# APPENDIX D

# Other Relevant Environmental Data

# 1232 Indian Falls Reports

**Proposed National Cemetery**
1232 Indian Falls Road
Corfu, NY 14036

Inquiry Number: 3342748.2s
June 12, 2012

# EDR NEPACheck®

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***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.


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# EDR NEPACheck® DESCRIPTION

The National Environmental Policy Act of 1969 (NEPA) requires that Federal agencies include in their decision-making processes appropriate and careful consideration of all environmental effects and actions, analyze potential environmental effects of proposed actions and their alternatives for public understanding and scrutiny, avoid or minimize adverse effects of proposed actions, and restore and enhance environmental quality as much as possible.

The EDR NEPACheck provides information which may be used, in conjunction with additional research, to determine whether a proposed site or action will have significant environmental effect.

The report provides maps and data for the following items (where available). Search results are provided in the Map Findings Summary on page 2 of this report.

| Section | Regulation |
|---|---|
| **Natural Areas Map** | |
| • Federal Lands Data: | |
| - Officially designated wilderness areas | 47 CFR 1.1307(1) |
| - Officially designated wildlife preserves, sanctuaries and refuges | 47 CFR 1.1307(2) |
| - Wild and scenic rivers | 40 CFR 6.302(e) |
| - Fish and Wildlife | 40 CFR 6.302 |
| • Threatened or Endangered Species, Fish and Wildlife, Critical Habitat Data (where available) | 47 CFR 1.1307(3); 40 CFR 6.302 |
| **Historic Sites Map** | |
| • National Register of Historic Places | 47 CFR 1.1307(4); 40 CFR 6.302 |
| • State Historic Places (where available) | |
| • Indian Reservations | |
| **Flood Plain Map** | |
| • National Flood Plain Data (where available) | 47 CFR 1.1307(6); 40 CFR 6.302 |
| **Wetlands Map** | |
| • National Wetlands Inventory Data (where available) | 47 CFR 1.1307(7); 40 CFR 6.302 |
| **FCC & FAA Map** | |
| • FCC antenna/tower sites, FAA Markings and Obstructions, Airports, Topographic gradient | 47 CFR 1.1307(8) |
| **Key Contacts and Government Records Searched** | |

# MAP FINDINGS SUMMARY

The databases searched in this report are listed below. Database descriptions and other agency contact information is contained in the Key Contacts and Government Records Searched section on page 25 of this report.

**TARGET PROPERTY ADDRESS**

PROPOSED NATIONAL CEMETERY
1232 INDIAN FALLS ROAD
CORFU, NY 14036

Inquiry #: 3342748.2s
Date: 6/12/12

**TARGET PROPERTY COORDINATES**

| | |
|---|---|
| Latitude (North): | 43.014400 - 43˚ 0' 51.8'' |
| Longitude (West): | 78.398399 - 78˚ 23' 54.2'' |
| Universal Tranverse Mercator: | Zone 17 |
| UTM X (Meters): | 712013.8 |
| UTM Y (Meters): | 4765483.5 |

| Applicable Regulation from 47 CFR/FCC Checklist | Database | Search Distance (Miles) | Within Search | Within 1/8 Mile |
|---|---|---|---|---|
| **NATURAL AREAS MAP** | | | | |
| 1.1307a (1) Officially Designated Wilderness Area | US Federal Lands | 1.00 | NO | NO |
| 1.1307a (2) Officially Designated Wildlife Preserve | US Federal Lands | 1.00 | NO | NO |
| 1.1307a (2) Officially Designated Wildlife Preserve | NY Wildlife Management Areas | 1.00 | NO | NO |
| 1.1307a (3) Threatened or Endangered Species or Critical Habitat | County Endangered Species | County | YES | N/A |
| **HISTORIC SITES MAP** | | | | |
| 1.1307a (4) Listed or eligible for National Register | National Register of Hist. Pla | 1.00 | NO | NO |
| | Indian Reservation | 1.00 | NO | NO |
| | APPAL_TRAIL | 1.00 | NO | NO |
| **FLOODPLAIN MAP** | | | | |
| 1.1307 (6) Located in a Flood Plain | FLOODPLAIN | 1.00 | YES | NO |
| **WETLANDS MAP** | | | | |
| 1.1307 (7) Change in surface features (wetland fill) | NWI | 1.00 | YES | YES |
| **FCC & FAA SITES MAP** | | | | |
| | Cellular | 1.00 | NO | NO |
| | 4G Cellular | 1.00 | NO | NO |
| | Antenna Structure Registration | 1.00 | NO | NO |
| | Towers | 1.00 | NO | NO |
| | AM Antenna | 1.00 | NO | NO |
| | FM Antenna | 1.00 | NO | NO |
| | FAA DOF | 1.00 | NO | NO |
| | Airports | 1.00 | NO | --- |
| | Power Lines | 1.00 | YES | --- |

# Natural Areas Map

0 1/4 1/2 1 Miles

- Target Property
- Roads
- County Boundary
- Waterways
- Water
- Locations
- Federal Areas
- Federal Linear Features
- State Areas
- State Linear Features

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: 1232 Indian Falls Road<br>Corfu NY 14036<br>LAT/LONG: 43.0144 / 78.3984 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.2s<br>DATE: June 12, 2012 |



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# NATURAL AREAS MAP FINDINGS

**Endangered Species Listed for: GENESEE County, NY.**
Source: EPA Endangered Species Protection Program Database

| | |
|---|---|
| BIRD: | EAGLE, BALD |
| MAMMAL: | BAT, INDIANA |

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|

No mapped sites were found in EDR's search of available government records within the search radius around the target property.

# Historic Sites Map

0 1/4 1/2 1 Miles

- Target Property
- Streets
- County Boundary
- Waterways
- Water
- Historic Sites
- Federal Historic Areas
- State Historic Areas
- US Indian Reservations
- Scenic Trail

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: 1232 Indian Falls Road<br>Corfu NY 14036<br>LAT/LONG: 43.0144 / 78.3984 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.2s<br>DATE: June 12, 2012 |



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# HISTORIC SITES MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|

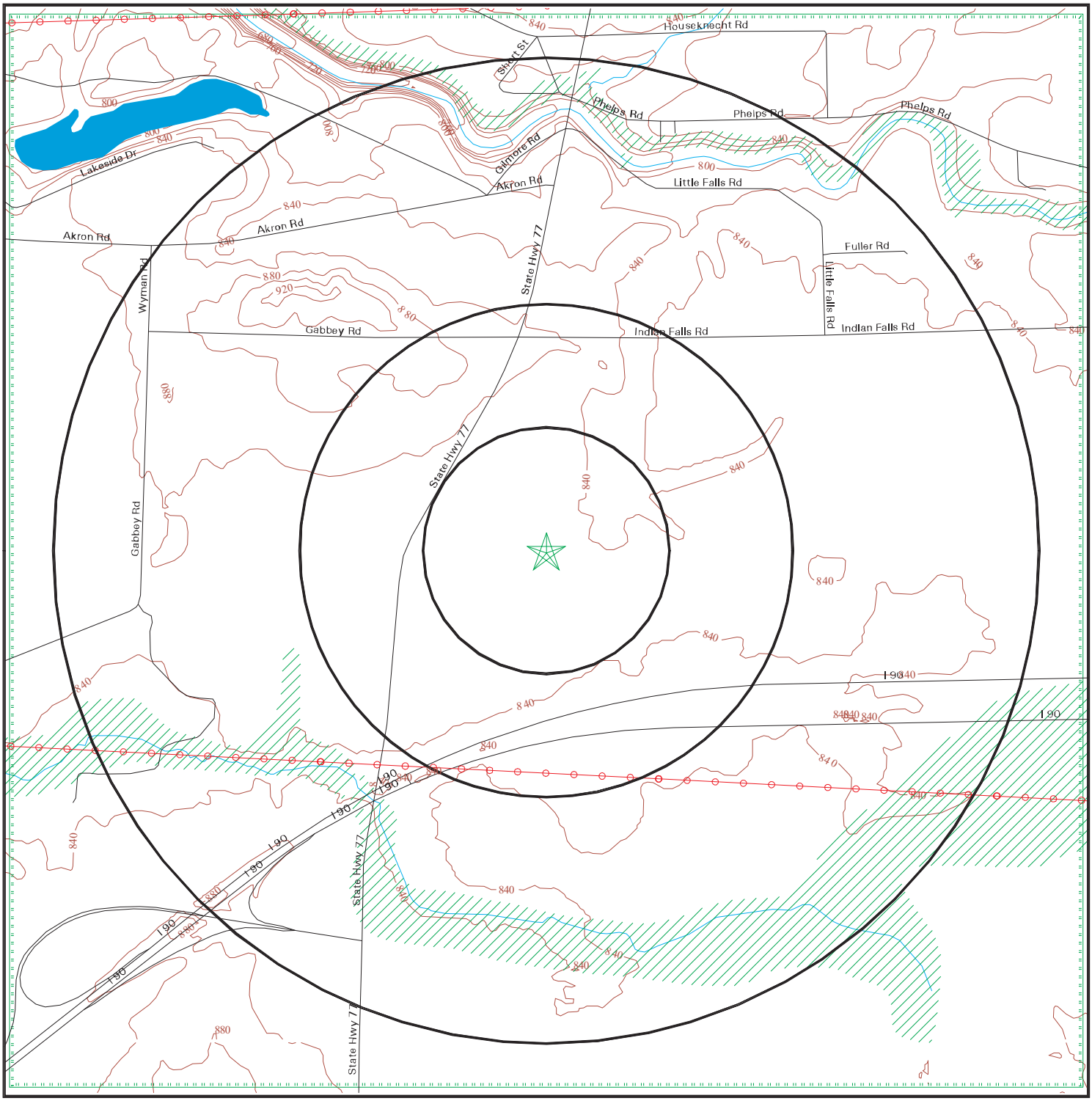
No mapped sites were found in EDR's search of available government records within the search radius around the target property.

# UNMAPPABLE HISTORIC SITES

| Due to poor or inadequate address information, the following sites were not mapped: | Status<br>EDR ID<br>Database |
|---|---|

No unmapped sites were found in EDR's search of available government records.

# Flood Plain Map




0 1/4 1/2 1 Miles

- Major Roads
- Contour Lines
- Waterways
- County Boundary
- Power Lines
- Pipe Lines
- Fault Lines
- Water
- 100-year flood zone
- 500-year flood zone
- Electronic FEMA data available
- Electronic FEMA data not available

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: 1232 Indian Falls Road<br>Corfu NY 14036<br>LAT/LONG: 43.0144 / 78.3984 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.2s<br>DATE: June 12, 2012 |



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# FLOOD PLAIN MAP FINDINGS

**Source: FEMA DFIRM Flood Data, FEMA Q3 Flood Data**

| County | FEMA flood data electronic coverage |
|---|---|
| GENESEE, NY | YES |

Flood Plain panel at target property: 3602830005C (FEMA Q3 Flood data)
Additional Flood Plain panel(s) in search area:
3602830010C (FEMA Q3 Flood data)

# National Wetlands Inventory Map

0 1/4 1/2 1 Miles

- Major Roads
- Contour Lines
- Waterways
- County Boundary
- Power Lines
- Pipe Lines
- Fault Lines
- Water
- National Wetland Inventory
- State Wetlands
- Electronic NWI data available
- Electronic NWI data not available

| | |
|---|---|
| SITE NAME: Proposed National Cemetery | CLIENT: TTL Associates, Inc |
| ADDRESS: 1232 Indian Falls Road<br>Corfu NY 14036 | CONTACT: Paul Jackson<br>INQUIRY #: 3342748.2s |
| LAT/LONG: 43.0144 / 78.3984 | DATE: June 12, 2012 |



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# WETLANDS MAP FINDINGS

Source: Fish and Wildlife Service NWI data

NWI hardcopy map at target property: Akron
Additional NWI hardcopy map(s) in search area:
Corfu

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 1<br>WSW<br>0-1/8 mi<br>603 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.013538 / -78.400322 | NWI |
| 2<br>East<br>1/8-1/4 mi<br>1026 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.014465 / -78.394562 | NWI |
| 3<br>SE<br>1/8-1/4 mi<br>1222 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.012272 / -78.394867 | NWI |
| 4<br>ESE<br>1/4-1/2 mi<br>1466 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.012321 / -78.393715 | NWI |
| 5<br>WSW<br>1/4-1/2 mi<br>1588 | PUBH<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded<br>Lat/Lon: 43.012775 / -78.403908 | NWI |
| 6<br>SSE<br>1/4-1/2 mi<br>1766 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.009651 / -78.397087 | NWI |
| 7<br>WSW<br>1/4-1/2 mi<br>1792 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.012691 / -78.404678 | NWI |
| 8<br>WSW<br>1/4-1/2 mi<br>1818 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.013390 / -78.405060 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 9<br>SSE<br>1/4-1/2 mi<br>1819 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.009895 / -78.395470 | NWI |
| 10<br>ESE<br>1/4-1/2 mi<br>1920 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.012196 / -78.391884 | NWI |
| 11<br>South<br>1/4-1/2 mi<br>2074 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.008801 / -78.397034 | NWI |
| 12<br>SE<br>1/4-1/2 mi<br>2353 | PSS1/EM1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.010281 / -78.391624 | NWI |
| 13<br>ESE<br>1/4-1/2 mi<br>2386 | PSS1/EM1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.013020 / -78.389679 | NWI |
| 14<br>West<br>1/4-1/2 mi<br>2592 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 43.015057 / -78.408051 | NWI |
| 15<br>West<br>1/2-1 mi<br>2692 | PSS1/EM1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.013893 / -78.408440 | NWI |
| 16<br>ESE<br>1/2-1 mi<br>2810 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.010319 / -78.389496 | NWI |
| 17<br>East<br>1/2-1 mi<br>2857 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 43.013947 / -78.387733 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 18<br>South<br>1/2-1 mi<br>2906 | PUBHh<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [h] Diked/Impounded<br>Lat/Lon: 43.006432 / -78.398781 | NWI |
| 19<br>SW<br>1/2-1 mi<br>2942 | PEM1C<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [C] Seasonally Flooded<br>Lat/Lon: 43.008198 / -78.405441 | NWI |
| 20<br>WSW<br>1/2-1 mi<br>3081 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.012741 / -78.409698 | NWI |
| 21<br>SSW<br>1/2-1 mi<br>3120 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 43.007019 / -78.404312 | NWI |
| 22<br>SSW<br>1/2-1 mi<br>3223 | PSS1/EM1Ed<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated, [d] Partially Drained/Ditched<br>Lat/Lon: 43.006939 / -78.404869 | NWI |
| 23<br>ESE<br>1/2-1 mi<br>3248 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.010338 / -78.387596 | NWI |
| 24<br>SW<br>1/2-1 mi<br>3315 | PSS1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.008255 / -78.407539 | NWI |
| 25<br>ESE<br>1/2-1 mi<br>3497 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.010147 / -78.386681 | NWI |
| 26<br>East<br>1/2-1 mi<br>3530 | PUBHh<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [h] Diked/Impounded<br>Lat/Lon: 43.015106 / -78.385239 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 27<br>East<br>1/2-1 mi<br>3675 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.013168 / -78.384766 | NWI |
| 28<br>ESE<br>1/2-1 mi<br>3743 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 43.009052 / -78.386459 | NWI |
| 29<br>East<br>1/2-1 mi<br>3757 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.016338 / -78.384605 | NWI |
| 30<br>SW<br>1/2-1 mi<br>3882 | PFO4E<br>[P] Palustrine, [FO] Forested, [4] Needle-Leaved Evergreen, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.008389 / -78.410378 | NWI |
| 31<br>WSW<br>1/2-1 mi<br>3892 | PSS1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.009937 / -78.411613 | NWI |
| 32<br>SSE<br>1/2-1 mi<br>3900 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.004818 / -78.391922 | NWI |
| 33<br>ESE<br>1/2-1 mi<br>3938 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.011059 / -78.384407 | NWI |
| 34<br>South<br>1/2-1 mi<br>3950 | PSS1/EM1B<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [B] Saturated<br>Lat/Lon: 43.003658 / -78.400337 | NWI |
| 35<br>NNE<br>1/2-1 mi<br>4213 | R2UBH<br>[R] Riverine, [2] Lower Perennial, [UB] Unconsolidated Bottom, [H] Permanently Flooded<br>Lat/Lon: 43.025635 / -78.394714 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 36<br>South<br>1/2-1 mi<br>4296 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 43.002613 / -78.398376 | NWI |
| 37<br>NW<br>1/2-1 mi<br>4298 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 43.022896 / -78.409546 | NWI |
| 38<br>North<br>1/2-1 mi<br>4317 | R3UBH<br>[R] Riverine, [3] Upper Perennial, [UB] Unconsolidated Bottom, [H] Permanently Flooded<br>Lat/Lon: 43.026100 / -78.400879 | NWI |
| 39<br>NNW<br>1/2-1 mi<br>4450 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 43.025162 / -78.406250 | NWI |
| 40<br>WSW<br>1/2-1 mi<br>4480 | PSS1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.007900 / -78.412605 | NWI |
| 41<br>ESE<br>1/2-1 mi<br>4678 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.010475 / -78.381752 | NWI |
| 42<br>NW<br>1/2-1 mi<br>4688 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 43.023205 / -78.411171 | NWI |
| 43<br>East<br>1/2-1 mi<br>4862 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 43.012806 / -78.380356 | NWI |
| 44<br>SW<br>1/2-1 mi<br>5068 | PUBF<br>[P] Palustrine, [UB] Unconsolidated Bottom, [F] Semipermanently Flooded<br><br>Lat/Lon: 43.004025 / -78.411011 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 45<br>East<br>1/2-1 mi<br>5109 | PUBH<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded<br><br>Lat/Lon: 43.013237 / -78.379372 | NWI |
| 46<br>ESE<br>1/2-1 mi<br>5135 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 43.010509 / -78.379951 | NWI |
| 47<br>SE<br>1/2-1 mi<br>5234 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.003555 / -78.385574 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS CLASSIFICATION SYSTEM

National Wetland Inventory Maps are produced by the U.S. Fish and Wildlife Service, a sub-department of the U.S. Department of the Interior. In 1974, the U.S. Fish and Wildlife Service developed a criteria for wetland classification with four long range objectives:

- to describe ecological units that have certain homogeneous natural attributes,
- to arrange these units in a system that will aid decisions about resource management,
- to furnish units for inventory and mapping, and
- to provide uniformity in concepts and terminology throughout the U.S.

High altitude infrared photographs, soil maps, topographic maps and site visits are the methods used to gather data for the productions of these maps. In the infrared photos, wetlands appear as different colors and these wetlands are then classified by type. Using a hierarchical classification, the maps identify wetland and deepwater habitats according to:

- system
- subsystem
- class
- subclass
- modifiers

(as defined by Cowardin, et al. U.S. Fish and Wildlife Service FWS/OBS 79/31. 1979.)

The classification system consists of five systems:

1. marine
2. estuarine
3. riverine
4. lacustrine
5. palustrine

The marine system consists of deep water tidal habitats and adjacent tidal wetlands. The riverine system consists of all wetlands contained within a channel. The lacustrine systems includes all nontidal wetlands related to swamps, bogs & marshes. The estuarine system consists of deepwater tidal habitats and where ocean water is diluted by fresh water. The palustrine system includes nontidal wetlands dominated by trees and shrubs and where salinity is below .5% in tidal areas. All of these systems are divided in subsystems and then further divided into class.

National Wetland Inventory Maps are produced by transferring gathered data on a standard 7.5 minute U.S.G.S. topographic map. Approximately 52 square miles are covered on a National Wetland Inventory map at a scale of 1:24,000. Electronic data is compiled by digitizing these National Wetland Inventory Maps.

**SYSTEM** — **MARINE**

**SUBSYSTEM** — **1 - SUBTIDAL**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | RF-REEF | OW-OPEN WATER / Unknown Bottom |
|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>3 Rooted Vascular<br>5 Unknown Submergent | 1 Coral<br>3 Worm | |

**SUBSYSTEM** — **2 - INTERTIDAL**

| CLASS | AB-AQUATIC BED | RF-REEF | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE |
|---|---|---|---|---|
| Subclass | 1 Algal<br>3 Rooted Vascular<br>5 Unknown Submergent | 1 Coral<br>3 Worm | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic |

**SYSTEM** — **E - ESTUARINE**

**SUBSYSTEM** — **1 - SUBTIDAL**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | RF-REEF | OW-OPEN WATER / Unknown Bottom |
|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 2 Mollusk<br>3 Worm | |

**SUBSYSTEM** — **2 - INTERTIDAL**

| CLASS | AB-AQUATIC BED | RF-REEF | SB - STREAMBED | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE | EM-EMERGENT | SS-SCRUB SHRUB | FO-FORESTED |
|---|---|---|---|---|---|---|---|---|
| Subclass | 1 Algal<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 2 Mollusk<br>3 Worm | 1 Cobble- Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Bedrock<br>2 Rubble | 1 Cobble- Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Persistent<br>2 Nonpersistent | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 Deciduous<br>7 Evergreen | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 Deciduous<br>7 Evergreen |

**SYSTEM** — **R - RIVERINE**

| SUBSYSTEM | 1 - TIDAL | 2 - LOWER PERENNIAL | 3 - UPPER PERENNIAL | 4 - INTERMITTENT | 5 - UNKNOWN PERENNIAL |
|---|---|---|---|---|---|
| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | *SB-STREAMBED | AB-AQUATIC BED | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE | **EM-EMERGENT | OW-OPEN WATER/ Unknown Bottom |
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Bedrock<br>2 Rubble<br>3 Cobble-Gravel<br>4 Sand<br>5 Mud<br>6 Organic<br>7 Vegetated | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 2 Nonpersistent | |

* STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM.
**EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS.

**SYSTEM** — **L - LACUSTRINE**

**SUBSYSTEM** — **1 - LIMNETIC**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | OW-OPEN WATER/ Unknown Bottom |
|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | |

**SUBSYSTEM** — **2 - LITTORAL**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE | EM-EMERGENT | OW-OPEN WATER/ Unknown Bottom |
|---|---|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 2 Nonpersistent | |

## SUBSYSTEM

## P - PALUSTRINE

| CLASS | RB--ROCK BOTTOM | UB--UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | US--UNCONSOLIDATED SHORE | ML--MOSS-LICHEN | EM--EMERGENT | SS--SCRUB-SHRUB | FO--FORESTED | OW-OPEN WATER/ Unknown Bottom |
|---|---|---|---|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble<br>3 Mud<br>4 Organic | 1 Cobble-Gravel<br>2 Sand | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 1 Moss<br>2 Lichen | 1 Persistent<br>2 Nonpersistent | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 Deciduous<br>7 Evergreen | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6Deciduous<br>7 Evergreen | |

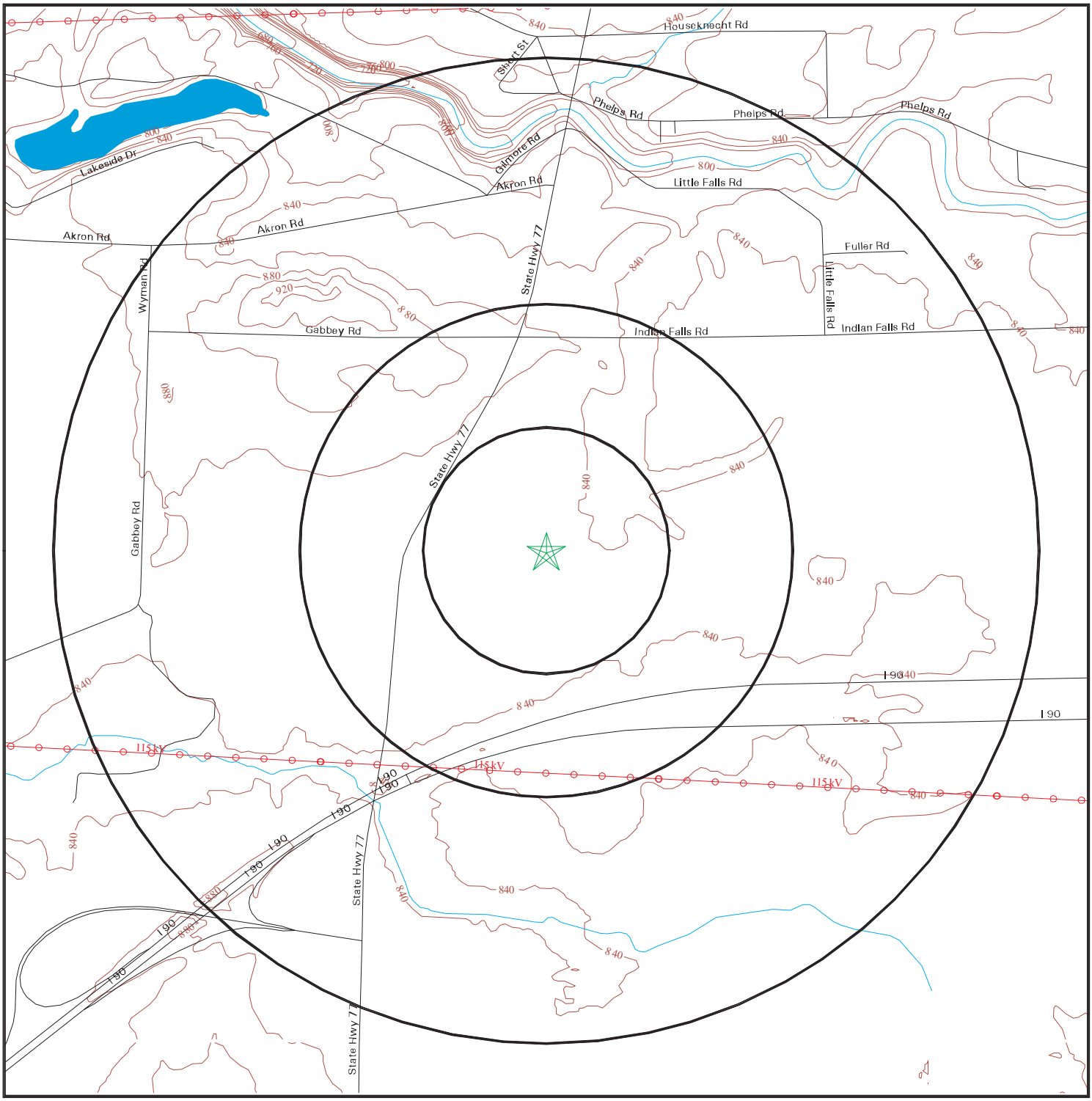
### MODIFIERS

In order to more adequately describe wetland and deepwater habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

| WATER REGIME | | | | WATER CHEMISTRY | | | SOIL | SPECIAL MODIFIERS |
|---|---|---|---|---|---|---|---|---|
| **Non-Tidal** | **Tidal** | **Coastal** | **Inland** | **Salinity** | **pH** | **Modifiers for all Fresh Water** | | |
| A Temporarily Flooded<br>B Saturated<br>C Seasonally Flooded<br>D Seasonally Flooded/ Well Drained<br>E Seasonally Flooded/ Saturated<br>F Semipermanently Flooded<br>G Intermittently Exposed | H Permanently Flooded<br>J Intermittently Flooded<br>K Artificially Flooded<br>W Intermittently Flooded/Temporary<br>Y Saturated/Semipermanent/ Seasonal<br>Z Intermittently Exposed/Permanent<br>U Unknown | K Artificially Flooded<br>L Subtidal<br>M Irregularly Exposed<br>N Regularly Flooded<br>P Irregularly Flooded | *S Temporary-Tidal<br>*R Seasonal-Tidal<br>*T Semipermanent -Tidal<br>V Permanent -Tidal<br>U Unknown<br><br>*These water regimes are only used in tidally influenced, freshwater systems. | 1 Hyperhaline<br>2 Euhaline<br>3 Mixohaline (Brackish)<br>4 Polyhaline<br>5 Mesohaline<br>6 Oligohaline<br>0 Fresh | 7 Hypersaline<br>8 Eusaline<br>9 Mixosaline<br>0 Fresh | a Acid<br>t Circumneutral<br>i Alkaline | g Organic<br>n Mineral | b Beaver<br>d Partially Drained/Ditched<br>f Farmed<br>h Diked/Impounded<br>r Artificial Substrate<br>s Spoil<br>x Excavated |

Source: U.S. Department of the Interior
Fish and Wildlife Service
National Wetlands Inventory

# FCC & FAA Sites Map




0 1/4 1/2 1 Miles

Streets
Contour Lines
County Boundary
Waterways
Power Lines
Water
Sites

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: 1232 Indian Falls Road<br>Corfu NY 14036<br>LAT/LONG: 43.0144 / 78.3984 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.2s<br>DATE: June 12, 2012 |



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# FCC & FAA SITES MAP FINDINGS
# TOWERS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|

No Sites Reported.

# FCC & FAA SITES MAP FINDINGS
# AIRPORTS

**EDR ID**
**Database**

No Sites Reported.

# FCC & FAA SITES MAP FINDINGS
# POWERLINES

**EDR ID**
**Database**

POW10000004124
POWERLINES

| | |
|---|---|
| Name: | Niaga |
| Id: | 3331 |
| Kv: | 115 |
| Label: | 115 kV |
| Company: | Niagara Mohawk, a National Grid Co. |
| Companyabb: | Niagara Mohawk |
| Edr id: | POW10000004124 |

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

Various Federal laws and executive orders address specific environmental concerns. NEPA requires the responsible offices to integrate to the greatest practical extent the applicable procedures required by these laws and executive orders. EDR provides key contacts at agencies charged with implementing these laws and executive orders to supplement the information contained in this report.

**NATURAL AREAS**
**Officially designated wilderness areas**
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.
Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

National Park Service, Northeast Region
200 custom Street, Fifth Floor
Philadelphia, PA 19106
215-597-7013

USDA Forest Service, Eastern
310 West Wisconsin Avenue
Milwaukee, WI 53203
414-297-3693

BLM - Eastern States Office
7450 Boston Blvd.
Springfield, VA 22153
703-440-1713

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

**Officially designated wildlife preserves, sanctuaries and refuges**
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.
Date of Government Version: 12/31/2005

NY Wildlife Management Areas: Wildlife Management Areas
Borders of New York State Wildlife Management Areas
Source: Dept. of Env. Conservation.
Telephone: 518-783-5733

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

State Contacts for Additional Information

Dept. of Environmental Conservation 518-457-5690

**Wild and scenic rivers**

Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.

Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

**Endangered Species**

Government Records Searched in This Report

Endangered Species Protection Program Database
A listing of endangered species by county.
Source: Environmental Protection Agency
Telephone: 703-305-5239

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

State Contacts for Additional Information

Natural Heritage Program, Dept. of Environmental Conservation 518-783-3932

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

**LANDMARKS, HISTORICAL, AND ARCHEOLOGICAL SITES**
**Historic Places**

Government Records Searched in This Report

National Register of Historic Places:

The National Register of Historic Places is the official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. These contribute to an understanding of the historical and cultural foundations of the nation.
The National Register includes:

- All prehistoric and historic units of the National Park System;
- National Historic Landmarks, which are properties recognized by the Secretary of the Interior as possessing national significance; and
- Properties significant in American, state, or local prehistory and history that have been nominated by State Historic Preservation Officers, federal agencies, and others, and have been approved for listing by the National Park Service.

Date of Government Version: 03/23/2006

Federal Contacts for Additional Information

Park Service; Advisory Council on Historic Preservation
1849 C Street NW
Washington, DC 20240
Phone: (202) 208-6843

State Contacts for Additional Information

Parks, Recreation & Historic Preservation 518-474-0443

**Indian Religious Sites**

Government Records Searched in This Report

Indian Reservations:

This map layer portrays Indian administrated lands of the United States that have any area equal to or greater than 640 acres.
Source: USGS
Phone: 888-275-8747
Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

Department of the Interior- Bureau of Indian Affairs
Office of Public Affairs
1849 C Street, NW
Washington, DC 20240-0001
Office: 202-208-3711
Fax: 202-501-1516

National Association of Tribal Historic Preservation Officers
1411 K Street NW, Suite 700
Washington, DC 20005
Phone: 202-628-8476
Fax: 202-628-2241

State Contacts for Additional Information
A listing of local Tribal Leaders and Bureau of Indian Affairs Representatives can be found at:
http://www.doi.gov/bia/areas/agency.html

Eastern Area Office, Bureau of Indian Affairs
3701 N. Fairfax Drive Mail Stop 260-VASQ
Arlington, VA 22203
703-235-2571

**Scenic Trails**

Government Records Searched in This Report
APPAL_TRAIL: Appalachian Trail
Source: Appalachian Trail Conference
Telephone: (304) 535-6331
Appalachian Trail centerline.

State Contacts for Additional Information
Appalachian Trail Conference
799 Washington Street P.O. Box 807
Harpers Ferry, WV 25425-0807
(304) 535-6331

North County Trail Association
49 Monroe Center Suite 200B
Grand Rapids, Michigan 49503
616-454-5506

**FLOOD PLAIN, WETLANDS AND COASTAL ZONE**

**Flood Plain Management**
Government Records Searched in This Report
Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

Federal Contacts for Additional Information
Federal Emergency Management Agency 877-3362-627

State Contacts for Additional Information
New York State Emergency Management Office 518-457-2200

**Wetlands Protection**
Government Records Searched in This Report
NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2004 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Freshwater Wetlands
Source: Department of Environmental Conservation
Telephone: 518-402-8961

Federal Contacts for Additional Information
Fish & Wildlife Service 813-570-5412

State Contacts for Additional Information
Dept. of Environmental Conservation 518-457-5690

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

**Coastal Zone Management**

Government Records Searched in This Report

CAMA Management Areas
Dept. of Env., Health & Natural Resources
919-733-2293

Federal Contacts for Additional Information

Office of Ocean and Coastal Resource Management
N/ORM, SSMC4
1305 East-West Highway
Silver Spring, Maryland 20910
301-713-3102

State Contacts for Additional Information

Dept of State, Div. Of Coastal Resources & Waterfront Revitalization 518-474-3643

**FCC & FAA SITES MAP**

For NEPA actions that come under the authority of the FCC, the FCC requires evaluation of Antenna towers and/or supporting structures that are to be equipped with high intensity white lights which are to be located in residential neighborhoods, as defined by the applicable zoning law.

Government Records Searched in This Report

**Cellular**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**4G Cellular**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**Antenna Structure Registration**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**Towers**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**AM Antenna**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

**FM Antenna**
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**FAA Digital Obstacle File**
Federal Aviation Administration (FAA)
1305 East-West Highway, Station 5631
Silver Sprinng, MD 20910-3281
Telephone: 301-713-2817
Describes known obstacles of interest to aviation users in the US. Used by the Federal Aviation Administration (FAA) and the National Oceanic and Atmospheric Administration to manage the National Airspace System.

**Airport Landing Facilities**
Federal Aviation Administration
Telephone (800) 457-6656
Private and public use landing facilities.

**Electric Power Transmission Line Data**
Rextag Strategies Corp.
14405 Walters Road, Suite 510
Houston, TX 77014
281-769-2247
U.S. Electric Transmission and Power Plants systems Digital GIS Data.

**Excessive Radio Frequency Emission**
For NEPA actions that come under the authority of the FCC, Commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities, require the determination of whether the particular facility, operation or transmitter would cause human exposure to levels of radio frequency in excess of certain limits.

Federal Contacts for Additional Information
Office of Engineering and Technology
Federal Communications Commission
445 12th Street SW
Washington, DC 20554
Phone: 202-418-2470

**OTHER CONTACT SOURCES**

**STREET AND ADDRESS INFORMATION**

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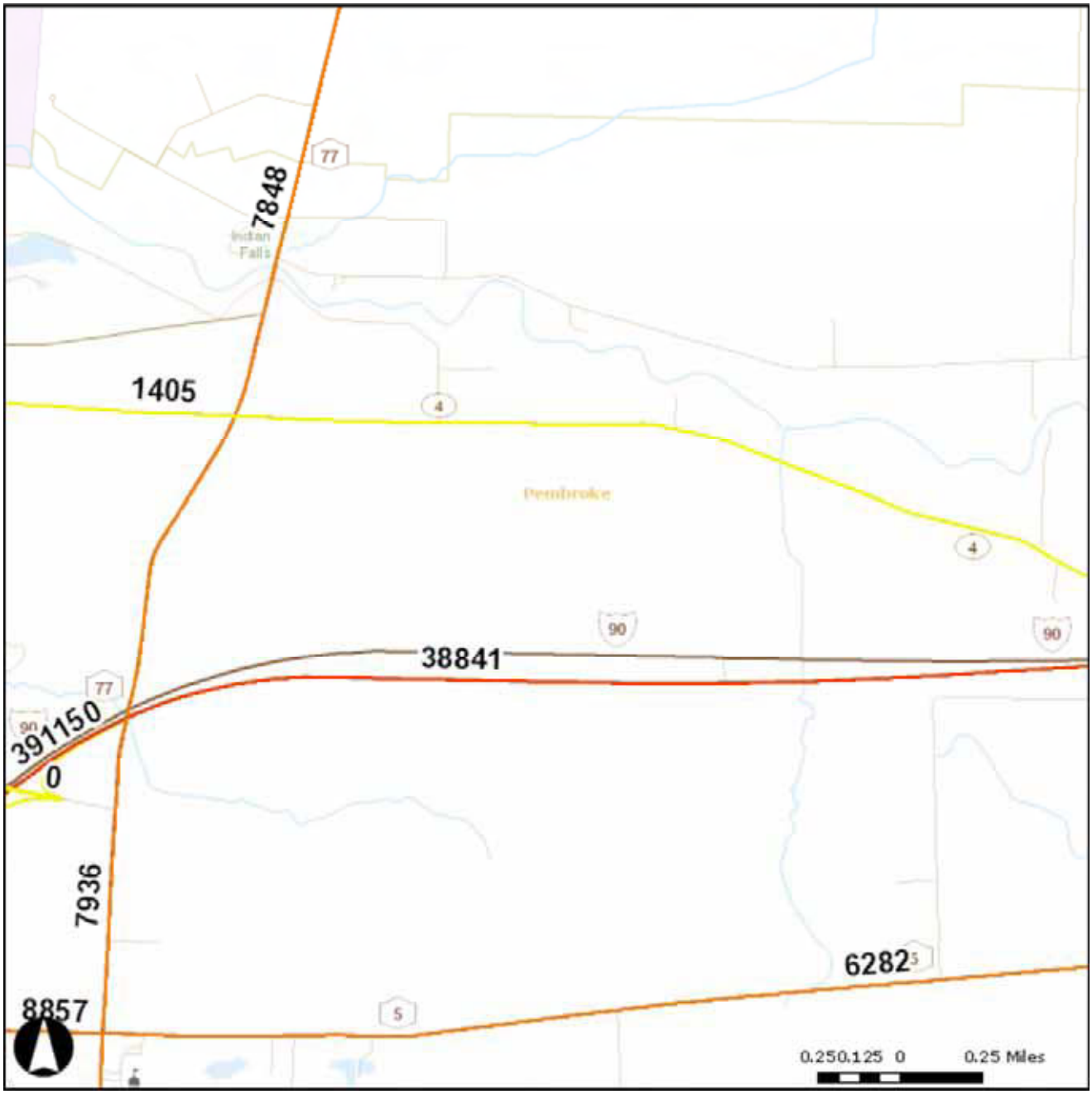
# Map




AADT

- 0 - 2000
- 2001 - 5000
- 5001 - 15000
- 15001 - 50000
- 50001 - 300000

December 12, 2012

Mr. Gary Rothfeld
Department of Veterans Affairs
Realty Specialist
003C1E
425 I St NW, Room 6W219A
Washington, DC 20001

**RE: -MANAGEMENT SUMMARY-**
**Phase 1 Cultural Resource Investigations**
**Proposed Western New York National Cemetery**
**1232 Indian Falls Road**
**Town of Pembroke, Genesee County, New York**
**OPRHP No. 12PR02608**

**- Via E-mail GaryRothfeld@va.gov -**

Dear Mr. Rothfeld:

Pursuant to your request, Commonwealth Cultural Resources Group, Inc. (CCRG) has prepared this management summary to provide you with an update regarding the status of our firm's evaluation of cultural resources at the above referenced property. The final Phase I Cultural Resources report for the project is nearly finished and will be forwarded to you for review and comment shortly. The 132± acre project area is located in an archaeologically sensitive area as identified by the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP). This triggered the need for you to retain a qualified consultant to conduct a cultural resource survey of the project site.

CCRG has been working diligently to conduct an evaluation of the project site. We have recently completed Phase I cultural resource investigations in accordance with the methodology required by the OPRHP. Upon completion of our firm's detailed report, it will be submitted to you and to the OPRHP (at your request) for review and comment. If necessary, we can forward a copy of the Phase I cultural resources report to the appropriate Tribal Historic Preservation Offices (THPO), including Ms. Christine Abrams with the Tonawanda Seneca Nation and Ms. Lana Watt with the Seneca Nation of Indians.

All cultural resource investigations have been performed in compliance with federal and state guidelines for cultural resource studies including the National Environmental Policy Act of 1969; the National Historic Preservation Act of 1966; Executive Order 11593; the Archeological and Historic Preservation Act of 1974; and the New York State Historic Preservation Act of 1980. As guidelines for these investigations, we utilized the procedures outlined in *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* as required by the OPRHP and in accordance with the New York Archaeological Council specifications (NYAC 1994).

**Phase IA Cultural Resource Investigation**

CCRG has conducted a Phase IA sensitivity assessment for the project. This portion of the Phase I study is intended to gather information concerning the environmental/physical setting of the project area as well as its cultural setting. Our research included consideration of relevant geomorphology and soil information, relevant cultural history, and previous archaeological studies conducted within the vicinity. This research helps to provide for the development of explicit expectations or predictions regarding the nature and locations of possible archaeological sites.

Site file research for the project was conducted at the OPRHP (Albany), the New York State Museum (NYSM) (Albany), and the State University of New York at Buffalo (Amherst). In addition, the State/National Register of Historic Places (NRHP) database was examined for documented resources located within a 1.5 mile radius of the project.

Based on background literature and site file research, the project area is considered to have a high sensitivity for the location of previously unrecorded prehistoric archaeological sites. The project's high sensitivity is due to it's proximity to Tonawanda Creek (located less than 0.5 miles to the north) and previously recorded sites. The project area's environmental and topographic features would have made it attractive to prehistoric populations. Site file research indicated that 17 prehistoric archaeological sites have been previously recorded within a 1.5 mile radius of the project area. The final Phase I Cultural Resources report will include a map indicating the location of each previously recorded site.

A nineteenth-century farmhouse and several associated barns and/or outbuildings have been recently removed from the project's northwestern portion (within the southeast corner of NYS Route 77 and Indian Falls Road). A review of available historic maps, atlases, and site file literature indicated that the former residence and barn(s) dated to 1866 and possibly earlier. Subsequently, the project area contained a high sensitivity for the location of subsurface features typically associated with such historic archaeological sites, including middens, sheet refuse deposits, priveys, house or barn foundation remnants, or wells.

**Phase IB Cultural Resource Investigation**

Zero ground surface visibility across the 1232 Indian Falls project area precluded the possibility of conducting a surface inspection. Shovel testing was the only field methodology employed. For the ease of field investigations and report writing the project area was separated into seven areas – Areas A through G (Figure 1).

**Area A.** Comprised of approximately 36.6 acres, Area A is located within the west-central portion of the project area. Area A is located within a wooded area and is bounded on the north by Area F; on the east by Area E; on the south by Area B; and on the west by NYS Route 77 (Figure 1). Placed at 50 ft (15 m) intervals, 639 shovel tests were excavated in Area A. One test, located adjacent to NYS Route 77, contained prehistoric material.

**Area B.** Comprised of approximately 14.7 acres, Area B is located within the southwestern portion of the project area. Located within an area consisting mainly of thick brush and

trees, Area B is bounded on the north by Area A; on the east by Area D; on the south by Area C; and on the west by NYS Route 77 and two residential lots facing NYS Route 77 (Figure 1). Placed at 50 ft (15 m) intervals, 272 shovel tests were excavated in Area B.

**Area C.** Comprised of approximately 5.8 acres, Area C is located within the southwestern corner of the project area. Located within an area consisting mainly of thick brush and trees, Area C is bounded on the north by Area B; on the east by Area D; on the south by Interstate 90; and on the west by NYS Route 77 (Figure 1). Area C contained 98 shovel tests, placed at a 50 ft (15 m) interval.

**Area D.** Comprised of approximately 11.2 acres, Area D is located within the southeastern corner of the project area. Located within an open, fallow agricultural field containing short wild grasses and weeds, Area D is bounded on the north by Area E; on the west by Areas B and C; on the south by Interstate 90; and on the east by a fallow agricultural (Figure 1). Area D contained 198 shovel tests, placed at a 50 ft (15 m) interval.

**Area E.** Comprised of approximately 18 acres, Area E is located within the east-central portion of the project area. Located within an open, fallow agricultural field containing short wild grasses and weeds, Area E is bounded on the north by Area F; on the west by Area A; on the south by Area D; and on the east by a fallow agricultural field (Figure 1). Area E contained 275 shovel tests, placed at a 50 ft (15 m) interval. Area E produced 14 shovel tests containing prehistoric material, all generally located throughout the northeastern and central portion.

**Area F.** Approximately 40 acres in size, Area F is located within the north-central portion of the project area. Located within an agricultural field (which contained soybean at the time of the Phase IB investigations and currently contains winter wheat), Area F is bounded on the north by Area G; on the west by NYS Route 77; on the south by Areas A and E; and on the east by a fallow agricultural field (Figure 1). Area F contained 662 shovel tests, placed at a 50 ft (15 m) interval. This location contained the bulk of the prehistoric material recovered from the project area. In general, shovel tests excavated across Area F revealed two large lithic scatters, with a majority of the material collected throughout the northeastern, southeastern, and south-central portions (Figure 1).

**Area G.** Area G is located within the site of the former residence and barn(s), within the project's northern portion. Comprised of approximately 5.7 acres, Area G is bounded on the north by Indian Falls Road; on the west by NYS Route 77; on the south by Area F; and on the east by a residential lot (Figure 1). A total of 76 shovel tests were excavated at a 50 ft (15 m) interval within a former pasture area (adjacent to the house area). An additional 50 shovel tests were excavated at a 25 ft (7.6 m) interval within the western portion of Area G, within the location of the former house and barn. In addition to a fair amount of historic artifacts, one test within Area G contained prehistoric material.

Shovel tests were excavated with shovels and hand trowels. Soils in all shovel tests were screened through ¼-inch mesh hardware cloth and examined for the presence or absence of cultural material.

Pertinent information for each shovel test (i.e., depth, soil type, color [Munsell] and texture) was recorded in field notebooks. All shovel tests were back-filled upon completion.

In summary, 2,270 shovel tests were excavated across the 132± acre project area, including 2,220 tests excavated at a 50 ft (15 m) interval and an additional 50 tests excavated at a 25 ft (7.6 m) interval.

**Recommendations and Rationale**

**Historic:**

Phase IB investigations carried out at the project area produced several shovel tests containing historic material. However, with the exception of Area G (former house and barn location), none of the recovered historic artifacts are considered to be significant due to either their recent age or lack of association with a former structure or archaeological site.

Not surprisingly, shovel testing across Area G (former house and barn location) produced a fair amount of historic and modern material. The artifact assemblage collected from this location is characteristic of that typically associated with nineteenth-century domestic and farmstead sites (glass, ceramics, metal, nails, construction materials, etc.). Although the former residential structure dates to the mid-nineteenth century, only a few of artifacts could be assigned a range of dates that includes early- to mid-nineteenth-century. In fact, a majority of the collected artifacts contain an extremely wide range of dates spanning well into the twentieth-century. Phase IB field investigations carried out in this location did identify a rock-lined well and a small stone smokehouse. The former residence has been completely removed from the site and its location has been capped with fill. Portions of a large barn foundation still exists immediately south of the former house location. Remnants of another, smaller outbuilding was also identified immediately southeast of the house location. Both foundations are comprised of poured concrete, suggesting, at the very least, early-mid twentieth century construction or modification.

Due to the limited quantity of the historic material collected, the lack of artifact concentrations, and the fact that testing adjacent to the former house location failed to produce evidence of a builder's trench, no further cultural resource investigations are recommended for the historic archaeological resources located within the 1232 Indian Falls project area. The proposed project will have no effect on any historic cultural resources listed, or eligible for listing, in the NRHP.

**Prehistoric**:

Of the 2,270 shovel tests excavated across the project area, 188 contained prehistoric material. A total of 561 prehistoric lithic artifacts were recovered, including two projectile points, 19 bifacially worked tools, two cores, flakes, flake fragments, and shatter. As described above, a majority of the material was collected from Area F – the soybean/winter wheat field within the project's north-central portion. This area contained 172 of the positive tests, while Areas A and G both contained one positive shovel test, and Area E contained the remaining 14 positive tests. In addition to prehistoric material, two shovel tests located within the southeastern portion of Area F contained dark black soil anomalies and charcoal, suggesting the potential for possible subsurface prehistoric hearth features.

Further archaeological investigations are recommended for the Indian Falls Road prehistoric loci in order to determine its potential eligibility for inclusion on the NRHP. The primary goal of a Phase II archaeological investigation is to obtain detailed information on the integrity, limits, structure, function and cultural/historical context of an archaeological site sufficient to evaluate its potential NRHP eligibility. These objectives necessitate the recovery and analysis of artifacts, their context and distribution and any other pertinent data necessary for an adequate evaluation. Based on this information, each site can be assessed to determine its eligibility for the State and NRHP. The criteria for eligibility for cultural resources are set forth in the *Code of Federal Regulations* (35 CFR 60.6 and 800.1):

a) that are associated with the events that have made a significant contribution to the broad patterns of our history, or

a) that are associated with the lives of persons significant in our past, or

a) that embody the distinctive characteristics of a type, period or method of construction, or that represent a significant and distinguishable entity whose components may lack individual distinction, or

a) that have yielded, or may be likely to yield, information important in prehistory or history." (36 CFR 800.16)

In accordance with the guidelines developed and approved by the OPRHP, the proposed field strategy for conducting Phase II investigations at the 1232 Indian Falls Road prehistoric loci should consist of a combination of the following: a controlled surface inspection within Area F; close-interval shovel testing; and test unit excavation.

<u>Surface Inspection.</u> The preferred field methodology for delineating the large clusters of artifacts located within Area F includes a controlled surface inspection. Due to current vegetation, the field should be plowed and disked which will allow for a systematic surface inspection wherein all encountered artifacts can be flagged, collected, and a provenience provided. Surface inspections allow for an accurate horizontal delineation of each prehistoric loci. If plowing and disking is not possible, a grid of close-interval shovel tests should be excavated around each clustered area. Shovel test grids should be excavated at a (minimum) 6 m (20 ft) interval. In order to fully delineate site limits at each locus, shovel test grids should be carried out until double negatives are achieved.

<u>Close-Interval Testing.</u> CCRG recommends close-interval shovel testing around all 16 isolated findspots. Close-interval shovel grids around each isolated find should consist of two tests (excavated at a 3 m and 6 m [10-20 ft] interval) in each cardinal direction. The goal of this task is to determine whether the original findspot constitutes a substantial archaeological site or if it is indeed an isolated find.

Test Unit Excavations. Phase II archaeological investigations across the site should also include the excavation of test units (1 m by 1 m or larger). Test unit placement should be based on the results of the Phase I study and subsequent Phase II close-interval shovel testing and/or surface inspections. Prehistoric loci across the property that appear to contain potential for National Register eligibility or even those that yield sufficient data to warrant additional evaluations, will be subjected to test unit excavations. Once the results of the Phase II close-interval shovel testing and/or surface inspections have been preliminarily analyzed, test unit placement can be determined by the Principal Investigator. The goal of test unit excavation is to gather additional data in order to further evaluate the site's potential significance in terms of criteria of eligibility for nomination on the NRHP. In addition, test unit excavations are utilized to gain a better understanding of soil profiles, investigate for subsurface features (postmolds, hearths, storage pits) and to delineate the horizontal and vertical limits of the site's boundaries.

As you know, a tremendous amount of work is needed to complete the required investigations and we are working diligently to finalize the comprehensive Phase I Cultural Resources report for your review and comment and submission to the OPRHP. If there are any questions regarding this letter or the final steps in finalizing the Phase I report for this project, please call me, at (716) 510-9115. Or, if you prefer, email me at rpeltier@ccrginc.com.

Sincerely Yours,
**CCRG, Inc**.

Robert J. Peltier, M.A.
Principal Archaeologist
rpeltier@ccrginc.com
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cc. Edward G. Brennan II, Public Properties
Rob Clark, TTL Associates, Inc.
Andrea Cohen, Tilton Realty

**FIGURE 1. Aerial View of Project Area Showing Study Area and Archaeologically Sensitive Areas**

KEY:

Area of Potential Effect

Archaeologically Sensitive Areas (Prehistoric Material)

SCALE:

Feet: 0 200 400 800

Meters: 0 61 122 244

N

COMMONWEALTH CRG CULTURAL RESOURCES GROUP, INC.

# Initial Findings of Phase 2 Investigations and Proposed Phase 3 Methodology, the Proposed Western New York U.S. Department of Veterans Affairs Cemetery Location in East Pembroke, New York

**Prepared by Michael L Kagelmacher, MA**
**Principal Investigator**

**July 3, 2013**

**Commonwealth Cultural Resources Group, Inc.**
**2530 Spring Arbor Road**
**Jackson, Michigan 49203**

## 1. Introduction

The U.S. Department of Veterans Affairs (VA) is considering the establishment of a cemetery on Allegheny Road in East Pembroke, Pembroke Township, Genesee County, New York. To assist in completing its obligations under Section 106 of the National Historic Preservation Act to identify historic properties, the VA contracted with Commonwealth Cultural Resources Group, Inc. (CCRG). A Phase 1 cultural resource survey revealed the presence of archaeological materials in the tract (Peltier 2012), and the State Historic Preservation Office (SHPO) concurred with CCRG's recommendation that Phase 2 investigation be undertaken. CCRG's Phase 2 field investigations of the prehistoric cultural deposits at the proposed VA cemetery began on April 15, 2013 and were concluded on June 24, 2013. Michael L Kagelmacher served as Principal Investigator and Field Director. Field technicians included Martin Boratin, Kyle Brock, Tony Bonn, Paul Jensen, Sigmund Antecki, Joe Kline, Vivian Honsinger, Jackie Damon, Dan Whalen and James Wasiura. The project was monitored by Justin Abrams of the Tonawanda Band of Seneca Indians. This report presents the initial findings from the Phase 2 investigations and documents the proposed Phase 3 study.

The Area of Potential Effect (APE) consists of 130+/- acres east of Allegheny Rd., between the I-90 and Indian Falls Rd. It had previously (Phase 1 investigations, Fall of 2012) been found to contain several prehistoric lithic scatters of varying spatial extent, most of which were concentrated in Area F, a large agricultural field that had been planted with soybeans and, more recently, winter wheat (Figure 1). One of the largest clusters of artifacts, covering approximately 2 acres and located in the northeast corner of Area F, was found during Phase 1 investigations to include projectile points of Genesee (Late Archaic period) and Meadowood (Early Woodland period) types (Ritchie 1971). A total of 593 prehistoric artifacts were recovered during Phase 1 investigations, including projectile points, bifaces/fragments, and chert debitage.

Several other large clusters (approximately 1-5 acres in extent) of artifacts were apparent in Area F from the results of Phase 1 investigations, the largest being in the southeast corner of the field. Other large clusters were noted in the southwest and central portions of the field, as were numerous scattered finds of a more isolated nature within the field.

Eighteen additional prehistoric find spots were located elsewhere within the APE (i.e. outside Area F, the wheat field), in Areas A, B, D, E and G, and consisted mostly of 1-3 chert flakes each. Based on the Phase 1 results, CCRG recommended that Phase 2 investigations be undertaken. The SHPO concurred with that recommendation.

## 2. Initial Findings of Phase 2 Investigations

CCRG's Phase 2 field investigations consisted largely of close-interval (20ft) and radial shovel testing around previous Phase 1 prehistoric find spots, in order to determine the spatial extent, distribution, and relative artifact density of prehistoric sites within the APE. The majority of Phase 2 field time was spent shovel testing in close-interval grids around Phase 1 find spots in Area F. Radial shovel tests were also placed around 15 find spots south of Area F (in areas A, B, D and E) and 3 find spots north of Area F (in Area G and in the vicinity of the former farmhouse). Aside from Area F, all previous prehistoric finds in

Areas A, B, D, E and G appear to be small single-use lithic scatters of short temporal duration and minimal spatial extent, generally featuring relatively lesser-quality and earlier stage reduction flakes.

At the beginning of Phase 2 investigations, 5 foot metal u-posts were placed at 300 foot intervals across Area F, to define investigation Blocks A-P. Using 300-foot tape measures, a 20 foot close-interval grid could thus quickly be established anywhere in the field. In blocks A, D, E, and P, all or nearly all possible shovel tests were excavated, to define the boundaries of the largest clusters. Partial grids were placed over several other blocks in a similar fashion, with boundaries generally defined by the presence of double negative shovel tests around the outskirts of a cluster of positive shovel tests.

Several of the stray lithic finds in the northern portion of Area F were initially subjected to radial testing to determine the presence or absence of additional cultural material. When many of these tests were found positive, it was decided that radial testing elsewhere would be abandoned in favor of placing close-interval grids around all of the stray finds in Area F. In general, as positive Phase 1 shovel tests were relocated among the growing wheat, each was initially encompassed by a 5x5 grid of 20ft close-interval shovel tests. As with the larger clusters, these smaller grids were generally terminated as double negative shovel tests were achieved. In several cases, this resulted in the discovery of additional artifact clusters up to 100 feet across (Figures 2 and 3).

When Phase 2 investigations began, the wheat crop was approximately 1-2 inches in height. After the seeding of the field and subsequent winter melt, numerous artifacts were apparent on the surface at the beginning of Phase 2 field investigations, particularly in the vicinity of the largest clusters of positive Phase 1 shovel tests. Of the approximately 6,000 total artifacts recovered during Phase 2 investigations, approximately 25 percent were surface finds, which were recorded separately in relation to the nearest shovel tests. The Phase 2 surface finds included numerous bifaces and biface fragments, a formal count of which will be available at the conclusion of the debitage and tool analysis. As the wheat crop grew, surface visibility gradually diminished, especially as close-interval grids were being placed around the more isolated finds in Area F.

At this writing, CCRG has been out of the field for a little over a week. Though a formal analysis of the chert tools and debitage has not yet been undertaken, rough counts indicate approximately 6,000 artifacts were recovered during Phase 2 investigations. These include numerous bifaces and biface fragments, as well as several projectile points or point fragments. Most notably, a Meadowood Point and a Genesee-like point fragment, similar to those found during Phase 1 in what would become Block A, were recovered on the surface in Blocks E and D, respectively. A drill fragment was also recovered in Block E, and what appears to be an unfinished Late Woodland triangular point was recovered from Block J.

**3. Proposed Phase 3 Field Methodology**

Due to the number and distribution of prehistoric artifacts recovered in Area F during Phase 1 investigations, Phase 2 close-interval testing in this field (which began in April) would normally have been preceded by plowing, disking, and a surface inspection of the field, and followed by the placement of up to 30-40 excavation units (1 x 1meter each). In order to avoid damage to the already-planted wheat crop in Area F, and to avoid a delay to the project, the VA, CCRG, and the SHPO agreed to postpone a

surface inspection until after the close-interval testing and mid-July harvest. Such a surface inspection would further our understanding of the distribution of sites or activity areas within the APE, and would have the potential to produce additional temporally-diagnostic artifacts, such as those found in the northeast corner of the field during Phase 1, in association with other clusters of artifacts.

Many of the more isolated Phase 1 prehistoric finds in the wheat field (Area F) were initially thought to be the result of plow-dragged specimens from the larger clusters. By early June of 2013, close-interval and radial shovel testing in the wheat field had revealed a larger than expected number of separate small clusters of artifacts around several of these more isolated finds.

After consultation with New York State SHPO and the VA, and in order to more adequately define site boundaries within the APE, it was determined in early June that the best course of action would be to forgo placing the planned 1m x 1m excavation units in favor of additional shovel test grids around the more isolated finds in Area F. Excavation units would have provided an opportunity to explore for subsurface features, with the potential for additional diagnostic artifacts as well as the potential for radio-carbon dates, but it was determined that this research potential could be addressed in a less labor-intensive way through mechanically stripping, which along with the postponed surface inspection would then be considered a Phase 3 investigation.

It is recognized that the project has not followed the classic trajectory of discovery, evaluation, and data recovery. Schedule concerns and avoidance of crop damage have forced the VA, CCRG, and the SHPO to modify the normal sequencing of tasks. The Section 106 compliance process is meant to be flexible, to respond to the demands of specific undertakings, and the present project displays that flexibility. The SHPO, VA, and CCRG have agreed that with the completion and reporting of the proposed Phase 3 investigations, the research potential of the site will have been achieved, and that further investigations (barring late discoveries) will not be necessary.

In interpreting lithic-dominated sites partially or completely in plowzone contexts, it is important to collect several key data sets. Certain of these data sources have been addressed during the Phase 2 investigation, and the proposed Phase 3 study will be focused on two tasks: 1) controlled surface collection of Area F, to provide a more comprehensive sample of the plowzone artifacts; and 2) machine-assisted removal of the plowzone from a sample of Area F to determine if cultural features are present, and to excavate such features.

Immediately after the harvest of the wheat crop, and prior to mechanical stripping, CCRG proposes to plow and disk the entire wheat field (Area F, approximately 40 +/- acres). After a weathering period of about 2 weeks, during which the site would be monitored by a field technician to deter looters and artifact collectors, Area F would then be subjected to a surface inspection lasting 5 days. This would afford the potential opportunity to recover additional diagnostic artifacts or tools, and may add to our understanding of the distribution of artifacts and/or sites across the field.

In order to better address questions concerning site function and timing of prehistoric occupations within the APE, CCRG thus proposes to mechanically strip the topsoil from an area approximately 1 acre in extent within Area F over a period of 10 days. This is equivalent to approximately half of one of the 300ft

x 300ft grid blocks. Stripping would be accomplished by placing 9 “windows”, of approximately 50ft x 100ft each, in and around the various concentrations identified during Phase 2 close-interval shovel testing, in order to explore for subsurface features. Two or 3 of these windows may be split into two 50ft x 50ft windows and used to investigate areas in the vicinity of the smaller clusters. Specific locations of the areas to be stripped will be determined based on artifact density (including high and low density areas), location of tools (projectile points, bifaces, etc.), and apparent site boundaries.

A total of 15 days over three weeks (pending weather) would be spent in the field for Phase 3 investigations once the harvest is concluded and the field plowed/disked/weathered. Five days would be spent on surface inspection of Area F (the wheat field), nine days would be spent on mechanical stripping of nine windows in Area F (50ft x 100ft each) to explore for subsurface features, and one day would be left for cleanup and to address any remaining features.

A Phase 3 Management Summary will be issued within two weeks of completion of the field work. Upon SHPO review and acceptance of the Management Summary, the tract will be cleared for construction activities, with the understanding that a complete Phase 3 report will be issued within one calendar year of completion of the field work.

The Phase 3 study would include laboratory processing and analysis of all artifacts recovered during Phase 2 and 3. If features are encountered, the analysis will include zooarchaeological and ethnobotanical analyses. Up to three samples will be submitted for radiocarbon assay. The reporting and curation preparation will follow the guidelines established by Section 14.09 of the New York State Historic Preservation Act of 1980 and Section 106 of the National Historic Preservation Act of 1966.

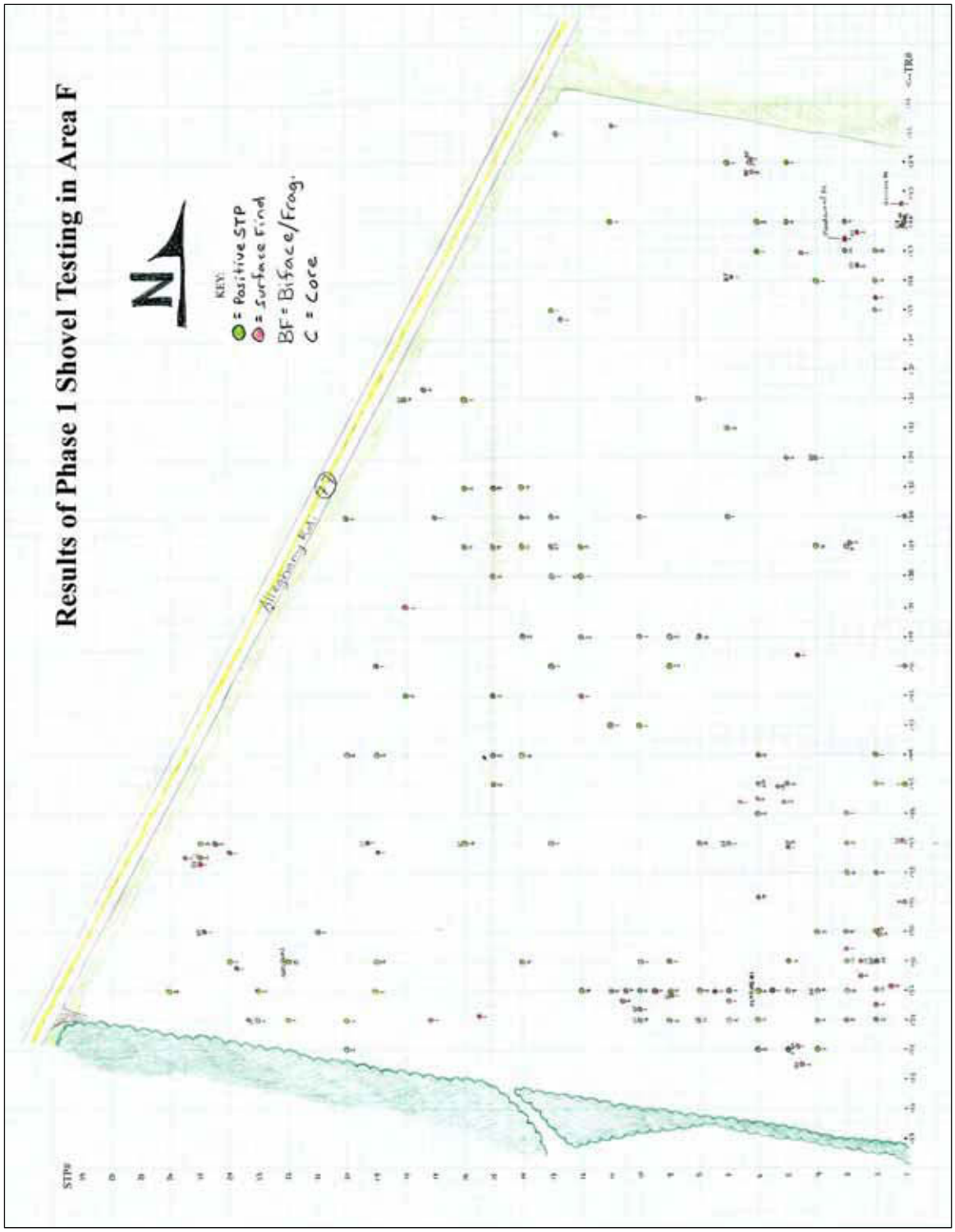


**Figure 1**. Positive Phase 1 Shovel Tests and Surface Finds in Area F.

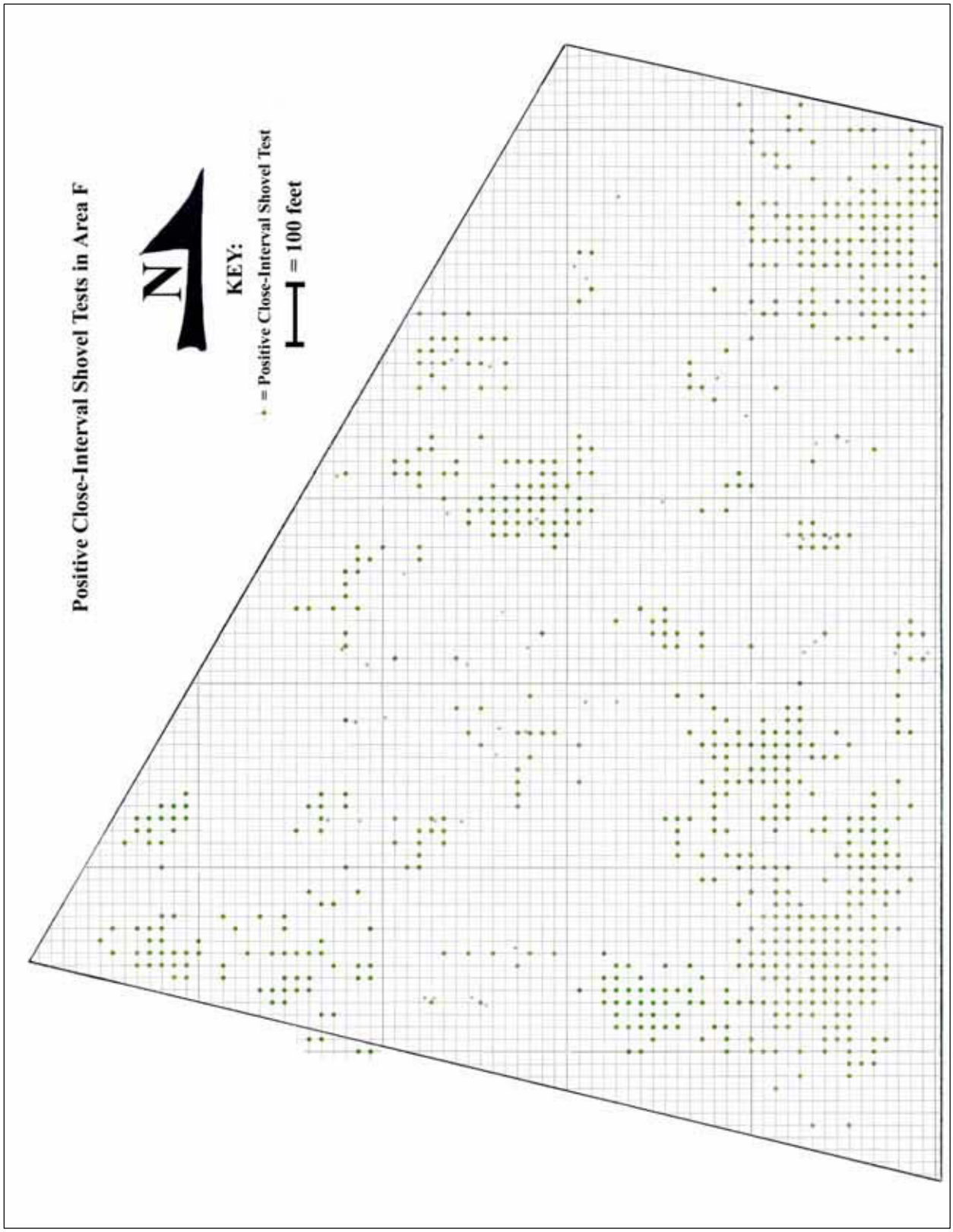


**Figure 2**. Positive Phase 2 Close-Interval Shovel Tests in Area F.

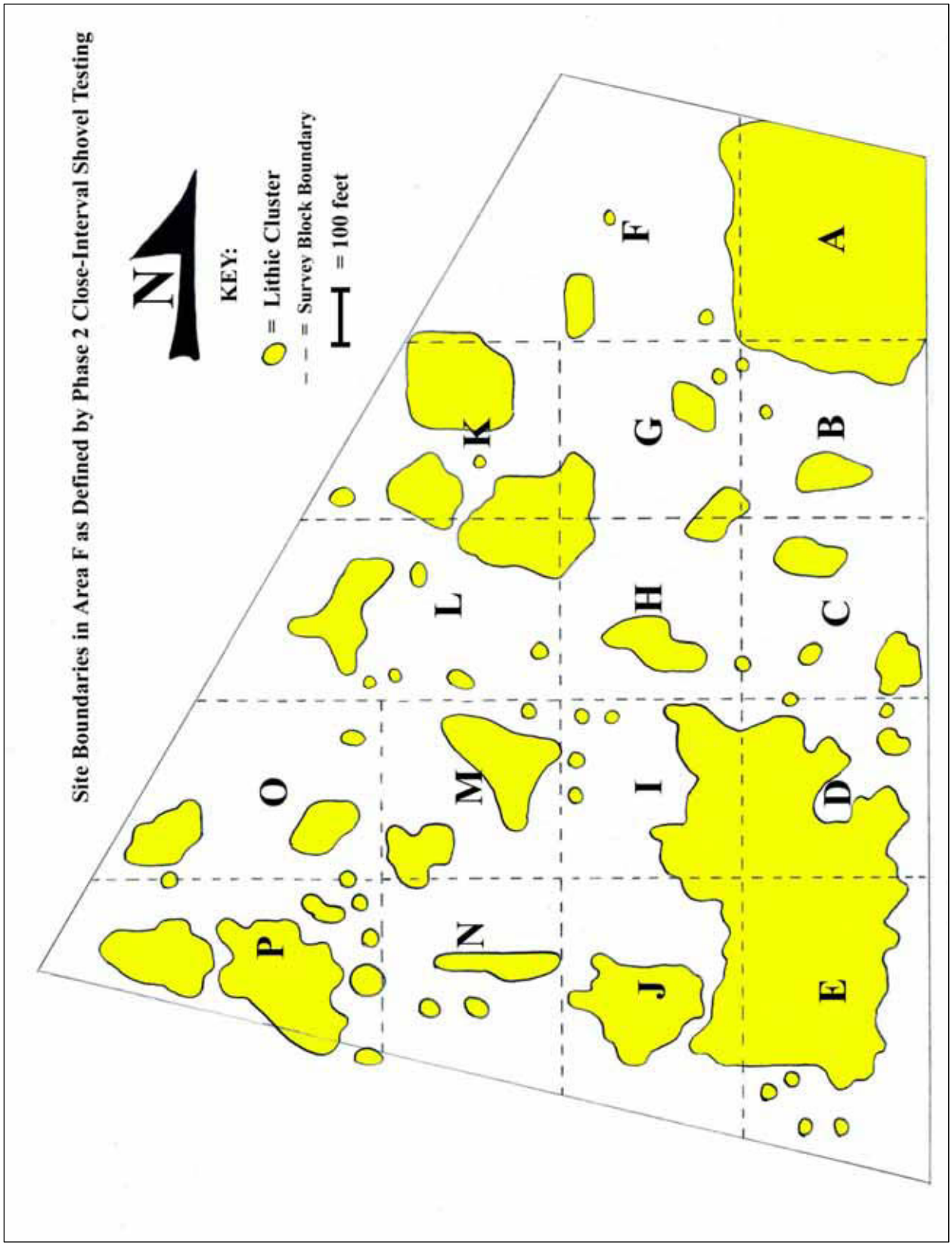


**Figure 3**. Clusters of Positive Close-Interval Shovel Tests in Area F.

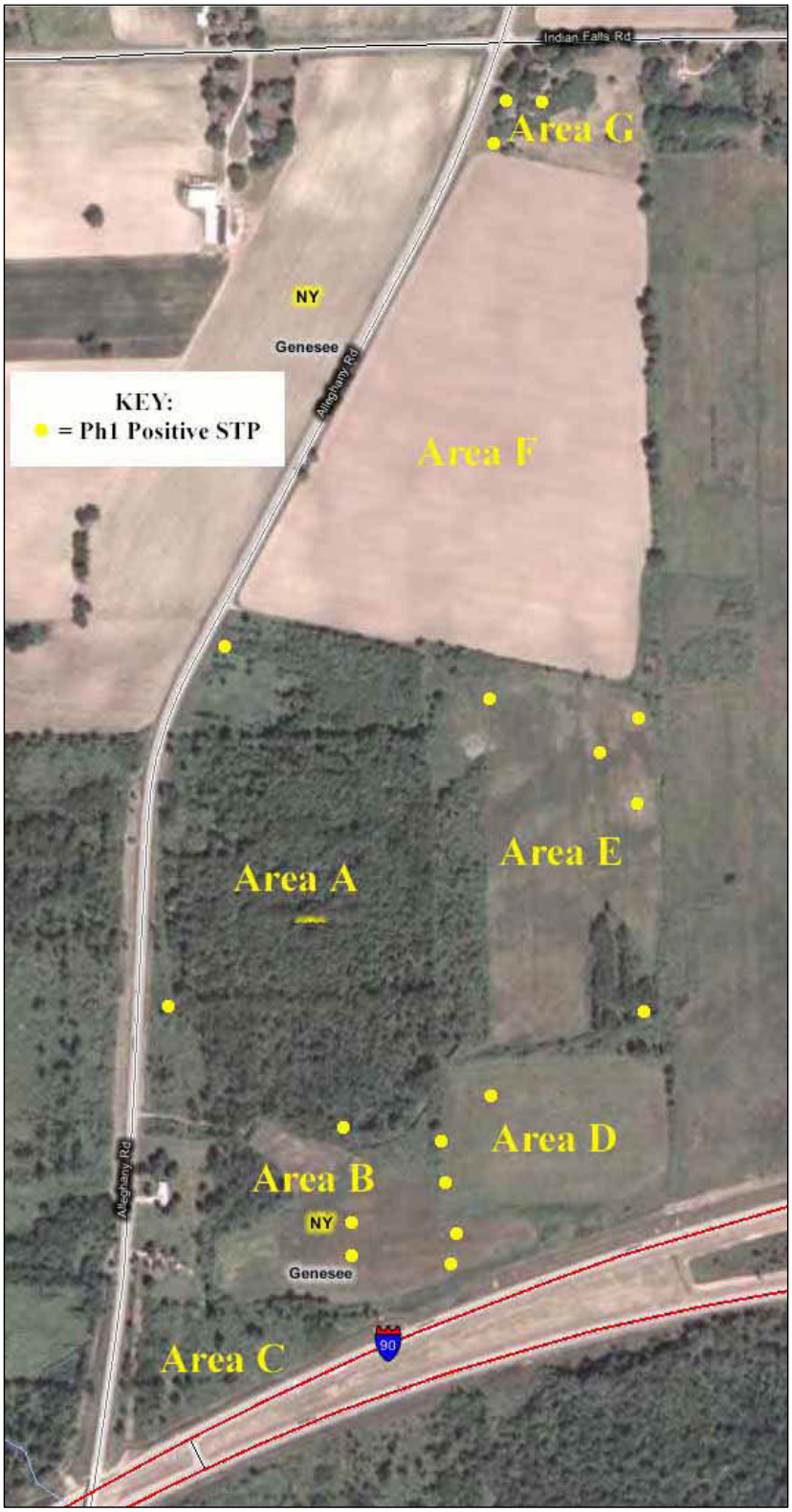


**Figure 4**. Positive Phase 1 Shovel Tests outside Area F.

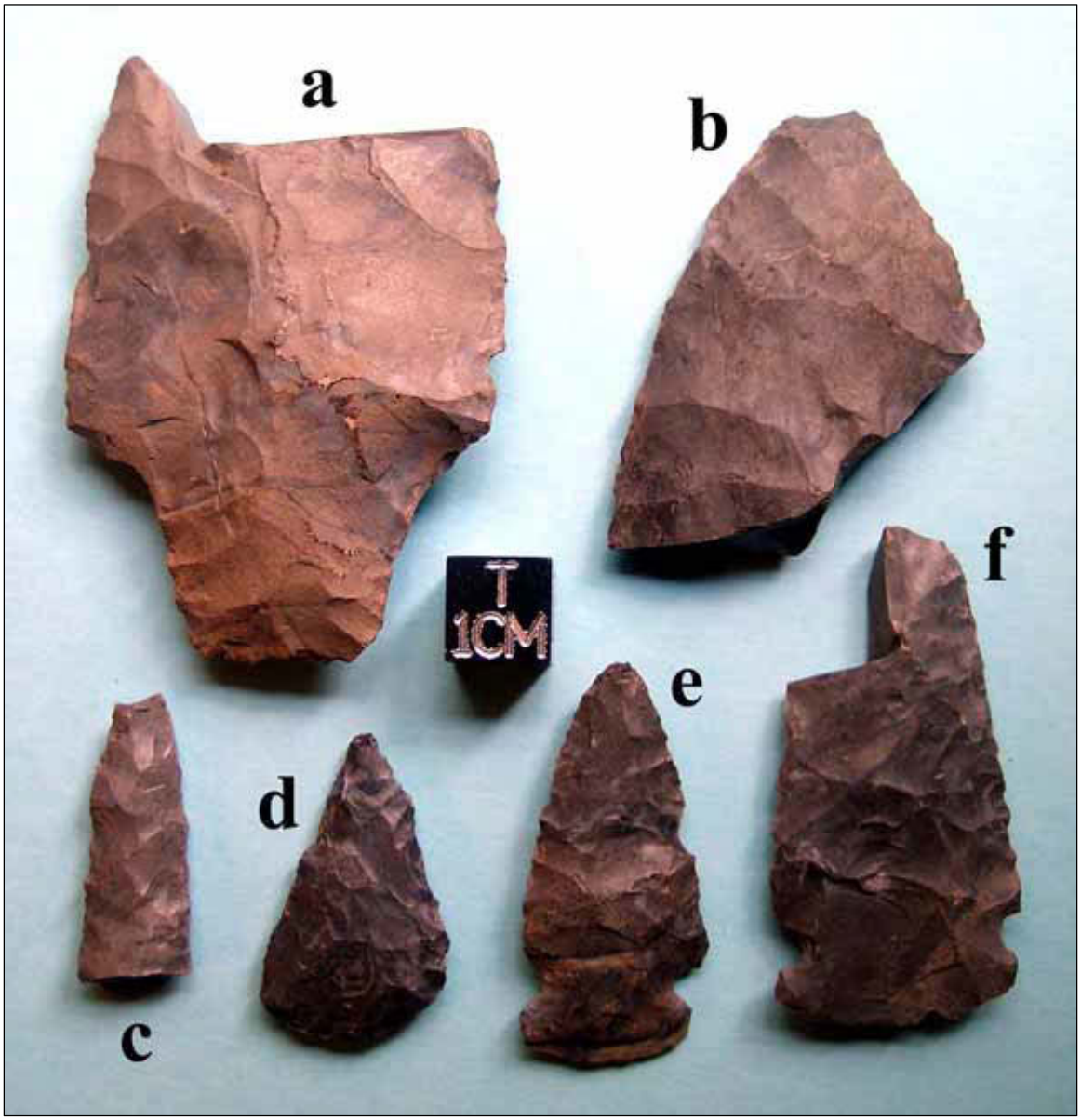


**Figure 5**. Tools from Phase 1 and Phase 2 investigations.

KEY:

a. Genesee Point fragment – Area A (Phase 1)
b. Genesee-like distal biface fragment – Area D (Phase 2)
c. Drill fragment – Area E (Phase 2)
e. Meadowood Point – Area E (Phase 2)
f. Meadowood Point Fragment – Area A (Phase 1)

**Figure 6**. Wheat at 1-2 inches in height on April 26, 2013

**Figure 7**. Close-interval shovel testing in Area F.

**Figure 8**. Surface finds marked with pink flags in Area F, Block E.

**Figure 9**. Facing south towards Block E. Close-interval grid marked with yellow flags.

**Figure 10**. Radial shovel testing around a positive Phase 1 shovel test in Area A.

**Figure 11**. Facing west towards the southwest corner of Area F, amid rapidly growing wheat.

**References Checked:**

Peltier, Robert

2012 *Management Summary: Phase 1 Cultural Resource Investigations, Proposed Western New York National Cemetery, 1232 Indian Falls Road, Town of Pembroke, Genesee County, New York (OPRHP No. 12PR02608).* Commonwealth Cultural Resources Group, Inc., Buffalo, New York. Submitted to Department of Veterans Affairs, Washington, D.C.

Ritchie, William A.

1971 *A Typology and Nomenclature for New York Projectile Points*. New York State Museum Bulletin Number 384. The University of the State of New York, State Department of Education. Albany, New York. Reprinted 1989.

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MEMBER
ACEC New York

May 23, 2013
Project No. BE-12-181

Mr. James Kennedy
Public Properites
3210 Grace Street, NW Suite 100
Washington, DC 20007

Re: General Site Assessment and Preliminary Geotechnical Evaluation Report for Proposed Veterans Affairs Cemetery
1232 Indian Falls Road
Town of Pembroke, Genesee County, New York

Dear Mr. Kennedy:

Empire Geo-Services, Inc. (Empire) is pleased to submit two (2) copies of this General Site Assessment and Preliminary Geotechnical Evaluation Report, to Public Properties on behalf of Veterans Affairs, for the above referenced project. A pdf file copy of the report has also been e-mailed to you for your use and distribution, as appropriate.

As the development of the proposed project site evolves, there will likely be additional issues, which Empire may need to address. Accordingly, please contact me, should you have any questions regarding our report or if you would like to discuss any design limitations and issues.

Sincerely,

EMPIRE GEO-SERVICES, INC.

Wanda M. Allen, P.E.
Geotechnical Engineer

Enc.: General Site Assessment and Preliminary Geotechnical Report (2 Copies)

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MEMBER

ACEC New York

# General Site Assessment and Preliminary Geotechnical Evaluation Report for Proposed Veterans Affairs Cemetery 1232 Indian Falls Road Town of Pembroke, Genesee County, New York

Prepared For:

Public Properties
3210 Grace Street
NW Suite 100
Washington, DC 20007

Prepared By:

Empire Geo-Services, Inc.
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STATE OF NEW YORK
WANDA M. ALLEN
No. 089731
LICENSED PROFESSIONAL ENGINEER

5/23/13

Project No.: BE-12-181
May 2013

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## 1.00 INTRODUCTION

### 1.10 GENERAL

This report presents a summary of the subsurface exploration program and geotechnical engineering evaluations, completed by Empire Geo-Services, Inc. (Empire), for the proposed Veterans Affairs Cemetery (VA Cemetery) project site planned at 1232 Indian Falls Road in Pembroke, New York. The approximate location of the project site is shown on Figure 1.

Public Properties retained Empire to complete the subsurface exploration program and provide a general site assessment including preliminary geotechnical engineering recommendations for the proposed project. This work was completed in general accordance with our October 5, 2012 proposal.

The subsurface exploration program consisted of the following, which serve as a basis for our geotechnical evaluation and recommendations presented herein:

- Completion of test borings at twenty-seven locations (designated as B-1 through B-27) throughout the 132.5 acre parcel of land;

- Installation of groundwater observation wells within two (2) of the completed test borings (i.e. at locations B-3 and B-21);

- Measuring and recording the groundwater levels in the observation wells on two occasions during our study;

- Laboratory testing of representative recovered soil samples to help characterize the soils and their index properties, as well as develop appropriate engineering parameters, including the analysis of organic content and pH of the existing topsoil; and

- Review of current aerial photographs as well as the "ALTA / ACSM Land Title Survey", for Being Parts of Lots 9, 17, 18 and 28 of the 12,000 Acre Tract, Tonawanda Reservation, prepared by Foit Albert Associates (Foit Albert), dated January 22, 2013, as basis for helping to characterize existing structures, possible buried structures and fill present on the site.

SJB Services, Inc. (SJB), our affiliated drilling and testing company completed the test borings and installed the groundwater observation wells. In addition, SJB completed geotechnical laboratory testing on the selected soil samples.

Based on the findings from the exploration program, Empire prepared this report, which summarizes the subsurface conditions, and presents geotechnical considerations and recommendations to assist in development of the site for use as a cemetery.

## 1.20 SITE DESCRIPTION

The proposed VA Cemetery project is currently planned on an approximate 132.5 acre parcel of land generally bound by Indian Falls Road (County Road 4) to the north, Allegany Road (Route 77) to the west, Interstate 90 to the south and undeveloped open fields and wooded areas as well as possible cultivated fields to the west. The property address is 1232 Indian Falls Road in the Town of Pembroke, New York.

Two residential lots, which are currently developed, are located off the west side of the parcel, near the southern portion of the project site, along Allegany Road. We understand, these properties are not within the limits of proposed cemetery. Based on the current aerial photograph of the site, obtained from the Microsoft web site, www.bing.com/maps, the residential lots are developed including single and two-story, wood framed structures, a swimming pool, gravel drives, telephones poles, etc.

Just north of the residential homes, within the property limits of the proposed cemetery, a gravel/dirt drive is located off the east side of Allegany Road which extends just past the east side of the proposed property. Foit Albert's survey indicates the gravel drive turns to a dirt road approximately 160 feet off the shoulder of the road. Following the path of the dirt road, a billboard sign is located approximately 390 feet off the shoulder of Allegany Road. A cable television line runs along the west edge of the developed residential properties including portions of the proposed property, which also extends east up to the southwest corner of the billboard sign. Several utility poles are also located along the south side of the dirt drive, prior to encountering the billboard.

In addition, near the northwest corner of the proposed property, based on the aerial photograph and Foit Albert's survey, a gravel drive, which is located approximately 120 feet south of the northwest corner of the property, extends east off of Allegany Road, bending north to connect with Indian Falls Road, approximately 110 feet east

of the northwest corner. Per the aerial photograph, the horseshoe driveway was used for access to a possible single to three-story, wood framed residential structure. Numerous trees surrounded the previously demolished home. Foit Albert's survey indicates this area consists generally of a grass field and there appears to be no evidence to the existence of the previous home structure.

Foit Albert's survey, also indicates an old concrete and stone foundation are located south and southeast of the gravel drive. The larger foundation is located directly south of the drive. This appears to have been an old barn with a silo to the south, per the aerial photograph. The type of structure for the other, smaller, previously demolished building is unknown. An old wood framed and stone building, approximately 72 square feet is located generally east of the gravel drive. A domestic well is also located east of the gravel drive, north of the wood framed and stone building.

The open field to the south of the residential type structures consists of cultivated land, until just shy of the center of the proposed property, which then appears to consist generally of undeveloped, heavily wooded areas generally on the west and open grass covered fields generally on the east side, except for the billboard sign and gravel/dirt drive previously noted.

Based on the USGS Topographical Survey Map of Akron Quadrangle, New York, 1981 - 7.5 minute series, the topography of the site appears to gradually slope downwards from the north end of the site to the south, with ground surface elevations (El.) ranging between about El. 870 feet to El. 840 feet. However, based on the aerial mapping, it appears the site grades have been raised, near the gravel and dirt access drive to accommodate the billboard structure.

## 1.30 PROJECT DESCRIPTION

The proposed VA Cemetery development project is in the preliminary phases, and a proposed development plan had not been established at the time of our geotechnical investigation. Accordingly, this geotechnical investigation was completed to provide a general site assessment of the proposed property to determine possible subsurface issues and feasibility with regard to development of a cemetery on the parcel.

Generally it is expected, the cemetery will include construction of mausoleums, maintenance building(s), monuments, roadways, sidewalks and underground crypts, including underground double depth burial lots. Significant site grade changes are

not anticipated, and are likely to be minimized to limit cost(s) for development of the cemetery.

On this basis preliminary geotechnical considerations and recommendations are provided in this report with regard to foundation design and bearing capacity, slab-on-grade construction and general site work construction. In addition, it is expected that any building structures will be designed for seismic conditions in accordance with the Building Code of New York State (2010 edition). Accordingly, preliminary seismic design criteria have also been provided in this report.

## 2.00 SUBSURFACE EXPLORATION PROGRAM

The subsurface exploration program was completed by SJB between February 25th and 28th, 2013. The subsurface exploration program consisted of performing test borings at twenty-seven (27) locations across the proposed project site and the installation of two (2) groundwater observation wells. The test boring locations are designated as B-1 through B-27 and the groundwater observation wells are identified by the test borings in which they were installed (i.e. observation wells B-3 and B-21). The approximate exploration and groundwater observation well locations are shown on Figure 2.

The suggested general locations of the test borings were initially established on a site plan by Empire to provide general coverage of the project site, in accordance with the "Statement of Work" dated October 1, 2012, which requested at least one boring per five acres of the site. SJB then staked the test borings in the field using hand held global positioning satellite (gps) instrumentation.

The test borings were made using a Central Mine Equipment (CME) model 850 all terrain track mounted drill rig, using hollow stem auger and split spoon sampling techniques. Split spoon samples and Standard Penetration Tests (SPTs) were taken continuously from the ground surface until boring completion. The test borings were advanced to a depth of 8 feet or until sample spoon and/or auger refusal were met at depths varying from 5.5 feet and 7.9 feet below existing site grades. The split spoon sampling and SPTs were completed in general accordance with *ASTM D 1586 - "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils"*.

During the advancement of test boring B-5, auger refusal was encountered on apparent boulder obstructions at a depth of 4.0 feet. The boring was subsequently moved over about 5 feet west and advanced to a depth of 4 feet where split spoon samples were then taken until a depth of 7.2 feet. At a depth of 7.2 feet sample

spoon refusal was met. Accordingly, test boring B-5A is considered a continuation of test boring B-5 and not an additional boring.

The groundwater observation wells installed in completed test borings B-3 and B-21, consisted of a 2-inch diameter PVC well screen and riser pipe with a sand filter and bentonite seal, which extended up to the existing ground surface, due to the shallow depth of the wells. The actual location of the ground monitoring observation well installed for test boring B-3 was set approximately 65 yards north of the initial test boring location. Additional details regarding the construction of the observation wells are shown on the Monitoring Well Completion Records presented following their respective test boring logs in Appendix A.

A Geologist from SJB prepared the test boring logs based on visual observation of the recovered soil samples and a review of the driller's field notes. The soil samples were described based on a visual/manual estimation of the grain size distribution, along with characteristics such as color, relative density, consistency, moisture, etc. The test boring logs are presented in Appendix A, along with general information and a key of terms and symbols used to prepare the logs.

## 3.00 LABORATORY TESTING

Several of the collected soil samples were tested in SJB's geotechnical testing laboratory to confirm soil classifications, provide soil index properties, and assist with estimating soil engineering properties. Several soil samples were also tested by SJB and Analytical Testing Services, Inc. to provide an indication of the corrosion potential of the on-site soils with regard to buried metallic conduits and potential sulfate chloride impacts on buried concrete structures. SJB's geologist collected a topsoil sample from test borings B-3, B-10, B-12 and B-21 on April 21, 2013. The topsoil samples collected were tested for its organic content and pH.

The geotechnical laboratory testing completed on the collected soil samples included the following tests.

- Natural moisture content in accordance with *ASTM D 2216 – "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass"*;
- Grain size analyses (sieve analyses only) in accordance with *ASTM C 136– "Standard Test Method for Particle-Size Analysis of Soils"*;

- Liquid Limit, Plastic Limit, and Plasticity Index of Soil in accordance with *ASTM D 4318* – "*Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils"*;
- Organic content in accordance with *ASTM D 2974 – "Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils"*; and
- Resistivity, redox, pH, moisture, and sulfides according to procedures established by the Ductile Iron Pipe Research Association (DIPRA test) to provide an indication of the corrosion potential of the on-site soils with regard to buried metallic conduits; and
- Sulfate and chloride concentration in the soils, in accordance with Analytical Method SW 9056, with regard to potential soil impacts on buried concrete structures.

The laboratory test data is summarized below in Sections 4.70 and 5.00 and is presented in Appendix B.

## 4.00 SUBSURFACE CONDITIONS

### 4.10 LOCAL GEOLOGY

The proposed project site is located on the south side of Indian Falls Road, which is located within less than a ½-mile south of Tonawanda Creek, southeast of the Indian Falls Gorge. The USGS topographically survey map, indicates the topography of the site gradually slopes downward, from the north to the south, from El. 570 feet to El. 540 feet.

Soil survey literature describes this map unit as generally laminated lacustrine silt and clay, which were deposited in glacial lakes and are generally calcareous. The thickness is variable (up to 100 meters) with potential land instability. In addition, the far northern portion of the site is described as till moraine, which is generally more variably sorted and more permeable than till and may include ablation till. The thickness is variable from 10 to 30 meters.

The modern United States Department of Agriculture (USDA) "Soil Survey of Genesee County, New York" (Version 12 – 2011) classifies the majority of the surface soils at the center of the site as Canandaigua silt loam. In the center of the site, generally near the west and east proposed property lines, Ovid silt loam,

Niagara silt loam and Lamson mucky very fine sand loam are also present per the USDA soil survey.

The surface soils along the northern portion of the site is a mixture of Dunkirk silt loam, Palmyra gravelly loam and Lima silt loam which grades to the Ontario loam. The Ontario loam makes up the majority of the northern surface soils prior to grading to the Canandaigua silt loam which dominates the classification of the surface soils on the site and specifically in the center and southern areas.

However, the surface Canandaigua silt loam grades to the Phelps gravelly loam when encroaching the southern portion of the project site which is also found with the Halsey silt loam, Lamson very fine sandy loam and Galen very fine sandy loam. At the far southwest corner, the surface soils consist of a mixture of Udorthents, Galen very fine sand loam, Romulus silt loam and Ovid silt loam.

In summary, per the Genesee County Soil Survey, the majority of the surface soils consist of Canandaigua silt loam (>50%), with the north consisting of Ontario loam and the south Phelps gravelly loam. In general, the surface soils are predominately fine grained in nature and have a low permeability.

The uppermost bedrock formation in this area is middle Devonian period limestone of the Onondaga Geologic Formation. The bedrock is characterized as cherty and is generally hard.

The permanent or generalized groundwater conditions (i.e. groundwater table) in this area are expected to be in close proximity to the water level of the Tonawanda Creek, and can fluctuate accordingly. Based on the soil types present, zones of perched or trapped groundwater can also be present at various locations, depths and times of the year, depending on precipitation, seasonal runoff, and site drainage characteristics.

## 4.20 GENERAL SUBSURFACE CONDITIONS ENCOUNTERED

The test borings completed at the site encountered soil and groundwater conditions generally similar to those of the known local geology.

Man-placed fill soils were not encountered at any of the test boring locations. However, it should be expected that fill soils and/or possible reworked indigenous soils will be encountered near the adjacent, previously developed properties as well as near the existing structures (i.e. wood framed building, billboard, access drive areas), including the previously demolished residential type structures. The fill

soils are expected to extend at least to the bottom of previous excavations for the existing building foundations and utility structures. In addition, it is expected the fill near these areas will vary and will be dependent on the original native site topography, as well as the extent to which the isolated site areas had been previously disturbed by past uses. The upper near surface indigenous soils have also been disturbed in many cases due to past agricultural uses of the site.

In most cases, the indigenous soils consisted predominately of fine silty sand followed by clayey silt and silty clay soil deposits. However, the clayey soil stratums were also recovered directly beneath the topsoil at several of the boring locations. The fine sand soil deposits contained varying amounts of medium to coarse sand, silt, clay and gravel. Occasional to numerous cobbles and boulders were also encountered within the sand soil deposits, especially on the northern portion of the site, which is described as till moraine per the soil survey.

It does not appear bedrock was encountered within the depths explored at the test boring locations, as discussed in more detail below.

The stabilized general groundwater table measured in the groundwater observation well (B-21) installed by Empire was near El. 843 feet.

The soil stratigraphy encountered and the groundwater conditions observed are described in more detail in the following sections and on the test boring logs included in Appendix A.

## 4.30 SURFACE MATERIALS

Topsoil was noted to be present at the ground surface of all the test borings. The topsoil thickness varied from about 2 to 12-inches based on the driller's interpretation of topsoil. Possible reworked or re-placed topsoil from the site may extend another foot or so, especially on the northern end of the site, due to past cultivation activities.

The topsoil measurements are widely spaced and are approximate, as the data is limited and subject to interpretation. Therefore this information should not be solely relied on for estimating topsoil quantities present on the site, which may be required to be removed for building, roadway and sidewalk construction. Accordingly, it will be necessary for the Contractor, and/or others, to make their own detailed observations and measurements, prior to bidding and construction, to determine the quantities, costs and efforts that will be required for removal of the

topsoil, organics and roots and any associated replacement with an appropriate suitable fill materials.

## 4.40 INDIGENOUS SOILS

Beneath the topsoil, the indigenous soils encountered consisted of varying proportions of intermixed fine to coarse sand, silt, clayey silt and silty clay soil deposits. Trace to some amounts of fine to coarse gravel was also noted within the sand soil deposits at varying locations and depths. A fine-coarse gravel soil stratum intermixed with sand and silt was also encountered at boring location B-9. These non-organic, lacustrine and till moraine type indigenous soils vary in composition between GM, SW, SP, SM, SC-SM, ML, CL-ML and CL group soils using the Unified Soil Classification System (USCS).

The Standard Penetration Test (SPT) "N" values obtained within the indigenous soil deposits ranged from 1 to greater than 50, indicating the granular sand and generally non-plastic silt soils as well as the gravel soil deposits have a variable relative density ranging from "very loose" to "very compact", while the cohesive silty clay and clayey silt have a variable consistency of "very soft" to "hard". The looser and softer indigenous soils were generally encountered within the upper 2 to 4 feet, although, at several boring locations, the softer/looser soil deposits did extend up to depths of 6 to 8 feet.

Sample spoon refusal ("REF" – greater than 50 blows required to advance the split spoon with 6-inches or less of penetration) was also encountered in the sand and gravel soil deposits at borings B-2, B-4, B-5/B-5A, B-6, B-8, B-9 and B-10, generally below a depth of about 6 feet, although it was also encountered at shallower depths at a couple of the boring locations. The spoon refusal indicates a very compact relative density of these soil deposits. However, trace to "and" amounts of boulder fragments were recovered within the sand and gravel soil deposits which will generally increase the resulting SPT "N" value. Accordingly, cobbles and boulders should be expected to be encountered at varying locations and depths throughout the proposed project site.

## 4.50 REFUSAL CONDITIONS

Test borings B-2, B-4, B-5A, B-6, B-8, B-9 and B-10 were terminated with sample spoon and/or auger refusal which was encountered at depths varying from 5.5 feet to 7.9 feet. In addition, at test boring location B-5, which is located adjacent to boring B-5A, auger refusal was encountered at a depth of 4.0 feet. In some cases, sample spoon and auger refusal can suggest the possibility that bedrock was

encountered at this depth. However, spoon refusal was also encountered within the upper sand soil deposits, as noted above. In addition, based on the varying depths (anticipated elevations) and locations at which spoon and/or auger refusal were encountered across the site, including the predicted till moraine type soil deposits per the soil survey, it does not appear the refusal conditions in these cases are the result of encountering bedrock but rather the cobbles and boulders present within the indigenous soil deposits. Additional deeper investigation is recommended to determine the actual depth and quality of the expected Limestone bedrock present beneath the site.

## 4.60 GROUNDWATER CONDITIONS

Water level measurements were made in the test borings at the completion of overburden drilling and sampling and are noted on the test boring logs included in Appendix A. Freestanding water was encountered at depths typically varying from 4 feet to 6 feet below the existing site grades, within the test borings located generally on the mid to southern portion of the project site.

Freestanding water was generally not encountered within the northern test borings, which are located at higher elevations on the site. It is noted that all the test borings were terminated at a depth of 8 feet or less. In addition, sufficient time for the groundwater to stabilize and/or accumulate in the test boring bore holes within the time that had elapsed from the completion of drilling operations and the time of measurement was most likely not provided prior to the groundwater level observations / measurements.

A 2-inch diameter PVC groundwater observation well was installed in test borings B-3 and B-21 to assess the approximate static groundwater level. The well riser pipe extends about 2.3 feet and 2.2 feet above the existing ground surface at the boring locations, respectively. Refer to the monitoring well installation detail presented with the test boring log in Appendix A for detailed information regarding the well construction.

SJB Geologist visited the site to record the water level in the wells on two occasions, March 18, 2013 and April 21, 2013. These measurements are as follows:

| Date | Depth to Groundwater (bgs) (feet) | Groundwater Elevation (feet) |
|---|---|---|
| Well B-3: Estimated Ground Surface El. 858 feet* | | |
| 3/18/13 | Not Encountered | Not Encountered |
| 4/21/13 | Not Encountered | Not Encountered |
| Well B-21: Estimated Ground Surface El. 843 feet* | | |
| 3/18/13 | 0.31 | 842.7 |
| 4/21/13 | 0.37 | 842.6 |

*Estimated Ground Surface obtained from USGS Topographical Survey Map

Based on the groundwater level measurements obtained within the ground observation wells, as well as the observations following the completion of overburden drilling and sampling within the test borings, it appears saturated groundwater conditions (i.e. groundwater table) are within 1 foot of the existing ground surface, on the mid to southern portion of the site.

SJB's geologist also noted ponded surface water at the ground surface, between test borings B-12, B-13, B-16 and B-17, which are generally located near the center of the site, on April 21, 2013. In addition, SJB's driller noted surface water at and surrounding test boring B-20 at the time of drilling operations (2/26/13). The installation of additional groundwater observation wells installed at deeper depths and with varying screened interval depths would help to better define the groundwater conditions present across the site.

Some localized zones of perched or trapped groundwater may also be present where more permeable silt, sand and gravel soils overlie the less permeable clay soils. Perched groundwater conditions can be more prevalent following heavy or extended periods of rain and during seasonally wet periods.

Accordingly, it should be expected that perched and permanent groundwater conditions will vary with changes in soil conditions, precipitation and seasonal conditions and can be influenced by fluctuations in the level of the nearby Tonawanda Creek.

## 4.70 SOIL CORROSION AND SULFATE ATTACK POTENTIAL

Two (2) soil samples, obtained from test boring B-1 between depths of 6 feet to 8 feet (Clayey Silt - ML) and from boring B-22 between depths of 4 feet to 6 feet

(Non-Plastic Silt - ML) were tested for resistivity, redox, pH and sulfides according to procedures established by the Ductile Iron Pipe Research Association (DIPRA). These samples were also tested for chlorides and sulfates. This laboratory test data is included in Appendix B and is also summarized in the following tables.

| Summary of DIPRA Test Results | | | | | | | |
|---|---|---|---|---|---|---|---|
| Test Boring | Sample Depth (feet bgs) | Resistivity (ohm-cm) | Redox (mv) | pH | Sulfides | Moisture (%) | Total DIPRA Points |
| B-1 | 6 to 8 | 1,300 | +121 | 6.8 | Negative | 16.8 | 4 |
| B-22 | 4 to 6 | 1,149 | +135 | 7.2 | Negative | 18.4 | 7 |

Based on the DIPRA publication "American National Standard for Polyethylene Encasement for Ductile Iron Pipe Systems", if the total DIPRA points exceed 10, the soil is considered corrosive to ductile iron pipe, and protection against exterior corrosion should be provided. Accordingly, based on these test results, it does not appear that cathodic protection or a suitable protective coating would be needed to resist potential corrosion for metallic pipes or conduits.

These samples were also tested for sulfate and chloride concentrations by Analytical Testing Services, Inc. These test results were as follows:

| Summary of Chloride and Sulfate Test Results | | | |
|---|---|---|---|
| Test Boring | Sample Depth (feet bgs) | Chloride (mg/kg) | Sulfate (mg/kg) |
| B-1 | 6 to 8 | None Detected | 20.0 |
| B-22 | 4 to 6 | None Detected | 23.3 |

Based on the sulfate concentrations, the indigenous soils, obtained at the above boring locations, are considered to have a negligible to low potential for sulfate exposure. In addition, based on the USDA Genesee County Soil Survey, "Corrosion of Concrete" mapping information which was obtained on-line, generally 98% of the soil conditions summarized at the site have a low risk for corrosion, except for the Udorthents, which has a moderate risk for corrosion of concrete. Per the soil survey, the Udorthents soils are located at the far southwest corner of the site and make up less than 2% of the proposed property. Accordingly, a Type I-II Portland Cement can be used for the concrete structure elements placed in these soils.

## 5.00 ADDITIONAL LABORATORY TEST RESULTS AND CONSIDERATIONS

The moisture content, liquid limit, plastic limit, plasticity index and shrinkage limit of the clayey silt soil samples tested from borings B-1 (S-3) and B-22 (S-3) are as follows:

| Summary of Moisture Contents and Atterberg Limits | | | | | |
|---|---|---|---|---|---|
| Boring | Sample Depth | Moisture Content | Liquid Limit | Plastic Limit | Plasticity Index |
| B-1 | 4'-6' | 15.6 % | 21 % | 15 % | 6 % |
| B-22 | 4'-6' | 13.5 % | 17 % | 12 % | 5 % |

The plasticity indices indicate the clayey soils obtained between depths of 4 feet to 6 feet at both boring locations are of a low plasticity. The resultant soil classification per USCS is an inorganic, clayey silt soil of low plasticity (CL-ML)

The grain size analyses of the soil samples obtained from borings B-22 and B-25 between depths of 6 feet to 8 feet and 4 feet to 6 feet, respectively, generally confirmed the soil classifications as summarized on the corresponding test boring logs included in Appendix A. In general, based on the USCS, the soil samples tested are of a ML (Silt) and SM (Silty Sand) group soil, respectively.

The following table summarizes the organic content and pH for the selected topsoil samples tested.

| Boring Location | Sample Depth | Organic Content (%) | pH Reading |
|---|---|---|---|
| B-3 | 8-inches | 7.6 | 6.8 |
| B-10 | 7-inches | 8.1 | 7.0 |
| B-12 | 10-inches | 10.0 | 7.2 |
| B-21 | 8-inches | 8.2 | 6.8 |

Based on the pH readings, the topsoil at boring locations B-3 and B-21 are slightly acidic, while the topsoil obtained from boring location B-10 is neutral and the topsoil sample obtained from B-12 is slightly alkaline. Most horticultural plants will grow satisfactorily in soils having a pH between 6 and 7.5.

In addition, the organic content of the topsoil samples recovered is relatively high suggesting the existing topsoil for lawn and landscaping areas is quite satisfactory, however, it was only recovered within the upper 7 to 10-inches of the ground surface. Therefore, placement of additional organic matter may be necessary for adequate plant growth.

In either case, we note, because of the potential shallow ground water conditions, including ponding in isolated areas throughout the proposed project site, the existing soil conditions maybe saturated which will limit proper plant growth. Per the USDA Genesee County Soil Survey, "Lawns, Landscaping, and Golf Fairways" mapping information which was obtained on-line, approximately 99% of the soil conditions encountered are considered very limited for establishing and maintaining lawn, ornamental trees and shrubs. The limitations are based on depth to a water table, ponding, depth to bedrock or a cemented pan, the available water capacity of the upper 40-inches, the content of salts, sodium or calcium carbonate and sulfidic materials.

Accordingly, based on the soil survey's rating, the soils have one or more properties that are unfavorable for establishing and maintaining lawn, ornamental trees and shrubs, and the limitations cannot be generally overcome without major soil reclamation, expensive installation procedures or special design. This could include re-grading the project site and implementation of storm and surface water drainage, especially in the areas of high groundwater.

## 6.00 PRELIMINARY GEOTECHNICAL EVALUATION, CONSIDERATIONS, AND RECOMMENDATIONS FOR SITE DEVELOPMENT

### 6.10 GENERAL GEOTECHNICAL CONSIDERATIONS

The presence of variable soil conditions and the high groundwater conditions will make development of the site difficult, especially for underground structures. It appears, the far northern portion of the site, which is at a higher elevation, may be more suitable for placement of underground crypts and burial plots. However, because of the potential high groundwater conditions, without raising the current site grades, development of the remaining site may not be practical for use as cemetery burial plots.

Excavations to prepare bearing grades and construct foundations and to install underground utilities as well as underground crypts and burial plots will encounter potentially substantial amounts of groundwater depending on location and

surrounding soil type. The relatively free draining sand and gravel soils are expected to yield large quantities of groundwater. These soils along with the no-plastic silt soils will undergo rapid excavation bottom and sidewall instability, if not properly dewatered in advance of excavation. Groundwater seepage through the lower permeability silty clay and clayey silt soils is expected to be substantially less, compared to the sand and gravel soils. However, the silty clay and clayey silt subgrades will also degrade over time as excavations are made into these soils, below groundwater conditions.

Therefore, it appears that potentially extensive dewatering will be required to perform earthwork, foundation and utility construction under relatively dry conditions, especially on the mid to southern portion of the project site. It is expected that site dewatering may require the use of groundwater cut-off trenches, groundwater barriers and deep sumps/well points operating on a continuous basis to control groundwater, depending on the groundwater conditions at the time of construction and location on site. The raising of site grades and the time of year construction proceeds may help reduce the amount of dewatering required. The final site grading design, including storm/surface water drainage should consider the high groundwater conditions present and the potential impacts of nearby Tonawanda Creek.

With regard to excavations for underground crypts and burial plots, utility and foundation construction, due to the very compact and hard indigenous soils encountered including the amount of cobbles and boulders present, especially on the northern portion of the site, the excavation effort may become difficult. In general, the ability to auger and split spoon sample through the upper material suggests that this material can generally be loosened and excavated using a conventional large size excavator (backhoe), equipped with rock teeth. The excavation effort is therefore expected to become more difficult with depth.

It is recommended that some test pits be excavated at various locations on the site to help further determine the dewatering methods necessary and the excavation effort required with regard to the actual amount of cobbles/boulders present as well as help confirm the possible depth to bedrock.

The construction dewatering will need to be carefully planned and implemented. Accordingly, the site work and construction dewatering should only be performed by Contractors experienced in these conditions. It is also recommended that dewatering plans and procedures be reviewed with the Engineer prior to implementation. Dewatering plans should include implementation of measures to

control erosion, sedimentation and the migration of soil fines along with a monitoring and maintenance plan.

The dewatering recommendations provided above and further below for foundation and utility construction only address temporary dewatering and do not address the concerns with the affect that the permanent groundwater conditions will have on the cemetery operation with regard to the underground crypts and burial plots. The underground, reinforced concrete crypts could be designed to withstand full hydrostatic pressures from acting on the structure walls and bottom slab. However, it would appear for use of conventional burials and double depth burial plots, the majority of the site grades would need to be raised significantly or extensive site drainage implemented, to accommodate these types of burials and prevent groundwater interference.

As previously stated, permanent groundwater conditions were present within a depth of 12-inches below the existing ground surface on the mid to southern portion of the project site, at the time of our study. We would recommend the installation of additional groundwater observation wells to help determine the permanent groundwater elevations across the site, to aid in the actual design of below grade crypts and the feasibility with including conventional burial lots, if development of the cemetery is to proceed.

The upper soil conditions are very loose to loose or very soft to medium and in correlation with the potential ponded, perched and the high groundwater conditions, site development and construction of the access roadways, sidewalks, etc. will also be difficult without special subgrade preparation procedures. Accordingly, raising the site grades may be necessary in some areas in order to construct roadways, sidewalks, etc., as well as for construction of any building structures and monuments as well as for general landscaping. In addition, following stripping of the site, the placement of oversized stone fill material encased in stabilization geotextile top and bottom, may be necessary in some areas to help stabilize the subgrades prior to the subgrade fill placement, particularly if the existing subgrades are in a soft/wet condition.

It is noted, the northern portion of the proposed parcel consisted of cultivated lands, and therefore, stripping of the site beyond the surface topsoil layer may be necessary in some areas to remove any additional organics, root matter and unsuitable reworked/disturbed indigenous soils, prior to placement of site grade fill and/or oversized stone fill for roadway and building floor slab construction.

We are available to further discuss the site conditions and site development limitations, as Public Properties along with the Department of Veterans Affairs, proceeds with the feasibility study. If development of the site does proceed, it is recommended the involved parties have a clear understanding of the site limitations, potential construction problems, risks and costs.

## 6.20 PRELIMINARY SPREAD FOUNDATION RECOMMENDATIONS

The relative density and consistency of the subsurface conditions encountered across the site vary with depth and location. Very loose/loose and soft/medium soil conditions were encountered up to depths of 6 to 8 feet within some of the test borings. These soil conditions are variable and marginal for support of building structures on a spread foundation system.

Accordingly, the loose and soft soil zones encountered at some of the boring locations will require relatively low bearing pressures be used for spread foundation design as well as special foundation bearing grade preparation, such as placement of a controlled structural fill layer beneath the foundation. The Structural Fill will help dissipate the loading on the looser/softer indigenous soils, provide a more uniform working surface for the foundation construction and will aid in any necessary dewatering, as well as help to protect the underlying subgrades.

The Structural Fill layer, where necessary, should extend beyond the foundation limits a distance equal to the thickness of the Structural Fill beneath the foundation. The actual thickness of the Structural Fill layer will be dependent upon the location on site, building foundation loads and depth of footings. Following determination of the Structural Fill thickness required, the foundation excavations would then have to be sized accordingly. In addition, the required oversized foundation excavations will have to account for groundwater and dewatering as discussed in sections 6.10 and 6.50.1

Preliminary, spread foundations constructed on suitable indigenous soil bearing grades or on properly constructed Engineered Fill materials placed over the suitable soil bearing grades, appear can be sized based on a net allowable bearing pressures ranging between about 1,250 pounds per square foot (PSF) and around 4,000 psf. The net allowable bearing capacity for foundation design will be dependent upon the location of the structure within the project site, along with the actual foundation depth.

If development of the cemetery proceeds, and the location of the mausoleums, maintenance building(s), monuments, etc. are established, we recommend that

additional test borings be completed at the structure locations to determine the appropriate bearing capacity and continuity of the subsurface conditions within the proposed structure footprint. At such time, Empire can provide more specific foundation design and construction recommendations, along with the expected settlement.

## 6.30 PRELIMINARY SLAB-ON-GRADE CONSTRUCTION

Where mausoleums, maintenance buildings, etc. are planned, following excavation to the slab-on-grade subgrade, the exposed subgrades should be proof-rolled and evaluated in accordance with our recommendations in Section 6.50.3. All vegetation, topsoil, organics present within the slab-on-grade areas will need to be removed and replaced with a suitable engineered fill, such as compacted Suitable Granular Fill or Structural Fill as described in Appendix C.

In general, the subgrade support of surface soils are considered in most cases to be relatively poor for construction of slab on grade floors. Therefore, it should be expected that some additional undercutting will be necessary to develop a stable subgrade condition. Preliminarily, we anticipate that a minimum of 12 inches of Subbase Stone will need to be placed beneath the slab-on-grade construction for lightly loaded floors to establish a suitable, firm and stable subgrade condition beneath the floor slabs. A suitable stabilization/separation geotextile, such as Mirafi 500X, should be placed over the existing soil subgrades prior to placement of the Suitable Granular Fill or overlying Subbase Stone layer.

Provided the above recommendations are followed, we expect the floor slabs can be designed as slab-on-grade using a modulus of subgrade reaction of 150 pounds per cubic inch (pci) at the top of the Subbase Stone layer. The slab-on-grade should be constructed such that it is not structurally connected to, or resting directly on, perimeter walls or column footings in order to limit differential settlement effects. In addition a suitable moisture barrier should be considered to reduce the potential for dampness.

## 6.40 SEISMIC DESIGN CONSIDERATIONS

Based on the subsurface conditions encountered, the upper 100 feet of the project site preliminarily can be classified as Seismic Site Class “D” in accordance with Table 1613.5.2 of the Building Code of New York State - December 2010 (NYS Building Code).

It is noted that in the majority of the test borings, very compact to hard indigenous soil deposits were encountered generally at depths of about 6 feet to 8 feet, which could potentially upgrade the seismic site class. Also the presence (depth) and quality of bedrock beneath the site has not been confirmed. Therefore, we would recommend additional deeper investigation of the underlying subgrade conditions be completed to confirm if the seismic site class could actually be upgraded, especially in the areas where the loose and medium soil deposits extended to boring completion.

The spectral response accelerations in the project area were obtained by Empire using the United States Geological Survey (USGS) web site application (http://geohazards.usgs.gov/designmaps/us/application.php). The accelerations are based on the 2009 NEHRP Recommended Seismic Provisions, which makes use of the 2008 USGS seismic hazard data. The acceleration values obtained from this application were then adjusted, as recommended by the USGS, to obtain the 2% probability in 50 years mapping accelerations, as presented in the NYS Building Code.

Using the site location off Allegany Road in Pembroke, New York, the calculated spectral response accelerations for Site Class "B" soils are 0.217g for the short period (0.2 second) response ($S_S$) and 0.052g for the one second response ($S_1$). For design purposes, these spectral response accelerations were then adjusted for Seismic Site Class "D", preliminarily recommended for the project site.

Accordingly, the adjusted spectral response accelerations for Seismic Site Class "D" are as follows:

- Short Period Response ($S_{MS}$) - 0.347g
- 1 Second Period Response ($S_{M1}$) - 0.125g

The corresponding five percent damped design spectral response accelerations ($S_{DS}$ and $S_{D1}$) are as follows:

- $S_{DS}$ - 0.231g
- $S_{D1}$ - 0.083g

## 6.50 SITE PREPARATION AND CONSTRUCTION CONSIDERATIONS

### 6.50.1 Dewatering Considerations

Based on the site conditions and groundwater conditions observed in the test borings and the groundwater observation wells, it is expected the general site groundwater conditions will be encountered as excavations proceed below the existing ground surface, on the mid to southern portion of the proposed project site. On the northern portion of the project site, permanent groundwater conditions may not be encountered within excavations. However, perched or trapped groundwater should be expected. Accordingly, the amount of groundwater that could be encountered will depend on the excavation location, depth, the permeability of the soils encountered and the actual groundwater conditions at the time of construction.

Proper construction dewatering procedures will need to be implemented for excavations which extend into groundwater conditions, in order to maintain stable excavation sidewall and bottom conditions, and allow for the construction of the foundation elements and depressed structures to proceed in the dry. Construction dewatering procedures should depress and maintain the groundwater levels at least 2 feet below the excavation bottoms.

Generally it is expected that excavations which do not extend more than a couple of feet below the groundwater can be dewatered with the use of sump and pump methods of dewatering. Placement of a working mat of drainage stone, in the bottom of the excavation, in conjunction with sumps and pumps placed in the drainage layer, will also aid in dewatering these excavations.

As previously discussed it is anticipated that generally more complex and substantial dewatering procedures, beyond conventional sump and pump methods of dewatering, will be required to control groundwater conditions and properly perform the work in the dry, especially on the mid to southern portion of the proposed project site.

Surface water drainage and groundwater dewatering plans should be prepared prior to construction and should be reviewed by Empire. Dewatering plans should include implementation of measures to control erosion, sedimentation and the migration of soil fines along with a monitoring and maintenance plan.

### 6.50.2 Excavation and Foundation Construction

Excavation to the proposed bearing grades for foundation construction should be performed using a method, which reduces disturbance to the bearing grade soils.

Any loose, disturbed or otherwise deleterious soil or protruding boulders beneath proposed foundation bearing subgrades should be removed. As mentioned above, it should be expected that a large conventional large size excavator (backhoe), equipped with rock teeth will be needed, especially on the northern portion of the site, to excavate for foundation construction, utility structures and burial lots.

All bearing grades for foundation construction should be protected from precipitation and surface water. No water should be allowed to accumulate on the foundation bearing grades. The bearing grades should not be allowed to freeze, either prior to or after construction of foundations. If the bearing grades are not protected and degrade, they must be undercut/removed accordingly.

Foundation excavations should be backfilled as soon as possible prior to construction of the superstructure. The foundations may be generally backfilled with the on-site soils provided they are free of organics or deleterious material. We recommend, however, that the backfill consist of Structural Fill where interior and exterior slabs or pavement will be constructed over the backfill. Recommendations for Structural Fill are presented in Appendix C. The backfill should be placed in lifts and properly compacted. Care must be exercised when placing and compacting the fill against the foundation walls so as not to induce additional lateral loads on the walls.

6.50.3 Subgrade Preparation for Slab on Grade and Pavement Construction

The site preparation work should be performed during seasonal dry periods to minimize potential degradation of the subgrade soils and undercuts which may be required to establish a stable base for construction. It should be understood that the very loose/loose sand and silt and soft/medium clayey silt/silty clay subgrade soils that will be exposed are highly sensitive and may degrade and lose strength when they are wet and disturbed by construction equipment traffic. Accordingly, efforts should be made to maintain the subgrades in a dry and stable condition at all times, and not permit construction traffic directly over these soils. In addition, procedures to improve site drainage should be implemented prior to commencing the site stripping and subgrade preparation work.

Site preparation for slab-on-grade and pavement construction will require that all trees, vegetation, topsoil, organic soils, etc., and any other deleterious materials within the proposed slab on grade and pavement areas be removed. Stripping of the site beyond the surface topsoil layer may be necessary in some areas to remove any additional organics, root matter and unsuitable reworked/disturbed indigenous soils, prior to placement of site grade fill.

Following stripping of the surface materials and excavation to the proposed subgrade, the exposed subgrade should be observed by a representative of Empire. The subgrade evaluation may require proof-rolling of the subgrade, using a static roller weighing approximately 7 tons, as determined appropriate by Empire. Further undercutting of the subgrades may be required based on evaluation of the conditions observed. Resulting over-excavations will have to be backfilled with a controlled Structural Fill as described in Appendix C.

Placement of a suitable base material and underlying stabilization geotextile, in the building pad areas, beneath roadways, and in construction staging areas, may be necessary in some areas to help stabilize the subgrades prior to the subgrade fill placement, particularly if the existing subgrades are in a soft/wet condition as anticipated.

The subgrade fill placement necessary to raise the site grades may proceed following preparation and acceptance of the existing subgrades. Suitable Fill or suitable on-site soil materials as described in Appendix C can be used to raise existing site grades for building pad areas and pavement construction. All fill placement to raise existing site grades should be carefully monitored and tested as recommended in Appendix C. It should be expected that the use of the finer grained on-site soils for site filling will be more difficult to work with (i.e. dry for proper compaction), vs. an imported Suitable Granular Fill or Structural Fill material, particularly during seasonally inclement or wet weather. It is recommended that utility trenches located within driveway and road areas be backfilled with controlled Structural Fill, as described in Appendix C.

## 7.00 CONCLUDING REMARKS

This report was prepared to assist in the site assessment and development of the proposed Veteran's Affairs Cemetery project planned at 1232 Indian Falls Road in the Town of Pembroke, Genesee County, New York. The report has been prepared for the exclusive use of Public Properties and members of the design team, for specific application to this site and this project only.

The recommendations were prepared based on Empire Geo-Services, Inc.'s understanding of the proposed project, as described herein, and through the application of generally accepted soil and foundation engineering practices. No warranties, expressed or implied are made by the conclusions, opinions, recommendations or services provided.

Empire Geo-Services, Inc. should be informed of any changes to the planned construction so that it may be determined if any changes to the recommendations presented in this report are necessary. Empire Geo-Services, Inc. should also be retained to review final plans and specifications, and to monitor the earthwork and foundation construction, to verify that the recommendations were properly interpreted and implemented. Additional information regarding the use and interpretation of this report is presented in Appendix D.

If you have any questions or wish to discuss this report, please do not hesitate to contact our office at any time.

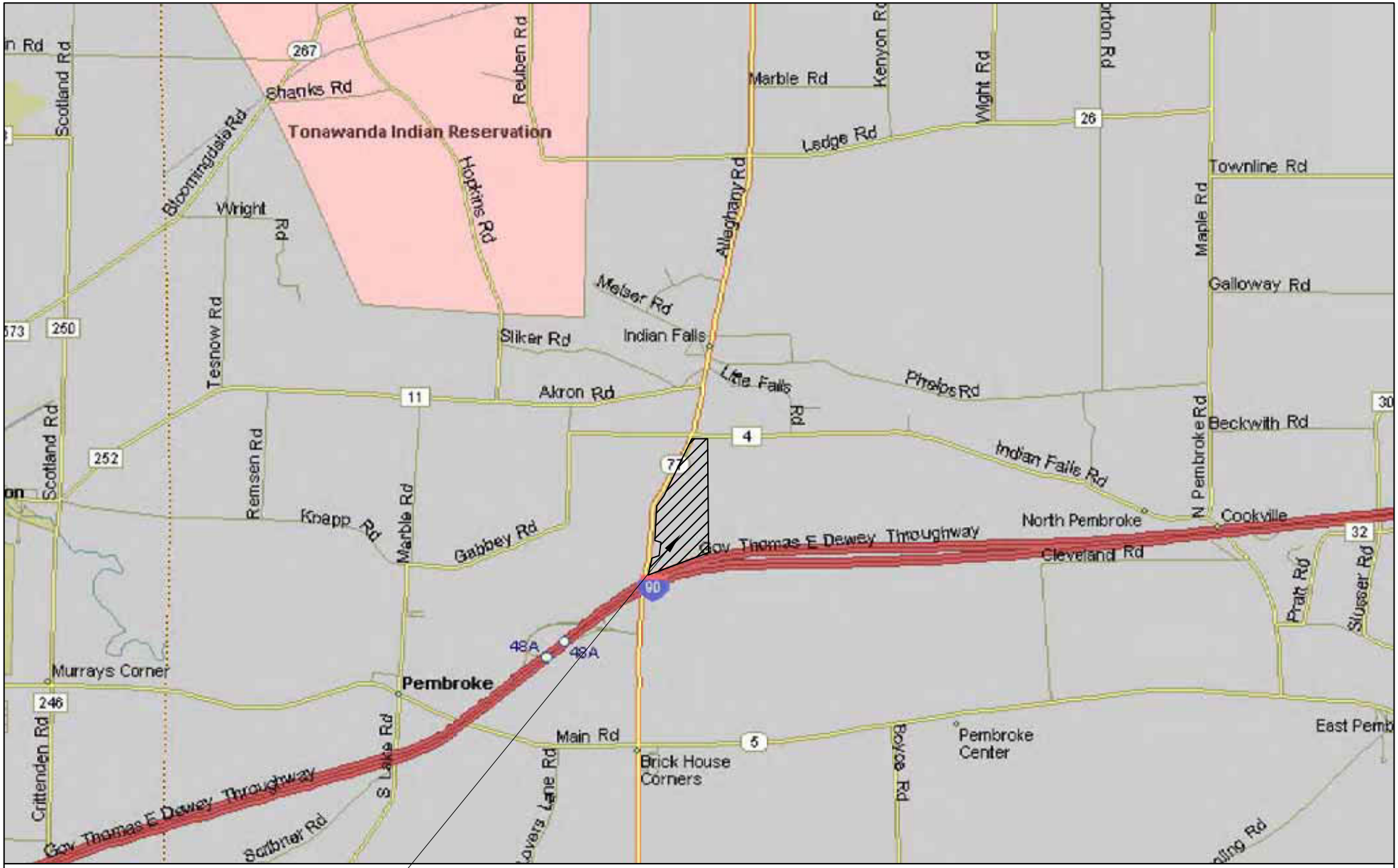
Sincerely,

EMPIRE GEO-SERVICES, INC.

Wanda M. Allen, P.E.
Geotechnical Engineer

John J. Danzer, P.E.
Senior Geotechnical Engineer and
Project Reviewer

# FIGURES




APPROXIMATE LOCATION OF PROJECT SITE

NOTE:

SITE LOCATION PLAN DEVELOPED
FROM MICROSOFT STREETS & TRIPS 2006

N

EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

PROPOSED VETERANS AFFAIRS CEMETERY SITE
1232 INDIAN FALLS ROAD
TOWN OF PEMBROKE, GENESSEE COUNTY, NEW YORK

| SITE LOCATION PLAN | DR BY: WMA | SCALE: NTS | PROJ NO.: BE-12-181 |
|---|---|---|---|
| | CHKD BY: JJD | DATE: 05/20/13 | FIGURE NO: 1 |

LEGEND:

B-1 INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.

N

NOTE:

FIGURE DEVELOPED FROM GOOGLE EARTH.

EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

PROPOSED VETERANS AFFAIRS CEMETERY SITE
1232 INDIAN FALLS ROAD
TOWN OF PEMBROKE, GENESEE COUNTY, NEW YORK

| | | | |
|---|---|---|---|
| SUBSURFACE EXPLORATION PLAN | DR BY: EDG | SCALE: NTS | PROJ NO.: BE-12-181 |
| | CHKD BY: WMA | DATE: 05/20/13 | FIGURE NO: 2 |

# APPENDIX A

# SUBSURFACE EXPLORATION LOGS

DATE

STARTED _____

FINISHED _____

SHEET ____ OF ____

# SJB SERVICES, INC.
# SUBSURFACE LOG

PROJ. No. _____

HOLE No. _____

SURF. ELEV. _____

G.W. DEPTH _____

PROJECT _____ LOCATION _____

| DEPTH (ft) | SAMPLES | SAMPLE No. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | 18/24 | N | BLOWS ON CASING C | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 1 | 3 | 3 | 4 | 8 | 7 | 10 | 3" TOPSOIL | Groundwater at 10' upon completion, and 5' 24 hrs. after completion |
| | | | | | | | | 15 | Brown SILT, some Sand, trace clay, ML (Moist-Loose) | |
| | | | | | | | | 50/.5 | | |
| 5 | | | | | | | | | Gray SHALE, medium hard, weathered, thin bedded, some fractures | Run#1, 2.5'-5.0' 95% Recovery 50% RQD |

1 2 3 4 5 6 7 (numbered features explained on reverse) 8 9 10

## TABLE I

- Split Spoon Sample
- Shelby Tube Sample
- Geoprobe Macro-Core
- Auger or Test Pit Sample
- Rock Core

## TABLE II

Identification of soil type is made on basis of an estimate of particle sizes, and in the case of fine grained soils also on basis of plasticity.

| Soil Type | Soil Particle Size | |
|---|---|---|
| Boulder | >12" | Coarse Grained (Granular) |
| Cobble | 3" - 12" | |
| Gravel - Coarse | 3" - 3/4" | |
| - Fine | 3/4" - #4 | |
| Sand - Coarse | #4 - #10 | |
| - Medium | #10 - #40 | |
| - Fine | #40 - #200 | |
| Silt - Non Plastic (Granular) | <#200 | Fine Grained |
| Clay - Plastic (Cohesive) | | |

## TABLE III

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimate is based on weight of total sample.

| Term | Percent of Total Sample |
|---|---|
| "and" | 35 - 50 |
| "some" | 20 - 35 |
| "little" | 10 - 20 |
| "trace" | less than 10 |

(When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.)

## TABLE IV

The relative compactness or consistency is described in accordance with the following terms:

| Granular Soils | | Cohesive Soils | |
|---|---|---|---|
| Term | Blows per Foot, N | Term | Blows per Foot, N |
| Very Loose | 0 - 4 | Very Soft | 0 - 2 |
| Loose | 4 - 10 | Soft | 2 - 4 |
| Firm | 10 - 30 | Medium | 4 - 8 |
| Compact | 30 - 50 | Stiff | 8 - 15 |
| Very Compact | >50 | Very Stiff | 15 - 30 |
| | | Hard | >30 |

(Large particles in the soils will often significantly influence the blows per foot recorded during the penetration test)

## TABLE V

| | |
|---|---|
| **Varved** | Horizontal uniform layers or seams of soil(s). |
| **Layer** | Soil deposit more than 6" thick. |
| **Seam** | Soil deposit less than 6" thick. |
| **Parting** | Soil deposit less than 1/8" thick. |
| **Laminated** | Irregular, horizontal and angled seams and partings of soil(s). |

## TABLE VI

| Rock Classification Term | | Meaning |
|---|---|---|
| Hardness | - Soft | Scratched by fingernail |
| | - Medium Hard | Scratched easily by penknife |
| | - Hard | Scratched with difficulty by penknife |
| | - Very Hard | Cannot be scratched by penknife |
| Weathering | - Very Weathered | Judged from the relative amounts of disintegration, iron staining, core recovery, clay seams, etc. |
| | - Weathered | |
| | - Sound | |

| Rock Classification Term | | Meaning | |
|---|---|---|---|
| Bedding | - Laminated | (<1") | Natural breaks in Rock Layers |
| | - Thin Bedded | (1" - 4") | |
| | - Bedded | (4" - 12") | |
| | - Thick Bedded | (12" - 36") | |
| | - Massive | (>36") | |

(Fracturing refers to natural breaks in the rock oriented at some angle to the rock layers)

# GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs attached to this report present the observations and mechanical data collected by the driller at the site, supplemented by classification of the material removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Subsurface Logs together with the recovered samples provide a basis for evaluating the character of the subsurface conditions relative to the project. The evaluation must consider all the recorded details and their significance relative to each other. Often analyses of standard boring data indicate the need for additional testing or sampling procedures to more accurately evaluate the subsurface conditions. Any evaluation of the contents of this report and recovered samples must be performed by qualified professionals. The following information defines some of the procedures and terms used on the Subsurface Logs to describe the conditions encountered, consistent with the numbered identifiers shown on the Key opposite this page.

1. The figures in the Depth column define the scale of the Subsurface Log.

2. The Samples column shows, graphically, the depth range from which a sample was recovered. See Table I for descriptions of the symbols used to represent the various types of samples.

3. The Sample No. is used for identification on sample containers and/or Laboratory Test Reports.

4. Blows on Sampler - shows the results of the "Penetration Test", recording the number of blows required to drive a split spoon sampler into the soil. The number of blows required for each six inches is recorded. The first 6 inches of penetration is considered a seating drive. The number of blows required for the second and third 6 inches of penetration is termed the penetration resistance, N.

5. Blows on Casing - Shows the number of blows required to advance the casing a distance of 12 inches. The casing size, hammer weight, and length of drop are noted at the bottom of the Subsurface Log. If the casing is advanced by means other than driving, the method of advancement will be indicated in the Notes column or under the Method of Investigation at the bottom of the Subsurface Log. Alternatively, sample recovery may be shown in this column, or other data consistent with the column heading.

6. All recovered soil samples are reviewed in the laboratory by an engineering technician, geologist or geotechnical engineer, unless noted otherwise. Visual descriptions are made on the basis of a combination of the driller's field descriptions and noted observations together with the sample as received in the laboratory. The method of visual classification is based primarily on the Unified Soil Classification System (ASTM D 2487) with regard to the particle size and plasticity (See Table No. II), and the Unified Soil Classification System group symbols for the soil types are sometimes included with the soil classification. Additionally, the relative portion, by weight, of two or more soil types is described for granular soils in accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Technical Publication 479, June 1970. (See Table No. III). Description of the relative soil density or consistency is based upon the penetration records as defined in Table No. IV. The description of the soil moisture is based upon the relative wetness of the soil as recovered and is described as dry, moist, wet and saturated. Water introduced into the boring either naturally or during drilling may have affected the moisture condition of the recovered sample. Special terms are used as required to describe soil deposition in greater detail; several such terms are listed in Table V. When sampling gravelly soils with a standard two inch diameter split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller.

7. Rock description is based on review of the recovered rock core and the driller's notes. Frequently used rock classification terms are included in Table VI.

8. The stratification lines represent the approximate boundary between soil types and the transition may be gradual. Solid stratification lines delineate apparent changes in soil type, based upon review of recovered soil samples and the driller's notes. Dashed lines convey a lesser degree of certainty with respect to either a change in soil type or where such change may occur.

9. Miscellaneous observations and procedures noted by the driller are shown in this column, including water level observations. It is important to realize the reliability of the water level observations depends upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that any drill water used to advance the boring may have influenced the observations. The ground water level will fluctuate seasonally, typically. One or more perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or groundwater observation wells.

10. The length of core run is defined as the length of penetration of the core barrel. Core recovery is the length of core recovered divided by the core run. The RQD (Rock Quality Designation) is the total length of pieces of NX core exceeding 4 inches divided by the core run. The size core barrel used is also noted in the Method of Investigation at the bottom of the Subsurface Log.

| | | |
|---|---|---|
| DATE<br>START 2/25/2013<br>FINISH 2/25/2013<br>SHEET 1 OF 1 | **SJB SERVICES, INC.**<br>**SUBSURFACE LOG** | HOLE NO. B-1<br>SURF. ELEV<br>G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | | | TOPSOIL<br>Brown f-m SAND, some Clayey Silt, tr.gravel (moist, v.loose, SC-SM) | Driller notes approx. 2" Topsoil |
| | | 1 | 1 | | 2 | | |
| | 2 | 1 | 1 | | | (moist-wet) | |
| | | 1 | 2 | | 2 | | |
| 5 | 3 | 1 | 3 | | | Brown Clayey SILT, tr.sand (moist, medium, CL-ML) | |
| | | 4 | 3 | | 7 | | |
| | 4 | 2 | 4 | | | Contains little f-c Sand, tr.gravel (ML) | |
| | | 4 | 3 | | 8 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water reading obtained at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| | | |
|---|---|---|
| DATE<br>START 2/28/2013<br>FINISH 2/28/2013<br>SHEET 1 OF 1 | **SJB SERVICES, INC.**<br>**SUBSURFACE LOG** | HOLE NO. B-2<br>SURF. ELEV<br>G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 2 | | | TOPSOIL<br>Orange-Brown FINE SAND, some Silt, tr.gravel (moist, v.loose, SM) | Driller notes approx. 8" Topsoil |
| | | 2 | 2 | | 4 | | |
| | 2 | 4 | 5 | | | Brown Clayey SILT, little Fine Sand (moist, stiff, ML) | |
| | | 7 | 7 | | 12 | | |
| 5 | 3 | 18 | 35 | 50/0.4 | REF | Brown f-m SAND and Clayey Silt (moist-wet, v.compact, SC-SM) | |
| | 4 | 33 | 45 | 50/0.4 | REF | | |
| | | | | | | Boring Complete with Sample Spoon Refusal at 7.2' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/28/2013 | **SJB SERVICES, INC.** | HOLE NO. B-3 |
| FINISH | 2/28/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 2 | | | TOPSOIL<br>Brown f-c SAND, some Silt, little f-c Gravel (moist, v.loose, SM) | Driller notes approx. 8" Topsoil |
| | | 2 | 2 | | 4 | | |
| | 2 | 3 | 2 | | | | Poor Recovery Sample #2 |
| | | 2 | 4 | | 4 | | |
| 5 | 3 | 4 | 6 | | | Brown f-c SAND, some Clayey Silt, tr.gravel, tr.boulder fragments (moist, firm, SC-SM) | |
| | | 7 | 10 | | 13 | | |
| | 4 | 15 | 21 | | | Brown f-c SAND, some Silt, tr.gravel (moist, compact, SM) | |
| | | 28 | 30 | | 49 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| | | | | | | | 2" PVC ground water observation well installed at boring completion. Refer to installation log for details. |
| 15 | | | | | | | |
| 20 | | | | | | | |

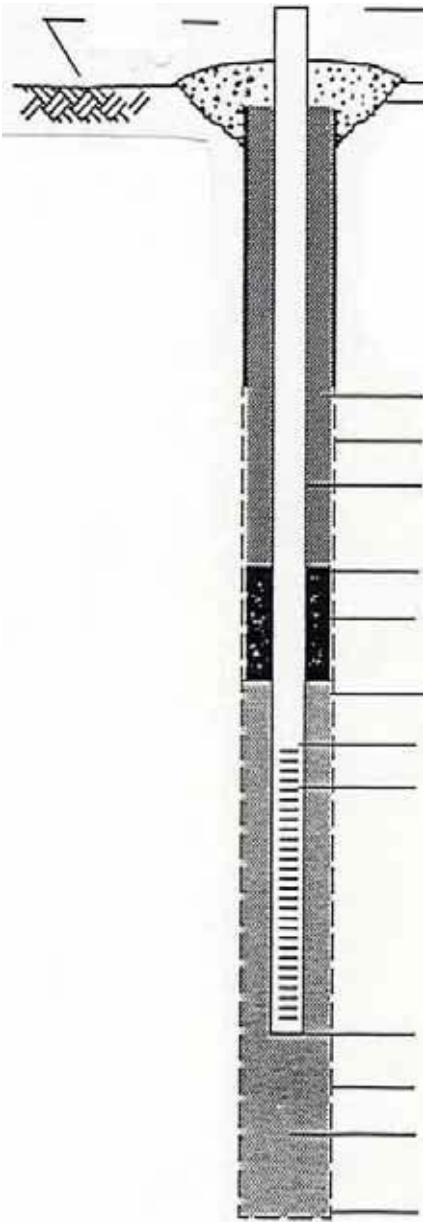
N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

# MONITORING WELL COMPLETION RECORD

| | |
|---|---|
| PROJECT: 1232 INDIAN FALLS ROAD | |
| PROJECT NUMBER: BE-12-181 | DRILLING METHOD: ASTM D-1586 |
| WELL NUMBER: B-3 | GEOLOGIST: ------ |
| DRILLER: A. JAKUBCZAK | INSTALLATION DATE(S): 2/28/2013 |



STICK- UP/ TOP OF RISER PIPE: 2.3'

TYPE OF SURFACE SEAL: BENTONITE CHIPS

TYPE OF BACKFILL: BENTONITE CHIPS

BOREHOLE DIAMETER: 7-8"

I.D. OF RISER PIPE: 2.0"

TYPE OF RISER PIPE: PVC

DEPTH OF SEAL: GRADE

TYPE OF SEAL: BENTONITE CHIPS

DEPTH OF SAND PACK: 2.0'

DEPTH OF TOP OF SCREEN: 3.0'

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .010 X 5.0'

I.D. OF SCREEN: 2.0"

TYPE OF SAND PACK: MORIE "O" FILTER SAND

DEPTH BOTTOM OF SCREEN: 8.0'

DEPTH BOTTOM OF SAND PACK: 8.0'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION/ DEPTH OF HOLE: 8.0'

| | | |
|---|---|---|
| DATE<br>START 2/25/2013<br>FINISH 2/25/2013<br>SHEET 1 OF 1 | **SJB SERVICES, INC.**<br>**SUBSURFACE LOG** | HOLE NO. B-4<br>SURF. ELEV<br>G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 4 | 2 | | | TOPSOIL<br>Brown Fine SAND, some Silt (moist, v.loose, SM) | Driller notes approx. 6" Topsoil |
| | | 2 | 3 | | 4 | | REF = Sample Spoon Refusal |
| | 2 | 7 | 6 | | | Red-Brown Clayey SILT, tr.sand (moist, stiff, ML) | |
| | | 5 | 7 | | 11 | | |
| 5 | 3 | 22 | 30 | | | Brown-Gray f-c SAND and Boulder fragments, little Silt (moist, v.compact, SM) | |
| | | 35 | 37 | | 65 | | |
| | 4 | 39 | 50 | 50/0.1 | REF | | |
| | | | | | | Boring Complete with Sample Spoon Refusal at 7.1' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/25/2013 | **SJB SERVICES, INC.** | HOLE NO. B-5 |
| FINISH | 2/25/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 2 | | | TOPSOIL<br>Brown Clayey SILT, tr.-little f-c Sand (moist, medium, ML) | Driller notes approx. 6" Topsoil |
| | | 3 | 5 | | 5 | | REF = Sample Spoon Refusal |
| | 2 | 26 | 50/0.4 | | REF | Brown-Gray Boulder fragments (moist) | |
| | | | | | | | No Recovery Sample #3 |
| 5 | 3 | 50/0.1 | | | REF | Boring Complete with Auger Refusal at 4.0' and Sample Spoon Refusal at 4.1' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/25/2013 | **SJB SERVICES, INC.** | HOLE NO. B-5A |
| FINISH | 2/25/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | | | | | | TOPSOIL | Boring B-5A is a continuation of Boring B-5 - Driller notes moving 5' west and augering to 4' |
| | AUGER | | | | | | |
| 5 | 1 | 16 | 20 | | | Brown f-c SAND, little-some Silt, tr.gravel (moist, compact, SM) | |
| | | 18 | 25 | | 38 | | |
| | 2 | 28 | 40 | 50/0.2 | REF | Contains occasional Boulder fragments (v.compact) | REF = Sample Spoon Refusal |
| | | | | | | Boring Complete with Sample Spoon Refusal at 7.2' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/25/2013 | **SJB SERVICES, INC.** | HOLE NO. B-6 |
| FINISH | 2/25/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 4 | 11 | | | TOPSOIL<br>Red-Brown f-m SAND, some Silt, tr.gravel (moist, firm, SM) | Driller notes approx. 8" Topsoil |
| | | 15 | 7 | | 26 | | REF = Sample Spoon Refusal |
| | 2 | 16 | 35 | 50/0.2 | REF | Brown f-c SAND, some Silt, little f-c Gravel, tr.boulder fragments (moist, v.compact, SM) | |
| 5 | 3 | 50/0.2 | | | REF | | |
| | | | | | | Boring Complete with Sample Spoon Refusal at 5.2' and Auger Refusal at 5.5' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | SJB SERVICES, INC. SUBSURFACE LOG | HOLE NO. B-7 |
|---|---|---|---|
| START | 2/25/2013 | | SURF. ELEV |
| FINISH | 2/25/2013 | | G.W. DEPTH See Notes |
| SHEET | 1 OF 1 | | |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 5 | 4 | | | TOPSOIL<br>Brown SILT, little Fine Sand (moist, loose, ML) | Driller notes approx. 8" Topsoil |
| | | 4 | 5 | | 8 | | |
| | 2 | 4 | 6 | | | Red-Brown Clayey SILT, little f-c Sand (moist, stiff, ML) | |
| | | 5 | 8 | | 11 | | |
| 5 | 3 | 12 | 15 | | | Brown Fine SAND, some Silt, little f-c Gravel (moist, compact, SM) | |
| | | 19 | 26 | | 34 | | |
| | 4 | 30 | 31 | | | Red-Brown Clayey SILT, tr.sand (moist, hard, ML) | |
| | | 45 | 48 | | 76 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| | | |
|---|---|---|
| DATE<br>START 2/25/2013<br>FINISH 2/25/2013<br>SHEET 1 OF 1 | **SJB SERVICES, INC.**<br>**SUBSURFACE LOG** | HOLE NO. B-8<br>SURF. ELEV<br>G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 2 | | | TOPSOIL<br>Brown Fine SAND and Silt (moist, v.loose, SM) | Driller notes approx. 8" Topsoil |
| | | 1 | 2 | | 3 | | REF = Sample Spoon Refusal |
| | 2 | 3 | 3 | | | Brown Clayey SILT, little f-c Sand (moist, medium, ML) | |
| | | 5 | 7 | | 8 | | |
| 5 | 3 | 3 | 3 | | | Red-Brown Silty CLAY, tr.sand (moist, medium, CL) | |
| | | 4 | 9 | | 7 | | |
| | 4 | 41 | 43 | 50/0.4 | REF | | No Recovery Sample #4 |
| | | | | | | Boring Complete with Sample Spoon Refusal at 7.4' | Free standing water recorded at 6.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/25/2013 | **SJB SERVICES, INC.** | HOLE NO. B-9 |
| FINISH | 2/25/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 3 | | | TOPSOIL<br>Brown Fine SAND, some-and Silt (moist, loose, SM) | Driller notes approx. 6" Topsoil |
| | | 2 | 3 | | 5 | | |
| | 2 | 6 | 9 | | | (moist-wet, firm) | |
| | | 11 | 14 | | 20 | | |
| 5 | 3 | 3 | 3 | | | Brown Clayey SILT, tr-little f-c Sand (moist-wet, medium, ML) | |
| | | 5 | 9 | | 8 | | |
| | 4 | 13 | 20 | 50/0.4 | REF | Brown f-c GRAVEL and f-c Sand, little-some Silt, tr.boulder fragments (wet, v.compact, GM) | |
| | | | | | | Boring Complete with Sample Spoon Refusal at 7.4' | Free standing water recorded at 6.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/25/2013 | **SJB SERVICES, INC.** | HOLE NO. B-10 |
| FINISH | 2/25/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | | | TOPSOIL<br>Brown f-m SAND, some Silt, tr.gravel<br>(moist, loose, SM) | Driller notes approx. 7" Topsoil |
| | | 4 | 4 | | 7 | | |
| | 2 | 3 | 3 | | | Brown Clayey SILT, some-and f-c Sand<br>(moist, medium, ML) | |
| | | 5 | 5 | | 8 | | |
| 5 | 3 | 6 | 9 | | | Brown-Gray f-c SAND, some Silt, tr.gravel<br>(moist, firm, SM) | |
| | | 10 | 14 | | 19 | | |
| | 4 | 16 | 19 | | | Contains some-and f-c Gravel (compact) | |
| | | 30 | 50/0.4 | | 49 | | |
| | | | | | | Boring Complete with Sample Spoon Refusal at 7.9' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/26/2013 | **SJB SERVICES, INC.** | HOLE NO. B-11 |
| FINISH | 2/26/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 2 | | | TOPSOIL<br>Brown-Olive f-c SAND, some f-c Gravel, some Silt (moist, loose, SM) | Driller notes approx. 4" Topsoil |
| | | 3 | 5 | | 5 | | |
| | 2 | 2 | 2 | | | Olive-Brown Clayey SILT, little Fine Sand (moist, medium, ML) | |
| | | 2 | 2 | | 4 | | |
| 5 | 3 | 4 | 3 | | | Olive Fine SAND, and Silt (moist-wet, firm, SM) | |
| | | 8 | 14 | | 11 | | |
| | 4 | 8 | 10 | | | Becomes Brown, Contains tr.gravel | |
| | | 10 | 16 | | 20 | | |
| | | | | | | Boring Complete at 8.0' | Free standing water recorded at 4.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/26/2013 | **SJB SERVICES, INC.** | HOLE NO. B-12 |
| FINISH | 2/26/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | | | TOPSOIL<br>Olive-Brown Clayey SILT, tr-little f-c Sand (moist, soft, ML) | Driller notes approx. 10" Topsoil |
| | | 2 | 4 | | 3 | | |
| | 2 | 3 | 5 | | | Brown Fine SAND and Clayey Silt (moist, loose, SC-SM) | |
| | | 4 | 5 | | 9 | | |
| 5 | 3 | 4 | 12 | | | Contains tr.gravel (firm) | |
| | | 15 | 22 | | 27 | | |
| | 4 | 20 | 27 | | | Brown-Gray f-c SAND, some Silt, tr.-little Gravel (moist, v.compact, SM) | |
| | | 40 | 46 | | 67 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| | | |
|---|---|---|
| DATE<br>START 2/26/2013<br>FINISH 2/26/2013<br>SHEET 1 OF 1 | **SJB SERVICES, INC.**<br>**SUBSURFACE LOG** | HOLE NO. B-13<br>SURF. ELEV<br>G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | | | TOPSOIL<br>Olive Silty CLAY, tr.sand<br>(moist, soft, CL) | Driller notes approx. 9" Topsoil |
| | | 2 | 2 | | 3 | | |
| | 2 | 2 | 2 | | | Becomes Brown, Contains little f-c Sand (medium) | |
| | | 2 | 3 | | 4 | | |
| 5 | 3 | 5 | 8 | | | | |
| | | 30 | 30 | | 38 | Brown Clayey SILT, tr-little f-c Sand<br>(moist, hard, ML) | |
| | 4 | 36 | 40 | | | Contains some f-c Sand | |
| | | 44 | 46 | | 84 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/25/2013 | **SJB SERVICES, INC.** | HOLE NO. B-14 |
| FINISH | 2/25/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 2 | | | TOPSOIL<br>Red-Brown Clayey SILT, tr.sand (moist, medium, ML) | Driller notes approx. 4" Topsoil |
| | | 3 | 4 | | 5 | | |
| | 2 | 14 | 10 | | | | Poor recovery sample #2 |
| | | 12 | 15 | | 22 | | |
| 5 | 3 | 14 | 24 | | | Red-Brown SILT, tr.sand, occasional clay partings and seams (moist, v.compact, ML) | |
| | | 41 | 49 | | 65 | | |
| | 4 | 39 | 41 | | | Brown-Gray Clayey SILT, tr.sand, occasional clay partings (moist, hard, ML) | |
| | | 46 | 44 | | 87 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/26/2013 | **SJB SERVICES, INC.** | HOLE NO. B-15 |
| FINISH | 2/26/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | | | TOPSOIL<br>Gray Clayey SILT, little Fine Sand (moist, soft, ML) | Driller notes approx. 6" Topsoil |
| | | 2 | 2 | | 3 | Fine Sand (moist, v.soft, ML) | |
| | 2 | 3 | 4 | | | Brown f-m SAND, some Silt (moist-wet, loose, SM) | |
| | | 5 | 8 | | 9 | | |
| 5 | 3 | 8 | 15 | | | Brown Fine SAND and Silt, tr.gravel (moist, compact, SM) | |
| | | 29 | 36 | | 44 | | |
| | 4 | 30 | 39 | | | Gray f-m SAND and Silt, tr.gravel (moist, v.compact, SM) | |
| | | 42 | 50 | | 81 | | |
| | | | | | | Boring Complete at 8.0' | Free standing water recorded at 6.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/26/2013 | **SJB SERVICES, INC.** | HOLE NO. B-16 |
| FINISH | 2/26/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH/1.0 | | | | TOPSOIL<br>Orange-Brown Clayey SILT, tr.-little Fine Sand (moist, v.soft, ML) | Driller notes approx. 4" Topsoil |
| | | 2 | 3 | | 2 | | WOH = Weight of Hammer and Rods |
| | 2 | 3 | 3 | | | Becomes Brown (medium) | |
| | | 4 | 7 | | 7 | | |
| 5 | 3 | 8 | 18 | | | Contains some f-c Sand, tr.gravel (hard) | |
| | | 19 | 14 | | 37 | | |
| | 4 | 14 | 18 | | | Contains tr.sand, tr.gravel | |
| | | 29 | 45 | | 47 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | SJB SERVICES, INC. SUBSURFACE LOG | HOLE NO. B-17 |
|---|---|---|---|
| START | 2/28/2013 | | SURF. ELEV |
| FINISH | 2/28/2013 | | G.W. DEPTH See Notes |
| SHEET | 1 OF 1 | | |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH/1.0 | | | | TOPSOIL<br>Brown f-c SAND, some-and Clayey Silt, tr-little f-c Gravel (moist, v.loose, SC-SM) | Driller notes approx. 4" Topsoil |
| | | 1 | 2 | | 1 | | |
| | 2 | 3 | 3 | | | Brown Clayey SILT, little f-c Sand (moist, medium, ML) | |
| | | 5 | 8 | | 8 | | |
| 5 | 3 | 7 | 10 | | | Becomes Red-Brown (v.stiff) | |
| | | 15 | 18 | | 25 | | |
| | 4 | 29 | 33 | | | Becomes Brown (hard) | |
| | | 38 | 40 | | 71 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/28/2013 | **SJB SERVICES, INC.** | HOLE NO. B-18 |
| FINISH | 2/28/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | 1 | 1 | | | TOPSOIL<br>Yellow-Brown mottled Clayey SILT, tr.sand (moist, soft, ML) | Driller notes approx. 6" Topsoil |
| | | 2 | 4 | | 3 | | |
| | 2 | 5 | 6 | | | Becomes Brown, Contains occasional Clay partings (stiff) | |
| | | 9 | 10 | | 15 | | |
| 5 | 3 | 14 | 15 | | | Brown f-c SAND and Clayey Silt, tr.gravel tr.boulder fragments (moist, compact, SC-SM) | |
| | | 16 | 19 | | 31 | | |
| | 4 | 12 | 27 | | | Brown Clayey SILT, tr.sand (moist, hard, ML) | |
| | | 36 | 41 | | 63 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/26/2013 | **SJB SERVICES, INC.** | HOLE NO. B-19 |
| FINISH | 2/26/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH | 1 | | | TOPSOIL<br>Orange-Brown and Gray Mottled Clayey SILT, tr.-little Fine Sand (moist, v.soft, ML) | Driller notes approx. 12" Topsoil<br><br>WOH = Weight of Hammer and Rods |
| | | 1 | 1 | | 2 | | |
| | 2 | 1 | 1 | | | Brown f-c SAND, some f-c Gravel, some Silt (wet, v.loose, SM) | |
| | | 1 | 2 | | 2 | | |
| 5 | 3 | 15 | 25 | | | Brown-Gray Clayey SILT, little f-c Sand, tr.gravel (moist, hard, ML) | |
| | | 29 | 36 | | 54 | | |
| | 4 | 48 | 49 | | | Becomes Brown | |
| | | 44 | 46 | | 93 | | |
| | | | | | | Boring Complete at 8.0' | Free standing water recorded at 6.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/26/2013 | **SJB SERVICES, INC.** | HOLE NO. B-20 |
| FINISH | 2/26/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH/1.0 | | | | | Driller notes Ponded surface water at bore location. |
| | | 1 | 1 | | 1 | | |
| | 2 | 3 | 4 | | | Brown Clayey SILT, tr.sand (moist, medium, ML) | No Recovery Sample #1 |
| | | 4 | 6 | | 8 | | WOH = Weight of Hammer and Rods |
| 5 | 3 | 8 | 12 | | | Brown-Gray Clayey SILT, little f-c Sand (moist-wet, v.stiff, CL-ML) | |
| | | 15 | 20 | | 27 | | |
| | 4 | 35 | 40 | | | Brown-Gray Clayey SILT, little-some f-c Sand, tr.gravel (moist, hard, ML) | |
| | | 46 | 48 | | 86 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water reading obtained at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/27/2013 | **SJB SERVICES, INC.** | HOLE NO. B-21 |
| FINISH | 2/27/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH/1.0 | | | | TOPSOIL<br>Yellow-Brown f-c SAND, some Silt, little f-c Gravel (moist, v.loose, SM) | Driller notes approx. 8" Topsoil<br><br>WOH = Weight of Hammer and Rods |
| | | 1 | 2 | | 1 | | |
| | 2 | 2 | 5 | | | Brown-Gray f-c SAND, little Silt (wet, loose, SM) | |
| | | 5 | 6 | | 10 | | |
| 5 | 3 | 7 | 10 | | | Gray SILT, tr.-little Fine Sand (moist-wet, firm, ML) | |
| | | 14 | 21 | | 24 | | |
| | 4 | 22 | 25 | | | Brown-Gray Clayey SILT, little f-c Sand, tr.gravel (moist, hard, ML) | |
| | | 30 | 38 | | 55 | | |
| | | | | | | Boring Complete at 8.0' | Free standing water recorded at 6.0' at boring completion.<br><br>2" PVC groundwater observation well installed at boring completion.<br><br>Refer to installation log for details. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

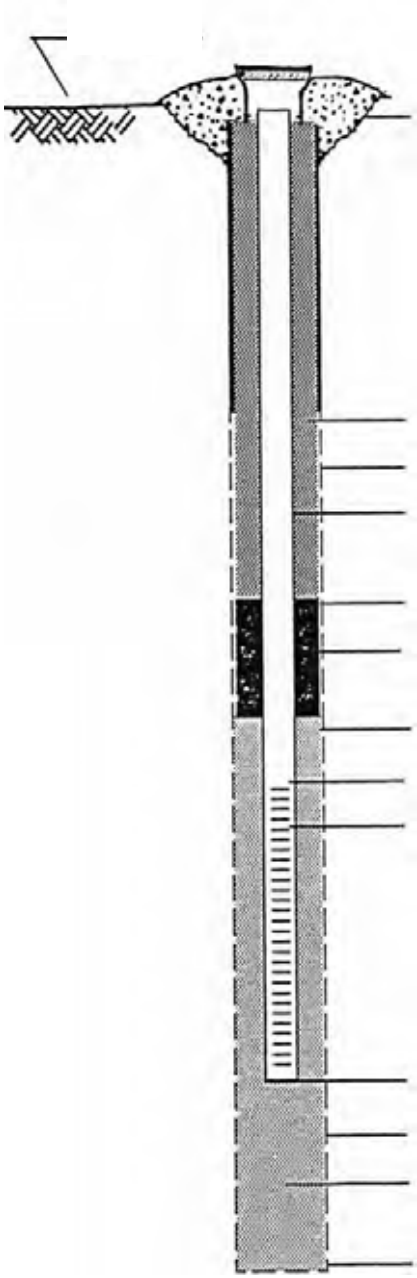
N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

# MONITORING WELL COMPLETION RECORD

| | |
|---|---|
| PROJECT: PROPOSED VA CEMETERY | |
| PROJECT NUMBER: BE-12-181 | DRILLING METHOD: ASTM-1586 USING HSF |
| WELL NUMBER: B-21 | GEOLOGIST: ----- |
| DRILLER: A. JAKUBCZAK | INSTALLATION DATE(S): 2/27/2013 |



STICK-UP: 2.2'

TYPE OF SURFACE SEAL: BENTONITE CHIPS

TYPE OF BACKFILL: BENTONITE CHIPS

BOREHOLE DIAMETER: +/- 8"

I.D. OF RISER PIPE: 2.0"

TYPE OF RISER PIPE: PVC

DEPTH OF SEAL: GRADE

TYPE OF SEAL: BENTONITE CHIPS

DEPTH OF SAND PACK: 2.0'

DEPTH OF TOP OF SCREEN: 3.0'

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .010 X 5.0'

I.D. OF SCREEN: 2.0"

TYPE OF SAND PACK: MORIE '0' FILTER SAND

DEPTH BOTTOM OF SCREEN: 8.0'

DEPTH BOTTOM OF SAND PACK: 8.0'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION/ DEPTH OF HOLE: 8.0'

| DATE | | SJB SERVICES, INC. SUBSURFACE LOG | HOLE NO. B-22 |
|---|---|---|---|
| START | 2/27/2013 | | SURF. ELEV |
| FINISH | 2/27/2013 | | G.W. DEPTH See Notes |
| SHEET | 1 OF 1 | | |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH | 1 | | | TOPSOIL<br>Brown f-m SAND and Silty Clay, tr.gravel (moist-wet, v.loose, SC-SM) | Driller notes approx. 6" Topsoil<br><br>WOH = Weight of Hammer and Rods |
| | | 1 | 2 | | 2 | | |
| | 2 | 3 | 5 | | | Brown f-c SAND, some Silt (wet, firm, SM) | |
| | | 7 | 4 | | 12 | | |
| 5 | 3 | 3 | 4 | | | Gray SILT, little Fine Sand (moist, firm, ML) | |
| | | 10 | 13 | | 14 | | |
| | 4 | 27 | 31 | | | Contains tr. fine sand(v.compact) | |
| | | 35 | 49 | | 66 | | |
| | | | | | | Boring Complete at 8.0' | Free standing water recorded at 4.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| | | |
|---|---|---|
| DATE<br>START 2/27/2013<br>FINISH 2/27/2013<br>SHEET 1 OF 1 | **SJB SERVICES, INC.**<br>**SUBSURFACE LOG** | HOLE NO. B-23<br>SURF. ELEV<br>G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH | 1 | | | TOPSOIL<br>Black f-m SAND, some Silt, tr.gravel (moist-wet, v.loose, SM) | Driller notes approx. 8" Topsoil |
| | | 1 | 1 | | 2 | | |
| | 2 | 2 | 2 | | | Brown Silty CLAY, tr.sand, occasional fine Sand lenses (moist, medium, CL) | |
| | | 3 | 5 | | 5 | | |
| 5 | 3 | 8 | 10 | | | Red-Brown Clayey SILT, little f-c Sand (moist, v.stiff, ML) | |
| | | 12 | 14 | | 22 | | |
| | 4 | 23 | 25 | | | Becomes Brown-Gray, Contains tr.sand (hard) | |
| | | 28 | 27 | | 53 | | |
| | | | | | | Boring Complete at 8.0' | Free standing water recorded at 6.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/27/2013 | **SJB SERVICES, INC.** | HOLE NO. B-24 |
| FINISH | 2/27/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH | 1 | | | TOPSOIL<br>Brown f-c SAND, some Silt, tr.gravel (moist, v.loose, SM) | Driller notes approx. 4" Topsoil<br><br>WOH = Weight of Hammer and Rods |
| | | 2 | 3 | | 3 | | |
| | 2 | 3 | 3 | | | Brown Fine SAND, little-some Silt (wet, loose, SM) | |
| | | 4 | 6 | | 7 | | |
| 5 | 3 | 3 | 4 | | | Brown f-c SAND, tr.silt (wet, loose, SW) | |
| | | 4 | 4 | | 8 | | |
| | 4 | 8 | 10 | | | (firm) | |
| | | 12 | 18 | | 22 | | |
| | | | | | | Boring Complete at 8.0' | Free standing water recorded at 5.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | SJB SERVICES, INC. SUBSURFACE LOG | HOLE NO. B-25 |
|---|---|---|---|
| START | 2/27/2013 | | SURF. ELEV |
| FINISH | 2/27/2013 | | G.W. DEPTH See Notes |
| SHEET | 1 OF 1 | | |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | W0H | 1 | | | TOPSOIL<br>Black-Brown f-m SAND, some Silt (moist-wet, v.loose, SM) | Driller notes approx. 6" Topsoil |
| | | 1 | 1 | | 2 | | WOH = Weight of Hammer and Rods |
| | 2 | 2 | 4 | | | Becomes Brown, Contains little Silt (loose) | |
| | | 4 | 7 | | 8 | | |
| 5 | 3 | 4 | 5 | | | Contains tr. silt (firm) | |
| | | 7 | 9 | | 12 | | |
| | 4 | 20 | 25 | | | (v.compact) | |
| | | 30 | 32 | | 55 | | |
| | | | | | | Boring Complete at 8.0' | Free standing water recorded at 4.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/27/2013 | **SJB SERVICES, INC.** | HOLE NO. B-26 |
| FINISH | 2/27/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH | 1 | | | TOPSOIL<br>Olive-Brown Fine SAND and Clayey Silt (moist, v.loose, SC-SM) | Driller notes approx. 3" Topsoil<br><br>WOH = Weight of Hammer and Rods |
| | | 1 | 2 | | 2 | | |
| | 2 | 3 | 4 | | | Orange-Brown Fine SAND, some Silt (moist-wet, loose, SM) | |
| | | 5 | 5 | | 9 | | |
| 5 | 3 | 10 | 29 | | | Red-Brown Clayey SILT, little f-c Sand, tr.gravel (moist, hard, ML) | |
| | | 40 | 45 | | 69 | | |
| | 4 | 15 | 20 | | | | |
| | | 36 | 48 | | 56 | | |
| | | | | | | Boring Complete at 8.0' | No free standing water encountered at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

| DATE | | | |
|---|---|---|---|
| START | 2/27/2013 | **SJB SERVICES, INC.** | HOLE NO. B-27 |
| FINISH | 2/27/2013 | **SUBSURFACE LOG** | SURF. ELEV |
| SHEET | 1 OF 1 | | G.W. DEPTH See Notes |

PROJECT: PROPOSED VA CEMETERY SITE LOCATION: 1232 INDIAN FALLS ROAD
PROJ. NO.: BE-12-181 PEMBROKE, NEW YORK

| DEPTH FT. | SMPL NO. | BLOWS ON SAMPLER 0/6 | 6/12 | 12/18 | N | SOIL OR ROCK CLASSIFICATION | NOTES |
|---|---|---|---|---|---|---|---|
| | 1 | WOH/1.0 | | | | TOPSOIL | Driller notes approx. 3" Topsoil |
| | | 1 | 1 | | 1 | Brown Fine SAND, some Silt (moist-wet, v.loose, SM) | WOH = Weight of Hammer and Rods |
| | 2 | 3 | 4 | | | Contains little Silt (wet, loose) | |
| | | 5 | 5 | | 9 | | |
| 5 | 3 | 4 | 4 | | | Brown-Gray Fine SAND, tr.silt, occasional Silt seams (wet, loose, SP) | |
| | | 5 | 7 | | 9 | | |
| | 4 | 6 | 8 | | | (firm) | |
| | | 10 | 10 | | 18 | | |
| | | | | | | Boring Complete at 8.0' | Free standing water recorded at 4.0' at boring completion. |
| 10 | | | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK DRILL RIG TYPE : CME-850

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

# APPENDIX B

# LABORATORY TEST DATA

*Western New York Office*
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

# Laboratory Test Report

**PROJECT:** **1232 Indian Falls Road, Pembroke NY**

**CLIENT:** **Public Properties**

**DATE:** **May 9, 2013**

**PROJECT NO.: BE-12-181**
**REPORT NO.: LTR-1**

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Attached are the results of laboratory testing conducted on various samples from the above referenced project. Mrs. Wanda Allen, representing Empire –Geo Services, Inc, chose samples contained in this report.

The testing conducted was as follows:

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil & Rock

ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

ASTM D-2974: Moisture, Ash, and Organic Matter of Peat and Other Organic Soils

ASTM D-4972: Test Method for pH of Soils

Soil Test Evaluation for Ductile Iron Pipe

Samples were received at the SJB Services, Inc. laboratory on April 4, 2013 where they were processed for testing.

If the reviewer should have any questions concerning this report, please do not hesitate to contact our office at any time.

---

**SJB Services, Inc.**

**Paul Gregorczyk**
**Laboratory Manager**

*Western New York Office*
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

# Laboratory Test Report

**PROJECT:** **1232 Indian Falls Road, Pembroke NY**

**CLIENT:** **Public Properties**

**DATE:** **May 9, 2013**

**PROJECT NO.: BE-12-181**
**REPORT NO.: LTR-1**


---

**SAMPLE NUMBER:** 13-543
**SAMPLE LOCATION:** B-1, S-3: 4' – 6'

***ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock***
***ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil***

| Moisture Content | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|
| 15.6 % | 21 | 15 | 6 |

**SAMPLE NUMBER:** 13-545
**SAMPLE LOCATION:** B-20, S-3: 4' – 6'

***ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock***
***ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil***

| Moisture Content | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|
| 13.5 % | 17 | 12 | 5 |

***ASTM D-2974: Moisture, Ash, and Organic Matter of Peat and Other Organic Soils***
***ASTM D-4972: Test Method for pH of Soils***

| Sample Number | Description | Location | Organic Content | Ph Reading |
|---|---|---|---|---|
| 13-549 | topsoil | B-3 | 7.6 % | 6.8 |
| 13-550 | topsoil | B-10 | 8.1 % | 7.0 |
| 13-551 | topsoil | B-12 | 10.0 % | 7.2 |
| 13-552 | topsoil | B-21 | 8.2 % | 6.8 |

*Western New York Office*
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

# Laboratory Test Report

**PROJECT:** **1232 Indian Falls Road, Pembroke NY**

**CLIENT:** **Public Properties**

**DATE:** **May 9, 2013**

**PROJECT NO.: BE-12-181**
**REPORT NO.: LTR-1**


**SAMPLE NUMBER:** 13-547
**SAMPLE LOCATION:** B-22, S-4: 6' – 8'

***ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates***

| *Sieve Size* | *Percent Passing* |
|---|---|
| #4 | 100.0 |
| #10 | 99.7 |
| #20 | 99.4 |
| #40 | 98.9 |
| #100 | 97.4 |
| #200 | 89.3 |

**SAMPLE NUMBER:** 13-547
**SAMPLE LOCATION:** B-25, S-3: 4' – 6'

***ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates***

| *Sieve Size* | *Percent Passing* |
|---|---|
| #4 | 100.0 |
| #10 | 98.2 |
| #20 | 92.7 |
| #40 | 66.6 |
| #100 | 6.5 |
| #200 | 4.2 |

*Western New York Office*
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

# Laboratory Test Report

**PROJECT:** **1232 Indian Falls Road, Pembroke NY**
**CLIENT:** **Public Properties**
**DATE:** **May 9, 2013**

**PROJECT NO.: BE-12-181**
**REPORT NO.: LTR-1**


**SAMPLE NUMBER:** 13-544
**SAMPLE LOCATION:** B-1, S-4: 6' – 8'

***Soil Test Evaluation for Ductile Iron Pipe***
**DIPRA RESULTS**

| Tests Performed | Results | Point Value |
|---|---|---|
| Resistivity | 1310 ohm-cm | 2 |
| Ph Reading | 6.8 | 0 |
| Redox Potential | +121 mv | 0 |
| Sulfides | Negative | 0 |
| Moisture Content | 16.8 % = poor drainage | 2 |
| | **Total DIPRA Points** | 4 |

**CHEMICAL ANALYSIS**

| Parameter Analyzed | Result |
|---|---|
| Chloride Content | none detected |
| Sulfate Content | 20.0 mg/kg |

**SAMPLE NUMBER:** 13-546
**SAMPLE LOCATION:** B-22, S-3: 4' – 6'

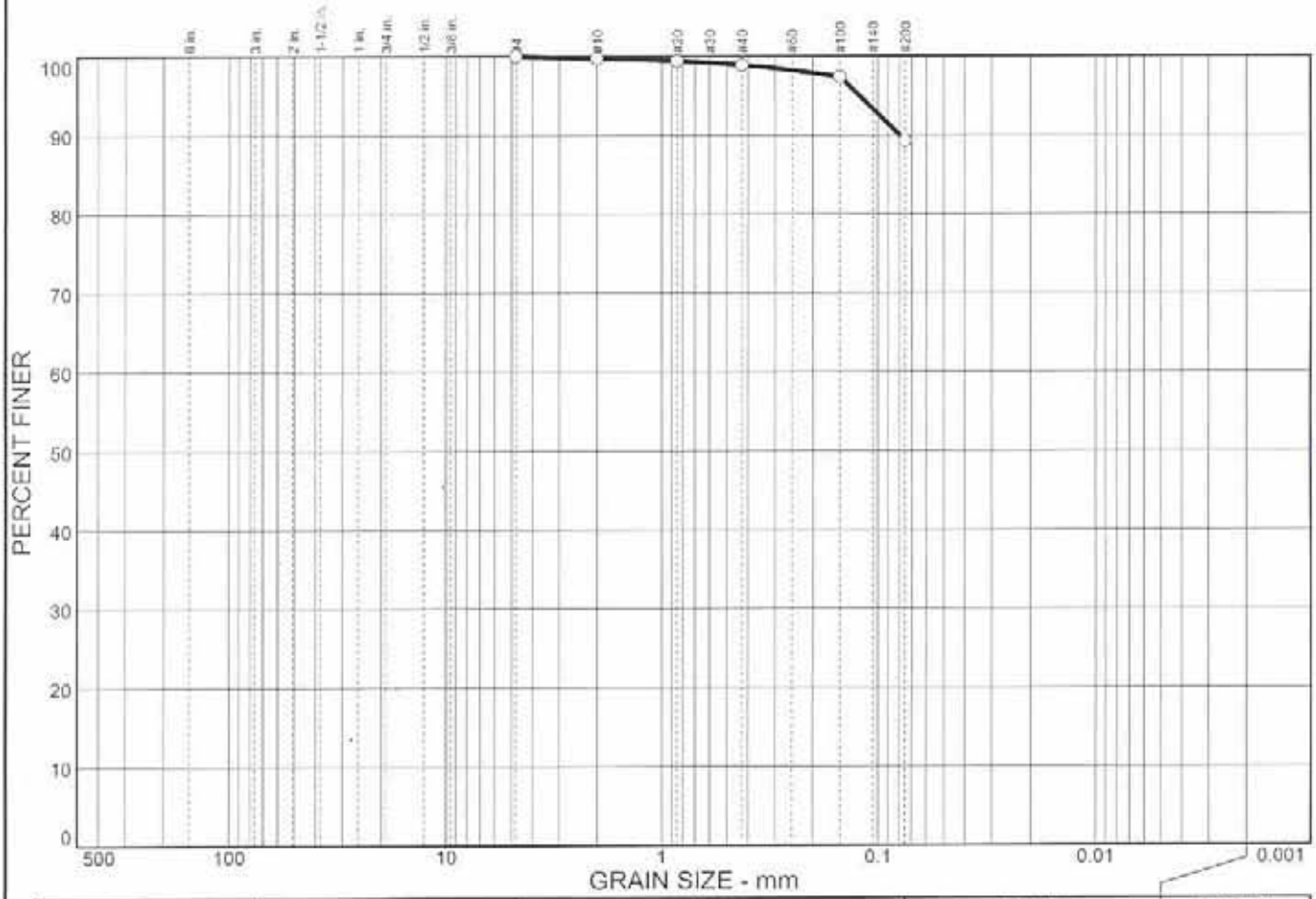
***Soil Test Evaluation for Ductile Iron Pipe***
**DIPRA RESULTS**

| Tests Performed | Results | Point Value |
|---|---|---|
| Resistivity | 1149 ohm-cm | 5 |
| Ph Reading | 7.2 | 0 |
| Redox Potential | +135 mv | 0 |
| Sulfides | Negative | 0 |
| Moisture Content | 18.4 % = poor drainage | 2 |
| | **Total DIPRA Points** | 7 |

**CHEMICAL ANALYSIS**

| Parameter Analyzed | Result |
|---|---|
| Chloride Content | none detected |
| Sulfate Content | 23.3 mg/kg |

# ASTM C-136: Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 0.0 | 10.7 | 89.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.4 | | |
| #40 | 98.9 | | |
| #100 | 97.4 | | |
| #200 | 89.3 | | |

* (no specification provided)

**Soil Description**

B-22, S-4: 6' - 8'

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{85}$= $D_{60}$= $D_{50}$=
$D_{30}$= $D_{15}$= $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= AASHTO=

**Remarks**

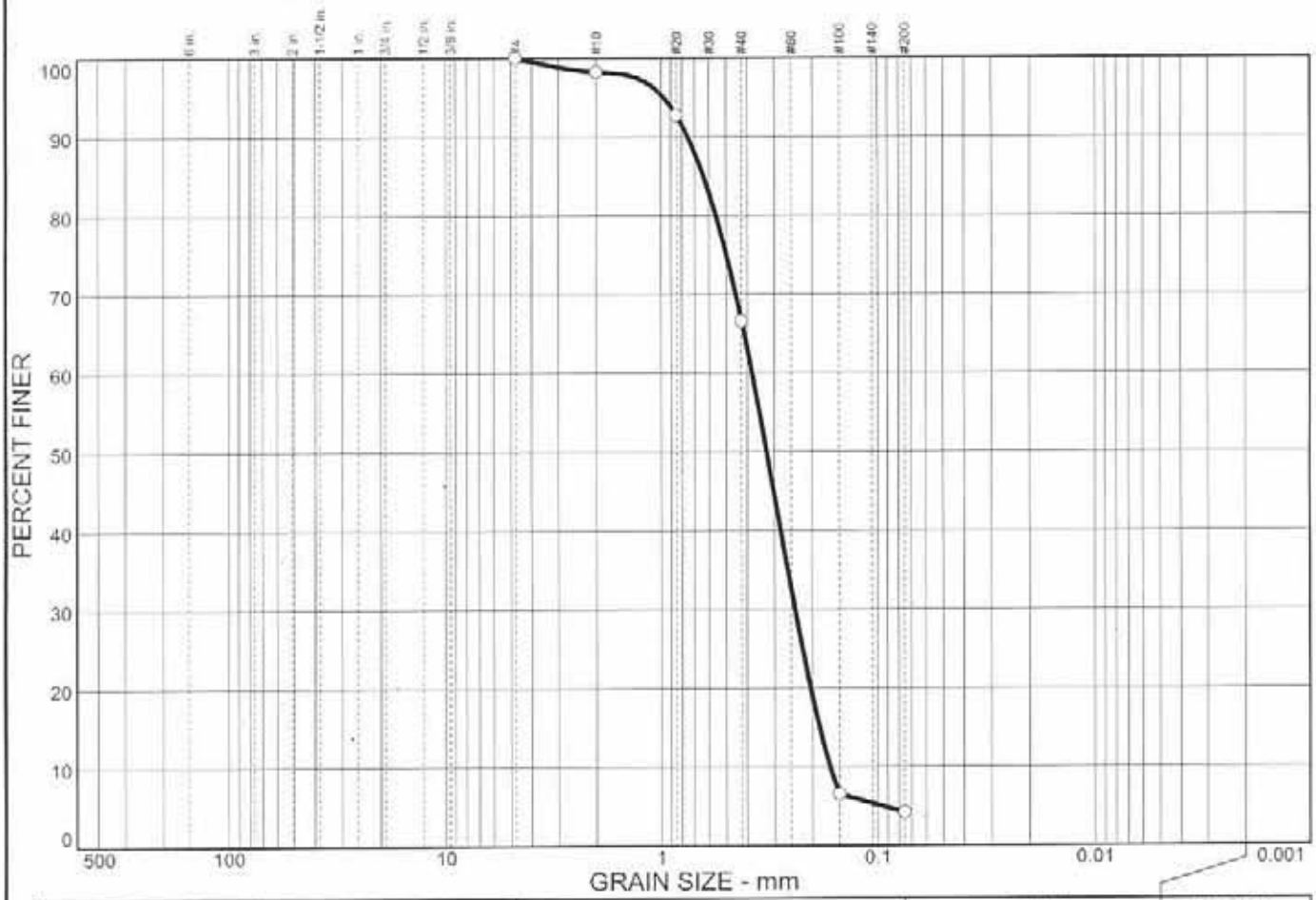
LTR-1
SAMPLE NUMBER: 13-547

**Sample No.:** S-4 **Source of Sample:** B-22 **Date:** 5-9-13
**Location:** B-22, S-4: 6' - 8' **Elev./Depth:** 6' - 8'

**SJB SERVICES, INC.**

**Client:** PUBLIC PROPERTIES
**Project:** 1232 INDIAN FALLS ROAD, PEMBROKE NY
**Project No:** BE-12-181

# ASTM C-136: Particle Size Distribution Report




| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 0.0 | 95.8 | 4.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 98.2 | | |
| #20 | 92.7 | | |
| #40 | 66.6 | | |
| #100 | 6.5 | | |
| #200 | 4.2 | | |

* (no specification provided)

**Soil Description**

B-25, S-5: 4' - 6'

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{85}$= 0.638 $D_{60}$= 0.381 $D_{50}$= 0.326
$D_{30}$= 0.241 $D_{15}$= 0.186 $D_{10}$= 0.166
$C_u$= 2.29 $C_c$= 0.92

**Classification**

USCS= AASHTO=

**Remarks**

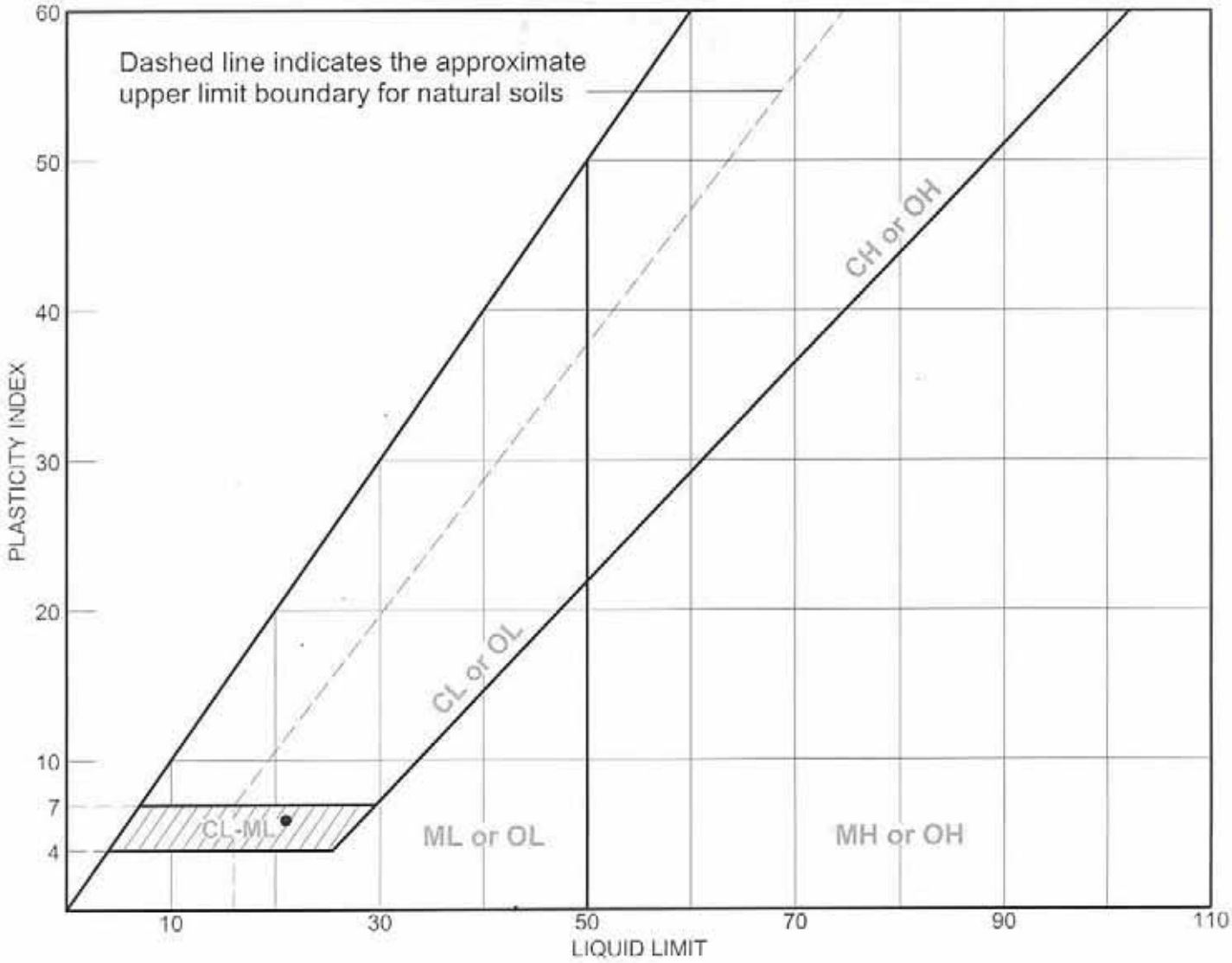
LTR-1
SAMPLE NUMBER: 13-548

**Sample No.:** S-5 **Source of Sample:** B-25 **Date:** 5-9-13
**Location:** B-25, S-5: 4' - 6' **Elev./Depth:** 4' - 6'

**SJB SERVICES, INC.**

**Client:** PUBLIC PROPERTIES
**Project:** 1232 INDIAN FALLS ROAD, PEMBROKE NY
**Project No:** BE-12-181

# SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

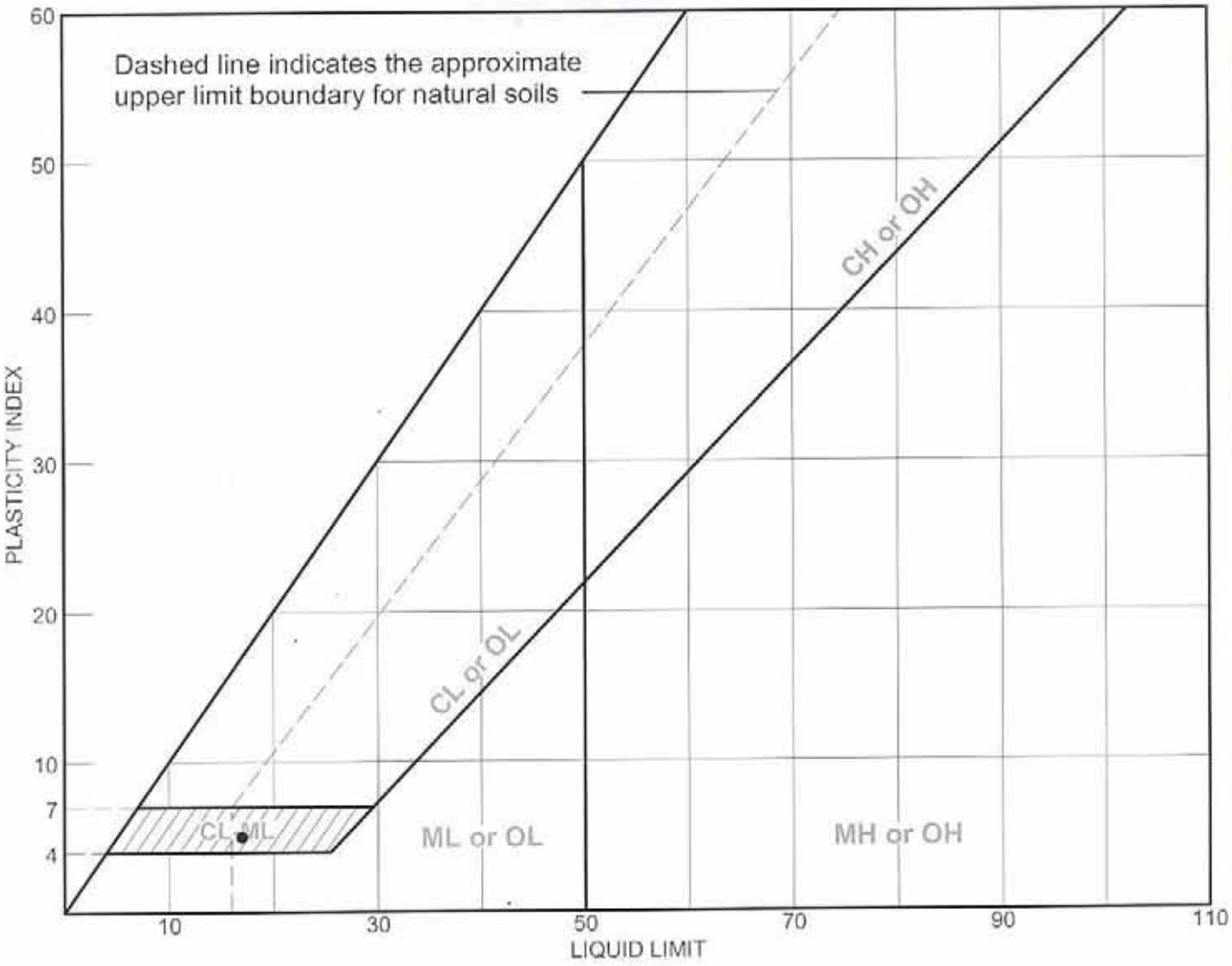



| SOIL DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SYMBOL | SOURCE | SAMPLE NO. | DEPTH (ft.) | NATURAL WATER CONTENT (%) | PLASTIC LIMIT (%) | LIQUID LIMIT (%) | PLASTICITY INDEX (%) | USCS |
| ● | B-1 | S-3 | 4' - 6' | 15.6 % | 15 | 21 | 6 | |

**SJB SERVICES, INC.**

**Client:** PUBLIC PROPERTIES
**Project:** 1232 INDIAN FALLS ROAD, PEMBROKE NY
**Project No.:** BE-12-181

# SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT




| SOIL DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SYMBOL | SOURCE | SAMPLE NO. | DEPTH (ft.) | NATURAL WATER CONTENT (%) | PLASTIC LIMIT (%) | LIQUID LIMIT (%) | PLASTICITY INDEX (%) | USCS |
| ● | B-20 | S-3 | 4' - 6' | 13.5 % | 12 | 17 | 5 | |

**SJB SERVICES, INC.**

**Client:** PUBLIC PROPERTIES
**Project:** 1232 INDIAN FALLS ROAD, PEMBROKE NY
**Project No.:** BE-12-181

# APPENDIX C
# FILL MATERIAL AND
# EARTHWORK RECOMMENDATIONS

## APPENDIX C

## FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

I. Material Recommendations

A. Structural Fill

Structural Fill should consist of a crusher run quarried Limestone or Dolostone, free of clay, organics and friable or deleterious particles. As a minimum, the crusher stone should meet the requirements of New York State Department of Transportation, Standard Specifications, Item 304.12 – Type 2 Subbase, with the following gradation requirements.

| Sieve Size Distribution | Percent Finer by Weight |
|---|---|
| 2 inch | 100 |
| ¼ inch | 25-60 |
| No. 40 | 5-40 |
| No. 200 | 0-10 |

B. Subbase Stone

The subbase stone course placed as the aggregate course beneath slab-on-grade and pavement construction should conform to the same material requirements as Structural Fill, stated above.

C. Suitable Granular Fill

Suitable soil material, well graded from coarse to fine and classified as GW, GP, GM, SW, SP and SM soils using the Unified Soil Classification System (ASTM D-2487) and having no more than 85- percent by weight material passing the No. 4 sieve, no more than 20- percent by weight material passing the No. 200 sieve and which is generally free of particles greater than 6 inches, will be acceptable as Suitable Granular Fill. It should also be free of topsoil, asphalt, concrete rubble, wood, debris, clay and other deleterious materials. Suitable Granular Fill can be used as foundation backfill and as subgrade fill to raise site grades beneath slab-on-grade and pavement construction.

Material meeting the requirements of New York State Department of Transportation, Standard Specifications, Item 203.07 – Select Granular Fill or Item 203.20 Select Granular Subgrade is acceptable for use as Suitable Granular Fill.

## II. Placement and Compaction Requirements

All controlled fill placed beneath foundations, slab-on-grade and pavement construction and beneath utilities should be compacted to a minimum of 95 percent of the maximum dry density as measured by the modified Proctor test (ASTM D1557). Fill placed in non-loaded landscape areas can be compacted to a minimum of 90 percent of the maximum dry density (ASTM D1557).

Placement of fill should not exceed a maximum loose lift thickness of 6 to 9 inches with the exception of the Subbase Stone course directly beneath slab on grade and pavement construction, which can be placed in a single lift not exceeding 15 inches. In addition the first lift of Engineered Fill placed to backfill undercut excavations may also be placed in a single lift not exceeding 15 inches. All succeeding lifts, however, should not exceed a maximum loose lift thickness of 6 to 9 inches. The loose lift thicknesses recommended above should be reduced, as necessary, in conjunction with the type of compaction equipment used, so that the required density is attained.

Engineered fill should have a moisture content within two percent of the optimum moisture content at the time of its compaction and compaction testing. Subgrades should be properly drained and protected from moisture and frost. Placement of fill on frozen or snow covered subgrades is not acceptable. It is recommended that all fill placement and compaction be monitored and tested on a full time basis by a representative of Empire Geo-Services, Inc.

## III. Quality Assurance Testing

The following minimum laboratory and field quality assurance testing frequencies are recommended to confirm fill material quality and post placement and compaction conditions. These minimum frequencies are based on generally uniform material properties and placement conditions. Should material properties vary or conditions at the time of placement vary (i.e. moisture content, placement and compaction, procedures or equipment, etc.) Then additional testing is recommended. Additional testing, which may be necessary, should be determined by qualified geotechnical personnel, based on evaluation of the actual fill material and construction conditions.

### A. Laboratory Testing of Material Properties

- Moisture content (ASTM D-2216) - 1 test per 4000 cubic yards or no less than 2 tests per each material type.
- Grain Size Analysis (ASTM D-422) - 1 test per 4000 cubic yards or no less than 2 tests per each material type.
- Liquid and Plastic Limits (ASTM D-4318) 1 test per 4000 cubic yards or no less than 2 tests per each material type. Liquid and Plastic Limit testing is necessary only if appropriate, based on material composition (i.e. clayey or silty soils).

- Modified Proctor Moisture Density Relationship (ASTM D-1557) 1 test per 4000 cubic yards or no less than 1 test per each material type. A maximum/minimum density relationship (ASTM D-4253 and ASTM D-4254) may be an appropriate substitute for ASTM D-1557 depending on material gradation.

B. Field In-Place Moisture/Density Testing (ASTM D-3017 and ASTM D-2922)

- Backfilling along trenches and foundation walls - 1 test per 100 lineal feet per lift.
- Backfilling Isolated Excavations (i.e. column foundations, manholes, etc.) 1 test per lift.
- Filling in open areas for slab-on-grade and pavement construction - 1 test per 10,000 square feet per lift.

# APPENDIX D

# GEOTECHNICAL REPORT LIMITATIONS

# GEOTECHNICAL REPORT LIMITATIONS

Empire Geo-Services, Inc. (Empire) has endeavored to meet the generally accepted standard of care for the services completed, and in doing so is obliged to advise the geotechnical report user of our report limitations. Empire believes that providing information about the report preparation and limitations is essential to help the user reduce geotechnical-related delays, cost over-runs, and other problems that can develop during the design and construction process. Empire would be pleased to answer any questions regarding the following limitations and use of our report to assist the user in assessing risks and planning for site development and construction.

**PROJECT SPECIFIC FACTORS**: The conclusions and recommendations provided in our geotechnical report were prepared based on project specific factors described in the report, such as size, loading, and intended use of structures; general configuration of structures, roadways, and parking lots; existing and proposed site grading; and any other pertinent project information. Changes to the project details may alter the factors considered in development of the report conclusions and recommendations. *Accordingly, Empire cannot accept responsibility for problems which may develop if we are not consulted regarding any changes to the project specific factors that were assumed during the report preparation.*

**SUBSURFACE CONDITIONS:** The site exploration investigated subsurface conditions only at discrete test locations. Empire has used judgement to infer subsurface conditions between the discrete test locations, and on this basis the conclusions and recommendations in our geotechnical report were developed. It should be understood that the overall subsurface conditions inferred by Empire may vary from those revealed during construction, and these variations may impact on the assumptions made in developing the report conclusions and recommendations. *For this reason, Empire should be retained during construction to confirm that conditions are as expected, and to refine our conclusions and recommendations in the event that conditions are encountered that were not disclosed during the site exploration program.*

**USE OF GEOTECHNICAL REPORT:** Unless indicated otherwise, our geotechnical report has been prepared for the use of our client for specific application to the site and project conditions described in the report. *Without consulting with Empire, our geotechnical report should not be applied by any party to other sites or for any uses other than those originally intended.*

**CHANGES IN SITE CONDITIONS:** Surface and subsurface conditions are subject to change at a project site subsequent to preparation of the geotechnical report. Changes may include, but are not limited to, floods, earthquakes, groundwater fluctuations, and construction activities at the site and/or adjoining properties. *Empire should be informed of any such changes to determine if additional investigative and/or evaluation work is warranted.*

**MISINTERPRETATION OF REPORT:** The conclusions and recommendations contained in our geotechnical report are subject to misinterpretation. *To limit this possibility, Empire should review project plans and specifications relative to geotechnical issues to confirm that the recommendations contained in our report have been properly interpreted and applied.*

Subsurface exploration logs and other report data are also subject to misinterpretation by others if they are separated from the geotechnical report. This often occurs when copies of logs are given to contractors during the bid preparation process. *To minimize the potential for misinterpretation, the subsurface logs should not be separated from our geotechnical report and the use of excerpted or incomplete portions of the report should be avoided.*

**OTHER LIMITATIONS:** Geotechnical engineering is less exact than other design disciplines, as it is based partly on judgement and opinion. For this reason, our geotechnical report may include clauses that identify the limits of Empire's responsibility, or that may describe other limitations specific to a project. These clauses are intended to help all parties recognize their responsibilities and to assist them in assessing risks and decision making. Empire would be pleased to discuss these clauses and to answer any questions that may arise.

September 23, 2013

Ms. Nancy Herter (PEB)
Historic Preservation Program Analyst
New York State Historic Preservation Office
Division for Historic Preservation
PO Box 189, Peebles Island
Waterford, New York 12188-3280

**RE: Phase 3 Cultural Resource Investigations**
**Initial Findings of Completed Phase 3 Field Investigations/Mechanical Stripping**
**Indian Falls Precontact Site (A03712.000035)**
**Corfu, Genesee County, New York**

Dear Ms. Herter,

Commonwealth Cultural Resources Group, Inc. (CCRG) has completed Phase 3 mechanical stripping at the Indian Falls Precontact Site (A03712.000035) at the proposed U.S. Department of Veterans Affairs cemetery location at 1232 Indian Falls Road, Corfu, Genesee County, New York 14036. The proposed Phase 3 field investigations at the site have thus been completed.

Mechanical stripping began on August 27, 2013, and involved the placement of 11 windows (of 100ft x 50ft or 50ft x 50ft), covering just over 1 acre in combined area (see map of stripping locations, Figure 2) in Area F, in order to explore for subsurface features. While CCRG awaited SHPO approval of the remaining stripping locations, Windows 2 and 3 in Block D were each expanded by 10 feet along one side, to 100ft x 60ft, to pursue possible features. Despite a few rainy days, excavation conditions were generally good to excellent. Feature excavation was completed on Sept. 20, 2013, though a small amount of equipment removal remains to be done.

A total of 34 features were excavated in Area F (see Figures 3-12 and Photos 1-68). Preliminary results suggest that these included several prehistoric/cultural burn or thermal features. Likely prehistoric examples included fire pit features, which were occasionally black with partially degraded charcoal (e.g., Feature #13 in Window 9, Block K; see Photos 25 and 26), as well as faint reddish thermal features of uncertain function (e.g., Feature #12 in Window 9, Block L; see Photos 23 and 24), which occasionally contained flakes and small amounts of charcoal. Also observed were pit-type features capped with dark, charcoal-rich sandy soil, and containing a mix of apparently heat-reddened sand, light or whitish-colored sand (possibly ashy), and mixed natural sandy soils (e.g., Feature #23 in Window 4, Block E; see Photos 45 and 46).

A few features were identified as root burns due to the presence of fairly modern, spongy pieces of slightly charred wood (e.g., Feature #17 in Window 2, Block D; see Photos 33 and 34). As well, rodent burrows were apparent throughout the field, and Feature #22 (Window 4, Block E; see Photos 43 and 44) may in fact be the result of rodent activity. Plow scars were abundant in all windows and generally ran in an east-west direction. Only Window 11 in Block O (west) was found to be devoid of subsurface features.

Charcoal (C-14) samples for possible radio-carbon dating were recovered from 23 features (see Table 1), though the original project scope only called for submission of up to three C-14 samples. Approximately 165 soil/flotation samples of 1-3 gallons each were also collected. As well, feature excavation yielded approximately 2000 lithic artifacts, in addition to the nearly 14,000 artifacts recovered during Phase 2 close-interval testing and Phase 3 surface inspection.

This summary includes maps showing the general location of features within each stripping window, as well as photos of the features. Table 1 shows preliminary findings from feature excavations. Maps illustrating preliminary lithic debitage counts from the Phase 2 close-interval shovel testing and Phase 3 surface collection, as well as the locations of lithic tools (bifaces, etc.) recovered during Phase 1, 2 and 3 investigations, are included as an appendix, following the feature photos. The latter also indicate the location of Phase 3 mechanical stripping windows (shaded areas).

If you have any questions please call me at (716)909-1660. Or if you would prefer, please email me at mlk1@ix.netcom.com.

Sincerely,

Michael L. Kagelmacher, M.A.
Principal Investigator
Commonwealth Cultural Resources Group, Inc.

**Table 1. Preliminary Feature Information.**

| Feature # | Location | Artifacts | C-14? | Preliminary Feature ID |
|---|---|---|---|---|
| 1 | Block P (w), Window 10 | --- | --- | Uncertain |
| 2 | Block P (w), Window 10 | --- | Yes | Uncertain |
| 3 | Block P (w), Window 10 | Flakes | Yes | Possible Prehistoric Fire Pit |
| 4 | Block P (w), Window 10 | Flakes (outside) | --- | Uncertain |
| 5 | Block P (w), Window 10 | --- | Yes | Uncertain |
| 6 | Block L, Window 8 | Flakes | Yes | Uncertain, |
| 7 | Block L, Window 8 | Flakes | --- | Reddish Thermal Feature |
| 8 | Block L, Window 8 | --- | --- | Likely root burn, contained recent wood |
| 9 | Block L, Window 8 | --- | --- | Rodent burrow/Root burn? |
| 10 | Block L, Window 8 | Flakes | Yes | Possible Prehistoric Fire Pit |
| 11 | Block L, Window 8 | Flakes | --- | Reddish Thermal Feature |
| 12 | Block L, Window 8 | Flakes | Yes | Reddish Thermal Feature |
| 13 | Block K, Window 9 | Flakes, Biface | Yes | Prehistoric Fire Pit |
| 14 | Block K, Window 9 | Flakes | Yes | Prehistoric Fire pit |
| 15 | Block H, Window 7 | Flakes | Yes | Possible Prehistoric Fire Pit |
| 16 | Block D, Window 2 | Flakes (outside) | Yes | Possible Prehistoric Fire Pit |
| 17 | Block D, Window 2 | --- | --- | Likely root burn, contained recent wood |
| 18 | Block D, Window 2 | Flakes | Yes | Possible Prehistoric Fire Pit |
| 19 | Block D, Window 3 | Flakes | Yes | Possible Prehistoric Fire Pit |
| 20 | Block D, Window 3 | --- | Yes | Possible Prehistoric Fire Pit |
| 21 | Block D, Window 3 | Flakes (outside) | Yes | Uncertain |
| 22 | Block E, Window 4 | --- | --- | Possible rodent burrow |
| 23 | Block E, Window 4 | Flakes | Yes | Prehistoric Fire/Roasting Pit |
| 24 | Block E, Window 4 | Flakes, Biface | Yes | Prehistoric Fire/Roasting Pit |
| 25 | Block E, Window 4 | Flakes | Yes | Possible Prehistoric Burn Feature |
| 26 | Block E, Window 5 | Flakes | Yes | Prehistoric Fire/Roasting Pit |
| 27 | Block E, Window 5 | Flakes | Yes | Prehistoric Fire Pit |
| 28 | Block E, Window 5 | --- | --- | Likely root burn, contained recent wood |
| 29 | Block J, Window 6 | --- | --- | Reddish Thermal Feature |
| 30 | Block A, Window 1 | Flakes | Yes | Possible Prehistoric Burn Feature |
| 31 | Block J, Window 6 | Flakes (outside) | Yes | Reddish Thermal Feature |
| 32 | Block J, Window 6 | Flakes | --- | Modern pit from pulled boulder |
| 33 | Block J, Window 6 | Flakes, Biface | Yes | Prehistoric Fire/Roasting Pit |
| 34 | Block J, Window 6 | Flakes | Yes | Prehistoric Fire/Roasting Pit |

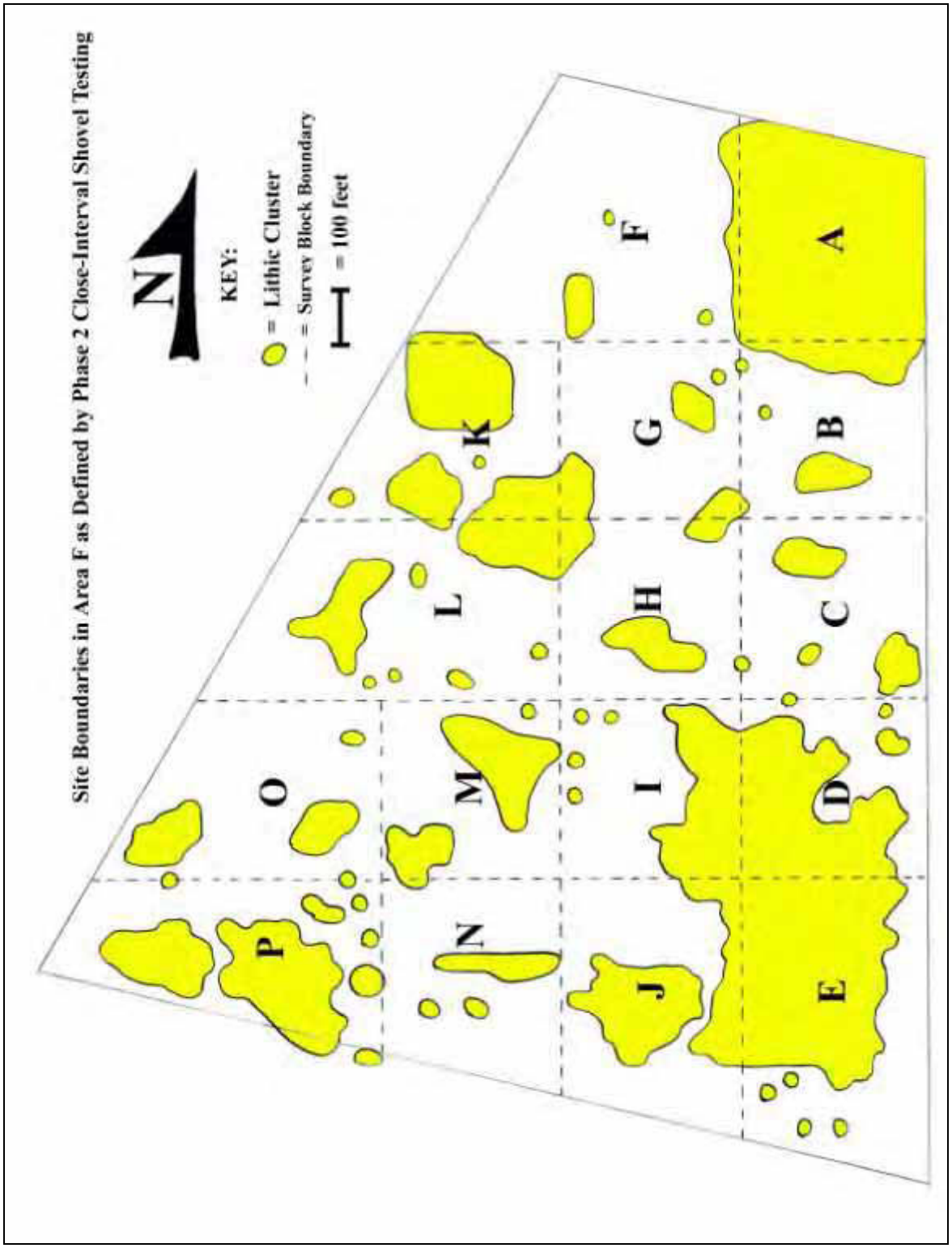



**Figure 1. Map Showing Grid Blocks and Phase 2 Artifact Clusters in Area F.**

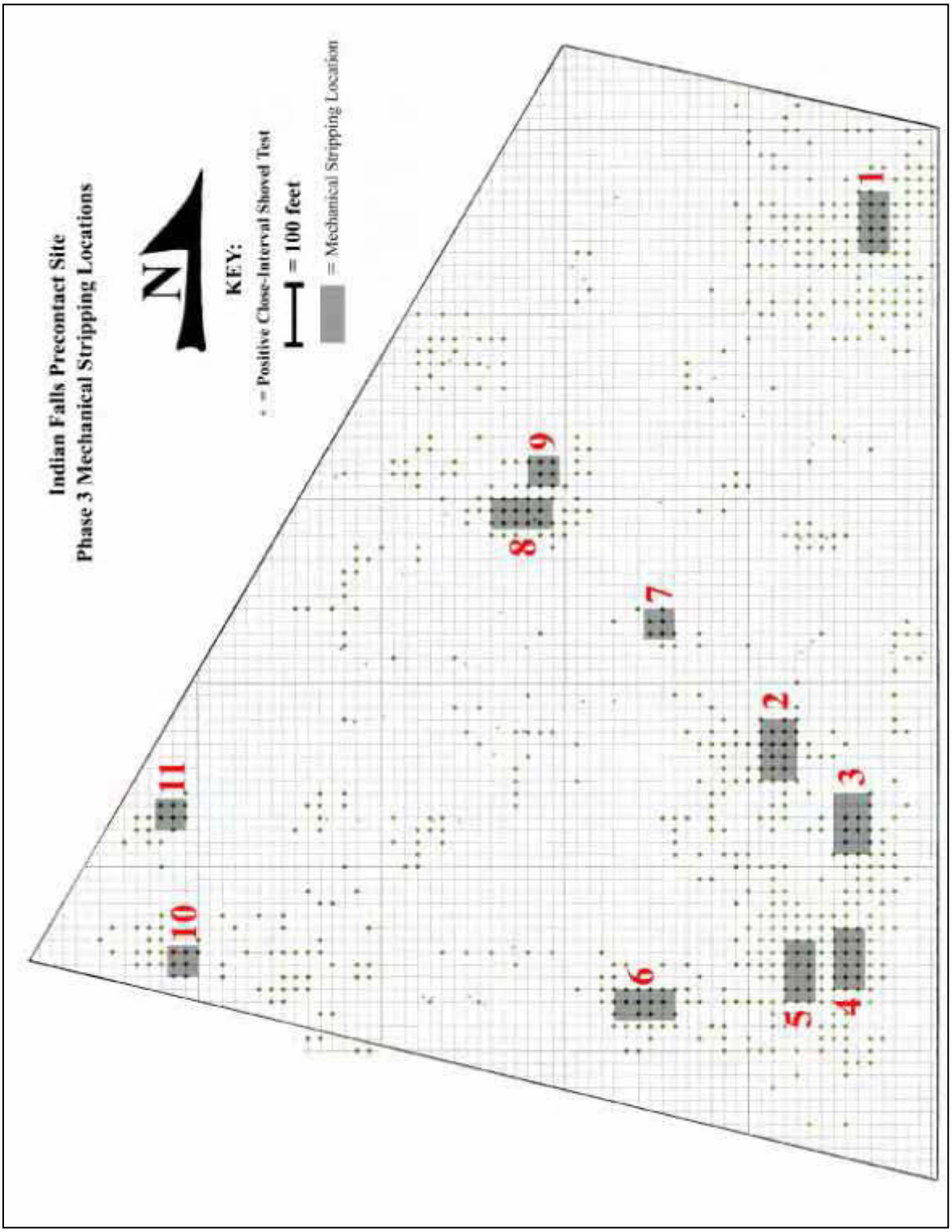



**Figure 2. Mechanical Stripping Locations in Area F.**

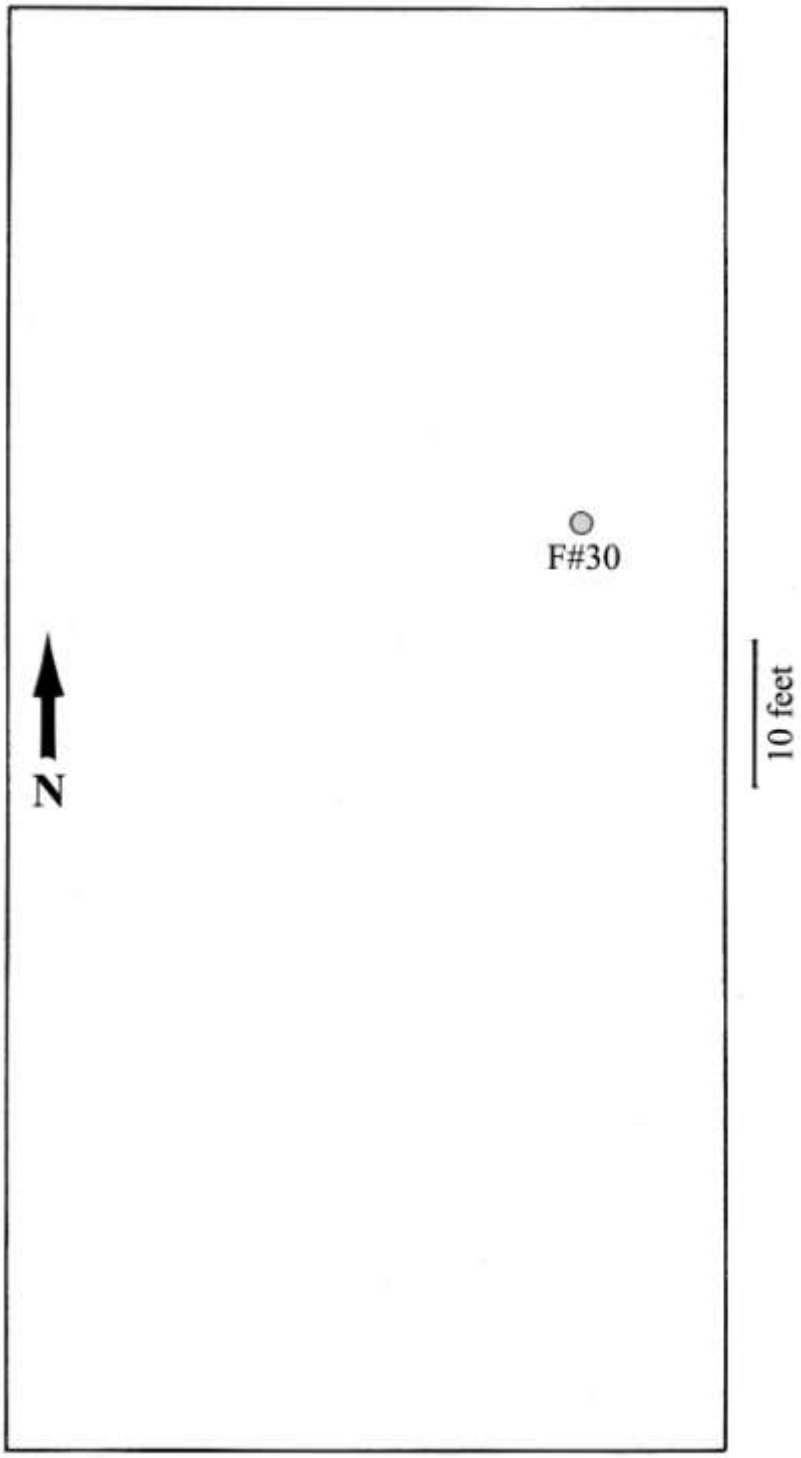



**Figure 3. Location of Feature #30 in Window 1, Block A.**

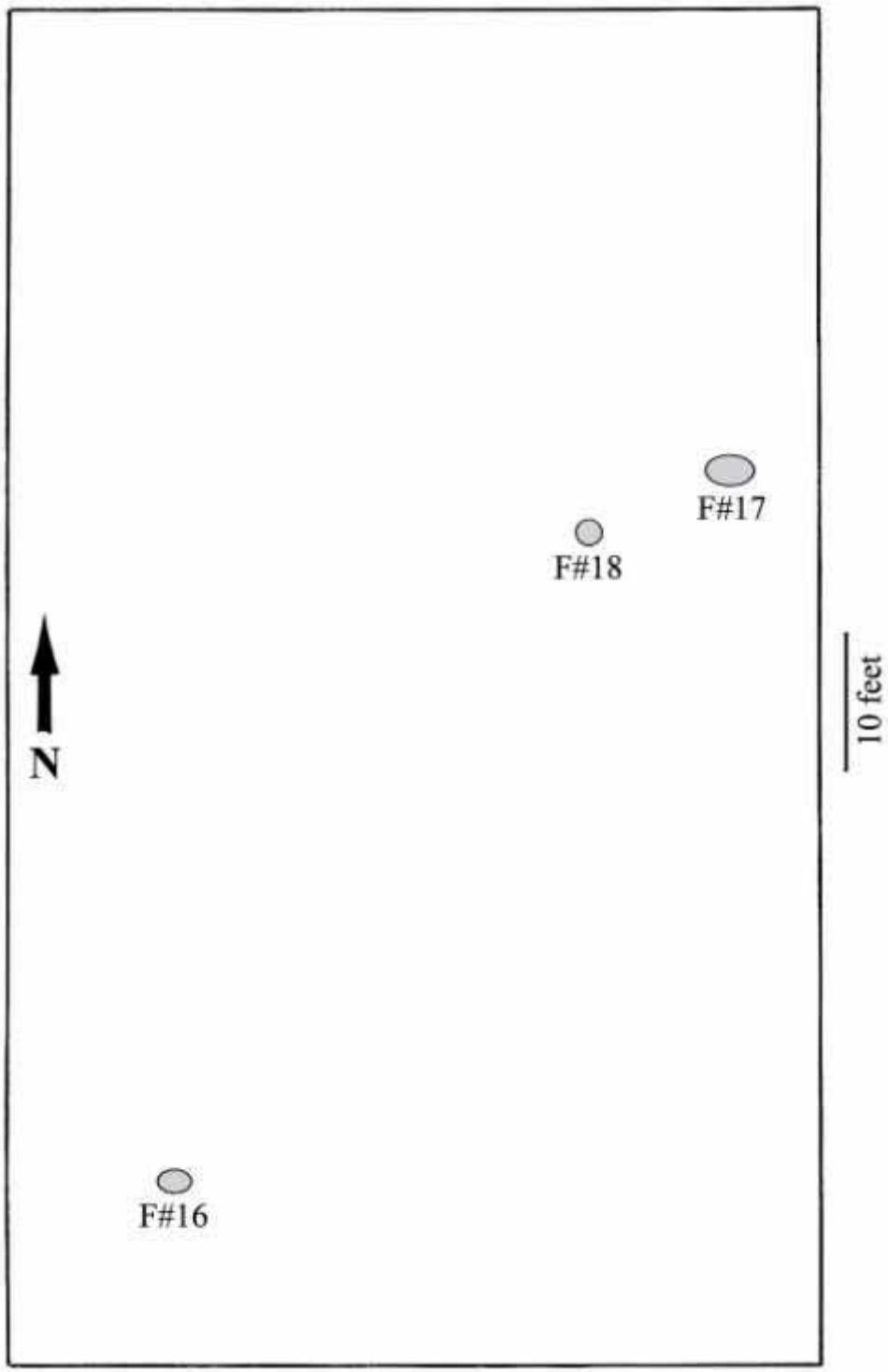



**Figure 4. Locations of Features #16, #17 and #18 in Window 2, Block D.**

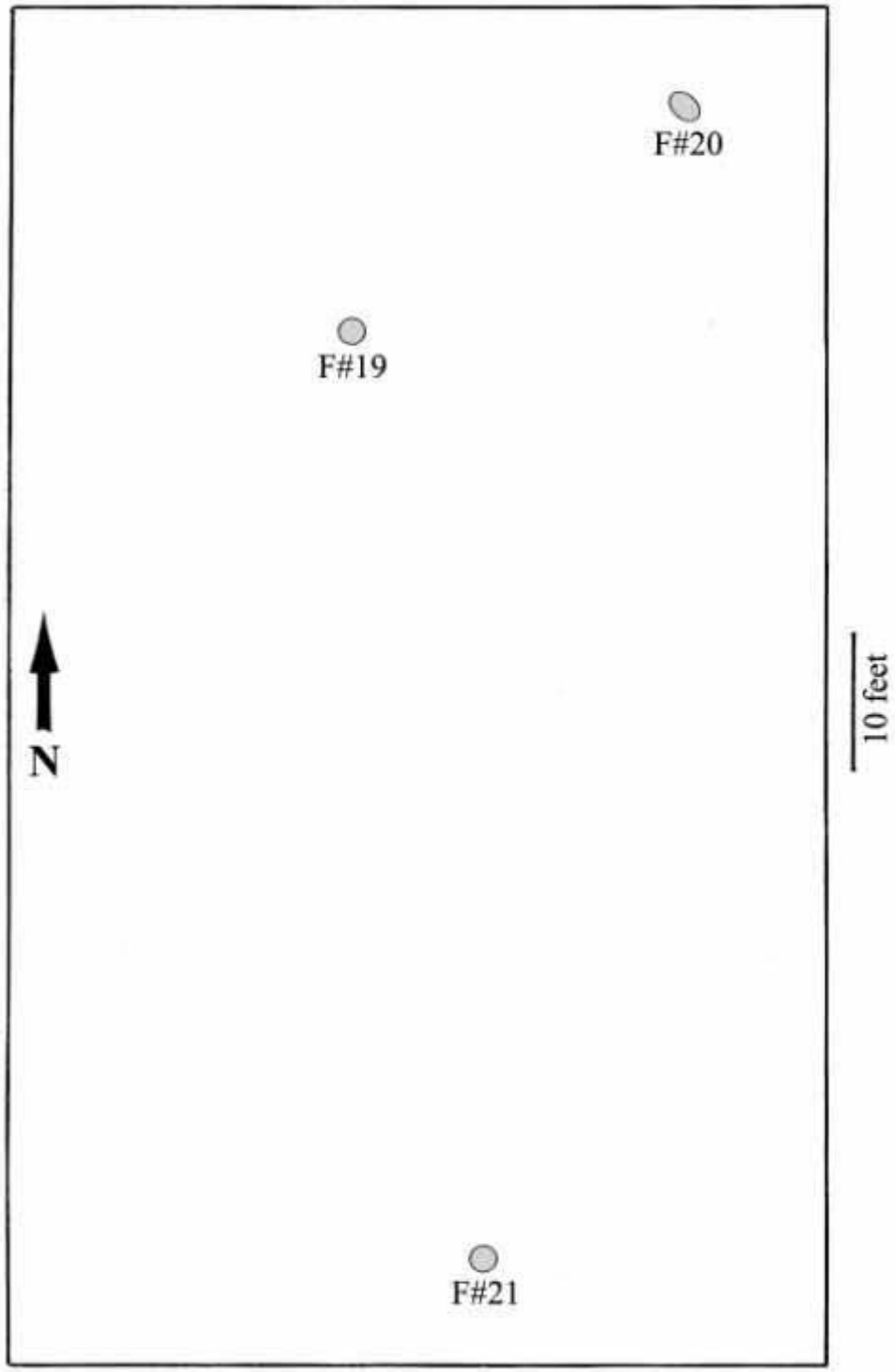



**Figure 5. Locations of Features #19, #20 and #21 in Window 3, Block D.**

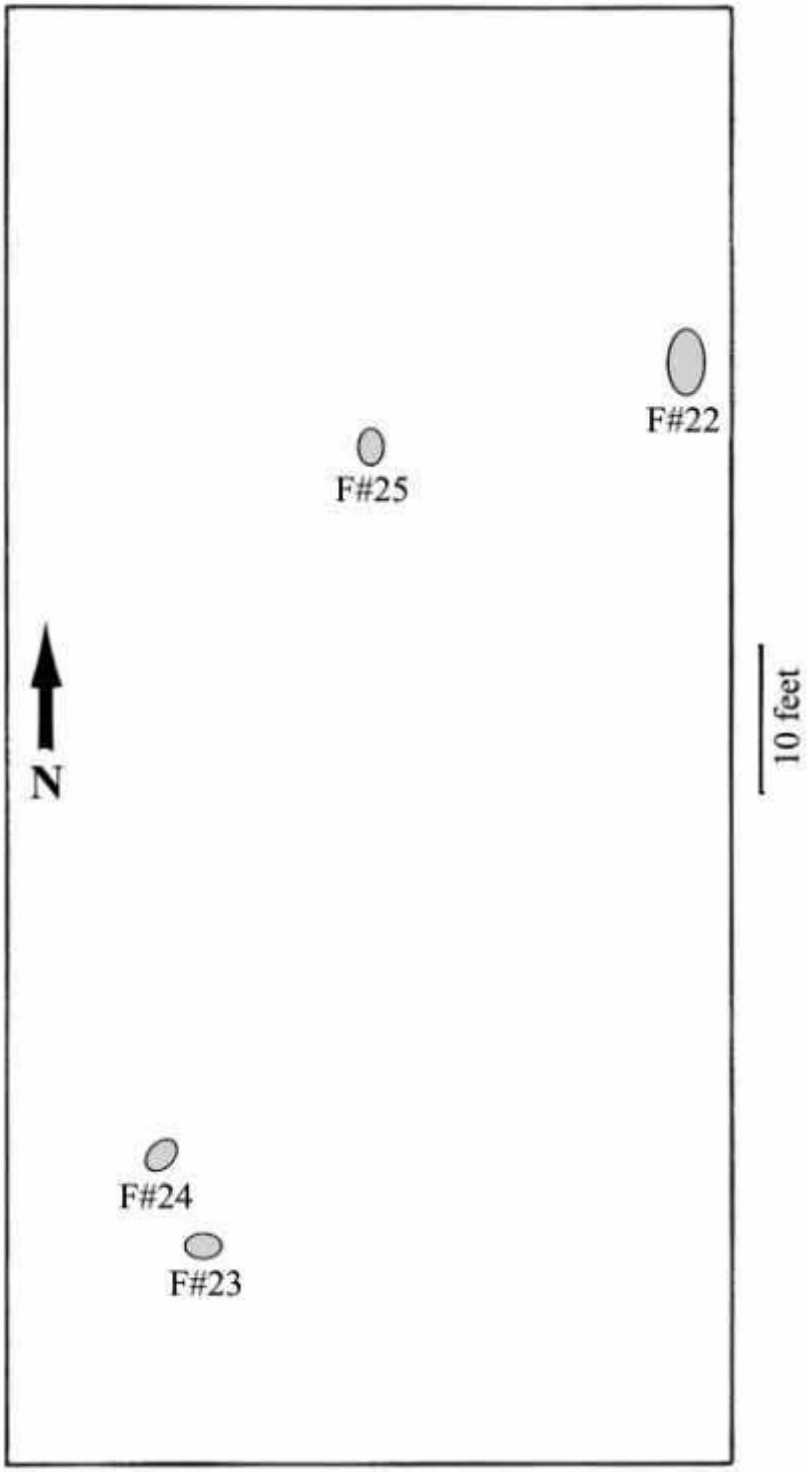



**Figure 6. Locations of Features #22, #23, #24 and #25 in Window 4, Block E.**

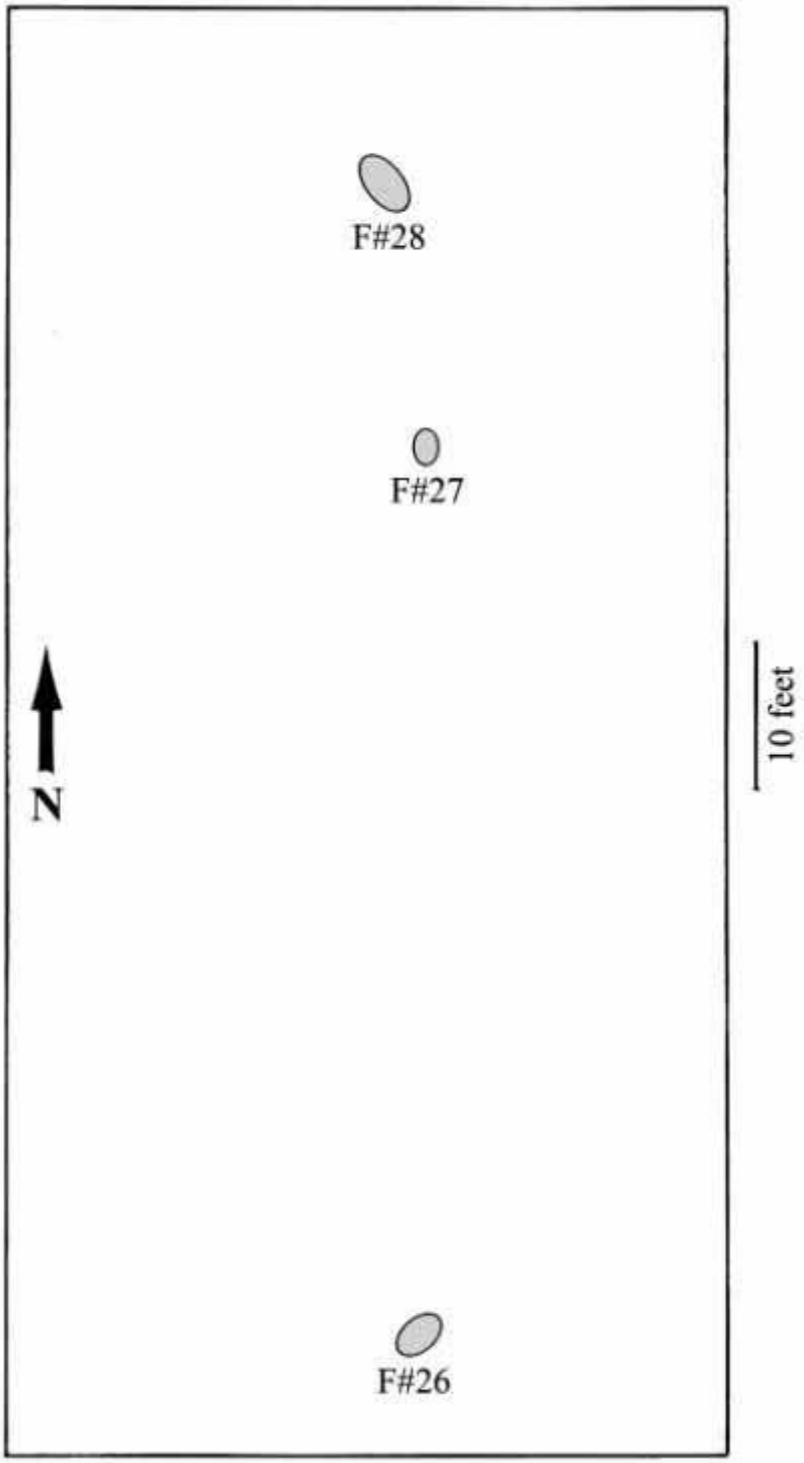



**Figure 7. Locations of Features #26, #27 and #28 in Window 5, Block D.**

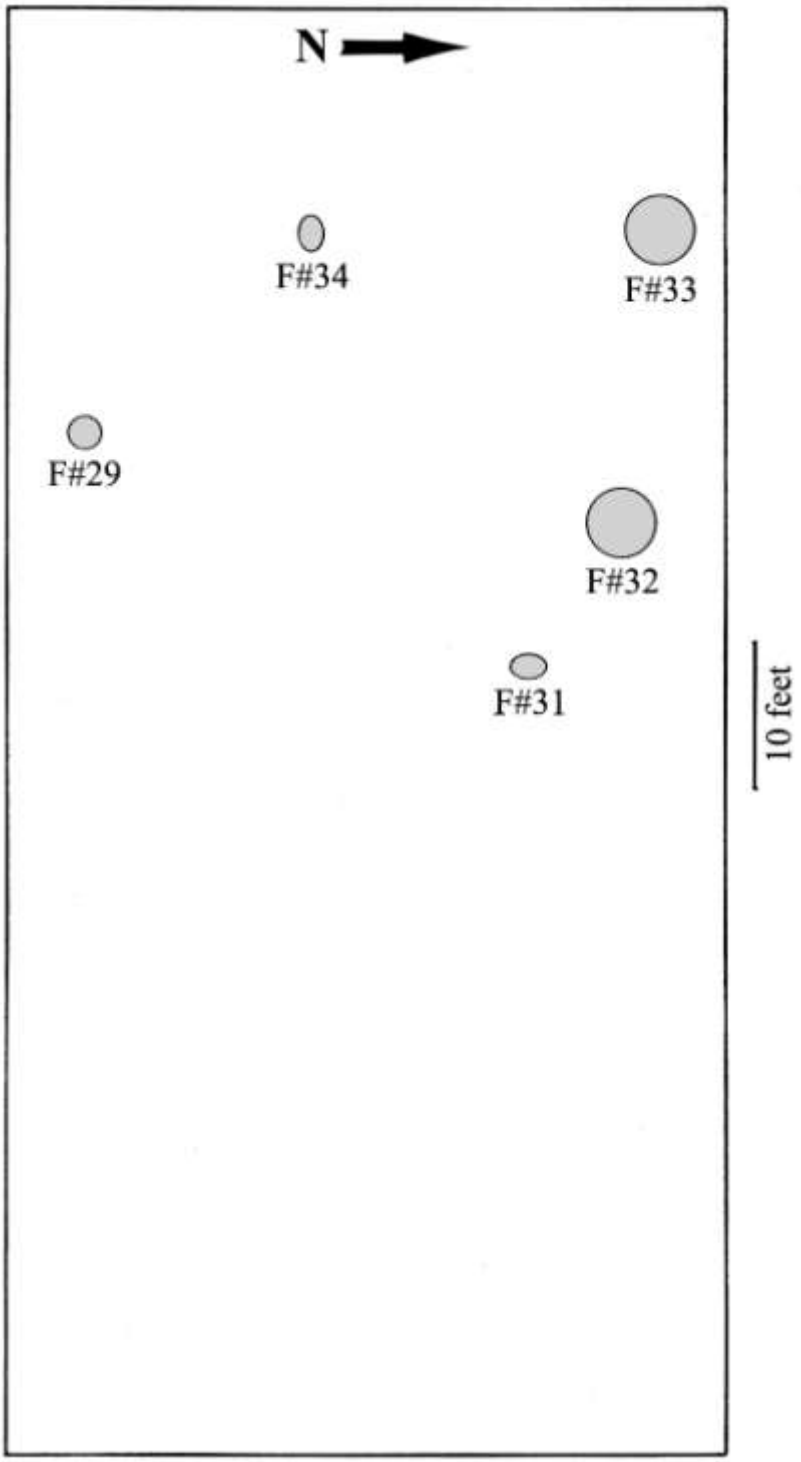



**Figure 8. Locations of Features #29, #31, #32, #33 and #34 in Window 6, Block J.**

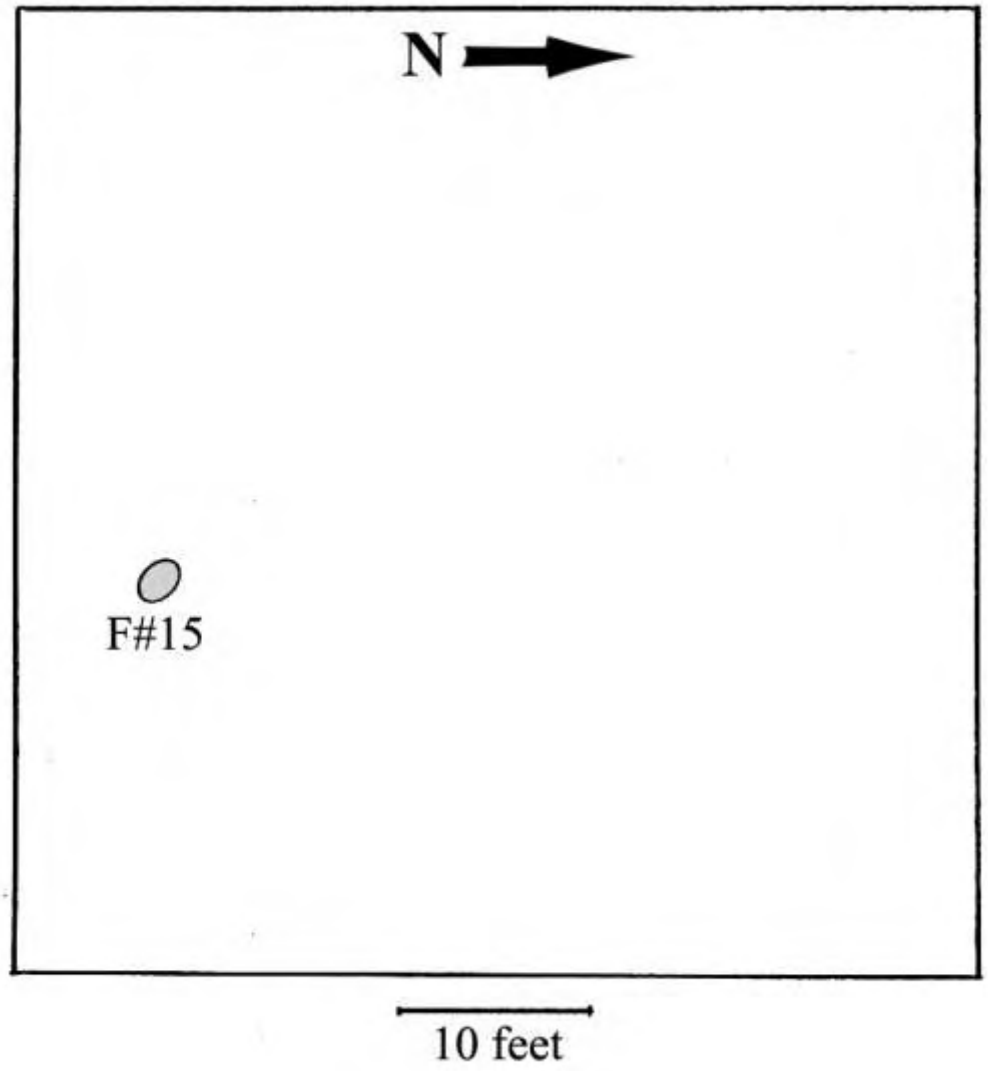



**Figure 9. Location of Feature #15 in Window 7, Block H.**

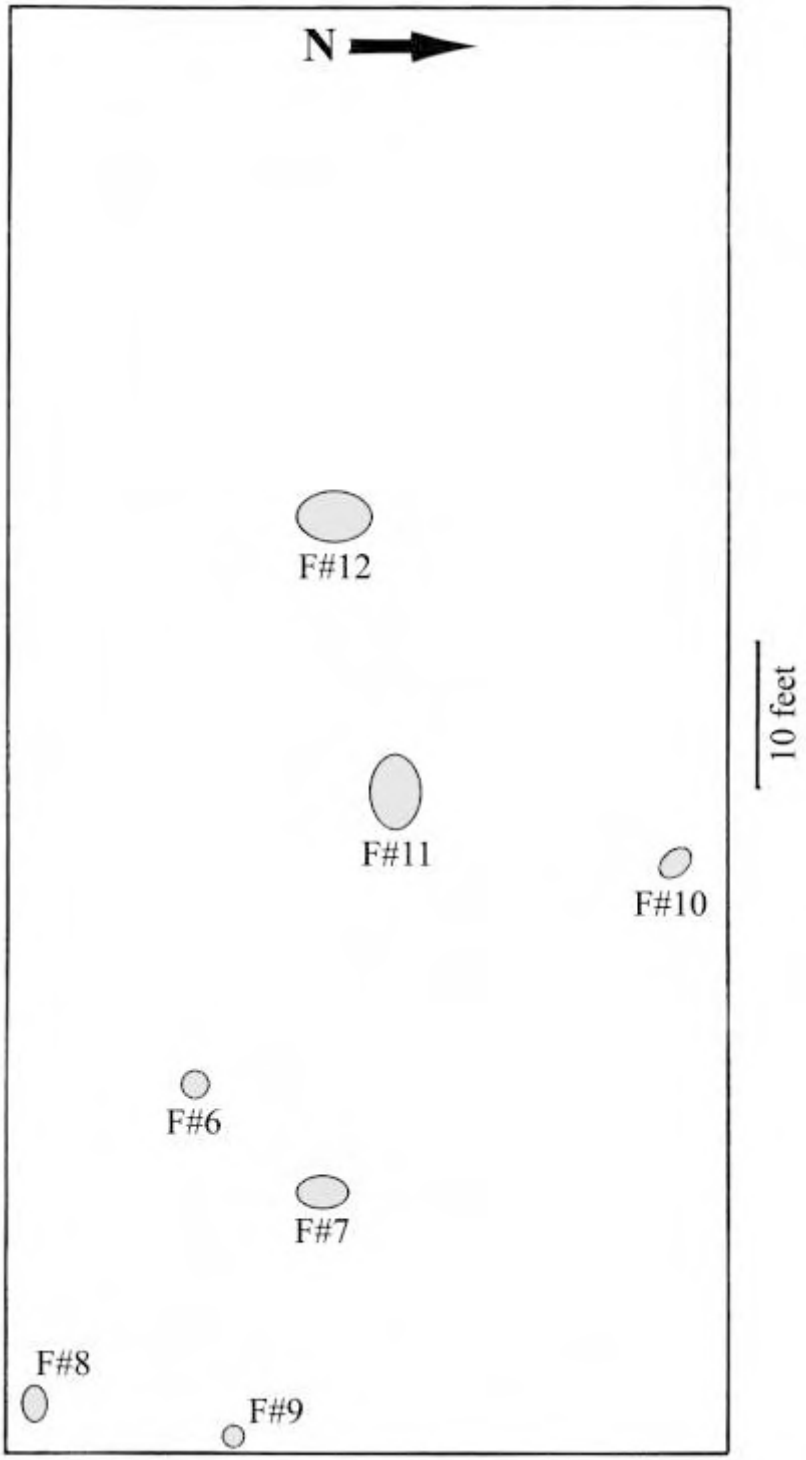



**Figure 10. Locations of Features #6, #7, #8, #9, #10, #11 and #12 in Window 8, Block L.**

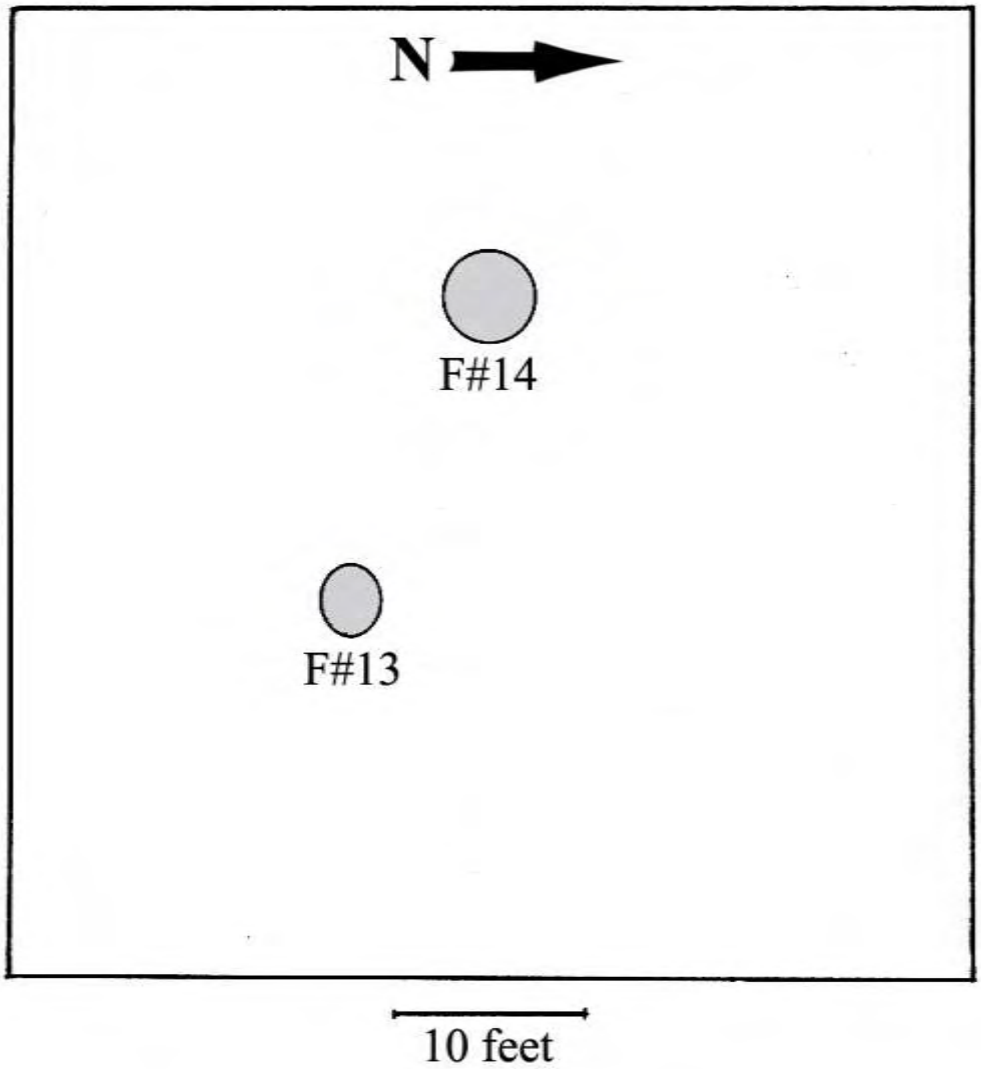



**Figure 11. Locations of Features #13 and #14 in Window 9, Block K.**

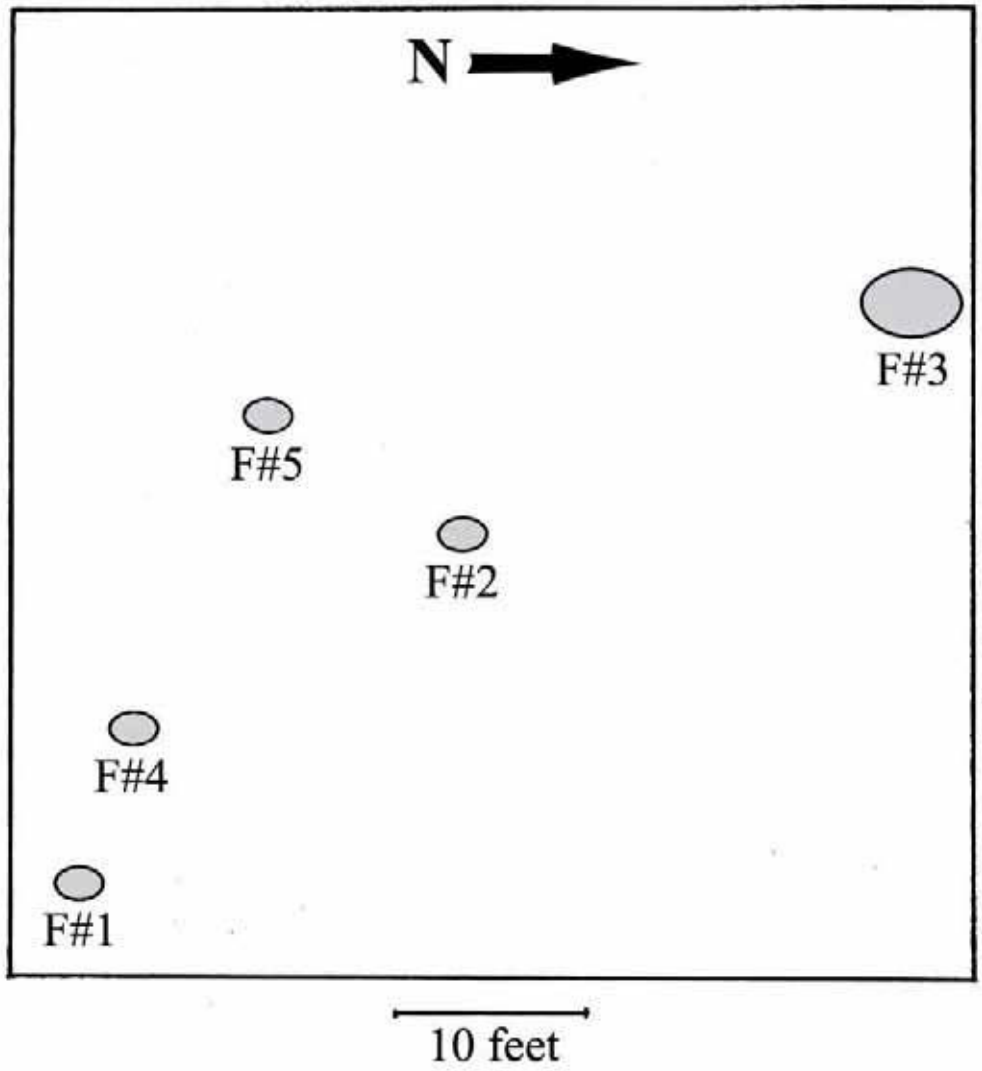



**Figure 12. Features #1, #2, #3, #4 and #5 in Window 10, Block P (west).**

**Photo 1. Feature #1, Window 10, Block P (west).**

**Photo 2. Feature #1 (profile), Window 10, Block P (west).**

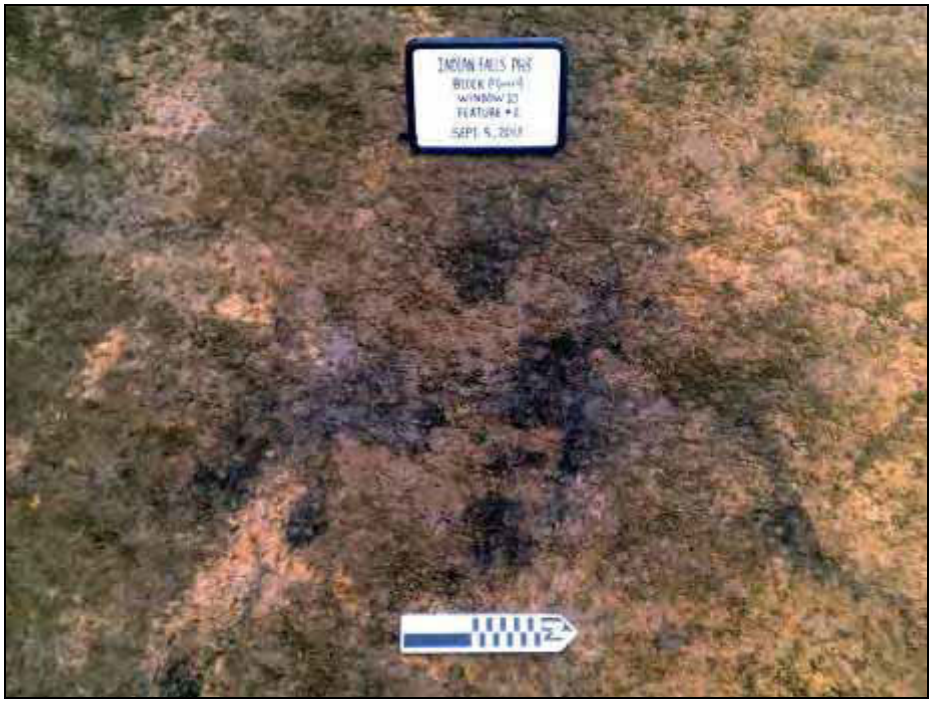


**Photo 3. Feature #2, Window 10, Block P (west).**

**Photo 4. Feature #2 (profile), Window 10, Block P (west).**

**Photo 5. Feature #3, Window 10, Block P (west).**

**Photo 6. Feature #3 (profile), Window 10, Block P (west).**

**Photo 7. Feature #4, Window 10, Block P (west).**

**Photo 8. Feature #4 (profile), Window 10, Block P (west).**

**Photo 9. Feature #5, Window 10, Block P (west).**

**Photo 10. Feature #5 (profile), Window 10, Block P (west).**

**Photo 11. Feature #6, Window 8, Block L.**

**Photo 12. Feature #6 (profile), Window 8, Block L.**

**Photo 13. Feature #7, Window 8, Block L.**

**Photo 14. Feature #7 (profile), Window 8, Block L.**

**Photo 15. Feature #8, Window 8, Block L.**

**Photo 16. Feature #8 (profile), Window 8, Block L.**

**Photo 17. Feature #9, Window 8, Block L.**

**Photo 18. Feature #9 (profile), Window 8, Block L.**

**Photo 19. Feature #10, Window 8, Block L.**

**Photo 20. Feature #10 (profile), Window 8, Block L.**

**Photo 21. Feature #11, Window 8, Block L.**

**Photo 22. Feature #11 (profile), Window 8, Block L.**

**Photo 23. Feature #12, Window 8, Block L.**

**Photo 24. Feature #12 (profile), Window 8, Block L.**

**Photo 25. Feature #13, Window 9, Block K.**

**Photo 26. Feature #13 (profile), Window 9, Block K.**

**Photo 27. Feature #14, Window 9, Block K.**

**Photo 28. Feature #14 (profile), Window 9, Block K.**

**Photo 29. Feature #15, Window 7, Block H.**

**Photo 30. Feature #15 (profile), Window 7, Block H.**

**Photo 31. Feature #16, Window 2, Block D.**

**Photo 32. Feature #16 (profile), Window 2, Block D.**

**Photo 33. Feature #17, Window 2, Block D.**

**Photo 34. Feature #17, showing wood from likely root burn, Window 2, Block D.**

**Photo 35. Feature #18, Window 2, Block D.**

**Photo 36. Feature #18 (profile), Window 2, Block D.**

**Photo 37. Feature #19, Window 3, Block D.**

**Photo 38. Feature #19 (profile), Window 3, Block D.**

**Photo 39. Feature #20, Window 3, Block D.**

**Photo 40. Feature #20 (profile), Window 3, Block D.**

**Photo 41. Feature #21, Window 3, Block D.**

**Photo 42. Feature #21 (profile), Window 3, Block D.**

**Photo 43. Feature #22, Window 4, Block E.**

**Photo 44. Feature #22 (profile), Window 4, Block E.**

**Photo 45. Feature #23, Window 4, Block E.**

**Photo 46. Feature #23 (profile), Window 4, Block E.**

**Photo 47. Feature #24, Window 4, Block E.**

**Photo 48. Feature #24 (profile), Window 4, Block E.**

**Photo 49. Feature #25, Window 4, Block E.**

**Photo 50. Feature #25 (profile), Window 4, Block E.**

**Photo 51. Feature #26, Window 5, Block E.**

**Photo 52. Feature #26 (profile), Window 5, Block E.**

**Photo 53. Feature #27, Window 5, Block E.**

**Photo 54. Feature #27 (profile), Window 5, Block E.**

**Photo 55. Feature #28, Window 5, Block E.**

**Photo 56. Feature #28, base of Level 1 (root burn), Window 5, Block E.**

**Photo 57. Feature #29, Window 6, Block J.**

**Photo 58. Feature #29 (profile), Window 6, Block J.**

**Photo 59. Feature #30, Window 1, Block A.**

**Photo 60. Feature #30 (profile), Window 1, Block A.**

**Photo 61. Feature #31, Window 6, Block J.**

**Photo 62. Feature #31 (profile), Window 6, Block J.**

**Photo 63. Feature #32, Window 6, Block J.**

**Photo 64. Feature #32 (profile), Window 6, Block J.**

**Photo 65. Feature #33, Window 6, Block J.**

**Photo 66. Feature #33 (profile), Window 6, Block J.**

**Photo 67. Feature #34, Window 6, Block J.**

**Photo 68. Feature #34 (profile), Window 6, Block J.**

# APPENDIX A

## Phase 2 Close-Interval Testing and Phase 3 Surface Inspection:

## Maps Showing Preliminary Artifact Counts and Mechanical Stripping Locations

**Figure 13. Mechanical Stripping Location in Block A (Area F).**

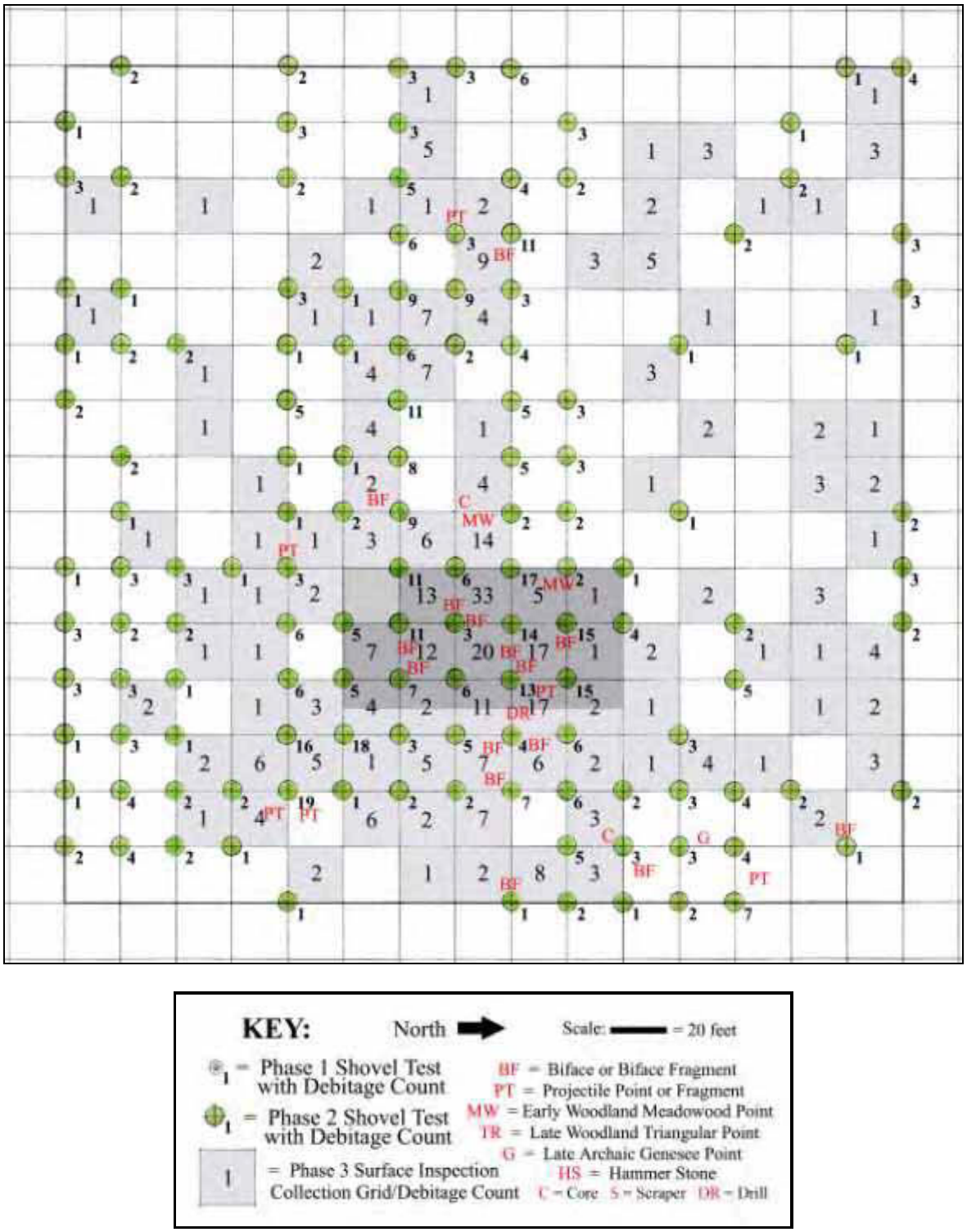


**Figure 14. Block A (north portion) in Area F.**

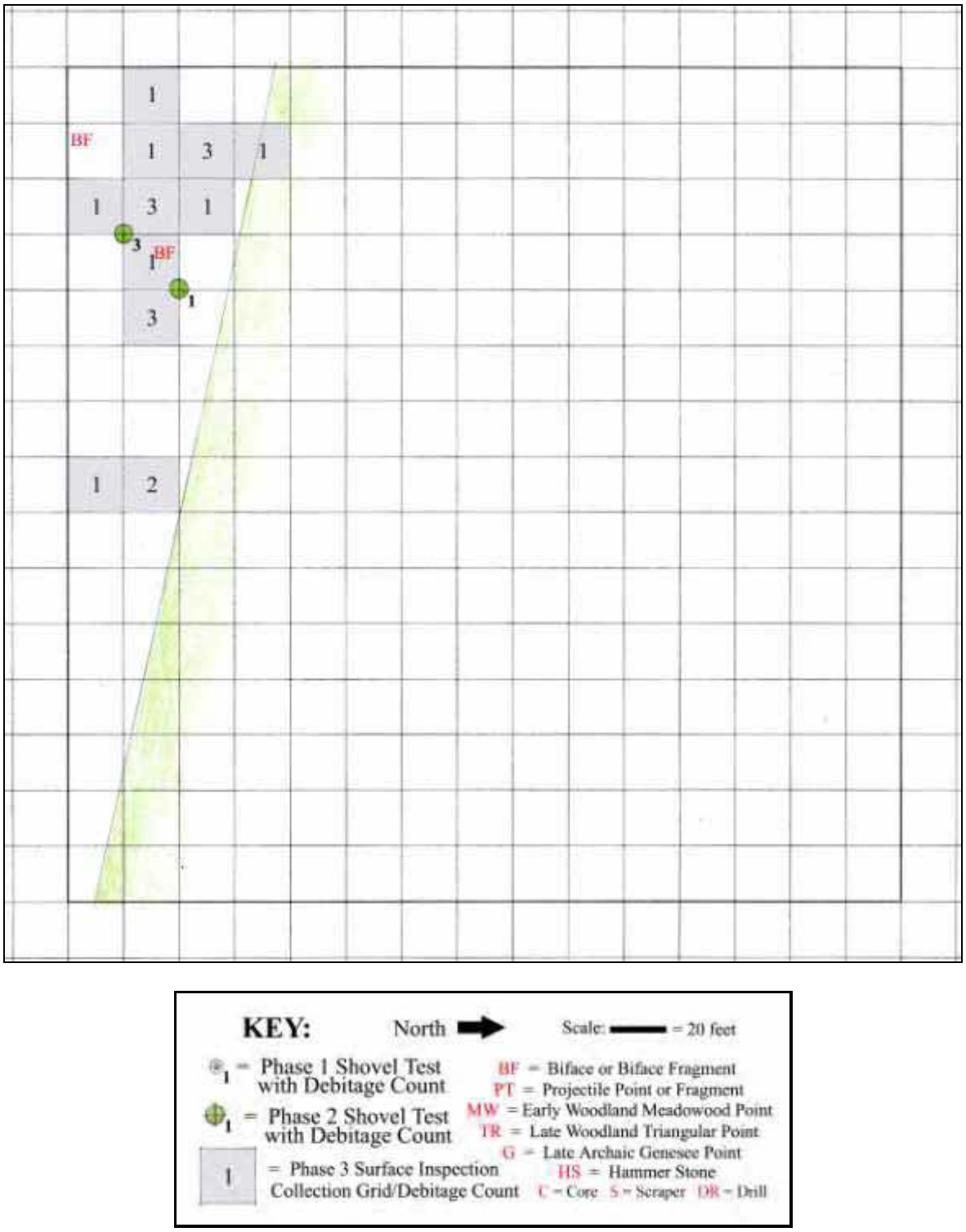


**Figure 15. Block B in Area F.**

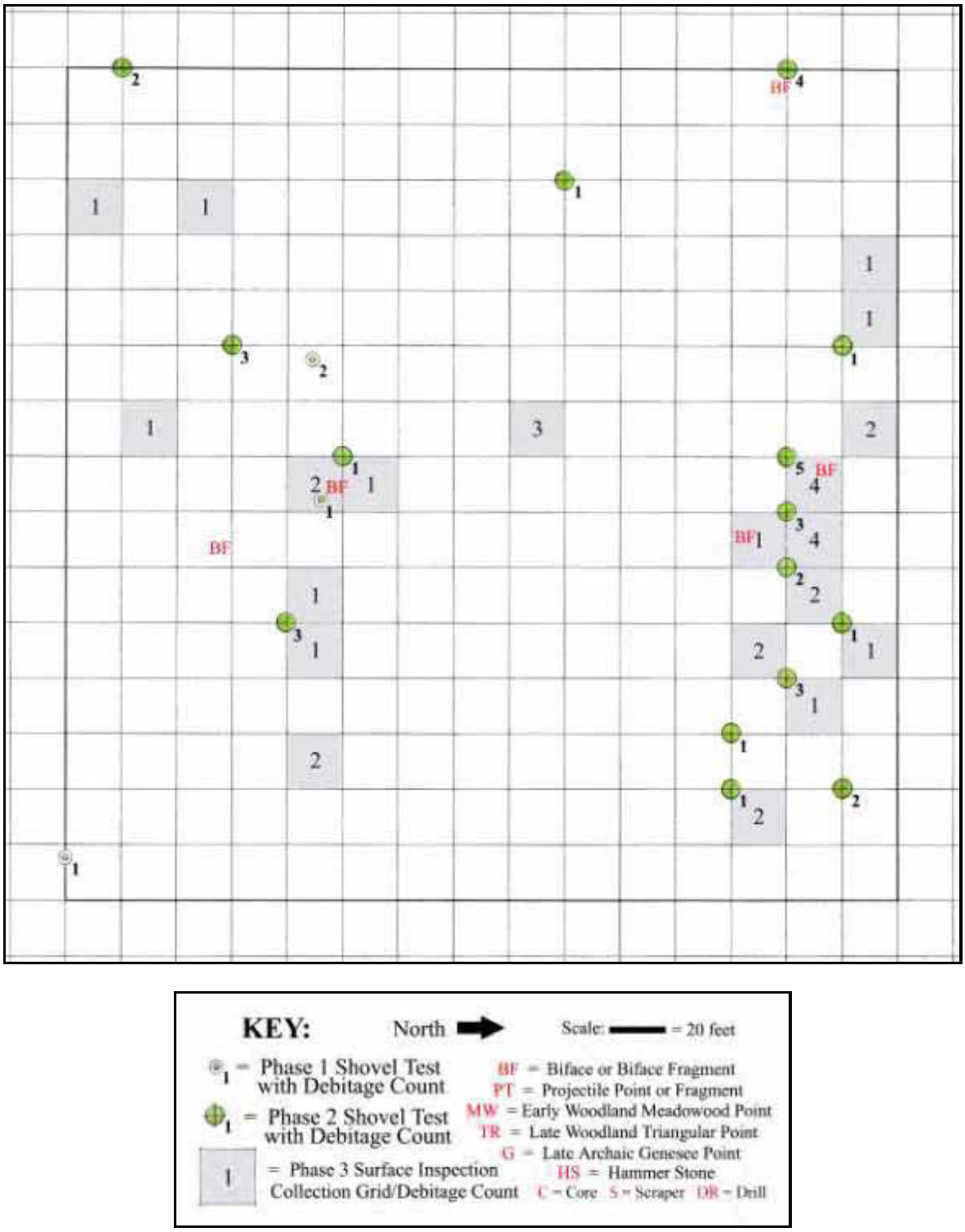


**Figure 16. Block C in Area F.**

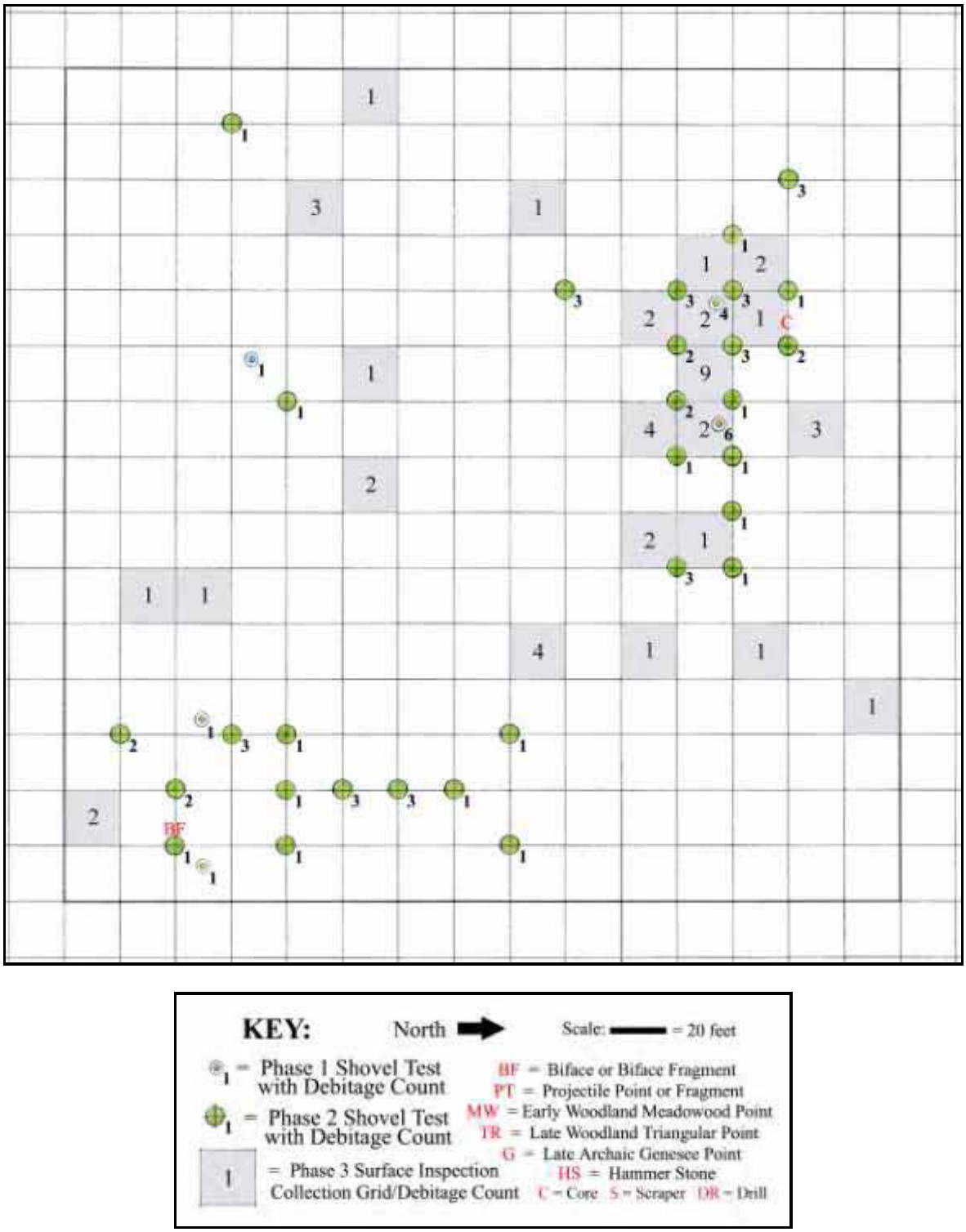


**Figure 17. Mechanical Stripping Locations in Block D (Area F).**

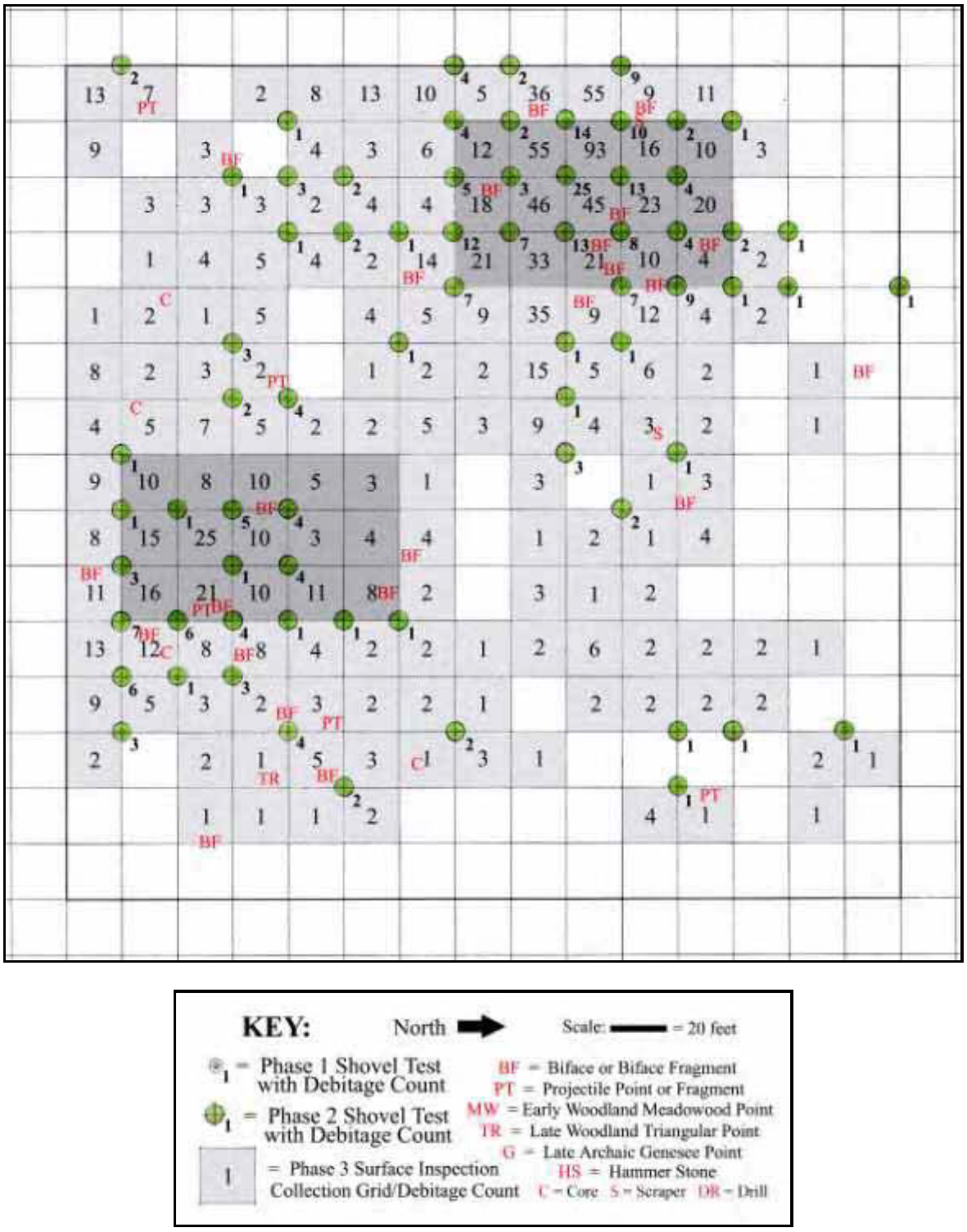


**Figure 18. Mechanical Stripping Location in Block E (Area F).**

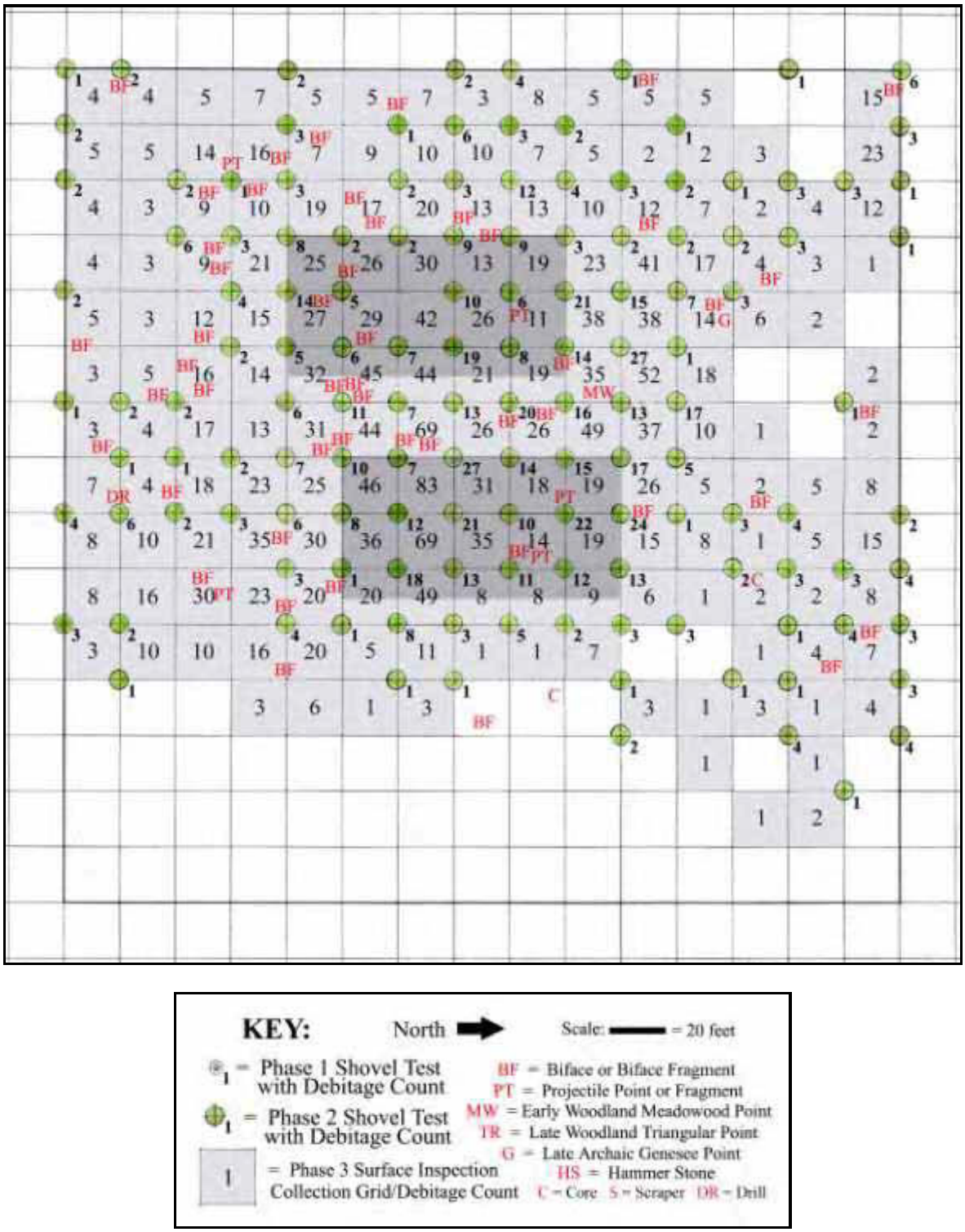


**Figure 19. Block E (south portion) in Area F.**

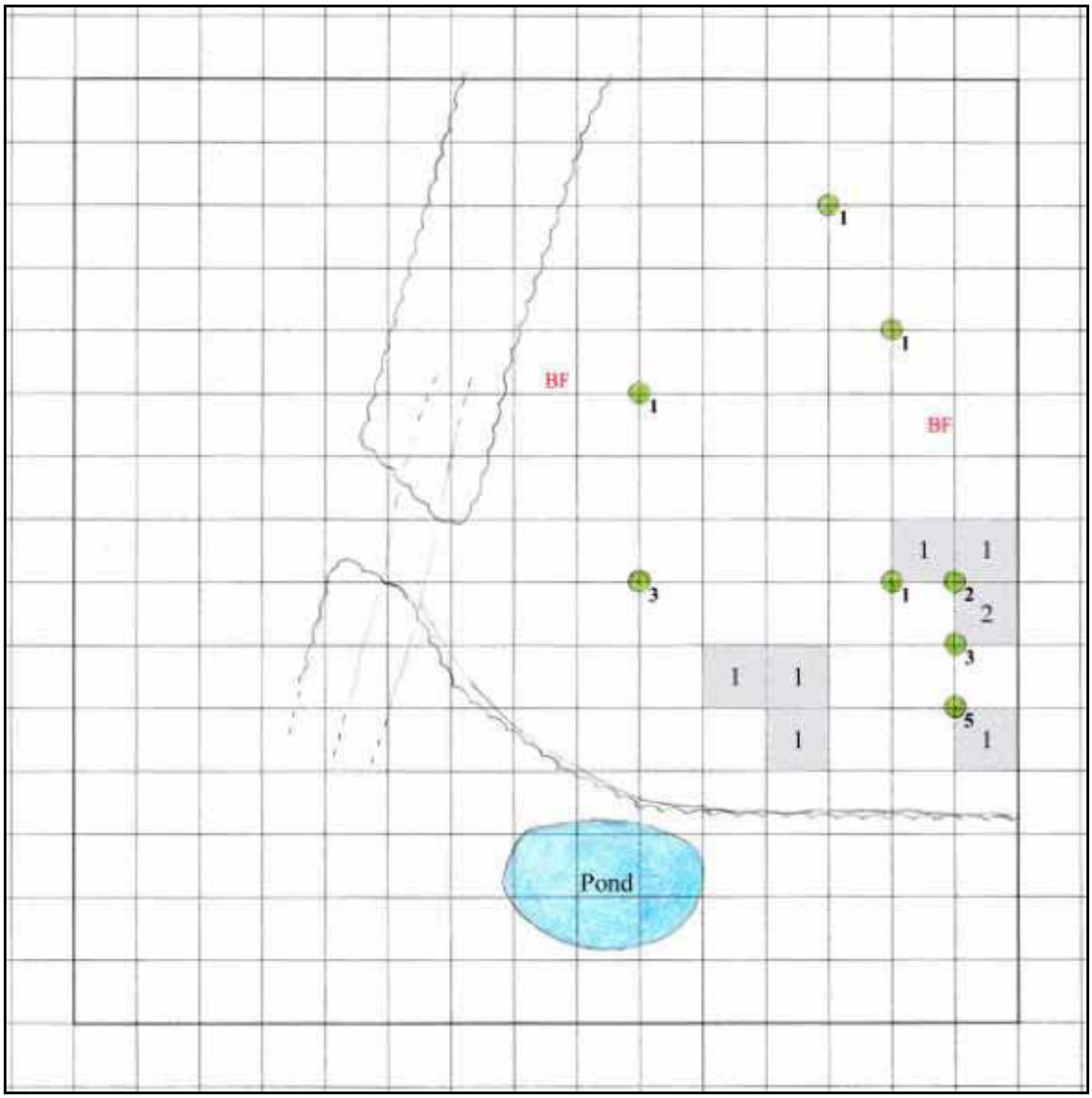
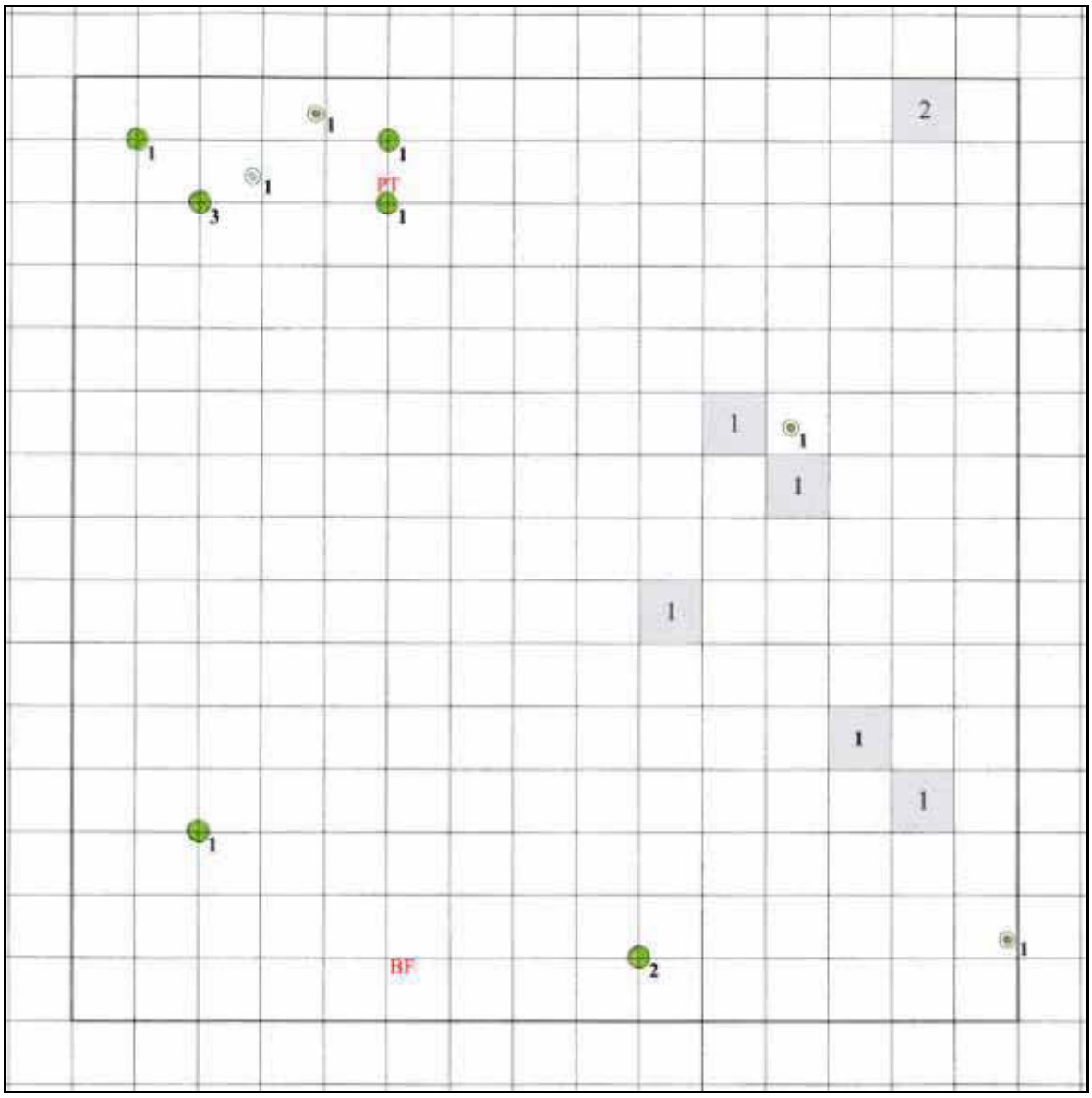


**Figure 20. Block F in Area F.**




**KEY:** North → Scale: ▬ = 20 feet

1 = Phase 1 Shovel Test with Debitage Count

1 = Phase 2 Shovel Test with Debitage Count

1 = Phase 3 Surface Inspection Collection Grid/Debitage Count

BF = Biface or Biface Fragment
PT = Projectile Point or Fragment
MW = Early Woodland Meadowood Point
TR = Late Woodland Triangular Point
G = Late Archaic Genesee Point
HS = Hammer Stone
C = Core S = Scraper DR = Drill

**Figure 21. Block F (north portion) in Area F.**

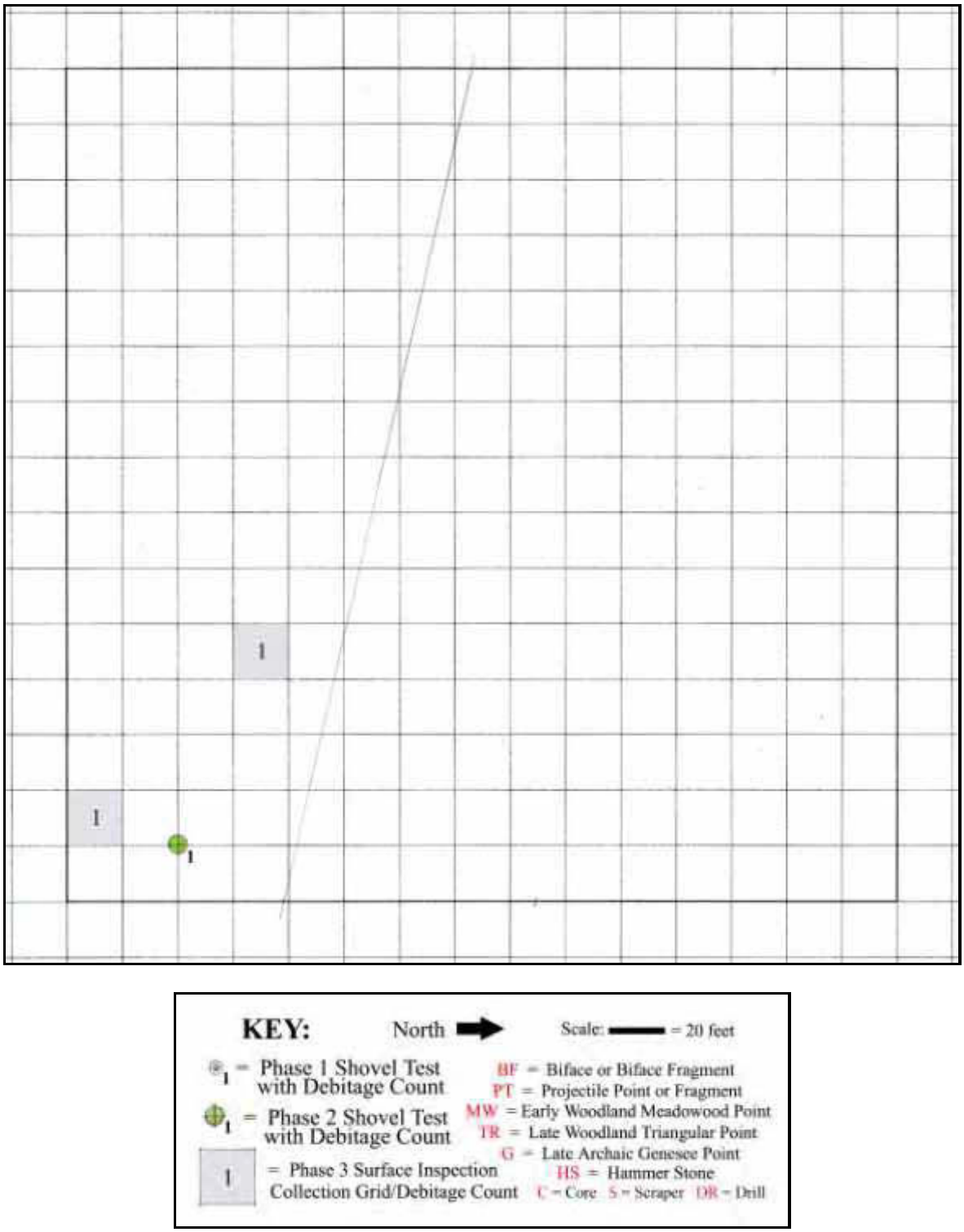
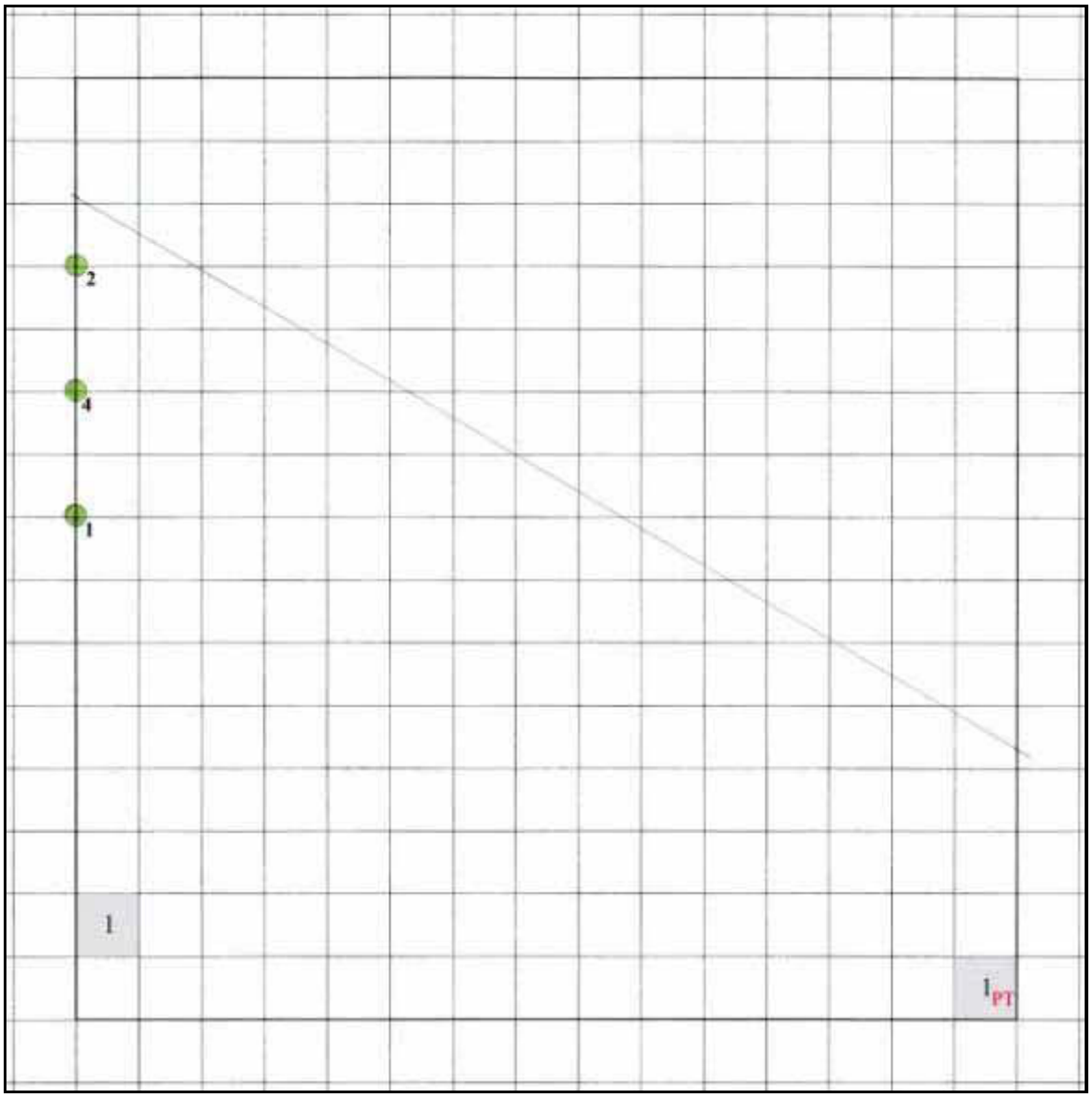


**Figure 22. Block F (west portion) in Area F.**




**KEY:** North → Scale: ▬ = 20 feet

1 = Phase 1 Shovel Test with Debitage Count

1 = Phase 2 Shovel Test with Debitage Count

1 = Phase 3 Surface Inspection Collection Grid/Debitage Count

BF = Biface or Biface Fragment
PT = Projectile Point or Fragment
MW = Early Woodland Meadowood Point
TR = Late Woodland Triangular Point
G = Late Archaic Genesee Point
HS = Hammer Stone
C = Core S = Scraper DR = Drill

**Figure 23. Block G in Area F.**

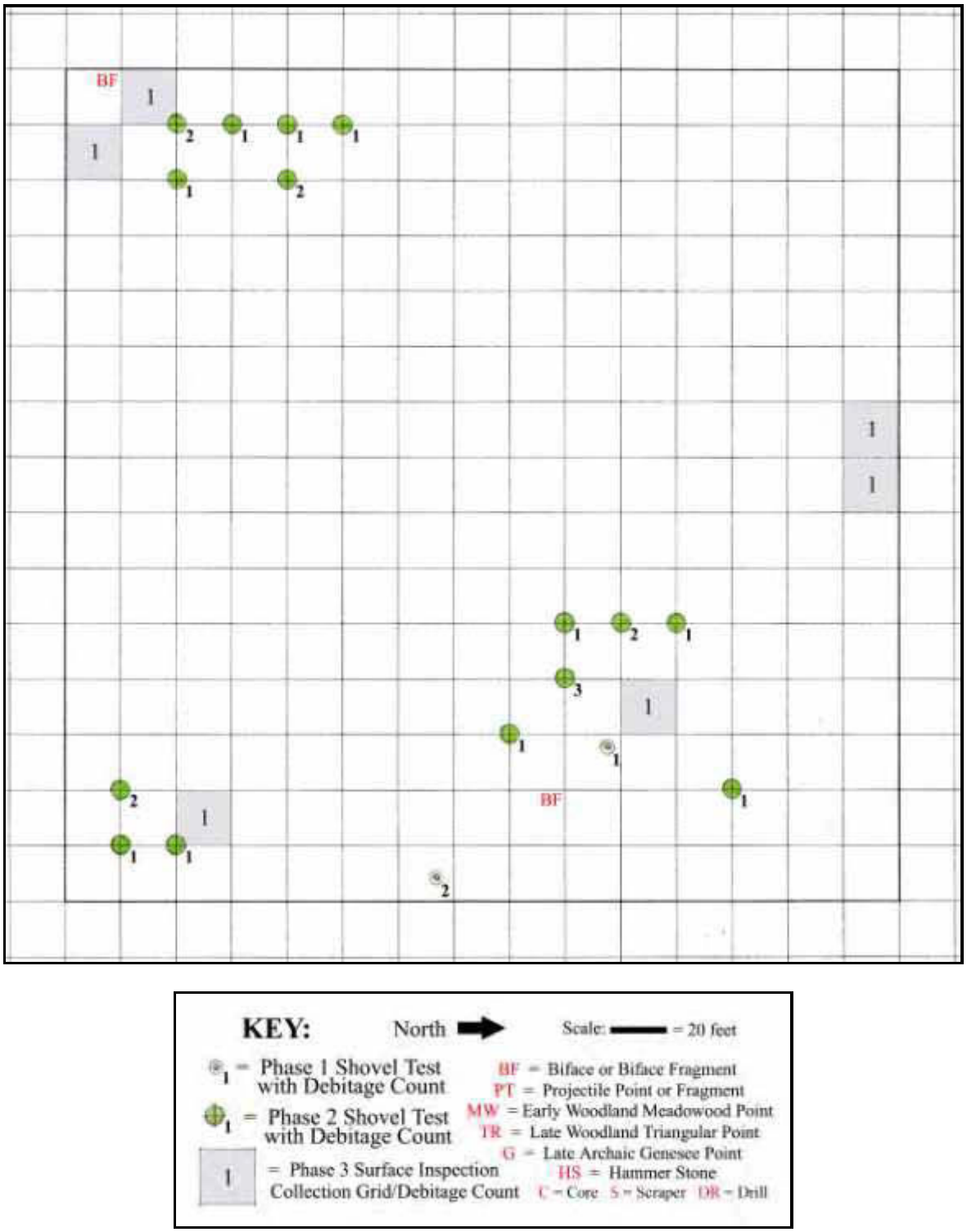


**Figure 24. Mechanical Stripping Location in Block H (Area F).**

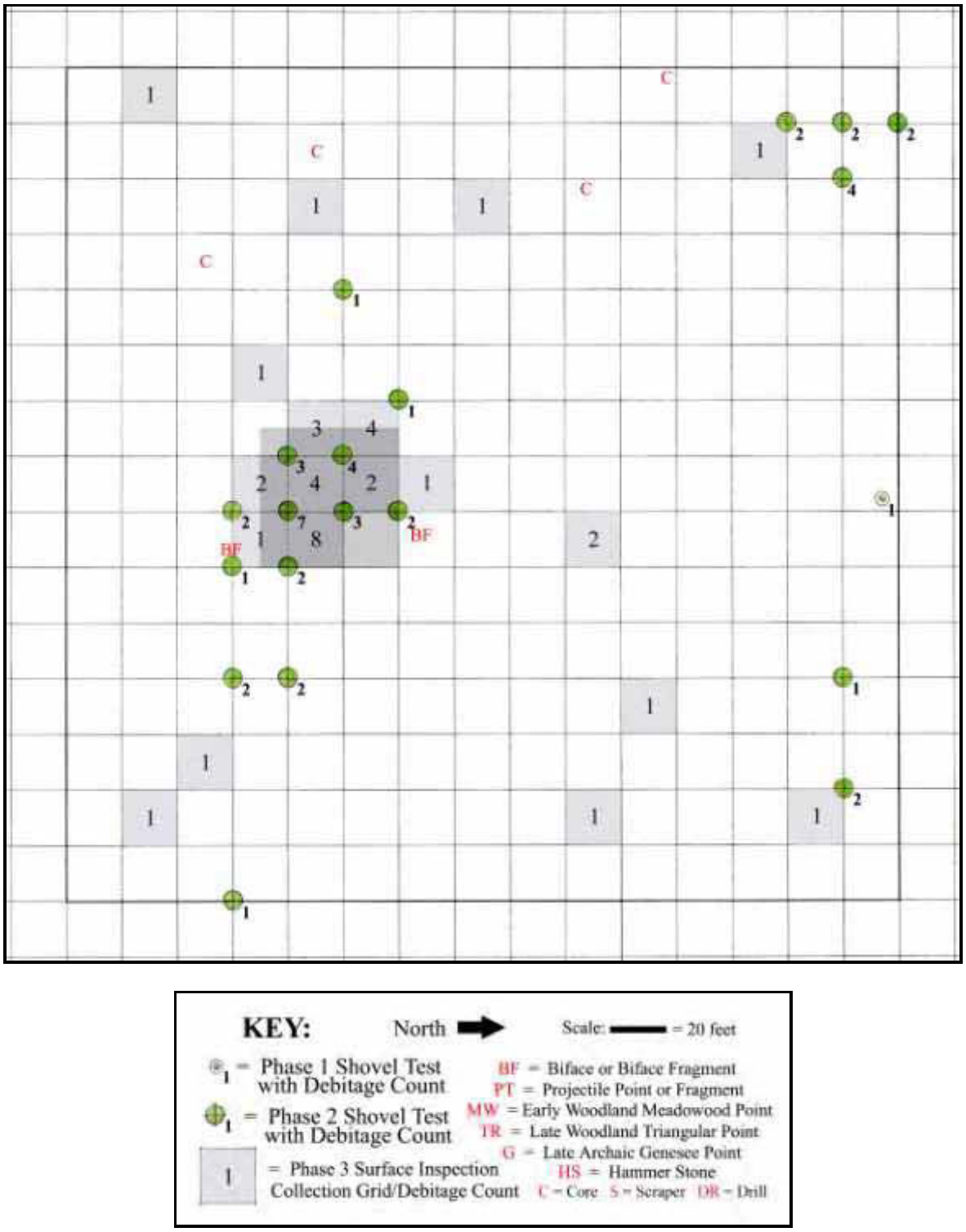
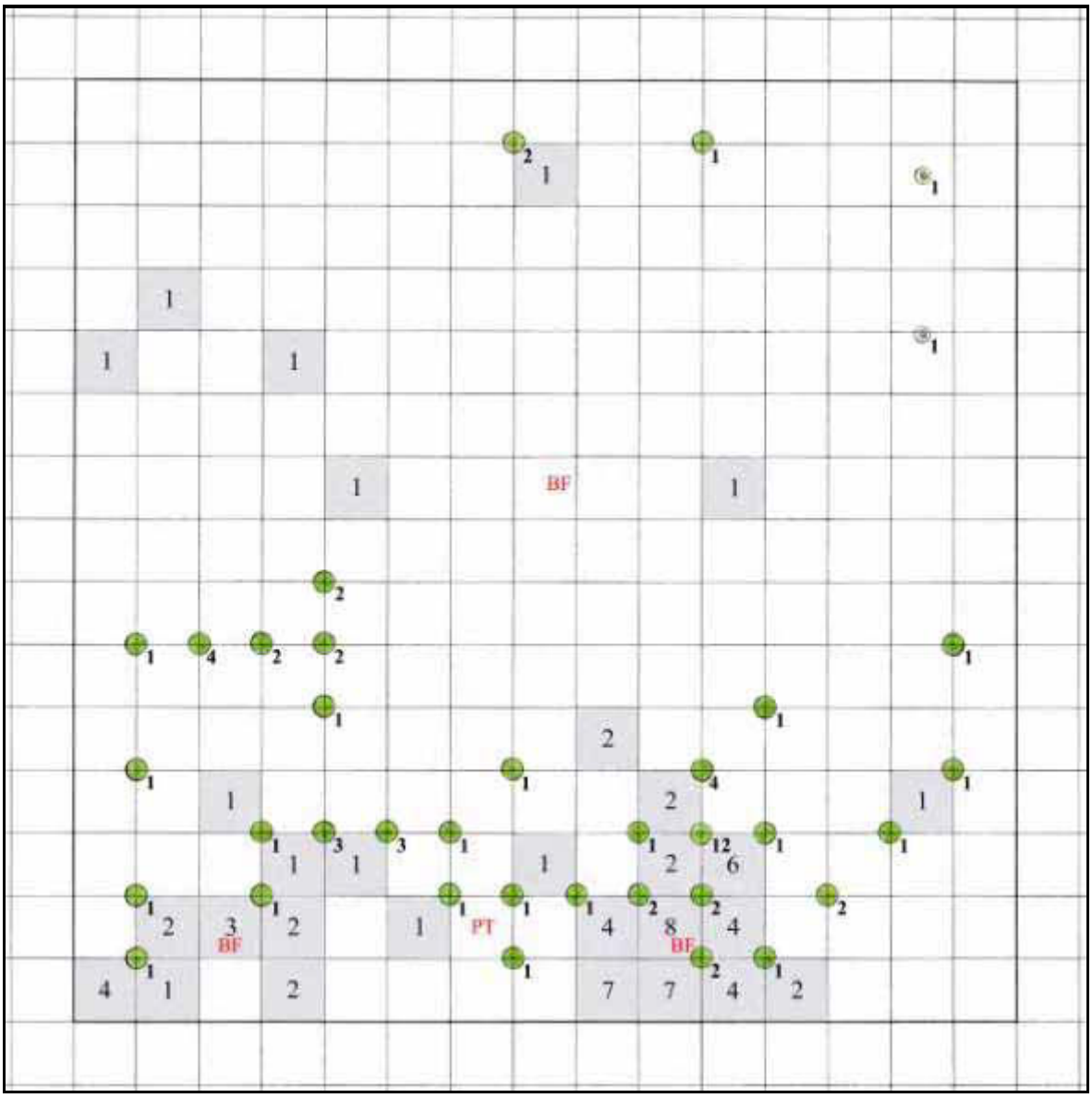


**Figure 25. Block I in Area F.**




**KEY:** North → Scale: ▬ = 20 feet

Phase 1 Shovel Test with Debitage Count

Phase 2 Shovel Test with Debitage Count

Phase 3 Surface Inspection Collection Grid/Debitage Count

BF = Biface or Biface Fragment
PT = Projectile Point or Fragment
MW = Early Woodland Meadowood Point
TR = Late Woodland Triangular Point
G = Late Archaic Genesee Point
HS = Hammer Stone
C = Core S = Scraper DR = Drill

**Figure 26. Mechanical Stripping Location in Block J (Area F).**

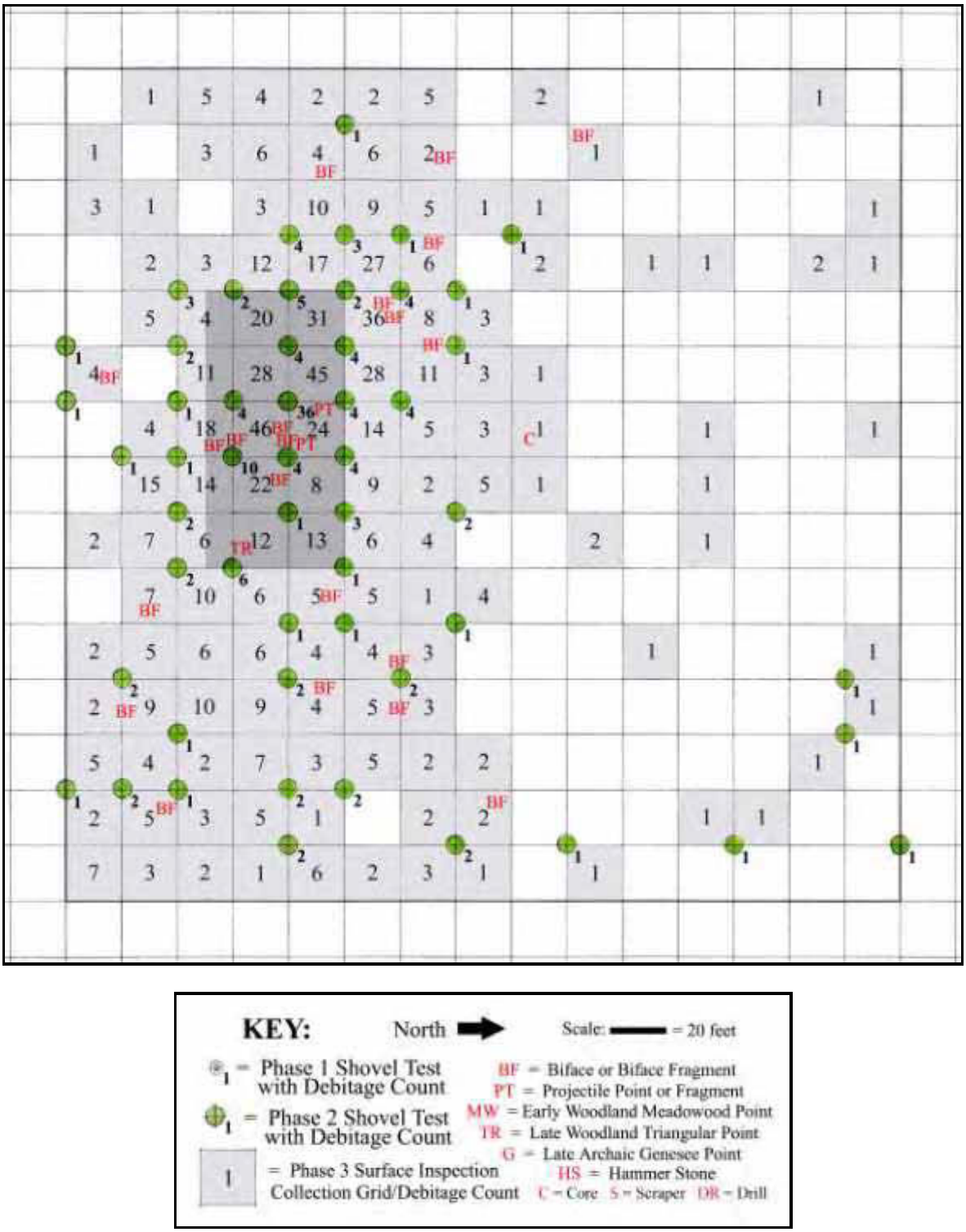
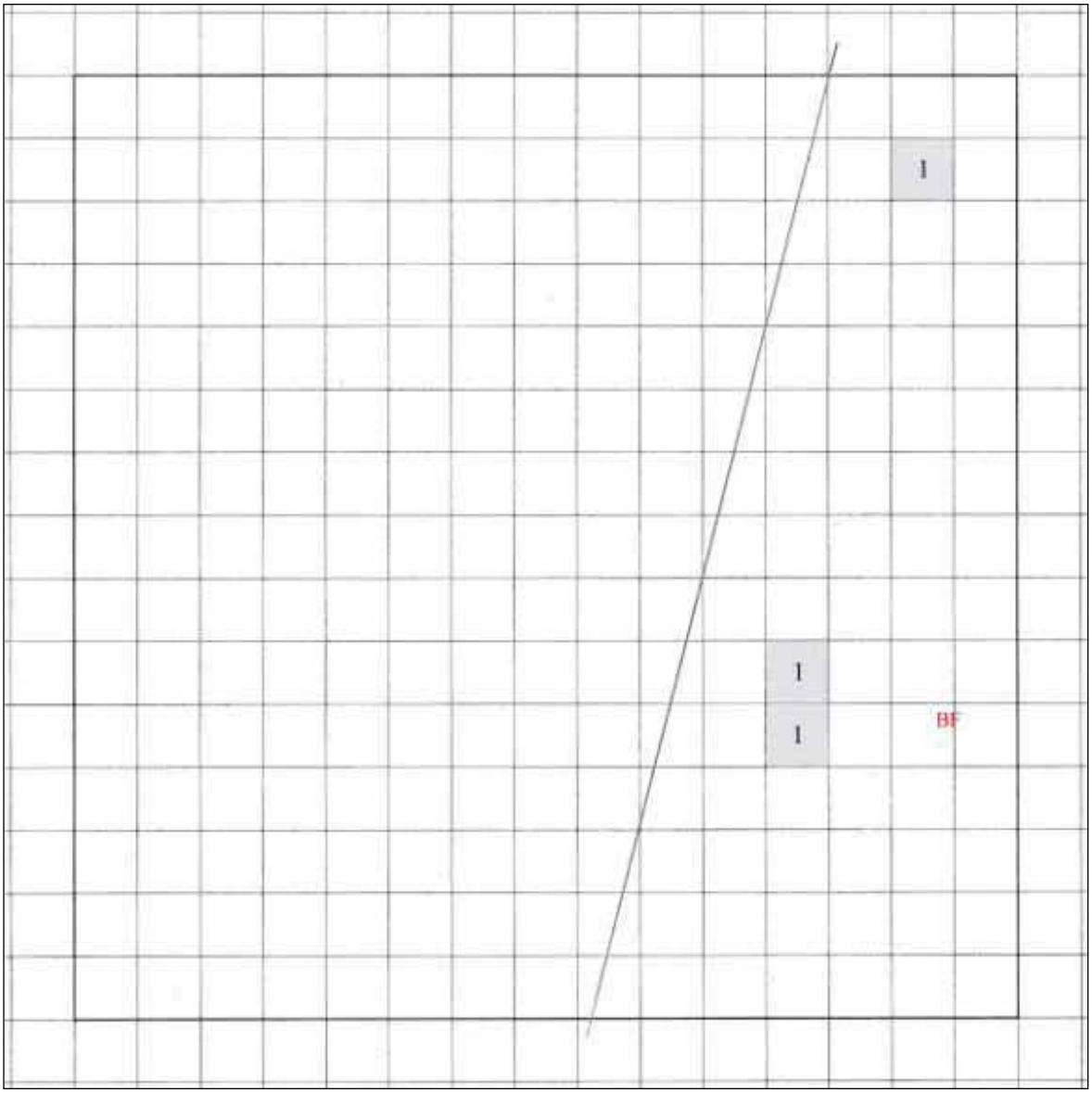


**Figure 27. Block J (south portion) in Area F.**




**KEY:** North ➡ Scale: ▬ = 20 feet

1 = Phase 1 Shovel Test with Debitage Count

1 = Phase 2 Shovel Test with Debitage Count

1 = Phase 3 Surface Inspection Collection Grid/Debitage Count

BF = Biface or Biface Fragment
PT = Projectile Point or Fragment
MW = Early Woodland Meadowood Point
TR = Late Woodland Triangular Point
G = Late Archaic Genesee Point
HS = Hammer Stone
C = Core S = Scraper DR = Drill

**Figure 28. Mechanical Stripping Location in Block K (Area F).**

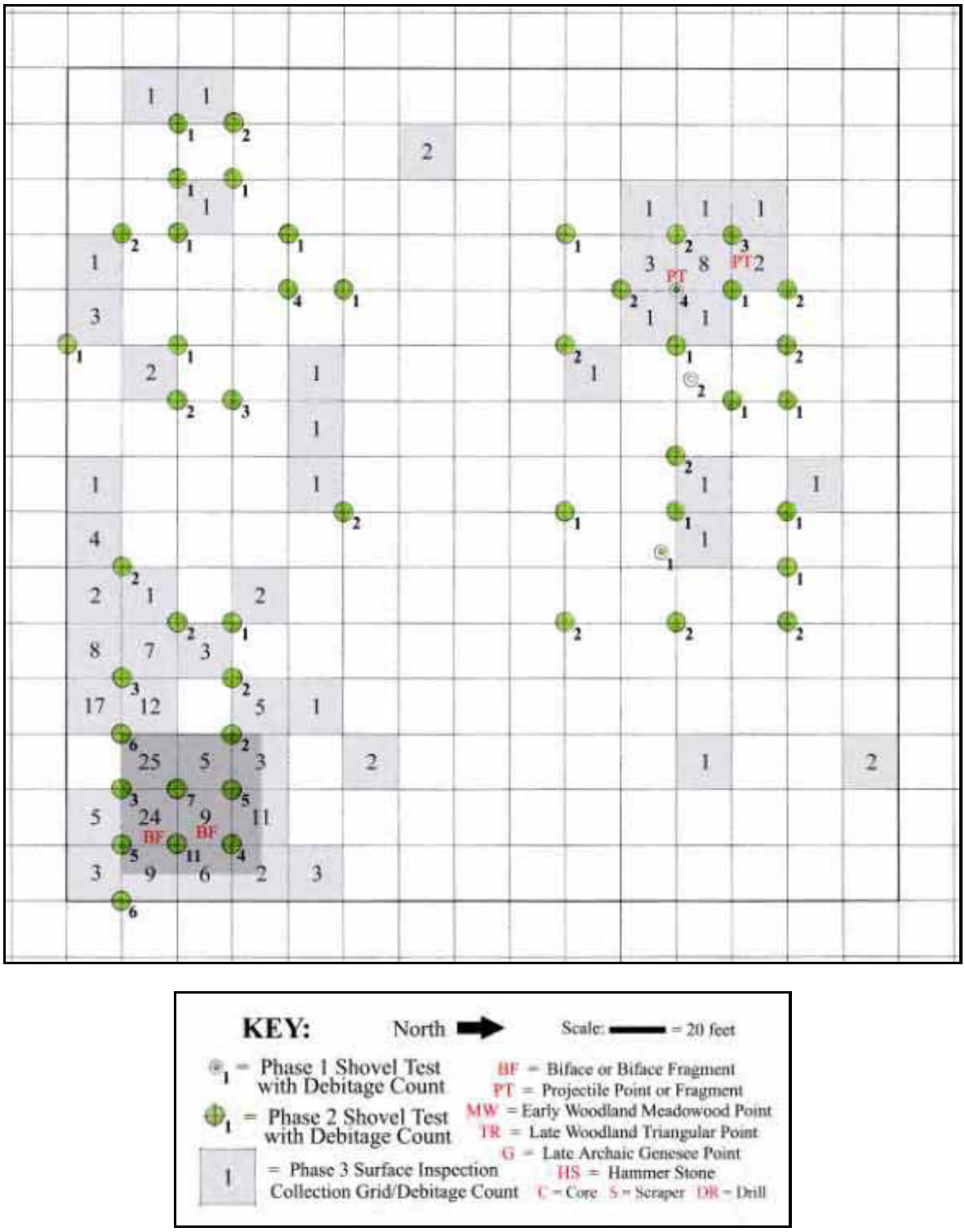
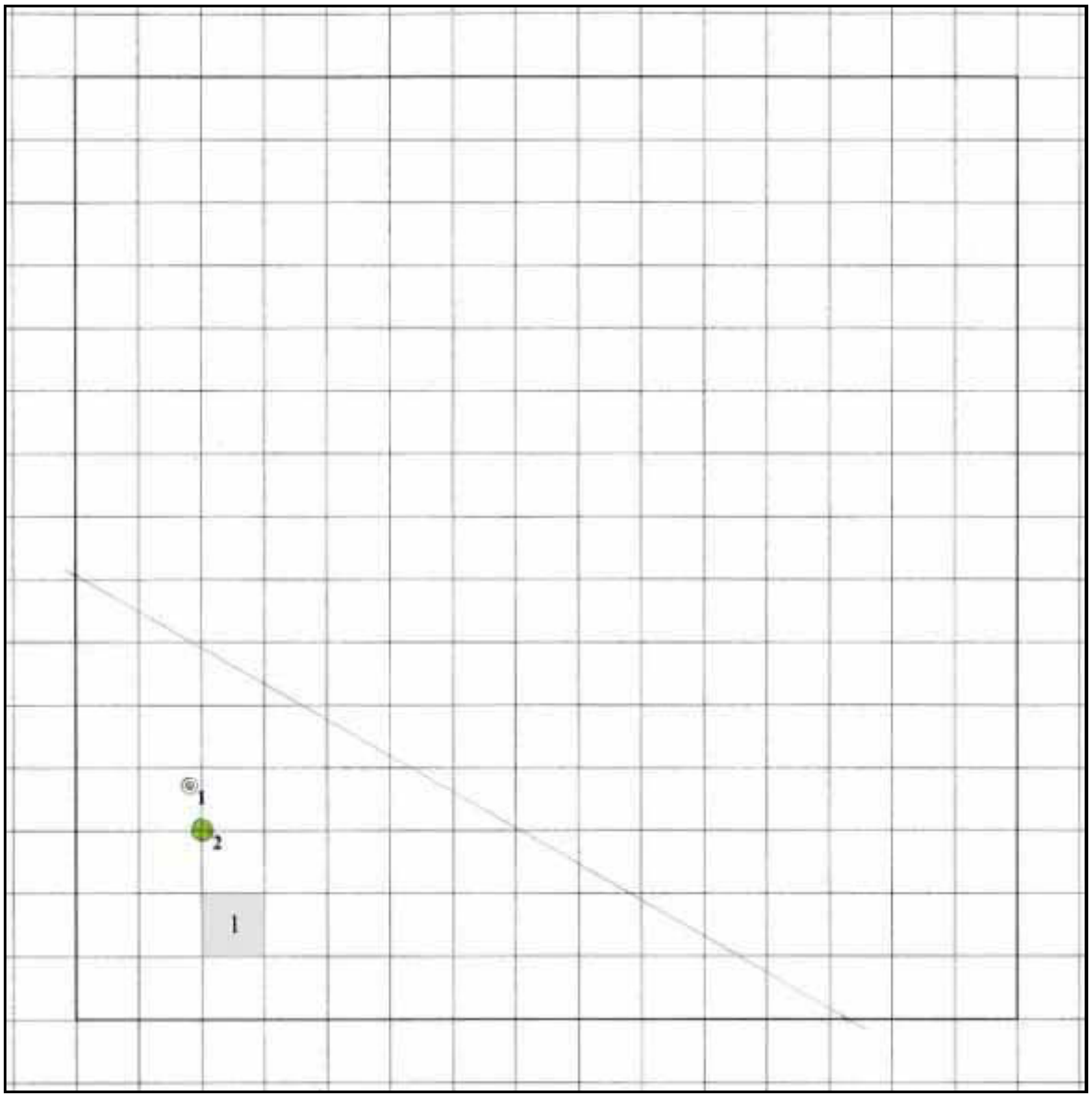


**Figure 29. Block K (west portion) in Area F.**




**KEY:** North ➡ Scale: ▬ = 20 feet

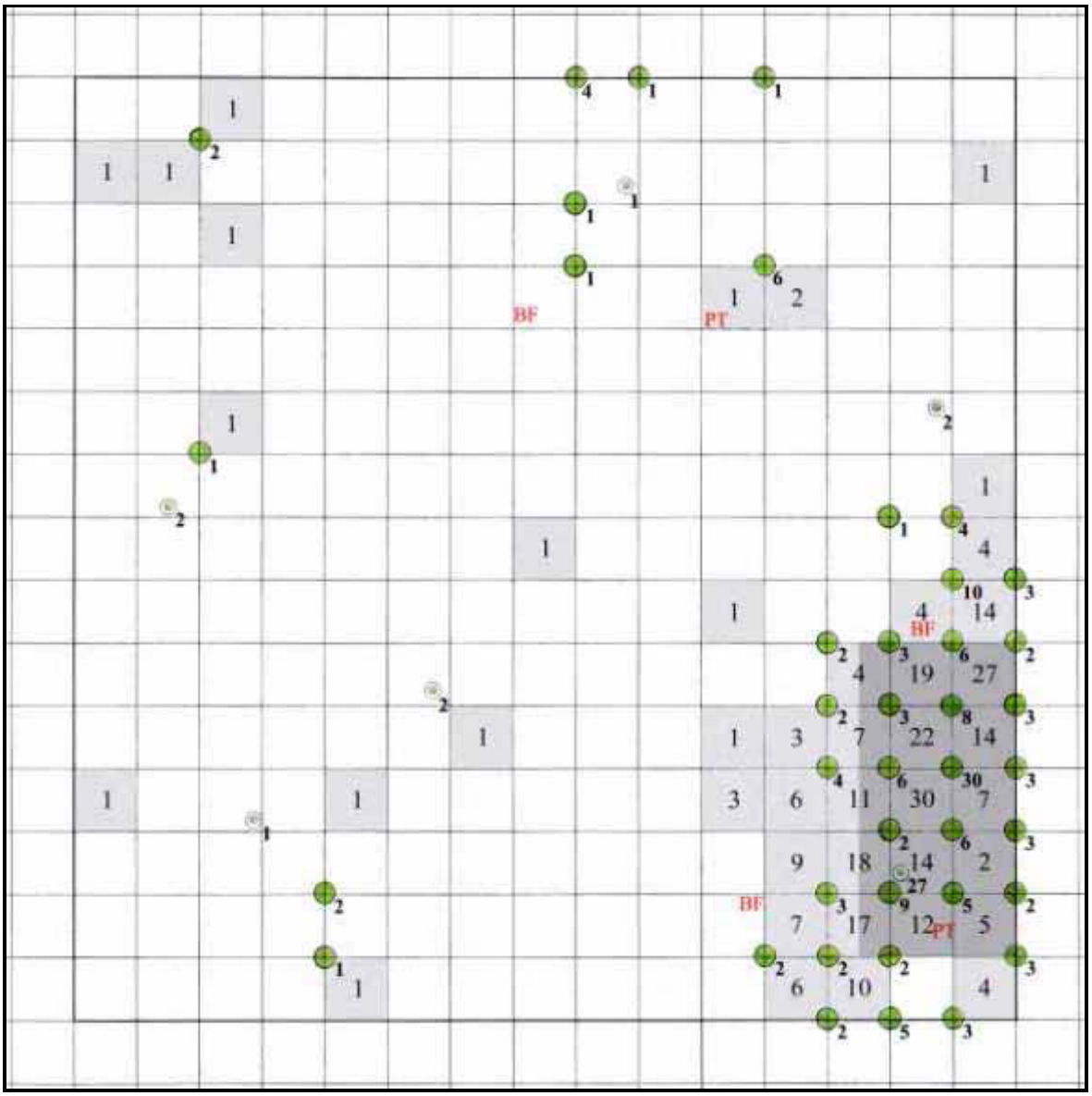
1 = Phase 1 Shovel Test with Debitage Count

1 = Phase 2 Shovel Test with Debitage Count

1 = Phase 3 Surface Inspection Collection Grid/Debitage Count

BF = Biface or Biface Fragment
PT = Projectile Point or Fragment
MW = Early Woodland Meadowood Point
TR = Late Woodland Triangular Point
G = Late Archaic Genesee Point
HS = Hammer Stone
C = Core S = Scraper DR = Drill

**Figure 30. Mechanical Stripping Location in Block L (Area F).**




**KEY:** North → Scale: ▬ = 20 feet

Phase 1 Shovel Test with Debitage Count

Phase 2 Shovel Test with Debitage Count

Phase 3 Surface Inspection Collection Grid/Debitage Count

BF = Biface or Biface Fragment
PT = Projectile Point or Fragment
MW = Early Woodland Meadowood Point
TR = Late Woodland Triangular Point
G = Late Archaic Genesee Point
HS = Hammer Stone
C = Core S = Scraper DR = Drill

**Figure 31. Block L (west portion) in Area F.**

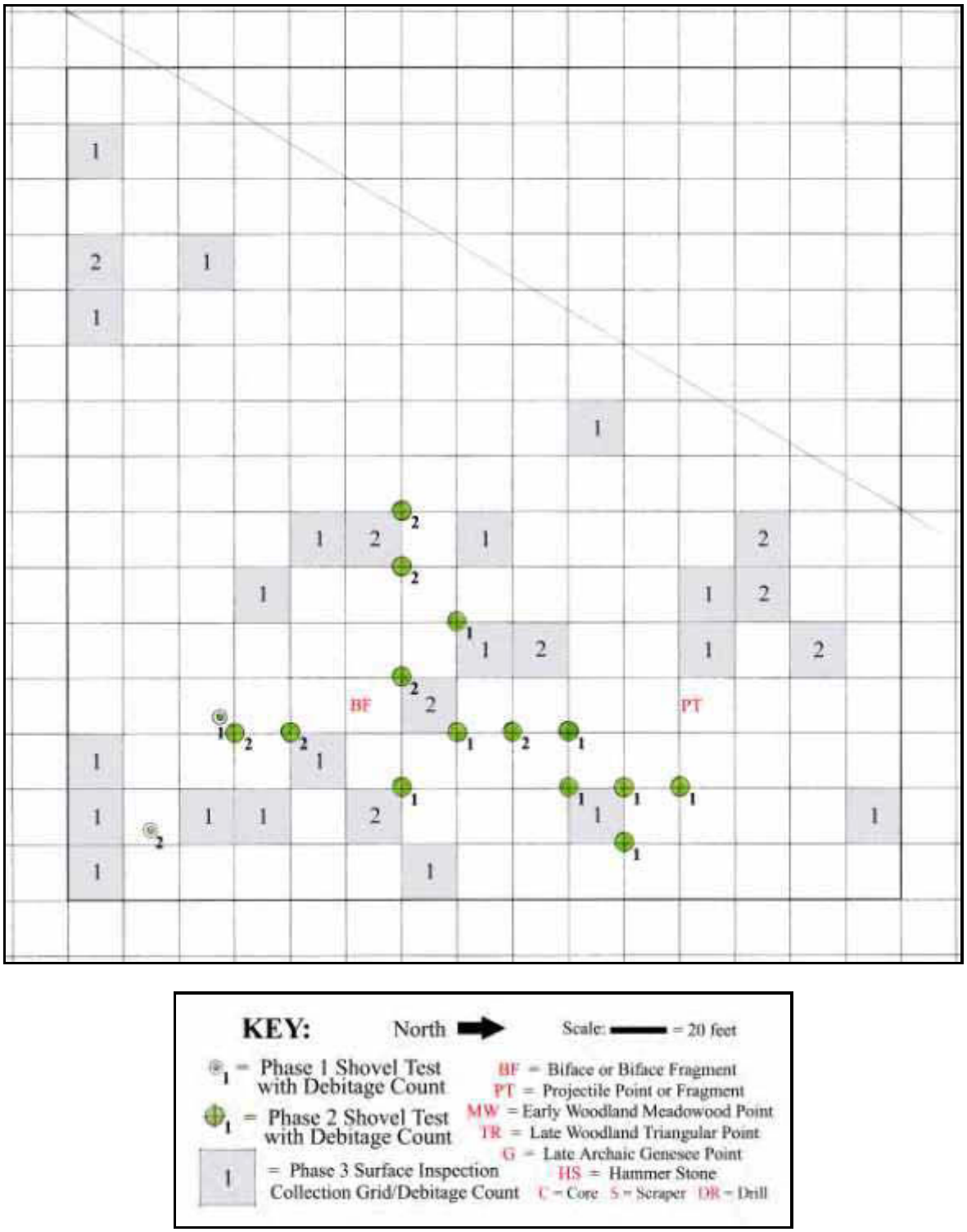


**Figure 32. Block M in Area F.**

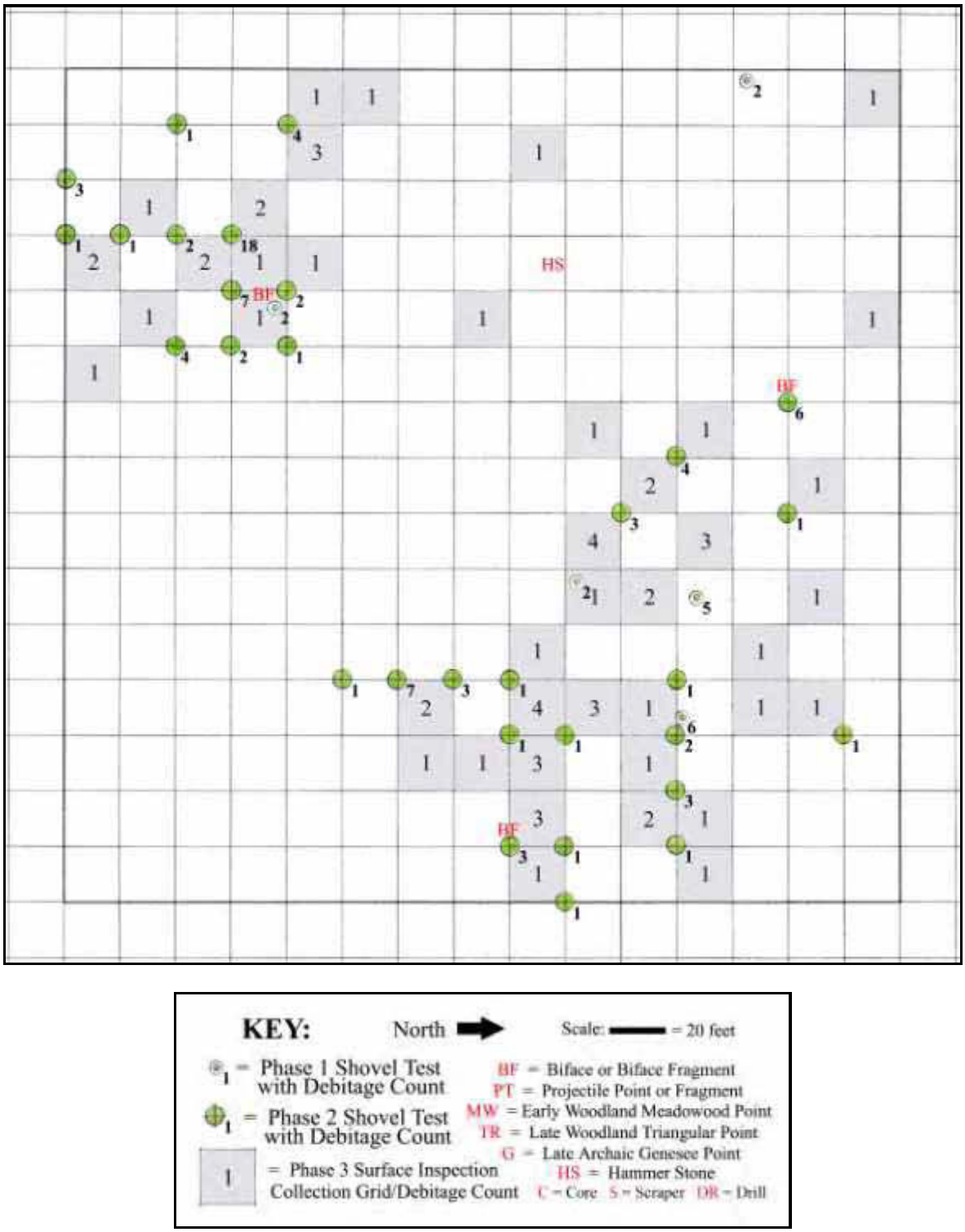


**Figure 33. Block N in Area F.**

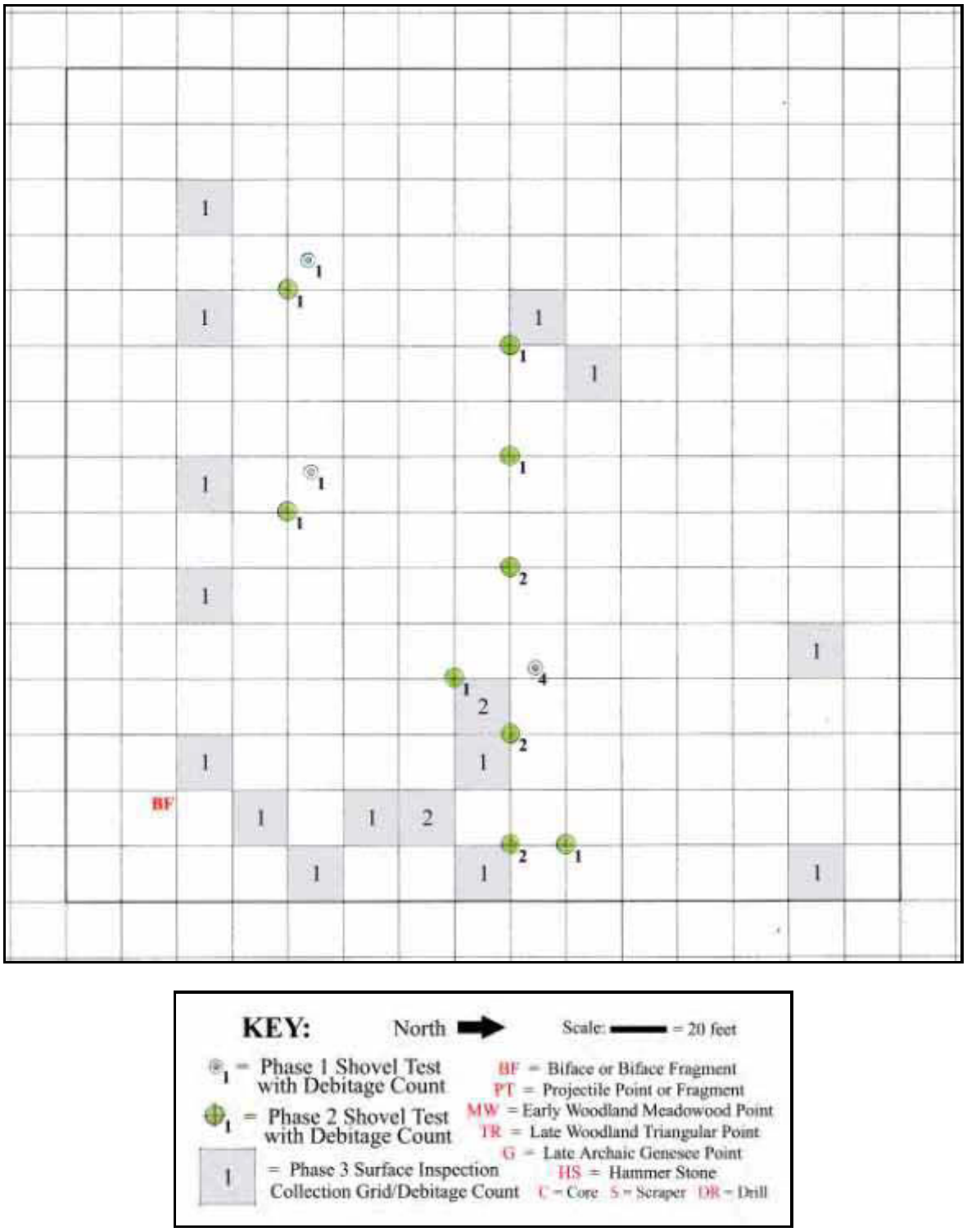


**Figure 34. Block O in Area F.**

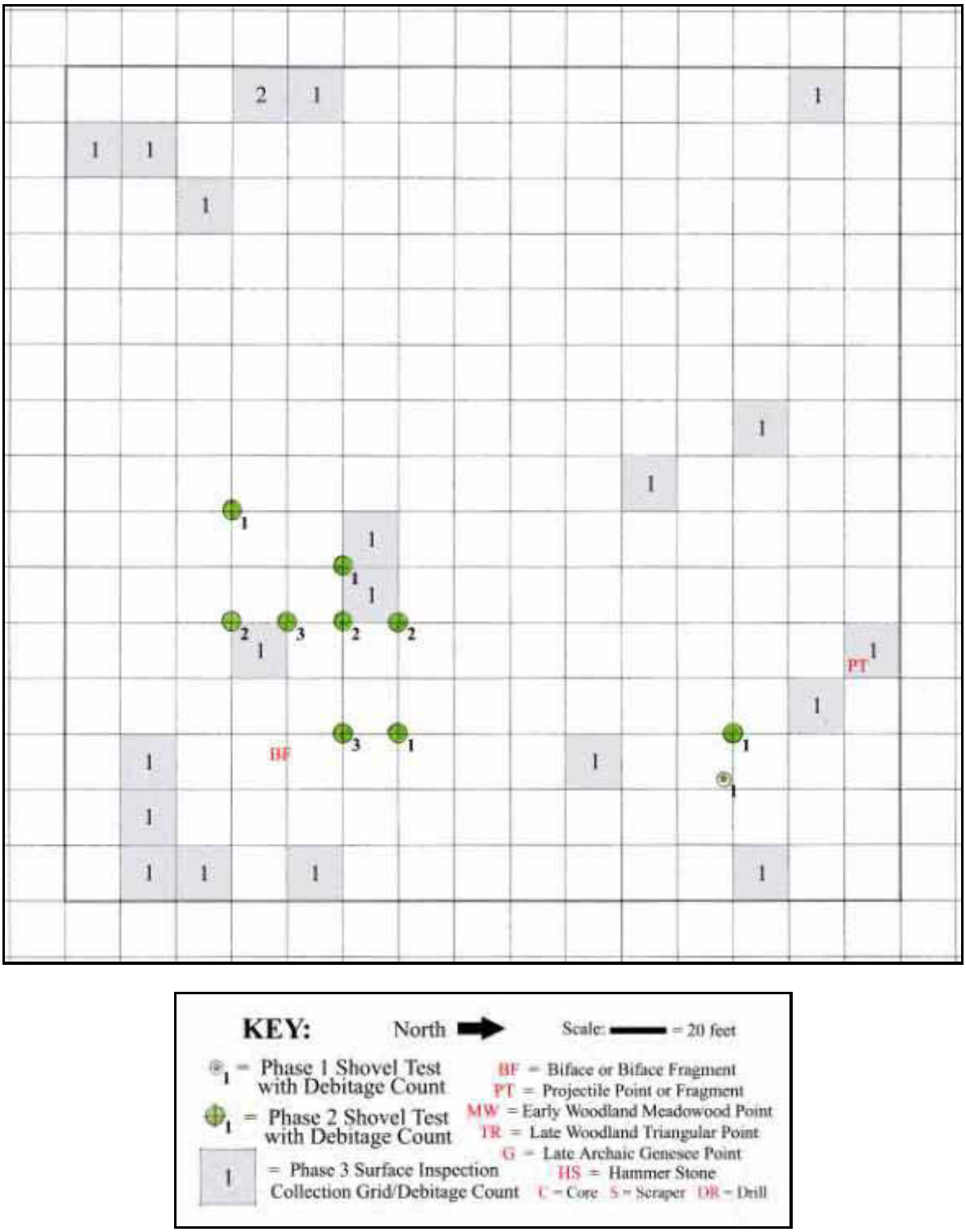


**Figure 35. Mechanical Stripping Location in West Portion of Block O (Area F).**

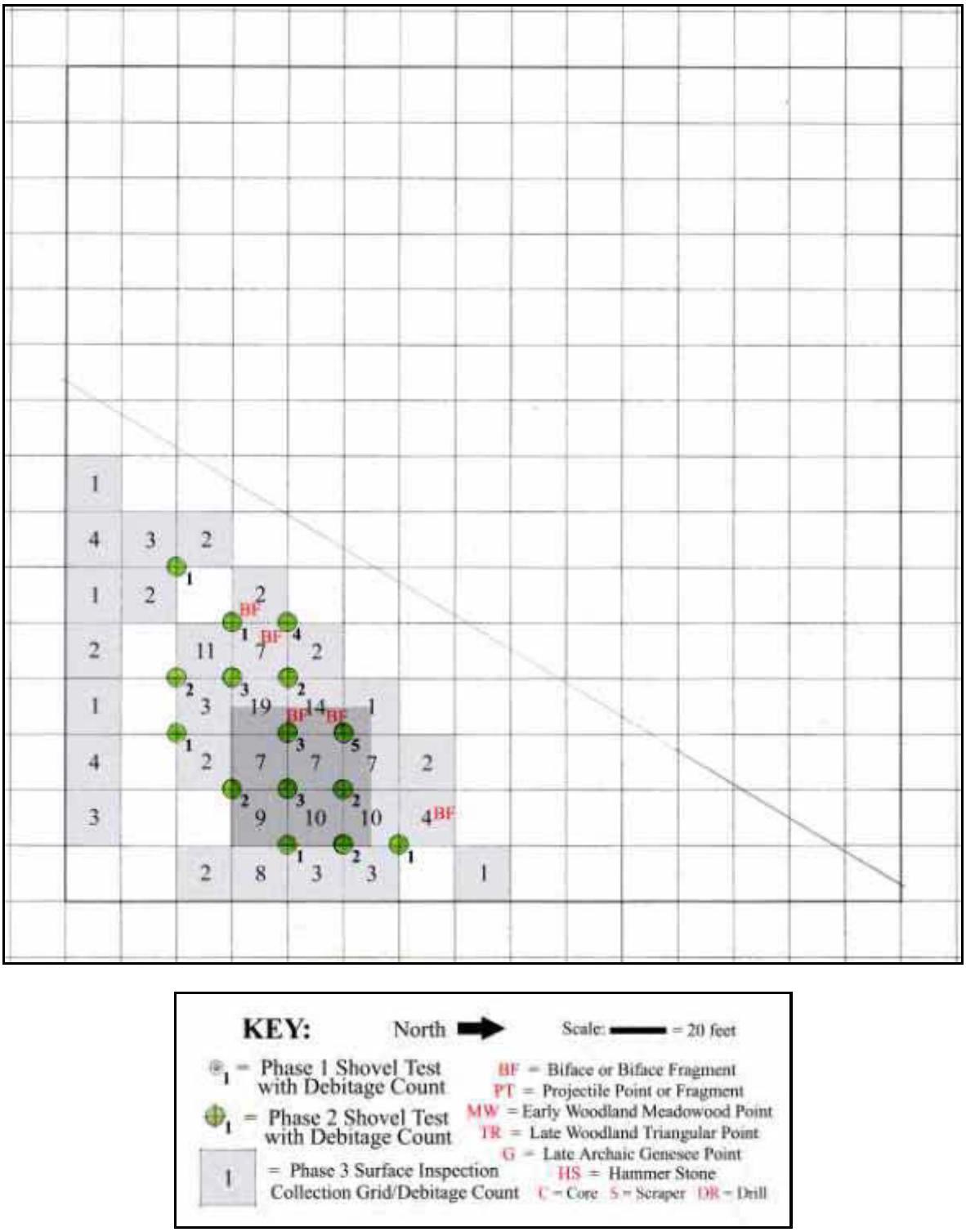
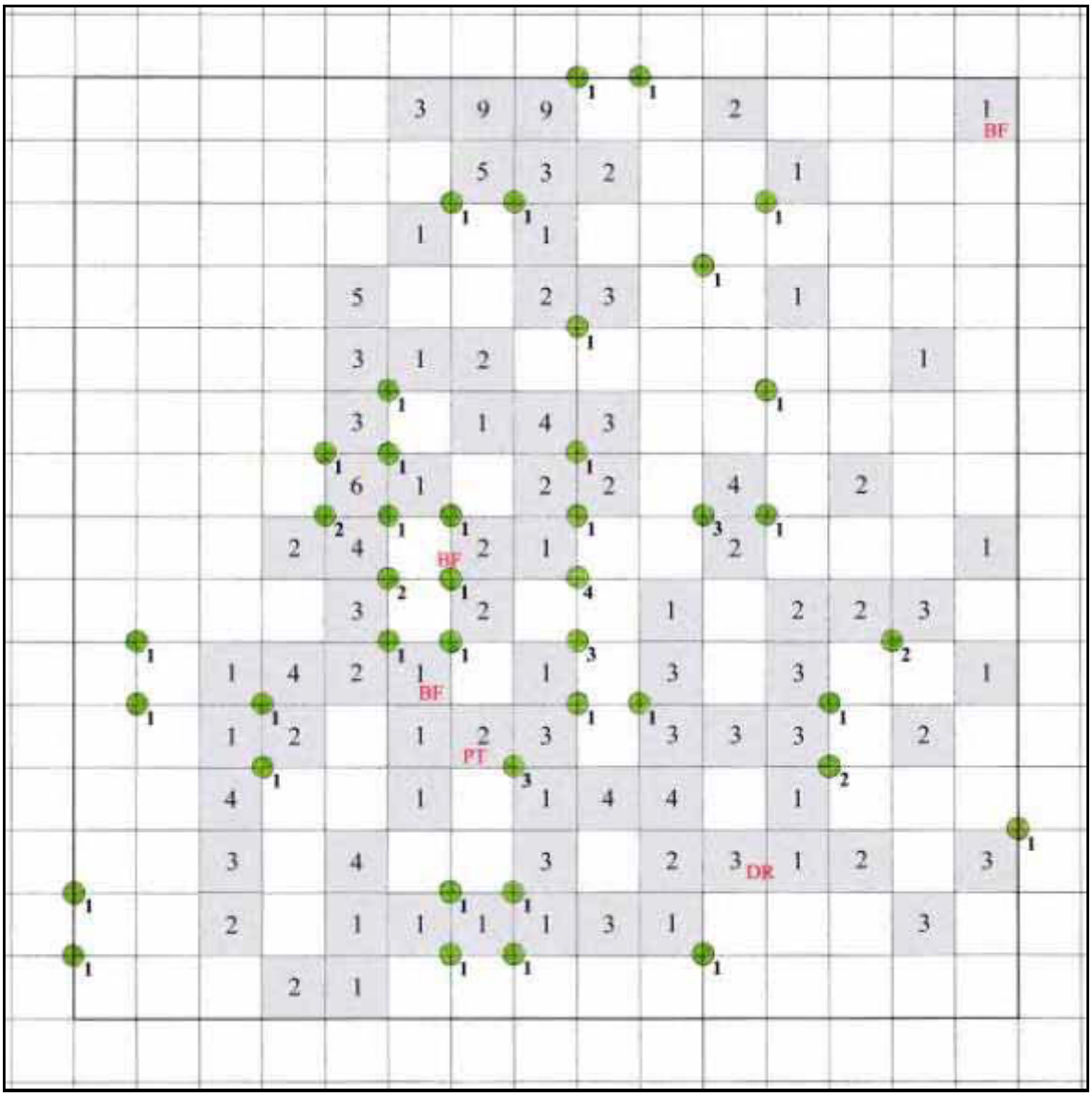


**Figure 36. Block P in Area F.**



**KEY:** North → Scale: ▬ = 20 feet

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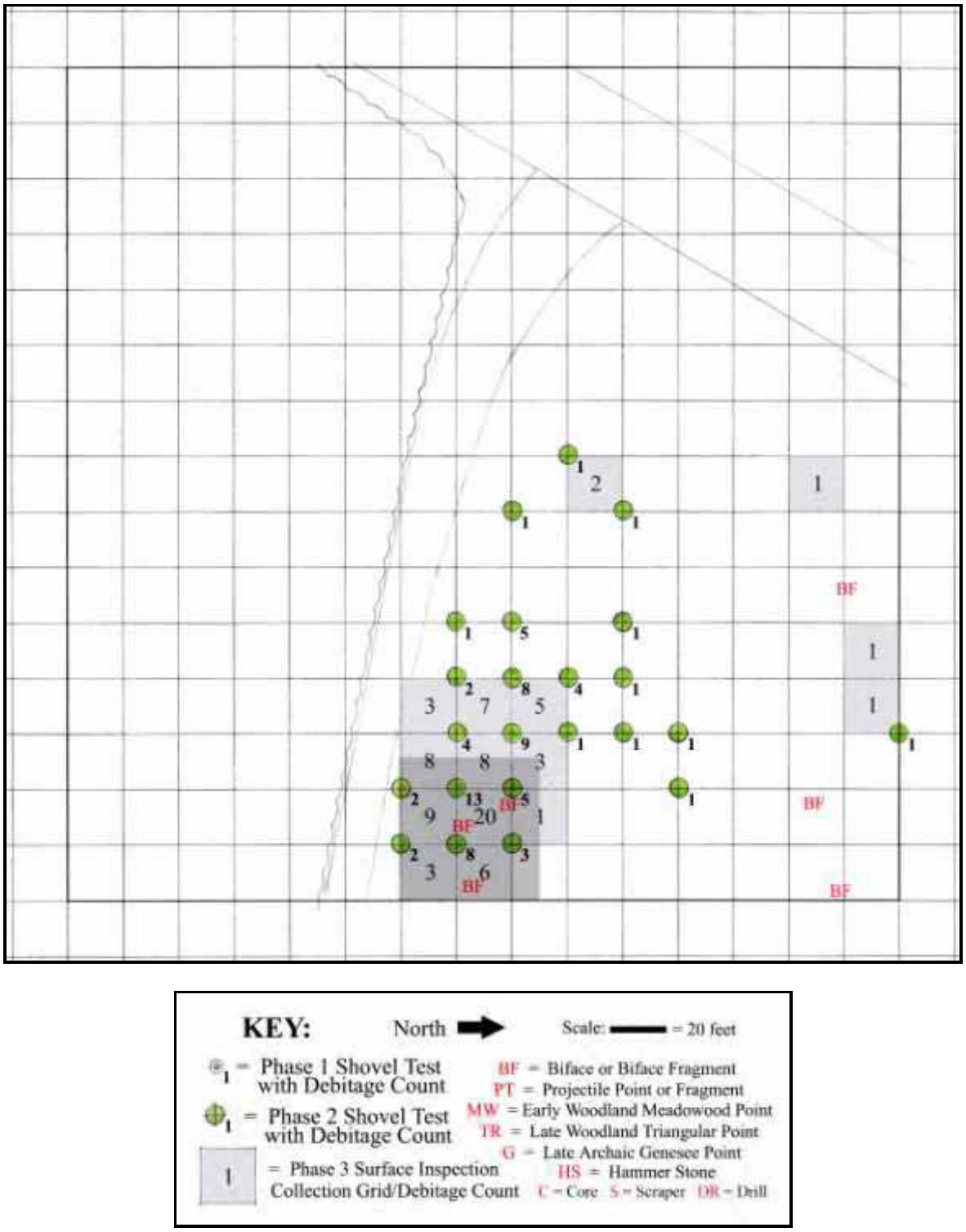
C = Core S = Scraper DR = Drill

**Figure 37. Mechanical Stripping Location in West Portion of Block P (Area F).**



# Main Road Reports

**Proposed National Cemetery**
Main and Cleveland Roads
Corfu, NY 14036

Inquiry Number: 3342748.4s
June 12, 2012

# EDR NEPACheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.


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# EDR NEPACheck® DESCRIPTION

The National Environmental Policy Act of 1969 (NEPA) requires that Federal agencies include in their decision-making processes appropriate and careful consideration of all environmental effects and actions, analyze potential environmental effects of proposed actions and their alternatives for public understanding and scrutiny, avoid or minimize adverse effects of proposed actions, and restore and enhance environmental quality as much as possible.

The EDR NEPACheck provides information which may be used, in conjunction with additional research, to determine whether a proposed site or action will have significant environmental effect.

The report provides maps and data for the following items (where available). Search results are provided in the Map Findings Summary on page 2 of this report.

| Section | Regulation |
|---|---|
| **Natural Areas Map** | |
| • Federal Lands Data: | |
| - Officially designated wilderness areas | 47 CFR 1.1307(1) |
| - Officially designated wildlife preserves, sanctuaries and refuges | 47 CFR 1.1307(2) |
| - Wild and scenic rivers | 40 CFR 6.302(e) |
| - Fish and Wildlife | 40 CFR 6.302 |
| • Threatened or Endangered Species, Fish and Wildlife, Critical Habitat Data (where available) | 47 CFR 1.1307(3); 40 CFR 6.302 |
| **Historic Sites Map** | |
| • National Register of Historic Places | 47 CFR 1.1307(4); 40 CFR 6.302 |
| • State Historic Places (where available) | |
| • Indian Reservations | |
| **Flood Plain Map** | |
| • National Flood Plain Data (where available) | 47 CFR 1.1307(6); 40 CFR 6.302 |
| **Wetlands Map** | |
| • National Wetlands Inventory Data (where available) | 47 CFR 1.1307(7); 40 CFR 6.302 |
| **FCC & FAA Map** | |
| • FCC antenna/tower sites, FAA Markings and Obstructions, Airports, Topographic gradient | 47 CFR 1.1307(8) |
| **Key Contacts and Government Records Searched** | |

# MAP FINDINGS SUMMARY

The databases searched in this report are listed below. Database descriptions and other agency contact information is contained in the Key Contacts and Government Records Searched section on page 24 of this report.

**TARGET PROPERTY ADDRESS**

PROPOSED NATIONAL CEMETERY
MAIN AND CLEVELAND ROADS
CORFU, NY 14036

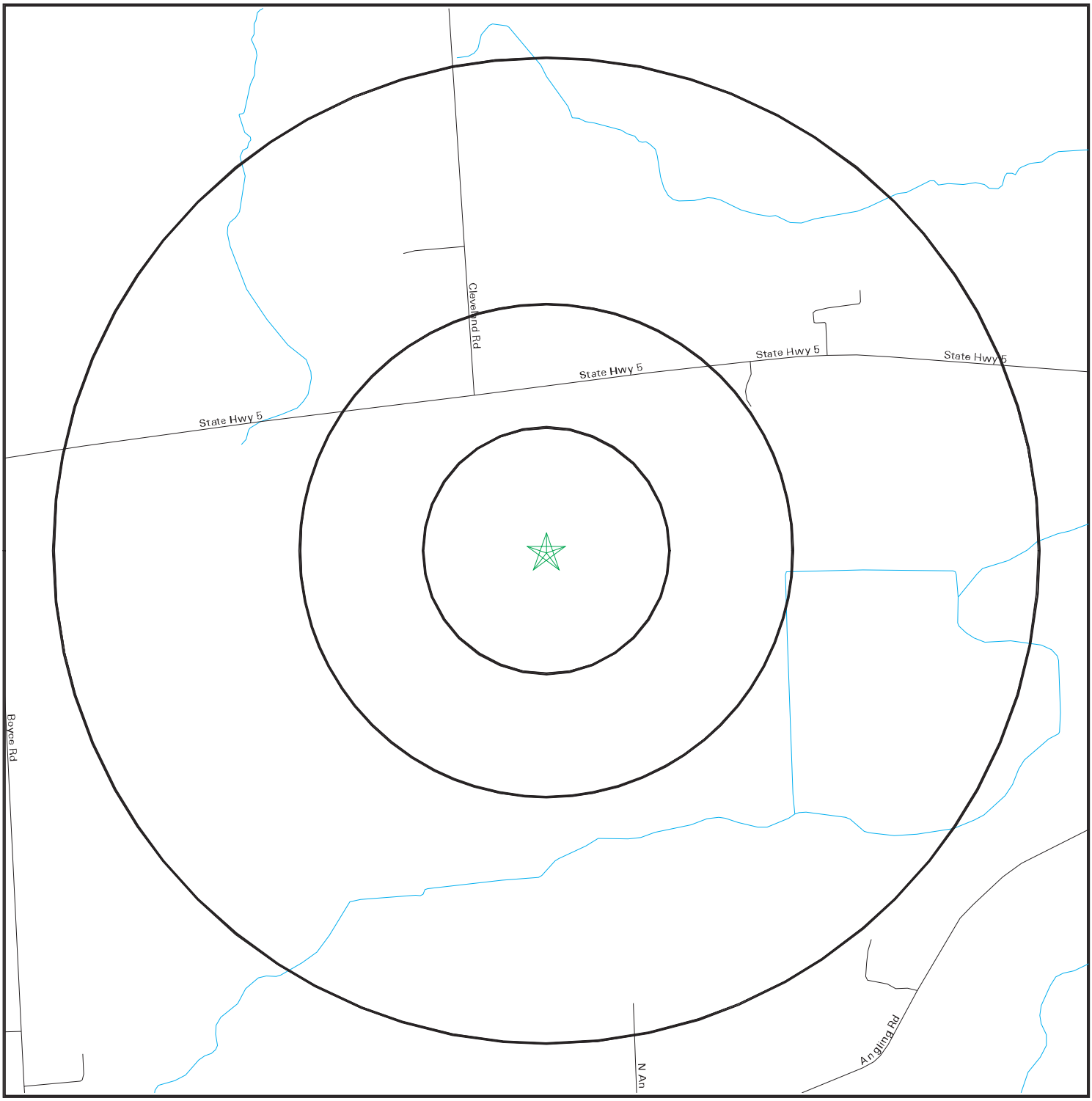
Inquiry #: 3342748.4s
Date: 6/12/12

**TARGET PROPERTY COORDINATES**

| | |
|---|---|
| Latitude (North): | 42.992298 - 42˚ 59' 32.3'' |
| Longitude (West): | 78.352699 - 78˚ 21' 9.7'' |
| Universal Tranverse Mercator: | Zone 17 |
| UTM X (Meters): | 715815.6 |
| UTM Y (Meters): | 4763146.0 |

| Applicable Regulation from 47 CFR/FCC Checklist | Database | Search Distance (Miles) | Within Search | Within 1/8 Mile |
|---|---|---|---|---|
| **NATURAL AREAS MAP** | | | | |
| 1.1307a (1) Officially Designated Wilderness Area | US Federal Lands | 1.00 | NO | NO |
| 1.1307a (2) Officially Designated Wildlife Preserve | US Federal Lands | 1.00 | NO | NO |
| 1.1307a (2) Officially Designated Wildlife Preserve | NY Wildlife Management Areas | 1.00 | NO | NO |
| 1.1307a (3) Threatened or Endangered Species or Critical Habitat | County Endangered Species | County | YES | N/A |
| **HISTORIC SITES MAP** | | | | |
| 1.1307a (4) Listed or eligible for National Register | National Register of Hist. Pla | 1.00 | NO | NO |
| | Indian Reservation | 1.00 | NO | NO |
| | APPAL_TRAIL | 1.00 | NO | NO |
| **FLOODPLAIN MAP** | | | | |
| 1.1307 (6) Located in a Flood Plain | FLOODPLAIN | 1.00 | YES | NO |
| **WETLANDS MAP** | | | | |
| 1.1307 (7) Change in surface features (wetland fill) | NWI | 1.00 | YES | YES |
| **FCC & FAA SITES MAP** | | | | |
| | Cellular | 1.00 | NO | NO |
| | 4G Cellular | 1.00 | NO | NO |
| | Antenna Structure Registration | 1.00 | NO | NO |
| | Towers | 1.00 | NO | NO |
| | AM Antenna | 1.00 | NO | NO |
| | FM Antenna | 1.00 | NO | NO |
| | FAA DOF | 1.00 | NO | NO |
| | Airports | 1.00 | NO | --- |
| | Power Lines | 1.00 | YES | --- |

# Natural Areas Map




- Target Property
- Roads
- County Boundary
- Waterways
- Water
- Locations
- Federal Areas
- Federal Linear Features
- State Areas
- State Linear Features

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: Main and Cleveland Roads<br>Corfu NY 14036<br>LAT/LONG: 42.9923 / 78.3527 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.4s<br>DATE: June 12, 2012 |



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# NATURAL AREAS MAP FINDINGS

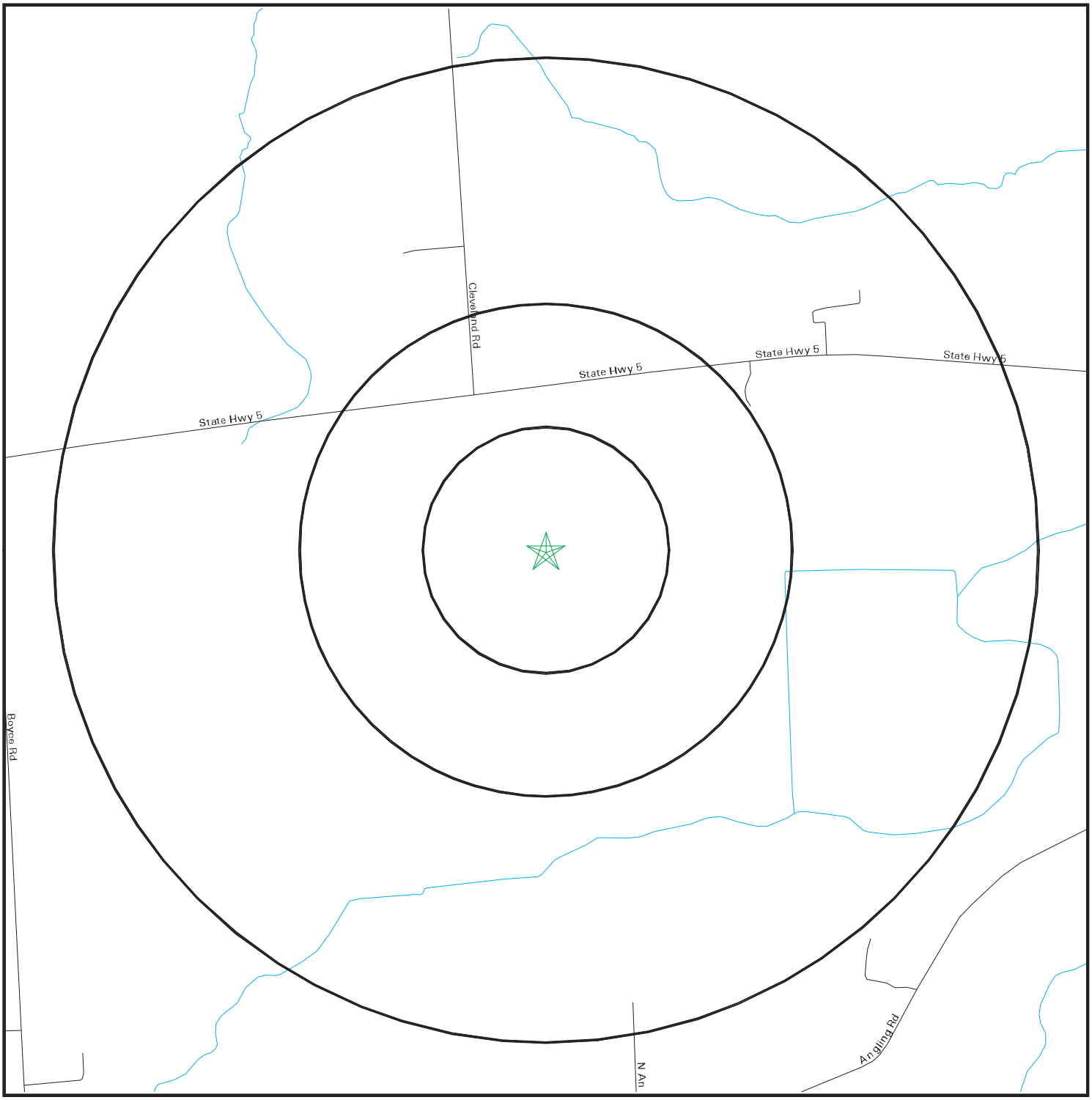
**Endangered Species Listed for: GENESEE County, NY.**
Source: EPA Endangered Species Protection Program Database

| | |
|---|---|
| BIRD: | EAGLE, BALD |
| MAMMAL: | BAT, INDIANA |

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|

No mapped sites were found in EDR's search of available government records within the search radius around the target property.

# Historic Sites Map




- Target Property
- Streets
- County Boundary
- Waterways
- Water
- Historic Sites
- Federal Historic Areas
- State Historic Areas
- US Indian Reservations
- Scenic Trail

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: Main and Cleveland Roads<br>Corfu NY 14036<br>LAT/LONG: 42.9923 / 78.3527 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.4s<br>DATE: June 12, 2012 |



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# HISTORIC SITES MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|

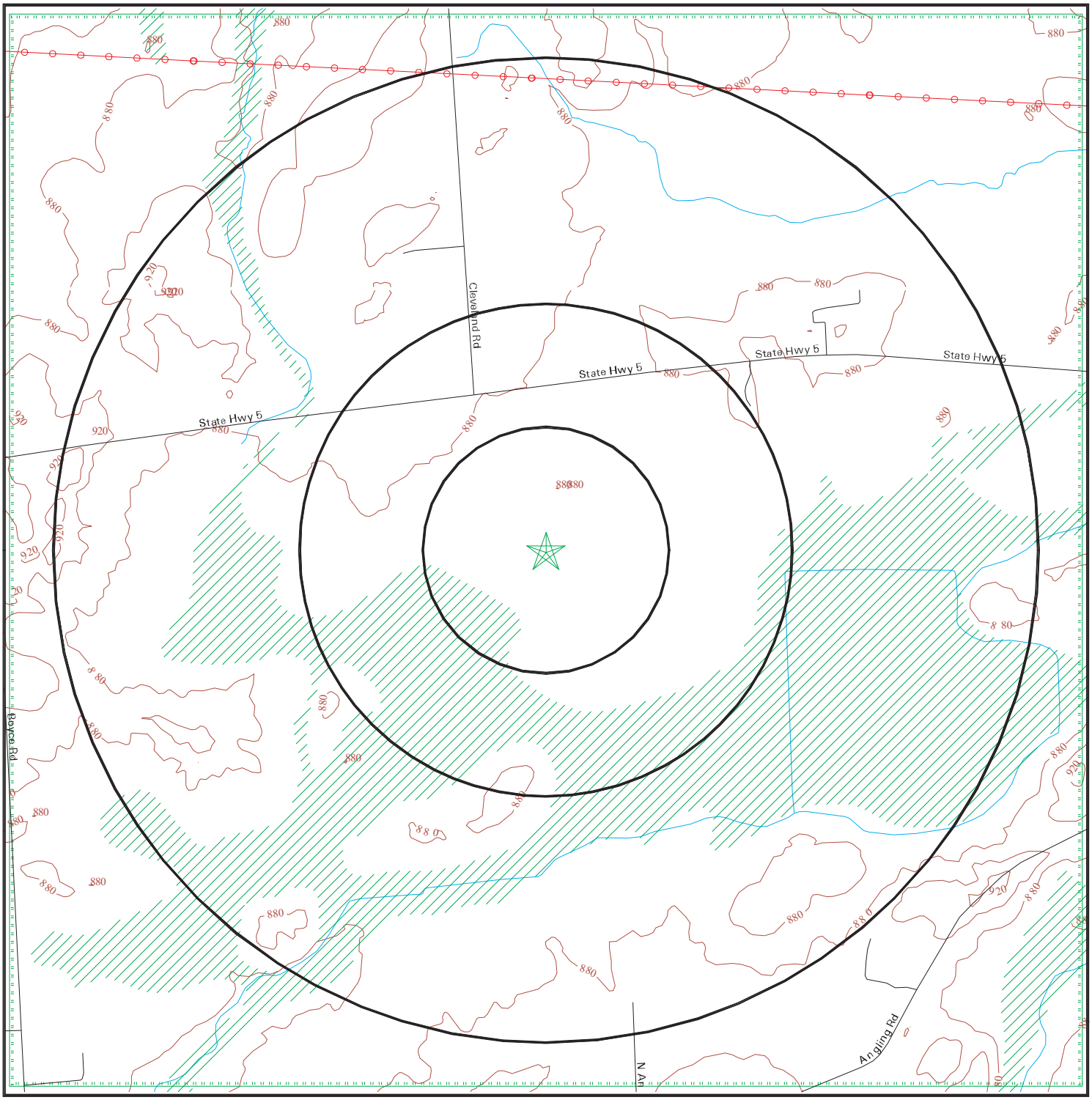
No mapped sites were found in EDR's search of available government records within the search radius around the target property.

# UNMAPPABLE HISTORIC SITES

| Due to poor or inadequate address information, the following sites were not mapped: | Status<br>EDR ID<br>Database |
|---|---|

No unmapped sites were found in EDR's search of available government records.

# Flood Plain Map




Major Roads
Contour Lines
Waterways
County Boundary
Power Lines
Pipe Lines
Fault Lines
Water
100-year flood zone
500-year flood zone
Electronic FEMA data available
Electronic FEMA data not available

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: Main and Cleveland Roads<br>Corfu NY 14036<br>LAT/LONG: 42.9923 / 78.3527 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.4s<br>DATE: June 12, 2012 |



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# FLOOD PLAIN MAP FINDINGS

**Source: FEMA DFIRM Flood Data, FEMA Q3 Flood Data**

| County | FEMA flood data electronic coverage |
|---|---|
| GENESEE, NY | YES |

Flood Plain panel at target property: 3602830020C (FEMA Q3 Flood data)
Additional Flood Plain panel(s) in search area:
3602830010C (FEMA Q3 Flood data)

# National Wetlands Inventory Map

Major Roads
Contour Lines
Waterways
County Boundary
Power Lines
Pipe Lines
Fault Lines
Water
National Wetland Inventory
State Wetlands
Electronic NWI data available
Electronic NWI data not available

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: Main and Cleveland Roads<br>Corfu NY 14036<br>LAT/LONG: 42.9923 / 78.3527 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.4s<br>DATE: June 12, 2012 |



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# WETLANDS MAP FINDINGS

Source: Fish and Wildlife Service NWI data

NWI hardcopy map at target property: Alexander
Additional NWI hardcopy map(s) in search area:
Oakfield

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 1<br>SSW<br>0-1/8 mi<br>604 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.990849 / -78.353790 | NWI |
| 2<br>SSE<br>0-1/8 mi<br>617 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.990707 / -78.351921 | NWI |
| 3<br>West<br>1/8-1/4 mi<br>1153 | PUBHh<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [h] Diked/Impounded<br>Lat/Lon: 42.992390 / -78.357010 | NWI |
| 4<br>NNE<br>1/4-1/2 mi<br>1781 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.996784 / -78.350060 | NWI |
| 5<br>NNE<br>1/4-1/2 mi<br>1948 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.997501 / -78.351013 | NWI |
| 6<br>NE<br>1/4-1/2 mi<br>2016 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.996239 / -78.347404 | NWI |
| 7<br>WSW<br>1/4-1/2 mi<br>2296 | PSS1/EM1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.990303 / -78.360840 | NWI |
| 8<br>NNE<br>1/4-1/2 mi<br>2348 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.998264 / -78.349396 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 9<br>East<br>1/4-1/2 mi<br>2386 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.991253 / -78.343895 | NWI |
| 10<br>East<br>1/4-1/2 mi<br>2542 | Pf<br>[P] Palustrine, [f] Farmed<br>Lat/Lon: 42.991470 / -78.343269 | NWI |
| 11<br>ENE<br>1/2-1 mi<br>2887 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.996449 / -78.343513 | NWI |
| 12<br>WNW<br>1/2-1 mi<br>2961 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.996624 / -78.362068 | NWI |
| 13<br>NE<br>1/2-1 mi<br>3082 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.998211 / -78.344467 | NWI |
| 14<br>NNE<br>1/2-1 mi<br>3099 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.000286 / -78.348732 | NWI |
| 15<br>NNE<br>1/2-1 mi<br>3153 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.000225 / -78.347977 | NWI |
| 16<br>West<br>1/2-1 mi<br>3215 | PSS1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.993736 / -78.364555 | NWI |
| 17<br>SW<br>1/2-1 mi<br>3484 | PSS1/EM1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.984550 / -78.360321 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 18<br>WNW<br>1/2-1 mi<br>3653 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 42.995701 / -78.365540 | NWI |
| 19<br>SSE<br>1/2-1 mi<br>3689 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.983131 / -78.346878 | NWI |
| 20<br>ENE<br>1/2-1 mi<br>3709 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 42.995747 / -78.339661 | NWI |
| 21<br>SSW<br>1/2-1 mi<br>3723 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.982529 / -78.356758 | NWI |
| 22<br>WNW<br>1/2-1 mi<br>3825 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 42.996452 / -78.365829 | NWI |
| 23<br>ENE<br>1/2-1 mi<br>4063 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.994743 / -78.337891 | NWI |
| 24<br>North<br>1/2-1 mi<br>4110 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.003464 / -78.350517 | NWI |
| 25<br>WNW<br>1/2-1 mi<br>4219 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 42.995956 / -78.367661 | NWI |
| 26<br>SSE<br>1/2-1 mi<br>4486 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.981155 / -78.345581 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 27<br>WSW<br>1/2-1 mi<br>4556 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 42.989834 / -78.369392 | NWI |
| 28<br>NNW<br>1/2-1 mi<br>4557 | PUBHh<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [h] Diked/Impounded<br>Lat/Lon: 43.003929 / -78.358948 | NWI |
| 29<br>East<br>1/2-1 mi<br>4622 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 42.994659 / -78.335732 | NWI |
| 30<br>SSW<br>1/2-1 mi<br>4649 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.979946 / -78.357002 | NWI |
| 31<br>SW<br>1/2-1 mi<br>4665 | PSS1/EM1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.983219 / -78.364983 | NWI |
| 32<br>SE<br>1/2-1 mi<br>4798 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 42.983685 / -78.339149 | NWI |
| 33<br>East<br>1/2-1 mi<br>4935 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.994400 / -78.334480 | NWI |
| 34<br>SW<br>1/2-1 mi<br>5023 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 42.982002 / -78.365166 | NWI |
| 35<br>NW<br>1/2-1 mi<br>5151 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.003555 / -78.364342 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 36<br>West<br>1/2-1 mi<br>5155 | PSS1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.990807 / -78.371857 | NWI |
| 37<br>SSE<br>1/2-1 mi<br>5165 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.979687 / -78.343903 | NWI |
| 38<br>NW<br>1/2-1 mi<br>5179 | PSS1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 43.003510 / -78.364594 | NWI |
| 39<br>South<br>1/2-1 mi<br>5216 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.978073 / -78.350609 | NWI |
| 40<br>SSW<br>1/2-1 mi<br>5245 | PFO1/SS1A<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [A] Temporarily Flooded<br>Lat/Lon: 42.978733 / -78.359230 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS CLASSIFICATION SYSTEM

National Wetland Inventory Maps are produced by the U.S. Fish and Wildlife Service, a sub-department of the U.S. Department of the Interior. In 1974, the U.S. Fish and Wildlife Service developed a criteria for wetland classification with four long range objectives:

- to describe ecological units that have certain homogeneous natural attributes,
- to arrange these units in a system that will aid decisions about resource management,
- to furnish units for inventory and mapping, and
- to provide uniformity in concepts and terminology throughout the U.S.

High altitude infrared photographs, soil maps, topographic maps and site visits are the methods used to gather data for the productions of these maps. In the infrared photos, wetlands appear as different colors and these wetlands are then classified by type. Using a hierarchical classification, the maps identify wetland and deepwater habitats according to:

- system
- subsystem
- class
- subclass
- modifiers

(as defined by Cowardin, et al. U.S. Fish and Wildlife Service FWS/OBS 79/31. 1979.)

The classification system consists of five systems:

1. marine
2. estuarine
3. riverine
4. lacustrine
5. palustrine

The marine system consists of deep water tidal habitats and adjacent tidal wetlands. The riverine system consists of all wetlands contained within a channel. The lacustrine systems includes all nontidal wetlands related to swamps, bogs & marshes. The estuarine system consists of deepwater tidal habitats and where ocean water is diluted by fresh water. The palustrine system includes nontidal wetlands dominated by trees and shrubs and where salinity is below .5% in tidal areas. All of these systems are divided in subsystems and then further divided into class.

National Wetland Inventory Maps are produced by transferring gathered data on a standard 7.5 minute U.S.G.S. topographic map. Approximately 52 square miles are covered on a National Wetland Inventory map at a scale of 1:24,000. Electronic data is compiled by digitizing these National Wetland Inventory Maps.

**SYSTEM** — **MARINE**

**SUBSYSTEM** — **1 - SUBTIDAL**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | RF-REEF | OW-OPEN WATER / Unknown Bottom |
|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>3 Rooted Vascular<br>5 Unknown Submergent | 1 Coral<br>3 Worm | |

**SUBSYSTEM** — **2 - INTERTIDAL**

| CLASS | AB-AQUATIC BED | RF-REEF | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE |
|---|---|---|---|---|
| Subclass | 1 Algal<br>3 Rooted Vascular<br>5 Unknown Submergent | 1 Coral<br>3 Worm | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic |

**SYSTEM** — **E - ESTUARINE**

**SUBSYSTEM** — **1 - SUBTIDAL**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | RF-REEF | OW-OPEN WATER / Unknown Bottom |
|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 2 Mollusk<br>3 Worm | |

**SUBSYSTEM** — **2 - INTERTIDAL**

| CLASS | AB-AQUATIC BED | RF-REEF | SB - STREAMBED | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE | EM-EMERGENT | SS-SCRUB SHRUB | FO-FORESTED |
|---|---|---|---|---|---|---|---|---|
| Subclass | 1 Algal<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 2 Mollusk<br>3 Worm | 1 Cobble- Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Bedrock<br>2 Rubble | 1 Cobble- Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Persistent<br>2 Nonpersistent | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 Deciduous<br>7 Evergreen | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 Deciduous<br>7 Evergreen |

**SYSTEM** — **R - RIVERINE**

| SUBSYSTEM | 1 - TIDAL | 2 - LOWER PERENNIAL | 3 - UPPER PERENNIAL | 4 - INTERMITTENT | 5 - UNKNOWN PERENNIAL |
|---|---|---|---|---|---|
| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | *SB-STREAMBED | AB-AQUATIC BED | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE | **EM-EMERGENT | OW-OPEN WATER/ Unknown Bottom |
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Bedrock<br>2 Rubble<br>3 Cobble-Gravel<br>4 Sand<br>5 Mud<br>6 Organic<br>7 Vegetated | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 2 Nonpersistent | |

* STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM.
**EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS.

**SYSTEM** — **L - LACUSTRINE**

**SUBSYSTEM** — **1 - LIMNETIC**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | OW-OPEN WATER/ Unknown Bottom |
|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | |

**SUBSYSTEM** — **2 - LITTORAL**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE | EM-EMERGENT | OW-OPEN WATER/ Unknown Bottom |
|---|---|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 2 Nonpersistent | |

## SUBSYSTEM

## P - PALUSTRINE

| CLASS | RB--ROCK BOTTOM | UB--UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | US--UNCONSOLIDATED SHORE | ML--MOSS-LICHEN | EM--EMERGENT | SS--SCRUB-SHRUB | FO--FORESTED | OW-OPEN WATER/ Unknown |
|---|---|---|---|---|---|---|---|---|---|
| Bottom | | | | | | | | | |
| Subclass | 1 Bedrock<br>2 Rubble<br>3 Mud<br>4 Organic | 1 Cobble-Gravel<br>2 Sand | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 1 Moss<br>2 Lichen | 1 Persistent<br>2 Nonpersistent | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 Deciduous<br>7 Evergreen | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6Deciduous<br>7 Evergreen | |

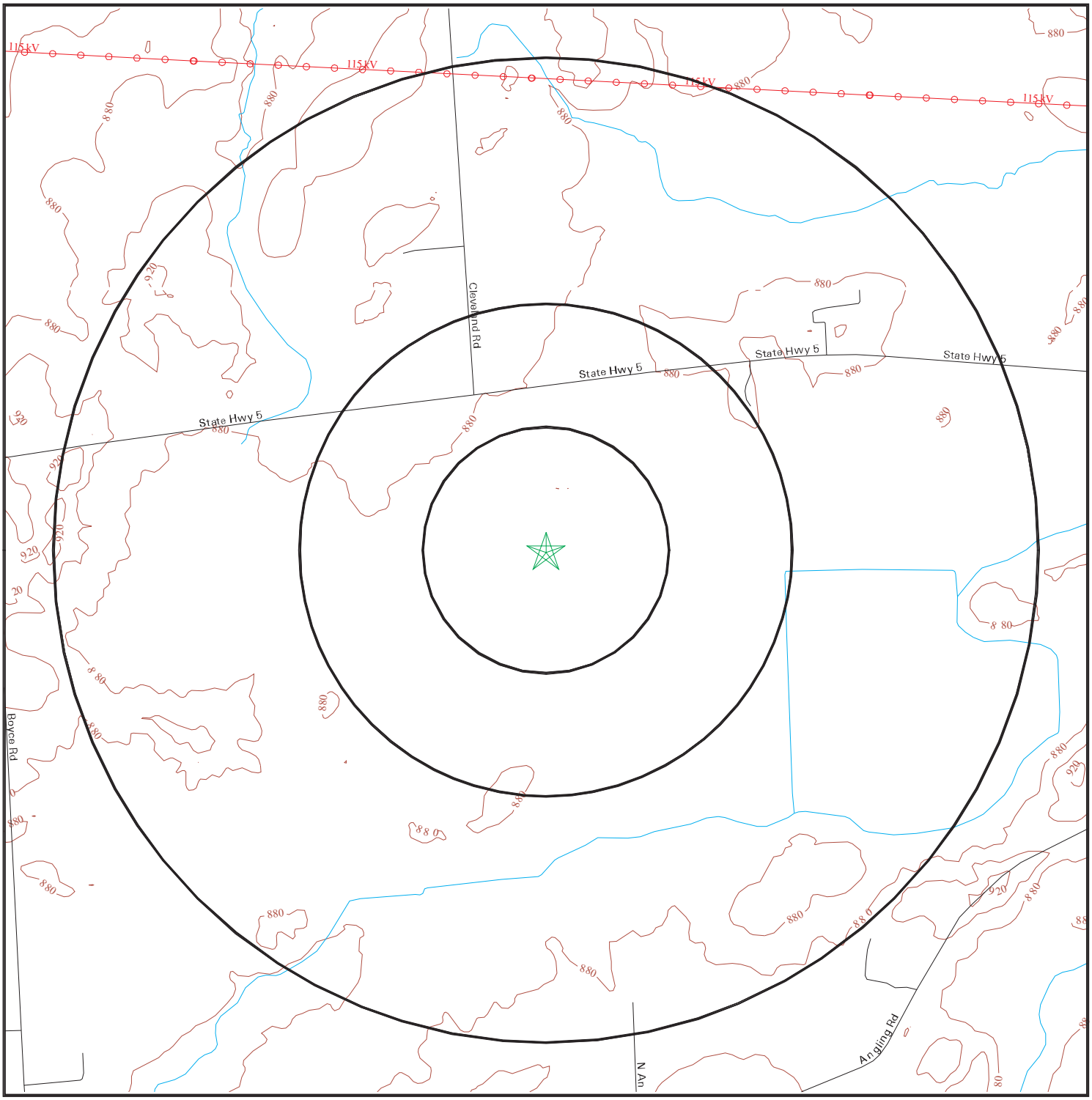
### MODIFIERS

In order to more adequately describe wetland and deepwater habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

| WATER REGIME | | | | WATER CHEMISTRY | | | SOIL | SPECIAL MODIFIERS |
|---|---|---|---|---|---|---|---|---|
| **Non-Tidal** | **Tidal** | **Coastal** | **Halinity** | **Inland** | **Salinity** | **pH** | **Modifiers for all Fresh Water** | |
| A Temporarily Flooded<br>B Saturated<br>C Seasonally Flooded<br>D Seasonally Flooded/ Well Drained<br>E Seasonally Flooded/ Saturated<br>F Semipermanently Flooded<br>G Intermittently Exposed | H Permanently Flooded<br>J Intermittently Flooded<br>K Artificially Flooded<br>W Intermittently Flooded/Temporary<br>Y Saturated/Semipermanent/ Seasonal<br>Z Intermittently Exposed/Permanent<br>U Unknown | K Artificially Flooded<br>L Subtidal<br>M Irregularly Exposed<br>N Regularly Flooded<br>P Irregularly Flooded | *S Temporary-Tidal<br>*R Seasonal-Tidal<br>*T Semipermanent -Tidal<br>V Permanent -Tidal<br>U Unknown<br><br>*These water regimes are only used in tidally influenced, freshwater systems. | 1 Hyperhaline<br>2 Euhaline<br>3 Mixohaline (Brackish)<br>4 Polyhaline<br>5 Mesohaline<br>6 Oligohaline<br>0 Fresh | 7 Hypersaline<br>8 Eusaline<br>9 Mixosaline<br>0 Fresh | a Acid<br>t Circumneutral<br>i Alkaline | g Organic<br>n Mineral | b Beaver<br>d Partially Drained/Ditched<br>f Farmed<br>h Diked/Impounded<br>r Artificial Substrate<br>s Spoil<br>x Excavated |

Source: U.S. Department of the Interior
Fish and Wildlife Service
National Wetlands Inventory

# FCC & FAA Sites Map




Streets
Contour Lines
County Boundary
Waterways
Power Lines
Water
Sites

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: Main and Cleveland Roads<br>Corfu NY 14036<br>LAT/LONG: 42.9923 / 78.3527 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.4s<br>DATE: June 12, 2012 |



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# FCC & FAA SITES MAP FINDINGS
# TOWERS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|

No Sites Reported.

# FCC & FAA SITES MAP FINDINGS
# AIRPORTS

**EDR ID**
**Database**

No Sites Reported.

# FCC & FAA SITES MAP FINDINGS
# POWERLINES

**EDR ID**
**Database**

POW10000004124
POWERLINES

| | |
|---|---|
| Name: | Niaga |
| Id: | 3331 |
| Kv: | 115 |
| Label: | 115 kV |
| Company: | Niagara Mohawk, a National Grid Co. |
| Companyabb: | Niagara Mohawk |
| Edr id: | POW10000004124 |

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

Various Federal laws and executive orders address specific environmental concerns. NEPA requires the responsible offices to integrate to the greatest practical extent the applicable procedures required by these laws and executive orders. EDR provides key contacts at agencies charged with implementing these laws and executive orders to supplement the information contained in this report.

**NATURAL AREAS**
**Officially designated wilderness areas**
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.

Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

National Park Service, Northeast Region
200 custom Street, Fifth Floor
Philadelphia, PA 19106
215-597-7013

USDA Forest Service, Eastern
310 West Wisconsin Avenue
Milwaukee, WI 53203
414-297-3693

BLM - Eastern States Office
7450 Boston Blvd.
Springfield, VA 22153
703-440-1713

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

**Officially designated wildlife preserves, sanctuaries and refuges**
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.

Date of Government Version: 12/31/2005

NY Wildlife Management Areas: Wildlife Management Areas
Borders of New York State Wildlife Management Areas
Source: Dept. of Env. Conservation.
Telephone: 518-783-5733

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

State Contacts for Additional Information

Dept. of Environmental Conservation 518-457-5690

**Wild and scenic rivers**

Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.

Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

**Endangered Species**

Government Records Searched in This Report

Endangered Species Protection Program Database
A listing of endangered species by county.
Source: Environmental Protection Agency
Telephone: 703-305-5239

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

State Contacts for Additional Information

Natural Heritage Program, Dept. of Environmental Conservation 518-783-3932

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

**LANDMARKS, HISTORICAL, AND ARCHEOLOGICAL SITES**
**Historic Places**
Government Records Searched in This Report

National Register of Historic Places:
The National Register of Historic Places is the official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. These contribute to an understanding of the historical and cultural foundations of the nation.
The National Register includes:
- All prehistoric and historic units of the National Park System;
- National Historic Landmarks, which are properties recognized by the Secretary of the Interior as possessing national significance; and
- Properties significant in American, state, or local prehistory and history that have been nominated by State Historic Preservation Officers, federal agencies, and others, and have been approved for listing by the National Park Service.

Date of Government Version: 03/23/2006

Federal Contacts for Additional Information

Park Service; Advisory Council on Historic Preservation
1849 C Street NW
Washington, DC 20240
Phone: (202) 208-6843

State Contacts for Additional Information

Parks, Recreation & Historic Preservation 518-474-0443

**Indian Religious Sites**
Government Records Searched in This Report

Indian Reservations:
This map layer portrays Indian administrated lands of the United States that have any area equal to or greater than 640 acres.
Source: USGS
Phone: 888-275-8747
Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

Department of the Interior- Bureau of Indian Affairs
Office of Public Affairs
1849 C Street, NW
Washington, DC 20240-0001
Office: 202-208-3711
Fax: 202-501-1516

National Association of Tribal Historic Preservation Officers
1411 K Street NW, Suite 700
Washington, DC 20005
Phone: 202-628-8476
Fax: 202-628-2241

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

State Contacts for Additional Information
A listing of local Tribal Leaders and Bureau of Indian Affairs Representatives can be found at:
http://www.doi.gov/bia/areas/agency.html

Eastern Area Office, Bureau of Indian Affairs
3701 N. Fairfax Drive Mail Stop 260-VASQ
Arlington, VA 22203
703-235-2571

**Scenic Trails**

Government Records Searched in This Report
APPAL_TRAIL: Appalachian Trail
Source: Appalachian Trail Conference
Telephone: (304) 535-6331
Appalachian Trail centerline.

State Contacts for Additional Information
Appalachian Trail Conference
799 Washington Street P.O. Box 807
Harpers Ferry, WV 25425-0807
(304) 535-6331

North County Trail Association
49 Monroe Center Suite 200B
Grand Rapids, Michigan 49503
616-454-5506

**FLOOD PLAIN, WETLANDS AND COASTAL ZONE**

**Flood Plain Management**
Government Records Searched in This Report
Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

Federal Contacts for Additional Information
Federal Emergency Management Agency 877-3362-627

State Contacts for Additional Information
New York State Emergency Management Office 518-457-2200

**Wetlands Protection**
Government Records Searched in This Report
NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2004 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Freshwater Wetlands
Source: Department of Environmental Conservation
Telephone: 518-402-8961

Federal Contacts for Additional Information
Fish & Wildlife Service 813-570-5412

State Contacts for Additional Information
Dept. of Environmental Conservation 518-457-5690

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

**Coastal Zone Management**

Government Records Searched in This Report

CAMA Management Areas
Dept. of Env., Health & Natural Resources
919-733-2293

Federal Contacts for Additional Information

Office of Ocean and Coastal Resource Management
N/ORM, SSMC4
1305 East-West Highway
Silver Spring, Maryland 20910
301-713-3102

State Contacts for Additional Information

Dept of State, Div. Of Coastal Resources & Waterfront Revitalization 518-474-3643

**FCC & FAA SITES MAP**

For NEPA actions that come under the authority of the FCC, the FCC requires evaluation of Antenna towers and/or supporting structures that are to be equipped with high intensity white lights which are to be located in residential neighborhoods, as defined by the applicable zoning law.

Government Records Searched in This Report

**Cellular**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**4G Cellular**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**Antenna Structure Registration**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**Towers**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**AM Antenna**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

**FM Antenna**
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**FAA Digital Obstacle File**
Federal Aviation Administration (FAA)
1305 East-West Highway, Station 5631
Silver Sprinng, MD 20910-3281
Telephone: 301-713-2817
Describes known obstacles of interest to aviation users in the US. Used by the Federal Aviation Administration (FAA) and the National Oceanic and Atmospheric Administration to manage the National Airspace System.

**Airport Landing Facilities**
Federal Aviation Administration
Telephone (800) 457-6656
Private and public use landing facilities.

**Electric Power Transmission Line Data**
Rextag Strategies Corp.
14405 Walters Road, Suite 510
Houston, TX 77014
281-769-2247
U.S. Electric Transmission and Power Plants systems Digital GIS Data.

**Excessive Radio Frequency Emission**
For NEPA actions that come under the authority of the FCC, Commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities, require the determination of whether the particular facility, operation or transmitter would cause human exposure to levels of radio frequency in excess of certain limits.

Federal Contacts for Additional Information
Office of Engineering and Technology
Federal Communications Commission
445 12th Street SW
Washington, DC 20554
Phone: 202-418-2470

**OTHER CONTACT SOURCES**

**STREET AND ADDRESS INFORMATION**

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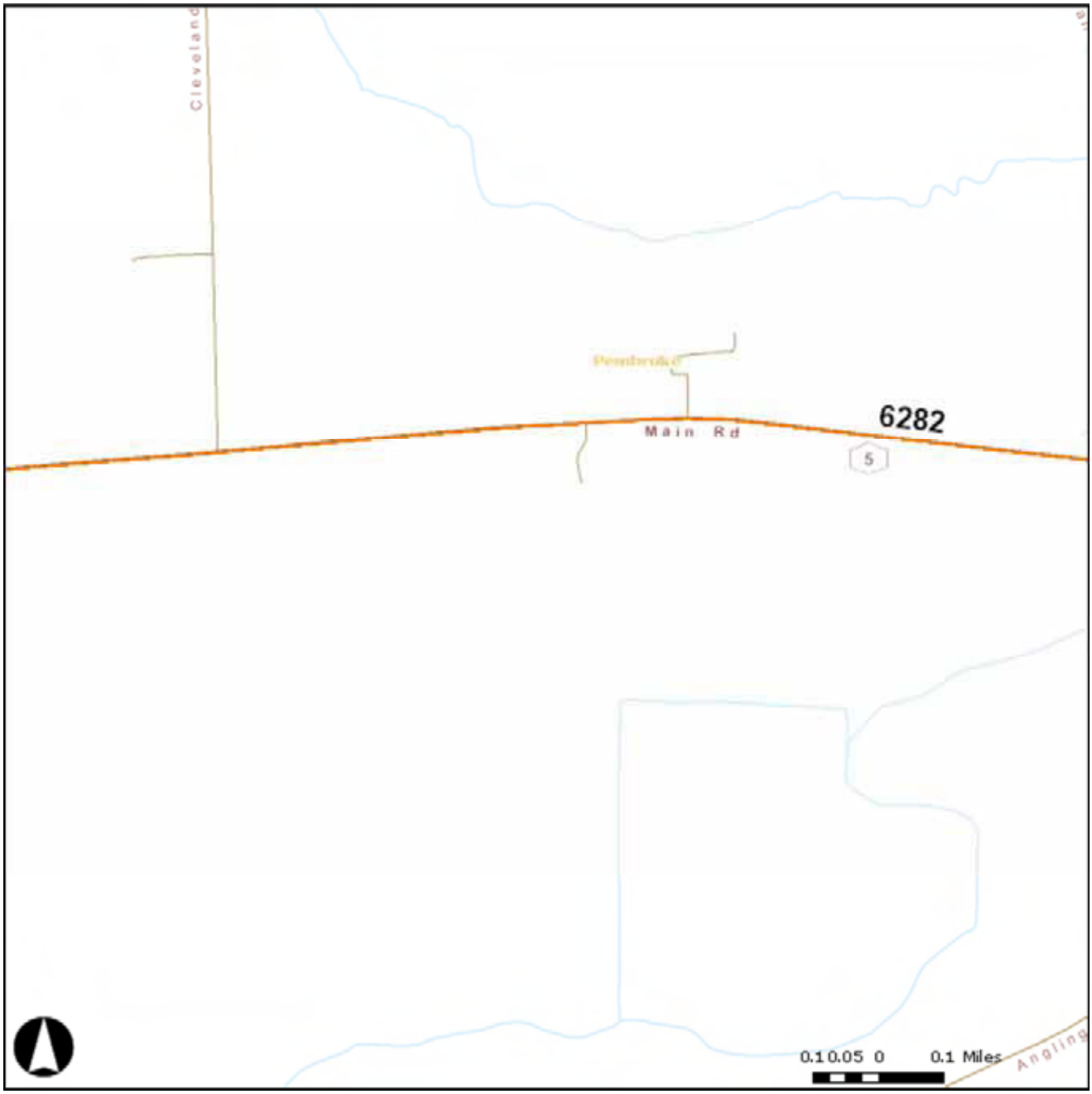
# Map




AADT

- 0 - 2000
- 2001 - 5000
- 5001 - 15000
- 15001 - 50000
- 50001 - 300000

# 4106 Walden Avenue Reports

**Proposed National Cemetery**
4106 Walden Avenue
Lancaster, NY 14086

Inquiry Number: 3342748.9s
June 12, 2012

# EDR NEPACheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.


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# EDR NEPACheck® DESCRIPTION

The National Environmental Policy Act of 1969 (NEPA) requires that Federal agencies include in their decision-making processes appropriate and careful consideration of all environmental effects and actions, analyze potential environmental effects of proposed actions and their alternatives for public understanding and scrutiny, avoid or minimize adverse effects of proposed actions, and restore and enhance environmental quality as much as possible.

The EDR NEPACheck provides information which may be used, in conjunction with additional research, to determine whether a proposed site or action will have significant environmental effect.

The report provides maps and data for the following items (where available). Search results are provided in the Map Findings Summary on page 2 of this report.

| Section | Regulation |
|---|---|
| **Natural Areas Map** | |
| • Federal Lands Data: | |
| - Officially designated wilderness areas | 47 CFR 1.1307(1) |
| - Officially designated wildlife preserves, sanctuaries and refuges | 47 CFR 1.1307(2) |
| - Wild and scenic rivers | 40 CFR 6.302(e) |
| - Fish and Wildlife | 40 CFR 6.302 |
| • Threatened or Endangered Species, Fish and Wildlife, Critical Habitat Data (where available) | 47 CFR 1.1307(3); 40 CFR 6.302 |
| **Historic Sites Map** | |
| • National Register of Historic Places | 47 CFR 1.1307(4); 40 CFR 6.302 |
| • State Historic Places (where available) | |
| • Indian Reservations | |
| **Flood Plain Map** | |
| • National Flood Plain Data (where available) | 47 CFR 1.1307(6); 40 CFR 6.302 |
| **Wetlands Map** | |
| • National Wetlands Inventory Data (where available) | 47 CFR 1.1307(7); 40 CFR 6.302 |
| **FCC & FAA Map** | |
| • FCC antenna/tower sites, FAA Markings and Obstructions, Airports, Topographic gradient | 47 CFR 1.1307(8) |
| **Key Contacts and Government Records Searched** | |

# MAP FINDINGS SUMMARY

The databases searched in this report are listed below. Database descriptions and other agency contact information is contained in the Key Contacts and Government Records Searched section on page 30 of this report.

**TARGET PROPERTY ADDRESS**

PROPOSED NATIONAL CEMETERY
4106 WALDEN AVENUE
LANCASTER, NY 14086

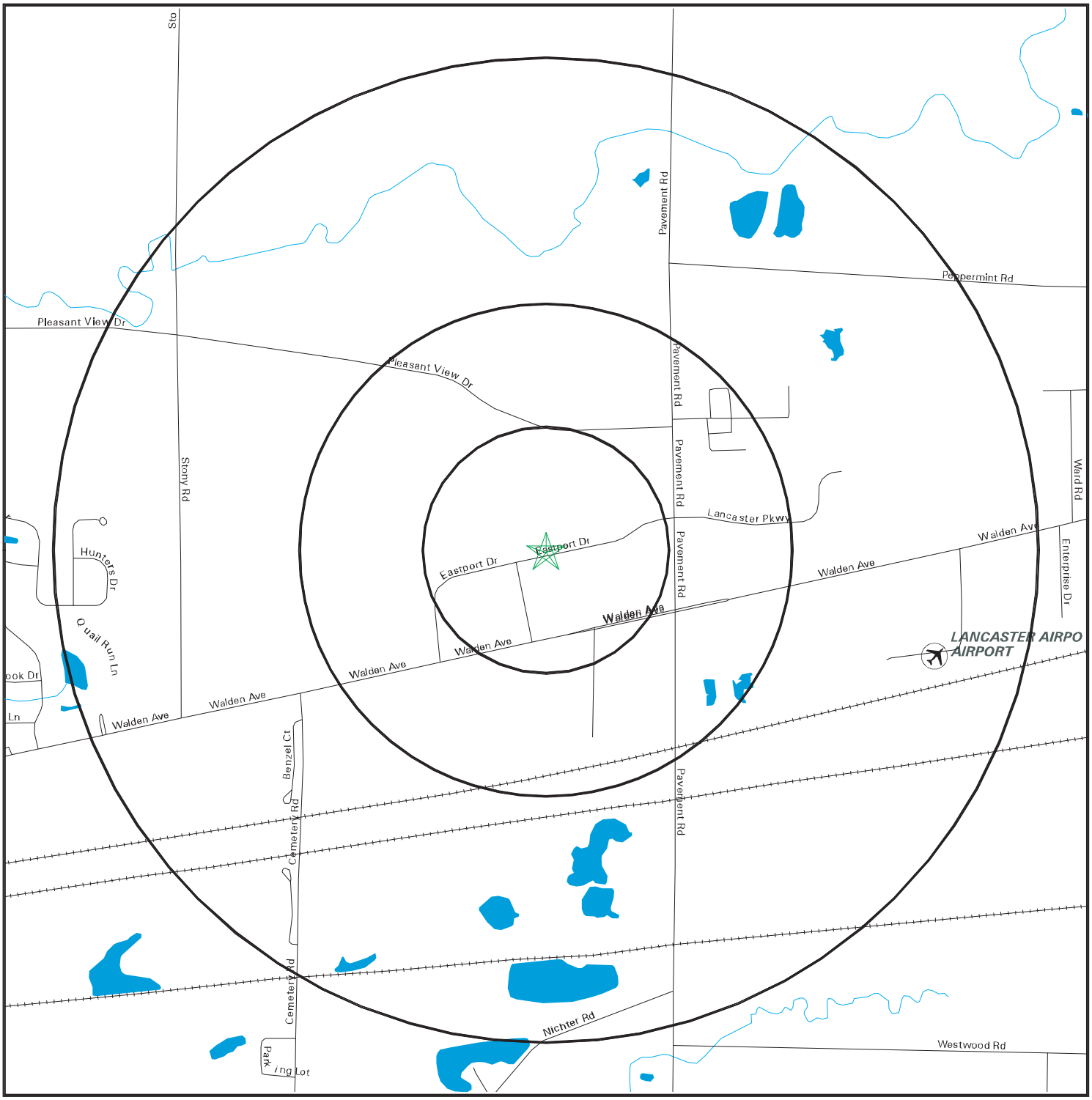
Inquiry #: 3342748.9s
Date: 6/12/12

**TARGET PROPERTY COORDINATES**

| | |
|---|---|
| Latitude (North): | 42.925400 - 42˚ 55' 31.4'' |
| Longitude (West): | 78.627800 - 78˚ 37' 40.1'' |
| Universal Tranverse Mercator: | Zone 17 |
| UTM X (Meters): | 693597.4 |
| UTM Y (Meters): | 4755046.0 |

| Applicable Regulation from 47 CFR/FCC Checklist | Database | Search Distance (Miles) | Within Search | Within 1/8 Mile |
|---|---|---|---|---|
| **NATURAL AREAS MAP** | | | | |
| 1.1307a (1) Officially Designated Wilderness Area | US Federal Lands | 1.00 | NO | NO |
| 1.1307a (2) Officially Designated Wildlife Preserve | US Federal Lands | 1.00 | NO | NO |
| 1.1307a (2) Officially Designated Wildlife Preserve | NY Wildlife Management Areas | 1.00 | NO | NO |
| 1.1307a (3) Threatened or Endangered Species or Critical Habitat | County Endangered Species | County | YES | N/A |
| **HISTORIC SITES MAP** | | | | |
| 1.1307a (4) Listed or eligible for National Register | National Register of Hist. Pla | 1.00 | NO | NO |
| | Indian Reservation | 1.00 | NO | NO |
| | APPAL_TRAIL | 1.00 | NO | NO |
| **FLOODPLAIN MAP** | | | | |
| 1.1307 (6) Located in a Flood Plain | FLOODPLAIN | 1.00 | NO | NO |
| **WETLANDS MAP** | | | | |
| 1.1307 (7) Change in surface features (wetland fill) | NWI | 1.00 | YES | YES |
| **FCC & FAA SITES MAP** | | | | |
| | Cellular | 1.00 | NO | NO |
| | 4G Cellular | 1.00 | NO | NO |
| | Antenna Structure Registration | 1.00 | YES | NO |
| | Towers | 1.00 | YES | NO |
| | AM Antenna | 1.00 | NO | NO |
| | FM Antenna | 1.00 | NO | NO |
| | FAA DOF | 1.00 | NO | NO |
| | Airports | 1.00 | YES | --- |
| | Power Lines | 1.00 | YES | --- |

# Natural Areas Map




- Target Property
- Roads
- County Boundary
- Waterways
- Water
- Airports
- Locations
- Federal Areas
- Federal Linear Features
- State Areas
- State Linear Features

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: 4106 Walden Avenue<br>Lancaster NY 14086<br>LAT/LONG: 42.9254 / 78.6278 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.9s<br>DATE: June 12, 2012 |



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# NATURAL AREAS MAP FINDINGS

**Endangered Species Listed for: ERIE County, NY.**
Source: EPA Endangered Species Protection Program Database
MAMMAL: BAT, INDIANA

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|

No mapped sites were found in EDR's search of available government records within the search radius around the target property.

# Historic Sites Map

- Target Property
- Streets
- County Boundary
- Waterways
- Water
- Airports
- Historic Sites
- Federal Historic Areas
- State Historic Areas
- US Indian Reservations
- Scenic Trail

| | |
|---|---|
| SITE NAME: Proposed National Cemetery | CLIENT: TTL Associates, Inc |
| ADDRESS: 4106 Walden Avenue<br>Lancaster NY 14086 | CONTACT: Paul Jackson<br>INQUIRY #: 3342748.9s |
| LAT/LONG: 42.9254 / 78.6278 | DATE: June 12, 2012 |



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# HISTORIC SITES MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|

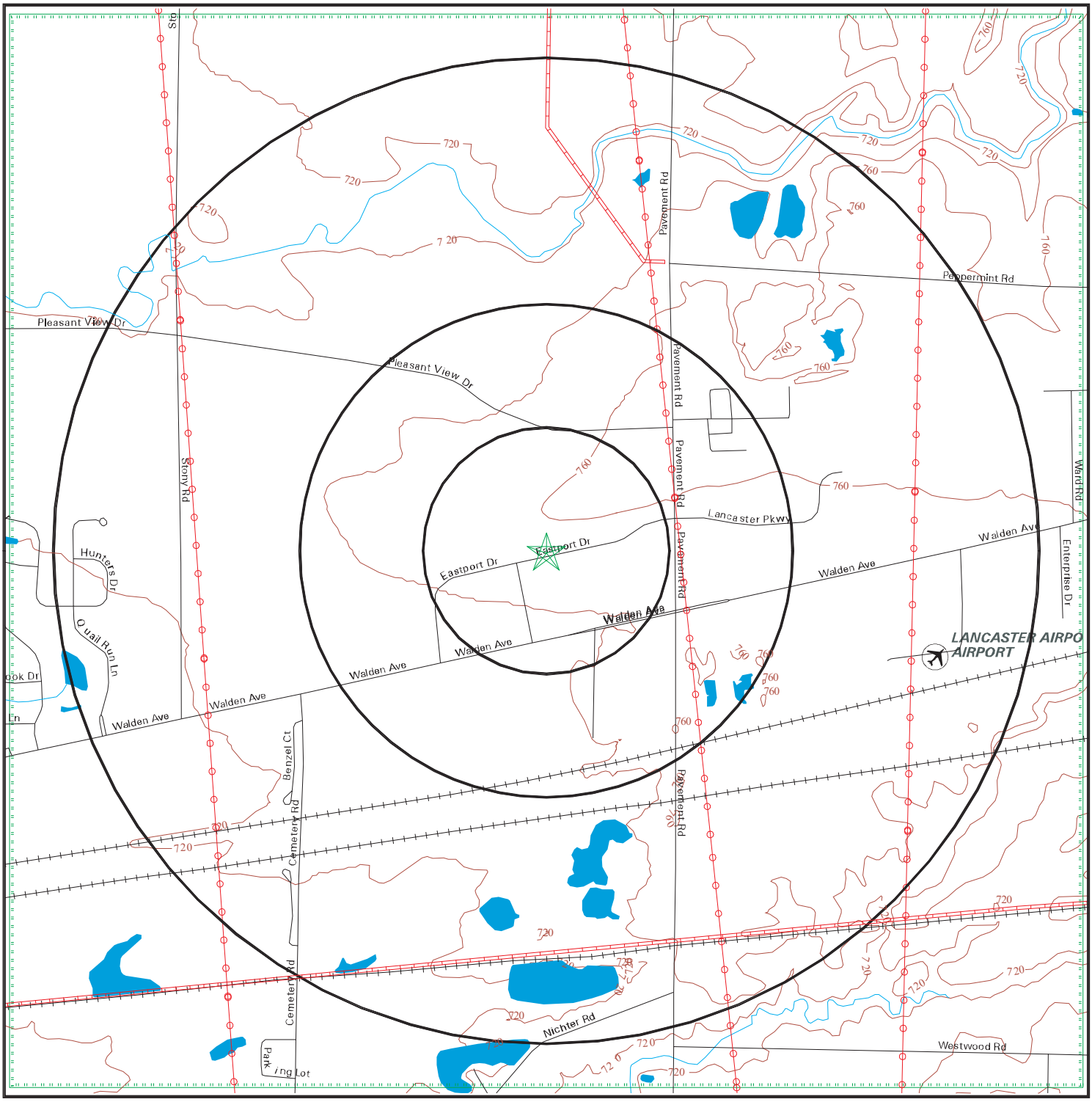
No mapped sites were found in EDR's search of available government records within the search radius around the target property.

# UNMAPPABLE HISTORIC SITES

| Due to poor or inadequate address information, the following sites were not mapped: | Status<br>EDR ID<br>Database |
|---|---|

No unmapped sites were found in EDR's search of available government records.

# Flood Plain Map




0 1/4 1/2 1 Miles

- Major Roads
- Contour Lines
- Waterways
- County Boundary
- Airports
- Power Lines
- Pipe Lines
- Fault Lines
- Water
- 100-year flood zone
- 500-year flood zone
- Electronic FEMA data available
- Electronic FEMA data not available

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: 4106 Walden Avenue<br>Lancaster NY 14086<br>LAT/LONG: 42.9254 / 78.6278 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.9s<br>DATE: June 12, 2012 |



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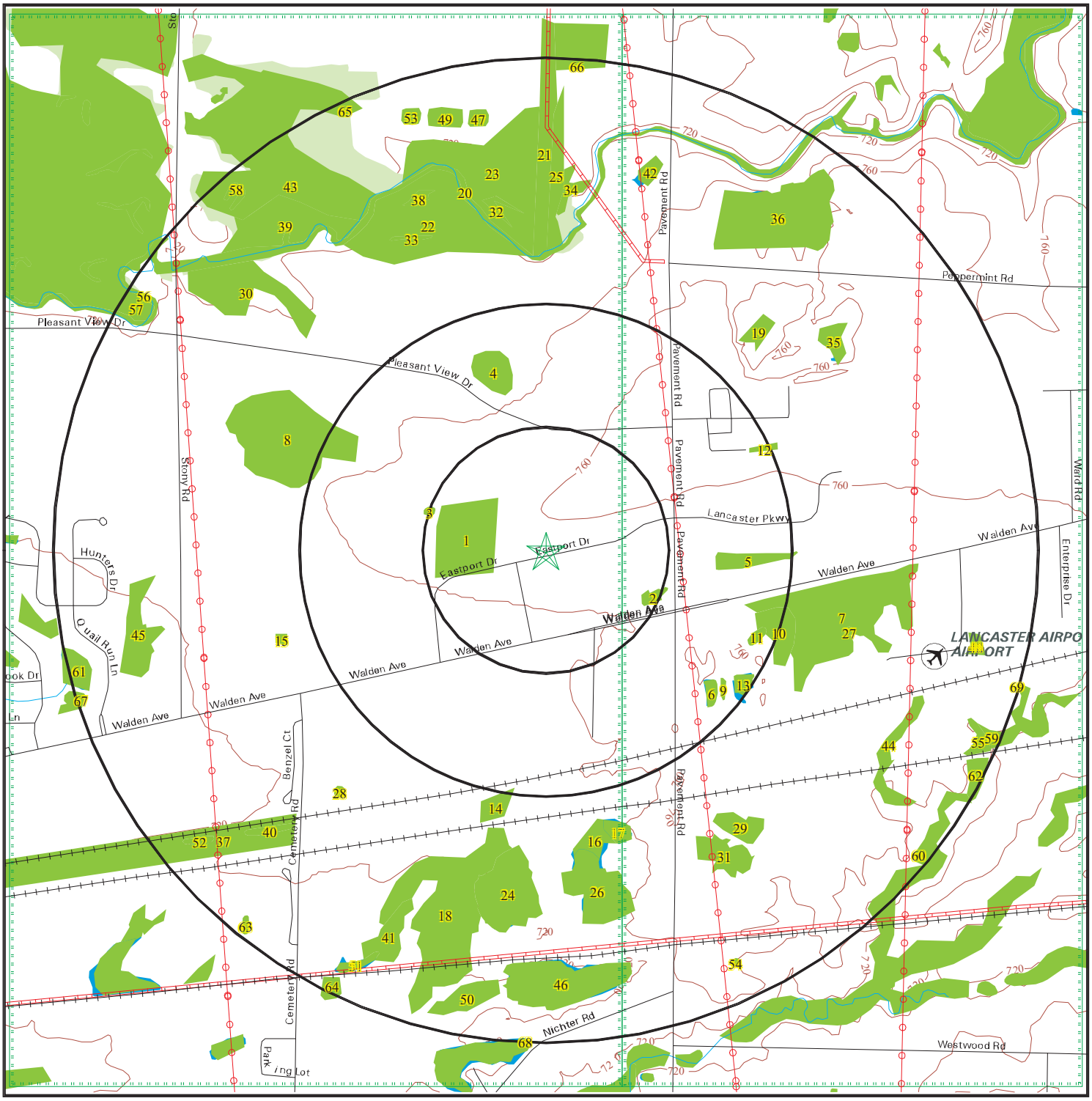
# FLOOD PLAIN MAP FINDINGS

**Source: FEMA DFIRM Flood Data, FEMA Q3 Flood Data**

| County | FEMA flood data electronic coverage |
|---|---|
| ERIE, NY | YES |
| Flood Plain panel at target property: | 36029C (FEMA DFIRM Flood data) |
| Additional Flood Plain panel(s) in search area: | None Reported |

# National Wetlands Inventory Map




Major Roads
Contour Lines
Waterways
County Boundary
Airports
Power Lines
Pipe Lines
Fault Lines
Water
National Wetland Inventory
State Wetlands
Electronic NWI data available
Electronic NWI data not available

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: 4106 Walden Avenue<br>Lancaster NY 14086<br>LAT/LONG: 42.9254 / 78.6278 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.9s<br>DATE: June 12, 2012 |



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# WETLANDS MAP FINDINGS

Source: Fish and Wildlife Service NWI data

NWI hardcopy map at target property: Lancaster
Additional NWI hardcopy map(s) in search area:
Clarence

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 1<br>West<br>0-1/8 mi<br>544 | PFO1B<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated<br><br>Lat/Lon: 42.925488 / -78.629829 | NWI |
| 2<br>ESE<br>1/8-1/4 mi<br>1127 | PFO1Bd<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated, [d] Partially Drained/Ditched<br>Lat/Lon: 42.924095 / -78.623985 | NWI |
| 3<br>WNW<br>1/8-1/4 mi<br>1258 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.926468 / -78.632263 | NWI |
| 4<br>NNW<br>1/4-1/2 mi<br>1714 | PFO1B<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated<br><br>Lat/Lon: 42.929947 / -78.629425 | NWI |
| 5<br>East<br>1/4-1/2 mi<br>1819 | PEM1Ah<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [A] Temporarily Flooded, [h] Diked/Impounded<br>Lat/Lon: 42.925217 / -78.621017 | NWI |
| 6<br>SE<br>1/4-1/2 mi<br>2202 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.921520 / -78.621498 | NWI |
| 7<br>ESE<br>1/4-1/2 mi<br>2205 | PSS1/EM1B<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [B] Saturated<br>Lat/Lon: 42.923798 / -78.619865 | NWI |
| 8<br>WNW<br>1/4-1/2 mi<br>2249 | PFO1B<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated<br><br>Lat/Lon: 42.927998 / -78.635414 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 9<br>SE<br>1/4-1/2 mi<br>2321 | PUBFx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [F] Semipermanently Flooded, [x] Excavated<br>Lat/Lon: 42.921642 / -78.620804 | NWI |
| 10<br>ESE<br>1/4-1/2 mi<br>2339 | PFO1B<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated<br>Lat/Lon: 42.923550 / -78.619438 | NWI |
| 11<br>ESE<br>1/4-1/2 mi<br>2364 | PUBF<br>[P] Palustrine, [UB] Unconsolidated Bottom, [F] Semipermanently Flooded<br>Lat/Lon: 42.922771 / -78.619728 | NWI |
| 12<br>ENE<br>1/4-1/2 mi<br>2418 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.928265 / -78.619659 | NWI |
| 13<br>SE<br>1/4-1/2 mi<br>2423 | PEM1Fx<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [F] Semipermanently Flooded, [x] Excavated<br>Lat/Lon: 42.921703 / -78.620277 | NWI |
| 14<br>South<br>1/4-1/2 mi<br>2569 | PUB/FO5F<br>[P] Palustrine, [UB] Unconsolidated Bottom / , [FO] Forested, [5] Dead, [F] Semipermanently Flooded<br>Lat/Lon: 42.918411 / -78.629051 | NWI |
| 15<br>WSW<br>1/2-1 mi<br>2913 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.922939 / -78.638153 | NWI |
| 16<br>South<br>1/2-1 mi<br>2931 | PUSCx<br>[P] Palustrine, [US] Unconsolidated Shore, [C] Seasonally Flooded, [x] Excavated<br>Lat/Lon: 42.917503 / -78.625740 | NWI |
| 17<br>SSE<br>1/2-1 mi<br>2952 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.917477 / -78.625504 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 18<br>South<br>1/2-1 mi<br>3010 | PFO1B<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated<br><br>Lat/Lon: 42.917233 / -78.629486 | NWI |
| 19<br>NE<br>1/2-1 mi<br>3052 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.931564 / -78.620094 | NWI |
| 20<br>North<br>1/2-1 mi<br>3104 | R2UBH<br>[R] Riverine, [2] Lower Perennial, [UB] Unconsolidated Bottom, [H] Permanently Flooded<br>Lat/Lon: 42.933914 / -78.628036 | NWI |
| 21<br>North<br>1/2-1 mi<br>3157 | PEM1E<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br><br>Lat/Lon: 42.934055 / -78.628159 | NWI |
| 22<br>North<br>1/2-1 mi<br>3158 | PFO1Bd<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated, [d] Partially Drained/Ditched<br>Lat/Lon: 42.934048 / -78.628555 | NWI |
| 23<br>North<br>1/2-1 mi<br>3163 | PFO1Bd<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated, [d] Partially Drained/Ditched<br>Lat/Lon: 42.934071 / -78.628311 | NWI |
| 24<br>South<br>1/2-1 mi<br>3172 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.916733 / -78.628883 | NWI |
| 25<br>North<br>1/2-1 mi<br>3213 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.934216 / -78.627769 | NWI |
| 26<br>South<br>1/2-1 mi<br>3225 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.916607 / -78.626472 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 27<br>ESE<br>1/2-1 mi<br>3313 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.923077 / -78.615845 | NWI |
| 28<br>SW<br>1/2-1 mi<br>3340 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.918404 / -78.635857 | NWI |
| 29<br>SSE<br>1/2-1 mi<br>3364 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.917664 / -78.620949 | NWI |
| 30<br>NW<br>1/2-1 mi<br>3427 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.931622 / -78.637383 | NWI |
| 31<br>SSE<br>1/2-1 mi<br>3458 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.917000 / -78.621803 | NWI |
| 32<br>North<br>1/2-1 mi<br>3479 | PUBF<br>[P] Palustrine, [UB] Unconsolidated Bottom, [F] Semipermanently Flooded<br><br>Lat/Lon: 42.934891 / -78.629143 | NWI |
| 33<br>NNW<br>1/2-1 mi<br>3566 | PUBF<br>[P] Palustrine, [UB] Unconsolidated Bottom, [F] Semipermanently Flooded<br><br>Lat/Lon: 42.934582 / -78.632393 | NWI |
| 34<br>North<br>1/2-1 mi<br>3594 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.935253 / -78.627296 | NWI |
| 35<br>NE<br>1/2-1 mi<br>3682 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.931568 / -78.616920 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 36<br>NNE<br>1/2-1 mi<br>3691 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.934235 / -78.621071 | NWI |
| 37<br>SW<br>1/2-1 mi<br>3884 | PSS1/EM1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.917664 / -78.637772 | NWI |
| 38<br>NNW<br>1/2-1 mi<br>3948 | PUBF<br>[P] Palustrine, [UB] Unconsolidated Bottom, [F] Semipermanently Flooded<br><br>Lat/Lon: 42.935532 / -78.633011 | NWI |
| 39<br>NNW<br>1/2-1 mi<br>3975 | PFO1/SS1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.934620 / -78.635719 | NWI |
| 40<br>SW<br>1/2-1 mi<br>3987 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.917374 / -78.637917 | NWI |
| 41<br>SSW<br>1/2-1 mi<br>3997 | PEM1Eh<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated, [h] Diked/Impounded<br>Lat/Lon: 42.915165 / -78.633156 | NWI |
| 42<br>NNE<br>1/2-1 mi<br>4054 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.936108 / -78.623711 | NWI |
| 43<br>NNW<br>1/2-1 mi<br>4054 | PFO1Bd<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated, [d] Partially Drained/Ditched<br>Lat/Lon: 42.935104 / -78.635201 | NWI |
| 44<br>ESE<br>1/2-1 mi<br>4160 | PFO1C<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [C] Seasonally Flooded<br><br>Lat/Lon: 42.919426 / -78.614571 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 45<br>WSW<br>1/2-1 mi<br>4165 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.923080 / -78.643028 | NWI |
| 46<br>South<br>1/2-1 mi<br>4398 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.913334 / -78.627724 | NWI |
| 47<br>North<br>1/2-1 mi<br>4593 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.937874 / -78.630219 | NWI |
| 48<br>East<br>1/2-1 mi<br>4612 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.922989 / -78.610901 | NWI |
| 49<br>NNW<br>1/2-1 mi<br>4620 | PEM1Ex<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated, [x] Excavated<br>Lat/Lon: 42.937824 / -78.631203 | NWI |
| 50<br>South<br>1/2-1 mi<br>4630 | PFO1A<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [A] Temporarily Flooded<br>Lat/Lon: 42.912773 / -78.629707 | NWI |
| 51<br>SSW<br>1/2-1 mi<br>4660 | PUBHh<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [h] Diked/Impounded<br>Lat/Lon: 42.913597 / -78.634483 | NWI |
| 52<br>SW<br>1/2-1 mi<br>4695 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.917004 / -78.641090 | NWI |
| 53<br>NNW<br>1/2-1 mi<br>4772 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.937943 / -78.632896 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 54<br>SSE<br>1/2-1 mi<br>4820 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.913410 / -78.620209 | NWI |
| 55<br>ESE<br>1/2-1 mi<br>4867 | PFO1C<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [C] Seasonally Flooded<br><br>Lat/Lon: 42.920433 / -78.610931 | NWI |
| 56<br>WNW<br>1/2-1 mi<br>4876 | R2UBH<br>[R] Riverine, [2] Lower Perennial, [UB] Unconsolidated Bottom, [H] Permanently Flooded<br>Lat/Lon: 42.932251 / -78.643433 | NWI |
| 57<br>WNW<br>1/2-1 mi<br>4921 | PFO1Bd<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated, [d] Partially Drained/Ditched<br>Lat/Lon: 42.932388 / -78.643524 | NWI |
| 58<br>NW<br>1/2-1 mi<br>4957 | PUBF<br>[P] Palustrine, [UB] Unconsolidated Bottom, [F] Semipermanently Flooded<br><br>Lat/Lon: 42.935486 / -78.640221 | NWI |
| 59<br>ESE<br>1/2-1 mi<br>4979 | PEM1Eb<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated, [b] Beaver<br>Lat/Lon: 42.920326 / -78.610542 | NWI |
| 60<br>ESE<br>1/2-1 mi<br>5014 | PSS1C<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [C] Seasonally Flooded<br><br>Lat/Lon: 42.918327 / -78.611748 | NWI |
| 61<br>WSW<br>1/2-1 mi<br>5030 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br><br>Lat/Lon: 42.921894 / -78.645966 | NWI |
| 62<br>ESE<br>1/2-1 mi<br>5037 | PFO1C<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [C] Seasonally Flooded<br><br>Lat/Lon: 42.919228 / -78.610977 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | Code and Description* | Database |
|---|---|---|
| 63<br>SW<br>1/2-1 mi<br>5053 | PUBFx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [F] Semipermanently Flooded, [x] Excavated<br>Lat/Lon: 42.914673 / -78.639755 | NWI |
| 64<br>SSW<br>1/2-1 mi<br>5083 | PSS1E<br>[P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.912842 / -78.636055 | NWI |
| 65<br>NNW<br>1/2-1 mi<br>5123 | PFO1Bd<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [B] Saturated, [d] Partially Drained/Ditched<br>Lat/Lon: 42.938126 / -78.635910 | NWI |
| 66<br>North<br>1/2-1 mi<br>5145 | PFO1E<br>[P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [E] Seasonally Flooded/Saturated<br>Lat/Lon: 42.939510 / -78.627396 | NWI |
| 67<br>WSW<br>1/2-1 mi<br>5175 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.921120 / -78.646217 | NWI |
| 68<br>South<br>1/2-1 mi<br>5243 | PUBHx<br>[P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated<br>Lat/Lon: 42.911026 / -78.628555 | NWI |
| 69<br>ESE<br>1/2-1 mi<br>5243 | PEM1Eb<br>[P] Palustrine, [EM] Emergent, [1] Persistent, [E] Seasonally Flooded/Saturated, [b] Beaver<br>Lat/Lon: 42.921463 / -78.608971 | NWI |

*See Wetland Classification System for additional information.

# WETLANDS CLASSIFICATION SYSTEM

National Wetland Inventory Maps are produced by the U.S. Fish and Wildlife Service, a sub-department of the U.S. Department of the Interior. In 1974, the U.S. Fish and Wildlife Service developed a criteria for wetland classification with four long range objectives:

- to describe ecological units that have certain homogeneous natural attributes,
- to arrange these units in a system that will aid decisions about resource management,
- to furnish units for inventory and mapping, and
- to provide uniformity in concepts and terminology throughout the U.S.

High altitude infrared photographs, soil maps, topographic maps and site visits are the methods used to gather data for the productions of these maps. In the infrared photos, wetlands appear as different colors and these wetlands are then classified by type. Using a hierarchical classification, the maps identify wetland and deepwater habitats according to:

- system
- subsystem
- class
- subclass
- modifiers

(as defined by Cowardin, et al. U.S. Fish and Wildlife Service FWS/OBS 79/31. 1979.)

The classification system consists of five systems:

1. marine
2. estuarine
3. riverine
4. lacustrine
5. palustrine

The marine system consists of deep water tidal habitats and adjacent tidal wetlands. The riverine system consists of all wetlands contained within a channel. The lacustrine systems includes all nontidal wetlands related to swamps, bogs & marshes. The estuarine system consists of deepwater tidal habitats and where ocean water is diluted by fresh water. The palustrine system includes nontidal wetlands dominated by trees and shrubs and where salinity is below .5% in tidal areas. All of these systems are divided in subsystems and then further divided into class.

National Wetland Inventory Maps are produced by transferring gathered data on a standard 7.5 minute U.S.G.S. topographic map. Approximately 52 square miles are covered on a National Wetland Inventory map at a scale of 1:24,000. Electronic data is compiled by digitizing these National Wetland Inventory Maps.

**SYSTEM** — **MARINE**

**SUBSYSTEM** — **1 - SUBTIDAL**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | RF-REEF | OW-OPEN WATER / Unknown Bottom |
|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>3 Rooted Vascular<br>5 Unknown Submergent | 1 Coral<br>3 Worm | |

**SUBSYSTEM** — **2 - INTERTIDAL**

| CLASS | AB-AQUATIC BED | RF-REEF | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE |
|---|---|---|---|---|
| Subclass | 1 Algal<br>3 Rooted Vascular<br>5 Unknown Submergent | 1 Coral<br>3 Worm | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic |

**SYSTEM** — **E - ESTUARINE**

**SUBSYSTEM** — **1 - SUBTIDAL**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | RF-REEF | OW-OPEN WATER / Unknown Bottom |
|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 2 Mollusk<br>3 Worm | |

**SUBSYSTEM** — **2 - INTERTIDAL**

| CLASS | AB-AQUATIC BED | RF-REEF | SB - STREAMBED | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE | EM-EMERGENT | SS-SCRUB SHRUB | FO-FORESTED |
|---|---|---|---|---|---|---|---|---|
| Subclass | 1 Algal<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 2 Mollusk<br>3 Worm | 1 Cobble- Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Bedrock<br>2 Rubble | 1 Cobble- Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Persistent<br>2 Nonpersistent | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 Deciduous<br>7 Evergreen | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 Deciduous<br>7 Evergreen |

**SYSTEM** — **R - RIVERINE**

| SUBSYSTEM | 1 - TIDAL | 2 - LOWER PERENNIAL | 3 - UPPER PERENNIAL | 4 - INTERMITTENT | 5 - UNKNOWN PERENNIAL |
|---|---|---|---|---|---|
| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | *SB-STREAMBED | AB-AQUATIC BED | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE | **EM-EMERGENT | OW-OPEN WATER/ Unknown Bottom |
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Bedrock<br>2 Rubble<br>3 Cobble-Gravel<br>4 Sand<br>5 Mud<br>6 Organic<br>7 Vegetated | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 2 Nonpersistent | |

* STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM.
**EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS.

**SYSTEM** — **L - LACUSTRINE**

**SUBSYSTEM** — **1 - LIMNETIC**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | OW-OPEN WATER/ Unknown Bottom |
|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | |

**SUBSYSTEM** — **2 - LITTORAL**

| CLASS | RB-ROCK BOTTOM | UB-UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | RS-ROCKY SHORE | US-UNCONSOLIDATED SHORE | EM-EMERGENT | OW-OPEN WATER/ Unknown Bottom |
|---|---|---|---|---|---|---|---|
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 2 Nonpersistent | |

## SUBSYSTEM

## P - PALUSTRINE

| CLASS | RB--ROCK BOTTOM | UB--UNCONSOLIDATED BOTTOM | AB-AQUATIC BED | US--UNCONSOLIDATED SHORE | ML--MOSS-LICHEN | EM--EMERGENT | SS--SCRUB-SHRUB | FO--FORESTED | OW-OPEN WATER/ Unknown |
|---|---|---|---|---|---|---|---|---|---|
| Bottom | | | | | | | | | |
| Subclass | 1 Bedrock<br>2 Rubble<br>3 Mud<br>4 Organic | 1 Cobble-Gravel<br>2 Sand | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 Unknown Submergent<br>6 Unknown Surface | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 1 Moss<br>2 Lichen | 1 Persistent<br>2 Nonpersistent | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 Deciduous<br>7 Evergreen | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6Deciduous<br>7 Evergreen | |

### MODIFIERS

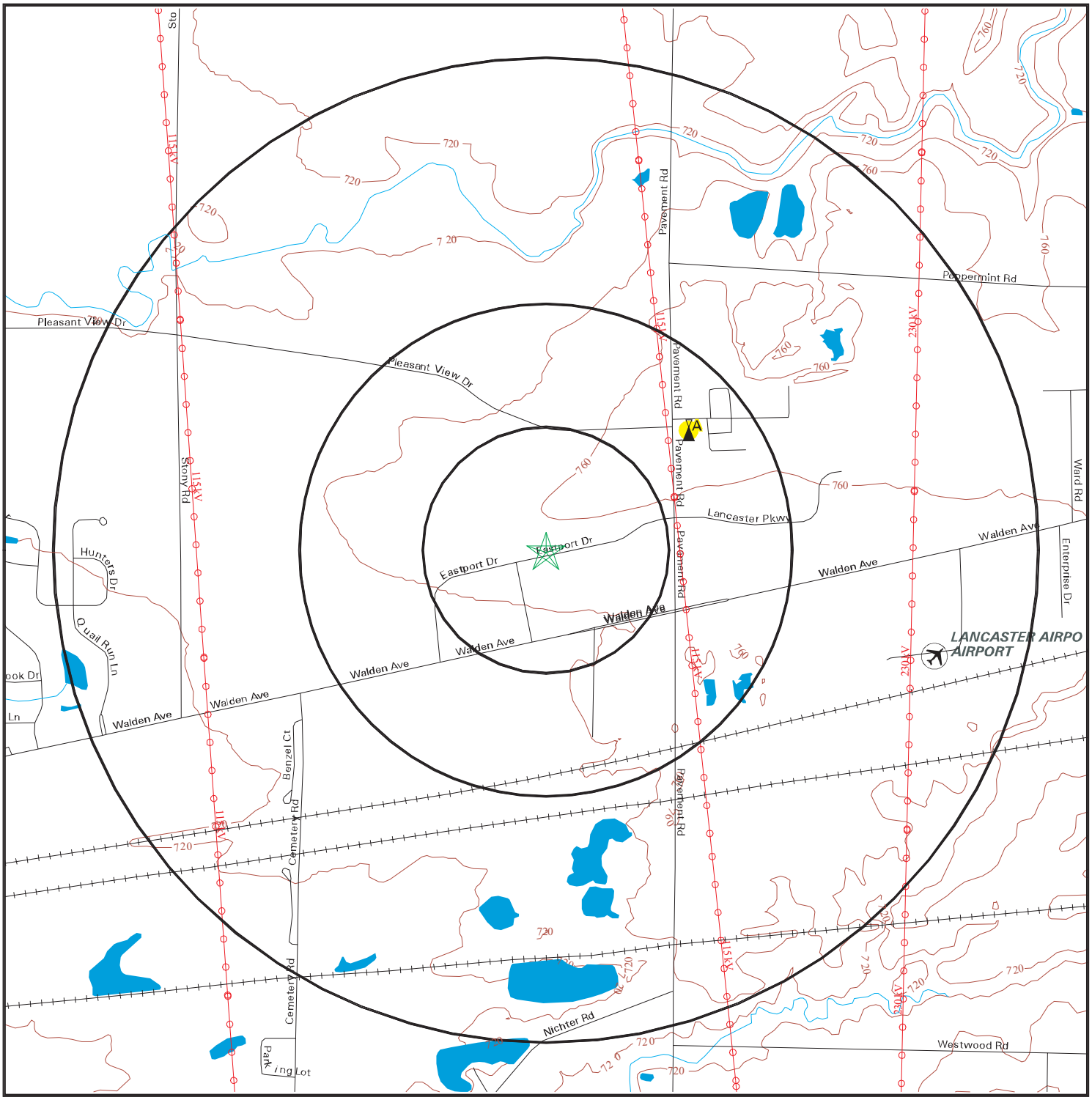
In order to more adequately describe wetland and deepwater habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

| WATER REGIME | | | | WATER CHEMISTRY | | | SOIL | SPECIAL MODIFIERS |
|---|---|---|---|---|---|---|---|---|
| **Non-Tidal** | **Tidal** | **Coastal** | **Halinity** | **Inland** | **Salinity** | **pH** | **Modifiers** | **for all Fresh Water** |
| A Temporarily Flooded | H Permanently Flooded | K Artificially Flooded | *S Temporary-Tidal | 1 Hyperhaline | 7 Hypersaline | | g Organic | b Beaver |
| B Saturated | J Intermittently Flooded | L Subtidal | *R Seasonal-Tidal | 2 Euhaline | 8 Eusaline | a Acid | n Mineral | d Partially Drained/Ditched |
| C Seasonally Flooded | K Artificially Flooded | M Irregularly Exposed | *T Semipermanent -Tidal | 3 Mixohaline (Brackish) | 9 Mixosaline | t Circumneutral | | f Farmed |
| D Seasonally Flooded/ Well Drained | W Intermittently Flooded/Temporary | N Regularly Flooded | V Permanent -Tidal | 4 Polyhaline | 0 Fresh | i Alkaline | | h Diked/Impounded |
| E Seasonally Flooded/ Saturated | Y Saturated/Semipermanent/ Seasonal | P Irregularly Flooded | U Unknown | 5 Mesohaline | | | | r Artificial Substrate |
| F Semipermanently Flooded | Z Intermittently Exposed/Permanent | | | 6 Oligohaline | | | | s Spoil |
| G Intermittently Exposed | U Unknown | | | 0 Fresh | | | | x Excavated |

*These water regimes are only used in tidally influenced, freshwater systems.

Source: U.S. Department of the Interior
Fish and Wildlife Service
National Wetlands Inventory

# FCC & FAA Sites Map




Streets
Contour Lines
County Boundary
Waterways
Power Lines
Water
Airports
Sites

| | |
|---|---|
| SITE NAME: Proposed National Cemetery<br>ADDRESS: 4106 Walden Avenue<br>Lancaster NY 14086<br>LAT/LONG: 42.9254 / 78.6278 | CLIENT: TTL Associates, Inc<br>CONTACT: Paul Jackson<br>INQUIRY #: 3342748.9s<br>DATE: June 12, 2012 |



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# FCC & FAA SITES MAP FINDINGS
# TOWERS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|
| A1<br>NE<br>1/4-1/2 mi<br>1970 | ANT200000100131<br>ANTREG |

| | |
|---|---|
| Regnum: | 1214054 |
| Filenum: | A0128610 |
| Issuedate: | 6/22/2000 |
| Entity: | Town of Lancaster Hwy Dept |
| Lat dms: | 42,55,44.2 |
| Lat dir: | 1 |
| Lon dms: | 78,37,20 |
| Lon dir: | -1 |
| Dd temp: | 42.9289 |
| Dd temp0: | -78.6222 |
| Strucht: | 10 |
| Strucadd: | 525 Pavement Road |
| Struccity: | Lancaster |
| Strucstate: | NY |
| Faastudy: | 00-AEA-1817-OE |
| Faacirc: | Not Reported |
| Licid: | L00076635 |
| Contname: | Not Reported |
| Contadd: | 525 Pavement Rd |
| Contpo: | Not Reported |
| Contcity: | Lancaster |
| Contstate: | NY |
| Contzip: | 14086 |
| Edr id: | ANT200000100131 |

This record is for a license, and it may or may not indicate a site which has been built.

# FCC & FAA SITES MAP FINDINGS
# TOWERS

| Map ID<br>Direction<br>Distance<br>Distance (ft.) | EDR ID<br>Database |
|---|---|
| A2<br>NE<br>1/4-1/2 mi<br>2027 | TOW100000062529<br>TOWER |

| | |
|---|---|
| Tower id: | 49269 |
| City: | LANCASTER |
| Date active: | Aug 29 1986 |
| Date const: | 99/99/1999 |
| Date faa: | Aug 7 1985 |
| Date fcc: | Aug 15 1986 |
| Hgt antenna: | 0.0000 |
| Hgt antenna (M): | 0.0000 |
| Hgt beacon: | 0.0000 |
| Hgt beacon (M): | 0.0000 |
| Elevation: | 840.0000 |
| Elev FAA: | 840.0000 |
| Elev FAA (M): | 256.0000 |
| Elev (M): | 256.0000 |
| Hgt structure: | 140.0000 |
| Hgt struc faa: | 140.0000 |
| Hgt stru faa (M): | 42.7000 |
| Hgt struc (M): | 42.7000 |
| Supporting Struc Hgt: | 0.0000 |
| Supp. Struct Hgt (M): | 0.0000 |
| Tower Hgt: | 0.0000 |
| Tower (M): | 0.0000 |
| Id asb acc: | C |
| Faa id: | 84-AEA-2219-OE |
| File num: | 0206010-PF086 |
| Name owner: | ERIE COUNTY DEPARTMENT OF EMG SERVICES |
| State: | NY |
| Address: | 525 PAVEMENT RD |
| Action: | MOD |
| Type stru: | TOW |
| Type tower: | E |
| Key site: | 63092 |
| Id exam: | Not Reported |
| Xmit lat: | 425544 |
| Xmit long: | 0783720 |
| Lat deg: | 42 |
| Lat min: | 55 |
| Lat sec: | 44 |
| Lat second: | 154544 |
| Long deg: | 78 |
| Long min: | 37 |
| Long sec: | 20 |
| Long secon: | 283040 |
| Key rem: | Not Reported |
| The date: | Not Reported |
| Type pl: | Not Reported |
| Spec cond1: | Not Reported |

**Map ID**
**Direction**
**Distance**
**Distance (ft.)**

**EDR ID**
**Database**

| | |
|---|---|
| Spec cond2: | Not Reported |
| Remarks: | Not Reported |
| Edr id: | TOW100000062529 |

This record is for a license, and it may or may not indicate a site which has been built.

# FCC & FAA SITES MAP FINDINGS
# AIRPORTS

**EDR ID**
**Database**

AIR12521
AIRPORTS

| | |
|---|---|
| Rec type: | APT |
| Site number: | 15548.1*A |
| Airport type: | AIRPORT |
| State: | NEW YORK |
| County: | ERIE |
| City: | LANCASTER |
| Facility: | LANCASTER AIRPORT INC |
| Owner type: | PR |
| Use: | PU |
| Owner: | LANCASTER AIRPORT INC. |
| Owner address: | 4343 WALDEN AVE |
| City/State: | LANCASTER, NY 14086 |
| Phone: | 716-683-7203 |
| Mgmt name: | TOM GELES |
| Mgmt address: | 10904 TOWNLINE |
| Mgmt city: | DARIEN CENTER, NY 14040 |
| Mgmt phone: | 716-591-0366 |
| Latitude: | 42-55-20.212N |
| Longitude: | 078-36-44.096W |
| Latlong method: | E |
| Elev ft: | 750 |
| Elev method: | E |
| Aero chart: | DETROIT |
| Dist from Biz: | 03 |
| Direc from Biz: | NE |
| Date Active: | Not Reported |
| Date Certified: | Not Reported |
| Fed agreements: | Not Reported |
| Intl airport?: | N |
| Customs airport?: | N |
| Inspection Method: | S |
| Inspected by: | S |
| Last inspected: | 10211999 |
| Attendance: | ON CALL |
| Lighting: | Not Reported |
| Atc tower?: | N |
| Beacon color: | Not Reported |
| Land fee: | N |
| Single engine: | 016 |
| Multi engine: | 001 |
| Jet engines: | Not Reported |
| Helicopters: | Not Reported |
| Gliders: | Not Reported |
| Military: | Not Reported |
| Ulight air: | Not Reported |
| Commercial: | Not Reported |
| Air taxi: | Not Reported |
| Local ops: | 010000 |
| Edr id: | AIR12521 |
| Rec type: | RWY |

**EDR ID**
**Database**

| | |
|---|---|
| Lf site nu: | 15548.1*A |
| Runway id: | 08/26 |
| Runway length: | 3200 |
| Runway width: | 40 |
| Surface: | ASPH-F |
| Lights intensity: | Not Reported |
| Base end id: | 08 |
| Markings: | NRS |
| Latitude: | Not Reported |
| Longitude: | Not Reported |
| Elevation: | Not Reported |
| Approach lights: | Not Reported |
| End lights: | Not Reported |
| Centerline lights: | Not Reported |
| Touchdown lights: | Not Reported |
| Recip end id: | 26 |
| Recip markings: | NRS |
| Recip lat: | Not Reported |
| Recip long: | Not Reported |
| Recip elev: | Not Reported |
| Reci app lights: | Not Reported |
| Recip end lights: | Not Reported |
| Reci center lights: | Not Reported |
| Recip td lights: | Not Reported |

# FCC & FAA SITES MAP FINDINGS
# POWERLINES

**EDR ID**
**Database**

---

POW10000004018
POWERLINES

| | |
|---|---|
| Name: | NY St |
| Id: | 3225 |
| Kv: | 115 |
| Label: | 115 kV |
| Company: | New York State Electric & Gas Corp. |
| Companyabb: | NYSEG |
| Edr id: | POW10000004018 |

---

POW10000004017
POWERLINES

| | |
|---|---|
| Name: | NY St |
| Id: | 3224 |
| Kv: | 115 |
| Label: | 115 kV |
| Company: | New York State Electric & Gas Corp. |
| Companyabb: | NYSEG |
| Edr id: | POW10000004017 |

---

POW10000013952
POWERLINES

| | |
|---|---|
| Name: | NY St |
| Id: | 1015 |
| Kv: | 230 |
| Label: | 230 kV |
| Company: | New York State Electric & Gas Corp. |
| Companyabb: | NYSEG |
| Edr id: | POW10000013952 |

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

Various Federal laws and executive orders address specific environmental concerns. NEPA requires the responsible offices to integrate to the greatest practical extent the applicable procedures required by these laws and executive orders. EDR provides key contacts at agencies charged with implementing these laws and executive orders to supplement the information contained in this report.

**NATURAL AREAS**
**Officially designated wilderness areas**
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.
Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

National Park Service, Northeast Region
200 custom Street, Fifth Floor
Philadelphia, PA 19106
215-597-7013

USDA Forest Service, Eastern
310 West Wisconsin Avenue
Milwaukee, WI 53203
414-297-3693

BLM - Eastern States Office
7450 Boston Blvd.
Springfield, VA 22153
703-440-1713

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

**Officially designated wildlife preserves, sanctuaries and refuges**
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.
Date of Government Version: 12/31/2005

NY Wildlife Management Areas: Wildlife Management Areas
Borders of New York State Wildlife Management Areas
Source: Dept. of Env. Conservation.
Telephone: 518-783-5733

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

State Contacts for Additional Information

Dept. of Environmental Conservation 518-457-5690

**Wild and scenic rivers**

Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service, Forest Service, and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.

Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

**Endangered Species**

Government Records Searched in This Report

Endangered Species Protection Program Database
A listing of endangered species by county.
Source: Environmental Protection Agency
Telephone: 703-305-5239

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 5
Div. Of Personnel Mgmt. 300 Westgate Center Drive
Hadley, MA 01035-9589
413-253-8313

State Contacts for Additional Information

Natural Heritage Program, Dept. of Environmental Conservation 518-783-3932

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

**LANDMARKS, HISTORICAL, AND ARCHEOLOGICAL SITES**
**Historic Places**

Government Records Searched in This Report

National Register of Historic Places:

The National Register of Historic Places is the official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. These contribute to an understanding of the historical and cultural foundations of the nation.
The National Register includes:

- All prehistoric and historic units of the National Park System;
- National Historic Landmarks, which are properties recognized by the Secretary of the Interior as possessing national significance; and
- Properties significant in American, state, or local prehistory and history that have been nominated by State Historic Preservation Officers, federal agencies, and others, and have been approved for listing by the National Park Service.

Date of Government Version: 03/23/2006

Federal Contacts for Additional Information

Park Service; Advisory Council on Historic Preservation
1849 C Street NW
Washington, DC 20240
Phone: (202) 208-6843

State Contacts for Additional Information

Parks, Recreation & Historic Preservation 518-474-0443

**Indian Religious Sites**

Government Records Searched in This Report

Indian Reservations:

This map layer portrays Indian administrated lands of the United States that have any area equal to or greater than 640 acres.
Source: USGS
Phone: 888-275-8747
Date of Government Version: 12/31/2005

Federal Contacts for Additional Information

Department of the Interior- Bureau of Indian Affairs
Office of Public Affairs
1849 C Street, NW
Washington, DC 20240-0001
Office: 202-208-3711
Fax: 202-501-1516

National Association of Tribal Historic Preservation Officers
1411 K Street NW, Suite 700
Washington, DC 20005
Phone: 202-628-8476
Fax: 202-628-2241

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

State Contacts for Additional Information
A listing of local Tribal Leaders and Bureau of Indian Affairs Representatives can be found at:
http://www.doi.gov/bia/areas/agency.html

Eastern Area Office, Bureau of Indian Affairs
3701 N. Fairfax Drive Mail Stop 260-VASQ
Arlington, VA 22203
703-235-2571

**Scenic Trails**

Government Records Searched in This Report
APPAL_TRAIL: Appalachian Trail
Source: Appalachian Trail Conference
Telephone: (304) 535-6331
Appalachian Trail centerline.

State Contacts for Additional Information
Appalachian Trail Conference
799 Washington Street P.O. Box 807
Harpers Ferry, WV 25425-0807
(304) 535-6331

North County Trail Association
49 Monroe Center Suite 200B
Grand Rapids, Michigan 49503
616-454-5506

**FLOOD PLAIN, WETLANDS AND COASTAL ZONE**

**Flood Plain Management**
Government Records Searched in This Report
Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

Federal Contacts for Additional Information
Federal Emergency Management Agency 877-3362-627

State Contacts for Additional Information
New York State Emergency Management Office 518-457-2200

**Wetlands Protection**
Government Records Searched in This Report
NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2004 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Freshwater Wetlands
Source: Department of Environmental Conservation
Telephone: 518-402-8961

Federal Contacts for Additional Information
Fish & Wildlife Service 813-570-5412

State Contacts for Additional Information
Dept. of Environmental Conservation 518-457-5690

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

**Coastal Zone Management**

Government Records Searched in This Report

CAMA Management Areas
Dept. of Env., Health & Natural Resources
919-733-2293

Federal Contacts for Additional Information

Office of Ocean and Coastal Resource Management
N/ORM, SSMC4
1305 East-West Highway
Silver Spring, Maryland 20910
301-713-3102

State Contacts for Additional Information

Dept of State, Div. Of Coastal Resources & Waterfront Revitalization 518-474-3643

**FCC & FAA SITES MAP**

For NEPA actions that come under the authority of the FCC, the FCC requires evaluation of Antenna towers and/or supporting structures that are to be equipped with high intensity white lights which are to be located in residential neighborhoods, as defined by the applicable zoning law.

Government Records Searched in This Report

**Cellular**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**4G Cellular**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**Antenna Structure Registration**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**Towers**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**AM Antenna**

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

# KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

**FM Antenna**
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554
888-225-5322

**FAA Digital Obstacle File**
Federal Aviation Administration (FAA)
1305 East-West Highway, Station 5631
Silver Sprinng, MD 20910-3281
Telephone: 301-713-2817
Describes known obstacles of interest to aviation users in the US. Used by the Federal Aviation Administration (FAA) and the National Oceanic and Atmospheric Administration to manage the National Airspace System.

**Airport Landing Facilities**
Federal Aviation Administration
Telephone (800) 457-6656
Private and public use landing facilities.

**Electric Power Transmission Line Data**
Rextag Strategies Corp.
14405 Walters Road, Suite 510
Houston, TX 77014
281-769-2247
U.S. Electric Transmission and Power Plants systems Digital GIS Data.

**Excessive Radio Frequency Emission**
For NEPA actions that come under the authority of the FCC, Commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities, require the determination of whether the particular facility, operation or transmitter would cause human exposure to levels of radio frequency in excess of certain limits.

Federal Contacts for Additional Information
Office of Engineering and Technology
Federal Communications Commission
445 12th Street SW
Washington, DC 20554
Phone: 202-418-2470

**OTHER CONTACT SOURCES**

**STREET AND ADDRESS INFORMATION**

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KayVer Group, Inc.
80 Linden Avenue, Buffalo, New York 14214 716-838-6302 Fax 716-838-0138

4922-F

# Transaction Screen
# Environmental Site Assessment
# Eastport Commerce Center
# Lancaster, New York

Prepared for:

First Niagara Bank
6950 South Transit Road
Lockport, New York 14095

Prepared by:

KayVer Group, Inc.
80 Linden Avenue
Buffalo, New York 14214

December 2002

KayVer Group, Inc.
80 Linden Avenue, Buffalo, New York 14214 716-838-6302 Fax 716-838-0138

December 19, 2002

Mr. Paul Taylor, Commercial Lending
First Niagara Bank
6950 South Transit Road
Lockport, New York 14095

Dear Mr. Taylor:

RE: Eastport Commerce Center, Lancaster
Transaction Screen Environmental Site Assessment

Enclosed you will find two copies of the Environmental Site Assessment report for the 128-acre property at Walden Avenue and Pavement Road, Lancaster, New York. After you have read it, please call me with any questions you may have. Thank you for allowing KayVer Group to assist you in this matter.

Very truly yours,

Sean T. Irwin

Sean T. Irwin
President

STI/mcs
Enclosures

## Table of Contents


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Figures

1. Site Survey

Appendices

1. Owner and Preparer Questionnaire
2. Environmental Data Record Search
3. Sanborn Maps
4. Site Condition Report

## 1.00 Findings and Conclusions

KayVer Group, Inc., has performed an Environmental Site Assessment: Transaction Screen of the Subject Property, 128 acres known as Eastport Commerce Center bound by Walden Avenue, Pavement Road and Pleasant View Drive, Lancaster, New York, in accordance with the ASTM (American Society For Testing And Materials) Standard E-1528-00. Based on the site inspection and information review no environmental concerns associated with potential present or past hazardous substances or petroleum product contamination of the property, no "Recognized Environmental Conditions" as defined by ASTM, were identified. No further inquiry into recognized environmental conditions at the property is needed for purposes of appropriate inquiry.

This assessment has been performed by Sean T. Irwin.

Attested to:

Sean T. Irwin, President

KayVer Group, Inc.

Date: December 19, 2002

1/2/02

## 2.00 Introduction and Background

KayVer Group, Inc., was retained by First Niagara Bank to perform an E-1528-00 ASTM Environmental Site Assessment Transaction Screen of the Subject Property, 128 acres known as Eastport Commerce Center, Lancaster, Erie County, New York. This report has been prepared for the exclusive benefit of First Niagara Bank, its affiliates, and the bank customer.

This Environmental Site Assessment has been performed in accordance with the American Society for Testing and Materials (ASTM) "E 1528-00 Standard Practice for Environmental Site Assessments, Transaction Screen Process."

The purpose of this scope of service is to assess this parcel of commercial real estate with respect to the range of contamination within the scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products. The goal of the process is to identify recognized environmental conditions. The term "recognized environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

The scope of this examination included:

- a review of fire insurance maps or consultation with the local fire inspector's office;
- interview with the property owner, completion of the questionnaire;
- a site inspection; and
- submittal of this written report with findings.

**Exceptions/Deletions/Limitations to this report:**

At the time of the site inspection there was a foot of snow cover over the site. Some areas of the site are covered with thick vegetation. KayVer's observations of the site were limited by these factors.

## 3.00 Site Description

The subject property, Eastport Commerce Center, Lancaster, Erie County, is approximately 128 acres in size. The property is developed only with a new roadway crossing the site, some utilities and an old farmhouse and barn. The new roadway has recently been installed to service the proposed industrial park. The farmhouse and barn at 502 Pavement Road are slated for immediate demolition. The property is identified on the site location map presented as Figure 1.

## 4.00 Historical Information

### 4.1 Site Descriptive Chain-of-Use

The history of the property was garnered from reviewing the two Phase I reports prepared by LCS, Inc., dated May 19 and May 24, 2000. The two reports were prepared for a 46.4-acre site with the address of 4106 Walden Avenue and an 81.69-acre site with the address of 502 Pavement Road, Lancaster. The only known use of the property has been as farmland.

### 4.2 Sanborn Fire Insurance Maps

A search for Sanborn Fire Maps was performed by EDR. EDR has reported that there is no coverage for the Subject Property.

### 4.3 Municipal Records

KayVer reviewed the Municipal records at the Building Inspector's Office. There are no records of mishap or code violations for the subject property. There are no records of tanks for the subject property.

### 4.4 Prior Environmental Reports

LCS, Inc., prepared Phase I Environmental Site Assessment reports of the site in May 2000.

Vacant Land
4106 Walden Avenue
Lancaster, New York
May 24, 2000

Vacant Farmstead
502 Pavement Road
Lancaster, New York
May 19, 2000

The conclusions of the earlier reports were that for the Walden Avenue parcel "there was no evidence observed that would indicate the presence or likely presence of a release or threatened release of hazardous, toxic, or other substances of concern. However, debris, including residential appliances, was noted near the northwest corner of the subject property". For the 502 Pavement Road parcel: "This assessment has revealed no evidence of recognized environmental conditions in connection with the subject property except for the following.

- Debris, including miscellaneous containers of oils, paints, etc., were noted within the barn and the basement of the residence; and
- LCS anticipates that a private septic system remains in-place on the subject property (location unknown).

The debris at the northwest area of the site was not observed by KayVer. There presently is a newly constructed storm water detention pond at the northwest area of the site. The debris has apparently been removed. No containers of paints, oils, etc., were observed at the farmhouse and barn. It is believed by KayVer that these items must have been previously removed to make way for the demolition of the barn and house.

## 5.00 Site Inspection

KayVer performed the site inspection on December 16, 2002. Mr. Sean T. Irwin, KayVer Group, Inc., performed the site inspection. A site inspection report is attached. No recognized environmental conditions as defined by ASTM were observed.

At the time of the site inspection there was a foot of snow cover over the site. Some areas of the site are covered with thick vegetation. KayVer's observations of the site were limited for these reasons.

At the time of the inspection a farmhouse, barn and shed were present along Pavement Road. These structures are scheduled for demolition. No other structures were present on site. The piles of debris in the NW section of the site as identified by LCS during their Phase I report dated May 2000 were not observed by KayVer. A new stormwater detention pond now occupies the area. It is assumed by KayVer that the debris has since been removed by

Uniland.

An access road and some utilities have been installed through the site in the past year.

## 6.00 Regulatory Information

A data search has been performed by EDR as part of this assessment. The database search was performed in accordance with the requirements of the ASTM Standard. Due to the size of the site, a ¼-mile was added to the search distance. A summary of the data search plottable sites follows. A copy of the data record search can be found as Appendix 2. The subject property is not a listed site. Adjacent properties across Walden Avenue and Pavement Road are identified as listed but are not believed to have a significant impact on the subject property. KayVer Group, Inc., believes none of the registered mapped or unplottable sites reported by EDR significantly affect the environmental condition of the subject property.

RCRIS Hazardous Waste Generators Sites

EDR has identified four sites as small generators of hazardous waste. The four sites, across Walden Avenue and Pavement Road are not believed to significantly impact the Subject Property.

Solid Waste Landfill & Hazardous substance Disposal Sites

Lancaster Reclamation, at 403 Pavement Road, is located approximately a ½ mile to the south. This site is also a listed Hazardous Substance Waste Disposal Site. Based on distance and geology, this site is not believed to significantly impact the subject property.

Leaking Underground Storage Tank Sites

There is one listing as a registered site as having had leaking underground storage tanks (LUST) within a half mile of the subject property. The site, 4085 Walden Avenue, is listed as located at greater than an 1/8$^{th}$ mile away from the Subject Property. The site file has been closed. There is no indication this site impacted the subject property.

New York Spills

There are six listed sites within an eighth mile of the subject property as having had spills. Three of the spills were traffic accidents. The remaining three occurred at facilities across Walden Avenue at FBC Chemical, Try-It Distributing and American Sales. There is no record that these spills significantly impacted the subject site.

## Storage Tank Sites

There are six sites listed as having either aboveground or below ground bulk storage tanks within a ¼ mile of the Subject Property. The Subject Property is not listed. No contiguous sites are identified. None of the listed sites are believed by KayVer to have a significant impact on the Subject Property.

## 7.00 Interviews

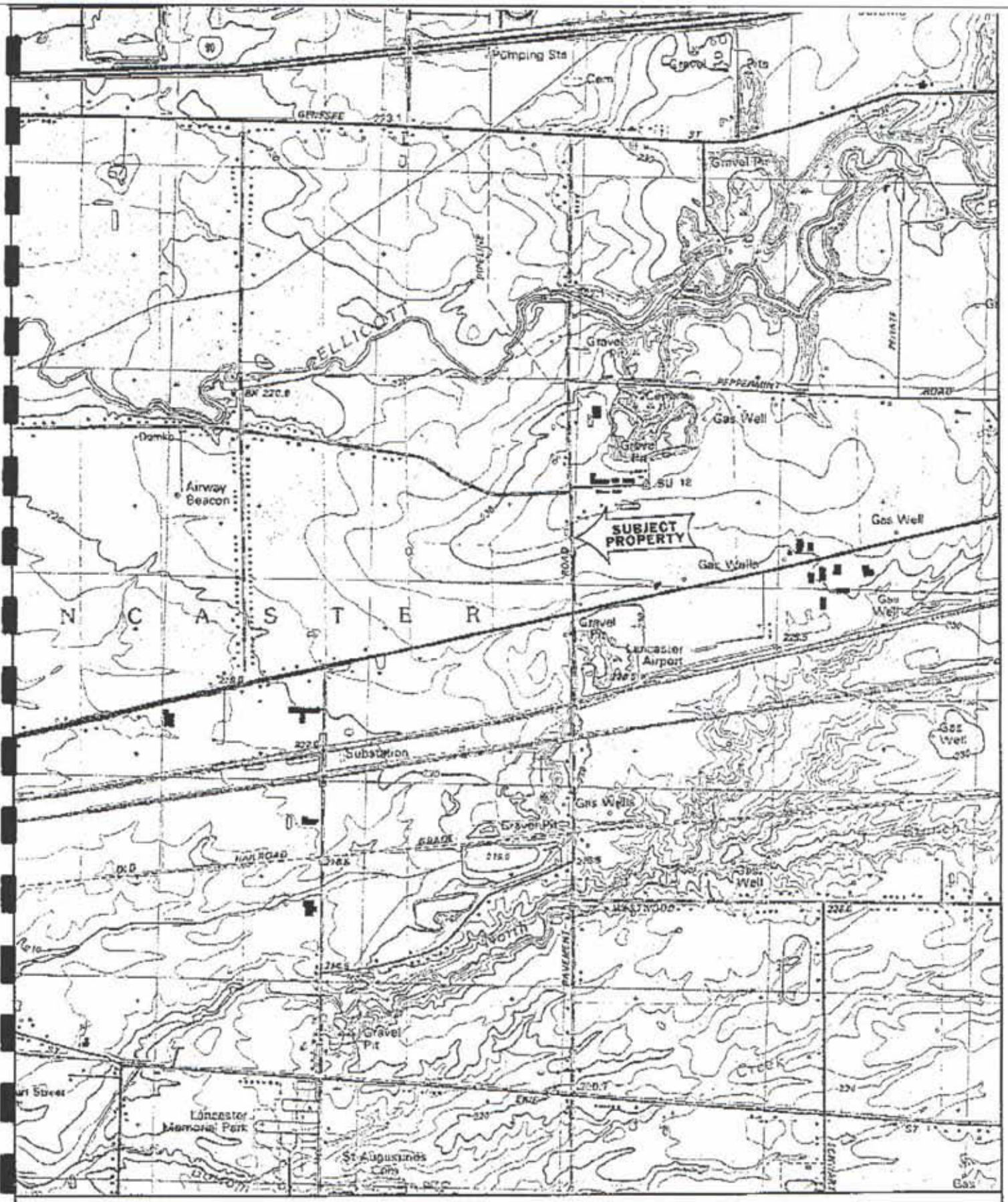
### 7.1 Owners, Operators

The following representatives were interviewed:

Mr. Robert Cook, property owner representative, has completed an environmental questionnaire during the Transaction Screen environmental site assessment process. Mr. Cook represents he is not aware of any hazardous or petroleum contamination of or at the property, past or present. Mr. Cook is not aware of any tanks, aboveground or below ground, past or present. Refer to the questionnaire completed by Mr. Cook.

### 7.2 Governmental Agency Representatives

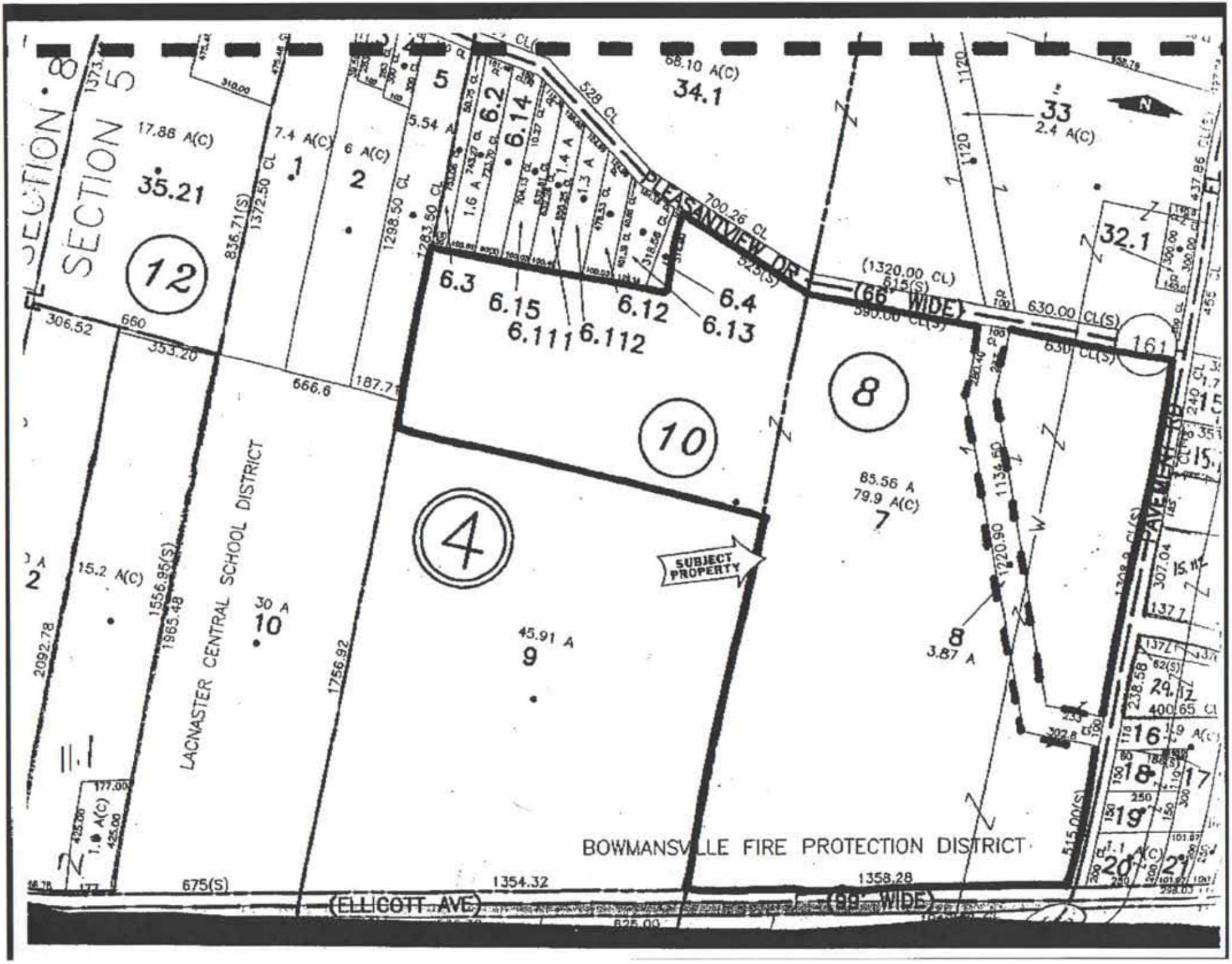
KayVer reviewed the files at the commercial building inspector and code enforcement office, Town of Lancaster. No records of environmental impairment for the property were discovered. No concern of environmental contamination was discovered.

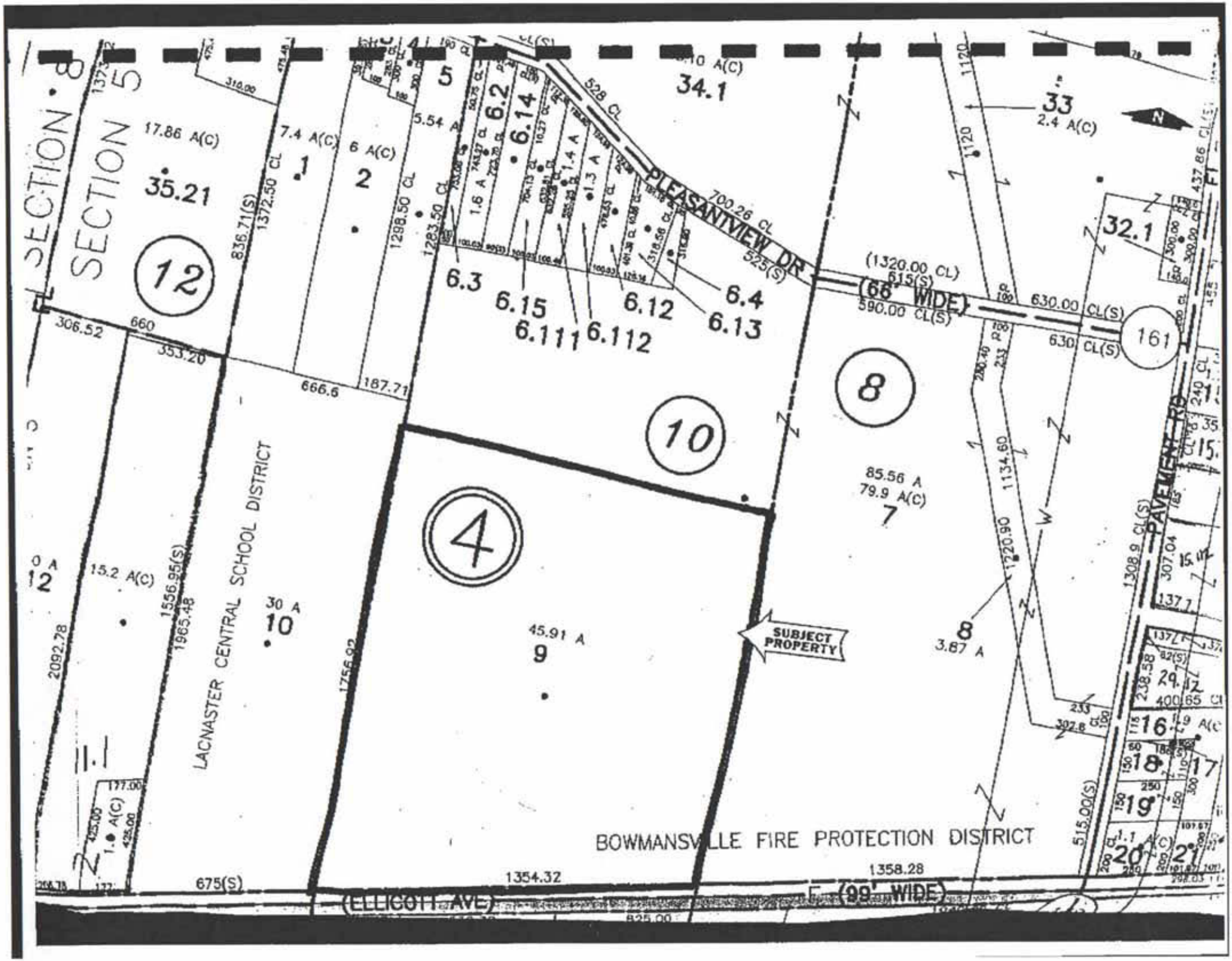



Name: LANCASTER
Date: 5/12/100
Scale: 1 inch equals 2000 feet

Location: 042° 55' 26.5" N 078° 37' 37.4" W
Caption: 1982

Copyright (C) 1997, Maptech, Inc.


SECTION 8
SECTION 5
PLEASANTVIEW DR
(66' WIDE)
(ELLICOTT AVE)
(99' WIDE)
LACNASTER CENTRAL SCHOOL DISTRICT
BOWMANSVILLE FIRE PROTECTION DISTRICT
SUBJECT PROPERTY
PAVEMENT
N
12
10
4
8
161
6.2
6.14
6.3
6.15
6.111
6.112
6.12
6.13
6.4
34.1
33
32.1
35.21
17.86 A(C)
7.4 A(C)
6 A(C)
5.54 A
68.10 A(C)
2.4 A(C)
85.56 A
79.9 A(C)
45.91 A
3.87 A
15.2 A(C)
1.1 A(C)
528 CL
700.26 CL
525(S)
(1320.00 CL)
615(S)
590.00 CL(S)
630.00 CL(S)
630 CL(S)
306.52
660
353.20
666.6
187.71
1283.50 CL
1298.50 CL
836.71(S)
1372.50 CL
1556.95(S)
1965.48
2092.78
1756.92
1220.90
1134.50
675(S)
1354.32
1358.28
825.00
515.00(S)
437.86 CL(S)
455 CL
240 CL
307.04
238.58
400.65 CL
62(S)
137.7
177.00
425.00
16
18
17
19
20
21


SECTION 8
SECTION 5
PLEASANTVIEW DR
(66' WIDE)
(ELLICOTT AVE)
(99' WIDE)
PAVEMENT RD
LACNASTER CENTRAL SCHOOL DISTRICT
BOWMANSVILLE FIRE PROTECTION DISTRICT
SUBJECT PROPERTY
12
10
4
8
161
35.21
17.86 A(C)
7.4 A(C)
6 A(C)
5.54 A
6.2
6.14
34.1
33
2.4 A(C)
32.1
6.3
6.15
6.111
6.112
6.12
6.13
6.4
85.56 A
79.9 A(C)
7
45.91 A
9
3.87 A
15.2 A(C)
30 A
10
12
1.0 A(C)
1.1 A(C)
16
17
18
19
20
21
528 CL
700.26 CL
525(S)
(1320.00 CL)
615(S)
590.00 CL(S)
630.00 CL(S)
630 CL(S)
306.52
660
353.20
666.6
187.71
836.71(S)
1372.50 CL
1298.50 CL
1283.50 CL
1556.95(S)
1965.48
2092.78
1756.92
1134.60
1220.90
1308.9 CL(S)
515.00(S)
675(S)
1354.32
1358.28
825.00

October 27, 2000 Job No: 00-572

Uniland Construction Corporation
University Corporate Centre
100 Corporate Parkway
Amherst, New York 14226

ATTN: Mr. Brian Cook

RE: Subsurface Explorations and
Geotechnical Engineering Report for
Proposed Walden Commerce Center
4106 Walden Ave. and 502 Pavement Road
Town of Lancaster, Erie County, New York
(P.O. No. 06384)

Gentlemen:

This report presents the findings of the subsurface investigation program and geotechnical engineering recommendations for the above referenced project. The geographic orientation of the project site is illustrated on the U.S. Geologic Survey (USGS) site location map in Figure No. 1. The project site is illustrated in Figure No. 2, entitled "Test Boring Location Plan", which includes: approximate locations of the eight test borings that were advanced by Buffalo Drilling Company, Inc. (BDC) on October 6 to 17, 2000; ground surface elevations; and additional site details.

## EXPLORATION METHODS

Sampling Method: A track-mounted Diedrich D-50 rotary drill rig was used to drill eight test borings to depths of approximately 30 to 40 feet below the ground surface by using 2-1/4 inch inside diameter (ID), continuous flight hollow stem augers. Soil samples were recovered by driving a standard split-spoon sampler (2-foot long by 1-3/8 inch inside diameter) 24 inches with a 140-pound hammer falling 30 inches per blow (ASTM D1586). The number of blows from six to 18 inches of penetration is defined as the Standard Penetration Test (SPT) N-value. Auger refusal, or inferred top of competent bedrock, was not encountered at any of the boring locations during the subsurface exploration operations. Spoon refusal was encountered and is believed to reflect a boulder and cobble-laden formation.

Classification: The soil samples were initially logged in the field by the driller, and a portion of each soil sample was placed and sealed in a glass jar. The boring logs, which are included in Appendix A, were

based upon the driller's log and a second visual classification of recovered soil samples in the laboratory by a geologist. Classification of soil samples, as noted on the boring logs, is based on the Unified Soil Classification System (USCS). Refer to Appendix B entitled, "Geotechnical Reference Standards", for an explanation of the terminology that is used for soil and rock descriptions.

Laboratory Testing: Laboratory soil testing was undertaken on several retrieved split spoon samples. The overall laboratory soil-testing program consisted of the following test methods:

| | |
|---|---|
| • Particle Size Analysis of Soils | ASTM D422 |
| • Water (Moisture) Content of Soil | ASTM D2216 |
| • Moisture, Ash and Organic Matter of Peat and Other Organic Soils | ASTM D2974 |
| • Liquid Limit, Plastic Limit, and Plasticity Index of Soils | ASTM D4318 |

Table No. 1 presents the tabulated results of the physical/soil index properties. The associated graphical illustrations of the data are included in Appendix C.

## SITE AND SUBSURFACE CONDITIONS

General: The project site is located on essentially undeveloped land and is addressed as 4106 Walden Avenue and 502 Pavement Road in the Town of Lancaster, New York. The project site is at the northwestern corner of the intersection of Pavement Road and Walden Avenue. Pleasantview Road borders most of the north property line of the project site. The proposed development area slopes downward from the northeast to the southwestern and northwestern boundaries of the site. The proposed building locations and types are unknown.

The site for the proposed buildings is currently tree and brush covered in the southwestern quadrant of the site and grass covered for the remainder of the site. As shown in Figure No. 2, a residence and wood-framed barn exist along Pavement Road near the northeastern corner of the property. A 65 ± foot wide sanitary/storm sewer easement also traverses the northeastern quadrant of the site and runs in a northwest-southeast direction.

Subsurface Soil Conditions: In general, subsurface conditions, underlying a thin topsoil veneer, consist a naturally deposited cohesive and granular glacial till soils. The topsoil thickness varied, across the site, from three to six inches with four inches being a reasonable average.

Beneath the topsoil, a naturally deposited cohesive glacial till layer exists and extends from 17.5 to 30 feet below the ground surface. The 30-foot depth is the full depth drilled at boring locations B-1, B-6 and B-8, along the western and southwestern parts of the site. Note that no cohesive glacial till exists at boring B-3 in the northeastern corner of the site. This cohesive unit consists of a clay-silt with lesser

boring B-3 in the northeastern corner of the site. This cohesive unit consists of a clay-silt with lesser amounts of sand and trace amounts of gravel. An isolated stiff, silty clay lense exists at a 27.5 to 35 foot depth at boring B-2. The stiffness of the clay-silt unit increased from a generally medium stiff (in the upper two feet of this unit) to a very stiff and then to a generally hard condition with increasing depth. A very stiff condition was noted to exist within a 13 to 27.5 foot depth range at boring B-2. The plasticity of the clay-silt ranged from slightly plastic to moderately plastic. The moisture content was generally moist throughout the depth of this unit, but was in a wet state at boring B-7 in the southeastern corner of the site.

A naturally deposited granular glacial till layer exists beneath the topsoil at boring B-3, in the northeastern corner of the site, and beneath the cohesive till unit at borings B-2, B-4, B-5 and B-7, in the central segment of the site. This unit extends the full depth drilled at these boring locations. Boring B-3 is also noted to be at the topographically high point on the project site. The lateral extent and available volume of this granular deposit, as a potential on-site borrow source, is indeterminate with the limited number of test borings. The top of this granular unit slopes downward from the northeastern corner to the southwestern part of the site and roughly parallels the ground surface. This granular unit consists of a fine to coarse grained sand with varying amounts of silt and gravel. At boring B-3 in the northeastern corner of the site, the relative density of the granular unit was in a loose state to a depth of four feet and increased to a medium dense state at four to six feet below the ground surface. With increasing depth, a dense to very dense condition existed in the granular till unit at boring B-3 and at borings B-2, B-4, B-5 and B-7. The moisture content was generally moist throughout the depth of this unit at boring B-3, but was in a wet to saturated state at borings B-2, B-4, B-5 and B-7.

Spoon refusal (i.e., N-values of 50+ to 100+) was encountered within the glacial till units at several of the boring locations and is believed to reflect a boulder/cobble condition. The ability to auger, with the drill rig, into these units suggests that the cobbles-boulders can be removed with conventional excavating equipment (i.e., backhoes, excavators, caisson/drilled pier drill rigs).

Bedrock: N-values of 100+ and auger refusal, which are generally inferred to be top of competent bedrock, were not encountered at any of the boring locations during subsurface explorations. Based upon the local geology, the underlying bedrock in this area of Lancaster, New York is believed to be the Otaka Creek Shale member of the Hamilton Group.

Groundwater: Groundwater was encountered at some of the test borings during subsurface explorations. From the topographically high to low points across the site, the measured groundwater depths/elevations within the boreholes are as follows:

| Boring No. | Ground Surface Elevation (feet) | Depth to Groundwater (feet) | Groundwater Elevation (feet) | Soil Unit |
|---|---|---|---|---|
| B-4 | 764.4 | 34 | 730.4 | Silty Sand |
| B-5 | 753.5 | 15 | 738.5 | Silty Sand |
| B-7 | 746.2 | 19 | 727.2 | Gravelly Sand |

Borings B-5 and B-7 both have artesian groundwater conditions; that is, groundwater levels were higher than the elevation of the top of the granular till unit. At boring B-2, wet soil conditions were also noted to exist at a depth of approximately 35 feet below the ground surface (elevation of 724.7 feet). The topographically high point at boring B-3 in the granular glacial till did not reveal a static groundwater level. This condition at boring B-3 may be attributable to the very compact glacial till formation and the high termination elevation of the test boring, relative to the down-gradient boreholes. Borings B-1, B-6, and B-8 were terminated in the cohesive glacial till and no groundwater was present within these boreholes. All of the open boreholes have since collapsed; which precluded subsequent determinations of a static groundwater level.

The regional groundwater flow direction is expected to be from the northeast to the southwest. Groundwater beneath the site is supplied by infiltrating surface water and ponded water at topographically higher points, such as the northeastern corner of the site and to the northeast of the project site. The water filled gravel pits in Figure No. 1 illustrate this point. The above groundwater measurement data suggests that, upon a breech of the lower hard cohesive glacial till unit, a potential artesian groundwater condition will exist within the underlying granular till unit over portions of the site. For proposed structures with or without recessed loading docks, potential artesian groundwater conditions may be, but is not necessarily, a concern in the more vulnerable northeastern quadrant of the site. The seasonally high, static groundwater level in the till deposit is indeterminate at this point.

The groundwater data acquisition program in this current investigation is cursory, given the method of measurement and the textural and extremely compact characteristics of the glacial till units. Groundwater levels and their fluctuations, across the project site, are more aptly defined in a properly designed and implemented system of groundwater observation wells.

Note that groundwater readings were taken at completion of drilling efforts and, therefore, an adequate amount of time for the groundwater level to recharge to static conditions was probably not allowed. Fluctuations in the groundwater level may occur due to other factors than those present during field operations.

## FOUNDATION DESIGN AND CONSTRUCTION RECOMMENDATIONS

General: This section will present and discuss recommendations on foundation design and construction, and the net allowable soil bearing capacity.

Site Conditions: Detailed topographic information was, but final site grades were not, available during the preparation of this report. On-site observations at the test boring locations identified a ground surface that generally slopes downward from the northeastern to the southwestern parts of the site. The ground surface is expected to vary by two or more feet across each of the proposed building footprints.

As shown in Figure No. 2, the proposed site for development is currently unoccupied by any structures, except for a residence and barn along the northern section of Pavement Road. The proposed building locations are presumably at or near the locations of the test borings B-1 to B-8. No structures are believed to exist within the footprints of the proposed buildings. Note that a sanitary/storm sewer line (easement) is located in the northeastern quadrant of the site and may lie within the proposed building footprint(s). This utility line would either be relocated or structurally isolated/reinforced in order to accommodate the proposed building loading conditions. Pipe sleeves may surround the existing lines and/or the proposed foundation may be constructed within a thickened foundation element.

In general, the overall project site for development is noted to consist of predominately grassed and/or heavily vegetated (in the southwestern quadrant of the site) areas. No marshy or wetland areas exist on the site.

There are the two aforementioned existing structures that would presumably be demolished immediately. Since cavities (from the footings, foundation walls, basements, and tanks, as encountered) would remain, backfilling in compacted lifts with several feet of controlled select granular fill, such as a number two crusher run stone, or with suitable stripped and approved on-site granular fill material is required.

The finish floor elevations have not been provided. It is assumed that the existing elevations of the site will change substantially for the proposed construction. Stripping and grubbing is needed to remove the tree and brush rooted areas and the topsoil layer, since these materials are unsuitable beneath the building pad and pavement and pavement/roadway areas. The northeastern quadrant of the site is a potential borrow source for raising the elevation in the southern and western areas of the site. A granular glacial till is present at this location, but the lateral and vertical extent must be determined.

For the most part, the site, in whole or in part, has historically believed to have been used as it exists today. It is unknown if any former residential/commercial structures, which presumably had basements,

existed on the project site. It is unknown if any former footings and foundation walls may be buried at the proposed site.

It is unknown if any former septic tanks/sewerage substructures, other sanitary holding tanks, or other tanks are buried at the proposed site. The septic tank/sewerage substructure locations and the abandonment conditions or practices are normally unknown. If encountered during site development, it is recommended that the septic tank/sewerage substructures or other tank types should be properly removed under the applicable local and state regulations. The remaining cavities should be backfilled with select granular fill, such as a number two crusher run stone or with suitable stripped or imported and approved granular fill material, which is placed in compacted lifts. Otherwise, with the septic tank/sewerage substructure or other tank types, which remain in-place, there is a potential for subsurface subsidence to create a surface depression. Leaving the leach field in-place or removal of the leach field must be evaluated upon exposure. If acceptable for use in-place, it is recommended that the granular bedding material is to be thoroughly compacted.

Site Preparation and Earthwork: General site preparation will include the demolition and complete removal of any encountered foundations and floor slabs, and removing all unsuitable surficial material (i.e., asphalt pavement, concrete, brick, expansive slag, organic or topsoil layer, and construction and demolition-like fill) to a depth where firm, granular or cohesive fills or naturally occurring soils are encountered. It is recommended, particularly in the location of the proposed buildings, that any slag and/or cinder/ash containing material, if encountered, should be tested to determine the expansion and corrosion characteristics (where applicable for direct or potential contact with foundation elements and buried utilities) of these materials prior to their use on-site. Any rubble-like and brick fill, boulders, or wood fill in particular, if encountered, will require undercutting.

Following the stripping of unsuitable material, proofrolling areas of proposed use with a fully loaded ten-wheel dump truck, to the extent practical, is recommended to determine the presence of soft and severely disturbed zones. All soft and disturbed zones should be undercut and stabilized with select granular fill, such as a number two crusher run stone or locally available imported and approved granular fill, or with suitable stripped and approved granular fill material, that does appear to be available in a limited quantity. These granular fills are to be placed in compacted lifts prior to fill placement above this grade. The New York State Department of Transportation (NYSDOT) specification numbers for typical select granular fill are Item No. 304.03, Subbase Course, Type 2 (< 2 inch maximum) which is preferred, or Item No. 304.05, Subbase Course, Type 4 (< 2 inch maximum). Pockets of soft and disturbed soils that are discovered will require undercutting to minimize the long-term subsidence/settlement at these locations.

As previously stated, excavation beneath the building pad and pavement areas would be needed to remove the topsoil and root zones, as well as any encountered organic-laden silt/clay soils. The remaining (upper two feet of) clay-silt soil is suitable as a subgrade soil, if it is or can be properly dried, blended and compacted. The very stiff to hard clay-silt soil, below the upper two feet of clay-silt, is acceptable as a subgrade soil, but must be properly protected from the rain/wet incidents/weather and traffic upon it's exposure. Otherwise, these soils will be rendered unsuitable.

The excavated on-site cohesive soil, that is the moist moderately plastic silt-clay, is preliminary concluded to be acceptable for placement as wall backfill with proper moisture control and placement methods. If the excavated fine-grained/cohesive soils/fills can not be properly conditioned or are in a wet to saturated state, this material is only acceptable for use in green or vegetated areas. The latter case may apply to any of the cohesive till that results from the surfical excavation/stripping of the building pad and pavement/roadway areas. For the most part and based on test results for similar soils, these cohesive natural soils are estimated to be at to wet of optimum moisture content, at the time of this investigation. This soil type may be expected to be suitable with the implementation of uniformly applied soil conditioning methods (i.e., drying and blending), if additional volume of wall backfill soil is needed. These factors should be given consideration in the design and use of excavated soils from the proposed development. Any deposits of buried organic silt and organic clay are also unsuitable for bearing purposes and the excavated material is limited for use in green or vegetated areas. On-site excavated and approvable granular fill is generally expected to be available in a limited quantity at the site (that is, at boring B-3).

In load bearing areas (i.e., beneath asphalt/Portland cement pavement and concrete floor slabs), approved ordinary fill consisting of on-site approved cohesive fill and/or granular fill, as available, or an approved import material is placed in compacted lifts, to more than 90 and 92 percent, respectively, maximum dry density by Modified Proctor Method of Compaction (ASTM D1557), up to the elevation that is required for the placement of the select granular fill for the subbase course. The existing fill materials, if reused on-site, are to be free of any construction-like material (i.e., concrete chunks, brick, wood, etc.), expansive slag, corrosive characteristics (where applicable for foundation elements and buried utilities), organic matter/debris, and rocks/boulders.

Refer to Appendix E entitled "General Earthwork Specification" for definitions of fill types and gradations, recommended minimum compaction requirements for various site developments, and placement and compaction methods. In general, all select granular fills within load bearing areas should be placed in a maximum loose lift thickness not exceeding 12 inches and uniformly compacted to a minimum of 95

percent of the maximum dry density as determined by the Modified Proctor Method of Compaction (ASTM D1557). A geotextile strength and filter fabric (such as, Mirafi 500X or 600X, Typar 3401, Amoco 2002 or 2006, or equal) is recommended to be placed on the prepared subgrade/subbase, if the subgrade conditions consist of sensitive cohesive or silty soil and construction schedules predict wet/rainy weather.

Proposed Buildings: Proposed site development is expected to include several commercial and office buildings and will have an unknown total floor area. The proposed buildings will most likely be constructed with interior and exterior bearing columns, and exterior bearing walls. The total exterior bearing wall and column loads are not expected to exceed eight kips per lineal foot and 100 kips, respectively. Interior column loads are not expected to exceed 200 kips.

Proposed Building Foundation: The foundation system for the proposed structures is recommended to be continuous strip-column footings and individual interior and/or exterior column footings, as needed. For any proposed drive through island or canopy, column footings are recommended.

The exterior and interior footings would be founded directly on the firm/thoroughly compacted natural silt-clay soils, throughout most of the site, and natural gravelly sand soils, in the northeastern corner of the site. It is noted that the footing bearing grade may be raised in the western and southern sections of the site. These latter footings may bear on variably thick layers of thoroughly compacted select or approved, on-site granular fill or approved on-site cohesive fill that is placed on the firm/thoroughly compacted natural soil. The exterior and interior footings would be founded at a depth of two feet or lower below the existing grade, unless this soil is properly conditioned, compacted and approved from this zero to two foot depth. The exterior footings would bear at a depth of four feet or lower below final grade for the proposed buildings. The interior footings would similarly bear on the same conditions as the exterior footings, but at a relative elevation of two and one-half feet or lower below finished floor for the proposed buildings. For proposed basement areas, the exterior and interior footings would bear at two feet or lower below finished floor.

The exterior strip-column footings are suggested to include excavating a foundation trench that is centered about the wall-column centerline and extending to a minimum depth of four feet below final exterior grade for the building walls. The footings for any exterior support structure and any overhead canopy should be constructed similar to that recommended for the adjacent exterior wall. A four foot minimum footing depth (or as required by local or New York State code) is required to provide adequate protection from frost. The interior strip/column footings are recommended to bear at a relative elevation that is two feet higher than the exterior footings. The contact surfaces of the foundation trench bottoms

are to be in a very stiff/very dense state or thoroughly compacted prior to select fill placement, as needed, and subsequent footing construction.

It is strongly recommended that the trench bottom is thoroughly inspected by experienced geotechnical personnel. All trench bottoms which are found to be on soft or in any manner unacceptable material, especially any organic and rubble fill layers, must be undercut to a stable bearing grade. Undercut areas beneath proposed shallow foundations must extend laterally beyond each vertically projected edge of the foundation by a minimum distance equal to one-half the total depth of the undercut or equating to a slope of two vertical to one horizontal. Side slopes of the trench excavation should be one on one (vertical to horizontal distance) or flatter in cohesive soils or one on one and one-half or flatter in the granular materials, as required by OSHA. The undercut shall be backfilled with select granular fill that is placed in loose lifts not exceeding 12 inches deep and compacted to a minimum 95 percent of maximum dry density as determined by ASTM D1557. For the interior footings, select granular fill can be similarly placed and compacted, in the appropriate number of lifts, up to the design bearing elevation for the footing.

It is unknown if sections of foundation walls and footings of the existing or any former buildings are near the same or at a lower relative elevation than the design footing bearing elevations of the proposed buildings. These sections of the proposed buildings will need to be treated as undercut areas, as applicable, for shallow foundation systems (i.e., footings).

Dewatering/Subsurface Drainage: Water must not be allowed to accumulate or pond on exposed foundation bearing grades. Short term dewatering during foundation, building pad and pavement construction may, but is not believed to, be a design concern in the northeastern quadrant of the site; which is due to the presence of the granular glacial till soil and depends on it's excavated depth as a borrow source. Subsurface loading/receiving docks are understood to be included in the proposed development. As such, long term dewatering of the foundation backfill, as is customarily applied in practice for substructure conditions (i.e., basements, loading docks, etc.), will be a design consideration. In these cases as applicable, the dewatering systems would consist of a minimum four-inch diameter drain tile or perforated/slotted pipe with the invert placed near the footing elevation. A six-inch diameter or larger pipe may be required if substantial quantities of groundwater are removed during footing construction. This pipe would be protected by an open/uniformly graded granular backfill filter with a minimum six-inch thickness. The collected groundwater and infiltrated surface water would ultimately be conveyed by gravity drainage to a sump pit(s) and pump(s) or other appropriate storm water conveyance structure (refer to Appendix D for additional details).

Net Allowable Bearing Pressure: The exterior footings are recommended to be founded upon the firm/thoroughly compacted natural silt-clay and gravelly sand soils at two feet or lower below the existing grade, unless these soils are properly conditioned, compacted and approved above this two foot depth. The relative bearing elevation for the exterior footings is four feet or lower below final grade. The interior footings are recommended to bear on the same conditions as the exterior footings, but at two and one-half feet or lower below finish floor. As applicable for any raised grades within the proposed buildings and any encountered underground tanks or septic tanks/sewerage substructure areas, the exterior and interior footings of the proposed buildings would bear on layers of thoroughly compacted select granular or on-site or imported and approved granular or cohesive fill that is placed upon the firm/thoroughly compacted naturally deposited soil layers.

Wall footings should have a minimum two-foot width and column footings should have a minimum three-foot width. Continuous strip/wall footings and individual column footings should be sized for the recommended maximum net allowable bearing pressure of 3,500 pounds per square foot (psf) of footing area. All footings for the same building are recommended to be designed near the same contact pressure. Total and differential settlements of less than one inch and 3/4's inch, respectively, are expected. Refer to the engineering computations, which are included as Appendix D, for additional footing design and construction details.

Additional Foundation Considerations: In addition to the above, the following recommendations will provide additional assurances with regard to proper foundation construction.

a) All fill placed beneath, adjacent, or above foundations must comply with the "General Earthwork Specification", included as Appendix E.

b) Backfill of foundations with approved select granular fill must be completed prior to placement of substantial superstructure loads, except for basement walls or substructure areas that may additionally require superstructure loads and possibly internal bracing.

c) The upper silty materials may rut and "pump" if exposed to excessive surface water and repeated construction traffic. Proper site management and fill placement operations are needed to minimize costly undercuts and subgrade repairs prior to placement of concrete slabs and asphalt pavement. It is noted that construction during wet/rainy and/or Fall and Spring conditions may require added precautions and possibly a thicker subbase layer to maintain a stable subgrade condition.

d) If very stiff/dense/hard soil/approved weathered/sound bedrock is not encountered within the required and/or recommended minimum foundation excavation depth, undercut to the naturally deposited very stiff/dense/hard soil/approved weathered/sound bedrock and backfill with compacted and tested select granular fill.

e) Step footings, if utilized, should have a rise to run ratio of 1:2, with a two-foot maximum rise and a four-foot minimum run between steps or as recommended by the design structural engineer.

Retaining Walls/Structures and Sign Foundations: Retaining walls are not known to be proposed for the current development. Recessed loading docks are expected to be proposed. The proposed structures may also have unbalanced lateral loads on the foundation wall, which is similarly treated as a rigid retaining wall. While not a unique design concern, these retaining wall/loading dock structures or other substructures, if considered, must be adequately designed and constructed to support horizontal soil pressures and surface loads. Refer to Appendix D for recommended soil parameters and loads for walls not exceeding 20 feet high.

Limitations, Field Inspections and Monitoring: This report is based on the preliminary information that is provided by project representatives and the subsurface conditions that were encountered at the test boring locations. As detailed in Appendix F "Limitations", modification regarding proposed building locations and other site developments can result in changes to provided recommendations. It is recommended that the geotechnical engineer be provided the opportunity to generally review the final detailed design and contract specifications. Required earthwork and foundation construction should be done under the supervision of experienced construction personnel and in a manner consistent with proven methods. All site work should be carefully monitored and tested by experienced geotechnical personnel to assure compliance with earthwork and foundation construction specifications.

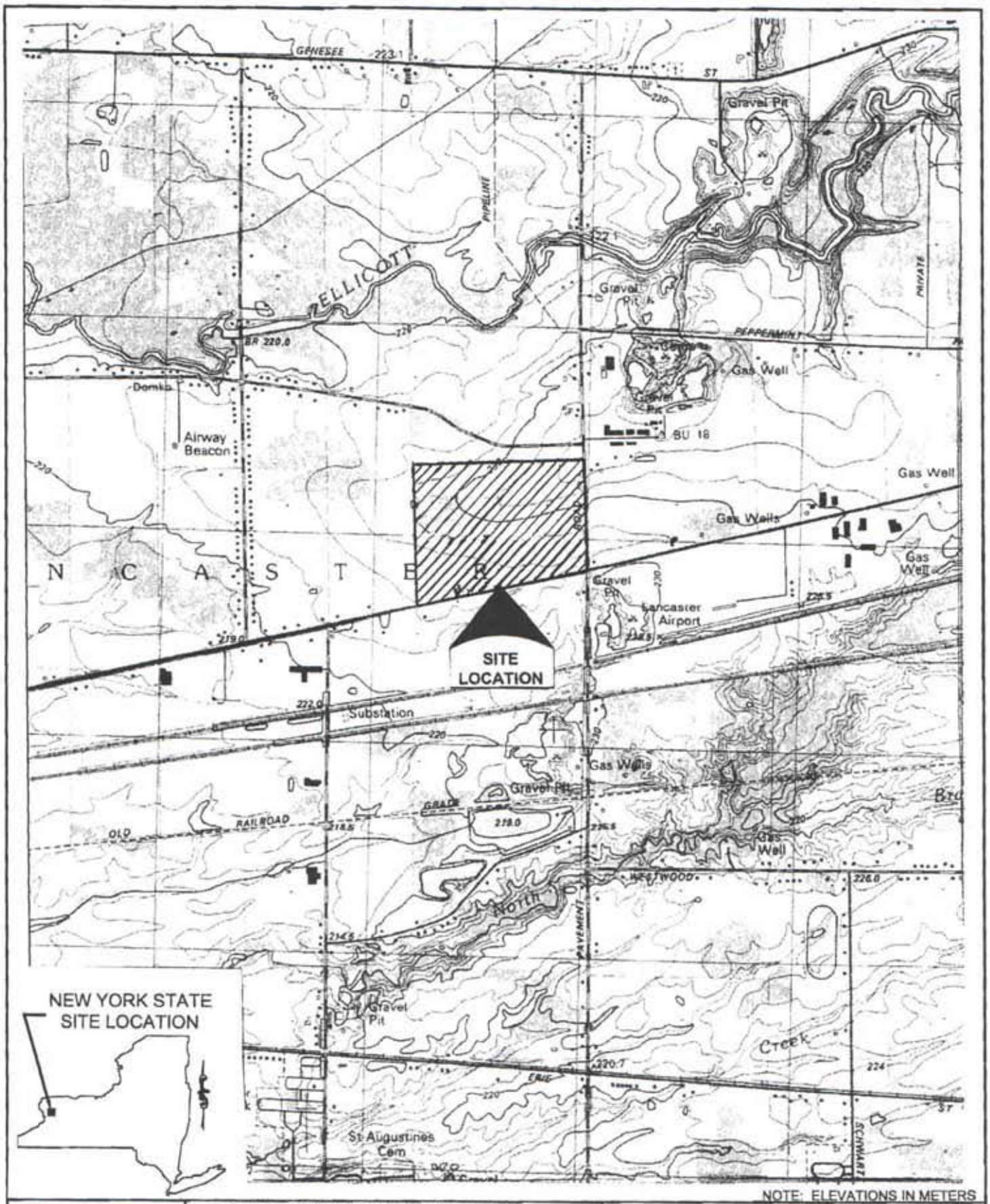
Thank you for the opportunity to assist on this project. If questions should arise, please call the undersigned at your earliest convenience.

Very truly yours,
**BARRON & ASSOCIATES, INC.**
and
**BUFFALO DRILLING COMPANY, INC.**

James S. Barron, P.E.
President

Carmen M. Panuccio
Geotechnical Engineer

cc: Mr. Lowell Dewey, C&S Engineers, Inc. (1 copy)




NOTE: ELEVATIONS IN METERS

| | | |
|---|---|---|
| BARRON & ASSOCIATES, P.C. & BUFFALO DRILLING COMPANY<br>19440 MAIN ST.<br>CLARENCE, NY 14031<br>(716)759-7821<br>FAX (716)759-7523<br>BUFFALO_DRILLING@BUFFALO.COM<br>BARRONANDASSOCIATES@BUFFALO.COM | CLIENT: UNILAND DEVELOPMENT COMPANY<br>UNIVERSITY CORPORATE CENTRE<br>100 CORPORATE PARKWAY<br>AMHERST, NY 14226<br>PROJECT: PROPOSED COMMERCE CENTER<br>4106 WALDEN and 502 PAVEMENT ROAD<br>LANCASTER, NY | USGS SITE LOCATION PLAN<br>LANCASTER NEW YORK QUAD<br>1982 |
| DRAWN: TOM LISZEWSKI | | JOB NO.: 00-572 / SCALE: 1" = 2083'± |
| | | DATE: 10/11/00 / FIGURE NO. 1 |

| LEGEND | |
|---|---|
| B-2 | = TEST BORING & NO. |
| (759.7) | = GROUND SURFACE ELEVATION (FT.) |
| BM-1 | = BENCH MARK (NORTH RIM OF STORM DRAIN INLET) |
| BM-2 & 3 | = BENCH MARK (NORTH RIM OF SANITARY MAN HOLE) |

NOTES:

1. BORING, BUILDING, & PROPERTY LINE LOCATIONS ARE APPROXIMATE.
2. BASE MAP REFERENCE PROVIDED BY MILLARD & MAC KAY LAND SURVEYORS, "TOPOGRAPHICAL SURVEY", SBL NO. 94.00-4-7, DATED 6/9/00.

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DRAWN: DAN KASPROWICZ

CLIENT: UNILAND DEVELOPMENT COMPANY
UNIVERSITY CORPORATE CENTRE
100 CORPORATE PARKWAY
AMHERST, NY 14226

PROJECT: PROPOSED COMMERCE CENTER
4106 WALDEN & 502 PAVEMENT ROAD
LANCASTER, NY

TEST BORING LOCATION PLAN

0 100 200 400

| | |
|---|---|
| JOB NO.: 00-572 | SCALE: 1" = 200'± |
| DATE: 10/10/00 | FIGURE NO. 2 |