Engineers Report

Bomax Drive Apartments

Village of Lansing, New York

May 2016

Prepared for:
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APPENDICES

1.0 INTRODUCTION

The project consists of the development of 140 residential units on 19.46 ± acres of land situated on the south side of Bomax Drive between Warren Road and Nor Way. The tax map identification number of the parcel is 45.1-1-51.12. An aerial image of the site is located in Appendix A.

There will be 14 two-story buildings with 10 residential units each. The development will be privately funded and contain a mixture of high-end one, two, and three bedroom rental units. Site amenities will include a 3,500 ± square foot (sf) clubhouse with a fenced-in pool area. Additionally, a dog park, community garden, 12'x60' regulation bocce court, and walking trail will be provided to grant ample recreational opportunities for residents. A combination of enclosed and open parking spaces will fulfill the off-street parking spaces required by the Village of Lansing. Additionally, a dedicated bus loop will be constructed to provide residents with public transportation and mitigate the traffic impacts of the development on the surrounding road network.

Ample infrastructure is currently in place to support the proposed development.

2.0 EXISTING CONDITIONS

A. Topography/ Drainage

The project site is currently vacant with the majority of the parcel being lightly wooded. The property slopes gently from east to west and drains into an existing unregulated wetland in the southwest corner of the site.

B. Soils

The United States Department of Agriculture (USDA) Soils survey shows the soils within the project limits are Bath and Valois, Erie-Chippewa, and Lanford series, which are in the hydrologic soil classes C and D. These soils are drained to the unregulated wetland on-site. (See Appendix B for soils map and rating table).

C. Federal Wetlands

According to federal wetland mapping there are no federally regulated wetlands within the property boundaries. An unregulated wetland was discovered in the southwest corner of the property during a site visit in April 2016. The project will avoid disturbance to the wetland. (See Appendix B for Federal Wetland Mapping).

D. Floodplains

According to Federal Emergency Management Agency (FEMA) map No. 3616120002A there are no floodplains located on the project site. The FEMA map does not contain any flood plains and, therefore, it is not printed.

E. Archeological Sensitive Areas

The New York State Parks, Recreation and Historic Preservation Department's State Historic Preservation Office (SHPO) archaeological "circle and square map" shows that the project is not located within any archeological or culturally sensitive areas. No further action is required in regard to archaeological investigation. (See Appendix B for SHPO mapping.)

F. NYSDEC Environmental Resources

The New York State Department of Environmental Conservation's (NYSDEC) provides the Environmental Resource Mapper (ERM) online. The ERM is an interactive mapping application used to identify New York State's regulated state wetlands, protected natural resources, and other environmental features. The ERM includes the following information:

- Animals and plants that are rare in New York, including the general locations of those listed as "Endangered" or "Threatened" (updated May 2008)
- Significant natural communities such as: rare or high-quality forests, wetlands, and other habitat types
- New York's streams, rivers, lakes, ponds; and classifications

According to the ERM there are no endangered or threatened animals or plants located in the vicinity of the project. There are no significant natural communities or state regulated wetland. There is a classified water body (intermittent stream) shown on the ERM. However, the ERM does not account for the existing industrial development upstream of the property, which diverted the classified stream. The stream now flows through the project site in a man-made channel and discharges in the southwest corner of the property. The proposed project has been designed to keep the diverted stream in its existing state with little to no disturbance. (See Appendix B for Environmental Resources Map).

3.0 LAND USE & ZONING

The proposal includes the development of approximately 19.46 acres of land currently zoned in the *Business and Technology District* (BTD). In order to allow for the proposed residential use, the parcel will be re-zoned to *High Density Residential* (HDR).

The land uses adjacent to the project vary from multi-family residential to the southeast and northwest, single family residential to the west, and industrial to the east. The property across Bomax Drive is currently vacant and undeveloped. Please refer to Table 3-1 below for the zoning regulations and proposed conditions of the project.

Table 3-1: High Density Residential Zoning Regulations			
Criteria		**Minimum Allowable**	**Proposed**
Setbacks	Front	75 ft	93 ft
	Rear	50 ft	200 ft
	Side	50 ft	50 ft
	Parking	25 ft	55 ft
Maximum Building Height	Principal Building	35 ft	≤35 ft
	Accessory Building	15 ft	≤15 ft
Minimum Parking		1.5 spaces/dwelling unit = 210 spaces	≥210 spaces
Minimum Lot Area		6,000 sf/dwelling unit	6,055 sf/dwelling unit
Maximum Lot Coverage		20%	9%

4.0 UTILITIES

4.1 Sanitary Sewer

The development will be adequately serviced by the existing 8" dedicated sanitary sewer which runs east-westerly along the southern half of the site within a 20' wide easement dedicated to the Village of Lansing.

The anticipated sanitary sewer demands for the project are shown below:

1. Average Daily Loading:

Givens:

- 140 apartment units

Assumptions:

- 2 people/unit
- 110 gallons per day (gpd) of sewage generated per person

$$Average\ Daily\ Loading = \#\ Dwelling\ Units \times People\ Per\ Unit \times Average\ Daily\ Sewage$$

$$Average\ Daily\ Loading = 140\ units \times 2\ \frac{people}{unit} \times 110 \frac{\frac{gal}{day}}{person} = 30{,}800\ gpd$$

2. Peak Daily Loading:

Givens:

- Average daily loading of 30,800 gpd

Assumptions:

- Peaking factor (PF) of 4.0

$$Peak\ Daily\ Loading = Average\ Daily\ Loading \times Peaking\ Factor$$

$$Peak\ Daily\ Loading = 30{,}800\ \frac{gal}{day} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{60\ min} \times 4.0\ = 86\ gpm$$

4.2 Water

Water will be provided for the project by connecting to an existing 8" public water main within the Bomax Drive right-of-way (ROW). Adequate water supply is available from the Bolton Point Water System to supply the project. The static water pressures within the existing public 8"main range from 75 to 80 psi. A private water service to the development will be installed from the existing 8" public main. A combined residential/fire service water meter and backflow preventer will be installed within the proposed clubhouse. The backflow prevention device will conform will all applicable local and state regulations. All facilities after the backflow preventers will be constructed in accordance with the New York State Department of Health (NYSDOH) specifications and American Water Works Association (AWWA) standards.

Private fire hydrants will be constructed off of the proposed private watermain for firefighting. Each of the 14 proposed residential buildings will be serviced with a 2" polyethylene (PE) water service for domestic water supply. Each building will have a fire sprinkler system.

4.3 Gas & Electric

Natural gas and electric services are provided by the New York State Electric and Gas Corporation (NYSEG). A new primary electric line will be extended into the development from either existing power line to the north and south of the site. Due to a moratorium on new natural gas connections

within the Town and Village of Lansing, the development will use propane until the restriction is lifted and natural gas service can be provided by NYSEG.

5.0 TRAFFIC & ACCESS

The Bomax Drive Apartments will be serviced by a single access from Bomax Drive, approximately 1,500 feet to the west of Warren Road.

The morning (AM) and evening (PM) peak hour trips were calculated by using the Institution of Transportation Engineers (ITE) *Trip Generation*, 9th Edition, Land Use 220 (Apartments). The peak-hour trips generated by the project are shown in Table 5-1 below.

Table 5-1: Proposed Trip Generation

Land Use	Trip Generation Equation*		Trips Generated	Entering	Exiting
Apartments	AM Peak	$T = 0.49(X) + 3.73$	72	14 (20%)	58 (80%)
	PM Peak	$T = 0.55(X) + 17.65$	95	62 (65%)	33 (35%)

*T=Trips, X=Number of Dwelling Units=140

As determined in the May 2016 Traffic Impact Study (TIS), the existing transportation infrastructure is adequate to support the 140 apartment units to be constructed at the project on Bomax Drive. The traffic caused by the development on Bomax Drive does not warrant any mitigation at the studied intersections or at the project entrance. This determination is due to the low volume of traffic expected to be generated by the development in comparison to the mature roadway network surrounding the site. The proposed public transportation route servicing the project will also reduce traffic generated from the site. The anticipated traffic from the proposed development will not have a negative impact on the surrounding road network.

The project site is currently zoned in the Business and Technology District (BTD) which permits light industry and manufacturing uses. Based on the BTD zoning requirements set forth by the Village of Lansing, the maximum building coverage of the 19.46 acre parcel is 25%. A development utilizing the maximum permitted 25% building coverage would result in a building with approximately 211,000 square feet of gross floor area (sf GSA). The AM and PM peak hour trips calculated by using the ITE Land Use 110 (General Light Industry) for this theoretical development are shown in Table 5-2 below.

Table 5-2: Light Industrial Trip Generation					
Land Use	Trip Generation Equation*		Trips Generated	Entering	Exiting
General Light Industry	AM Peak	$T = 1.18(X) - 89.78$	160	141 (88%)	19 (12%)
	PM Peak	$T = 1.43(X) - 157.36$	145	17 (12%)	128 (88%)

*T=Trips, X= Total sf GFA/1,000 sf GFA=211 (211,000 sf GFA/1,000 sf GFA)

The development of a light industrial building at the Bomax Drive site would result in nearly 80% more AM/PM peak hour trips in comparison to the proposed apartments. The current proposal has far less impact in terms of traffic.

6.0 LANDSCAPE AND LIGHTING

7.1 Landscaping

The landscaping for the project will include foundation plantings, shade trees, evergreen screening and designated landscape bed areas. The shade trees will complement the open space areas and provide a reduction in the "heat island effect" along parking and road areas. Evergreen trees will be planted along the eastern property border to screen the development from the existing industrial building. Landscaped screening will also be provided around the proposed mechanical building. All of the plants and materials proposed are native and will not have a detrimental impact to the environment.

A site-specific landscaping plan will be prepared by a landscape architect and included in the overall plan set for final review by the Village of Lansing.

7.2 Lighting

The roads within the project will utilize 14-18' tall post top fixtures which are typical of residential neighborhoods. These fixtures will also be LED and dark-sky compliant. Lights will be provided at engineered locations to ensure that safe levels are maintained throughout the project. Light trespass will be mitigated through strategic tree plantings and light fixture placement.

7.0 SUMMARY

Based on site investigation and traffic analysis, the 19.46 ± acres site on the south side of Bomax Drive is adequate to support the proposed 140 residential units. Existing sanitary sewer, municipal water, and electricity are available to service the project. As per discussions with representatives of NYSEG, a moratorium is in place on new natural gas connections. Therefore, the project will be supplied by propane stored on-site until the natural gas moratorium is lifted and a connection is established.

APPENDIX A. AERIAL PHOTO

Not to Scale

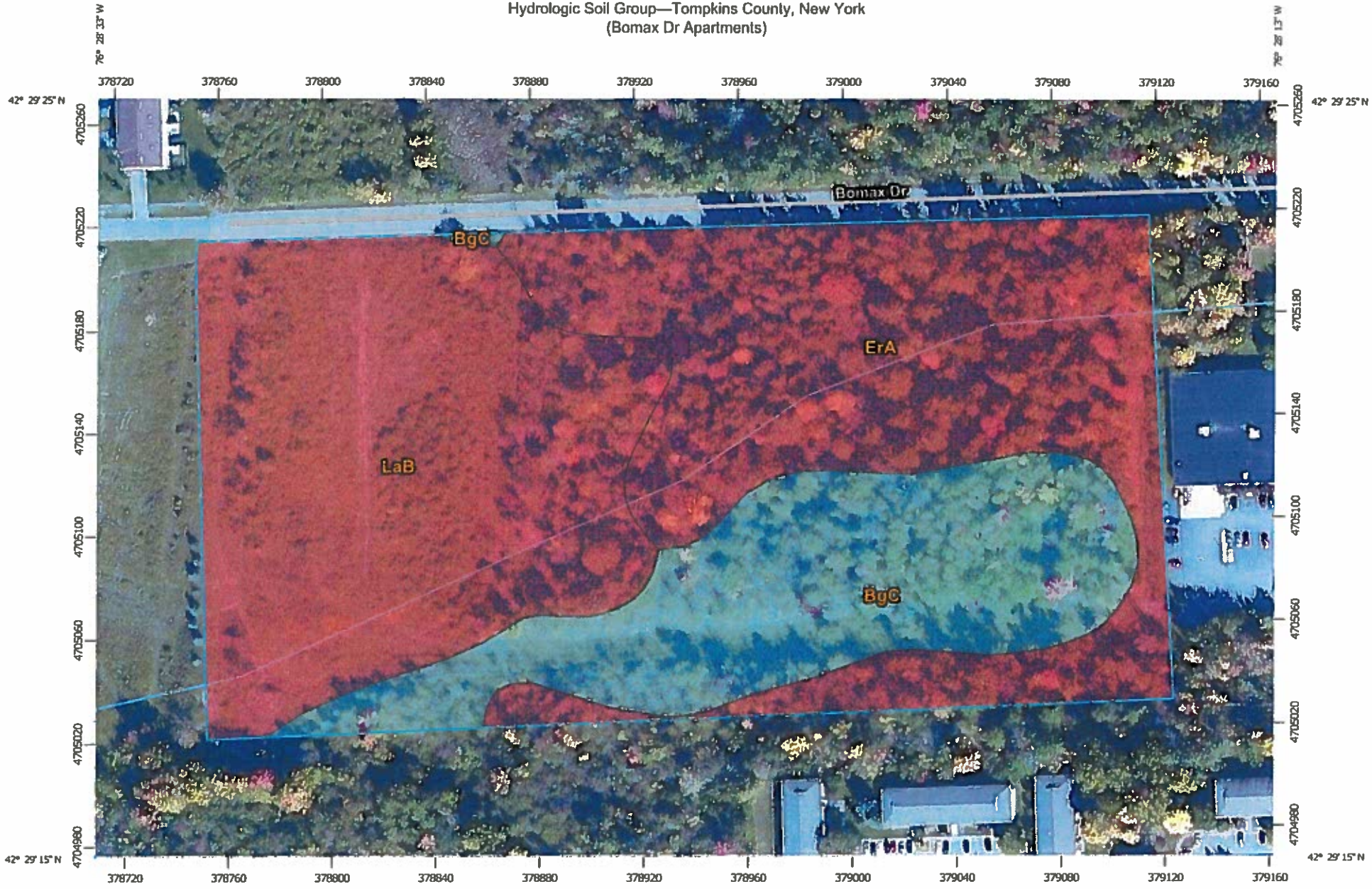
PA

AERIAL PHOTOGRAPH

May 2016

APPENDIX B. EXISTING CONDITIONS

Hydrologic Soil Group—Tompkins County, New York
(Bomax Dr Apartments)



Map Scale: 1:2,070 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tompkins County, New York
Survey Area Data: Version 10, Sep 24, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 2, 2010—Oct 8, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Tompkins County, New York (NY109)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BgC	Bath and Valois soils, 5 to 15 percent slopes	C	4.2	24.0%
ErA	Erie-Chippewa channery silt loams, 0 to 3 percent slopes	D	6.6	37.9%
LaB	Langford channery silt loam, 2 to 8 percent slopes	D	6.7	38.1%
Totals for Area of Interest			17.5	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

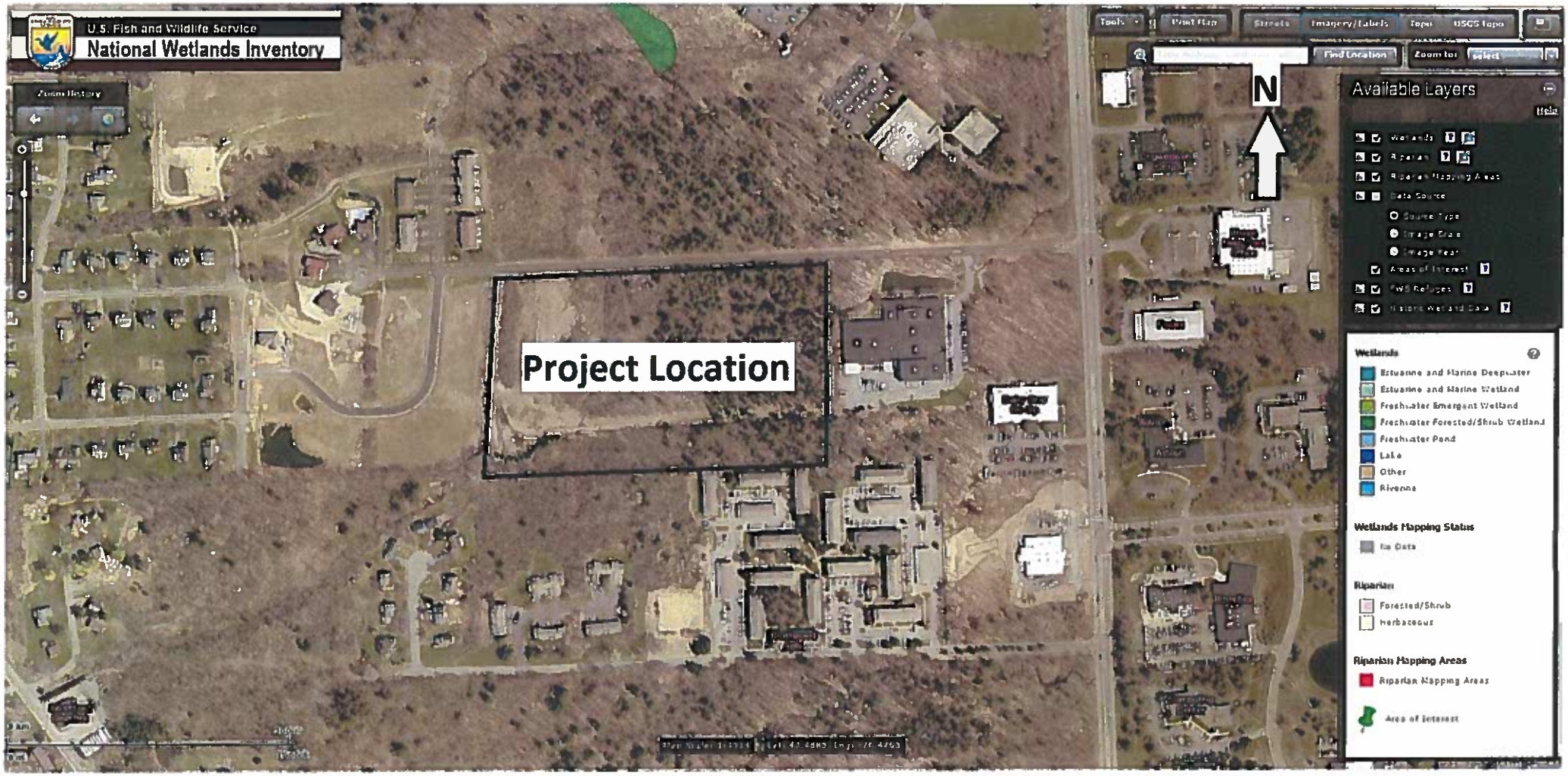
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

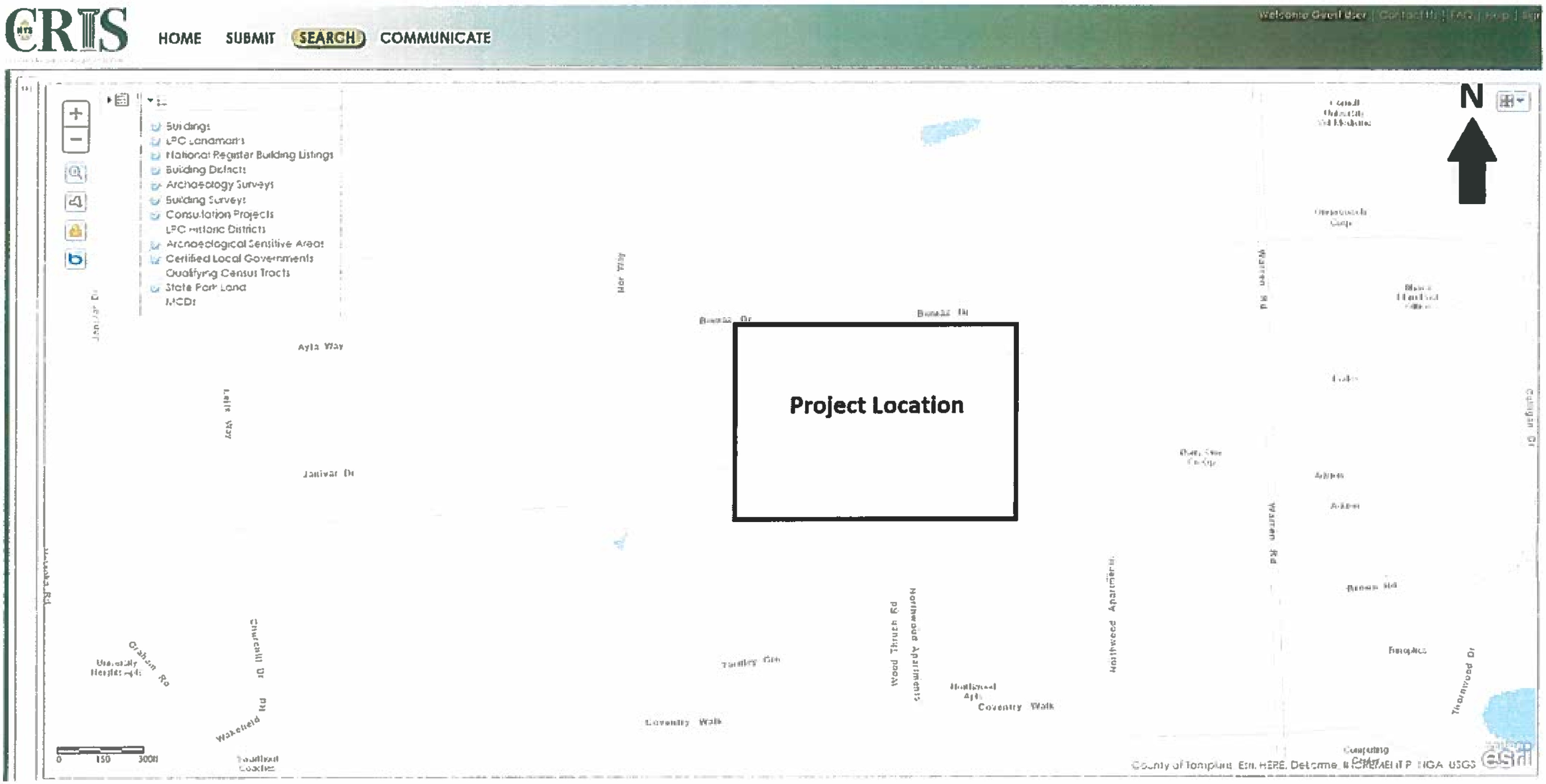
Rating Options

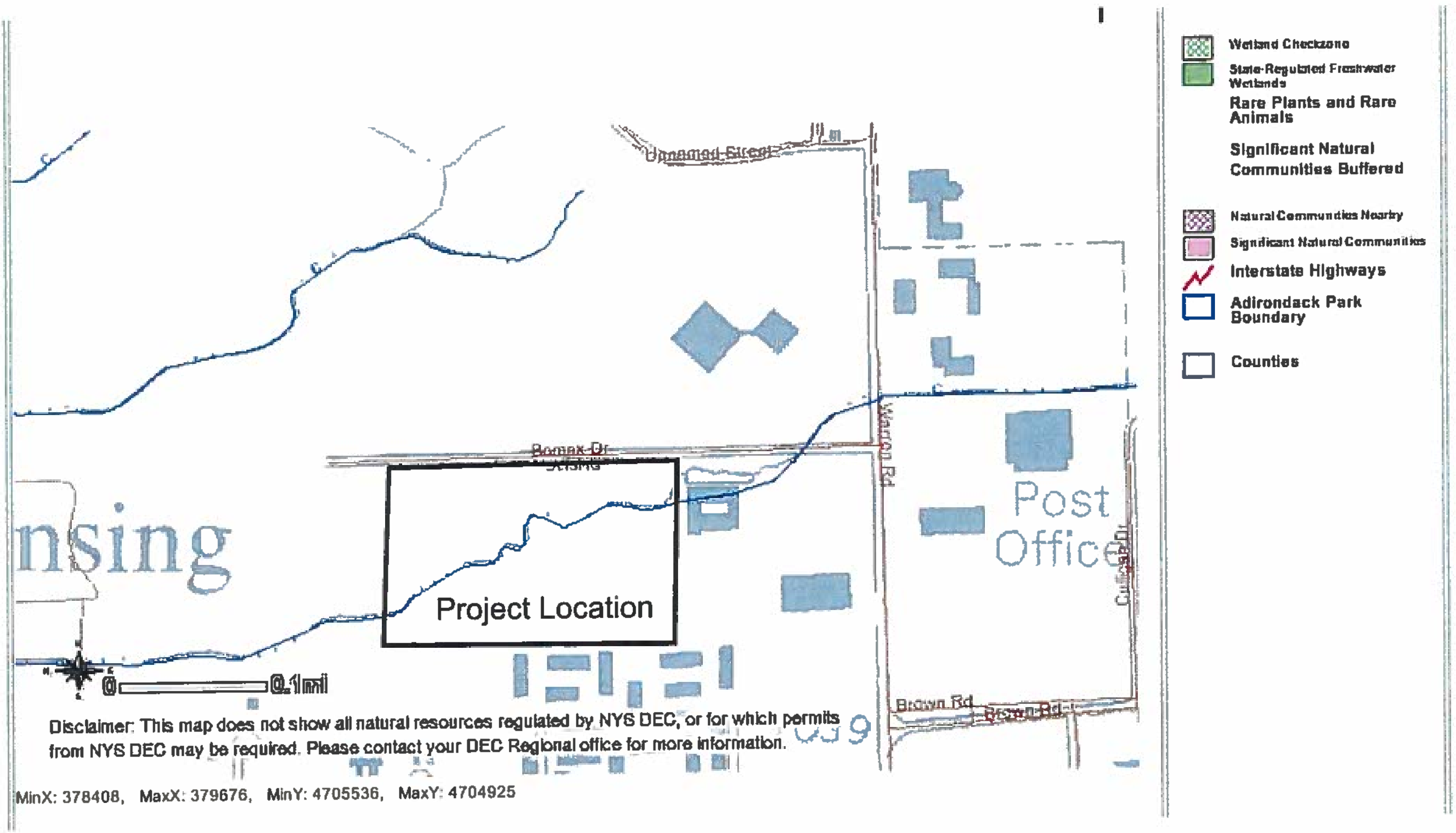
Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher


U.S. Fish and Wildlife Service
National Wetlands Inventory
Project Location
N
Available Layers
Wetlands
Estuarine and Marine Deepwater
Estuarine and Marine Wetland
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
Wetlands Mapping Status
No Data
Riparian
Forested/Shrub
Herbaceous
Riparian Mapping Areas
Riparian Mapping Areas
Area of Interest


CRIS
HOME
SUBMIT
SEARCH
COMMUNICATE
N
Buildings
LPC Landmarks
National Register Building Listings
Building Districts
Archaeology Surveys
Building Surveys
Consultation Projects
LPC Historic Districts
Archaeological Sensitive Areas
Certified Local Governments
Qualifying Census Tracts
State Park Land
MCDs
Project Location
Warren Rd
Ayla Way
Lake Way
Janivar Dr
Churchill Dr
Graham Rd
Wakefield Rd
Tandley Grn
Coventry Walk
Wood Thrush Rd
Northwood Apartments
Thornwood Dr
Colligan Dr
0 150 300ft
County of Tompkins, Esri, HERE, DeLorme, NGA, USGS


Wetland Checkzone
State-Regulated Freshwater Wetlands
Rare Plants and Rare Animals
Significant Natural Communities Buffered
Natural Communities Nearby
Significant Natural Communities
Interstate Highways
Adirondack Park Boundary
Counties
Unnamed Street
Warren Rd
Bomax Dr
Brown Rd
Post Office
nsing
Project Location
0
0.1mi
Disclaimer: This map does not show all natural resources regulated by NYS DEC, or for which permits from NYS DEC may be required. Please contact your DEC Regional office for more information.
MinX: 378408, MaxX: 379676, MinY: 4705536, MaxY: 4704925