certificate of Compliance for the removal of the UST (copy attached as Appendix B).

Once verbal approval was received from the Town of Southeast representatives, the UST excavation was backfilled with the cement dispenser slab, clean native soils from around and above the tank, and approximately five cubic yards of imported clean fill. The fill materials were mounded slightly over the former UST area to account for settling. The tank, dispenser and appurtenant piping were placed in a dump truck and transported off-site for disposal as scrap metal.

A total of twelve 55-gallon drums of oily debris and 1,130 gallons of contaminated liquid were generated during the remedial activities. The drums and liquid were transported off-site by Enviro Waste for proper disposal under non-hazardous waste manifest control (copies of manifests attached as Appendix C).

3.0 CONCLUSIONS AND RECOMMENDATIONS

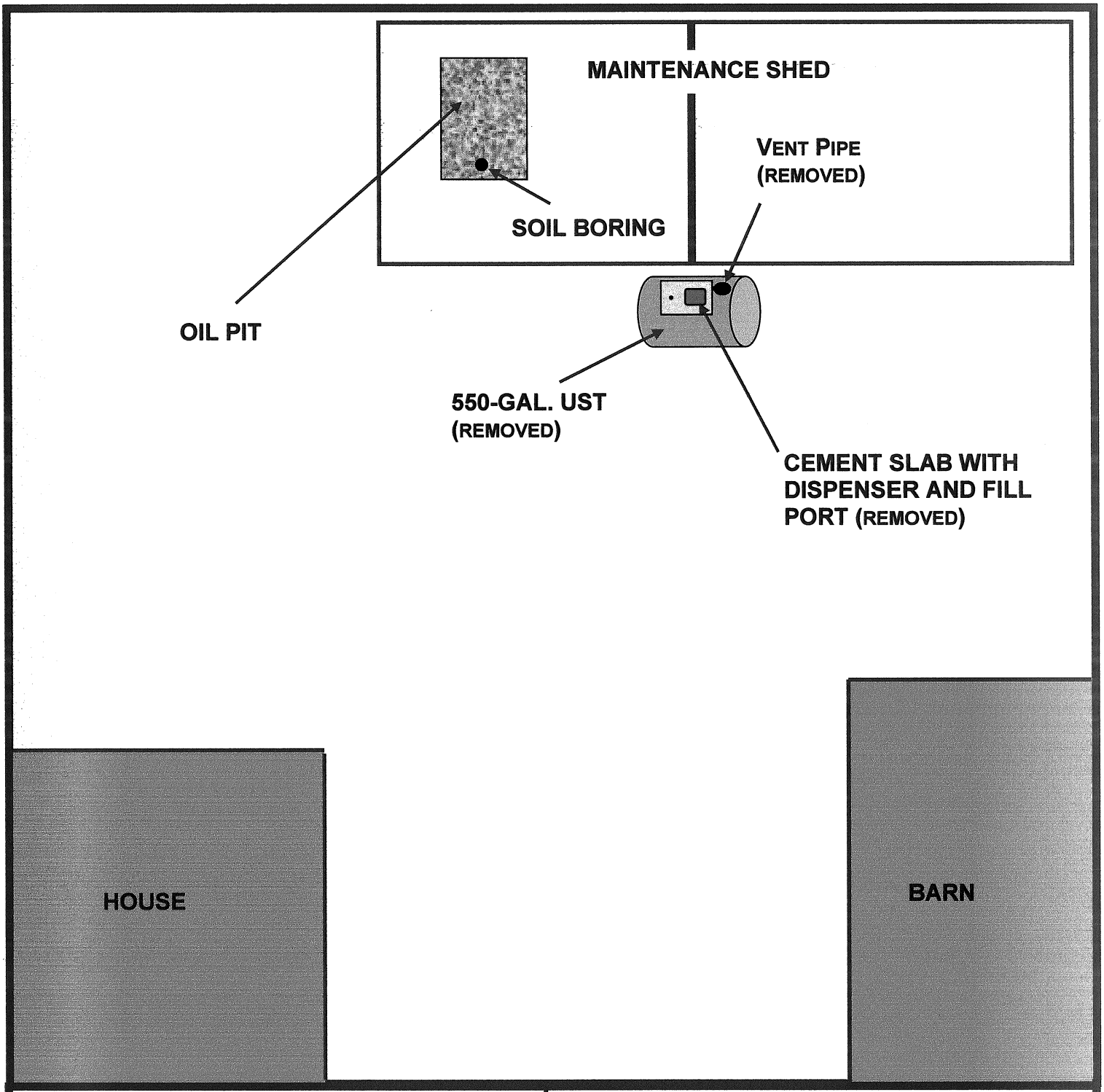
3.1 Oil Pit

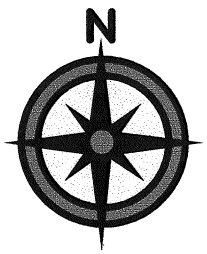
The recently discovered maintenance pit underlying the maintenance shed has been properly cleaned and its former contents have been properly containerized and disposed of off-site in accordance with all applicable regulations. Inspection of the pit floor and a soil boring advanced through the bottom of the pit yielded no evidence of any historical leaks or releases to underlying soil. In light of the foregoing, no future testing is required. Any maintenance activities involving the use of this pit to aid in access to the bottom of vehicles should utilize proper external containment (e.g. oil pans and drums) to catch and store waste oil or other automotive fluids. In addition, the small core-hole installed to collect subsurface soil should be repaired with cement so that any incidentally or accidentally spilled fluids will not have a preferential pathway to the subsurface.

3.2 Underground Storage Tank

The out-of-service 550-gallon diesel underground storage tank along with the associated dispenser and piping have been properly excavated and removed in accordance with all applicable regulations. Inspection of the tank and tank grave by CA RICH and Town of Southeast Fire Inspectors / Code Enforcement Officers, John Leather and Kenneth Clair did not reveal any evidence of leakage or subsurface contamination. Because the tank was less than 1,100 gallons in capacity, no NYSDEC registration or closure permit was necessary for removal of the UST. As such, no further action is warranted with respect to the UST, and as stated above, no future testing of this location is required.

Hdrive/projects/fields corner rem./firld corners rem rept





NOT TO SCALE

CA RICH ENVIRONMENTAL SPECIALISTS

CA RICH CONSULTANTS, INC.
17 Dupont Street,
Plainview, NY 11803

TITLE: Location of Remedial Action	DATE: 11/29/04
	SCALE: AS SHOWN
FIGURE: 1	DRAWN BY: STM
DRAWING: Campus at Field Corners, Town of Southeast, NY	APPR. BY: RJI

Appendix A

Building Department Permit

CONDITIONS OF PERMIT: INSPECTION MUST BE DONE WHEN TANK IS OUT OF GROUND, STILL ON SITE AND GROUND IS STILL OPEN.

Application number: 999726 E

Permit number: **17707E**

BUILDING DEPARTMENT

TOWN OF SOUTHEAST

County of Putnam

67 Main Street, Brewster, New York 10509- (845) 279-2123

LOCATION 63 Barrett Road TAXMAP 45.-1-5

DEVELOPMENT NAME _____ Lot: _____

EQUIPMENT PERMIT

Date: 11/10/04 Expiration Date: 11/10/05

Permission is hereby granted to Putnam Seabery

Barrett Road

BREWSTER, NY 10509

WORK DESCRIPTION: Removal of und. Tank

The following inspections are required for this permit:

☐	B.O.H.A.	☐	FOOTING DRAINS	☐	H.V.A.C
☐	DRIVEWAY	☐	FRAMING	☐	FINAL PLUMBING
☐	STAKING	☐	ROUGH PLUMBING	☐	FINAL ELECTRICAL
☐	FOOTINGS	☐	ROUGH ELECTRICAL	☐	GROUNDS
☐	FOUNDATIONS	☐	INSULATION	☐	FINAL DRIVEWAY
☑	OTHER: SEE NOTE ABOVE.				

Construction cost: _____

Fee: $50.00

Building Inspector

Appendix B

Certificate of Compliance

TOWN OF SOUTHEAST, NEW YORK

No. 17707E

BUILDING DEPARTMENT

Date Issued: 11/17/04

CERTIFICATE of COMPLIANCE

THIS CERTIFICATE IS ISSUED TO THE PERSON(S) LISTED BELOW IS PROOF THAT THE WORK LISTED BELOW HAS BEEN INSPECTED AND THAT THE CONSTRUCTION METHODS ARE IN COMPLIANCE WITH THE BUILDING CODES IN EFFECT AT THE TIME THIS ORIGINAL CERTIFICATE IS ISSUED. THIS CERTIFICATE REMAINS IN EFFECT UNTIL THE LISTED OCCUPANCY OR USE CHANGES IN ANY MANNER OR IS REVOKED FOR OTHER CAUSE ALLOWED BY LOCAL OR STATE LAWS. THIS CERTIFICATE DOES NOT INCLUDE ANY WORK NOT SPECIFICALLY LISTED IN THE BUILDING DEPARTMENT DESCRIPTION LISTED HEREIN.

THE PREMISES LOCATED AT 63 Barrett Road

TAX MAP 45.-1-5 OWNER Putnam Seabery Partners

MAY BE OCCUPIED OR USED AS Oil Tank

DESCRIPTION OF PREMISES Removed 1 Underground Oil Tank - NO LEAKS.

Application number: 999726

BUILDING INSPECTOR

Appendix C

Waste Manifests

279 Route 6 • Mahopac, NY10541
Ph: (845) 279-0263, (866) WASTE OIL
Fax: (845) 621-3078

Enviro Waste

Oil Recovery Specialists

1-866-WASTE-OIL

STANDARD COLLECTION ORDER FORM

012058

NAME: Resident

DATE: 10/27/04

GENERATOR/LOCATION

NAME: The Farm House II

INFORMATION ATTENTION LINE

ETA

DELIVERY ADDRESS: 63 Barrett Rd

CITY: Brewster

STATE: NY

ZIP

PHONE NUMBER

PURCHASE ORDER NUMBER

TIME IN

TIME OUT

BILL TO (IF DIFFERENT FROM LOCATION)

NAME

INFORMATION ATTENTION LINE

ACCOUNT APPROVAL CODE

DELIVERY ADDRESS

CITY

STATE

ZIP

PHONE NUMBER

PURCHASE ORDER NUMBER

MANIFEST NUMBER

DRIVERS NOTES

SERVICE SECTION

SALES CODE	DESCRIPTION	WASTE CODE	QUANTITY	UNIT PRICE	PRICE	TOTAL	LINE TOTAL
721	USED OIL REMOVAL						
713	ANTI-FREEZE REMOVAL						
700	OILY WATER DISPOSAL		1,150				
742	SLUDGE DISPOSAL						
737	GASOLINE/WATER						
782	DRUM DISPOSAL						
800	PAD & BROOM REMOVAL						
763	OIL FITLER REMOVAL						
810	PARTS WASHER SERVICE						
746	VACUUM SERVICE						
780	TRUCK HOURLY RATE						
750	TRANSPORTATION						
					TOTAL		

CUSTOMER SERVICES EVERY 30 DAYS

GENERATOR WARRANTS AND REPRESENTS THAT THE MATERIALS PROVIDED ENVIRO WASTE HEREUNDER HAVE NOT BEEN MIXED, COMBINED, OR OTHERWISE BLENDED IN ANY QUANTITY WITH MATERIALS CONTAINING POLYCHLORINATED BIPHENYLS (PCB) OR ANY OTHER MATERIAL DEFINED AS HAZARDOUS WASTE UNDER APPLICABLE LAWS, INCLUDING BUT NOT LIMITED TO 40 CFR PART 261, GENERATOR AGREES TO INDEMNIFY AND HOLD ENVIRO WASTE HARMLESS FOR ANY DAMAGES, COSTS, ATTORNEY'S FEES, ETC. ARISING OUT OF OR IN ANY WAY RELATED TO A BREACH OF THE ABOVE WARRANTY BY THE GENERATOR.

Generator certifies that the waste is ☐ used oil ☐ used antifreeze ☑ oily water ☐ Other _____

DESCRIPTION

In accordance the N.J.A.C. 7:26-12.1 et seq. Enviro Waste has the required permits to accept the above described waste.

PRINT NAME

TITLE

SIGNATURE

DATE

GENERATOR/CUSTOMER

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR CERTIFICATION

I certify that this generator generates less than 100 kilograms of hazardous waste per month, as defined at 40 C.F.R. 261, and does not accumulate more than 1,000 kilograms of such waste during the month.

GENERATOR'S SIGNATURE

NON CONDITIONALLY EXEMPT LARGE QUANTITY GENERATOR CERTIFICATION

Dexsil CDT Test Results

PPM _____

CHARGE MY ACCOUNT FOR THIS TRANSACTION UNLESS OTHERWISE INDICATED IN THE PAYMENT SECTION. INVOICED REFLECTING CHARGES TO CUSTOMER ARE SUBJECT TO AN INTEREST RATE OF THE LESSER OF 1-1/2% PER MONTH (18% PER ANNUM) OR THE MAXIMUM RATE ALLOWED BY LAW ON ANY INVOICES THAT ARE NOT PAID WITHIN 30 DAYS. IN THE EVENT OF DEFAULT, ENVIRO WASTE SHALL BE ENTITLED TO RECOVER COSTS OF COLLECTION, INCLUDING REASONABLE ATTORNEY'S FEES. INITIAL _____

$

PAYMENT RECEIVED SECTION

CASH ☐	TOTAL RECEIVED
CHECK NUMBER	

In accordance with NJAC7:26-8.7b + 40 CFR PART 279, Enviro Waste has notified the U.S.EPA of its location and used oil management activities.

PRINT NAME

SIGNATURE

DATE 10/27/04

ENVIRO WASTE REPRESENTATIVE

279 Route 6 • Mahopac, NY10541
Ph: (845) 279-0263, (866) WASTE OIL
Fax: (845) 621-3075

Enviro Waste

Oil Recovery Specialists

1-866-WASTE-OIL

STANDARD COLLECTION ORDER FORM

011910

NAME: _____ DATE: 11/17/04

GENERATOR/LOCATION

NAME: FARM HOUSE

INFORMATION ATTENTION LINE:

ETA: 9:00

DELIVERY ADDRESS: 63 BARRETT RD

CITY: BREWSTER STATE: NY ZIP:

PHONE NUMBER:

PURCHASE ORDER NUMBER:

TIME IN:

TIME OUT:

BILL TO (IF DIFFERENT FROM LOCATION)

NAME: DUTCHESS ENVIRO.

INFORMATION ATTENTION LINE:

ACCOUNT APPROVAL CODE:

DELIVERY ADDRESS:

CITY: STATE: ZIP:

PHONE NUMBER:

PURCHASE ORDER NUMBER:

MANIFEST NUMBER:

DRIVERS NOTES

SERVICE SECTION

SALES CODE	DESCRIPTION	WASTE CODE	QUANTITY	UNIT PRICE	PRICE	TOTAL	LINE TOTAL
721	USED OIL REMOVAL						
713	ANTI-FREEZE REMOVAL						
700	OILY WATER DISPOSAL		80 gal.				
742	SLUDGE DISPOSAL						
737	GASOLINE/WATER						
782	DRUM DISPOSAL						
800	PAD & BROOM REMOVAL						
783	OIL FITLER REMOVAL						
810	PARTS WASHER SERVICE						
746	VACUUM SERVICE		1				
760	TRUCK HOURLY RATE						
750	TRANSPORTATION						
					TOTAL		

CUSTOMER SERVICES EVERY 30 DAYS ☐

GENERATOR WARRANTS AND REPRESENTS THAT THE MATERIALS PROVIDED ENVIRO WASTE HEREUNDER HAVE NOT BEEN MIXED, COMBINED, OR OTHERWISE BLENDED IN ANY QUANTITY WITH MATERIALS CONTAINING POLYCHLORINATED BIPHENYLS (PCB) OR ANY OTHER MATERIAL DEFINED AS HAZARDOUS WASTE UNDER APPLICABLE LAWS, INCLUDING BUT NOT LIMITED TO 40 CFR PART 261, GENERATOR AGREES TO INDEMNIFY AND HOLD ENVIRO WASTE HARMLESS FOR ANY DAMAGES, COSTS, ATTORNEY'S FEES, ETC. ARISING OUT OF OR IN ANY WAY RELATED TO A BREACH OF THE ABOVE WARRANTY BY THE GENERATOR.

Generator certifies that the waste is ☐ used oil ☐ used antifreeze ☐ oily water ☐ Other _____ DESCRIPTION

In accordance the N.J.A.C. 7:26-12.1 et seq. Enviro Waste has the required permits to accept the above described waste.

PRINT NAME: _____ TITLE:

SIGNATURE: _____ DATE:

GENERATOR/CUSTOMER

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR CERTIFICATION

I certify that this generator generates less than 100 kilograms of hazardous waste per month, as defined at 40 C.F.R. 261, and does not accumulate more than 1,000 kilograms of such waste during the month.

GENERATOR'S SIGNATURE

NON CONDITIONALLY EXEMPT LARGE QUANTITY GENERATOR CERTIFICATION

Dexsil CDT Test Results

PPM _____

CHARGE MY ACCOUNT FOR THIS TRANSACTION UNLESS OTHERWISE INDICATED IN THE PAYMENT SECTION. INVOICED REFLECTING CHARGES TO CUSTOMER ARE SUBJECT TO AN INTEREST RATE OF THE LESSER OF 1-1/2% PER MONTH (18% PER ANNUM) OR THE MAXIMUM RATE ALLOWED BY LAW ON ANY INVOICES THAT ARE NOT PAID WITHIN 30 DAYS. IN THE EVENT OF DEFAULT, ENVIRO WASTE SHALL BE ENTITLED TO RECOVER COSTS OF COLLECTION, INCLUDING REASONABLE ATTORNEY'S FEES. INITIAL _____

$

PAYMENT RECEIVED SECTION

CASH ☐	TOTAL RECEIVED
CHECK NUMBER	

In accordance with NJAC7:26-6.7b + 40 CFR PART 279, Enviro Waste has notified the US EPA of its location and used oil management activities.

PRINT NAME: _____ 11-17-04

SIGNATURE: _____ DATE:

ENVIRO WASTE REPRESENTATIVE

279 Route 6 • Mahopac, NY10541
Ph: (845) 279-0263, (866) WASTE OIL
Fax: (845) 621-3075

Enviro Waste

Oil Recovery Specialists

1-866-WASTE-OIL

STANDARD COLLECTION ORDER FORM

011884

NAME: _____ DATE: _____

GENERATOR/LOCATION

NAME: Dutchess Environmental

INFORMATION ATTENTION LINE: Rt. 6, Mahopac N.Y.

ETA:

DELIVERY ADDRESS:

CITY: STATE: ZIP:

PHONE NUMBER: PURCHASE ORDER NUMBER:

TIME IN: TIME OUT:

BILL TO (IF DIFFERENT FROM LOCATION)

NAME:

INFORMATION ATTENTION LINE: ACCOUNT APPROVAL CODE:

DELIVERY ADDRESS:

CITY: STATE: ZIP:

PHONE NUMBER: PURCHASE ORDER NUMBER:

MANIFEST NUMBER:

DRIVERS NOTES

SERVICE SECTION

SALES CODE	DESCRIPTION	WASTE CODE	QUANTITY	UNIT PRICE	PRICE	TOTAL	LINE TOTAL
721	USED OIL REMOVAL						
713	ANTI-FREEZE REMOVAL						
700	OILY WATER DISPOSAL						
742	SLUDGE DISPOSAL						
737	GASOLINE/WATER						
782	DRUM DISPOSAL		12				
800	PAD & BROOM REMOVAL						
783	OIL FITLER REMOVAL						
810	PARTS WASHER SERVICE						
746	VACUUM SERVICE						
760	TRUCK HOURLY RATE						
750	TRANSPORTATION						
	Drum Delivery		16				

TOTAL

CUSTOMER SERVICES EVERY 30 DAYS ☐

GENERATOR WARRANTS AND REPRESENTS THAT THE MATERIALS PROVIDED ENVIRO WASTE HEREUNDER HAVE NOT BEEN MIXED, COMBINED, OR OTHERWISE BLENDED IN ANY QUANTITY WITH MATERIALS CONTAINING POLYCHLORINATED BIPHENYLS (PCB) OR ANY OTHER MATERIAL DEFINED AS HAZARDOUS WASTE UNDER APPLICABLE LAWS, INCLUDING BUT NOT LIMITED TO 40 CFR PART 261, GENERATOR AGREES TO INDEMNIFY AND HOLD ENVIRO WASTE HARMLESS FOR ANY DAMAGES, COSTS, ATTORNEY'S FEES, ETC. ARISING OUT OF OR IN ANY WAY RELATED TO A BREACH OF THE ABOVE WARRANTY BY THE GENERATOR.

Generator certifies that the waste is ☐ used oil ☐ used antifreeze ☐ oily water ☐ Other _____ DESCRIPTION

In accordance the N.J.A.C. 7:26-12.1 et seq. Enviro Waste has the required permits to accept the above described waste.

PRINT NAME: TITLE:

SIGNATURE: DATE:

GENERATOR/CUSTOMER

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR CERTIFICATION

I certify that this generator generates less than 100 kilograms of hazardous waste per month, as defined at 40 C.F.R. 261, and does not accumulate more than 1,000 kilograms of such waste during the month.

GENERATOR'S SIGNATURE

NON CONDITIONALLY EXEMPT LARGE QUANTITY GENERATOR CERTIFICATION

Dexsil CDT Test Results

PPM <1000

CHARGE MY ACCOUNT FOR THIS TRANSACTION UNLESS OTHERWISE INDICATED IN THE PAYMENT SECTION. INVOICED REFLECTING CHARGES TO CUSTOMER ARE SUBJECT TO AN INTEREST RATE OF THE LESSER OF 1-1/2% PER MONTH (18% PER ANNUM) OR THE MAXIMUM RATE ALLOWED BY LAW ON ANY INVOICES THAT ARE NOT PAID WITHIN 30 DAYS. IN THE EVENT OF DEFAULT, ENVIRO WASTE SHALL BE ENTITLED TO RECOVER COSTS OF COLLECTION, INCLUDING REASONABLE ATTORNEY'S FEES. INITIAL _____

$

PAYMENT RECEIVED SECTION

CASH ☐	TOTAL RECEIVED
CHECK NUMBER	

In accordance with NJAC7:26-6.7b + 40 CFR PART 279, Enviro Waste has notified the US EPA of its location and used oil management activities.

PRINT NAME: Thomas Lombardi

SIGNATURE: DATE: 11/16/04

ENVIRO WASTE REPRESENTATIVE

APPENDIX 17-2

Dumpsite and Barn Area Cleanup Report by CA Rich Environmental Specialists, dated August 2005

CA RICH
ENVIRONMENTAL SPECIALISTS

DUMPSITE AND BARN AREA CLEANUP
CAMPUS AT FIELD CORNERS
TOWN OF SOUTHEAST, NY

AUGUST 2005

PREPARED FOR:

SCHULWEIS REALTY, INC.
9 WEST 57TH STREET, 50TH FLOOR
NEW YORK, NY

PREPARED BY:

CA RICH CONSULTANTS, INC.
17 DUPONT STREET
PLAINVIEW, NY 11803

RICH
ENVIRONMENTAL SPECIALISTS

August 9, 2005

Schulweis Realty, Inc.
9 West 57th Street, 50th Floor
New York, NY 10019

Attention: Steven Caldwell,
Project Manager

Re: Dumpsite and Barn Area Cleanup
Campus at Field Corners
Town of Southeast, NY

Dear Mr. Caldwell:

Please find our attached Summary Report for the above-captioned project. As discussed in the attached Report, all of the surficial debris discovered in the dumpsite area has been segregated, removed and properly disposed of off site in accordance with all applicable regulations. In addition, the oil tank, 55-gallon drums, miscellaneous containers and all contained liquids discovered in the barn area have also been properly removed. On-site soil sampling by Chazen Environmental Services, Inc. conducted during the cleanup revealed no evidence of soil contamination. As such, no further testing is required.

Thank you for this opportunity to provide you with our professional services. If you have questions or need for any additional detail, please feel free to call me, immediately.

Respectfully submitted,

CA RICH CONSULTANTS, INC.

Richard J. Izzo, CPG 9644
Associate

AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS
CERTIFICATE NUMBER
9644
AIPG
RICHARD J. IZZO
CERTIFIED PROFESSIONAL GEOLOGIST

RJI/tk
Attachments

cc:
Dan Richmond, Esq.

Hdrive/projects/field corners rems /rem cl

TABLE OF CONTENTS

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1.0	INTRODUCTION	1
2.0	SUMMARY OF REMEDIAL ACTIVITIES	2
3.0	PHASE II REPORT REVIEW	5
4.0	CONCLUSIONS AND RECOMMENDATIONS	5

FIGURES

		Following Page
1.	Areas of Cleanup	1

APPENDICES

A. Asbestos Analysis Report
B. Disposal Documentation

SUMMARY REPORT
Dumpsite and Barn Area Cleanup
Campus at Field Corners
Town of Southeast, NY
August 2005

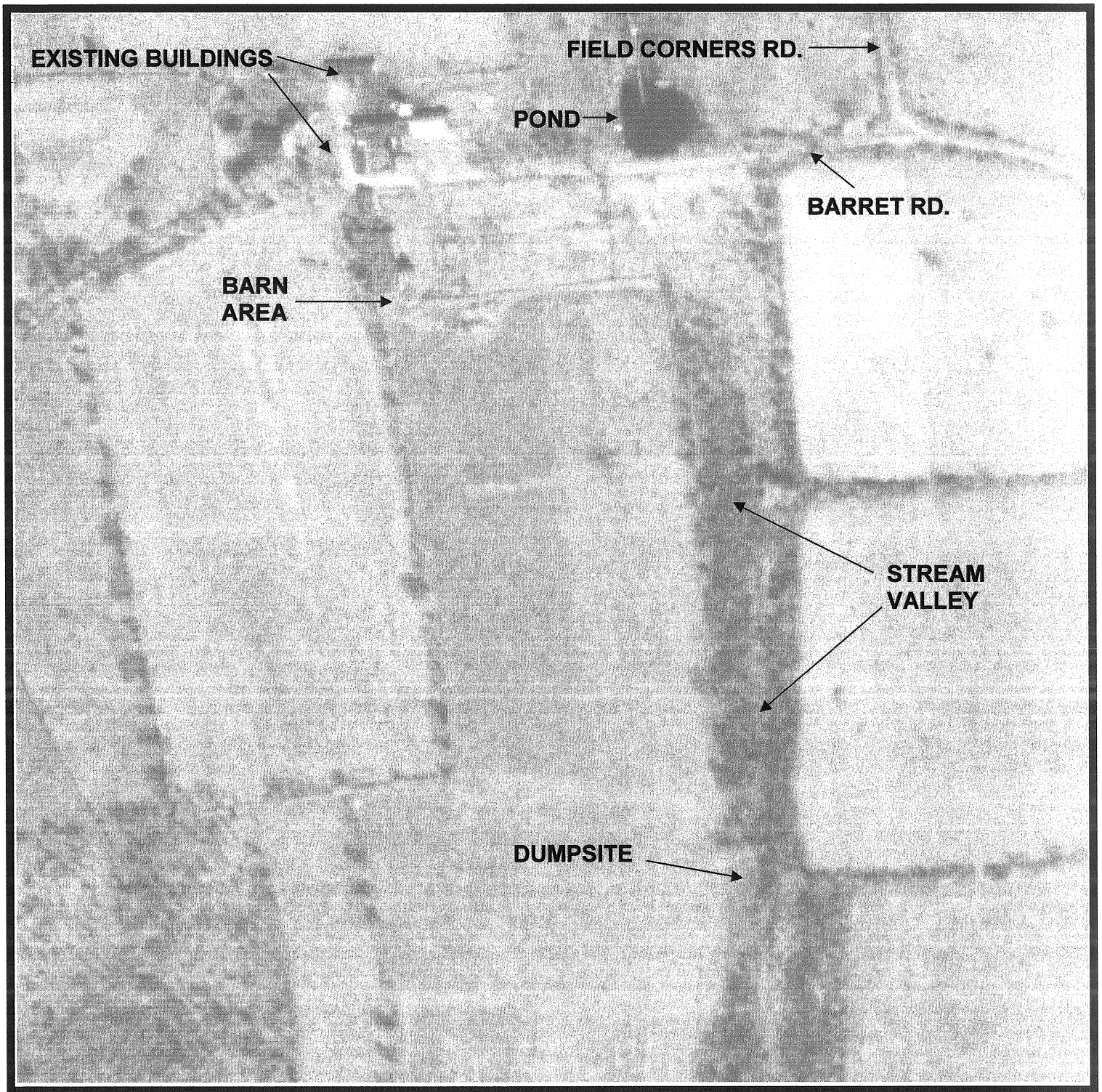
1.0 INTRODUCTION

This report summarizes the recent cleanup activities performed by CA RICH at the Campus at Field Corners Project Site located near NYS Route 312 and Pugsley Road in the Town of Southeast, Putnam County, NY (the Site).

Cleanup activities included the consolidation and removal of over 100 cubic yards of debris discovered at an old dumpsite on the edge of the stream valley in the south-central portion of the Property (hereinafter referred to as the dumpsite). In addition, a small amount of residual farm-related waste oil contained in several 5-gallon buckets, three 55-gallon drums and an abandoned 550-gallon aboveground storage tank (AST), along with the containers themselves, several empty 1-gallon antifreeze containers, three automobile batteries, several tires and a small volume of soil (less than ½ cubic yard) was consolidated and removed from an area adjacent to a collapsed barn along the southern field access road (hereinafter referred to as the barn area).

The small dumpsite was discovered during the recent due diligence property inspection conducted by Chazen Associates on behalf of the prospective buyer, US Homes. Materials identified within the dump include furniture, appliances, roofing materials and tires along with bottles, cans, scrap metal and general domestic and farm debris. The remaining materials in the barn area were discovered by CA RICH during subsequent site inspection activities. The approximate locations of the dumpsite and barn area are illustrated on Figure 1.

During the cleanup, on-site soil testing was conducted by Chazen Associates on behalf of US Homes. CA RICH reviewed Chazen's Phase II report dated June 9, 2005 detailing this testing.



APPROX. SCALE (ft.)

0 250 500

N

Adapted from 1982 Air Photo

CA RICH ENVIRONMENTAL SPECIALISTS

CA RICH CONSULTANTS, INC.
17 Dupont Street,
Plainview, NY 11803

TITLE: Areas of Cleanup	DATE: 6/6/05
	SCALE: AS SHOWN
FIGURE: 1	DRAWN BY: STM
DRAWING: Campus at Field Corners Town of Southeast, NY	APPR. BY: RJI

2.0 SUMMARY OF REMEDIAL ACTIVITIES

2.1 Waste Stream Identification / Consolidation

An initial site inspection was conducted with the excavation/disposal contractor, Tarky Construction of Patterson, NY, on May 12, 2005. Based upon this inspection, three (3) waste streams were identified for the dumpsite including:

1) general domestic and farm debris (approx. 100 cubic yards),
2) petroleum-containing materials (tires and asphalt roofing) (approx. 20 cubic yards), and
3) freon-containing appliances (approximately 10 cubic yards).

Additional field inspection and profiling was conducted on May 18, 2005 to determine the compatibility of the containerized oils in the barn area. This included visual inspection/inventory and estimate of volume along with pH testing and screening for total airborne volatile organic compounds (VOCs) with an HNU Systems Photoionization Detector (HNU). This information is summarized below:

5-Gallon Buckets:

No. of Containers	Contents	Total Volume	pH Range	Total VOCs (ppm)
14	waste oil	20 gal.	6.5 - 7.5	0-2

55-Gallon Drums

No. of Containers	Contents	Total Volume	pH Range	Total VOCs (ppm)
3	waste oil & water	10 gal.	6.5 - 7.5	0-2

550-Gallon AST

No. of Containers	Contents	Volume	pH Range	Total VOCs (ppm)
1	waste oil & water	20 gal.	6.5 - 7.5	0-2

All of the containerized materials were observed to be waste oils with a pH between 6.5 and 7.5. Total VOC readings ranged from 0 to 2 ppm above background indicating a low concentration of VOCs. The oils in the 5-gallon buckets were then combined and placed in the AST for disposal. All of the 5-gallon buckets were cleaned out using a solution of Simple Green detergent and water and rinsed with water. The wash/rinse solution was containerized and placed in the AST for disposal.

Three (3) samples of the asphalt roofing materials identified in the dumpsite were also collected on May 18th and hand delivered the next day to State-certified Testing Mechanic Corp. in Seaford, NY for asbestos analysis. Analysis confirmed that the dumped roofing materials were not asbestos containing. A copy of the asbestos analysis report is attached as Appendix A.

2.2 Waste Removal

2.2.1 Dumpsite

Prior to the cleanup activity, access to the dumpsite was limited to the unpaved southern field access road and a series of narrow ATV trails. Tarky Construction widened the ATV trails to create an access road to the dumpsite. Following this activity, on May 23, 2005, Tarky mobilized a track-mounted excavator and a large (5-yard capacity) rubber tire loader along with three laborers to segregate the dumpsite wastes into the three identified waste streams and remove them from the dumpsite.

A large area at the end of the southern field access road and at the top of the slope leading down to the dumpsite was used as a staging area for the drop off and pick up of roll-off containers to be used to store and transport the debris. The debris was segregated and consolidated with the excavator, brought up the hill with the rubber tire machine and dumped into the appropriate container for off-site transportation and disposal.

Because much of the debris was located down in the stream valley, laborers were used to retrieve the materials that could not be safely reached with the excavator. In addition, some of the older debris at the bottom of the dumpsite was intermixed with rocks and soil and had to be segregated by hand.

A total of three (3) 30-yard roll-offs were filled with the general domestic and farm debris for a total of 90 cubic yards. One 20-yard roll-off was filled with the tires and asphalt shingles, and one 10-yard container was used to dispose of the Freon-containing appliances. The roll-offs were removed from the Property and their contents properly disposed of off site by NY State licensed Copies of billing for proper off-site disposal is included as Appendix B.

2.2.2 Barn Area

On May 20, 2005, Enviro Waste Oil Recovery Specialists of Mahopac, NY (Enviro Waste) were mobilized to the site with a 4,500-gallon capacity vacuum truck to remove the liquid from the AST and the drums. Enviro Waste removed a total of 20 gallons of oil and water from the AST and approximately 10 gallons of oil and water from the drums.

The 55-gallon drums were then cleaned with a 1-gallon solution of Simple Green detergent and water. The spent cleaning solution was then placed in the AST along with an additional concentrated 5-gallon detergent/water solution. This solution was allowed to remain in the tank over the weekend to dissolve any the remaining sludge in the bottom of the tank and assist in the prevention of any potential “flare-up” when the tank was cut open.

On May 27, 2005 Tarky Construction cut the top of the tank off for cleaning. Enviro waste returned to the site with their vac truck and removed the remaining detergent solution and sludge. The tank was then wiped clean using oil absorbent pads and removed from the site as scrap metal along with the three previously cleaned 55-gallon drums. Enviro waste left an empty open-topped 55-gallon drum for use in removing a small quantity of stained soil observed in the vicinity of the drums and tank.

Approximately 1/3 cubic yard of soil was manually dug out from the stained areas and placed in the drum for proper disposal along with the oil absorbent pads used to clean the tank. The drum was picked up by Enviro Waste on May 31, 2005 and disposed of as non-hazardous industrial waste. Copies of manifests for disposal of the oil/water and soil are included in Appendix B.

3.0 PHASE II REPORT REVIEW

CA Rich reviewed the Chazen Environmental Services, Inc. Phase II Environmental Site Assessment for the subject Property dated June 9, 2005. Fieldwork for this Assessment was ongoing during our remedial action and included collection of surface and subsurface soil samples in areas of the property identified during their previous Phase I ESA as potential areas of environmental concern. This includes two samples in the vicinity of the dumpsite. None of the samples collected indicated the presence of elevated levels of contaminants above NYSDEC recommended soil cleanup objectives or Northeastern United States background levels. The Chazen Study concluded that "there is no significant contamination at the Pugsley Road Site".

4.0 CONCLUSIONS AND RECOMMENDATIONS

The recently discovered dumpsite as well as the barn area has been properly cleaned and its former contents have been properly containerized and disposed of off-site in accordance with all applicable regulations. A small amount of stained soil (approximately 0.33 cubic yards) was removed from the barn area. Otherwise, no evidence of residual contamination was observed in the dumpsite or barn area. The Phase II Assessment by Chazen Environmental Services, Inc. conducted during the course of the remedial action described herein did not detect any significant environmental impacts. In light of the foregoing, no future testing is required.

Hdrive/projects/fields corner rem./firld corners rem rept

Appendix A

Asbestos Analysis Report

TESTING MECHANICS CORP.
ENVIRONMENTAL TESTING AND MONITORING
3770 Merrick Rd. Seaford LI New York 11783 (516) 221-3800

Laboratory Number:05-1066
Project Number: 101

February 9, 2004

C.A. Rich Consultants
17 Dupont Street
Plainview, New York 11803
Attention: Mr. Rich Izzo

Re: Asbestos testing - Roofing Shingles - Barret Road Southeast, New York

Dear Mr. Izzo:

Enclosed, please find the results of three (3) bulk samples submitted for asbestos content analysis.

The samples were received by Testing Mechanics Corp. on May 19, 2005.

All samples were first analyzed by Polarized Light Microscopy, in accordance with the New York State Department of Health Method 198.1. Polarized Light Microscopy (PLM) is an analytical procedure utilized to detect asbestos in suspect materials based on certain optical properties of the asbestos minerals which can be measured. The samples submitted are categorized as a non-friable organically bound (NOB) substances. A Non-Friable Organically Bound Material (NOB) refers to a wide variety of non-friable building materials embedded in flexible to rigid asphalt or vinyl matrices. This includes floor tile, floor tile mastic, asphalt shingles, roofing materials, etc.

No asbestos was detected by PLM analysis in the samples submitted. Transmission Electron Microscopy (TEM) is an analytical procedure utilized to detect asbestos in air samples and bulk samples. TEM is required by the New York State Department of Health to prove an NOB material to be non-ACM, if the material is initially determined to be non-ACM by PLM examination if the sample has an acid insoluble inorganic phase of greater than 1.0 %.

The results of our analysis indicate that the submitted roofing shingles are not asbestos containing materials. Enclosed, please find complete laboratory results.

Thank you for using Testing Mechanics Corp. for your analytical services.

Very truly yours,

TESTING MECHANICS CORP.

Kevin Tumulty
Laboratory Director

KT/pc

TESTING MECHANICS CORP.
ENVIRONMENTAL TESTING AND MONITORING
3770 Merrick Rd. Seaford LI New York 11783 (516) 221-3800

LABORATORY RESULTS

Method: (1) EPA-600/R-93/116/July, 1993/Polarized Light Microscopy
(2) Modified EPA-600/R-93/116/July, 1993/Polarized Light Microscopy
(3) NYSDOH Environmental Laboratory Approval Program (ELAP) Certified Method 198.1, Polarized Light Microscopy Method for Identifying And Quantitating Asbestos In Bulk Samples.

IDENTIFYING INFORMATION:
PROJECT NAME: Barret Road Southeast, New York
CLIENT: CA Rich Consultants, Inc. 17 Dupont Road Plainview, New York 11803

TMC ELAP NUMBER: 11018
LAB NUMBER 05-1066
PROJECT NUMBER 101

SAMPLE ORIGINATION:
SAMPLING AGENCY: Client
SAMPLING SITE: Barret Road Southeast, New York
NUMBER OF SAMPLES: Three (3) Bulk Samples

SAMPLING DATE: 5/18/05
DATE ANALYZED: 5/20/05

SAMPLE NUMBER	TMC ID #	COLOR METHOD	SAMPLE TYPE	SAMPLE IDENTIFICATION	ASBESTOS TYPE	ASBESTOS CONTENT (%)	ASBESTOS TOTAL (%)	OTHER COMPONENTS (%)
RT 001	49050	Black, 3	NOB	Roofing Tiles	NDI(None Detected Inconclusive)	--	--	Organic- 48, Acid-Soluble Inorganic- 17.3, Acid-Insoluble Inorganic- 34.7
RT 002	49051	Black, 3	NOB	Roofing Tiles	NDI(None Detected Inconclusive)	--	--	Organic- 44, Acid-Soluble Inorganic- 15.8, Acid-Insoluble Inorganic- 40.2

ND = No Asbestos Detected FRI = Friable Sample NOB = Non-Friable Organically Bound Sample ND = None Detected N/A = Not Applicable
NOTE: This sample was not collected by Testing Mechanics Corp. If Testing Mechanics Corp. did not collect these samples, we can only certify results for the submitted sample, and not the origination.

Testing Mechanics Corp. is accredited by the New York State Department Of Health (Lab ID # 11018). TMC does not claim that The N.Y.S.D.O.H or any other agency endorses the accuracy of this report. The results contained in this report relate only to the items tested. This report shall not be reproduced except in full, without written approval of Testing Mechanics Corporation. This report may not be used by the client to claim product endorsement by the New York State D.O.H. or any other agency. Unless otherwise specified, all test items are characterized as suspect ACM submitted for asbestos analysis by PLM and were received in an acceptable condition for analysis

Polarized-light microscopy is not consistently reliable in detecting asbestos in non-friable organically bound materials (i.e.: floor covering, asphaltic roofing products, etc.). Before these materials can be considered or treated as non-asbestos containing, the New York State Department of Health requires confirmation analysis by quantitative transmission electron microscopy.

Unless otherwise specified, all test items are characterized as suspect asbestos containing materials submitted for analysis by PLM and were received in an acceptable condition
= Material is considered an asbestos containing material (greater than 1% asbestos).

= Material is a non-friable organically bound substance. No asbestos was detected by PLM analysis. Additional Analysis by TEM (see above) is required before this material can be treated as non-ACM.

Reviewed by: _____

TESTING MECHANICS CORP.

ENVIRONMENTAL TESTING AND MONITORING
3770 Merrick Rd. Seaford LI New York 11783 (516) 221-3800

Testing Mechanics Corporation
Laboratory Number - 05-1066
Project Number - 101

LABORATORY RESULTS - CONTINUED

SAMPLE NUMBER	TMC ID #	COLOR METHOD	SAMPLE TYPE	SAMPLE IDENTIFICATION	ASBESTOS TYPE	ASBESTOS CONTENT (%)	ASBESTOS TOTAL (%)	OTHER COMPONENTS (%)
RT 003	49052	Black, 3	NOB	Roofing Tiles	NDI(None Detected Inconclusive)	--	--	Organic- 47, Acid-Soluble Inorganic- 15.3, Acid-Insoluble Inorganic- 37.7

ND = No Asbestos Detected FRI = Friable Sample NOB = Non-Friable Organically Bound Sample ND = None Detected N/A = Not Applicable
NOTE: This sample was not collected by Testing Mechanics Corp. If Testing Mechanics Corp. did not collect these samples, we can only certify results for the submitted sample, and not the origination.

Testing Mechanics Corp. is accredited by the New York State Department Of Health (Lab ID # 11018). TMC does not claim that The N.Y.S.D.O.H or any other agency endorses the accuracy of this report. The results contained in this report relate only to the items tested. This report shall not be reproduced except in full, without written approval of Testing Mechanics Corporation. This report may not be used by the client to claim product endorsement by the New York State D.O.H. or any other agency. Unless otherwise specified, all test items are characterized as suspect ACM submitted for asbestos analysis by PLM and were received in an acceptable condition for analysis

Polarized-light microscopy is not consistently reliable in detecting asbestos in non-friable organically bound materials (i.e.: floor covering, asphaltic roofing products, etc.). Before these materials can be considered or treated as non-asbestos containing, the New York State Department of Health requires confirmation analysis by quantitative transmission electron microscopy.

Unless otherwise specified, all test items are characterized as suspect asbestos containing materials submitted for analysis by PLM and were received in an acceptable condition

= Material is considered an asbestos containing material (greater than 1% asbestos).

= Material is a non-friable organically bound substance. No asbestos was detected by PLM analysis. Additional Analysis by TEM (see above) is required before this material can be treated as non-ACM.

Reviewed by: _____

TESTING MECHANICS CORP.

ENVIRONMENTAL TESTING AND MONITORING

3770 Merrick Rd. Seaford LI New York 11783 (516) 221-3800

TEM CONFIRMATION OF NEGATIVE PLM NOB SAMPLES

LAB.NO.: 05-1066
PROJECT NO.: 101 (TEM)
CLIENT: C.A. Rich Consultants, Inc.
REPORTED SITE ADDRESS: Barret Road Southeast, New York
REPORTED DATE OF SAMPLING: 5/18/05
SAMPLE COLLECTION AGENCY: Client
ANALYTICAL AGENCY: EMSL Analytical, Inc.
ANALYTICAL METHOD: TEM Method For Identifying And Quantitating Asbestos In NOB Bulk Samples NYSDOH-ELAP Manual Item 198.4

Field I.D. Number	PLM I.D. Number	Sample Description	AII %	TEM % Asbestos In AII	Asbestos Type	Final Asbestos Concentration	Final Classification
RT-001	49050	Roofing Tiles	34.7	None Detected	---	None Detected	Not ACM
RT-002	49051	Roofing Tiles	40.2	None Detected	---	None Detected	Not ACM
RT-003	49052	Roofing Tiles	37.7	None Detected	---	None Detected	Not ACM

- = Positive Asbestos Containing Material (ACM) (Greater Than 1% Asbestos)

Note: TEM confirmation of negative NOB's by PLM is not required on those samples which yield an acid insoluble residue of less than 1% of the total original sample

NOTE: This sample was not collected by Testing Mechanics Corp.
If Testing Mechanics Corp. did not collect these samples, we can only certify results for the submitted sample, and not the origination.

N19-04

TESTING MECHANICS CORP.
ENVIRONMENTAL TESTING AND MONITORING
3770 Merrick Rd. Seaford LI New York 11783 (516) 221-3800

CHAIN OF CUSTODY RECORD

CLIENT: CA Rich Consultants, Inc
ADDRESS: 17 Dupont Street Plainview, NY 11803
CONTACT: Rich Izzo
TEL: (516) 576-8844

LAB NO.: OS-10616
SAMPLE LOCATION (Address): Barret Road, Southeast, NY

Outside Services Project Name: Field Corners
Project Number: 101
Project Phase:

Sample I.D. No.	Date Collected	Time	No of Containers	Sample Identification	SAMPLE VOLUME (Liters)	ASBESTOS PCM	ASBESTOS PLM	ASBESTOS TEM	OTHER (Specify)	ADDITIONAL REQUIREMENTS (METHOD)
RT-001	5/18/05		1	Roofing Tiles						1 Homogeneous Area
RT-002	↓		1							Analyze to 1st positive
RT-003	↓		1							

24 hr Turnaround Required

Relinquished by (Signature)	Date/Time	Agent of:	Rec'd. by (Signature)	Date/Time	Agent of:
Printed Name: Richard Izzo	5/19/05 11:15	CA Rich	Printed Name: Heather Fox	5/19 05	TMC
Relinquished by (Signature) / Printed Name	Date/Time	Agent of:	Rec'd. by Laboratory (Signature) / Printed Name	Date/Time	Agent of:
Relinquished by (Signature) / Printed Name	Date/Time	Received for Analysis by (Signature) / Printed Name	Date/Time: 5/19/05	Remarks:	

Sampler (Signature)
Samplers Name (Print)

LAIL Pilot Site- 515-7235 cell phone.

EMSL Analytical Inc. PLM Sheet and Chain of Custody Page 1 Of 1

Client (EMSL's) Testing Mechanics Corp.	Site Address Barret Road Southeast, N.Y.		Date Submitted 5/20/05
Address 3770 Merrick Road Seaford, New York 11783	Work Area Roof		Turn Around Time ~~3 Day~~ (3 Day)
	Fax Results To (516) 221-3810	Call Results To (516) 221-3800	Page Results To
			Number of Samples 3

Analytical Procedure: (Circle One) PLM EPA 600 | PLM P.C. | PLM NOB | PLM VCM | Other | Billing #

Sample Number	Location	Sample Description Color	Comments (All-%)
01	49050	Roofing Tiles	All-34.7
02	49051	Roofing Tiles	All-40.2
03	49052	Roofing Tiles	All-37.7

SAMPLES ACCEPTED FOR ANALYSIS BY EMSL ANALYTICAL INC

06050203012

RECEIVED 05 MAY 20 AM 7:30

Relinquished by (Signature)	Date	Time	Received By (Signature)	Date	Agent Of
	5/20/05	AM			
Relinquished by (Signature)	Date	Time	Received By (Signature)	Date	Agent Of

Appendix B

Disposal Documentation

Automated Waste Disposal, Inc.
307 White Street
Danbury, Connecticut 06810-6974
(845) 279-5353

Invoice Number
92682023

Account Number
TARK772815

Invoice Date
05/31/2005

TARKY CORP
2267 ROUTE 22 (OT)
PATTERSON NY 12563

We will gladly accept your payment by Master Card or Visa.

Master Card: $ _____ Visa: $ _____

Account Number _____ Expiration Date (Mo/Yr) _____

Authorized Signature _____

Payment Enclosed: $ _____

Please Return Top Portion With Your Payment

Service From: 05/01/2005
Service Thru: 05/31/2005
Payment Terms: DUE UPON RECEIPT
*** 1.718% late charge due on balance outstanding more than 30 days from date of invoice *** 1.718% Per month

Quantity	Date Of Service	Transaction Number	Description of Service	Unit Price	Total Charge
			Previous Account Balance		0.00
*** Service For Location ***			TARKY CORP 69 BARETT RD (OT) BREWSTER NY 10509		
1.00	05/26/2005	001131181	PU & NC RET 30 YD CONTAINER	582.50	582.50
8.88	05/26/2005	001131181	DISPOSAL (IN EXCESS OF 5 TONS) > DEBRIS	75.00	666.00
				Sales Tax:	93.64
1.00	05/26/2005	001131182	PU & RET 30 YD CONTAINER	582.50	582.50
14.08	05/26/2005	001131182	DISPOSAL (IN EXCESS OF 5 TONS) > DEBRIS	75.00	1056.00
				Sales Tax:	122.89
1.00	05/31/2005	001131196	PU & NC RET 30 YD CONTAINER	582.50	582.50
7.18	05/31/2005	001131196	DISPOSAL (IN EXCESS OF 5 TONS) > DEBRIS	75.00	538.50
				Sales Tax:	84.08
1.00	05/31/2005	001131197	PU & NC RET 20 YD CONTAINER > TIRES	515.00	515.00
				Sales Tax:	38.63
1.00	05/31/2005	001131198	PU & NC RET 10 YD CONTAINER > REFRIGERATOR	293.55	293.55
				Sales Tax:	22.02
			Current Period Charges For Location:		5177.81
			Total Charges Due:		5177.81

ENVIRO 'TE OIL RECOVERY, LLC
279 Route 6 O. Box 747
Mahopac, NY 10541
Ph: (845) 279-0263
Fax: (845) 621-3075

Enviro Waste
Oil Recovery Specialists
1-866-WASTE-OIL

Sales Order Picking List

Sales Order Number: 31803
Sales Order Date: 5/26/2005
Page:

SOLD TO:

CA RICH CONSULTANTS
17 DUPONT STREET
PLAINVIEW, NY 11803

SHIP TO:

RESIDENT
63 BARRETT ROAD
BREWSTER, NY
516-576-8844

Mike C. 5/27/05

CUSTOMER ID	PO NUMBER	SALES REP NAME
	RICH	ad
CUSTOMER CONTACT	**SHIPPING METHOD**	**PAYMENT TERMS**
	OUR TRUCK	Net 30

DESIGNATED FACILITY ENVIRO WASTE OIL RECOVERY, LLC. STATE ID NO

ADDRESS 279 ROUTE 6, MAHOPAC, N.Y. 10541 USA EPA ID NO NYD044825636

QUANTITY	ITEM	DESCRIPTION	UNIT COST	TOTAL
1	746	VACUUM SERVICE		
10gal 0	700	OILY WATER DISPOSAL		
0	742	SLUDGE DISPOSAL/TANK BOTTOMS		
		SUBTOTAL		
		FRIDAY, @ 10AM, TANK WILL BE CUT OPEN		
	B	INSURANCE SURCHARGE (6%)		
		PUTNAM COUNTY SALES TAX		

CHARGE MY ACCOUNT FOR THIS TRANSACTION UNLESS OTHERWISE INDICATED IN THE PAYMENT SECTION. INVOICES REFLECTING CHARGES ARE SUBJECT TO AN INTEREST RATE OF THE LESSER OR 1-1/2% PER MONTH (18% PER ANNUM) OR THE MAXIMUM RATE ALLOWED BY LAW ON ANY INVOICES THAT ARE NOT PAID WITHIN 30 DAYS. IN THE EVENT OF DEFAULT, ENVIRO WASTE SHALL BE ENTITLED TO RECOVER COSTS OF COLLECTION, INCLUDING REASONABLE ATTORNEY'S FEES. INITIAL

USEPA TRANSPORTER 1 ID NO	GENERATOR USEPA ID NO	GENERATOR STATE ID NO	EMERGENCIES: (866) 927-8364	$
NYD044825636				

US DOT DESCRIPTION	CONTAINERS NO.	TYPE	TOTAL QUANTITY	UNIT WT/VOL
USED OIL, NON REGULATED, (NOT US D.O.T. HAZARDOUS MATERIAL)				
~~PETROLEUM CONTAMINATED WATER NON D.O.T. NON R.C.R.A.~~ Petroleum Contaminated Sludge, Non Reg., (Not U.S.D.O.T. Haz. Mat)	1	FT	10	gal

GENERATOR WARRANTS AND REPRESENTS THAT THE MATERIALS PROVIDED ENVIRO WASTE HEREUNDER HAVE NOT BEEN MIXED, COMBINED, OR OTHERWISE BLENDED IN ANY QUANTITY WITH MATERIALS CONTAINING POLYCHLORINATED BIPHENYLS (PCB) OR ANY OTHER MATERIAL DEFINED AS HAZARDOUS WASTE UNDER APPLICABLE LAWS, INCLUDING BUT NOT LIMITED TO 40 CFR PART 261. GENERATOR AGREES TO INDEMNIFY AND HOLD ENVIRO WASTE HARMLESS FOR ANY DAMAGES, COSTS, ATTORNEY'S FEES, ETC. ARISING OUT OF OR IN ANY WAY RELATED TO A BREACH OF THE ABOVE WARRANTY BY THE GENERATOR.

ENVIRO WASTE, ITS AGENTS AND CONTRACTORS HAVE THE CAPACITY AND ARE AUTHORIZED AND PERMITTED IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS, TO TRANSPORT, ACCEPT, STORE, RECLAIM OR AND/OR DISPOSE OF THE WASTE LISTED ON THIS DOCUMENT.

GENERATOR CERTIFIES THAT THE WASTE IS: ☐ USED OIL ☐ USED ANTI-FREEZE ☐ OILY WATER ☐ OTHER

I CERTIFY THAT MY TOTAL WASTE STREAMS ARE WITHIN ONE OF THE FOLLOWING CATEGORIES:

0 TO 220 LBS/MONTH — INITIALS

220 LBS TO 2,200 LBS/MONTH — INITIALS

GREATER THAN 2,200 LBS/MONTH — INITIALS

PRINT NAME Richard Izzo TITLE Consultant

SIGNATURE DATE 5/27/05

GENERATOR/CUSTOMER

DEXSIL CDT TEST RESULTS

PPM

ECOVERY, LLC
.O. Box 747
, NY 10541
(845) 279-0263
Fax: (845) 621-3075

Enviro Waste
Oil Recovery Specialists
1-866-WASTE-OIL

Sales Order Picking List

Sales Order Number: 31859
Sales Order Date: 5/27/2005
Page:

SOLD TO:

CA RICH CONSULTANTS
17 DUPONT STREET
PLAINVIEW, NY 11803

SHIP TO:

RESIDENT
63 BARRETT ROAD
BREWSTER, NY
516-576-8844

CUSTOMER ID	PO NUMBER	SALES REP NAME
	RICH	ad
CUSTOMER CONTACT	**SHIPPING METHOD**	**PAYMENT TERMS**
	OUR TRUCK	Net 30

DESIGNATED FACILITY ENVIRO WASTE OIL RECOVERY, LLC. STATE ID NO

ADDRESS 279 ROUTE 6, MAHOPAC, N.Y. 10541 USA EPA ID NO NYD044825636

QUANTITY	ITEM	DESCRIPTION	UNIT COST	TOTAL
10	781	55gl DRUM DISPOSAL/SOLIDS, ABSORBENT PADS, SOIL		
		SUBTOTAL		
	B	INSURANCE SURCHARGE (6%)		
		DO TUESDAY. DRUM IN SAME SPOT BY TRACTOR WHERE ENVIRO DROPPED OFF.		
		PUTNAM COUNTY SALES TAX		

CHARGE TO ACCOUNT FOR THIS TRANSACTION UNLESS OTHERWISE INDICATED IN THE PAYMENT SECTION. INVOICES REFLECTING CHARGES ARE SUBJECT TO NINETY (90) DAYS TERMS. A SERVICE CHARGE OF 1.5% PER MONTH (18% PER ANNUM) WILL BE ALLOWED BY SELLER ON ANY INVOICES THAT ARE NOT PAID WITHIN NINETY (90) DAYS. IN THE EVENT OF DEFAULT ENVIRO WASTE OIL RECOVERY, LLC. RECEIVES CLAIMS FOR COLLECTION, YOU WILL BE CHARGED FOR ATTORNEY'S FEES, COSTS

USEPA TRANSPORTER 1 ID NO	GENERATOR USEPA ID NO	GENERATOR STATE ID NO	EMERGENCIES: (866) 927-8364
NYD044825636			

US DOT DESCRIPTION	CONTAINERS NO.	TYPE	TOTAL QUANTITY	UNIT WT/VOL
USED OIL, NON REGULATED, (NOT US D.O.T. HAZARDOUS MATERIAL)				
PETROLEUM CONTAMINATED WATER, NON D.O.T., NON R.C.R.A.				
Non Haz Solids Non Regulated (Not US DOT Hazardous Material)	001	DM	500	P

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ENVIRO WASTE, ITS AGENTS AND CONTRACTORS HAVE THE CAPACITY AND ARE AUTHORIZED AND PERMITTED IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS, TO TRANSPORT, ACCEPT, STORE, RECLAIM OR AND/OR DISPOSE OF THE WASTE LISTED ON THIS DOCUMENT.

GENERATOR CERTIFIES THAT THE WASTE IS: ☐ USED OIL ☐ USED ANTI-FREEZE ☐ OILY WATER ☒ OTHER Non-Haz Solids

I CERTIFY THAT MY TOTAL WASTE STREAMS ARE WITHIN ONE OF THE FOLLOWING CATEGORIES:

0 TO 220 LBS/MONTH
INITIALS

220 LBS TO 2,200 LBS/MONTH
INITIALS

GREATER THAN 2,200 LBS/MONTH
INITIALS

PRINT NAME TITLE

SIGNATURE DATE

GENERATOR/CUSTOMER

DEXSIL CDT TEST RESULTS
PPM <1000

Enviro Waste
1-866-WASTE-OIL

Sales Order Picking List

Sales Order Number: 31547
Sales Order Date: 5/20/2005
Page:

[illegible]79-0263
(845) 621-3075

SOLD TO:

CA RICH CONSULTANTS
17 DUPONT STREET
PLAINVIEW, NY 11803

SHIP TO:

CA RICH CONSULTANTS
63 BARRETT ROAD
BREWSTER, NY
516-576-8844

CUSTOMER ID	PO NUMBER	SALES REP NAME
		ad
CUSTOMER CONTACT	**SHIPPING METHOD**	**PAYMENT TERMS**
	OUR TRUCK	Net 30

DESIGNATED FACILITY ENVIRO WASTE OIL RECOVERY, LLC. STATE ID NO

ADDRESS 279 ROUTE 6, MAHOPAC, N.Y. 10541 USA EPA ID NO NYD044825636

QUANTITY	ITEM	DESCRIPTION	UNIT COST	TOTAL
1	782	55gl DRUM DISPOSAL/EMPTY/OPEN TOP	35.00	35.00T
			Subtotal	$35.00
			Sales Tax (7.5%)	$2.63
			Total	$37.63

[illegible]

USEPA TRANSPORTER 1 ID NO	GENERATOR USEPA ID NO	GENERATOR STATE ID NO	EMERGENCIES: (866) 927-8364
NYD044825636			

US DOT DESCRIPTION	CONTAINERS NO.	CONTAINERS TYPE	TOTAL QUANTITY	UNIT WT/VOL
USED OIL, NON REGULATED, (NOT US D.O.T. HAZARDOUS MATERIAL)				

GENERATOR WARRANTS AND REPRESENTS THAT THE MATERIALS PROVIDED ENVIRO WASTE HEREUNDER HAVE NOT BEEN MIXED, COMBINED, OR OTHERWISE BLENDED IN ANY QUANTITY WITH MATERIALS CONTAINING POLYCHLORINATED BIPHENYLS (PCB) OR ANY OTHER MATERIAL DEFINED AS HAZARDOUS WASTE UNDER APPLICABLE LAWS, INCLUDING BUT NOT LIMITED TO 40 CFR PART 261. GENERATOR AGREES TO INDEMNIFY AND HOLD ENVIRO WASTE HARMLESS FOR ANY DAMAGES, COSTS, ATTORNEY'S FEES, ETC. ARISING OUT OF OR IN ANY WAY RELATED TO A BREACH OF THE ABOVE WARRANTY BY THE GENERATOR.

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GENERATOR CERTIFIES THAT THE WASTE IS: ☐ USED OIL ☐ USED ANTI-FREEZE ☐ OILY WATER ☑ OTHER

I CERTIFY THAT MY TOTAL WASTE STREAMS ARE WITHIN ONE OF THE FOLLOWING CATEGORIES:

0 TO 220 LBS/MONTH — INITIALS

220 LBS TO 2,200 LBS/MONTH — INITIALS

GREATER THAN 2,200 LBS/MONTH — INITIALS

Richard Izzo
PRINT NAME TITLE

SIGNATURE DATE
GENERATOR/CUSTOMER

DEXSIL CDT TEST RESULTS
PPM <10.00

CHAZEN ENVIRONMENTAL SERVICES, INC.

Capital District Office
Phone: (518) 273-0055

Orange County Office
Phone: (845) 567-1133

21 Fox Street, Poughkeepsie, New York 12601
Phone: (845) 454-3980 Fax: (845) 454-4026
Web: www.chazencompanies.com

North Country Office
Phone: (518) 812-0513

June 9, 2005

Jefferson W. Schiller, P.E.
Vice President
US Home Corporation
1401 Route 52, Suite 100
Fishkill, New York 12524

Re: Phase II Environmental Site Assessment
Pugsley Road Site, Town of Southeast, Putnam County New York
Chazen Project # 20510.00

Dear Mr. Schiller:

Chazen Environmental Services, Inc. (CES) appreciates the opportunity to provide our environmental services. In May 2005, CES prepared a Phase I Environmental Site Assessment (ESA) for a site located on Pugsley Road in the Town of Southeast, Putnam County, New York. CES concluded there were a number of recognized environmental conditions (RECs) and was subsequently authorized to begin a Phase II Environmental Site Assessment (ESA) to evaluate the RECs identified for the above-referenced site. This Phase II ESA is now complete, and the findings are discussed herein.

BACKGROUND

The site encompasses portions of three tax lots and a right of way along a portion of Pugsley Road in the Town of Southeast, Putnam County, New York (see Figure 1). The main portion of the site is comprised of two adjoining tax lots bisected by Barrett Road and identified as Section 45, Block 1, Lots 5 and 8, except that the north-central portion (approximately 25 acres) of lot 5 is not included as part of the subject property. The central portion of the main site is located approximately 2,000 feet northwest of the Interstate 84, Exit 19. Two discontiguous 400-foot diameter well fields on a third tax lot (Section 45, Block 1, Lot 12) as well as a 25-foot right-of-way along Pugsley Road comprise the rest of the site. The two well fields are identified as Well Fields 4B-1 and 4B-2.

Local hydrologic features that are most likely affecting groundwater flow are wetlands to the north, east and west of the site, and an intermittent stream that flows through a valley on the site that parallels the eastern property line (see Figure 1).

The Phase I ESA conducted by CES [May 9, 2005] identified the following RECs at the above-referenced property:

- Distressed vegetation and stained soil were observed beneath roof lines of the cow barn and the open-sided, metal framed barn.
- Two (2) miscellaneous pipes were noted at the northwestern corner of the open-sided, metal framed barn. The purpose(s) of these pipes are unknown and they could be related to an underground tank or an avenue for subsurface disposal.
- A review of the 2001 orthophoto for the subject property indicates that the southwestern area of the field slightly north of the on-site structures was formerly used to store cars. Motor vehicle fluids could have been spilled.
- An historic aerial photograph shows orchards to be present in the northeastern most field. Pesticide usage is typically associated with orchards. Pesticides, herbicides and the associated metals lead and arsenic could potentially be present in this area.
- A fill port and vent pipe for a 1,000-gallon underground storage tank (UST) was observed near the northern exterior wall of the on-site residence. This UST is believed to store fuel oil for the residential heating system. The integrity of this UST is unknown.
- An approximate 3,000-4,000 square-foot area of debris was observed on the southeastern portion of the subject property. The debris in this area included glass, furniture, 55-gallon and 5-gallon containers, metal and wood debris, asphalt, miscellaneous small machinery, tires, beverage containers, and a former car gas tank. There is potential for contamination in this area

This Phase II ESA concentrated on evaluating: 1) shallow soil in black stained areas and in areas potentially impacted by pesticides, herbicides and the associated heavy metals lead and arsenic, and 2) overburden soil in other areas for impacts from volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and heavy metals.

SUBSURFACE INVESTIGATION

On May 23 and 24, 2005, a CES subcontractor advanced soil borings in nine (9) locations at the site and CES collected shallow surface soil samples at four (4) other locations (see Figures 2, 3 and 4 attached). The soil boring locations are identified as SB-1 through SB-9, and the surface soil samples are identified as SS-1 through SS-4. Soil borings were installed using a track-mounted Geoprobe® drilling rig. The Geoprobe® rig utilizes direct-push drilling technology to advance four-foot stainless steel soil coring samplers. A plastic sleeve is placed in a split-spoon sampler and the in-situ soil coring occurs with minimal disturbance. Shallow surface soil samples were collected using manual techniques.

1. Two soil borings and two surface soil samples were collected to evaluate: a) black stained soil beneath the roof lines of the cow barn and the open-sided, metal framed barn, b) findings of a diesel UST closure and c) the miscellaneous pipes protruding from the ground at the northwest corner of the open-sided, metal framed barn.

   - Surface soil sample SS-1 and soil boring SB-1 were both located south of the open sided metal framed barn.

   - SS-1 included the upper six inches of the black stained soil.

   - Soil boring SB-1 could not be located directly through the black staining at SS-1 due to its proximity to the building and the size of the Geoprobe rig, but it was located approximately 10 feet southwest of sample SS-1.

   - Soil boring SB-1 was located in the vicinity of a closed diesel UST. This UST closure was evaluated during the Phase I ESA, and the documentation reviewed indicates there was no release of diesel fuel to surrounding soil. Although this diesel UST closure is not a REC, the location of SB-1 served to re-confirm those findings as well as evaluate deeper impacts from the black staining nearby at SS-1.

   - Surface sample SS-2 was located north of the cow barn, and it included the upper six inches of the black stained soil.

   - Soil boring SB-2 was located near the northwest corner of the open-sided metal framed barn and was conveniently selected to evaluate both deeper impacts from the black stained soil and the two miscellaneous pipes protruding from the ground.

2. Soil borings SB-3 and SB-4 were located within the former Vehicle Storage Area identified in the 2001 aerial photograph

- SB-3 was located 30 feet north of the northeast corner of the Hay Barn where vehicle storage was observed

- SB-4 was located 30 feet north of the northwest corner of the Hay Barn where vehicle storage was observed

3. Four surface soil samples were collected from locations SS-3 and SS-4 (one shallow 0 to 2 inches below ground and one slightly deeper at 4 to 6 inches below ground from each location) in areas where orchards appeared to be present in historical aerial photographs (See Figure 2).

4. Two soil borings SB-5 and SB-6 were installed in the vicinity of the of the fuel oil UST

5. Three soil borings SB-7, SB-8 and SB-9 were installed in the debris area.

The nine borings were advanced to depths ranging from 5.8 to 16 feet bgs. Refusal was encountered in one boring location: SB-2 at 5.8 feet bgs. Based on the type of rock observed in the soil boring from SB-2, refusal was determined to be caused by reaching the bedrock surface. The geology observed during the investigation revealed that native overburden soils are predominantly silt with occasional sand, gravel or clay overlying dense glacial till. Saturated or wet conditions indicative of groundwater were not found in any location. The impermeable nature of the dense glacial till suggests that when groundwater encounters it, it is likely to flow laterally until it seeps out of steep terrain towards the downgradient stream or wetlands

Soil boring/surface soil logs describing subsurface conditions are attached. Soil samples from each boring were evaluated for staining and odors indicative of petroleum or chemicals and also screened with a photo ionization detector (PID) for volatile organic compound vapors. No evidence of petroleum or chemical impacts was detected in any of the soil samples evaluated.

The black stained soil beneath the roof lines had a discoloration, but that does not necessarily indicate petroleum or chemical contamination. It could be bacterial or fungal growths or an innocuous substance. The surface soil samples SS-1 and SS-2 contained no other field indicators of contamination such as odor or organic vapors measured with the PID. Pesticides, herbicides and the associated metals lead and arsenic have no field indicators and can only be detected by laboratory analysis of soil samples.

DEBRIS REMOVAL

On May 23 and 24, 2005, a contractor for the owner was observed working onsite with an excavator to remove material from the debris area. The material had been pulled into a pile approximately 10 feet high in the center. Tires had been sorted and stockpiled separately. Roll-off containers were onsite for loading and disposal of the debris. We were told that debris removal would continue until the end of the week. We subsequently received a phone call the following week and returned to the site to conduct a visual inspection. Photographs of the final condition of this area of the property are attached. The vast majority of the debris appeared to have been removed. There were some minor fragments of plastic, metal, paper and glass that were compacted in the upper few inches of soil. It appears that it was infeasible to sort and remove these materials. Based on analytical testing discussed below, it is unlikely that this material would pose a significant environmental threat. However, you may wish to have it removed for other reasons. In that event, it would be appropriate to address the removal of this remaining debris with the owner

SAMPLE COLLECTION

This Phase II ESA included collection of shallow soil samples and deeper soil samples for laboratory analysis. Shallow soil samples from SS-1, SS-3 (two depths 0 to 2 inches bgs and 4 to 6 inches bgs) and SS-4 (two depths 0 to 2 inches bgs and 4 to 6 inches bgs) were packed in appropriate containers with ice and submitted for laboratory analysis.

The sample of black stained soil from SS-1 was analyzed for a wide variety of parameters including VOCs by EPA Method 8260, ethylene glycol by gas chromatography direct aqueous injection (GC/DAI), SVOCs by EPA Method 8270 STARS and eight heavy metals by EPA Methods 6010 and 7470.

The samples from SS-3 and SS-4 were analyzed for pesticides and herbicides by EPA Method 8081 and the associated heavy metals lead and arsenic by EPA Method 6010.

Deeper soil samples from SB-1, SB-3, SB-5, SB-8 and SB-9 were packed in appropriately preserved containers and submitted for laboratory analysis as discussed below.

The sample from soil boring SB-1 was representative of the 4 to 8 feet bgs interval near the black stained soil from location SS-1. This sample was analyzed for the same wide variety of parameters as the shallow sample from SS-1

Two samples were submitted for analysis from SB-3: one from 0 to 6 inches bgs interval and one from the 4 to 8 feet bgs interval. Both samples were analyzed for a variety of automotive-related parameters including VOCs by EPA Method 8260, ethylene glycol by GC/DAI, SVOCs by EPA Method 8270 STARS and lead by EPA Method 6010.

One sample was submitted for analysis from SB-5 from the 4 to 8 feet bgs interval in close proximity to the bottom of the fuel oil UST. This sample was analyzed for fuel-oil-related parameters including VOCs by EPA Method 8021 STARS and SVOCs by EPA Method 8270 STARS.

One soil sample was submitted from SB-8 and one from SB-9. These samples represented the 0 to 4 feet bgs interval from each location. These samples were analyzed for the same wide variety of parameters at SS-1. Deeper soil in these two locations and SB-7 (i.e. the debris area) are significantly denser than upper soils. These observations suggest that groundwater and water soluble contaminants therein will flow laterally, seep out of the steep hillside and leave the deeper soils relatively uncontaminated. Based on this information and the lack of observable field indicators of contamination, no deeper soil samples in the debris area appeared to require laboratory analysis.

ANALYTICAL RESULTS AND DISCUSSION

All samples were sent to York Analytical Laboratories, Inc. (YAL) of Stratford, CT for analysis. The laboratory analytical report is attached. The results are summarized and compared to NYSDEC and/or USEPA standards or guidance values in Table 1, 2, 3 and 4 attached.

Table 1 summarizes the analytical results for VOCs (including ethylene glycol) in soil samples and compares them to Recommended Soil Cleanup Objectives in the NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) # 4046. No VOCs were detected in any of the samples.

Table 2 summarizes the analytical results for SVOCs in soil samples and compares them to Recommended Soil Cleanup Objectives in the TAGM # 4046. No SVOCs were detected in any of the samples.

Table 3 summarizes the analytical results for heavy metals in soil samples, except lead and arsenic associated with pesticides which are included in Table 4. The results in Table 3 are compared to range of Eastern USA Background concentrations for each metal. All metals were either not detected in these samples or detected at a concentration within the range of Eastern USA Background concentrations, except lead in the surface soil sample from SS-1. Lead was detected

at 78.8 parts per million (ppm) which is slightly above the background range for rural areas of 4 to 61 ppm and other samples collected at this site. This sample was of the black stained soil below the roof line of one of the barns, and it implies that all of the black stained soil would have a slightly elevated lead concentration. It is important to note that the lead concentration detected in the deeper sample in this vicinity (SB-1) was within the range of Eastern USA Background concentrations suggesting that the lead in the surface soil is insoluble in water. The concentration in sample SS-1 is too low (below 100 parts per million) for this soil to be considered a hazardous waste. The source of the lead could be some type of sealant applied to the roof that had washed off over the years.

Table 4 summarizes the analytical results for pesticides and the associated heavy metals lead and arsenic. The pesticide results are compared to Recommended Soil Cleanup Objectives in the TAGM # 4046. No pesticides were detected. Lead and arsenic concentration were compared to the range of Eastern USA Background concentrations for each metal. All metals were detected at a concentration within the range of Eastern USA Background concentrations.

Based on the soil sampling and laboratory analysis conducted under this Phase II ESA, there is no significant contamination at the Pugsley Road site. There is a slightly elevated lead concentration in black stained surface soil along the roof lines of two barns. Based on the lead concentration detected in the sample, this soil would not be considered a hazardous waste. It may be advisable to excavate this black stained soil based on visual observation of discoloration (which appears to be no deeper than two inches below ground) and dispose of it along with construction and demolition debris, since it would be an ordinary solid waste. The volume of soil is estimated to be less than 3 cubic yards.

CLOSING

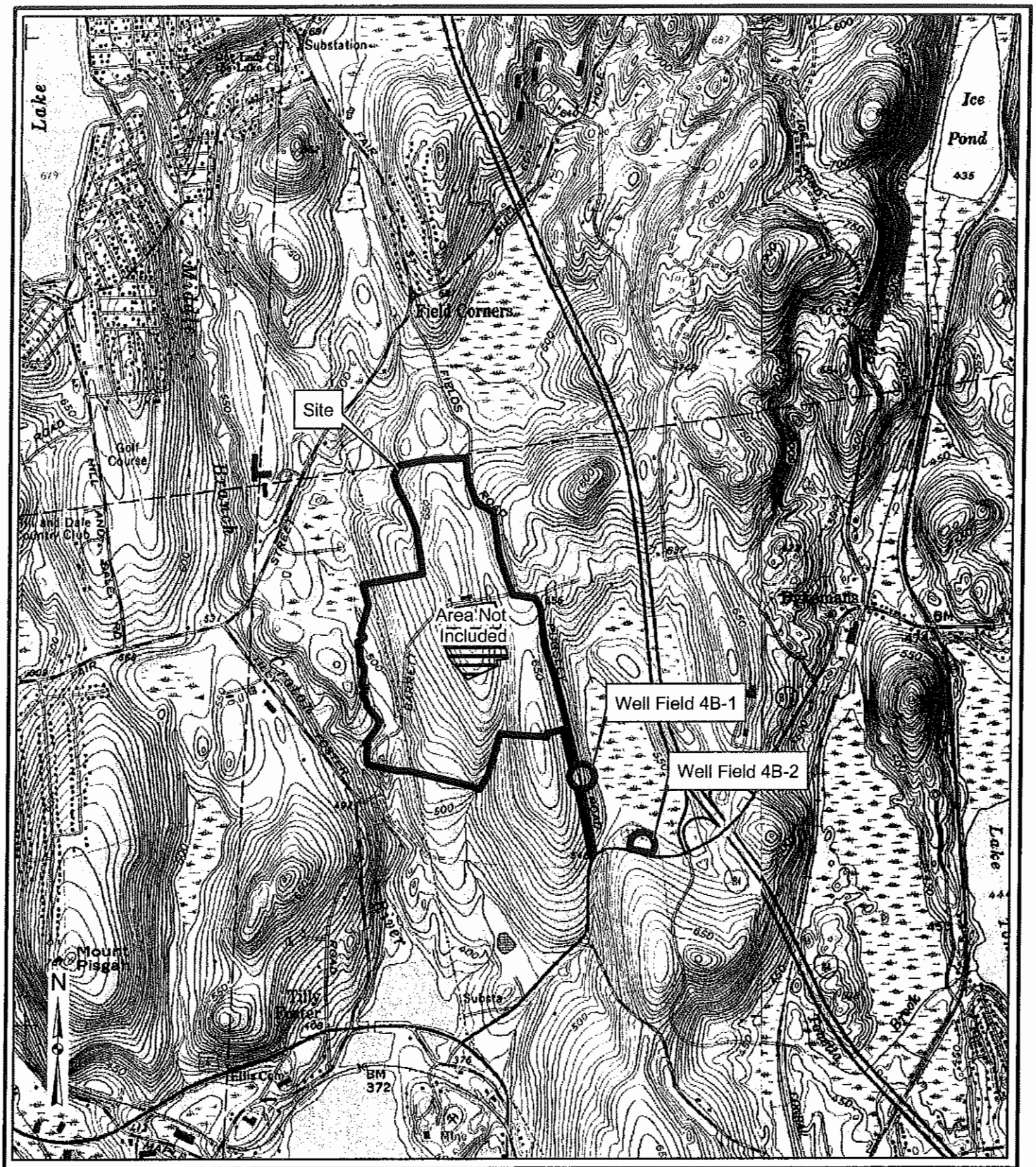
Please feel free to call me at 845-454-3980, if you have any questions or need additional information.

Sincerely,

Charles P. Alongi
Senior Environmental
Scientists & Project
Manager

CA/encl.

cc: D. McClure, P.E. - CES



THE Chazen COMPANIES

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GIS CONSULTANTS

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Orange County Office:
263 Route 17K Newburgh, NY 12550

Capital District Office:
20 Gurley Avenue Troy, NY 12182

Glens Falls Office:
110 Glen Street Glens Falls, NY 12801

FIGURE 1-SITE LOCATION MAP

Putnam Seabury Partners LLC Property

Pugsley Road, Barrett Road, and Route 312

Town of South East, Putnam County, New York

USGS Topographic Map of the Lake Carmel, NY Quadrangle Dated 1981. Photo Revised 1988. 7.5 Minute Series. Putnam County Real Property Services - Tax Parcel Data

Date:
April 2005

Scale:
1 inch:2,000 feet

Project #:
20510.00

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110 Glen Street Glens Falls, NY 12801

FIGURE 2 - 2001 ORTHOPHOTO

Putnam Seabury Partners LLC Property
Pugsley Road, Barrett Road, and Route 312
Town of South East, Putnam County, New York

NYS Office of Technology Orthophoto Data
Putnam County Real Property Services - Tax Parcel Data

Date:
June 2005

Scale:
1 inch:1,000 feet

Project #:
20510.00

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FIGURE 3 - BUILDING AREA SAMPLE LOCATIONS

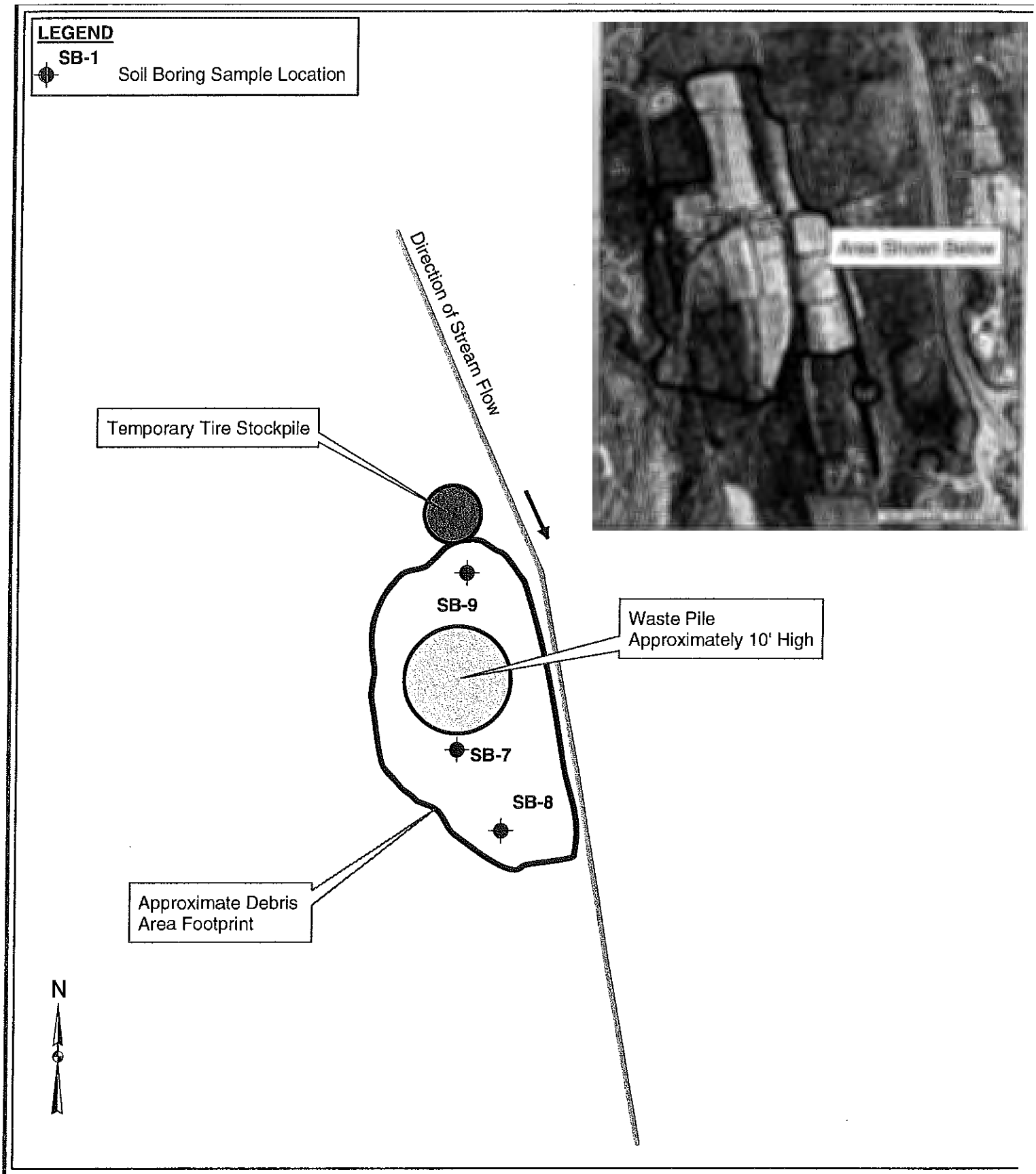
Putnam Seabury Partners LLC Property
Pugsley Road, Barrett Road, and Route 312
Town of South East, Putnam County, New York

NYS Office of Technology Orthophoto Data
Putnam County Real Property Services - Tax Parcel Data

Date:
June 2005

Scale:
1 inch:50 feet

Project #:
20510.00



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Capital District Office:
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Glens Falls Office:
110 Glen Street Glens Falls, NY 12801

FIGURE 4- DEBRIS AREA SAMPLE LOCATIONS

Putnam Seabury Partners LLC Property
Pugsley Road, Barrett Road, and Route 312
Towu of South East, Putnam County, New York

NYS Office of Technology Orthophoto Data
Putnam County Real Property Services - Tax Parcel Data

Date:
June 2005

Scale:
1 inch:25 feet

Project #:
20510.00

Photo 1
View of debris area facing northeast.

Photo 2
View of debris area facing southeast.

Photo 3
Representative view of minor fragments of debris in upper few inches of soil.

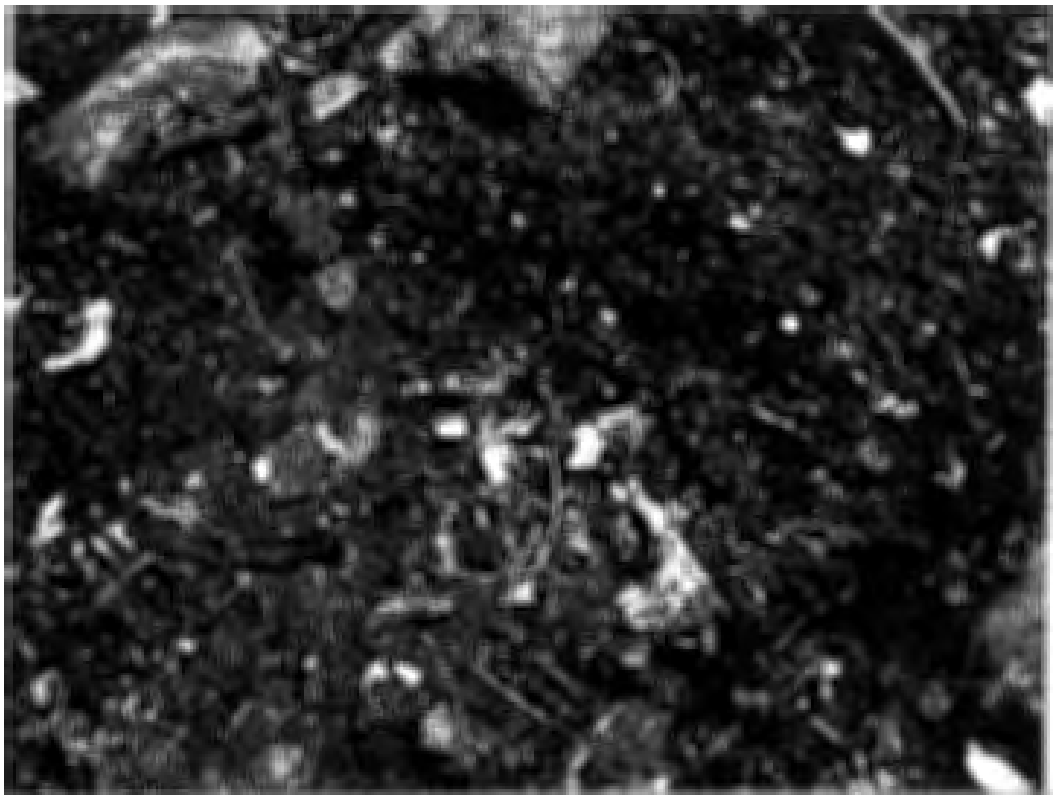

Photo 4
Representative view of minor fragments of debris in upper few inches of soil.

Photo 5
Representative view of 8 inch deep hole dug through the debris area.

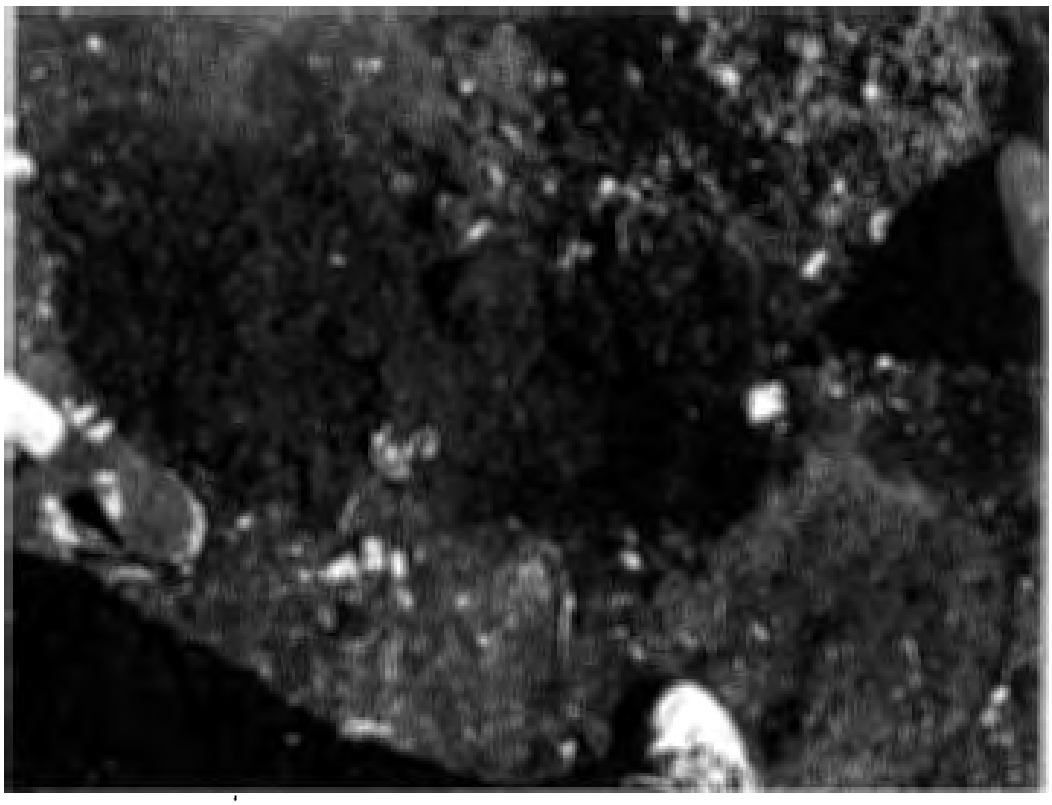

Photo 6
Representative view of 8 inch deep hole dug through the debris area.

Table 1 - Summary of Volatile Organic Compounds in Soil Samples
Pugsley Road Site, Town of Southeast, Putnam County, New York

		Sample ID	SS-1:0-4in	SB-1:4-8'	SB-8:0-4'	SB-9:0-4'	SB-6:4-8'	SB-3:0-6in	SB-3:4-8'
		Sample Date	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005
EPA 8260- List	Units	TAGM #4046 Soil Cleanup Objective	Results						
1,1,1,2-Tetrachloroethane	ppb	**	ND-	ND	ND	ND	NA	ND	ND
1,1,1-Trichloroethane		800	ND	ND	ND	ND	NA	ND	ND
1,1,2,2-Tetrachloroethane		600	ND	ND	ND	ND	NA	ND	ND
1,1,2-Trichloroethane		**	ND	ND	ND	ND	NA	ND	ND
1,1-Dichloroethane		200	ND	ND	ND	ND	NA	ND	ND
1,1-Dichloroethylene		**	ND	ND	ND	ND	NA	ND	ND
1,1-Dichloropropylene		**	ND	ND	ND	ND	NA	ND	ND
1,2,3-Trichlorobenzene		**	ND	ND	ND	ND	NA	ND	ND
1,2,3-Trichloropropane		400	ND	ND	ND	ND	NA	ND	ND
1,2,3-Trimethylbenzene		**	ND	ND	ND	ND	NA	ND	ND
1,2,4-Trichlorobenzene		3,400	ND	ND	ND	ND	NA	ND	ND
1,2,4-Trimethylbenzene		10,000	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane		**	ND	ND	ND	ND	NA	ND	ND
1,2-Dibromoethane		**	ND	ND	ND	ND	NA	ND	ND
1,2-Dichlorobenzene		7,900	ND	ND	ND	ND	NA	ND	ND
1,2-Dichloroethane		100	ND	ND	ND	ND	NA	ND	ND
1,2-Dichloroethylene (Total)		**	ND	ND	ND	ND	NA	ND	ND
1,2-Dichloropropane		**	ND	ND	ND	ND	NA	ND	ND
1,3,5-Trimethylbenzene		3,300	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene		1,600	ND	ND	ND	ND	NA	ND	ND
1,3-Dichloropropane		300	ND	ND	ND	ND	NA	ND	ND
1,4-Dichlorobenzene		8,500	ND	ND	ND	ND	NA	ND	ND
1-Chlorohexane		**	ND	ND	ND	ND	NA	ND	ND
2,2-Dichloropropane		**	ND	ND	ND	ND	NA	ND	ND
2-Chlorotoluene		**	ND	ND	ND	ND	NA	ND	ND
4-Chlorotoluene		**	ND	ND	ND	ND	NA	ND	ND
Benzene		60	ND	ND	ND	ND	ND	ND	ND
Bromobenzene		**	ND	ND	ND	ND	NA	ND	ND
Bromochloromethane		**	ND	ND	ND	ND	NA	ND	ND
Bromodichloromethane		**	ND	ND	ND	ND	NA	ND	ND
Bromoform		**	ND	ND	ND	ND	NA	ND	ND
Bromomethane		**	ND	ND	ND	ND	NA	ND	ND
Carbon Tetrachloride		600	ND	ND	ND	ND	NA	ND	ND
Chlorobenzene		1,700	ND	ND	ND	ND	NA	ND	ND
Chloroethane		1,900	ND	ND	ND	ND	NA	ND	ND
Chloroform		300	ND	ND	ND	ND	NA	ND	ND
Chloromethane		**	ND	ND	ND	ND	NA	ND	ND

Table 1 - Summary of Volatile Organic Compounds in Soil Samples
Pugsley Road Site, Town of Southeast, Putnam County, New York

		Sample ID	SS-1:0-4in	SB-1:4-8'	SB-8:0-4'	SB-9:0-4'	SB-6:4-8'	SB-3:0-6in	SB-3:4-8'
		Sample Date	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005
EPA 8260- List	Units	TAGM #4046 Soil Cleanup Objective	Results						
cis-1,3-Dichloropropylene	ppb	**	ND	ND	ND	ND	NA	ND	ND
Dibromochloromethane		**	ND	ND	ND	ND	NA	ND	ND
Dibromomethane		**	ND	ND	ND	ND	NA	ND	ND
Dichlorodifluoromethane		**	ND	ND	ND	ND	NA	ND	ND
Ethylbenzene		5,500	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene		**	ND	ND	ND	ND	NA	ND	ND
Isopropylbenzene		2,300	ND	ND	ND	ND	ND	ND	ND
Methylene chloride		100	ND	ND	ND	ND	NA	ND	ND
Methyl tert-butyl ether		120	ND	ND	ND	ND	ND	ND	ND
Naphthalene		13,000	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene		10,000	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene		3,700	ND	ND	ND	ND	ND	ND	ND
o-Xylene		1,200 (total)	ND	ND	ND	ND	ND	ND	ND
p-&m-Xylenes			ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene		10,000	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene		10,000	ND	ND	ND	ND	ND	ND	ND
Styrene		**	ND	ND	ND	ND	NA	ND	ND
tert-Butylbenzene		10,000	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene		**	ND	ND	ND	ND	NA	ND	ND
Toluene		1,500	ND	ND	ND	ND	ND	ND	ND
Total Xylenes			NA	NA	NA	NA	ND	ND	ND
trans-1,3-Dichloropropylene		**	ND	ND	ND	ND	NA	ND	ND
Trichloroethylene		**	ND	ND	ND	ND	NA	ND	ND
Trichlorofluoromethane		**	ND	ND	ND	ND	NA	ND	ND
Vinyl chloride		200	ND	ND	ND	ND	NA	ND	ND
Etylene Glycol			ND	ND	ND	ND	NA	ND	ND

ppb = parts per billion
"ND" indicates that the compound was not detected at a concentration equal to or greater than the Method Detection Limit.
"NA" indicates that the compound was not analyzed

** This compound has no specifc limit, however, as per TAGM #4046, individual and sum of deteced VOC's have a limit of 10,000 ppb

Table 2 - Summary of Semi-Volatile Organic Compounds in Soil Samples
Pugsley Road Site, Town of Southeast, Putnam County, New York

		Sample ID	SS-1:0-4in	SB-1:4-8'	SB-8:0-4'	SB-9:0-4'	SB-6:4-8'	SB-3:0-6in	SB-3:4-8'
		Sample Date	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005
Semi-Volatiles EPA 8270 STARS	**Units**	**TAGM #4046 Cleanup Objective**	**Results**						
Acenaphthene	ppb	50	ND	ND	ND	ND	ND	ND	ND
Anthracene		50	ND	ND	ND	ND	ND	ND	ND
Benz(a)anthracene		0.224 or MDL	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene		0.061 or MDL	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene		0.22 or MDL	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,I)perylene		50	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene		.22 or MDL	ND	ND	ND	ND	ND	ND	ND
Chyrsene		0.4	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthrace		.0143 or MDL	ND	ND	ND	ND	ND	ND	ND
Fluoranthene		50	ND	ND	ND	ND	ND	ND	ND
Fluorene		50	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyre		3.2	ND	ND	ND	ND	ND	ND	ND
Naphthalene		13	ND	ND	ND	ND	ND	ND	ND
Phenanthrene		50	ND	ND	ND	ND	ND	ND	ND
Pyrene		50	ND	ND	ND	ND	ND	ND	ND

ppb = parts per billion
"ND" indicates that the compound was not detected at a concentration equal to or greater than the Method Detection Limit.
** This compound has no specifc limit, however, as per TAGM #4046, individual and sum of deteced SVOC's have a limit of 50,000 ppb

Table 3 - Summary of Heavy Metals in Soil Samples
Pugsley Road Site, Town of Southeast, Putnam County, New York

		Sample ID	SS-1:0-4in	SB-1:4-8'	SB-8:0-4'	SB-9:0-4'	SB-3:0-6in	SB-3:4-8'
		Sample Date	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005	5/23/2005
RCRA Metals	**Units**	**TAGM #4046 Eastern USA Background Concentrations**	**Results**					
Arsenic	ppm	3-12	1.19	5.97	4.73	3.47	NA	NA
Barium		15-600	22.1	114	63.9	66.6	NA	NA
Cadmium		0.1-1.0	5.15	0.56	ND	ND	NA	NA
Chromium		1.5-40	4.80	24.5	15.9	12.7	NA	NA
Lead*		4-61	**78.8**	8.52	8.25	14.4	10.5	8.14
Selenium		0.1-3.9	1.64	2.61	2.46	2.99	NA	NA
Silver		NA	ND	ND	ND	ND	NA	NA
Mercury		.001-0.2	ND	ND	0.17	ND	NA	NA

ppm = parts per million
"ND" indicates that the compound was not detected at a concentration equal to or greater than the Method Detection Limit.
"NA" indicates the compound was not analyzed
* Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm.
Results that exceed Eastern USA Background Concentrations are shown in bold type.

Table 4 - Summary of Pesticides, Herbicides, Lead and Arsenic in Soil Samples
Pugsley Road Site, Town of Southeast, Putnam County, New York

		Sample ID	SS-3:0-2in	SS-3:4-6in	SS-4:0-2in	SS-4:4-6in
		Sample Date	5/23/2005	5/23/2005	5/23/2005	5/23/2005
8080 List-Pesticides	**Units**	**TAGM #4046 Soil Cleanup Objective**	**Results**			
4,4'-DDD	ppb	2900	ND	ND	ND	ND
4,4'-DDE		2100	ND	ND	ND	ND
4,4'-DDT		2100	ND	ND	ND	ND
Aldrin		41	ND	ND	ND	ND
alpha-BHC		110	ND	ND	ND	ND
beta-BHC		200	ND	ND	ND	ND
Chlordane		540	ND	ND	ND	ND
delta-BHC		300	ND	ND	ND	ND
Dieldrin		44	ND	ND	ND	ND
Endosulfan I		900	ND	ND	ND	ND
Endosulfan II		900	ND	ND	ND	ND
Endosulfan Sulfate		1000	ND	ND	ND	ND
Endrin		100	ND	ND	ND	ND
Endrin aldehyde		N/A	ND	ND	ND	ND
gamma-BHC (Lindane)		60	ND	ND	ND	ND
Heptachlor		100	ND	ND	ND	ND
Heptachlor epoxide		20	ND	ND	ND	ND
Methoxychlor		*	ND	ND	ND	ND
Toxaphene		NA	ND	ND	ND	ND
Metal	**Units**	**TAGM #4046 Eastern USA Background Concentrations**	**Results**			
Arsenic	ppm	3-12	4.71	4.71	4.70	4.74
Lead**		4-61	14.9	15.9	24.4	22.0

ppb = parts per billion
* This compound has no specifc limit, however, as per TAGM #4046, individual and sum of deteced VOC's have a limit of 10,000 ppb

** Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm.

ppm = parts per million
"ND" indicates that the compound was not detected at a concentration equal to or greater than the Method Detection Limit.

YORK
ANALYTICAL LABORATORIES, INC.

Technical Report

prepared for

Chazen Environmental Services
21 Fox Street
Poughkeepsie, NY 12601
Attention: Catherine Monian

Report Date: 6/6/2005
Re: Client Project ID: 20510.00 Task 0300
York Project No.: 05050942

CT License No. PH-0723 New York License No. 10854

120 RESEARCH DRIVE STRATFORD, CT 06615 (203) 325-1371 FAX (203) 357-0166

Report Date: 6/6/2005
Client Project ID: 20510.00 Task 0300
York Project No.: 05050942

Chazen Environmental Services
21 Fox Street
Poughkeepsie, NY 12601
Attention: Catherine Monian

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 05/27/05. The project was identifed as your project "20510.00 Task 0300 ".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables .

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

Analysis Results

Client Sample ID			SS-1:0-4in		SB-1:4-8'	
York Sample ID			05050942-01		05050942-02	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260 list	SW846-8260	ug/Kg	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,1-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1,2,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,2-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethylene			Not detected	5.0	Not detected	5.0
1,1-Dichloropropylene			Not detected	5.0	Not detected	5.0
1,2,3-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,3-Trichloropropane			Not detected	5.0	Not detected	5.0
1,2,3-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2-Dibromo-3-chloropropane			Not detected	5.0	Not detected	5.0
1,2-Dibromoethane			Not detected	5.0	Not detected	5.0
1,2-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,2-Dichloroethane			Not detected	5.0	Not detected	5.0

YORK

Client Sample ID			SS-1:0-4in		SB-1:4-8'	
York Sample ID			05050942-01		05050942-02	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
1,2-Dichloroethylene (Total)			Not detected	5.0	Not detected	5.0
1,2-Dichloropropane			Not detected	5.0	Not detected	5.0
1,3,5-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,3-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,3-Dichloropropane			Not detected	5.0	Not detected	5.0
1,4-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1-Chlorohexane			Not detected	5.0	Not detected	5.0
2,2-Dichloropropane			Not detected	5.0	Not detected	5.0
2-Chlorotoluene			Not detected	5.0	Not detected	5.0
4-Chlorotoluene			Not detected	5.0	Not detected	5.0
Benzene			Not detected	5.0	Not detected	5.0
Bromobenzene			Not detected	5.0	Not detected	5.0
Bromochloromethane			Not detected	5.0	Not detected	5.0
Bromodichloromethane			Not detected	5.0	Not detected	5.0
Bromoform			Not detected	5.0	Not detected	5.0
Bromomethane			Not detected	5.0	Not detected	5.0
Carbon tetrachloride			Not detected	5.0	Not detected	5.0
Chlorobenzene			Not detected	5.0	Not detected	5.0
Chloroethane			Not detected	5.0	Not detected	5.0
Chloroform			Not detected	5.0	Not detected	5.0
Chloromethane			Not detected	5.0	Not detected	5.0
cis-1,3-Dichloropropylene			Not detected	5.0	Not detected	5.0
Dibromochloromethane			Not detected	5.0	Not detected	5.0
Dibromomethane			Not detected	5.0	Not detected	5.0
Dichlorodifluoromethane			Not detected	5.0	Not detected	5.0
Ethylbenzene			Not detected	5.0	Not detected	5.0
Hexachlorobutadiene			Not detected	5.0	Not detected	5.0
Isopropylbenzene			Not detected	5.0	Not detected	5.0
Methylene chloride			Not detected	5.0	Not detected	5.0
MTBE			Not detected	5.0	Not detected	5.0
Naphthalene			Not detected	5.0	Not detected	5.0
n-Butylbenzene			Not detected	5.0	Not detected	5.0
n-Propylbenzene			Not detected	5.0	Not detected	5.0
o-Xylene			Not detected	5.0	Not detected	5.0
p- & m-Xylenes			Not detected	5.0	Not detected	5.0
p-Isopropyltoluene			Not detected	5.0	Not detected	5.0
sec-Butylbenzene			Not detected	5.0	Not detected	5.0
Styrene			Not detected	5.0	Not detected	5.0
tert-Butylbenzene			Not detected	5.0	Not detected	5.0
Tetrachloroethylene			Not detected	5.0	Not detected	5.0
Toluene			Not detected	5.0	Not detected	5.0
trans-1,3-Dichloropropylene			Not detected	5.0	Not detected	5.0
Trichloroethylene			Not detected	5.0	Not detected	5.0
Trichlorofluoromethane			Not detected	5.0	Not detected	5.0
Vinyl chloride			Not detected	5.0	Not detected	5.0
STARS Target Semi-Volatiles	SW846-8270	ug/kG	---	---	---	---
Acenaphthene			Not detected	48	Not detected	48
Anthracene			Not detected	32	Not detected	32
Benzo[a]anthracene			Not detected	46	Not detected	46
Benzo[a]pyrene			Not detected	48	Not detected	48
Benzo[b]fluoranthene			Not detected	38	Not detected	38

YORK

Client Sample ID			SS-1:0-4in		SB-1:4-8'	
York Sample ID			05050942-01		05050942-02	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Benzo[g,h,i]perylene			Not detected	55	Not detected	55
Benzo[k]fluoranthene			Not detected	91	Not detected	91
Chrysene			Not detected	45	Not detected	45
Dibenz[a,h]anthracene			Not detected	47	Not detected	47
Fluoranthene			Not detected	41	Not detected	41
Fluorene			Not detected	60	Not detected	60
Indeno[1,2,3-cd]pyrene			Not detected	54	Not detected	54
Naphthalene			Not detected	38	Not detected	38
Phenanthrene			Not detected	45	Not detected	45
Pyrene			Not detected	56	Not detected	56
Total RCRA Metals	SW846	mg/kG	---	---	---	---
Arsenic, total			1.19	1.00	5.97	1.00
Barium, total			22.1	0.50	114	0.50
Cadmium, total			5.15	0.50	0.56	0.50
Chromium, total			4.80	0.50	24.5	0.50
Lead, total			78.8	0.50	8.52	0.50
Selenium, total			1.64	1.00	2.61	1.00
Silver, total			Not detected	0.50	Not detected	0.50
Mercury	SW846-7471	mg/kG	Not detected	0.10	Not detected	0.10
Ethylene Glycol	GC/DAI	mg/Kg	Not detected	20.0	Not detected	20.0

Client Sample ID			SB-8:0-4'		SB-9:0-4'	
York Sample ID			05050942-03		05050942-04	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260 list	SW846-8260	ug/Kg	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,1-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1,2,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,2-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethylene			Not detected	5.0	Not detected	5.0
1,1-Dichloropropylene			Not detected	5.0	Not detected	5.0
1,2,3-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,3-Trichloropropane			Not detected	5.0	Not detected	5.0
1,2,3-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2-Dibromo-3-chloropropane			Not detected	5.0	Not detected	5.0
1,2-Dibromoethane			Not detected	5.0	Not detected	5.0
1,2-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,2-Dichloroethane			Not detected	5.0	Not detected	5.0
1,2-Dichloroethylene (Total)			Not detected	5.0	Not detected	5.0
1,2-Dichloropropane			Not detected	5.0	Not detected	5.0
1,3,5-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,3-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,3-Dichloropropane			Not detected	5.0	Not detected	5.0
1,4-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1-Chlorohexane			Not detected	5.0	Not detected	5.0

YORK

Client Sample ID			SB-8:0-4'		SB-9:0-4'	
York Sample ID			05050942-03		05050942-04	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
2,2-Dichloropropane			Not detected	5.0	Not detected	5.0
2-Chlorotoluene			Not detected	5.0	Not detected	5.0
4-Chlorotoluene			Not detected	5.0	Not detected	5.0
Benzene			Not detected	5.0	Not detected	5.0
Bromobenzene			Not detected	5.0	Not detected	5.0
Bromochloromethane			Not detected	5.0	Not detected	5.0
Bromodichloromethane			Not detected	5.0	Not detected	5.0
Bromoform			Not detected	5.0	Not detected	5.0
Bromomethane			Not detected	5.0	Not detected	5.0
Carbon tetrachloride			Not detected	5.0	Not detected	5.0
Chlorobenzene			Not detected	5.0	Not detected	5.0
Chloroethane			Not detected	5.0	Not detected	5.0
Chloroform			Not detected	5.0	Not detected	5.0
Chloromethane			Not detected	5.0	Not detected	5.0
cis-1,3-Dichloropropylene			Not detected	5.0	Not detected	5.0
Dibromochloromethane			Not detected	5.0	Not detected	5.0
Dibromomethane			Not detected	5.0	Not detected	5.0
Dichlorodifluoromethane			Not detected	5.0	Not detected	5.0
Ethylbenzene			Not detected	5.0	Not detected	5.0
Hexachlorobutadiene			Not detected	5.0	Not detected	5.0
Isopropylbenzene			Not detected	5.0	Not detected	5.0
Methylene chloride			Not detected	5.0	Not detected	5.0
MTBE			Not detected	5.0	Not detected	5.0
Naphthalene			Not detected	5.0	Not detected	5.0
n-Butylbenzene			Not detected	5.0	Not detected	5.0
n-Propylbenzene			Not detected	5.0	Not detected	5.0
o-Xylene			Not detected	5.0	Not detected	5.0
p- & m-Xylenes			Not detected	5.0	Not detected	5.0
p-Isopropyltoluene			Not detected	5.0	Not detected	5.0
sec-Butylbenzene			Not detected	5.0	Not detected	5.0
Styrene			Not detected	5.0	Not detected	5.0
tert-Butylbenzene			Not detected	5.0	Not detected	5.0
Tetrachloroethylene			Not detected	5.0	Not detected	5.0
Toluene			Not detected	5.0	Not detected	5.0
trans-1,3-Dichloropropylene			Not detected	5.0	Not detected	5.0
Trichloroethylene			Not detected	5.0	Not detected	5.0
Trichlorofluoromethane			Not detected	5.0	Not detected	5.0
Vinyl chloride			Not detected	5.0	Not detected	5.0
STARS Target Semi-Volatiles	SW846-8270	ug/kG	---	---	---	---
Acenaphthene			Not detected	48	Not detected	48
Anthracene			Not detected	32	Not detected	32
Benzo[a]anthracene			Not detected	46	Not detected	46
Benzo[a]pyrene			Not detected	48	Not detected	48
Benzo[b]fluoranthene			Not detected	38	Not detected	38
Benzo[g,h,i]perylene			Not detected	55	Not detected	55
Benzo[k]fluoranthene			Not detected	91	Not detected	91
Chrysene			Not detected	45	Not detected	45
Dibenz[a,h]anthracene			Not detected	47	Not detected	47
Fluoranthene			Not detected	41	Not detected	41
Fluorene			Not detected	60	Not detected	60
Indeno[1,2,3-cd]pyrene			Not detected	54	Not detected	54

YORK

Client Sample ID			SB-8:0-4'		SB-9:0-4'	
York Sample ID			05050942-03		05050942-04	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Naphthalene			Not detected	38	Not detected	38
Phenanthrene			Not detected	45	Not detected	45
Pyrene			Not detected	56	Not detected	56
Total RCRA Metals	SW846	mg/kG	---	---	---	---
Arsenic, total			4.73	1.00	3.47	1.00
Barium, total			63.9	0.50	66.6	0.50
Cadmium, total			Not detected	0.50	Not detected	0.50
Chromium, total			15.9	0.50	12.7	0.50
Lead, total			8.25	0.50	14.4	0.50
Selenium, total			2.46	1.00	2.99	1.00
Silver, total			Not detected	0.50	Not detected	0.50
Mercury	SW846-7471	mg/kG	0.17	0.10	Not detected	0.10
Ethylene Glycol	GC/DAI	mg/Kg	Not detected	20.0	Not detected	20.0

Client Sample ID			SB-6:4-8'	
York Sample ID			05050942-05	
Matrix			SOIL	
Parameter	Method	Units	Results	MDL
Volatiles- STARS List	SW846-8260	ug/Kg	---	---
1,2,4-Trimethylbenzene			Not detected	5.0
1,3,5-Trimethylbenzene			Not detected	5.0
Benzene			Not detected	5.0
Ethylbenzene			Not detected	5.0
Isopropylbenzene			Not detected	5.0
Methyl-tert-butyl ether (MTBE)			Not detected	5.0
Naphthalene			Not detected	5.0
n-Butylbenzene			Not detected	5.0
n-Propylbenzene			Not detected	5.0
o-Xylene			Not detected	10
p- & m-Xylenes			Not detected	10
p-Isopropyltoluene			Not detected	5.0
sec-Butylbenzene			Not detected	5.0
tert-Butylbenzene			Not detected	5.0
Toluene			Not detected	5.0
Total Xylenes			Not detected	10
STARS Target Semi-Volatiles	SW846-8270	ug/kG	---	---
Acenaphthene			Not detected	48
Anthracene			Not detected	32
Benzo[a]anthracene			Not detected	46
Benzo[a]pyrene			Not detected	48
Benzo[b]fluoranthene			Not detected	38
Benzo[g,h,i]perylene			Not detected	55
Benzo[k]fluoranthene			Not detected	91

YORK

Client Sample ID			SB-6:4-8'	
York Sample ID			05050942-05	
Matrix			SOIL	
Parameter	Method	Units	Results	MDL
Chrysene			Not detected	45
Dibenz[a,h]anthracene			Not detected	47
Fluoranthene			Not detected	41
Fluorene			Not detected	60
Indeno[1,2,3-cd]pyrene			Not detected	54
Naphthalene			Not detected	38
Phenanthrene			Not detected	45
Pyrene			Not detected	56

Client Sample ID			SB-3:0-6in		SB-3:4-8'	
York Sample ID			05050942-06		05050942-07	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260 list	SW846-8260	ug/Kg	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,1-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1,2,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,2-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethylene			Not detected	5.0	Not detected	5.0
1,1-Dichloropropylene			Not detected	5.0	Not detected	5.0
1,2,3-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,3-Trichloropropane			Not detected	5.0	Not detected	5.0
1,2,3-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2-Dibromo-3-chloropropane			Not detected	5.0	Not detected	5.0
1,2-Dibromoethane			Not detected	5.0	Not detected	5.0
1,2-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,2-Dichloroethane			Not detected	5.0	Not detected	5.0
1,2-Dichloroethylene (Total)			Not detected	5.0	Not detected	5.0
1,2-Dichloropropane			Not detected	5.0	Not detected	5.0
1,3,5-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,3-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,3-Dichloropropane			Not detected	5.0	Not detected	5.0
1,4-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1-Chlorohexane			Not detected	5.0	Not detected	5.0
2,2-Dichloropropane			Not detected	5.0	Not detected	5.0
2-Chlorotoluene			Not detected	5.0	Not detected	5.0
4-Chlorotoluene			Not detected	5.0	Not detected	5.0
Benzene			Not detected	5.0	Not detected	5.0
Bromobenzene			Not detected	5.0	Not detected	5.0
Bromochloromethane			Not detected	5.0	Not detected	5.0
Bromodichloromethane			Not detected	5.0	Not detected	5.0
Bromoform			Not detected	5.0	Not detected	5.0
Bromomethane			Not detected	5.0	Not detected	5.0
Carbon tetrachloride			Not detected	5.0	Not detected	5.0
Chlorobenzene			Not detected	5.0	Not detected	5.0
Chloroethane			Not detected	5.0	Not detected	5.0

YORK

Client Sample ID			SB-3:0-6in		SB-3:4-8'	
York Sample ID			05050942-06		05050942-07	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Chloroform			Not detected	5.0	Not detected	5.0
Chloromethane			Not detected	5.0	Not detected	5.0
cis-1,3-Dichloropropylene			Not detected	5.0	Not detected	5.0
Dibromochloromethane			Not detected	5.0	Not detected	5.0
Dibromomethane			Not detected	5.0	Not detected	5.0
Dichlorodifluoromethane			Not detected	5.0	Not detected	5.0
Ethylbenzene			Not detected	5.0	Not detected	5.0
Hexachlorobutadiene			Not detected	5.0	Not detected	5.0
Isopropylbenzene			Not detected	5.0	Not detected	5.0
Methylene chloride			Not detected	5.0	Not detected	5.0
MTBE			Not detected	5.0	Not detected	5.0
Naphthalene			Not detected	5.0	Not detected	5.0
n-Butylbenzene			Not detected	5.0	Not detected	5.0
n-Propylbenzene			Not detected	5.0	Not detected	5.0
o-Xylene			Not detected	5.0	Not detected	5.0
p- & m-Xylenes			Not detected	5.0	Not detected	5.0
p-Isopropyltoluene			Not detected	5.0	Not detected	5.0
sec-Butylbenzene			Not detected	5.0	Not detected	5.0
Styrene			Not detected	5.0	Not detected	5.0
tert-Butylbenzene			Not detected	5.0	Not detected	5.0
Tetrachloroethylene			Not detected	5.0	Not detected	5.0
Toluene			Not detected	5.0	Not detected	5.0
trans-1,3-Dichloropropylene			Not detected	5.0	Not detected	5.0
Trichloroethylene			Not detected	5.0	Not detected	5.0
Trichlorofluoromethane			Not detected	5.0	Not detected	5.0
Vinyl chloride			Not detected	5.0	Not detected	5.0
STARS Target Semi-Volatiles	SW846-8270	ug/kG	---	---	---	---
Acenaphthene			Not detected	48	Not detected	48
Anthracene			Not detected	32	Not detected	32
Benzo[a]anthracene			Not detected	46	Not detected	46
Benzo[a]pyrene			Not detected	48	Not detected	48
Benzo[b]fluoranthene			Not detected	38	Not detected	38
Benzo[g,h,i]perylene			Not detected	55	Not detected	55
Benzo[k]fluoranthene			Not detected	91	Not detected	91
Chrysene			Not detected	45	Not detected	45
Dibenz[a,h]anthracene			Not detected	47	Not detected	47
Fluoranthene			Not detected	41	Not detected	41
Fluorene			Not detected	60	Not detected	60
Indeno[1,2,3-cd]pyrene			Not detected	54	Not detected	54
Naphthalene			Not detected	38	Not detected	38
Phenanthrene			Not detected	45	Not detected	45
Pyrene			Not detected	56	Not detected	56
Ethylene Glycol	GC/DAI	mg/Kg	Not detected	20.0	Not detected	20.0
Lead	SW846-6010	mg/kG	10.5	0.500	8.14	0.500

YORK

Client Sample ID			SS-3:0-2in		SS-3:4-6in	
York Sample ID			05050942-08		05050942-09	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Pesticides 8081 List	SW846-3550B/8081	ug/Kg	---	---	---	---
4,4'-DDD			Not detected	10	Not detected	10
4,4'-DDE			Not detected	10	Not detected	10
4,4'-DDT			Not detected	10	Not detected	10
Aldrin			Not detected	10	Not detected	10
alpha-BHC			Not detected	10	Not detected	10
beta-BHC			Not detected	10	Not detected	10
Chlordane			Not detected	50	Not detected	50
delta-BHC			Not detected	10	Not detected	10
Dieldrin			Not detected	5	Not detected	5
Endosulfan I			Not detected	10	Not detected	10
Endosulfan II			Not detected	10	Not detected	10
Endosulfan sulfate			Not detected	10	Not detected	10
Endrin			Not detected	10	Not detected	10
Endrin aldehyde			Not detected	10	Not detected	10
gamma-BHC (Lindane)			Not detected	10	Not detected	10
Heptachlor			Not detected	10	Not detected	10
Heptachlor epoxide			Not detected	10	Not detected	10
Methoxychlor			Not detected	50	Not detected	50
Toxaphene			Not detected	300	Not detected	300
Arsenic	SW846-6010	mg/kG	4.71	1.00	4.71	1.00
Lead	SW846-6010	mg/kG	14.9	0.500	15.9	0.500

Client Sample ID			SS-4:0-2in		SS-4:4-6in	
York Sample ID			05050942-10		05050942-11	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Pesticides 8081 List	SW846-3550B/8081	ug/Kg	---	---	---	---
4,4'-DDD			Not detected	10	Not detected	10
4,4'-DDE			Not detected	10	Not detected	10
4,4'-DDT			Not detected	10	Not detected	10
Aldrin			Not detected	10	Not detected	10
alpha-BHC			Not detected	10	Not detected	10
beta-BHC			Not detected	10	Not detected	10
Chlordane			Not detected	50	Not detected	50
delta-BHC			Not detected	10	Not detected	10
Dieldrin			Not detected	5	Not detected	5
Endosulfan I			Not detected	10	Not detected	10
Endosulfan II			Not detected	10	Not detected	10
Endosulfan sulfate			Not detected	10	Not detected	10
Endrin			Not detected	10	Not detected	10
Endrin aldehyde			Not detected	10	Not detected	10
gamma-BHC (Lindane)			Not detected	10	Not detected	10

YORK

Client Sample ID			SS-4:0-2in		SS-4:4-6in	
York Sample ID			05050942-10		05050942-11	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Heptachlor			Not detected	10	Not detected	10
Heptachlor epoxide			Not detected	10	Not detected	10
Methoxychlor			Not detected	50	Not detected	50
Toxaphene			Not detected	300	Not detected	300
Arsenic	SW846-6010	mg/kG	4.70	1.00	4.74	1.00
Lead	SW846-6010	mg/kG	24.4	0.500	22.0	0.500

Units Key: For Waters/Liquids: mg/L = ppm ; ug/L = ppb For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

Notes for York Project No. 05050942

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that no analyses reported herein were subcontracted to another laboratory.

Approved By: Robert Q. Bradley
Managing Director

Date: 6/6/2005

YORK

CHAIN OF CUSTODY RECORD

CHAZEN ENVIRONMENTAL SERVICES, INC.

TU
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05050942

Attention: Don M/ Catherine/ Chuck A
Project Name: U.S. Homes
Location: Southeast, NY
Project Number: 20510.00 TASK 0300
Project Manager: Chuck A

Laboratory: York
Turn Around Time: 5 days
Level: Normal

SAMPLE ID	DATE	TIME	Composite	Grab Sample	Matrix*	Total Number of Containers	40 ml Vial: Preserved	40 ml Vial: Un-Preserved	Liter Un-Preserved: Glass - Clear	Liter Un-Preserved: Glass - Amber	Liter Un-Preserved: Plastic	Liter Preserved: Sulfuric	Liter Preserved: Nitric	Liter Preserved: Sodium Hydroxide	Liter Preserved: Other	Liter Preserved: Organic Washed	500 ml: Field Fixed Dissolved Oxygen	250 ml: Glass	250 ml: Plastic	125 ml: Sterile Plastic	Glass: Soil Sample	Glass: Other	ANALYSIS REQUESTED
SS-1: 0-4"	5/23/05	11:40		✓	SS																		8260 + Ethylene Glycol / 8270 STARS / RCRA metals
SB-1: 4-8'	5/23/05	11:20		✓	SS	1															✓		SAME
SB-8: 0-4'	5/24/05	10:45		✓	SS	2															✓		SAME
SB-9: 0-4'	5/24/05	11:11		✓	SS	2															✓		SAME
SB-6: 4-8'	5/23/05	15:35		✓	SS	1															✓		8021 STARS / 8270 STARS
SB-3: 0-6"	5/23/05	12:10		✓	SS	1															✓		8260 + Ethylene Glycol / 8270 Stars / Lead
SB-3: 4-8'	5/23/05	12:12		✓	SS	1															✓		(SAME)
SS-3: 0-2"	5/23/05	14:15		✓	SS	1															✓		8081 + Pb / AS
SS-3: 4-6"	5/23/05	14:20		✓	SS	1															✓		(SAME)

Please Identify Matrix: *GW = Groundwater SW = Surface Water DW = Drinking Water SS = Soil Sample SD = Sediment Sample SL = Sludge PS = Process Sample Other (Please Specify)*

Sampled By: Name: D. Michaud (Please Print) Date: 5/24/05 Time: 16:00 Company: CES

Relinquished By: Name: Yong Wang (Please Print) Date: 5/26/05 Time: 1240 Company: CES

Received By: Name: (Please Print) Date: Time: Company:

Received By: Name: (Please Print) Date: 5/26/05 Time: 9:20 SPK Company: York

PLEASE NOTE: Pink Sheet - Chazen Copy Yellow Sheet - Laboratory File Copy White Top Sheet - Report Copy (Please return along with completed Lab Results)

CHAIN OF CUSTODY RECORD
CHAZEN ENVIRONMENTAL SERVICES, INC.

PO #07023
Packed on Ice

Dutchess County Office:
21 Fox Street
Poughkeepsie, New York 12601
Phone: (845)454-3980
Fax: (845)454-4026

Newburgh Office:
356 Meadow Avenue
Newburgh, New York 12550
Phone: (845)567-1133
Fax: (845)567-1925

Capital District Office:
547 River Street
Troy, New York 12180
Phone: (518)235-8050
Fax: (518)235-8051

North County Office:
100 Glen Street
Glens Falls, New York 12801
Phone: (518)812-0513
Fax: (518)812-2215

0505 0942

Attention: Dan M/Catherine/Chuck A.
Project Name: U.S. Hines
Location: Southeast, NY
Project Number: 20510.00 Task 0300
Project Manager: Chuck A.

Laboratory: York
Turn Around Time: 5 days
Level: Normal

SAMPLE ID	DATE	TIME	Composite	Grab Sample	Matrix *	Total Number of Containers	40 ml Vial: Preserved	40 ml Vial: Un-Preserved	Liter Un-Preserved: Glass - Clear	Liter Un-Preserved: Glass - Amber	Liter Un-Preserved: Plastic	Liter Preserved: Sulfuric	Liter Preserved: Nitric	Liter Preserved: Sodium Hydroxide	Liter Preserved: Other	Liter Preserved: Organic Washed	500 ml: Field Fixed Dissolved Oxygen	250 ml: Glass	250 ml: Plastic	125 ml: Sterile Plastic	Glass: Soil Sample	Glass: Other	ANALYSIS REQUESTED
SS-4: 0-2"	5/23/05	16:20		✓	SS	1															1		8081 + PB/AS
SS-4: 4-6"	5/23/05	16:30		✓	SS	1															1		Same

Please Identify Matrix: *GW • Groundwater SW • Surface Water DW • Drinking Water SS • Soil Sample SD • Sediment Sample SL • Sludge PS • Process Sample Other (Please Specify)*

Sampled By: Name: D. Michaud (Please Print) Date: 5/24/05 Time: 16:00 Company: CES

Relinquished By: Name: [signature] (Please Print) Date: 5/26/05 Time: 12:40 Company: CES

Received By: Name: (Please Print) Date: Time: Company:

Received By: Name: [signature] (Please Print) Date: 5/26 Time: Company: [signature]

5/26 09:14 VC

PLEASE NOTE: Pink Sheet - Chazen Copy Yellow Sheet - Laboratory File Copy White Top Sheet - Report Copy (Please return along with completed Lab Results)

APPENDIX 17-3

Soil Management/Contingency Plan by CA Rich Environmental Specialists, dated June 2019

Soil Management/Contingency Plan

Commercial Campus at Field Corners
Pugsley Road & Route 312
Town of Southeast, NY

June 2019

Prepared for:
Putnam Seabury Partners, LP
287 King Street
Chappaqua, NY 10514

Prepared by:

CA RICH Consultants, Inc.
17 Dupont Street
Plainview, NY 11803

June 3, 2019

Putnam Seabury Partners, LP
287 King Street
Chappaqua, NY 10514

Attn: Mr. Harvey Schulweis

Re: Soil Management/Contingency Plan
Commercial Campus at Field Corners
Town of Southeast, NY

Dear Mr. Schulweis

Enclosed, please find the 2019 Soil Management/Contingency Plan for the above-referenced location. If you have any questions pertaining to this report, please feel free to contact the undersigned.

Respectfully Submitted,

CA RICH Consultants, Inc.

Richard J. Izzo, PG, CPG
Vice President

cc:

Robert Peake
Peter Gilpatric
Dan Richmond
Joe Sarchino

Soil Management/Contingency Plan
Commercial Campus at Field Corners
Town of Southeast, NY
June 2019

1.0 Introduction

This Plan summarizes procedures and protocol to be followed in the event stained or otherwise impacted soils, underground storage tanks, dry wells, or dumping sites are discovered during construction activities related to the planned development at the above-referenced, 327-acre Project Site located along Pugsley Road and Route 312 in the Town of Southeast, Putnam County, NY (the Site). The location of the Site is illustrated on Figure 1.

Remediation was conducted at the Site in 2004 and 2005 and included the cleanout of an oil/maintenance pit and removal of an underground storage tank in the vicinity of a former barn. In addition, in 2005, remedial activities were performed including the cleanup of a small dumpsite. Currently, there are no known additional tanks, pits drywells or dump sites on the property. As such, the following protocol and procedures are a contingency in the event additional sources of contamination are discovered during Site redevelopment.

2.0 Potential Contaminant Sources and Procedures for Remediation

2.1 Stained or Impacted Soil

Should visually impacted soils be encountered during development-related excavation activities, whether an obvious source of contamination is present (such as the sources detailed in the subsequent sections of this Plan) or no source is identified, the procedures and protocols for addressing impacted soils are as follows:

A Qualified Environmental Professional (QEP), or Professional Engineer (PE) as set forth in NYSDEC DER -10, will be engaged and present on Site to oversee the proper handling of the impacted soils. Visual, olfactory and instrument-based soil screening will be performed by a QEP during all remedial excavations into known or potentially contaminated material. All soils exhibiting evidence of contamination will be removed and stockpiled for proper testing and off-site disposal. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Stockpiles will be inspected at a minimum once each week and after every storm event.

All impacted soils excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6 NYCRR Part 360) and Federal regulations. The soils will be sampled by a QEP or PE and analyzed by a NY State accredited laboratory for proper placement at a facility licensed to accept such material. Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 Unrestricted Soil Cleanup Objectives (USCOs) as per NYSDEC Part 375, is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

Visual inspection of the excavation will be performed by the QEP or PE to ensure the removal of all impacted soils. In addition, excavation end-point samples will be collected and analyzed for the contaminants of concern.

2.2 Underground Storage Tanks

At this time there are no known USTs on the Site. During construction related activities, if USTs are uncovered on Site, they will be handled in accordance with all applicable State and local regulations. All liquids will be pumped out of the USTs via a vacuum truck for proper off-site disposal. In addition, the USTs will be exhumed, cut, cleaned, and disposed of off-site at an approved off-site disposal facility in accordance with NYSDEC DER-10 and applicable rules and regulations. Tanks will be registered for removal with the NYSDEC, as required. In addition, a Town of Southeast Building Department Permit will be obtained for removal of the tank, as required.

The PE or a QEP or designee under his/her direct supervision will visually inspect the excavation and monitor the soil surrounding the tank with a portable Photo-Ionization Detector (PID) for signs of fuel-related contamination. In addition, to confirm that the soil surrounding the excavation does not contain remaining petroleum-contaminated soil that may be attributed to the UST, the QEP or PE will collect endpoint sediment samples from all four sides and the bottom of the excavation. The samples will be placed into laboratory-issued containers, stored in a cooler on ice and transported to a State-certified laboratory under chain-of-custody documentation. The samples will be analyzed for the CP-51 list of volatile and semi-volatile organics for suspect fuel oil or gasoline tanks. Additional analysis including metals and PCBs will be included for suspect waste oil tanks. The results for the tested parameters will be compared to NYSDEC Unrestricted Use guidance values.

If visual inspection and soil screening identify evidence of a petroleum release, a fuel spill will be reported to the NYSDEC Spill Hotline (1-800-457-7362). In this case, the excavation will continue until all of the visually impaired soil has been removed or shallow groundwater is encountered.

2.3 Dry Wells

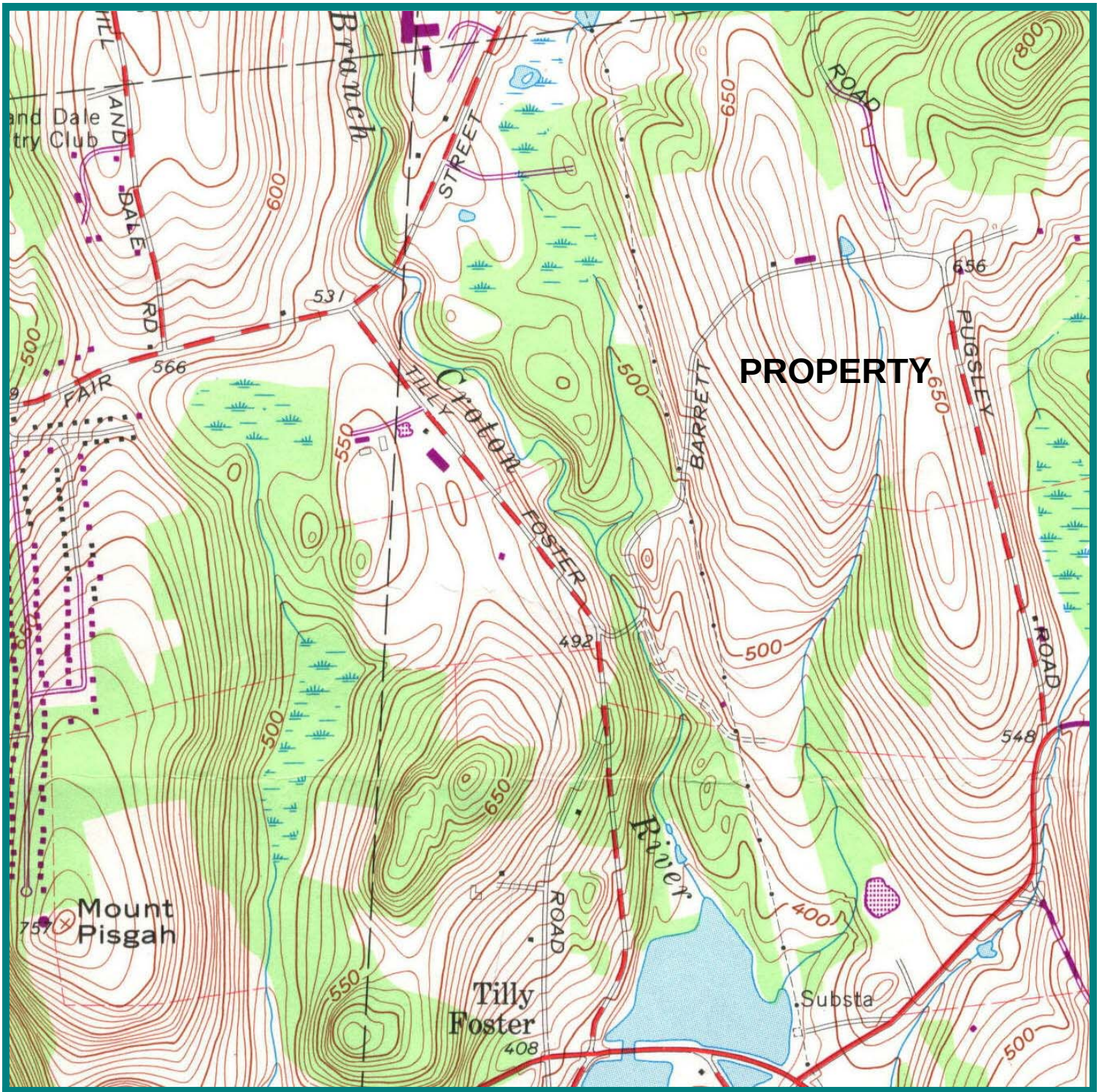
Should an abandoned drywell or leaching pool be encountered during excavation activities, the structure will be inspected and tested to determine of it has an open (soft) bottom or cement bottom. If sediments are present at the base of the dry well, they will be inspected and screened with a PID. All stained or impacted soils will be removed and stockpiled for proper testing and off-site disposal as per the provisions of Section 2.1, above.

The cement rings and lid of the dry well will be exhumed and properly disposed of as construction/demolition debris.

2.4 Dump Sites

A PE or QEP will perform an inspection of the dump site to assess the nature of the waste materials and identify appropriate waste streams in accordance with State and local regulations. All containerized liquids will be consolidated and properly disposed of in appropriate containers (e.g. DOT approved 55-gallon drums or vactor truck). Sampling and analysis of containerized liquids will be performed as necessary. Potential asbestos-containing materials such as roofing will be sampled for proper handling. Domestic debris will be placed in roll-off containers for proper off-site disposal.

Following debris removal, the ground surface in areas in which containerized liquids were found will be inspected and surface soil samples will be collected in areas which appear to have been impacted.



N

APPROX. SCALE (ft.)

0 1,000 2,000

Adapted from USGS Lake Carmel Quadrangle Map (1981photorevision)

CA RICH CONSULTANTS, INC.
17 Dupont Street,
Plainview, NY 11803

TITLE: Site Location		DATE: 6/1/19
		SCALE: AS SHOWN
FIGURE: 1	Commercial Campus at Field Corners Town of Southeast, NY	DRAWN BY: DK
DRAWING:		APPR. BY: RJI