

Proposed World Headquarters of Jehovah's Witnesses Draft Environmental Impact Statement (DEIS)

APPLICANT INFORMATION

Project Description

The Project Sponsor will construct a campus of buildings on approximately 45 acres of the total 253-acre site. The proposal includes an administration offices building, service building with kitchen, laundry, storage and infirmary; four residential buildings housing 588 one- and two-bedroom units for approximately 1,000 residents; a vehicle maintenance building; a waste separation facility; a powerhouse/maintenance building, and a recreational facility. The majority of parking is proposed to be within attached underground parking structures.

Project Location

1 Kings Drive, Tuxedo, New York 10987-5500 (Orange County)

Tax Map Identification

Section No. 85, Tax ID Numbers 85-1-2.22, 85-1-2.3, 85-1-4.1, 85-1-4.2, 85-1-5.1, 85-1-5.2, 85-1-6

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NOTE: Blank pages occur behind every color page and every 11-by-17-inch page in this DEIS. Although these are counted in the numbering, no number is printed on them.

A. Introduction

This Chapter is intended to provide a brief précis of the more comprehensive document that follows. No information is contained within the “Executive Summary” that is not contained in the main document, so readers that wish to review the full document do not need to read the “Executive Summary.” In this Chapter, technical information is summarized and only key points necessary for decision making are included. For a more detailed description and consideration of environmental impacts along with supporting information, description of methods and analysis, as well as additional maps and graphics, the reader should review the main document that follows.

B. Site Existing Conditions

The Watchtower Bible and Tract Society of New York, Inc., (referred to throughout this Statement as “Applicant,” “Project Sponsor,” “Watchtower,” or “Owner”) owns the Project Site which is approximately 253 acres in the Town of Warwick and is divided into two tracts; one tract northeast and one tract southwest of Long Meadow Road.

The tract proposed for development is located southwest of Long Meadow Road and contains existing industrial buildings totaling approximately 198,000 square feet in area along with attendant parking lots and an inoperative wastewater treatment plant. All existing buildings are proposed to be demolished under the proposed plan. The existing improved portion of the property fronts on Sterling Forest Lake (Blue Lake). A 100-foot-wide Orange and Rockland Utilities, Inc., (O&R) easement bisects the properties on both sides of the road. A smaller tract northeast of Long Meadow Road is currently vacant of any significant structures. The Project Sponsor proposes no construction on the northeast parcel except for walking trails and ancillary rest areas to provide locations for residents to walk, pray, and meditate in quiet solitude and without distraction.

Surrounding Properties

The southwest tract is bordered on the north by a large IBM facility. A residential development is located approximately 1,800 feet from the southeast boundary. The other bordering properties are part of the state park systems of New York (Sterling Forest State Park) and New Jersey (Ringwood State Park). A small out-parcel just north of the existing access road is owned by United Water and contains a potable water treatment plant which draws water from Blue Lake. Another parcel northwest of the northeast tract is also owned by United Water and is used for an existing wastewater treatment plant, which services IBM and the Project Site.

Recent History

The southwest tract consists of 168 acres sold by the Sterling Forest Corporation to the International Nickel Company (INCO). After years of use as an industrial research facility, the site was sold to Lynmark Development Associates which proposed a 150-lot residential subdivision which was the subject of an EIS and Findings Statement. In 1991, the site was purchased by King’s College and in 2000, the Warwick Planning Board granted site plan approval for a 1,500-person college of approximately 706,000 square feet on 102 of the 168 acres including significant steep slopes. Kings College was never constructed.

Touro College purchased the property in 2004 along with an additional 50 acres of property comprising the northeast tract. Touro College conducted a number of environmental studies but never formally applied to the Town for any permits. The entire property was purchased by Watchtower in July 2009, for use as the world headquarters of Jehovah’s Witnesses.

Tax Map Information

The property includes two parcels northeast and five parcels southwest of Long Meadow Road. These are described in Table 1-1:

Table 1-1 World Headquarters of Jehovah’s Witnesses Parcel Identifications

Section Number	Tax ID Number	Zoning Designation	Area (Acres)	Lot Description	Relation to Project
85	85-1-2.22 EXEMPT	00799 Land Conservation LC	13.20	Woodlands	Open Space
85	85-1-2.3 EXEMPT	00799 LC	36.90	Woodlands	Open Space
85	85-1-4.1 EXEMPT	00799 LC	2.80	Woodlands/Wetlands	Open Space
85	85-1-4.2 EXEMPT	00799 LC	2.50	Kings Drive (Roadway)	Roadway
85	85-1-5.1 EXEMPT	00799 LC	138.60	Woodlands	Mostly Open Space
85	85-1-5.2 EXEMPT	00799 LC	24.70	Main Facilities	To be developed
85	85-1-6 EXEMPT	00799 LC	34.40	Woodlands	Open Space

Source: Watchtower Bible and Tract Society of New York, Inc.

Zoning Information

The zoning designation for the entire site is LC (Land Conservation). Portions of the property are subject to the Ridgeline Overlay and Biodiversity Conservation Overlay District regulations. Uses allowed by special permit of the Planning Board include places of worship, convents and monasteries, offices, residential buildings, and motor vehicle repair. The proposed facility would conform to the zoning requirements.

C. Description of Proposed Action

Project Sponsor

The Project Sponsor is a religious, not-for-profit corporation founded in 1909 to support the efforts of Jehovah’s Witnesses to preach and teach the gospel of God’s Kingdom under Christ Jesus, print, record, and distribute Bibles and Bible-based literature, establish and maintain schools for Bible education and to otherwise advance its purposes.

Since 1909, the Project Sponsor has occupied facilities in Brooklyn, New York, at which the Governing Body, other staff of the world headquarters of Jehovah’s Witnesses, and various supporting departments and committees have operated (the “Brooklyn Facilities”). The Brooklyn Facilities are staffed by

Jehovah's Witnesses who are members of the Worldwide Order of Special Full-Time Servants of Jehovah's Witnesses ("Worldwide Order") who perform their duties full-time without compensation, have chosen to live either unmarried or married without children, and have taken a simple vow of obedience and poverty. The personnel who serve in the Brooklyn Facilities live at residence buildings that are part of the Brooklyn Facilities. Additionally, thousands of guests and visitors arrive annually to tour the facilities and see relatives or friends.

The Project Sponsor has recently relocated several functions from its Brooklyn Facilities to facilities it currently has in the Town of Shawangunk, Ulster County, NY. The Project Sponsor also operates a facility that focuses on religious and organizational education near Patterson, NY. The Project Sponsor proposes to relocate the offices of the Governing Body of Jehovah's Witnesses and various supporting departments and committees from Brooklyn to the Project Site which is a more rural, contemplative environment and closer to the Project Sponsor's other facilities.

Proposed Action

The Project Sponsor proposes to build eight buildings along with several accessory site structures. The proposed project is to be an integrated working and living facility, for approximately 850 members of the Worldwide Order initially, with sufficient space to allow this number to eventually grow to 1,000.

The project will disturb approximately 45 acres (18 percent) of the total 253 acres with a total impervious area of about 13 acres. The development will largely be contained within the area previously developed by INCO. The developed areas will fall almost entirely outside the boundaries of the Ridgeline Overlay District. The small portion that falls within this district will be developed in harmony with the requirements of Chapter 164-47.1 of the *Code of the Town of Warwick, New York*. Development will take place outside of the boundaries of the Biodiversity Conservation Overlay District which surrounds the Project Site.

Description of Proposed Facility

The existing main entrance road will remain with minor realignment and the addition of a manned gatehouse and improvements at the entrance to accommodate deliveries and visitors. The main building complex will be in the area of the present development. For a graphic representation, please see Figure 2-8 in the "Project Description" chapter. The development site has been constrained between Blue Lake on the north, the O&R easement on the south, and the property boundaries on the east and west. As such, the complex is laid out with a main circulation spine bounded on either side by the proposed buildings. The following buildings are proposed:

- Administration Offices/Services Building: A building containing offices, and entrance lobby having an average of 56 feet in height with 456,000 square feet of total building area.
- Residence Buildings: Four residence buildings 30 to 58 feet in height with 494,000 square feet of total building area.
- Maintenance Building: A maintenance, powerhouse, recreation, and resident parking building varying from 15 to 52 feet in height with 427,000 square feet of total building area. The resident parking garage encompasses 280,000 square feet of this space.
- Vehicle Maintenance Building: A maintenance building located closer to Long Meadow Road 30 to 46 feet in height with 35,000 square feet of total building area.
- Visitor Parking Building: A three-level partially enclosed below-ground parking garage with 240 parking spaces for visitors with 92,200 square feet of total building area.

- **Accessory Buildings:** Several small outbuildings, totaling less than 8,000 square feet, will be distributed within the general development area for recreation, waste separation, visitor conveniences, and maintenance areas.

Since the administration offices/services building is open to the public for guided tours, this building has been developed nearer to the main entry. The main loading docks are also developed near the main entrance to reduce vehicular traffic at the residential and recreational areas of the site, but are hidden from general public view. The residence buildings are located further from the main entrance in the more secluded and private area of the site. All major buildings are designed to take maximum advantage of lake views without significantly impacting areas outside of the site visually.

Construction is proposed to begin upon completion of the permit process in 2012 and is anticipated to continue for approximately four years.

Landscaping

Clearing of existing vegetation around the site will be minimized. However, currently open areas including areas along the existing utility line easement, dam, and along Blue Lake will be maintained in an open unwooded character in order to maintain habitat for species that prefer this type of ecological community. The site's remaining landscaping will be designed to be appropriate to the site's location in a wooded area. Small ornamental planting areas and retaining walls will make generous use of on-site boulders and stone. Any large retaining walls will be supplemented with green walls. No large lawn areas are planned. Only native plant species will be used for planting areas. The total impervious area will be limited to approximately 13 acres. The use of vegetated roofs will increase the vegetated area of the site by 4.5 acres. Where heavy traffic is not anticipated, pervious paving as defined by the *2010 New York State Stormwater Management Design Manual* will be used.

Architecture

The proposed new buildings have been designed in cooperation with the award-winning architectural firm of Perkins Eastman. Care was taken to develop an eco-friendly design which blends with the scenic rural environs while minimizing impact on precious habitats and wildlife. Views from Sterling Forest State Park were carefully analyzed. Impacts have been minimized by maintaining a small overall footprint, use of environmentally-friendly building materials and colors and textures which blend well with the natural surroundings. The façade of each building will use natural materials. Complementary architectural features, such as a mix of sloped and vegetated roofs, punched windows, stepped buildings, and avoidance of long unbroken walls will enhance the overall appearance.

Proposed Utilities, Open Spaces, and Impervious Areas

Water and sewer services to the site are to be provided by United Water's facilities which occupy adjacent parcels. A water allotment of 130,000 gpd has been granted to the site as part of the original property purchase. The existing facilities have adequate capacity to service the facility. The facilities will employ low-flush toilets, water-saving or no-water urinals, water-saving faucets and shower heads, low-water dishwashers and washing machines, and other water conserving appliances and equipment.

Wastewater is to be handled by the Blue Lake Wastewater Treatment Plant (Blue Lake STP), which was upgraded in 2002 to a 150,000-gpd plant with tertiary treatment. United Water South County Sewer has confirmed that the proposed site has an allotment of 130,000 gallons per day of available treatment capacity. The Applicant anticipates a maximum average of 80,000 per day will be discharged from the site.

Stormwater is to be handled in accordance with the *2010 New York State Stormwater Management Design Manual*. Stormwater runoff reduction will be accomplished through the use of vegetated roofs,

permeable paving, stormwater planters, bio-retention basins, and finally through riparian buffers and detention basins. A Stormwater Pollution Prevention Plan (SWPPP) is included in Appendix M.

Electrical service will be provided by O&R through an on-site substation. On-site electrical distribution will be via buried cable in order to minimize visual impact. The peak proposed electrical load is anticipated to be approximately 2,100 kW for the entire facility. In addition, the Project Sponsor will install three, approximately 720-kW each, diesel-powered generators configured to supply power during an outage or during periods of high demand when curtailment is requested.

Outdoor recreation is proposed to include two tennis courts, two volleyball courts, a basketball court, and picnic tables. Indoor recreation will include a small swimming pool, basketball and racquetball courts, aerobic exercise, and games rooms. Libraries will also be provided for the residents.

A total of 870 covered parking spaces will be provided for fleet, personal vehicles of the residents, and visitor parking. A total of 150 surface parking places will be provided in addition to parking for up to 13 buses. All of the covered parking will be in multi-story (mostly below street-level) garages to minimize footprint and runoff.

D. Project Purpose, Need, and Benefits

Objective of the Project Sponsor

The objective of the Project Sponsor is to relocate the world headquarters and some of its supporting committees and departments to a more rural, contemplative facility that is compact and operationally efficient nearer to other Project Sponsor's facilities. This relocation is intended to better serve the organizational and religious goals of the Project Sponsor as further described in Chapter 2.

Public Purposes: Meeting the Objectives of the *Town of Warwick Comprehensive Plan*

The proposed action will satisfy and conform to a number of public objectives and policies as expressed in the *Town of Warwick Comprehensive Plan*, including:

- **Regional Planning Efforts**: The proposal concentrates development in an identified growth area from the *Orange County Plan*.
- **Goals of the Community**: The proposed project protects Warwick's rural quality by redeveloping an already developed area and preserving the great majority of the approximately 250 acres in its natural state.
- **Privately Operated Utilities**: The proposed project development will tap into already existing, but underutilized, water and sewer utilities.
- **Agriculture, (C) Conservation Easements**: The Town's policy of receiving conservation easements on environmentally sensitive lands can be achieved through building clustering and preservation of sensitive lands.
- **Site Entrance and Parking (C)**: The proposal locates the large majority of parking in below-ground garages out of view and minimizes paving.
- **Commercial and Industrial Development, (D) Other Compatible Businesses**: The proposed project will have a positive economic benefit to the community due the expenditure of funds to maintain and operate the facility and due to the tourism associated with the development.
- **Open Space and Recreation, Community Objective**: The proposed project preserves environmentally sensitive lands including wetlands, steep slopes, and potentially important habitat areas.

- Architectural design and layout suitable to its environs: The architectural design theme of the project was developed in consultation with Perkins Eastman of New York with interim review and input by members of the Warwick Planning Board.
- Public Facilities, (E) Health and Safety: The Project Sponsor, as a responsible property manager, will meet or exceed the local and NY State requirements for inspection and maintenance of the on-site dam.
- Environmental Protection, (B) Sensitive Environments: The proposed action maintains a diversity of habitats and satisfies a number of objectives outlined in the Southern Wallkill Biodiversity Plan.
- Environmental Protection, (C) Vegetation: The proposal will maximize the retention of existing vegetation.
- Environmental Protection, (H) Energy: The proposal will include an energy reduction strategy as part of its design. The Project Sponsor is registered with the Green Building Initiative (GBI) which has established a sustainability program similar to the US Green Building Council (USGBC). This project will strive for a rating of three Green Globes™, which is similar to a LEED Gold rating.

E. Involved and Interested Agencies

Table 1-2 describes the approvals required to construct the proposed campus:

Table 1-2 Required Approvals—Involved Agencies

Type of Approval	Agency
Special Use Permit	Town of Warwick Planning Board
Site Plan	Town of Warwick Planning Board
Possible (non-use) variances	
a) Incursion of portion of one building into Ridgeline Overlay District	Town of Warwick Planning Board
b) Height of roadway lighting	Town of Warwick Planning Board
Blasting Permit	Town of Warwick Planning Board
Demolition Permit	Town of Warwick Planning Board
Building Permit	Town of Warwick Planning Board
Architectural Review	Town of Warwick Architectural Review Board
Water, Sewer, Road Access	Orange County Department of Public Works
Stormwater SPDES Permit	NYSDEC
Article 15—Protection of Waters Permit	NYSDEC
GML 239 Review	Orange County Planning Department
Notes:	
1. The project is not located within the regulated Municipal Separate Storm Sewer System (MS4) for the Town of Warwick.	

Additionally, the following agencies and persons have been included in State Environmental Quality Review (SEQR) distributions as interested agencies:

- Supervisor Michael Sweeton.
- Town Board of the Town of Warwick.
- Town of Warwick Zoning Board of Appeals.
- Town of Warwick Conservation Advisory Board.
- Orange County Department of Health.

- New York State Office of Parks Recreation and Historic Preservation.
- Palisades Interstate Park Commission.
- Sterling Forest State Park.
- United States Army Corps of Engineers.
- Town Board of the Town of Tuxedo.
- Village of Greenwood Lake Board of Trustees.
- Greenwood Lake Fire District.
- Borough of Ringwood Council.
- Tuxedo Union Free School District.
- Wisner Library.

F. Geology, Topography, and Soils

Existing Conditions

Geology

Depth to bedrock varies considerably, ranging from 3 feet to more than 60 feet in the area of proposed development. The site was previously used for two shallow open-pit mines identified as the Snyder and Hewitt magnetite mines, operated between the 1700's through approximately 1880. Both of these mines are located at the extreme southern end of the site in the area furthest from the existing INCO campus and proposed area of development. There is no indication of any other extensive mining or subsurface mining.

The site is located within the Reading Prong, a geologic formation known to produce radon. The INCO buildings were tested for the presence of radon in 1991 (see Appendix B-4). Based on this testing, the average level of radon at five locations throughout the buildings was below the USEPA maximum contaminant level.

Soils

Predominant general on-site soils are classified as Mardin-Erie, Hollis Rock Outcrop and Arnot-Swartswood-Hollis. The majority of both the parcel southwest and northeast of Long Meadow Road is classified as Arnot-Swartswood-Hollis which are sloping; shallow to deep over gneiss and schist; excessively to well-drained; medium-textured soils on uplands.

The majority of soils in the currently improved area, which is the area primarily proposed for development are SXC–SXC—Swartswood and Mardin, very stony soils. The water table is perched above a fragipan early in spring at a depth of 2.0 to 4.0 feet. The depth to bedrock is greater than 60 inches. Permeability is moderate above the pan in both soils and relatively slow in the pan and substratum. Available water capacity, or the ability of the soils to hold water available for use by most plants, is low to moderate. Runoff is medium in both soils. These soils are not subject to flooding.

These soils are suitable for the construction of structures. The soils are deep-till deposits, which generally provide stable, relatively incompressible foundations for engineering works. If well compacted, fill material from these soils generally provides stable embankments. Steeper-cut slopes are commonly subject to surface sloughing and erosion. The soils have good compaction and load bearing qualities and are generally from 59 to 70 inches in depth. However, construction on Swartswood and Mardin soils will

require the removal of large stones at or near the soil surface. In addition, the Swartswood soils pose a high risk of corrosion for concrete.

The soils are only moderately suitable for construction of local roads and streets and for lawns and landscaping due to slope and frost action. The soils are considered fair as road fill due to the frost action, and poor as topsoil due to large stones.

Potential Existing Soil Contamination

Environmental site assessments and follow-up investigations have resulted in the identification of the following on-site soil contamination:

- Polyaromatic hydrocarbons (PAHs) are present near Building A.
- Thallium is present at slightly elevated levels across the site, which was determined to be a natural condition. No mitigation was recommended.
- Higher-than-average levels of PAHs were detected in the groundwater near the former wastewater treatment plant.
- Nickel and titanium are present throughout the site consistent with background levels, although one concentration was found in the filter beds near the former drum storage area and wastewater treatment plant.
- No contaminated conditions were observed in 2009 at the sand filter beds but contamination was observed in 2006.

Topography

Long Meadow Road bisects the two halves of the project tract through a valley following a stream bed with elevations rising on either side. The site can be categorized as sloping to moderately steep. The area northeast of the road that is proposed to remain vacant is categorized by a flat area along the stream corridor at the north end of the site rising to a ridge toward the northeast away from the road. As the stream travels south, it enters a more pronounced gully, and the foot of the ridgeline to the northeast gets closer to the road.

The area to be developed is generally categorized as sloping land with grades from 8 to 15 percent, with a low elevation at Blue Lake of 640 feet above sea level to a high of approximately 700 feet above sea level. The area surrounding the former INCO site has been graded to a more moderately sloping plateau. The area to be developed is well above the principal roadway, Long Meadow Road, which is located at 590 feet above sea level. Behind and to the southeast of this plateau, the land rises to a ridge with an elevation ranging from 785 to 805 feet above sea level before sloping back down to the southerly limits of the tract.

Potential Impacts

Geology

The construction of the proposed buildings with subsurface parking will require significant excavation including potential blasting that may encounter subsurface geology.

Soils

All of the disturbance proposed on the site will be proposed over Swartswood and Mardin very stony sloping soils. It is possible that seasonally high water may be encountered.

Topography

Overall, the site will be designed to blend and adapt to the existing topography, however, some slope stabilization may be required.

There will be excess cut of approximately 300,000 cubic yards of excavated soil.

Mitigation Measures

Geology

- Factoring of bedrock depth into the site design.
- Reuse of excavated rock on site.
- Reusing excavated material with excess fill exported.
- Implementation of a blasting plan as described in Chapter 3.

Soils

- Remediation of all contaminated soils as described in Chapter 3 prior to site construction.
- Designing buildings specific to their location on the site including consideration of the potential for differential settlement for some buildings.
- Compaction of on-site soils for subgrade fill.
- Use of sumps and pumps, diversion and drainage ditches, toe drains, and other similar methods during construction.
- Construction of a drainage system to adequately reduce hydrostatic pressure behind basement walls and maintain the groundwater level six inches below basement floors.
- Employment of a qualified geotechnical engineer on site during excavation for foundations.
- Testing of materials used as fill by a qualified soils laboratory.
- Implementation of an erosion control plan prepared for the SWPPP.

Topography

- Construction of static-load bearing basement walls and retaining walls with proper drainage facilities.
- The Project Sponsor is working with the geotechnical engineer to revise the finished floor elevations in order to reduce the amount of excavation required. Efforts are also being made to utilize excavated material at other locations on site.

G. Water Resources

Existing Conditions

Groundwater

The Project Site is located above the Highlands Aquifer System, a sole-source aquifer. All underground storage tanks (USTs) previously on the Project Site were removed by The King's College prior to 2005. These tanks included an 8,000-gallon neutralization tank and 6,000-gallon settling tank. Any

contaminated soils associated with the tanks were fully remediated to New York State Department of Environmental Conservation (NYSDEC) standards.

There are no existing NYSDEC registered wells on the Project Site and no groundwater wells will be constructed as part of the proposed project. The nearest wells are located between 1 and 1.75 miles east of the Project Site in Rockland County.

Surface Water

Surface water in the vicinity of the proposed area of disturbance flows from higher elevations to the south property toward Blue Lake. From the Blue Lake Dam spillway, surface water travels under Long Meadow Road (also known as County Road 84 [CR-84]) into an unnamed tributary of the Ringwood River.

Blue Lake was reportedly created in 1953 when the Ringwood River was impounded by the construction of the Blue Lake Dam. The main dam is located approximately one-half mile from Long Meadow Road (CR-84). The principal spillway is located approximately 1,200 feet north of the main dam on the southwest corner of the intersection of Long Meadow Road (CR-84) and Sterling Lake Road. Blue Lake serves as the main potable water supply for approximately 1,200 people. During 2009 an average of about 99,500 gallons of water per day was withdrawn from Blue Lake. Because of its use as a drinking water supply, Blue Lake is classified as a Class A water body and is subject to the NYSDEC Protection of Waters Regulatory Program.

The Ringwood River is located within the Ramapo River Watershed which is part of the Passaic River Basin primarily located in northern New Jersey. The stream classification of the unnamed tributary located within the property has been assigned a classification of C(T) (Classification C is for waters supporting fisheries and suitable for non-contact activities; (T) indicates that a trout population may be supported).

The portion of the unnamed tributary to the Ringwood River that is located east of Long Meadow Road (CR-84) is supplied by waters from Blue Lake to the west and Little Sterling Lake to the north. The river headwaters flow downstream from the Little Sterling Lake outfall past the Blue Lake STP where it merges with an unnamed tributary supplied by the emergency spillway of Blue Lake. After traversing the eastern portion of the property the tributary to the Ringwood River continues south crossing into New Jersey and Ringwood Mill Pond.

Several US Army Corps wetlands were identified on site. Undeveloped portions of the property that are not proposed to be disturbed, including forested lands, upslope to the south and the entire portion of the property east of Long Meadow Road (CR-84), were not field-inspected for the presence/absence of unmapped wetland resources.

Potential Impacts

- Stormwater run-off volume from new impervious areas will create an increase in run-off volume from pre-developed conditions without taking the proposed mitigation measures into consideration.
- Runoff rates could potentially increase due to shorter travel of runoff through pipes and compacted soils, and decreased groundwater recharge without mitigation.
- No disturbance of water bodies or wetlands is proposed.
- The proposed project will alter the site's drainage patterns.
- During storm events, pollutants including sediment, nutrients, organic carbon, bacteria, hydrocarbons, pesticides, and chlorides would potentially be delivered to downstream waters.

- Mosquitoes could breed if standing water remains in the stormwater detention areas for longer than 48 hours.
- The stormwater detention areas will include inlet and outlet structures housing 36-inch-diameter pipes. If left uncovered these pipes are large enough to be entered and could pose a safety hazard.
- No impacts to the safe drawdown of Blue Lake are anticipated.
- It is not anticipated that the proposed project will cause any adverse impacts to the unnamed tributary to the Ringwood River from increased wastewater.
- No impact to the Highlands Aquifer System is anticipated.
- The use pesticides and fertilizers on lawn areas and road salt may impact groundwater resources if overused or left unmitigated.

Mitigation Measures

- Implementation of a SWPPP to maintain runoff quality.
- Reduction of the rate of runoff to less than or equal to pre-existing conditions through implementation of the SWPPP.
- Use of an integrated approach to pest management and removal and use of organic fertilizer on landscaped areas of the site.
- Implementation of best management practices (BMPs) for the application of landscape upkeep substances (such as fertilizer).
- Minimization of the use of salt. Underground snow-melt systems and coarse sand will be favored in clearing of sidewalk and roadway snow.
- Facilitation of groundwater recharge from stormwater facilities.
- Inspection of the stormwater system after each major storm event (greater than 2-year, 24-hour storm) to ensure the small orifices and inlets remain open.
- Design of stormwater detention areas to drain within 48 hours, thus preventing mosquito breeding.
- The inlet and outlet structures in the stormwater detention areas will include grates and bars that block entry into the 36-inch pipes, and plantings around the structures to obscure them from view and deter public access.
- Removal of sediment from detention ponds as needed, or at a minimum of every five years.
- Implementation of an Erosion and Sediment Control Plan during construction.
- Leaving the majority of the site undisturbed.
- Minimizing clearing and grading through site design.
- Prompt stabilization of disturbed areas after construction.
- Location of proposed development in areas of previous disturbance.
- Parking in multi-story structures to reduce impervious surface.
- Directing sheet flow to riparian buffers.
- Incorporation of bioretention areas and stormwater planters.

- Installation of green roofs on several of the structures.
- Employment of porous pavement in select areas.
- Employment of underground detention chambers instead of detention ponds.

H. Air Resources

Existing Conditions

Air quality in the vicinity of the project generally does not exceed standards adopted by the NYSDEC. Carbon Monoxide and Particulate Matter standards are met at the busiest area intersection (Long Meadow Road and Sterling Mine Road).

Potential Impacts

- Air quality impacts will include an increase in emissions and fugitive dust generation during construction, an increase in traffic, and emissions from the heating plant. Mitigation measures to minimize these emissions are discussed below.
- The project is not anticipated to impact carbon monoxide or particulate matter standards from increased traffic or on-site heating plant emissions.
- Heating plant emissions will meet standards relative to nitrogen oxides, volatile organic compounds, hazardous air pollutants, and sulfur dioxide.
- The construction will result in dust generation during site clearing, excavation, demolition, and grading activities which will largely be limited to the first 30 months of construction. The site is not in close proximity to public receptors; thus, the risk to public health is minimal.
- Asbestos from the existing on-site buildings was fully remediated as per NYSDEC standards.
- Radon levels are within established standards.

Mitigation Measures

- Use of fuel oil with a maximum sulfur content of 0.5 percent by weight.
- Employment of best construction management practices (BMPs) to reduce soil erosion and possible sources of fugitive dust.
- Use of water-spray trucks daily in dry periods.
- Installation of anti-tracking pads at construction entrances.
- Implementation of an Erosion and Sediment Control Plan.
- Use of ultra-low sulfur fuel in diesel construction equipment.
- Remediation of asbestos by a licensed asbestos contractor if encountered.
- Continued radon monitoring.

I. Terrestrial and Aquatic Ecology

Existing Conditions

Existing Vegetative Species

The vegetation on the site is mostly second growth upland eastern deciduous hardwood forest. Areas not defined by forest associations are a homogenization of hardwoods including oak, maple, ash, sweet birch, and hickory with an understory of flowering dogwood, blue beech, sassafras, and maple leaf viburnum. Various other associations exist throughout the site.

A forested wetland community exists along the riparian corridor north of Long Meadow Road. This community is dominated by red maple and white ash with understory of skunk cabbage, American hornbeam, sensitive fern, and jewelweed.

The NYSDEC has identified a portion of the site and much of the surrounding State Park and environs as Appalachian Oak Hickory Forest, and this ecological community has been identified on the Natural Heritage database as being important due to its size and setting. It is classified as Rank S4—apparently secure and does not qualify for specific legal protections.

The search of the New York Natural Heritage Databases yielded the following potential rare or protected vegetative species:

Terrestrial Starwort *Callitriche terrestris*—NY Threatened Species

Potential habitat for this species on the Site includes along the edge of Blue Lake, the edge of Ringwood River and along the perennial stream located between the existing college and Sterling Forest Road. No terrestrial starwort was observed during the site investigation.

Green Parrot's Feather *Myriophyllum pinnatum*—NY Endangered Species

Potential habitat for this species on the Site is generally limited to Blue Lake. Green parrot's feather was not observed during site investigation.

Hyssop Skullcap—*Scutellaria integrifolia*—NY Endangered Species

Potential habitat for this species on the Site includes the edge of Sterling Forest Road, the Site access road and the power-line right-of-way. Small colonies of hyssop skullcap were observed along the power-line right-of-way in 2007. These colonies were not observed when transects were re-walked in 2010, potentially due to seasonal conditions.

Michaux's Blue-Eyed Grass—*Sisyrinchium mucronatum*—NY Endangered Species

Potential habitat for this species on site occurs along the power-line right-of-way. Vegetation transects were completed for the length of the power-line right-of-way and the wetlands south of the sewage treatment plant. Michaux's blue-eyed grass was not observed.

A search of the New Jersey Natural Heritage Database yielded no rare plant species or natural communities within one-fourth mile of the site.

Existing Wildlife Species

The site is located in an area surrounded by State parkland. A wide variety of wildlife was observed on site; a complete list is included in Chapter 6.

Based on field observations, a Habitat Assessment, and inquiries to the NYSDEC and New Jersey Department of Environmental Protection (NJDEP) Natural Heritage Program in 2005 and 2007, a list of rare or protected species that could be inhabiting the site or its vicinity was assembled.

Timber Rattlesnake—*Crotalus horridus*—NY Vulnerable and NJ Endangered Species

A number of timber rattlesnake den sites exist within two miles of the Project Site and rattlesnakes are known to forage in the forested areas surrounding the site.

Marbled Salamander—*Ambystoma opacum*—NY Special Concern and NJ Declining Species

No evidence of marbled salamander larva or past evidence of breeding was discovered during investigations of wetlands and vernal pool areas and marbled salamander was not observed during investigations of amphibian breeding in emergent wetland areas. During surveys of road crossing amphibians and calling during rainy nights, no marbled salamanders were detected.

Eastern Box Turtle—*Terrapene Carolina*—NY and NJ Special Concern Species

The site provides adequate habitat for box turtles, which prefers open woodlands, pasture, and marshy meadows near streams or ponds. A live female box turtle was observed near the former INCO campus in 2007, and two turtle shells were also found. An immature box turtle was observed within the power-line right-of-way in 2010.

Wood Turtle—*Clemmys insculpta*—NY Special Concern Species

Potential breeding and overwintering habitat may exist for this species along the Ringwood River on the parcel north of Long Meadow Road. This parcel is proposed to be preserved as open space. According to NYSDEC records, wood turtles are known to have been previously observed on the site; however, an investigation in 2007 and 2010 yielded no observations.

Red-Shouldered Hawk—*Buteo jamaicensis*—NY Special Concern Species

Potential nesting habitat may exist along the second growth wooded areas along the riparian corridor on the parcel north of Long Meadow road. This area is proposed to be preserved as open space. This riparian corridor crosses under Long Meadow Road south of the Project Site. No nests were identified and taped calls yielded no response. Red-shouldered hawks were observed foraging along the power-line right-of-way in 2007, but based on observations it is believed the observed pair nest to the south of the site. No red-shouldered hawks have been observed on the site in 2010.

Barred Owl—*Strix varia*—NJ Threatened Species

- This species is not listed on the New York State list of Species of Greatest Conservation Need and pursuant to the adopted scope, do not require additional investigation.

Coopers Hawk—*Accipter cooperii*—NY Special Concern and NJ Threatened Species

- The site's wooded uplands provide adequate habitat for coopers hawk, which is tolerant to human activity. No nest sites or coopers hawk were observed on the site although abundant suitable breeding and foraging habitat exists on the site and in the surrounding State Park.

Great Blue Heron—*Ardea herodias*—NJ Stable Species

- This species is not listed on the New York State list of Species of Greatest Conservation Need and pursuant to the adopted scope, do not require additional investigation.

Veery—*Catharus fuscescens*—NJ Special Concern Species

- This species is not listed on the New York State list of Species of Greatest Conservation Need and pursuant to the adopted scope, do not require additional investigation.

Eastern Bluebird—*Sialia sialis*—NY Special Concern Species

Suitable open-country habitat exists for the eastern bluebird along the site's power-line right-of-way, along the dike at the eastern end of Blue Lake and throughout the existing INCO campus. Numerous tree cavities exist along the edges of these open-county areas and numerous bluebirds were observed on the site.

Indiana Bat and Small-Footed Myotis

Although not indicated by the Natural Heritage Programs, the Project Sponsor commissioned a breeding bat survey to determine the potential presence of Indiana bat and small-footed myotis. Neither was captured during a summer mist net survey conducted in accordance with protocols set forth in the US Fish and Wildlife Services Bat Recovery Plan. Three non-protected species encountered include the big brown bat, eastern red bat, and little brown bat.

Potential Impacts

The proposed project will be located predominantly within recently previously disturbed areas surrounding the existing INCO building.

Two previously undisturbed areas are proposed for disturbance. These areas coincide with the proposed Vehicle Maintenance Building and Resident Recreation/Picnic area. Disturbance associated with the latter will be limited to site grading and installation of three minor recreation, storage, and convenience buildings. The graded area will be used for installation of court sport areas, such as basketball, tennis, and volleyball.

The newly disturbed areas are within close proximity to previously disturbed areas associated with the INCO building, Long Meadow Road, and the utility right-of-way. They are in areas of the predominant eastern deciduous hardwood forest and transects in these areas did not indicate any unique vegetation.

Terrestrial Starwort

The proposed application maintains a buffer of at least 75 feet from Blue Lake and proposed no development north of Long Meadow Road. Therefore no impacts to this protected species are anticipated.

Green Parrot's Feather

This plant is an aquatic plant, whose sole potential habitat is Blue Lake. No green parrot's feather was observed, and the project maintains a buffer of at least 75 feet from Blue Lake. Therefore no impacts to this protected species are anticipated.

Hyssop Skullcap

The proposed application involves some disturbance to the proposed power-line right-of-way, particularly for the installation of berms necessary for stormwater management, for possible undergrounding of the high-voltage power lines, and partially for installation of a roadway to the recreational fields and vehicle maintenance building. Identified threats to hyssop skullcap indicated on the *New York Natural Heritage Program Guide* for this species includes succession of meadow and grassland to woody plants and potential deer browsing. The activities of the Project Sponsor near the power-line right-of-way will

involve some clearing of trees and brush plants. If done correctly (see “Mitigation” section), this will help to manage the grassland habitat from woody plant succession.

Michaux’s Blue-Eyed Grass

No Michaux’s blue-eyed grass was observed on site and therefore no impacts to this protected species are anticipated.

Timber Rattlesnakes

The proposed project will not have a negative effect on local timber rattlesnake populations. Rattlesnake utilization of the forested areas around the property will not be affected by Project Sponsor’s construction and use of the development on the formerly disturbed industrial campus and adjacent areas. Potential impacts from chance encounters during construction are possible and mitigations are proposed hereafter.

Marbled Salamander

Following thorough searches of amphibian presence and activity, no marbled salamander were observed on site, therefore impacts to this protected species are unlikely.

Eastern Box Turtle

Once construction activities are completed, the power-line right-of-way will be returned to its present open state. Additionally, the buffered open area near Blue Lake and additional open areas to be established near the recreational/picnic area will provide box turtles with additional open habitat. Potential impacts from chance encounters during construction are possible and mitigations are proposed hereafter.

Wood Turtle

No wood turtles were observed on site and suitable habitat is limited to the area north of Long Meadow Road, which will remain undisturbed. Therefore, impacts to this protected species are not anticipated. Potential impacts from chance encounters during construction are possible and mitigations are proposed hereafter.

Red-Shouldered Hawk

Red-shouldered hawks are relatively tolerant of human disturbance. Further, there is adequate habitat in the surrounding area to compensate for the small decrease in habitat that will result due to the proposed action.

Coopers Hawk

No coopers hawk or nests were observed on site and impacts to this protected species are not anticipated. This species is relatively tolerant of human disturbance. There is adequate habitat in the surrounding area to compensate for the small decrease in habitat that will result due to the proposed action.

Eastern Bluebird

Significant disturbance is proposed within the site’s existing bluebird habitat. It is likely that some trees containing nesting cavities will require removal to support site construction. Additionally, the power-line right-of-way will be significantly disturbed to construct stormwater infrastructure, proposed roads, and to possibly underground existing power lines. Mitigations to probable impacts to this species are proposed hereafter.

Indiana Bat and Small-Footed Myotis

No Indiana bat or small-footed myotis were observed on site and impacts to this protected species are not anticipated. There is adequate habitat in the surrounding area to compensate for the small decrease in habitat that will result due to the proposed action.

Aquatic Wildlife

Stormwater runoff has the potential to impact aquatic wildlife by increasing the temperature in receiving streams, if detained on-site for extended periods. Aquatic wildlife, such as trout, that require cold and cool water conditions would be adversely impacted by increased temperatures of stormwater runoff.

Wetlands

The Project Site contains several areas of US Army Corps jurisdictional wetlands. These are described more fully in Chapter 4, "Water Resources." The Applicant will not be disturbing any wetlands and is anticipating maintaining a minimum buffer of at least 25 feet from all wetlands.

Mitigation Measures

Hyssop Skullcap

The Project Sponsor proposes to reinvestigate the power-line right-of-way during the flowering period of June and during the fruiting period of July and August. If this species is discovered upon reexamination, measures will be taken to mitigate possible impacts. This may include one or more methods to be taken including:

- Minor modification to the grading plan to avoid disturbance of colonies if practicable.
- Retention of a qualified horticulturalist or landscape architect to identify suitable habitat on site and a program to establish a stable colony of the plants from seed.
- Possible incorporation of the plant into the site's landscape plan if practicable and desirable.
- Making seed available to NYSDEC and through NYSDEC to organizations or individuals intending to reestablish the species throughout the region, if practicable and desirable to NYSDEC.
- The Project Sponsor will coordinate all mitigation activities with NYSDEC.

In the event that no plants are observed upon reinvestigation, the Project Sponsor will limit significant grading and clearing activities within the power-line right-of-way to the period from October 1 through March 31. This period corresponds with the period after which seeds have been dispersed and before germination. Disturbance during this period will have the lowest potential for harming plants that may exist unknown on the site.

Timber Rattlesnakes

Prior to construction, the area of disturbance will be bounded by silt fence to deter timber rattlesnakes that may be foraging in the area from entering the construction area. After installation of the fence, the fence will be inspected to prevent potential trapping of snakes inside the construction area.

In the event that a rattlesnake is found in a parking lot or near the buildings where it would be unsafe, Watchtower would call one of the NYSDEC-listed Nuisance Rattlesnake Responder volunteers or have someone on staff trained in the protocols to safely move them.

Wood Turtles and Eastern Box Turtles

Prior to construction, the area of disturbance will be bounded by silt fence to deter wood turtles in the area from entering the construction area. After installation of the fence, the fence will be inspected to prevent potential trapping of wood turtles inside the construction area.

Eastern Bluebird

Tree removal will be conducted from October 1 through March 31, after the population has migrated for the winter. Further, after disturbance of the power-line right-of-way, bluebird nesting boxes will be installed in this area, along the Dike, and along the power-line right-of-way north of Long Meadow Road to encourage reestablishment of the bluebird populations in this area following construction.

Aquatic Wildlife

In order to reduce thermal impacts to streams, stormwater runoff is being designed with the minimum amount of extended detention required. In addition, the use of stormwater ponds is currently not proposed as the *2010 New York State Stormwater Management Design Manual* advises that "available evidence suggests that these practices can increase stream temperatures." Underground detention chambers will be used instead to maintain lower temperatures than if exposed to the sun in shallow ponds.

J. Traffic and Transportation

Existing Conditions

Long Meadow Road (CR-84), a minor arterial, is a two-lane roadway with a pavement width of approximately 24 feet and shoulder width varying from 4 feet to 8 feet. The speed limit on this roadway is 55 mph.

Sterling Mine Road (CR-72), a minor arterial, is a two-lane roadway with a pavement width of approximately 24 feet and shoulder width varying from 4 feet to 8 feet. A portion of this roadway consists of three lanes—two eastbound lanes and one westbound lane. The speed limit on this roadway is 40 mph.

Eagle Valley Road (West), a local road, is a two-lane roadway with a pavement width varying between approximately 22 feet and 24 feet and no defined shoulders. The speed limit on this roadway is 30 mph.

Eagle Valley Road (East), local road, originates along Sterling Mine Road approximately 3 miles east of Eagle Valley Road (West). This is a two-lane roadway with a pavement width varying between approximately 20 feet and 24 feet and no defined shoulders. Eagle Valley Road (East) has a restricted weight limit of 4 tons, excluding local delivery traffic. The speed limit varies between 30 mph and 35 mph.

NYS Route 17A, a major arterial, is a four-lane divided state highway, which converts to an undivided two-lane highway approximately one-mile west and one-mile east of its intersection with Long Meadow Road. The speed limit on this roadway is 55 mph.

Traffic Counts and Turning Movements

The level of service (LOS) at the following intersections was determined for existing conditions, 2015 No-build conditions, and 2015 Build conditions.

- Sterling Mine Road (CR-72) and Long Meadow Road (CR-84).
- Long Meadow Road (CR-84) and Eagle Valley Road.
- Long Meadow Road (CR-84) and Woodlands Drive.

- Long Meadow Road (CR-84) and IBM Entrance/Beech Road.
- NYS Route 17A and Long Meadow Road (CR-84)/Clinton Road.
- Long Meadow Road (CR-84) and Site Access Driveway.
- Sterling Mine Road (CR-72) and Sister Servants Lane/Eagle Valley Road.

The existing level of service was determined to be acceptable.

A total of 44 accidents were reported along Sterling Mine Road (CR-72), Long Meadow Road (CR-84) and Route 17A from March 2007 to February 2010. Approximately 52 percent of the accidents involved animal action or slippery pavement. Another 34 percent were attributable to driver error, speed, or alcohol and the remaining 14 percent were due to other or unknown causes.

Sight distance requirements for stopping and merging with traffic are exceeded at the Project Site's existing entrance.

New Jersey Transit operates two bus routes from Warwick to New York City. Additionally, two train stations that operate on the Port Jervis Line of the Metro-North/New Jersey Transit system are located in the Village of Sloatsburg (5 miles away) and Town of Tuxedo (8 miles away). Coach USA also operates commuter bus routes from Tuxedo and Sloatsburg to New York City.

Starting in 2012 with the commencement of construction activities, construction truck traffic will include between 30 and 50 trips per day for approximately 3 to 4 years. The majority of the trucks will travel on Long Meadow Road south from Route 17A. The others will travel Highway 17 to Sterling Mine Road (CR-72) to Long Meadow Road (CR-84).

Three special events that are projected to increase traffic will be held at the Project Site during the year. Approximately 480 vehicles are projected to arrive from other locations and a total of 970 vehicles are projected to be on site during these special events. The majority of vehicles, 311 or 65 percent, will arrive between 9:00 AM and 10:00 AM. The proposed action will include a total of 1,020 parking spaces.

Provision will be made for bicycle parking at various locations throughout the site, although on-site bicycle traffic is expected to be minimal. Signage, speed tables, and striping will be provided to maintain low speeds (traffic calming) and to ensure pedestrian and vehicle traffic do not conflict. Pedestrian crosswalks will be provided to ensure safe and effective pedestrian travel.

Potential Impacts

- Levels of service at all area intersections will continue to be acceptable after construction under two separate traffic generation estimates. It is not believed that the project will affect the number of accidents in the area due to the minimal impact to the LOS at nearby intersections.
- Periodic road shoulder closures may be experienced during the installation of the force main, electrical work, spillway repairs, and possible gas-line installation.
- Residents will need to travel to nearby train stations, airports or one of the other complexes operated by the Project Sponsor for either personal or sponsor-related business. Those without personal transportation or who wish not to use their personal vehicles will have an impact on the public transportation system, if other transportation arrangements are not made.
- Traffic to the Project Site during the three weekends that special events are held may adversely impact traffic at nearby intersections. The greatest number of vehicles are projected to arrive during the one-hour period (9:00 AM to 10:00 AM) prior to the start of the event.

Mitigation Measures

- The Project Sponsor will comply with all local, county, and state regulations for construction traffic and road closures. Construction traffic will be limited to normal working hours.
- The site entrance will be reviewed with the Orange County Department of Public Works (DPW) to determine if additional turning lanes and/or road widening is warranted for Long Meadow Road (CR-84) at the site's entrance.
- During construction, truck traffic to and from the site will be routed along Long Meadow Road (CR-84), Sterling Mine Road (CR-72) and NYS Route 17A. No construction traffic will be routed along Eagle Valley Road due to the 4-ton weight limit.
- When completed, the majority of the residents of the facility will have private vehicles. Where necessary, sponsor-provided shuttle service, or ride-sharing arrangements between residents will provide access to the train station, nearby airports, or the Project Sponsor's other complexes.
- As has been done at other complexes owned and operated by the Project Sponsor, traffic attendants will be provided during special events to direct traffic. Half of the attendees will be instructed to arrive at the site from the north, utilizing Route 17A and Long Meadow Road (CR-84). The other half of attendees will be instructed to arrive at the site from the south, utilizing Sterling Mine Road (CR-72) and Long Meadow Road (CR-84). Both entrances to the site will be opened to minimize congestion on Long Meadow Road (CR-84). Exiting the site after the program will be managed in a similar fashion.

K. Community Services and Facilities

Existing Conditions

Police Protection

The site will be served by the Town of Warwick Police Department. The department consists of 33 officers, six of whom are part-time for a full-time equivalent (FTE) of 30 officers. The department has 15 marked police vehicles, 3 unmarked cars, 5 bicycles, and 3 motorcycles. The police force operates out of Town Hall, located at 132 Kings Highway, approximately 8 miles from the Project Site. Because of the intervening terrain between the Warwick Police Department and the Project Site, the shortest driving route between the site and Police Department is approximately 16.1 miles.

Based on the 2008 population estimate of the Town, the Police Department currently has a staffing level of approximately 1 full-time equivalent police and 0.64 vehicles per 1,000 residents. This indicates that the existing police force operates at approximately one-half of the national planning standard. Police Chief Thomas McGovern verified that the department is currently also operating with fewer officers than New York State Standards dictate based on calls for service.

Additional police coverage for the Project Site is available from the Orange County Sheriff's office and the New York State Police Troop F.

Fire Protection

The Project Site is located in the Greenwood Lake Fire District. This district maintains a contract agreement with the Tuxedo Fire District to provide response to the Project Site. The Eagle Valley Fire house is the closest Tuxedo Fire District facility and is located at 14 Scott Mine Road in Tuxedo, New York, approximately 2.5 driving miles away.

Meetings were conducted in November 2010 with the Greenwood Lake Fire District and February 2011 with the incoming Chief of the Tuxedo Fire District. The following information was provided by Chief Ralph Brooks and Chairman Charles Jones of the Tuxedo Fire District:

- The department has 40 volunteers.
- Fire-fighting equipment includes:
 - Ladder 575, which is a 1997 Smeal with 75-foot rear-mount aerial ladder, 1500 gpm pump, and 500-gallon tank.
 - Engine 566, which is a 1987 Pierce E-One with 1,500-gpm pump and 1,000-gallon tank.
- The response time to the Project Site is approximately 10–15 minutes.

Ambulance

The Project Site is serviced by the Greenwood Lake Ambulance District which is located at 74 Windermere Avenue in Greenwood Lake. The Corps currently has 45 members, 3 ambulance vehicles and responds to an average of over 500 calls per year. The national standard for ambulance staffing is 3 full-time personnel per 30,000 residents. Using a ratio of 3 volunteers to a full-time professional, the Greenwood Lake Ambulance Corps provides approximately 20 times the national standard.

Private ground Advanced Life Support (paramedic level training) is immediately available via local services as well as Rapid-Air Advanced Life Support which is available through the State Police helicopter Life Guard unit stationed at Stewart Airport and State Flight services out of Westchester Medical Center.

The closest emergency medical facilities are Good Samaritan Hospital approximately 7.7 vehicle miles away and St. Anthony's Community Hospital approximately 19 vehicle miles away.

The Turner Miller Group (TMG) contacted the President of the Ambulance Corps Eileen Diffley by letter on January 7, 2011, to gather information on existing Corps Equipment, staff, facilities, and ability to service the Project Site, but without response (see Appendix A-12). Subsequent efforts by TMG to contact the Ambulance Corps by phone were unfruitful.

Recreation Services

The following parks and recreational facilities exist in the Town of Warwick:

- Warwick Town Park/Union Corners Park: Pavilions, golf course, baseball diamonds, soccer fields, playground equipment—47.9 acres.
- Union Corners Sports Complex: Six multi-use fields, Little League fields—64.3 acres.
- Pine Island: Baseball fields, basketball court, playground, tennis court and fitness station—4.8 acres.
- Airport Park: Playground area, basketball courts, baseball diamond—4.4 acres.
- East Shore Beach: Pavilion, playground equipment, beach with swimming area, volleyball courts—38 acres.
- Wickham Lake: Fishing, boating, beach area—13 acres.
- Cascade Park: Fishing, picnicking, nature trails, natural area—504 acres.
- Hickory Hill County Park: Picnic area, baseball fields, 18-hole golf course—708.5 acres.

- Sterling State Forest: Fishing, biking, hunting, hiking, boating, natural trails—17,988 acres, 8,668 located within the Town of Warwick.
- Wallkill River National Wildlife Refuge: Nature trails, wildlife observation, fishing, canoeing—4,800 acres, 222 located within the Town of Warwick.

A number of pocket parks and small nature trails also exist throughout the Town as well as Mount Peter's Ski Area (privately-owned facility). According to the Town's Recreation Plan, the Town is in the process (in 2006) of clearing an additional 10 acres at the Union Corners Park in order to accommodate additional facilities. Sterling Forest State Forest is the closest facility to the Project Site.

Potential Impacts

Police Protection

Based on national standards, the proposed development would require the addition of between 1.7 and 2.0 full-time equivalent police positions. Based on existing Warwick staffing levels, 0.85 to 1.0 full-time equivalent positions would be needed to maintain current service ratios. Based on experience with other Watchtower facilities, the proposed project will not require the addition of any staff.

Demand for police services is reduced by the following measures:

- Only adults reside on site.
- All residents are members of a religious order who serve under a simple vow of obedience and poverty and, before becoming members, go through a strict screening process in order to verify, to the extent possible, that they are law-abiding and honest.
- On-site security staff maintain 24/7 physical and video surveillance of the property, buildings, and related facilities, which helps deter trespassing and vandalism.
- Security staff will receive training to assist with on-site storm preparation, accidents, intruders, stranded vehicles, and other on-site emergencies, contacting appropriate authorities only as necessary.
- Facility activities, including emergency incident response, would be coordinated from a central desk, which will be equipped with radio and telephone communication.
- There will be full back-up power generation facilities available in the event of an outage.

Fire Protection

Anticipated Demand

Based on national standards, the proposed development would require the addition of 4.2 to 4.95 volunteer firemen. However, it is noted that the needs of the future residents will not be equivalent to the existing average Warwick resident. Based on experience with other similar existing Watchtower facilities, the proposal will not require a significant increase in Fire Department staffing.

On February 21, 2011 a meeting was held between representatives of the Project Sponsor and members of the Tuxedo Fire District. In that meeting Chief Ralph Brooks and Chairman Charlie Jones along with other members of the Fire Department reviewed the drawings and design approach being proposed by the Project Sponsor. They indicated their general agreement with what is planned and made recommendations that will be addressed during the design phase.

Ambulance

Based on national standards, the proposed development would require the addition of 0.12 and 0.137 full-time equivalent EMS positions. Because the existing Ambulance Corps has well over the national standard staffing level, it is assumed that the proposed facility would not result in significant service deficits. Further, it is noted that the proposed facility will include an on-site infirmary with licensed physicians, registered nurses, and certified emergency medical technicians present on site at all times. Additionally, a basic life-support (BLS) ambulance will be maintained on site for non-critical transport of patients to area medical facilities. Many occupants also receive regular refresher training in cardio-pulmonary resuscitation (CPR).

Recreation Services

Based on national standards, the residents of the project would require 5.31 to 10.5 acres of parkland, approximately 1.06 to 2.5 acres of which should be local and actively-programmed recreation land. The amount of passive and active parkland is more than satisfied on site and by surrounding parks.

Mitigation Measures

Police Protection

No impacts are anticipated. See potential impacts for security features proposed as part of the project.

Fire Protection

- Strict site-wide no smoking policy.
- Guidelines on the use of candles, halogen lamps, and similar objects.
- Annual fire safety reminders, fire safety video, and fire escape plan review.
- Annual fire safety inspection of each room and work area.
- Inclusion of fire and safety reminders in regular department/shop meetings.
- Storage of hazardous materials such as paint for building maintenance in specific fire-resistant locations equipped with the required ventilation, fire suppression systems, and spill containment.
- Maintenance of an inventory of any chemicals on site, and their associated Material Safety Data Sheets (MSDS).
- Secondary emergency access from Long Meadow Road.
- Plans and landscaping designed to accommodate fire fighting and rescue equipment and operation.
- Construction of structures with non-combustible and fire-resistant materials.
- Compartmentalization of structures with code-compliant fire-rated doors, partitions, and construction.
- Installation of sprinkler system in all buildings except small recreation buildings and storage sheds.
- Installation of Class II standpipe, hose system, and Siamese connection on an accessible face of all buildings except garages, small recreation buildings, and storage sheds.
- Installation of dry-pipe Class III standpipe, hose system, and Siamese connection on an accessible face of all parking garage structures.
- Meeting all relevant fire and building code standards.

- Height of building kept within height of largest Tuxedo ladder truck.
- Installation of centrally monitored alarms and smoke detectors in each building and residential unit.
- Installation of fire hydrants in the vicinity of the new buildings, in consultation with the Tuxedo Joint Fire District.
- Provision of emergency backup power for all fire suppression system pumps.

Ambulance

Because the Greenwood Lake Ambulance Corps has adequate staffing and equipment to service the site and because on-site medical resources will be employed, no significant impacts to ambulance services are anticipated. See potential impacts for a description of on-site medical facilities proposed as part of the project.

Recreation Services

- Reservation in a natural state for passive enjoyment of the more than 80 percent of the Project Site that will not be used for building site construction.
- 70,000 square feet of active recreational facilities on site including a number of outdoor tennis, volleyball, and basketball courts.
- Use of Blue Lake for non-motorized boating.
- Indoor facilities totaling approximately 24,200 square feet including weight/exercise room(s), aerobics room, indoor basketball court, racquetball courts, music/social rooms, sauna, and therapeutic pool.

L. Infrastructure and Utilities—Wastewater Management

Existing Conditions

The existing Blue Lake STP, constructed in 2002 and owned by United Water South County Sewer, is located across Long Meadow Road from the Project Site. The STP was designed for tertiary treatment of 150,000 gallons per day (gpd), with 130,000 gpd available for the Project Site. The outfall from the plant is located about 200 feet downstream of the plant at the confluence of the Ringwood River below Little Sterling Lake and the unnamed branch coming from the Blue Lake Dam spillway.

The full quantity of wastewater generated at the Project Sponsor's facility is anticipated to be 80,000-gpd average flow. Wastewater from the Project Sponsor's new facilities will be conveyed by buried gravity sewer mains. These mains will be routed from the proposed buildings to a trunk sewer line travelling parallel to the existing United Water water supply line and between that line and the proposed buildings. Both the water supply and sewer trunk lines will be on the lake side of the complex. Manholes will be provided at each change in direction or slope. Discharge from the gravity trunk sewer will require pumping to the new Blue Lake STP via a new lift station and force main along Long Meadow Road. The new gravity sewer mains, lift station, and force main are proposed to be constructed by the Project Sponsor or by an outside specialty contractor.

Assuming that the wastewater generated by the IBM facility remains at 20,000 gpd, the combined flow from the Project Sponsor's facilities and the IBM facility would amount to 100,000 gpd, or approximately 60 percent of the total permitted flow of the plant. The permit conditions for this plant provide the degree of treatment necessary to maintain water quality standards, including nutrients, to avoid impacts on the

Ringwood River and the Wanaque Reservoir. Included in the permit are sludge disposal requirements which meet DEC regulations.

Potential Impacts

Installation of the proposed force main will require crossing a stream and Long Meadow Road (CR-84), which could impact the stream bed and traffic if the crossings are performed by open-cut methods.

Fats, oils, and grease in the wastewater stream can become a source of odors in the proposed lift station if left unmitigated.

Additionally, impacts to the community due to noise from the operating lift station were considered and are not significant given the depth of the lift station, and the small capacity of the pumps, and the lack of residential receptors.

Mitigation Measures

The force main will be installed by means of directional drilling from the lift station to the headworks of the Blue Lake STP. This will eliminate the need to open-cut Long Meadow Road (CR-84) and the stream crossing thereby mitigating potential impacts. If directional drilling equipment interferes with traffic or road access, then appropriate traffic control measures will be implemented to direct vehicles such as advanced warning signs, flaggers, and traffic cones.

Preventing the fats, oils, and grease from entering the wastewater collection system will prevent odors from developing in the lift station. The kitchen facilities at the site will be equipped with grease traps to intercept fats, oils, and grease. The grease traps will be routinely cleaned and the debris will be disposed of with the solid waste.

M. Infrastructure and Utilities—Water Supply

Existing Conditions

An existing surface water treatment plant owned by United Water New York/Blue Lake System is located between the Blue Lake Dam and Long Meadow Road. The plant presently supplies IBM, the Blue Lake STP, and the Woodlands residential community, in addition to the Project Sponsor's property. The plant draws water from Blue Lake via an 8-inch line through the dam. This line is fed by a submerged intake which limits the drawdown of Blue Lake to about 4 feet below the spillway crest. After filtration and further treatment, water is pumped to the distribution system and a 500,000-gal storage tank. The storage tank supplies the distribution system when the pumps are not running. The storage tank is on the top of a hill southwest of Blue Lake, with the base elevation at 947 feet and with an overflow at 972 feet.

The existing INCO building has a self-contained fire protection system consisting of a water storage tank and fire hydrants adjacent to the building. The water tank is no longer in service. The water system on the site has sufficient capacity and pressure to meet all necessary fire protection criteria without installation of booster pumps.

The average daily potable water demand for the proposed action is projected to be 85,000 gallons per day (gpd) and maximum daily demand for the proposed action is projected to be 145,000 gpd. The majority of the projected average daily demand will occur between 5:30 a.m. and midnight. No on-site storage tanks are expected to be required.

By "willingness-to-serve" letter dated October 25, 2010, United Water has indicated that an allotment of 147,000 gpd (maximum per day) available treatment capacity could be provided from their Blue Lake STP to serve the proposed development of the former King's College property. The current United Water water plant system capacity is 650,000 gpd (maximum day).

Proposed fire flow and storage is required to be 2,000 gallons per minute (gpm) for 2 hours (240,000 gallons) kept as a reserve above the domestic water requirements. Water mains are proposed to be cement-lined ductile iron pipe with a 6-inch-minimum diameter.

The typical proposed water pressure at the ground floor of the proposed buildings is anticipated to be 120 pounds per square inch (psi). The distribution mains to the various proposed buildings will be designed to maintain the United Water pressure to meet fire protection needs for standpipes and sprinkler systems. However, this pressure shall be reduced for domestic water by pressure reducing valves within buildings to achieve a suitable domestic use pressure of not more than about 65 psi for normal plumbing fixtures.

Potential Impacts

The proposed action will generate an average daily per capita wastewater flow of 85 gallons. This impact is not significant when compared to the overall historical per capita water demand of Orange County, which, according to the final Water Master Plan adopted by Orange County on October 7, 2010 (see <http://waterauthority.orangecountygov.com>), is 118 gallons per person per day. Even so, the Project Sponsor proposes to further minimize water consumption as described below under Section D, “Mitigation Measures.”

Installation of the proposed water infrastructure will require connection to the existing 16-inch water pipeline that runs along Sterling Forest Lake (Blue Lake). This pipeline is owned and operated by United Water. No new construction is planned outside of the defined project area for water supply.

Mitigation Measures

Although the existing United Water supply infrastructure and distribution system can adequately supply the proposed project’s water supply needs, the Project Sponsor is planning to voluntarily implement the following water-saving fixtures and practices to minimize the potable water requirements of the site:

- Install low-flow showerheads with a maximum flow rate of 1.5 gpm.
- Install dual-flush flushometers in women's restrooms.
- Install high-efficiency urinals in high-use areas in men's restrooms.
- Install dual-flush gravity tank toilets in residence rooms.
- Install water conserving washing machines in the personal laundry areas.
- Utilize recycled stormwater to provide non-potable water for cooling towers.

Connection to United Water’s existing potable water pipeline will be made using “hot tapping” methods whereby the existing pipeline remains in service. The connections will include backflow preventers and water meters to measure consumption.

N. Infrastructure and Utilities—Solid Waste

Existing Conditions

The most recent Solid Waste Management Plan accepted by Orange County, New York, was prepared in 1991 and updated in 1995–1996. The County is currently undertaking the process of updating the Solid Waste Management Plan and has solicited input from municipalities.

Since the 1995 Plan Update, the County has generally continued to rely on municipalities or private contracts for materials collection, processing, and ultimate disposal. The County maintains three solid waste transfer stations which accept separated recyclables, yard waste, and residual waste. The nearest to

the Project Site is the New Hampton transfer station, located coterminous with the County Fire Training Center.

The Town of Warwick requires all commercial properties to contract for trash collection and collection of recyclables. The Town of Warwick only provides recycling pickup from residential property.

Potential Impacts

Based on similar facilities owned and operated by the Watchtower Bible and Tract Society of New York, the anticipated average amount of municipal solid waste that will be generated is approximately 3.39 pounds per capita per day. Based on an average overnight population of 1,000 people (at maximum build-out), the anticipated monthly total is approximately 101,710 pounds (30,520 pounds of which is to be recycled). This is below the national average published by EPA (for 2009) of 4.34 pounds per capita per day.

Mitigation Measures

The proposed project includes an on-site recycling facility. The proposed recycling facility will handle all non-hazardous waste and recyclable materials generated on site. It is anticipated that 30 percent of the mixed solid waste generated by the facility will be recycled. This includes glass, metal, plastic, cardboard, and paper waste streams.

The Applicant will engage several vendors to haul solid waste off site, depending on the nature of the waste, to be disposed of at the proper facilities as required by the municipality.

O. Fiscal Resources

Existing Conditions

The existing Project Site is comprised of seven tax parcels located within the unincorporated Town of Warwick, Orange County, Warwick Fire District #2 (Greenwood Lake Fire Department), Greenwood Lake Ambulance District, and the Tuxedo Union Free School District. For the Town of Warwick, the Project Site is potentially subject to taxation for the General, Part Town, Open Space—Purchase of Development Rights, and Highway Funds. The entire site is subject to exemption under Section 420-b of the New York State Real Property Tax Law.

Under these rules, all seven properties are currently fully exempt. Four of the seven parcels properties had also been exempt under the preceding owners—Touro College and Kings College—two religious organizations intending to use the property for private religious educational facilities. The existing parcels paid a total of \$9,863.86 in 2010.

Potential Impacts

The Project Sponsor intends to maintain exempt status over all tax parcels. Based on this, the proposed project is not anticipated to increase tax revenues to any taxing jurisdiction.

The proposed project is designed to be self-sustaining and to require few public services. The project is anticipated to have the following cost impacts on the community as follows:

Orange County

Despite being located on a County road and having somewhat of a significant resident population, the proposed development is not likely to significantly increase costs to the County.

Town of Warwick

The proposed development will contain several recreational resources on site and it is unlikely that the proposed project will significantly impact the Town's recreation budget. No Dial-a-Bus use is anticipated as Watchtower operates its own shuttles for travel between complexes and residents are self-sufficient for transportation involving personal activities. Generally, there is a very low-to-absent incidence of criminal activity at Project Sponsor's existing facilities and it is not anticipated that the project will result in a significant increase in Town Court costs.

Warwick Open Space

The proposed development will not increase the Town's costs associated with repayment of the Open Space-PDR bond.

Warwick Highway

The project is not located on a Town road and there are no Warwick Town roads between the site and regional arterials that are likely to be frequently used for travel between the Applicant's other facilities. It is not likely that the project will result in increased costs to the Town's Highway Department.

Warwick Part Town

The demand of the proposal on Police services is detailed in Chapter 8. In summary of the applicable portions of that Chapter, based on experience with the other Project Sponsor's facilities located in similar communities in the Towns of Patterson and Shawangunk, it is anticipated that the level of service that will be demanded from the Police Department will be similar to that demanded by one single-family detached Warwick residence. This does not present a significant additional cost to the department.

Greenwood Lake Ambulance

The demand on ambulance services is detailed in Chapter 8. In summary of the applicable portions of that Chapter, the project will include on-site infirmary, doctors, nurses, and emergency medical technicians. If, as expected, the proposed facility is operated similar to the Applicant's Patterson facility, ambulance service will only be requested if the on-site ambulance is out of service or if additional transport is required. Because of this there is not anticipated to be a significant demand for ambulance service.

Warwick Fire District #2

The Warwick Fire District #2 has a contractual agreement with the Tuxedo Fire District to provide services to the site. The demand on firefighting services is detailed in Chapter 8. In summary of the applicable portions of that Chapter, the proposed project will result in the same level of demand as approximately 16.3 average Warwick residents.

- It is anticipated that the increased cost to the Tuxedo Fire District will be approximately \$1,350 to \$1,600 per year.

Tuxedo Union Free School District

No school-aged children will reside at the site. Therefore the project will not result in any increased costs to the Tuxedo Union Free School District.

Proposed Mitigation

The proposed project is not likely to result in significant additional increases in cost to the Orange County, Town Fund, Town Highway, Open Space, Part Town, and ambulance taxing jurisdictions. The

fire district will experience increased costs and a net negative fiscal impact, but this is likely to be insignificant in comparison to the total budget of the Tuxedo Fire District. Although no significant impacts are anticipated, the Project Sponsor is proposing to contribute \$2,000 per year to Warwick Fire District #2 to help to offset the cost of fire protection.

P. Visual Character

Existing Conditions

The following aesthetic resources exist within a five-mile radius of the Project Site:

- Tuxedo Park, Orange County, New York: National Register of Historic Places.
- Long Pond Ironworks, West Milford, Passaic County, New Jersey: National Register of Historic Places.
- Ringwood Manor, Ringwood, Passaic County, New Jersey: National Register of Historic Places.
- Sterling Forest State Park, Orange County, New York.
- Harriman State Park, Rockland and Orange Counties.
- Ringwood State Park, Ringwood, Passaic County, New Jersey (also known as Ramapo State Forest).
- Long Pond Ironworks State Park, West Milford, Passaic County, New Jersey.
- Appalachian Trail.

The project region itself is primarily wooded and mountainous, with many small lakes and streams. The surrounding state parkland is primarily used for recreational activities and open-space preservation. Existing hiking trails are located along the west side of Blue Lake and an existing public cartop boat launch is found at the north end of Blue Lake.

Views of the existing buildings from aesthetic resources are limited to the public boat launch in Sterling Forest State Park. The adjacent IBM facility affords views of the existing buildings from private land. The site's existing entrance and gatehouse are visible from Long Meadow Road.

The existing visual character of the site is predominantly composed of three elements: the forested slopes of the site, the existing INCO buildings on the shore of Blue Lake, and meadow/brushland in the existing cleared easement used and maintained by O&R. The existing INCO buildings and the campus of buildings proposed to replace them is surrounded by higher elevations that effectively screen the site from the surrounding area.

Potential Impacts

- Proposed buildings will only be visible from viewpoints where the existing buildings may already be seen.
- Proposed buildings will be qualitatively improved from the existing abandoned and deteriorated structures.
- The Project Sponsor is in discussion with O&R concerning the possibility of burial of the existing overhead power lines within the existing 100-foot-wide easement. Also being discussed is the relocation and updating of the existing electrical substation, to reduce its size and improve the overall aesthetics.
- The existing deteriorated elevated water tower located within the property will be demolished along with the adjacent equipment building. No additional water towers are proposed.

- To accommodate necessary communications infrastructure, a rooftop platform is proposed for the installation of a cellular/two-way radio antenna array. Additional dish-type receiver antennas are proposed on the maintenance building and each residence building for Master Antenna Television (MATV) reception. These antenna installations are proposed in locations that minimize the visual impact from the direction of sensitive views.
- The developed areas of the site will fall almost entirely outside the boundaries of the Ridgeline Overlay District. The small portion that falls within this district will be sensitively developed, restricting site clearing and grading to the minimum necessary and in harmony with the current requirements of the *Code of the Town of Warwick, New York*.
- Concerning the view from Long Meadow Road, undeveloped woodlands will continue to surround the proposed development, effectively screening it from public view.
- The main project entrance will be developed in the same location as the existing entrance with adjustments for improved access to the driveway to enhance safety. The landscaping will also be improved to enhance the natural characteristics of the existing road. A second emergency site entrance road, located approximately 500 feet southwest of the existing entrance will be created as required by the fire code.
- The effect of the proposed site lighting, including internal building lighting, may result in increased visual impact within the limited viewshed. Considering that the boat launch is substantially used for daytime recreational activities, the impact of proposed site lighting on recreational users within the viewshed will be minor. Similarly, the majority of employees and visitors to the IBM site are present during daylight hours, and IBM contains its own site lighting.

Mitigation Measures

- The proposed buildings are kept near the lake at lower elevations resulting in a viewshed limited by topography and vegetation to the Blue Lake basin.
- The majority of the disturbance to the site is within the previously disturbed area, limiting the spread of the development and thus minimizing the increase in visibility. This also reduces the area of existing woodland needing to be cleared for the proposed project.
- The building heights are limited to five stories with an overall height of 60 feet, maximum.
- Structures have been sited to provide a sufficient distance between the buildings to appear as separate edifices. Techniques are employed to visually break down the overall massing of the larger buildings, including: varying the planes of the building façade and the heights of differing building sections; interrupting façades of larger buildings with projecting porches, recessed wings, or columns; layout of “U-shaped” residential buildings around large courtyards will to boost the appearance of separate structures.
- Different fenestration size, types, and patterns have been implemented, minimizing sections of uninterrupted walls.
- Use of exterior finish materials in combinations of natural stone and masonry with varying shades and textures.
- Use of exterior finish colors in conformance with the Town's Biodiversity Color Chart.
- Providing a building “base” of stone to augment the overall appearance and provide human scale.

- Use of complementary combination of gable-roof lines intersecting with flat roofs. The gable roofs will be featured at the building ends facing Blue Lake to soften the appearance of the structures from the distant views.
- Screening of mechanical equipment from public view.
- Burial of site utilities where possible; or when not possible, screening with fencing, walls, vegetation, or mechanical rooms scaled to resemble outbuildings.
- Location of heating, ventilation, and air conditioning equipment typically mounted on the roof, behind sloped roofs, projections, or at the rear of buildings so that it is beyond the sight lines as viewed from the boat launch.
- Concealment of parking in parking garages for the majority of the parking needs.
- Location of remaining surface parking at the rear or side of buildings with landscape screening.
- Maintenance of the majority of the site in a natural state.
- Supplementation of existing vegetation with plantings of native trees, shrubs, and ground cover to reduce visibility of the site after clearing is performed for the pond.
- Installation of significant new plantings to re-vegetate disturbed areas with native planting.
- Avoidance of unnatural expanses of large lawn areas as part of the landscaping scheme.
- Provision of a lacustrine buffer at the lakefront wetland setback and retention of existing trees along the lake. Planting of new trees will be avoided close to the shore of the lake to maintain existing open habitat currently being utilized by bluebirds and other protected species.
- Avoidance of lighting “hot spots.”
- Limiting site lighting to primary roadways and parking, pedestrian walkways and spaces, service areas, building entrances, main site entrance, and outdoor recreation area by means of pole-mounted roadway lights and lighting bollards.
- Lighting the driveway only at intersections of travel and a few points along the way as is typical of rural roads.
- Using only night-sky friendly lighting including “full cut-off” fixtures that do not provide any uplight above horizontal, thus avoiding night trespass and night-sky glow.
- Use of timer-control with a manual override “On” or “Off” at court lights with automatic shut-off controls to limit the hours of use.
- Proposing fixture heights to be lower than the general height of the on-site tree canopy.

Q. Cultural Historic and Archaeological Resources

Existing Conditions

A Phase IA archaeological study was prepared in accordance with relevant guidelines. Historic period iron mining is believed to have been present on the Project Site although outside of the currently proposed project’s area of potential effect. No properties listed, or now considered eligible for listing, on the New York State or National Registers of Historic Places are located within the project property or within one mile of the project area, including lands within the State of New Jersey.

Pre-contact period Native American sites and historic period sites associated with the Sterling Works may exist within a small area of sensitivity that was not previously disturbed by the INCO facility, and that would be disturbed under the Project Sponsor’s proposal—within the area of potential effect (APE).

Potential Impacts

Ground disturbance in the approximately 45-acre APE will generally occur within the existing developed portion of the Warwick property, formerly occupied by the INCO facility, and immediately adjoining undeveloped areas. Ground disturbance will result from the demolition of existing buildings and construction of a religious administrative campus. New road construction, installation of utilities, and landscaping also will occur within the APE as part of construction activities.

Mitigation Measures

Phase IB-level archaeological testing will be undertaken in the archaeologically sensitive portion of the APE for the Project Site that was not previously disturbed by previous INCO development.

R. Unavoidable Adverse Environmental Impacts

The proposed action will result in a number of potential impacts that cannot be avoided. Although these impacts cannot be avoided, the Project Sponsor has proposed a number of mitigation measures that will reduce their likelihood of occurrence or scope of impact:

Table 1-3 Summary of Potential Impacts and Mitigation Measures

Potential Impacts	Mitigation Measures
Increased susceptibility to erosion from the loss of natural vegetation on the site during construction.	Limit the construction activity to a maximum of ten acres at any one time, and implement temporary stabilization measures for all areas disturbed during construction.
Blasting and permanent alteration to geology.	Develop blasting plan; licensed personnel to perform blasting per Chapter 63 of the <i>Code of the Town of Warwick, New York</i> ; notify nearby property owners.
Increase to the volume of stormwater runoff from new impervious areas.	Limit stormwater runoff rates from new impervious areas to preconstruction rates or less; implement stormwater pollution prevention plan including green infrastructure practices and standard stormwater management practices.
An increase in emissions and fugitive dust generation during construction and emissions from the heating plant.	Regularly apply water to disturbed areas; use ultra-low sulfur fuel in construction equipment; use fuel oil with a maximum sulfur content of 0.5 percent by weight at heating plant.
Disturbance to two previously undisturbed eastern deciduous hardwood forest areas.	Keep developed area and resultant clearing to a minimum; reforest approximately 5 acres of the site after grading activities.
Disturbance to an area potentially supporting hyssop skullcap, a New York State-protected vegetative species.	Reinvestigate the power-line right-of-way during the hyssop skullcap flowering period; depending on findings, mitigation measures may include: limiting grading to between October and March; grading plan modification; retention of horticulturalist or landscape architect; incorporation of plant species into landscape; or making seed available to NYSDEC.

Table 1-3 Summary of Potential Impacts and Mitigation Measures

Disturbance to habitat supportive of eastern bluebirds, a New York State-protected wildlife species.	Conduct tree removal from October 1 through March 31; install bluebird nesting boxes.
Potential chance encounters with red-shouldered hawks, a New York State-protected wildlife species.	No red-shouldered hawks have been observed on the site in 2010; preserve natural habitat as undisturbed, open space; suitable nesting and foraging habitat provided in Sterling Forest and Ringwood Manor State Parks.
Potential chance encounters with timber rattlesnakes, eastern box turtles, and wood turtles, all New York State-protected wildlife species.	Install silt fence; inspect silt fence to prevent potential trapping; contact NYSDEC to remove rattlesnakes or have someone on staff trained in the protocols to safely move them.
A minimal increase in the volume of traffic and delays through local intersections.	Provide live/work arrangement and shuttle service between Project Sponsor's complexes.
A minimal increase in the demand for police, fire and ambulance services.	Provide on-site security and medical staff as well as fire suppression equipment.
A minimal increase in the demand for recreation services.	Provide on-site indoor and outdoor recreation spaces including: tennis courts, volleyball courts, basketball courts, picnic tables, swimming pool, racquetball courts, aerobic exercise room, games rooms and libraries.
An increase in the volume of wastewater received by the local wastewater treatment facility (STP).	Received "willingness-to-serve" letter from utility; construct lift station and force main to deliver wastewater to the headworks of the STP.
An increase in the demand for potable water.	Received "willingness-to-serve" letter from utility; implement water-saving fixtures and practices including low-flow showerheads, dual-flush flushometers and gravity tank toilets, high-efficiency urinals, water-conserving washing machines and the use of recycled stormwater to provide non-potable water for cooling towers.
An increase in the volume of solid waste generated locally.	Provide on-site recycling facility; recycle approximately 30 percent of solid waste; contract with third-party vendors to haul and dispose of solid waste and recyclable material.
A minimal increase in costs to the local fire district.	Contribute \$2,000 per year to Warwick Fire District #2.
A minimal impact to views from the public boat launch at the north side of Blue Lake and from the adjacent private lands of IBM.	Use nature stone and masonry along with a warm color palette and textures; screen mechanical equipment and paved areas from public view; provide parking garages to minimize paved areas.
A minimal increase in the amount of light visible at the sight during nighttime hours.	Limit use of lights along the main roadway; include induction-type fixtures; provide waist-high bollard lighting for walkways.
The project will disturb areas of the site that may contain historic and archaeological resources.	Conduct Phase IB-level archaeological testing and submit work plan to NYSOPRHP for review.

S. Alternatives

The following alternatives to the proposed action were considered:

No-Action Alternative

This alternative assumes that no action is taken on the part of the Project Sponsor to develop the proposed project or that the existing site could be reoccupied by a user similar to INCO. INCO utilized the site as their headquarters office and for research and development. The research and development at the Blue Lake facility was related to metal plating processes. The facility was not used for production. If this site is reoccupied by a similar user, environmental impacts to the site will be similar to those present during the time the INCO facility was in operation. Unless it was reoccupied, many areas could be left with unsightly abandoned buildings which also constitute an attractive nuisance for potential trespassers. Site contamination would be left unremediated. For additional comparative impacts of this alternative to the present proposal, please see Table 1-4 Comparison of Alternative Impacts. This alternative would not serve the Project Sponsor's goals.

Educational Facilities Alternative

The King's College proposal included construction of a four-year liberal arts college for 1,500 students. The existing INCO building, which consists of 198,000 square feet of floor space, was to form the core of the new campus. Adaptive reuse and building additions would have resulted in a total of 377,450 square feet of floor space in this main building to accommodate administrative and faculty offices, classrooms/labs, food service, support facilities, student/campus center, theater/performing arts center, library, and gymnasium/indoor pool.

On-campus student housing was to be constructed on the hillside to the southeast of the existing INCO building. A complex of six (6) residence halls, totaling approximately 320,000 square feet and made up of suite-type and single- and double-dormitory-type living units, were proposed. Married student housing for 40 couples was to be constructed adjacent to the student dormitory buildings. A variance was required to permit the proposed dormitories to be constructed to a height of four stories.

A 42,170-square-foot Chapel Music Center was planned for a site immediately northeast of the main building.

An athletic complex was to be constructed on the plateau at the top of the campus hill and would have included an all-weather track/multi-use field, soccer and baseball fields, tennis courts, and other passive recreational areas. The recreational complex was to be serviced by a 3,000-square-foot athletic field building and a 4,050-square-foot campus service building was to be located near the recreational fields.

The existing on-site 10,000-gpd wastewater treatment plant was to be replaced with a new wastewater treatment plant located at the site of the existing Blue Lake STP. This new plant was completed in 2002 in conjunction with the South County Sewer Corporation (SCSC) and is capable of treating the 130,000 gpd of sewage that will be generated by The King's College.

Land area had been reserved adjacent to the main building for development of a future educational facility, assumed to be approximately 50,000 square feet in size.

A total of 1,370 (31 handicapped) parking spaces were to be provided on-campus. The total parking lot pavement area was to amount to approximately 13.3 acres in 21 separate lots.

The construction of a complete loop road was to provide improved vehicular circulation and emergency access throughout the campus.

For comparative impacts of this alternative to the present proposal please see Table 1-4 Comparison of Alternative Impacts. This alternative would not serve the Project Sponsor's goals.

Low-Height Alternative

This alternative assumes that the Project Sponsor will develop the site with a maximum building height of 40 feet. To accommodate the same building square footage, approximately 59 acres of the site will be disturbed as opposed to 45 acres under the original proposal. For additional comparative impacts of this alternative to the present proposal, please see Table 1-4 Comparison of Alternative Impacts.

As-of-Right Alternative

This project alternative analyzes development of a 25-unit residential subdivision on the Project Sponsor's property in accordance with existing zoning regulations. These residences are assumed to be five-bedroom houses approximately 3,200 square feet in area. Subsequently, potential impacts from this type of development were assessed.

Estimates show that approximately 200 acres of the 253-acre parcel are available for development of lots; the remaining 53 acres are reserved for infrastructure (i.e., roadways and stormwater facilities, open-space and contingency). For additional comparative impacts of this alternative to the present proposal please see Table 1-4 Comparison of Alternative Impacts. This alternative would not serve the Project Sponsor's goals.

Table 1-4 Comparison of Alternative Impacts

Areas of Potential Impact	Proposed Project	No-Action/ Re-occupy by Similar User Alternative	Educational Facilities Alternative	Low-Height Alternative	As-of-Right Alternative
Land/Demographics					
Population, Employees, Students	1,000 residents	440 employees ⁽¹⁾	1,500 students + 260 staff	1,000 residents	113 residents
Area of Disturbance (Total)	45 acres	15 acres ⁽²⁾	102 acres	59 acres	65 acres
Disturbance of Slopes 15–25%	2 acres	0 acres	26 acres	13.7 acres	14 acres
Disturbance of Slopes >25%	0.5 acres	0 acres	5 acres	3.4 acres	3.8 acres
Impervious Surface	13.0 acres	6.8 acres	31.7 acres	31 acres	25.7 acres
Buildings					
Total Building Area (except parking)	1,100,000 sq ft	198,000 sq ft	706,000 sq ft	1,100,000 sq ft	80,000 sq ft
Total Covered Parking Area	341,000 sq ft	None	None	None	None
Maximum Height	60 ft or less	50 ft or less	60 ft or less	40 ft or less	35 ft or less
Minimum Distance to Public Road	330 ft	1,380 ft	980 feet	429 ft	150 ft
Parking Spaces	870 (covered), 1,020 (total)	246	1,370	1,020	50
Infrastructure and Utilities					
Water	85,000 gpd	50,000 gpd ⁽⁶⁾	144,000 gpd	85,000 gpd	13,750 gpd
Wastewater	80,000 gpd	45,000 gpd ⁽³⁾	130,000 gpd	80,000 gpd	13,750 gpd
Stormwater	Underground stormwater chambers @ 26,500 cu ft	No detention; all runoff into Blue Lake	6 detention basins @ 560,000 cu ft	1 detention basin @ 318,500 cu ft	Unknown
Solid Waste	427 tons/year—disposed 183 tons/year—recycled	Unknown	1,140 tons/year—disposed 460 tons/year—recycled	427 tons/year—disposed 183 tons/year—recycled	88 tons/year—disposed 30 tons/year—recycled
Electricity	2,100 kVA	Unknown	9 mill KWh/yr	Unknown	500 KVA ⁽⁴⁾

Areas of Potential Impact	Proposed Project	No-Action/ Re-occupy by Similar User Alternative	Educational Facilities Alternative	Low-Height Alternative	As-of-Right Alternative
Heating Fuel	Geothermal with boilers or Conventional Fuel Oil Boilers w/ heat input = 48.5 million Btu/hr	Conventional Fuel Oil Boilers w/ heat input = 40 million Btu/hr	1.26 billion Btu/yr	Geothermal with boilers or Conventional Fuel Oil Boilers w/ heat input = 48.5 million Btu/hr	Residential installations using natural gas or heating oil
Community Services					
Police, Fire, and Ambulance	Minimal	Minimal	Minimal	Minimal	Minimal
Recreation	Minimal	Minimal	Minimal	Minimal	Minimal
Schools	Minimal	Minimal	Minimal	Minimal	Significant
Traffic					
Weekday AM Peak (Trips—Entry/Exit)	23 / 30	203 / 41	129 / 86	23 / 30	8 / 22
Weekday PM Peak (Trips—Entry/Exit)	44 / 115	32 / 182 ⁽⁵⁾	163 / 195	44 / 115	16 / 9
Saturday Peak (Trips—Entry/Exit)	81 / 116	Minimal	Minimal	81 / 116	Minimal
Sunday Peak (Trips—Entry/Exit)	41 / 58	Minimal	Minimal	41 / 58	Minimal
Other					
Geology, Soils and Topography	Minimal	Minimal	Significant	Significant	Moderate
Groundwater and Surface Water	Minimal	Significant	Minimal	Moderate	Minimal
Air Resources	Minimal	Minimal	Minimal	Minimal	Minimal
Terrestrial and Aquatic Ecology	Minimal	Potentially Significant	Significant	Moderate	Moderate
Visual Character	Moderate	Minimal	Significant	Significant	Moderate
Cultural, Historic and Archeological	Further Study Recommended	None	Further Study Recommended	Further Study Recommended	Further Study Recommended
Fiscal Impacts	Minimal	Minimal	Significant	Minimal	\$350,000 Net Deficit

Areas of Potential Impact	Proposed Project	No-Action/ Re-occupy by Similar User Alternative	Educational Facilities Alternative	Low-Height Alternative	As-of-Right Alternative
Zoning	Land Conservation —Requires Special Permit	Land Conservation	Land Conservation —Requires Special Permit	Land Conservation — Requires Special Permit	Land Conservation

Notes:

1. Based on 2.2 employees per 1,000 sq ft in *ITE Trip Generation Manual*, 4th ed.
2. Calculated based on 102 total acres minus 87 newly disturbed acres for The King's College.
3. Based on CHA Site Investigation Report, June 2009.
4. Electrical demand based on approximately 20 KVA per home.
5. Based on ITE Trip Generation Table for Land Use Code 760—Research and Development.
6. Based on anticipated wastewater use.

T. Irreversible and Irretrievable Commitment of Resources

Some small areas of existing undeveloped land will be committed to development of structures, roads, and landscaped areas. Other irreversible and irretrievable commitment of resources include:

- As a result of grading activities, the upper geological formation on portions of the site will be irreversibly altered.
- As a result of grading and filling activities, the soil composition and characteristics of portions of the site will be irreversibly altered.
- The proposal will irreversibly alter the site's topography.
- The proposal will require the use of materials and energy for the construction of structures and site improvements.
- The proposal will irreversibly alter areas of eastern deciduous forest to developed land.
- The proposal will consume 85,000 gallons per day of potable water.
- The proposal will reduce the available capacity of the Blue Lake STP by 80,000 gallons per day.
- The proposal will consume 52,610 MBtu per year of energy.

U. Potential Growth Inducing Aspects

The proposal involves the relocation of up to 850 resident members of the Worldwide Order from the existing Watchtower Facility in Brooklyn, NY, to the Project Site with the potential for future growth to 1,000 residents. The introduction of these persons residing and working on the site will increase the local demand for goods and services. While Watchtower makes every effort to use its own resources efficiently, Watchtower will make substantial annual purchases of goods and services in the local region in support of the proposed facility.

Based on past experience, over 70,000 persons from around the world can be expected to visit the headquarters annually. Additionally, it can be expected that friends and family members of on-site

residents from outside the New York metropolitan area will regularly come to visit the facilities and surrounding area, often eating and lodging overnight at local commercial establishments.

Growth-Inducing Aspects

The increase in local purchases both by facility operations and by visitors has the potential to significantly impact the local economy. The construction and operation of the facility may result in increased growth in the area in such sectors as:

- Agriculture and food.
- Wholesale sales including office supply, fuels, and janitorial supplies.
- Retail sales including apparel, housewares, and others.
- Utilities including water, sewer, electric, gas, and telephone.
- Personal services.

At this time it is difficult to estimate the local impact of operational expenditures of the future facility. However, inquiries are being made to area growers about purchasing locally-grown food on an ongoing basis.

Tourism

The increase in regional economic activity is much easier to anticipate based on the availability of data on tourism expenditures from Orange County. It is anticipated that visitors to the facilities will spend their money on:

- Accommodations.
- Private recreation including theaters, museums, historic sites, local attractions, etc.
- Retail sales including service stations, outdoor outfitters, and general merchandise.
- Food and beverages.
- Transportation including taxis, car rental, and mass transit.

The most recent data available of Orange County Tourist expenditures is from 1998. This data was adjusted to 2009 dollars.¹ As a result, visitors to the facility are anticipated to spend \$7,443,420 annually within the County. It is anticipated, based on a more recent tourism study², that these expenditures will be distributed as follows:

¹ By using a multiplier derived from comparing the 1998 and 2009 Bureau of Labor Statistics, *Consumer Expenditure Survey Average Entertainment Expenditures* totals for the Northeast Region, $\$2,627/\$1,772 = 1.4825$.

²Tourism Economics. *The Economic Impact of Tourism in New York State - Hudson Valley Focus*. Oxford, UK: May 2010

Table 1-5 Direct Expenditures from Tourism

Type of Expenditures	% of Expenditures	Annual Direct Economic Activity
Retail and Service Stations	19.00%	\$1,414,250
Recreation	9.00%	\$669,908
Transportation	22.00%	\$1,637,552
Overnight Accommodations	23.00%	\$1,711,987
Food & Beverage	27.00%	\$2,009,723
		\$7,443,420

Using the Regional Input-Output Modeling System (RIMS II), the impact of these expenditures on the regional economy (Orange County and directly adjacent Counties) is calculated in Table 1-6. The impact on the regional rather than County economy was analyzed, because it was assumed that, in addition to those in Orange County, many visitors to the site will seek points of interest in other Hudson Valley counties, Northern New Jersey, and Northwestern Pennsylvania.

Table 1-6 Impact of Tourism Expenditures on Regional Economy

Category	RIMS Multipliers			Total		
	Output	Earnings	Employment	Output	Earnings	Employment
Retail Trade	1.7501	0.4281	15.6276	\$2,475,079	\$605,440	22
Amusements, Gambling, Recreation	1.7235	0.3859	17.6104	\$1,154,586	\$258,517	12
Transit and ground passenger transportation*	1.7795	0.5354	25.7075	\$2,914,024	\$876,746	42
Accommodation	1.7792	0.4093	13.5565	\$3,045,967	\$700,716	23
Food services and drinking places	1.7911	0.3972	20.4191	\$3,599,616	\$798,262	41
Total				\$13,189,271	\$3,239,682	140

The tourism generated by the facility is likely to result in a total increase to the region of approximately \$13 million and increase demand for approximately 140 new employees. Of the 140 positions created it is anticipated that approximately 106 of the positions would be directly induced by the expenditures of the tourists, while the remainder would be due to indirect effects as the increased activity ripples through the regional economy.

V. Project Effects on the Use and Conservation of Energy Resources

Existing Conditions

The existing INCO buildings comprise a total area of approximately 198,000 square feet. The US Department of Energy, on their Energystar® web site, currently states: “Labs are energy intensive using 5 to 10 times more energy per square foot than an average office building.” If the existing facilities were reused for a similar lab and industrial use with the same floor area it could consume approximately 93,000–186,000 MBtu/year.

Potential Impacts

The proposed new development would contain a total of 1,140,200 square feet, divided amongst office, residential, and services/maintenance building spaces. The proposed new development comprises 5.5 times more space than the existing uses. However, the existing uses were at least 5 to 10 times more energy intensive than an average office building, which is the most energy-intensive use being proposed for the new development. Also, the Energy Use Index (EUI) for the new development is targeted to be more than 45 percent lower than the average office, residence, or services/maintenance building. Thus it can be concluded that the new development will use considerably less energy, less than 50 percent the anticipated energy with the continued use of the existing or similar facilities. Normal energy use for a complex similar to what is being proposed would be 96,244 MBtu per year.

Mitigation Measures

Table 1-7 illustrates the anticipated energy impact of the proposed project based on a sustainable design approach. This reflects a target of at least a 45-percent reduction in energy use compared to the average code-compliant building. The total energy use anticipated for the proposed facility is 52,610 MBtu per year.

Table 1-7 Projected Energy Impact Based on Sustainable Design Approach

Building Type	Proposed sq ft per Building Type	Projected EUI	Projected Annual Consumption
Office	250,200	51 kBtu/sf/yr	12,760 MBtu/yr
Residence	494,000	47 kBtu/sf/yr	23,218 MBtu/yr
Service	396,000	42 kBtu/sf/yr	16,632 MBtu/yr
Totals:	1,140,200	N/A	52,610 MBtu/yr

Energy and Sustainable Design Practices Summary

The buildings in this complex are projected to score in the top 15 percent in terms of minimizing energy consumption, according to the Department of Energy's Target Finder energy performance rating tool. For example, the energy consumption expected for the proposed residence buildings will be approximately 45 kBtu per square foot per year. The average for this type of building in the same geographic area is 86 kBtu per square foot per year. This reflects a reduction in energy usage and carbon emissions of 47 percent over the average building of this type. Similar percentages in energy savings with respect to the average building are expected for the proposed offices and maintenance buildings on the site.

The new residences, administration offices/services building, and maintenance building will be designed to accepted sustainability standards. The goal of the Project Sponsor is to achieve a three Green Globes™ award level in sustainable design through the Green Globes™ System. This roughly corresponds to a "LEED® Green Building Rating System™ Gold award level.

Sustainable design initiatives will include all of the following:

Site Development

- Undeveloped areas to remain undisturbed.
- Landscaping will integrate native planting and naturalization.

- “Heat island” effect to be minimized by using shading, high-albedo paving surfaces, and green roofs.
- Exterior lighting to minimize glare, night trespass, and night sky glow.
- Design to reduce bird collisions with buildings.
- Natural habitat cores and corridors are to be preserved.
- Site grading will increase infiltration.
- Reduce run-off by use of plants, trees, detention ponds, and infiltration trenches.
- Use of indigenous plants in landscaping will reduce water use and reduce pest infiltration.

Energy

- DOE Energy Star Target Finder rating of 85 percent or better (indicates upper 15 percent).
- Shading devices, low-emissivity (low-e) glazing to reduce heat infiltration and thus reduce energy use.
- Building envelope to optimize energy savings.
- High-efficiency lamps, ballasts, and lighting controls to save energy.
- Variable frequency drives (VFDs), energy-efficient motors, and elevators to be installed.
- Transportation—commuting to and from site—will have minimal effects on fossil-fuel consumption.

Water

- Consumption targets—less than 10 gallons per square foot per year in offices and 11,000 gallons per dwelling unit per year in residences.
- Water-saving fixtures to be installed.

Resources and Materials

- Use of locally manufactured materials.
- Materials with low volatile-organic-compound (VOC) content to be used.
- Recycled content to comprise a minimum of 10 percent of all construction materials.
- Durable and low-maintenance materials to be used.
- Strategies to reuse and recycle demolition waste.

Emissions

- Low-ozone-depleting refrigerants to be used.
- All new combustion equipment to meet Energy Star or other energy saving standards.

Indoor Environmental Quality

- Ventilation rates to comply with *ASHRAE Standard 62.1-2004* for indoor air quality.
- Strategies to control sources of indoor pollutants.
- Strategies to optimize lighting comfort for occupants, maximizing daylighting.

- Strategies to provide acoustic comfort.

In addition to the energy-efficient practices incorporated into the sustainable design approach, required energy conservation measures will be incorporated in the design of each specific building. At no time will the energy conservation measures fall below the standards mandated in the current *Energy Conservation Construction Code of New York State (ECCCNYS)*. The code specifies, within each given climate zone, basic requirements that would be applied to the building envelope, mechanical systems, and lighting as mandatory for residential and commercial buildings. *

A. Introduction

This Chapter provides a brief history of the Project Sponsor's organization and existing operations in New York State, descriptions of the site location and the proposed project, and explanations of the Project Sponsor's objectives and the need for the proposed project.

B. Site Location and Description

The Project Site is approximately 253 acres in the Town of Warwick and is divided into two tracts; one tract northeast and one tract southwest of Long Meadow Road (see Figure 2-1 Regional Location Map). In addition, the tract northeast of Long Meadow Road is traversed by a portion of Old Sterling Mine Road, as well as by a portion of Ringwood Brook. Approximately 7.8 acres of the site are meadow/brush land; 228.8 acres are forest; 0.7 acre is wetland (jurisdictional and non-jurisdictional); 6.8 acres are roads, pavement, structures, and other impervious surfaces; and 8.9 acres are landscaped area.

The main tract is southwest of Long Meadow Road and contains some large industrial buildings totaling approximately 198,000 square feet in area, parking lots, a former industrial wastewater treatment plant, and an entrance road. All existing buildings are to be demolished under the proposed plan. The developed portion of the property fronts on a portion of Blue Lake (also known as Sterling Forest Lake). A 100-foot-wide Orange and Rockland Utilities, Inc., (O&R) easement bisects the properties on both sides of the road.

The smaller tract lies northeast of Long Meadow Road and is vacant of any significant structures. This portion of the property is largely undeveloped and abuts a parcel of approximately 4 acres under separate ownership on which is situated a treatment plant for public wastewater.

Surrounding Properties

The property is bordered on the north by a large IBM facility. A 3.5-acre lot (parcel 851-1.221) owned by United Water includes a water treatment plant and is encompassed by the Project Sponsor's property. Additionally, a residential development is located approximately 1,800 feet from the southeast boundary. New Jersey zoning is R-3 (3-acre lots) for residence, religious, and community uses. The other bordering properties are part of the state park systems of New York (Sterling Forest State Park) and New Jersey (Ringwood State Park)—see Figure 2-2 Area Location Map and Figure 2-3 Existing Land Use Map.

Recent History

The main portion of the property consists of a 168-acre tract formerly sold by the Sterling Forest Corporation to the International Nickel Company (INCO). After years of use as metallurgical laboratories and a pilot alloying facility by INCO, the site was sold to Lynmark Development Associates which proposed development of a residential subdivision (i.e., Blue Lakes). A Findings Statement was issued by the Warwick Town Planning Board as Lead Agency on November 15, 1989, for a 150-lot residential subdivision. In July 1991, the site was purchased by King's College and on January 5, 2000, site plan approval was given for a 1,500-person college of approximately 706,000 square feet (see Figure 2-4 The King's College Site Map). Under the approved King's College site plan, approximately 102 acres (61 percent) were to be disturbed. Of the 102 acres, 26 percent of the disturbed area was on slopes of 15 to 25 percent, and 5 percent was on slopes of 25 percent or greater. The development proposed blasting of approximately 50,000 cubic yards of rock. The plans, though approved, were not acted upon.

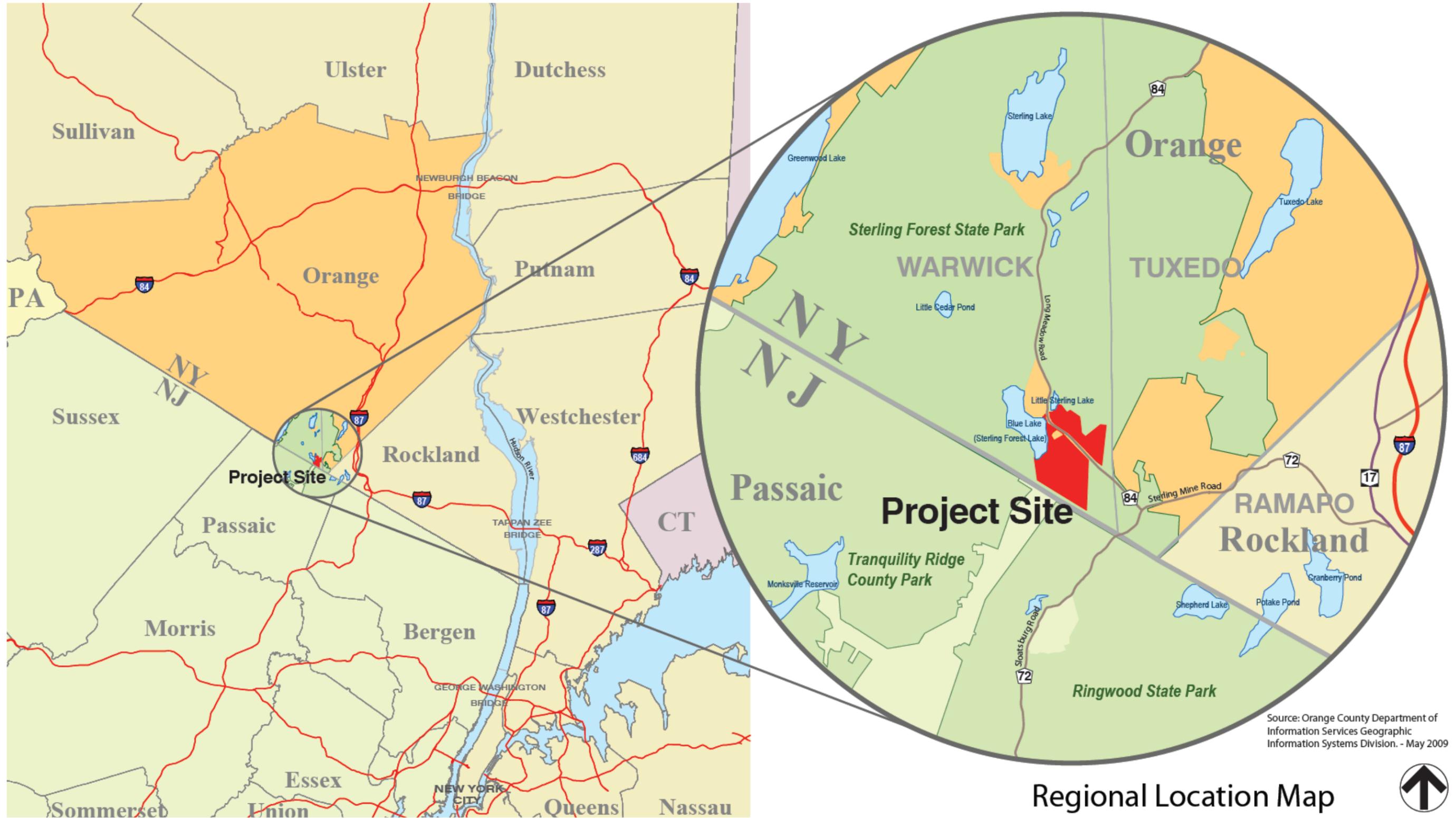


Figure 2-1 Regional Location Map

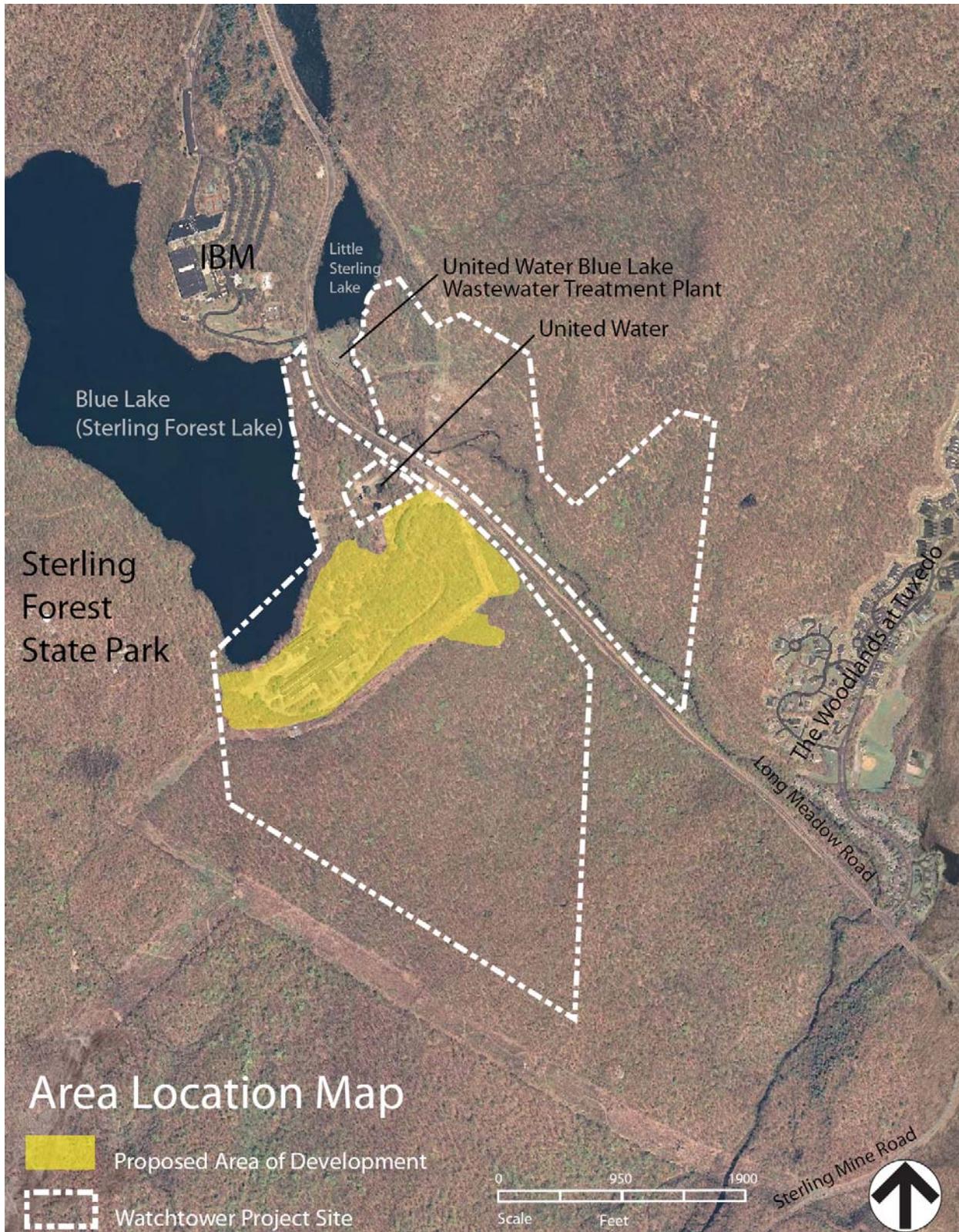
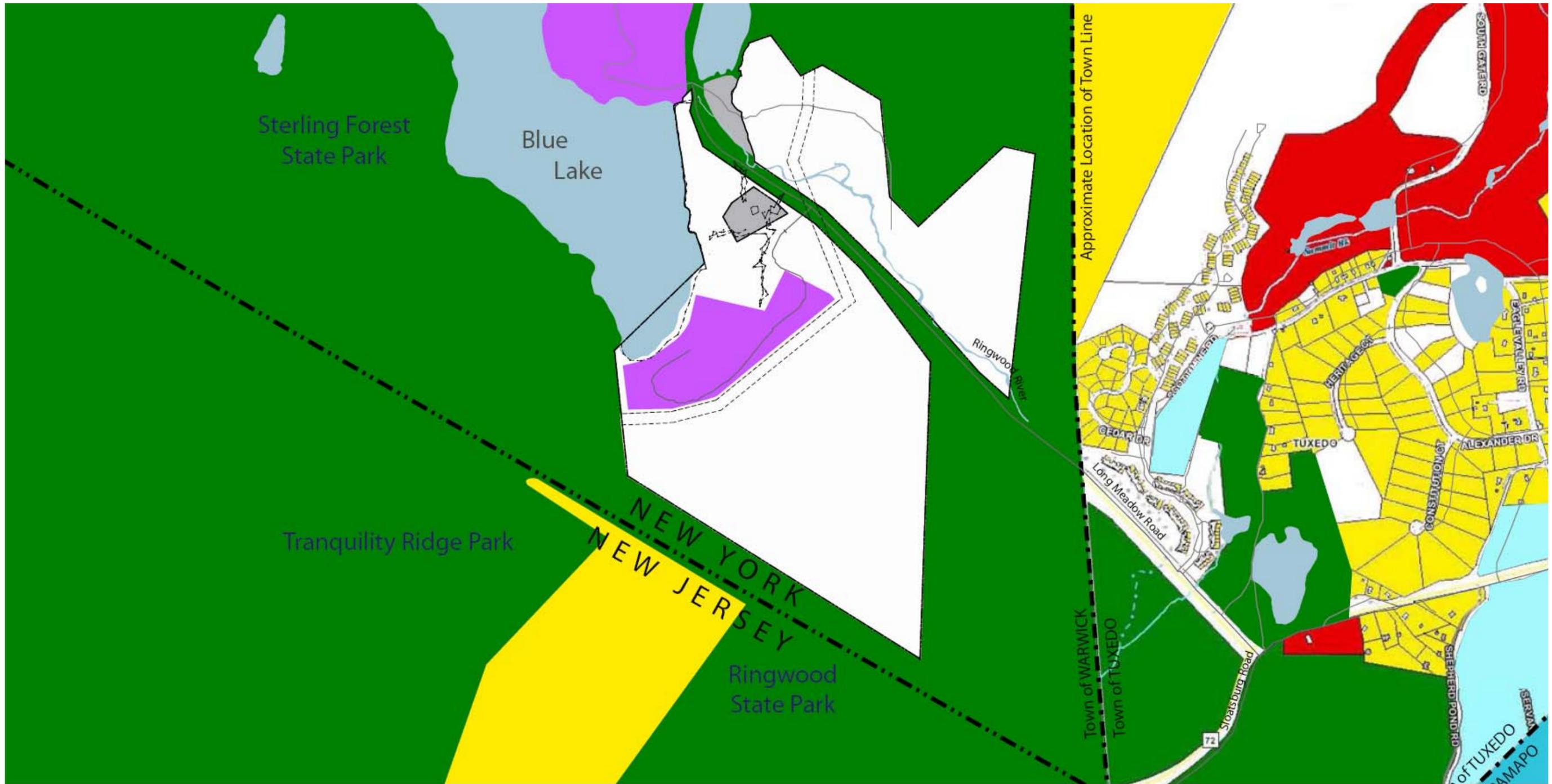


Figure 2-2 Area Location Map



Land Use Map

Map Sources:
 Orange County Government Website:
 Official Zoning Map - Town of Warwick
 Unofficial Zoning Map - Town of Tuxedo
 Town of Ramapo Zoning Map prepared by Fredrick P. Clark and Associates

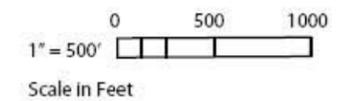
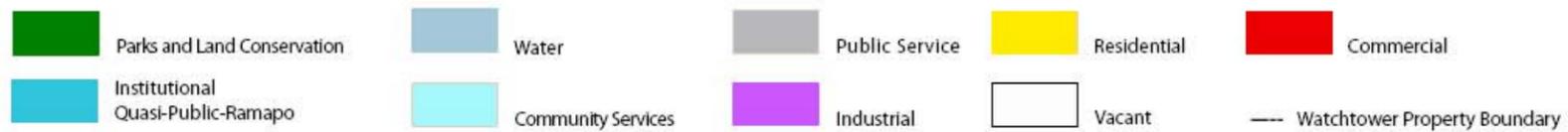


Figure 2-3 Existing Land Use Map



Area of Development Under King's College Proposal

Source: Kings College DEIS - January 20, 1999

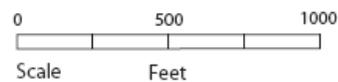


Figure 2-4 The King's College Site Map

Touro College purchased the property in 2004 along with the additional 50 acres of property northeast of Long Meadow Road. Over the next few years a number of additional SEQR-related studies were conducted, some of which are referenced in this document. However, no formal application was submitted for use of the land by Touro College. On July 17, 2009, the entire property was purchased by the Watchtower Bible and Tract Society of New York, Inc., (referred to throughout this Statement as “Applicant,” “Project Sponsor,” “Watchtower,” or “Owner”) for use as the world headquarters of Jehovah’s Witnesses. As shown in Table 2-1, the subject property has been under SEQR review on three occasions. The only physical result of the past applications has been the upgrade of the Blue Lake Wastewater Treatment Plant (Blue Lake STP) to accommodate the King’s College proposal—see Chapter 4, “Water Resources.”

Table 2-1 SEQR-Related History of Subject Property

Date	Applicant	Application for	Scope
November 1989	Blue Lakes Subdivision	Residential subdivision	150 lots/~494 residents ¹
March 1994	King’s College ²	Student College	1500 students/270 staff
Present	Watchtower	Headquarters Facility	850 staff/residents (build-out to 1,000)

¹ Based on 1990 average family size of 3.92 persons in Town of Warwick.

² Subsequently, a special permit, preliminary approval for phases 1 through 7, and final approval for phase 1 were granted on January 5, 2000.

Tax Map Information

As shown in Figure 2-5 Orange County Tax Map, the property includes two parcels northeast and five parcels southwest of Long Meadow Road. These are described in Table 2-2. An access easement also exists to permit United Water to access their storage tank above the property and their water pipes that traverse the property along the lake.

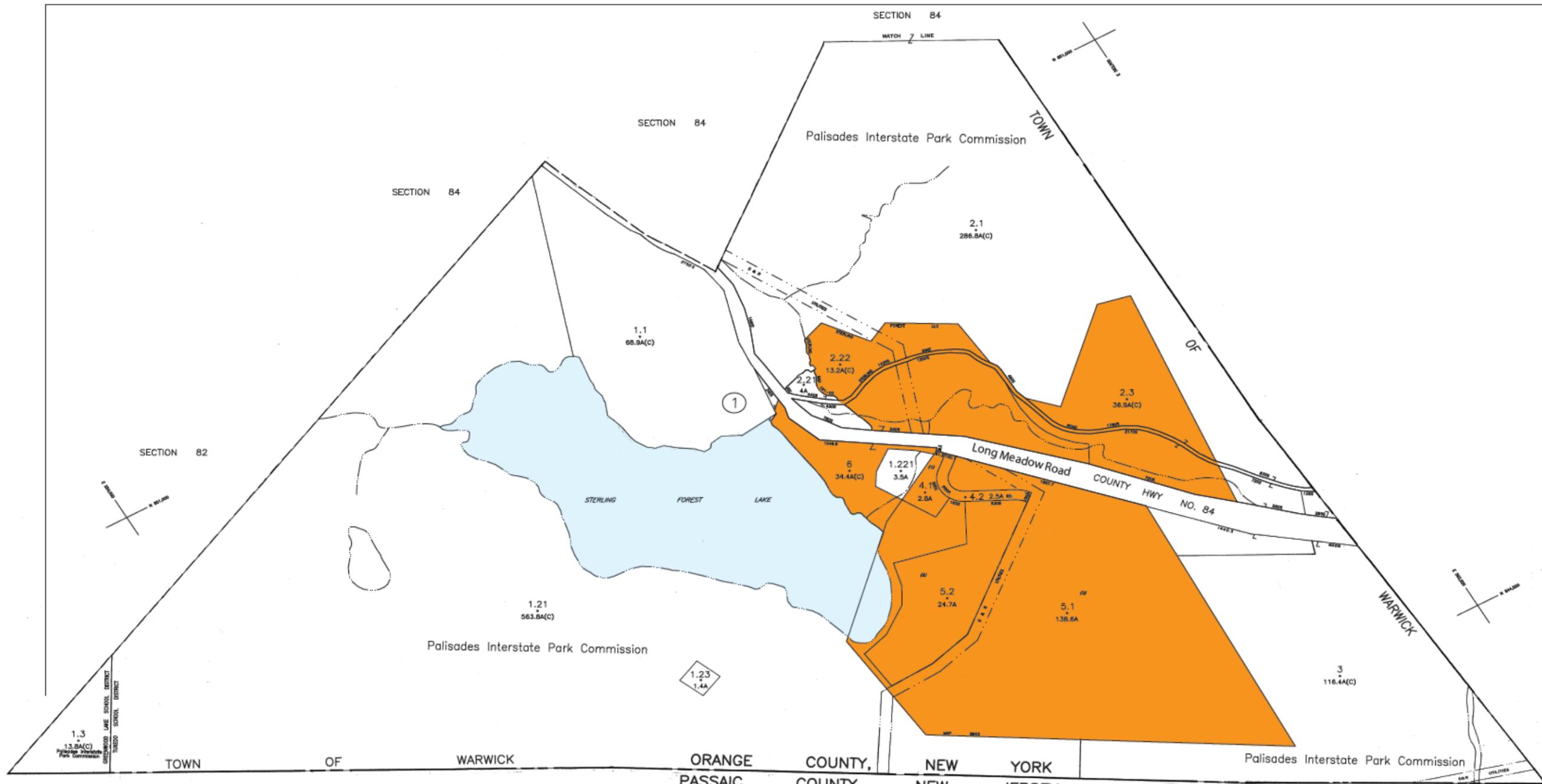
Lot #2.22 (13.2 acres) and #2.3 (36.9 acres) northeast of Long Meadow Road are contiguous wooded lots, although bisected by the Rockland and Orange Utilities, Inc., easement (“Rockland and Orange easement”). The 203 acres southwest of Long Meadow Road are made up of five lots as follows: Lot 1-6 (34.4 acres) consists of woodlands bordering Long Meadow Road to the north and Sterling Forest Lake to the southwest. Lot #4.1 (2.8 acres) houses the former INCO sewage treatment plant. Lot #4.2 (2.5 acres) is the proposed road. Lot #5.2 (24.7 acres) is a mixed wooded and developed parcel bordering Sterling Forest Lake to the west and the Rockland and Orange Utilities, Inc., easement. (This is the principal location of the former INCO complex.) Lot #5.1 (138.6 acres) lies east of the easement and is woodlands, the southern portion of which falls mostly within the Ridgeline Overlay District. As part of this application a tax lot merger is requested for tax lots 1-6, 4.1, 4.2, 5.1, and 5.2.

Table 2-2 World Headquarters of Jehovah’s Witnesses Parcel Identifications

Section Number	Tax ID Number	Zoning Designation	Area (Acres)	Lot Description	Relation to Project
85	85-1-2.22 EXEMPT	00799 Land Conservation LC	13.20	Woodlands	Open Space
85	85-1-2.3 EXEMPT	00799 LC	36.90	Woodlands	Open Space
85	85-1-4.1 EXEMPT	00799 LC	2.80	Woodlands/Wetlands	Open Space
85	85-1-4.2 EXEMPT	00799 LC	2.50	Kings Drive (Roadway)	Roadway
85	85-1-5.1 EXEMPT	00799 LC	138.60	Woodlands	Mostly Open Space
85	85-1-5.2 EXEMPT	00799 LC	24.70	Main Facilities	To be developed
85	85-1-6 EXEMPT	00799 LC	34.40	Woodlands	Open Space

Source: Watchtower Bible and Tract Society of New York, Inc.

REVISION
03/01/03
02/09/04



Watchtower Property

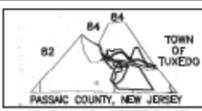
LEGEND			
STATE OR COUNTY LINE	FILED PLAN LOT LINE	TAX MAP BLOCK NO. ④	FILED PLAN BLOCK NO. ② ③
CITY TOWN OR VILLAGE	EASEMENT LINE	TAX MAP PARCEL NO. 32	FILED PLAN LOT NO. (C) or (P/O 2)
BLOCK OR SECTION LIMIT	MATCH LINE	AREAS (SHE) 11.14 or (CALCULATED) 11.94(C)	STATE HIGHWAYS N.Y. STATE HWY NO 17
SPECIAL DISTRICT LINE	WATER FEATURES	DIMENSIONS (SHE) 88 or (CALCULATED) 753	COUNTY HIGHWAYS COUNTY ROAD NO 4
PROPERTY LINE	GRID COORDINATE/ENTRANCE	PORTION OF TAX LOT P/O 1-1-1	TOWN ROADS TOWN ROAD 1

ORANGE COUNTY—NEW YORK

Prepared by
Orange County Tax Map Department
124 Main Street, Goshen, N.Y. 10924
Phone 845.291.2498 Fax 845.291.2499

NOTICE
MAINTENANCE, ALTERATION, SALE OR DISTRIBUTION
OF ANY PORTION OF THE ORANGE COUNTY TAX
MAP IS PROHIBITED WITHOUT WRITTEN PERMISSION
OF THE O.C. REAL PROPERTY TAX SERVICE AGENCY

NOT TO BE REPRODUCED FOR COMMERCIAL
PURPOSES FOR TAX PURPOSES ONLY
NOT TO BE USED FOR CONVEYANCE



335489
TOWN OF WARWICK

Scale 1" = 400' Section No. 85



Tax Year 2009

Figure 2-5 Orange County Tax Map

Zoning Information

The zoning designation for the entire site is LC (Land Conservation). Under this designation privately held lands are to be considered as OI or CO to determine allowable uses. Portions of the property are subject to Ridgeline Overlay (elevations over 700 feet) and Biodiversity Conservation Overlay (currently undisturbed areas) District regulations—Figure 2-6 Zoning Map and Figure 2-13 Southern Wallkill Biodiversity Plan (SWBP) and 700-foot Ridgeline Overlay District. As-of-right uses include single-family residences and commercial agricultural operations. Uses that are allowable with a special permit by the Planning Board include migrant worker dormitories, farm markets, and retail establishments, processing agricultural materials, storage and sale of agricultural products, animal hospitals, commercial recreation, warehouses, offices, commercial garages, commercial lumbering and sawmill operations, dog kennels, eating and drinking establishments, mines, hotels/motels, health resorts, light manufacturing, motor vehicle sales, repair and cleaning, research and design, service establishments, membership clubs, camps, community recreation, golf courses, institutions of higher learning, nursery schools, outdoor amusement establishments, places of worship, schools, convents, and monasteries.

The bulk and setback requirements are provided in Table 2-3 below:

Table 2-3 Table of Bulk Requirements (164-40N)

Use Group	Front Setback	Rear Setback	Side Setback	Bldg Ht (ft)	Bldg Ht (Stories)
g (89)	30	30	30	60	-
k (89)	50	50	50	35	3
l (90)	50	50	35	35	3
<i>Actual*</i>	260	70	160	60	5

* After lot merger

Easements and Rights-of-Way

There are numerous easements on the property, the most significant of which is the 100-foot-wide O&R easement previously described. (See Appendices A-15, A-16, and A-17.) A right-of-way still exists along the course of the former Sterling Mine railroad siding. The boundaries of these easements and rights-of-way are shown on Figure 2-5 Orange County Tax Map.

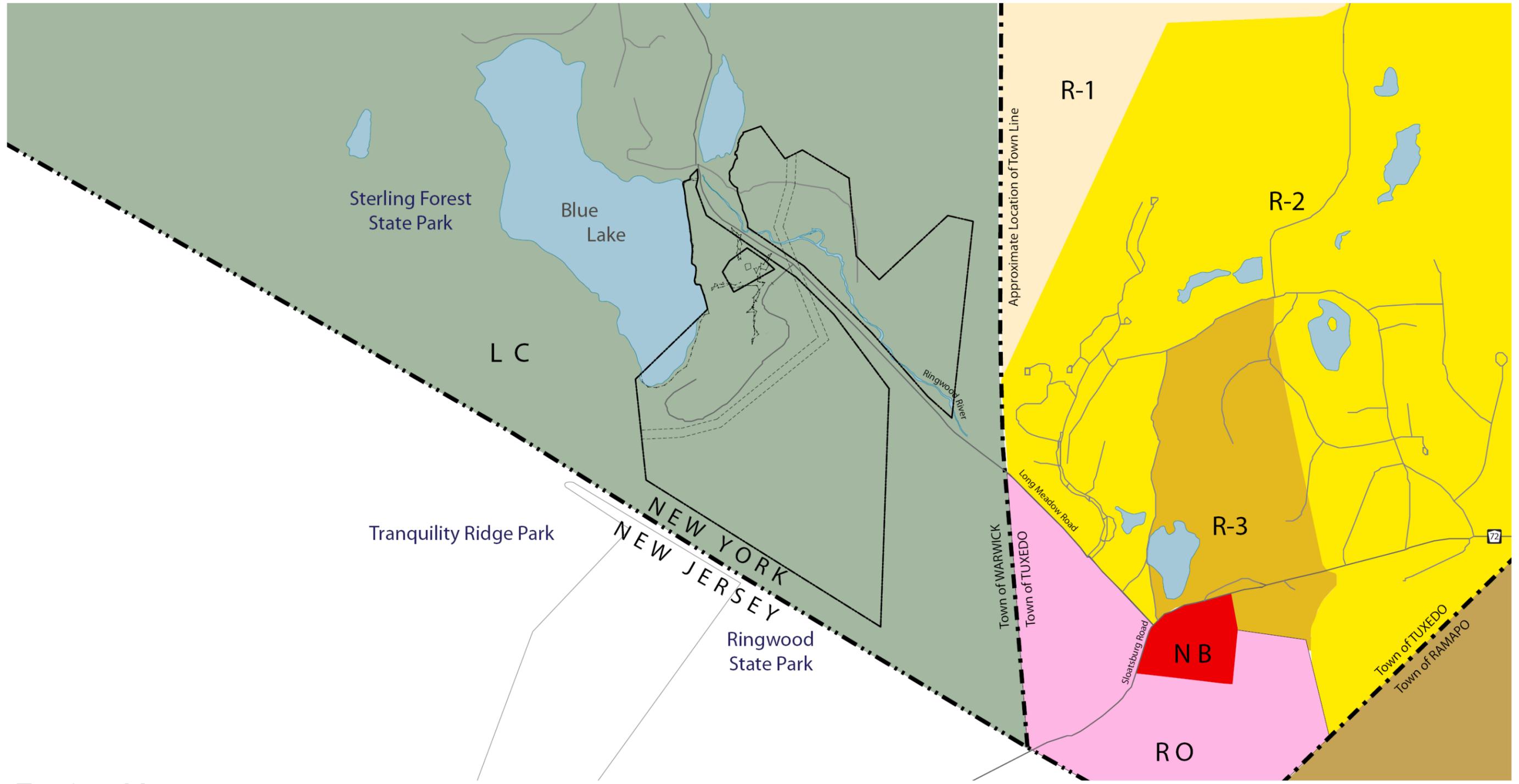
C. Description of Proposed Action

Project Sponsor

The Project Sponsor was founded as a New York not-for-profit corporation in 1909 and is recognized as exempt from federal income taxes under Internal Revenue Code section 501(c)(3). Its chartered purposes are “religious, educational, and charitable” and include to support the efforts of Jehovah’s Witnesses to preach and teach the gospel of God’s Kingdom under Christ Jesus; print, record, and distribute Bibles and Bible-based literature, establish and maintain schools for Bible education, and to otherwise advance its purposes, and maintain any religious order of special ministers used by Jehovah’s Witnesses. The Project Sponsor, in association with other legal entities, is used by the ecclesiastical Governing Body of Jehovah’s Witnesses (the “Governing Body”) to accomplish a global Christian religious educational and charitable work.

Since 1909, the Project Sponsor has provided facilities in Brooklyn, New York, at which the Governing Body, other staff of the World Headquarters of Jehovah’s Witnesses, and various supporting departments and committees, including some that provide services for the United States branch of Jehovah’s Witnesses, have operated (the “Brooklyn Facilities”). The Brooklyn Facilities are staffed by Jehovah’s

Witnesses who are members of the Worldwide Order. Members of the Worldwide Order perform their duties full-time without compensation, have chosen to live either unmarried or married without children, and have taken a simple vow of obedience and poverty. The personnel who serve the world headquarters and these other departments and committees, including maintenance, cleaning, housekeeping, and food service personnel, live at residence buildings that are part of the Brooklyn Facilities. Additionally, thousands of guests and visitors arrive annually to tour the facilities and see relatives or friends.



Zoning Map

Map Source:
 Orange County Government Website:
 Official Zoning Map - Town of Warwick
 Unofficial Zoning Map - Town of Tuxedo
 Town of Ramapo Zoning Map prepared by Fredrick P. Clark and Associates

- Watchtower Property Boundary
- Land Conservation, L C
- Openspace Residential, R-1
- Rural Residential, R-2
- Neighborhood Business, N B
- Open Water
- Suburban Residential, R-3
- Ramapo Residential RR-80
- Research Office, R O

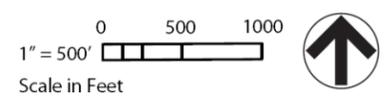


Figure 2-6 Zoning Map

In 2004, printing operations, including those previously carried on in Brooklyn, were consolidated to the Project Sponsor's farm and printing facility near the hamlet of Wallkill in the Town of Shawangunk, New York. At Watchtower's educational facility located in Patterson, New York, members of the Worldwide Order provide training to missionaries, ministers, and religious administrators and prepare audio, video, and visual artwork, provide translation services, and administer the congregations, assemblies, education, and public religious worship of Jehovah's Witnesses in the United States.

All three existing facilities are staffed by members of the Worldwide Order.

As a result of discontinuing printing and related activities at the Brooklyn Facilities, related downsizing of staff at those facilities, and other organizational adjustments, the Brooklyn Facilities are too large for the activities now carried on there. Such changes make it feasible to relocate the world headquarters staff and others to a more rural, contemplative environment appropriate for the needs of the activities now remaining at the Brooklyn Facilities.

Proposed Action

The Project Sponsor proposes to locate the world headquarters of Jehovah's Witnesses to the Project Site. The proposed religious administrative campus will be comprised of approximately 8 buildings along with several accessory site structures constructed on approximately 45 acres of the 253-acre site. The proposed project is intended to relocate the offices of the Governing Body of Jehovah's Witnesses and various supporting departments and committees to a rural setting in closer proximity to the two upstate facilities. The proposed project is to be an integrated working and living facility, initially for approximately 850 members of the Worldwide Order, although sufficient construction is planned to allow this number to eventually grow to 1,000. These individuals will work and live on site. For this reason, virtually no commuter traffic will be generated by the proposed project.

The project will disturb approximately 45 acres (18 percent) of the total 253 acres with a total impervious area of about 13 acres. The development will be largely contained within the area previously developed by INCO. (See Figure 2-7 Watchtower and King's College—Proposal Comparison and Figure 2-4 The King's College Site Map.) Thus, the developed areas will generally fall outside the boundaries of the Ridgeline Overlay District. The small portion that falls within this district will be developed in harmony with the current requirements of Chapter 164-47.1 of the *Code of the Town of Warwick, New York*. (See Figure 2-13 Southern Wallkill Biodiversity Plan (SWBP) and 700-foot Ridgeline Overlay District.) Development will also proceed outside of the boundaries of the Biodiversity Conservation Overlay District.

The pre-construction and construction phases are described in detail below in Section E, "Construction and Operations."

Description of Proposed Project

The existing main entrance road will be reused as the proposed main entrance road with minor realignment and functional enhancements. To monitor admission to the site, a manned gatehouse and an entrance gate will be positioned inside the property line to accommodate deliveries and visitors. A second site entrance road southeast of the existing entrance will be created as required by the fire code. This will also provide operational flexibility.

The main building complex will be in the area of the present development as shown on Figure 2-8 Proposed Site Map. The site is constrained between the lake on the north, the electrical easement on the south, and the property boundaries on the east and west. As such, the complex is laid out with a main circulation spine bounded on either side by the proposed buildings. As proposed, the new buildings will consist of a total footprint of approximately 360,000 square feet. The maximum height of any building is 60 feet.



Site Usage Comparison



Figure 2-7 Watchtower and King’s College—Proposal Comparison

Structures have been sited to provide a sufficient distance between the buildings to appear as separate edifices. Attention has been given to providing a balance of massing harmonious to the eye. In addition, several techniques are employed to visually break the massing of the larger buildings. These techniques include: “U-shaped” structures around large courtyards, varied planes of building façades and building heights, interrupting large façades with projecting porches, recessed wings, or columns, and providing different fenestration sizes, types, and patterns. These measures will be complemented by the use of exterior finish materials of natural stone and masonry with varying shades and textures.

Additionally, outdoor recreation facilities located southeast of the proposed buildings are comprised of two tennis courts, a basketball court, and two sand volleyball courts of regulation size. In order to reduce the overall impervious area and visual impact, roads were kept to a minimum and surface parking was replaced by enclosed parking garages caring for 85 percent of the parking requirements.

The following buildings are proposed:

Administration Offices/Services Building

- This structure comprises three joined buildings. An administration offices building will have a basement and three stories, which will average 56 feet in height with 210,000 square feet of total building area. This building will be set into the trees on all sides except for the south side which faces the main entry.
- A public entry lobby, which includes a Visitor Center and connects to an auditorium seating 1,100 persons and consists of a basement and two-story atrium space. The building is 32 to 46 feet in height with 40,200 square feet of total building area.
- A services building houses the kitchen, dining room, and laundry spaces along with other support spaces. This building ranges from 46 to 60 feet in height with 206,000 square feet of total building area and is made up of a basement with three floors. Included in the basement are 11,000 square feet for parking—(see Figure 2-8 Proposed Site Map, Figure 2-9 Architectural Rendering—Administration Offices/Services Courtyard View and Figure 2-10 Architectural Rendering—Administration Offices/Services Lakeside View). Three sample elevations of the administration offices/services building are included in the drawing set—see A-201 Building Elevations—Office/Services and Maintenance Buildings.



Figure 2-8 Proposed Site Map



Figure 2-9 Architectural Rendering—Administration Offices/Services Courtyard View



Figure 2-10 Architectural Rendering—Administration Offices/Services Lakeside View

Residence Buildings

- Four residence buildings, 30 to 58 feet in height with 494,000 square feet of total building area (see Figure 2-8 Proposed Site Map). The buildings generally have a basement with four floors above and contain a total of 588 residence rooms and support spaces. The residence rooms are “studio” or one-bedroom units ranging from 350 to 600 square feet including a kitchenette and private bathroom. Three sample elevations of Residence A are included in the drawing set—see Drawing A-202 Building Elevations—Residence A.

Maintenance Building/Resident Parking

- A maintenance and resident parking building with basement, varying from 15 to 52 feet in height with 427,000 square feet of total building area. 280,000 square feet of this space are for parking. Also included in the building footprint are the powerhouse and recreational facilities—see Figure 2-8 Proposed Site Map. One sample elevation of the maintenance building is included in the drawing set—see Drawing A-201 Building Elevations—Office/Services and Maintenance Buildings.

Vehicle Maintenance Building

- A maintenance building will be located between the main entrance road and the O&R easement and will be 30 to 46 feet in height with 35,000 square feet of total building area. The building consists of a basement with one or two floors above.

Visitor Parking

- A three-level partially enclosed below-ground parking garage with 240 parking spaces for visitors and 92,200 square feet of total building area.

Accessory Buildings

- Several small outbuildings, totaling less than 8,000 square feet, will be distributed within the general development area for recreation, waste separation, visitor conveniences, and maintenance areas.

Since the administration offices/services building is open to the public for guided tours, this building has been developed nearer to the main entry. The main loading docks are also developed near the main entrance to reduce vehicular traffic at the residential and recreational areas of the site, but are hidden from general public view. The residence buildings are located further from the main entrance in the more secluded and private area of the site. All major buildings are designed to take maximum advantage of lake views while minimizing the visual impact from areas outside of the site.

All of the proposed uses comply with existing zoning since places of worship, convents and monasteries, offices, and vehicle repair uses are allowed by special permit. Two zoning variances may be required for the project as noted in Table 2-5 Required Approvals.

Although the initial move-in is proposed to have 500 dwelling units for an initial move-in population of 850 persons, future expansion possibilities for a maximum of 588 and 1,000 persons will be built-in as part of the initial construction. The additional dwelling units are needed for residents’ guests and for turnover accommodations to allow for maintenance and upgrade of the units on an ongoing basis. The proposal is being designed in this manner in order to maintain the unified and compact nature of the proposal and to avoid future construction activities in the midst of a functioning site. No further expansion is planned beyond what is proposed as part of the present application.

Construction is proposed to begin upon completion of the permit process in 2012 and is anticipated to continue for approximately four years. The phases are described in detail in Section E, “Construction and Operations” below.

Landscaping

Clearing of existing vegetation around the site will be minimized. However, currently open areas including areas along the existing utility line easement, dam, and along Blue Lake will be maintained in an open unwooded character in order to maintain habitat for species that prefer this type of ecological community. The site’s remaining landscaping will be designed to be appropriate to the site’s location in a wooded area. Small ornamental planting areas and small retaining walls will make generous use of on-site boulders and stone. Any large retaining walls will be supplemented with green walls. No large lawn areas are planned. Only native plant species will be used for planting areas. The total impervious area will be limited to approximately 13 acres. The use of vegetated roofs will decrease the impervious area of the site by approximately 3.5 acres. Where heavy traffic is not anticipated, pervious paving as defined by the *2010 New York State Stormwater Management Design Manual* will be used. Figure 2-11 Proposed Landscaping Plan shows how these elements will be included in the landscaping—see full-size drawing in Appendix L.

Building Elevations of Proposed Development

The proposed new buildings have been designed in cooperation with the award-winning architectural firm of Perkins Eastman. Care was taken to develop an eco-friendly design which blends with the scenic rural environs while minimizing impact on precious habitats and wildlife. Views from Sterling Forest State Park were carefully analyzed. Impacts have been minimized by maintaining a small overall footprint, use of environmentally-friendly building materials and color shades and textures which blend well with the natural surroundings. Colors will be chosen in conformance with the Town's Biodiversity Color Chart (see Appendix I-4). The façade of each building will use natural materials. Complementary architectural features, such as a mix of sloped and vegetated roofs, punched windows, stepped buildings, and avoidance of long unbroken walls will enhance the overall appearance.

Proposed Utilities, Open Spaces, and Impervious Areas

The proposed project includes new distribution and collection piping, recreational amenities, open-space areas for common use by residents and visitors, parking, and driveways.

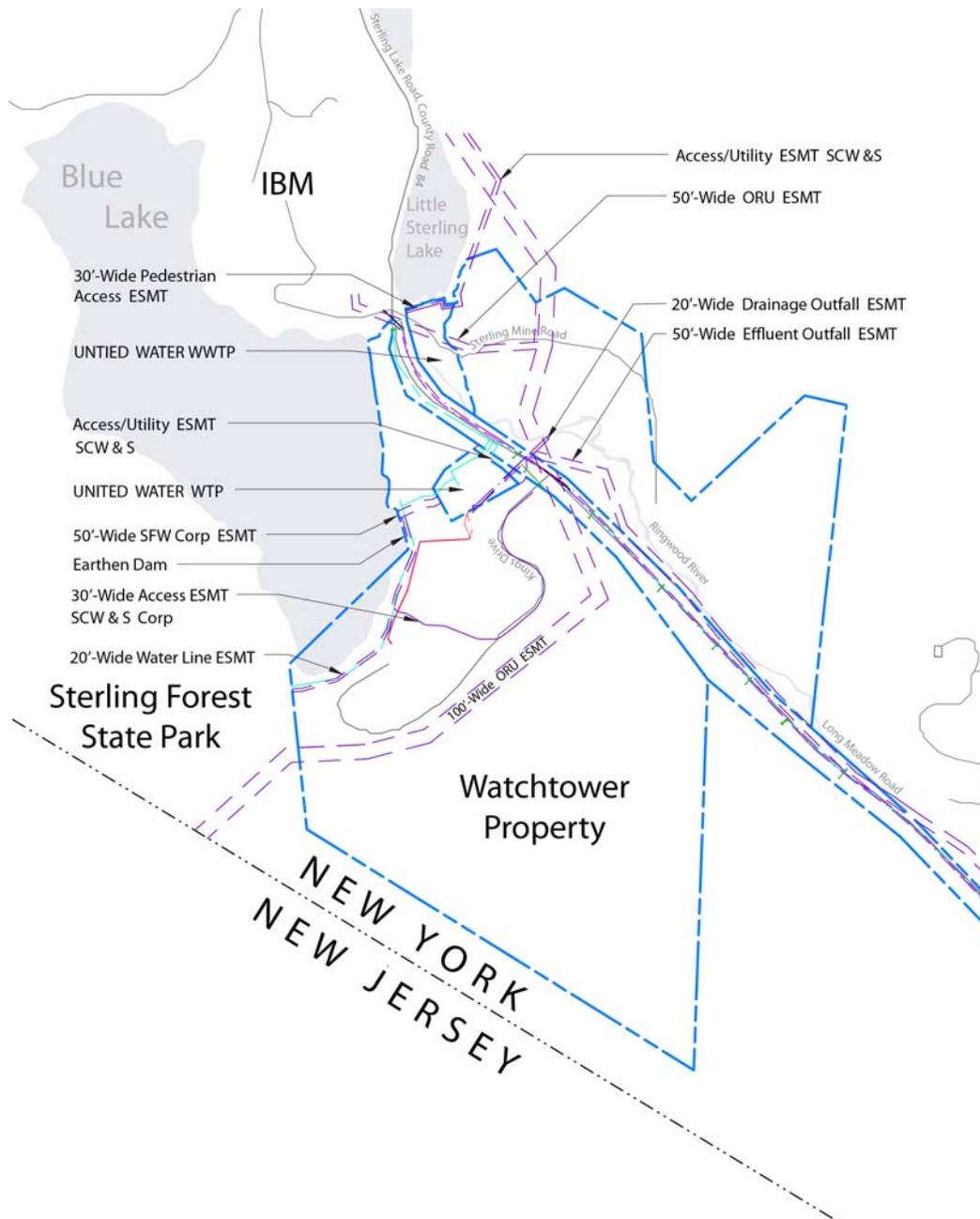
Water and sewer services to the site are to be provided by United Water's facilities which occupy adjacent parcels. In their "Willingness to Serve" letter, United Water stated that 147,000 gpd can be made available for the Project Sponsor's proposed use (see Appendix H-1). United Water has a Water Taking Permit for withdrawal from Blue Lake for 500,000 gpd. The rated capacity of the existing water plant is 650,000 gpd. The average daily demand on the plant is 119,000 gpd and maximum daily demand is 188,000 gpd. The plant presently supplies IBM, the Blue Lake STP, and Woodlands Development in addition to the Project Sponsor's property.

Water consumption in the offices is anticipated to be less than 10 gallons per square foot per year, achieving the highest Green Globes™ points in this category. The residences will have lower-than-normal consumption through the use of low-flush toilets, water-saving or no-water urinals, water-saving faucets and shower heads, and other water conserving appliances and equipment.

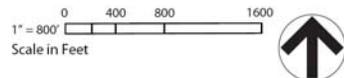
Wastewater is to be handled by the Blue Lake STP, which was upgraded in 2002 to a 150,000-gpd plant with tertiary treatment (see Appendix A-9—"SPDES Permit" dated November 6, 2002). At present, the nearby IBM facility is the only user of this plant. United Water South County Sewer has confirmed that the proposed site has a maximum allotment of 130,000 gallons per day of available treatment capacity. However, a maximum average of 80,000 per day will be discharged due to the conservation measures outlined in Chapter 10, "Infrastructure and Utilities—Water Supply."

Stormwater is to be handled in accordance with the *2010 New York State Stormwater Management Design Manual*. Stormwater runoff reduction will be accomplished through the use of vegetated roofs, permeable paving, rainwater harvesting, rain gardens, bio-retention basins, and finally through riparian buffers and detention basins. A Stormwater Pollution Prevention Plan (SWPPP) is being submitted, the conformance of which will result in no net increase to the rate of stormwater runoff.

Electrical service will be provided by Orange and Rockland Utilities, Inc. (O&R) through an on-site substation. On-site electrical distribution will be via buried cable in order to minimize visual impact. The peak proposed electrical load is anticipated to be approximately 2100 kW for the entire facility. In addition, the Project Sponsor will install three, approximately 720-kW each, diesel-powered generators configured to supply power during an outage or during periods of high demand when curtailment is requested. The electrical design will follow required sustainability standards in order to achieve a 3 Green Globes™ award level. Communications services can be provided by Verizon and/or Cablevision—see Figure 2-12 Utilities Map.



Utilities Map



ABBREVIATIONS

ESMT	Easement
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant
SFW	Sterling Forest Water Corporation
ORU	Orange & Rockland County Utilities
SCW&S Corp	South County Water & Sewer Corporation

LEGEND

	Property Lines
	Existing Stormwater Pipes/Structures
	Existing Potable Water Lines
	Existing Electrical PWR Line-Overhead
	Existing Sanitary Sewer
	Existing Communications
	Existing Easements

Figure 2-12 Utilities Map

Indoor and outdoor recreation spaces will be provided. Outdoor recreation is anticipated to include two tennis courts, two volleyball courts, a basketball court, and picnic tables. Indoor recreation will include a small swimming pool, basketball and racquetball courts, aerobic exercise, and game rooms. The swimming pool will be filled from domestic water connections located in the pool area. Chemicals used to maintain proper water quality in the pool include sodium hypochlorite for disinfection, and muriatic acid and sodium bicarbonate for pH balance. These chemicals will be stored in a separate room, away from the pool, within containment areas. Libraries will also be provided for the residents.

The footprint of the development has been kept to the smallest area practical to allow for the largest amount of open space. The approximate 50 acres in lots #2.22 (13.2 acres) and #2.3 (36.9 acres) northeast of Long Meadow Road and approximately 158 acres of land southwest of Long Meadow Road will be left undeveloped, other than unpaved walking trails to be used by residents for exercise, prayer, and meditation trails.

A total of 870 covered parking spaces will be provided for fleet, personal vehicles of the residents, and visitor parking. A total of 150 surface parking places will be provided in addition to parking for up to 13 buses. All of the covered parking will be in multi-story (mostly below street-level) garages to minimize footprint and runoff.

D. Project Purpose, Need, and Benefits

Objective of the Project Sponsor

As stated in its charter, the Project Sponsor's purposes include to:

"...support the efforts of Jehovah's Witnesses to preach and teach the gospel of God's Kingdom under Christ Jesus as a witness to the name, Word, and supremacy of Almighty God, JEHOVAH (Matthew 24: 14; 28: 19, 20; Psalm 83: 18; Isaiah 43: 10- 12); print, record by any means and in any medium, and otherwise produce, and distribute Bibles in any medium; disseminate Bible truths in various languages; write, record by any means and in any medium, and otherwise create, publish, and distribute literature in various languages containing information and comment explaining Bible truths and prophecy concerning the establishment of Jehovah's Kingdom under Christ Jesus (2 Timothy 3:16, 17); write, record by any means and in any medium, and otherwise create, publish, and distribute music, art, and other intellectual property of a religious or educational nature in any medium; instruct and educate men, women, and children about the Bible and incidental scientific, historical, and literary subjects and to own and/or operate schools to advance such purpose; improve men, women, and children intellectually and morally by education based on Christian principles and to own and/or operate schools to advance such purpose; establish and operate private Bible schools, and ancillary facilities to house and care for the students at such schools, and classes for instructing men and women about the Bible, Bible literature, and Bible history; arrange for and hold assemblies for religious worship (Leviticus 23); maintain one or more religious orders of special ministers of Jehovah's Witnesses (2 Kings 2:3, 5; 6:1)."

To accomplish these purposes, the personnel serving at the Brooklyn Facilities plan, research, and create the content of Jehovah's Witnesses' religious print, audio, and video publications and their educational programs, including those for schools for missionaries, special ministers, and religious administrators and for meetings and assemblies for public religious worship. Personnel serving there also oversee worldwide functions, including financial services and computer software creation and technical support, and some activities specific to the United States.

The worldwide activities of Jehovah's Witnesses are overseen by the Governing Body, which has established over 100 branch offices of Jehovah's Witnesses throughout the world. Worldwide, the number of active Jehovah's Witnesses has grown from over 4,000,000 in 1990 to about 7,500,000 today, living in

236 lands. The number of those attending meetings of Jehovah's Witnesses in their local congregations has grown from about 9.9 million in 1990 to over 18 million in 2010.

The world headquarters of Jehovah's Witnesses oversees a worldwide religious organization that is well-known for its distribution of Bibles and Bible-based literature and providing free Bible education to all who wish to understand the Bible better. Over 165 million copies of all editions of the New World Translation have been printed in over 80 languages, with translation currently underway in more than 30 additional languages. Distribution of the bi-monthly magazine *The Watchtower* has steadily increased to its current average printing of over 42 million per issue in 185 languages, making it the most widely distributed magazine in the world. The monthly *Awake!* magazine, now published in 83 languages, is a general-interest magazine with a religious slant. The average printing of *Awake!* has increased from about 15 million in 1990 to over 39 million in 2010. Additionally, Jehovah's Witnesses have produced 22 documentary videos on a variety of historical and Biblical topics in 71 languages and have prepared about 100 different American Sign Language programs in DVD format with a distribution of 527,555 copies a year.

The increased membership among Jehovah's Witnesses and a concomitant increase in printing requirements have necessitated expansion and/or upgrading of the Project Sponsor's facilities in the United States and those at other branches of Jehovah's Witnesses in numerous locations around the world. Several growth factors are responsible for the rate at which these needs arise. They include: (1) as a result of world political changes and globalization, many countries of the world have opened up to Christianity in general and to Jehovah's Witnesses in particular; (2) the worldwide growth in the number of Jehovah's Witnesses and those associating with them; and (3) the increase in the worldwide demand for Bibles and Bible-related literature printed and published by Jehovah's Witnesses.

These same factors have created a need to increase the size of the staff serving the world headquarters and some of its supporting departments. That need and the desire to withdraw from the sprawling Brooklyn Facilities and consolidate operations to a rural, contemplative facility that is compact and operationally efficient provide the catalyst for, and are the goals that the Project Sponsor intends to achieve by the proposed project.

Public Purposes: Meeting the Objectives of the *Town of Warwick Comprehensive Plan*

The proposed action will satisfy a number of public objectives as expressed in the *Town of Warwick Comprehensive Plan*. The adopted *Comprehensive Plan* makes the following comments related to this property and planning in general. Relevant quotations from the *Comprehensive Plan* are followed by comments on how the proposal relates to those quotations.

- Regional Planning Efforts (referring to the *2003 Orange County Comprehensive Plan*): "The growth areas are general areas of preference for future development to maximize efficiency of infrastructure and services and minimize losses of open space. . . . In the County Plan . . . Urban development is shown . . . to a more limited extent in Sterling Forest around Sterling Lake and Sterling Forest Lake." —Section 1.2, page 4, paragraphs 2 and 3.

The proposal concentrates development in an identified growth area from the *Orange County Plan*. As stated in the *Town of Warwick, NY, 2008 Comprehensive Plan*, the *County Plan* is only advisory. Nevertheless, focusing future development to existing villages, hamlets, and areas with existing infrastructure is a widely applied principal in the *Town Plan*, and is consistent with smart growth practice.

- Goals of the Community: "Protection of Warwick's rural quality and its natural environment continue to clearly stand out as the major goals for the residents of Warwick." —Section 1.4, page 10, paragraph 2.

The proposed project reflects this goal in redeveloping an area already developed while preserving the great majority of the approximately 250 acres in its natural state.

- Privately Operated Utilities: “Sterling Forest, east of Greenwood Lake, has centralized water and sewer services in the Town of Warwick at three locations. These facilities are capable of being expanded to provide for future planned development along County Road 84 (CR-84) in the Sterling Forest area. Touro College has been proposed for the former International Nickel site in the Town and it is possible that some additional commercial development will occur in this area by Sterling Forest or others.”—Section 2.9, page 55, paragraph 3.

The proposed project development will tap into already existing, but underutilized, water and sewer utilities.

- Agriculture, (C) Conservation Easements: “The Town has put into place a mechanism for receiving development rights and conservation easements from farmers and other property owners who would like to donate these rights to the public.... Warwick should consider expansion of this mechanism to receive conservation easement on other environmentally sensitive lands as well.”—Section 3.2, page 61, paragraph 1.

While the proposed project is not an agricultural use, the Town’s policy of receiving conservation easements on environmentally sensitive lands can be achieved. Specifically, the proposed project is seeking to heavily cluster disturbance on approximately 45 of 253 acres. The Project Sponsor will seek to ensure conservation of preserved lands and will explore the potential for furthering the Town’s goals while meeting its own preservation objectives.

- Residential Development, Community Objective: “Encourage a mixed-use pattern of development where appropriate, in and around the hamlets and adjacent to the Villages.”—Section 3.3, page 66, “Community Goals” textbox, bullet 4.

The proposed project is not located adjacent to a village or hamlet located in the Town of Warwick, although it is located adjacent to the Eagle Valley area of the Town of Tuxedo. Nevertheless, many of the benefits associated with mixed-use development will be achieved by the proposed action, specifically the significant reduction in automobile dependence, since residents will work and share meals communally, and recreational facilities will be available on site.

- Site Entrance and Parking (C): “Paved parking areas should be decentralized and placed as far from public view as possible...Additional limitation should...reduce the number of entrances onto major roads, as well as eliminate the possibility of continuous paved access.”—Section 3.4, page 85, paragraph 3.

The proposal provides for all resident parking to be located in below-ground parking garage to minimize surface cover. Main-site ingress and egress will be achieved via a boulevard leading from and to a single-site entrance. To the extent possible, the existing main access road will be utilized in order to minimize disturbance to the landscape. The project will similarly take advantage of existing utilities.

- Commercial and Industrial Development, (D) Other Compatible Businesses: “Other kinds of economic activity, which are compatible with public desires for a quiet residential community, include institutions of higher learning, enterprises related to the visual and performing arts, tourism, and home occupations which do not depend on daily high volume customer traffic and do not have other negative effects on the residential neighbors.... Finally, the physical attractiveness of the area should be recognized as an economic resource supporting restaurants, recreational sites and tourism.”—Section 3.4, page 85, paragraph 5.

The proposed project will have a positive economic benefit to the community due the expenditure of funds to maintain and operate the facility and due to the tourism associated with the development. It will not generate a high volume of traffic and will have a minimal effect on the surrounding area compared to other potential uses. The world headquarters is currently a very popular tourist destination for Jehovah's Witnesses throughout the world. Currently, when touring the Brooklyn Facilities, visitors typically visit other popular destinations in New York City. With the proposed project these visitors will be brought to Warwick and will seek tourist destinations, lodging, and restaurants in the area.

- **Open Space and Recreation, Community Objective:** “*Support preservation of open space, especially in environmentally sensitive areas.*” —Section 3.5, page 86, “Community Goals” textbox, bullet 2.

The proposed project contains sensitive lands including wetlands, steep slopes, and potentially important habitat areas. The project will be clustered on 18 percent of the total site, disturbing only 45 of 253 total acres—almost half of which was already disturbed for a previous development.

- **Public Facilities, (B) Water and Sewer Service:** “The Comprehensive Plan encourages areas with high development density, on the border of Villages or other areas with community water and sewer, to connect to these existing public services if capacity is available.” —Section 3.7, page 95, paragraph 2.

The proposal is similar to the referenced previously planned development by a non-profit entity and will similarly take advantage of existing, under-utilized utilities. It is noted that the local water utility is not private but is operated by United Water, a public utility. Adequate water and sewer capacity exist at the site.

- **Controlling the Intensity of Office and Industrial Use:** “Additional limitations should restrict curb cut width and spacing, reduce the number of entrances onto major roads.”—Section 3.4.C, page 85, paragraph 1.

The proposed layout has just one entrance for daily use, including visitors and deliveries. A second road—required by fire code—will be locked and used for emergencies only.

- **Architectural design and layout suitable to its environs:** “The negative aesthetic and traffic impacts of office and light industrial structures can be reduced by design requirements related to architecture, parking, and access....Paved parking areas should be decentralized and placed as far from public view as possible.”—Section 3.4.C, page 85, paragraph 2.

The architectural design theme of the project was developed in consultation with Perkins Eastman of New York with interim reviews and input by members of the Warwick Planning Board. In order to keep paved parking areas “as far from public view as possible” the Project Sponsor plans to construct underground parking garages which will meet the parking requirements. These garages will also greatly reduce the non-pervious surface parking footprint, thereby reducing stormwater run-off.

- **Public Facilities, (E) Health and Safety:** “The Comprehensive Plan strongly supports the inspection of all bridges and dams within the Town, including those under the jurisdiction of Orange County and the State, for their safety and structural integrity on a regular basis.”—Section 3.7, page 97, paragraph 1.

The Project Sponsor, as a responsible property manager, will meet or exceed the local and NY State requirements for inspection and maintenance of the dam.

- **Environmental Protection, (B) Sensitive Environments:** “Steep slopes, significant habitats, wetlands and other water bodies are environmentally sensitive areas that should be protected...perhaps through

the Town's Ridgeline Overlay District regulations....Significant habitats have been identified through a comprehensive examination of such areas by the Metropolitan Conservation Alliance, which resulted in the Southern Wallkill Biodiversity Plan (SWBP).”—Section 3.8, page 99, paragraphs 4, 5.

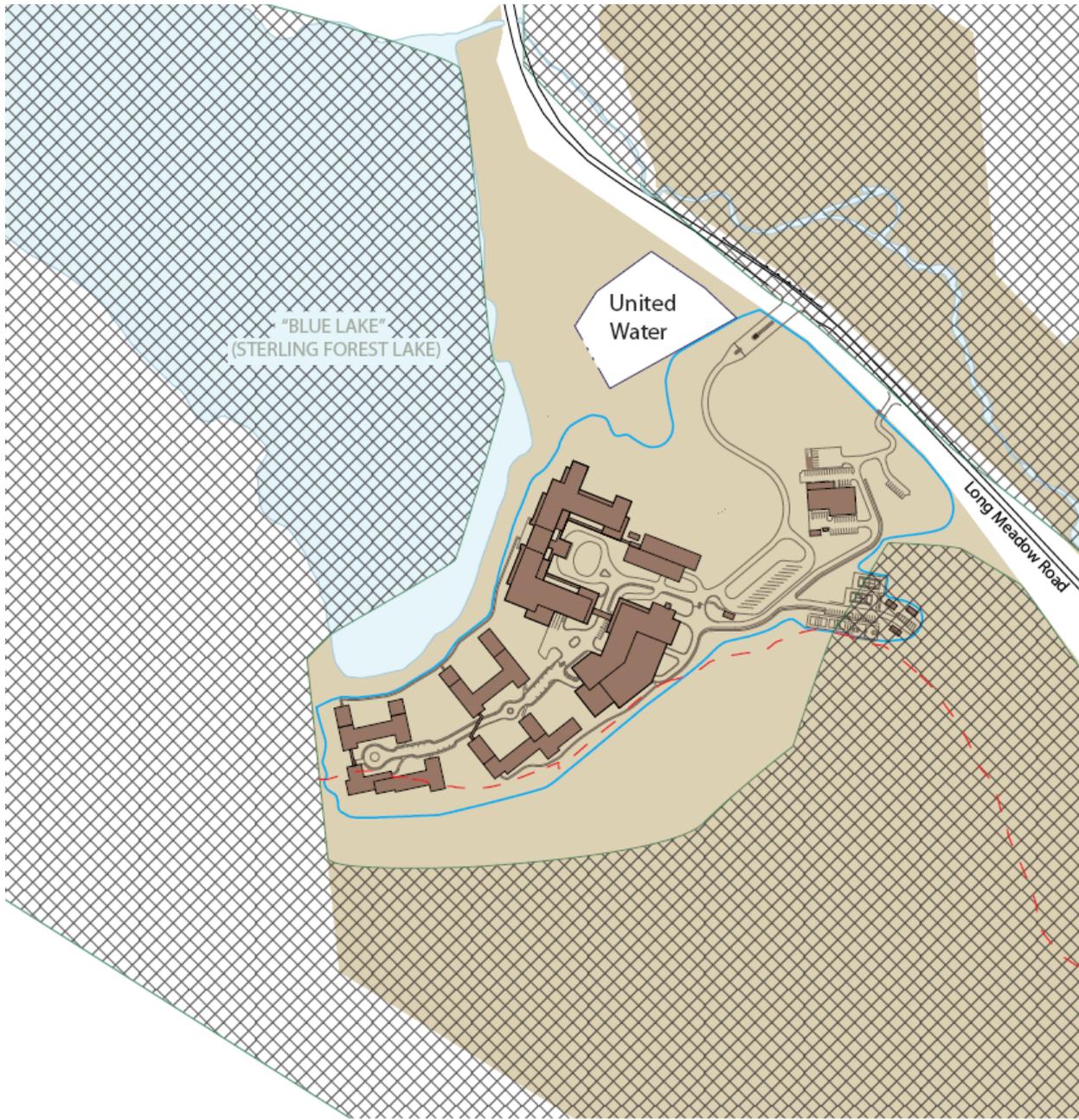
The proposed project lies almost entirely outside the boundaries of both the Southern Wallkill Biodiversity Plan (SWBP) and the 700-foot Ridgeline Overlay District. (See Figure 2-13 Southern Wallkill Biodiversity Plan (SWBP) and 700-foot Ridgeline Overlay District.) Even so, the proposed action acknowledges the importance of maintaining a diversity of habitats and satisfies a number of objectives outlined in the SWBP. By limiting the proposed development to just 18 percent of the 253 acres, a substantial amount of undisturbed wildlife habitat is retained.

- Environmental Protection, (C) Vegetation: “Vegetation retards water runoff, thus helping to preserve the water table and to prevent flooding. It stabilizes the slopes and prevents soil erosion and excessive siltation of the stream beds. It also reduces air and noise pollution and offers a beautiful scenic resource that is so important to Warwick. Future development should be carefully planned and controlled to avoid the destruction of this valuable natural resource.”—Section 3.8, page 100, paragraph 3.

The proposal will maximize the retention of existing vegetation. As a result, the benefits outlined will be achieved.

- Environmental Protection, (H) Energy: “Since energy usage has become a critical concern in the Town and globally, the Town should consider substantially strengthening the Building Code with regards to energy use in both residential and commercial properties. The Town should consider following the lead of the Orange County Planning Department regarding the US Green Building Council Program or that of the LEED (Leadership in Energy and Environmental Design.)”—Section 3.8, page 102, paragraph 2, 3.8.

The proposal will include energy reduction strategy as part of its design. The Project Sponsor is registered with the Green Building Initiative (GBI) which has established a sustainability program similar to the US Green Building Council (USGBC). GBI promotes a rating system similar to the LEED system that awards from one-to-four Green Globes™ based on the points obtained in the design and construction of projects. The Green Globes™ program also incorporates a third-party verification of actual project accomplishments as compared to proposed initiatives. This project will strive for a rating of three Green Globes™, which is similar to a LEED Gold rating.



SWBP and 700-Foot Ridgeline Overlay

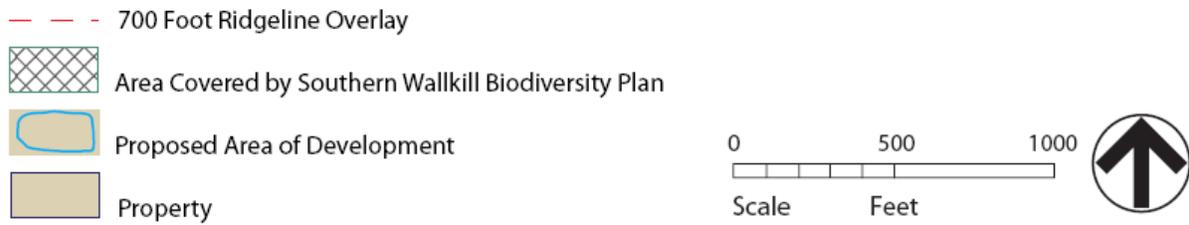


Figure 2-13 Southern Walkkill Biodiversity Plan (SWBP) and 700-foot Ridgeline Overlay District

E. Construction and Operations

Construction

Construction is proposed to begin upon completion of the permit process in 2012 and is anticipated to continue for approximately four years.

The proposed project will require the disturbance of approximately 45 acres. During construction, unstabilized disturbed soils will not exceed ten acres at any given time. The proposed project will be divided into a pre-construction phase and 13 construction phases and will proceed in compliance with the New York State (NYS) Department of Environmental Conservation (DEC) limits.

Sequence

See the Stormwater Pollution Prevention Plan (SWPPP) in Appendix M for construction sequencing as well as phasing maps for the proposed project. The pre-construction and 13 construction phases will generally follow the sequence outlined in Appendix M, Section 2, and as summarized in Table 2-4:

Table 2-4 Construction Phasing

Phase and Area of Disturbance	Construction Activity
Phase 1 – 7.5 Acres	Construction road access, Vehicle Maintenance Building, Utility Installation
Phase 2 – 10.0 Acres	Staging Areas
Phase 3 – 5.7 Acres	Temporary Concrete Batch Plant
Phase 4 – 9.0 Acres	Maintenance Building
Phase 5 – 8.0 Acres	Temporary Housing, C Residence, Utility Install
Phase 6 – 5.7 Acres	C Residence, D Residence, Maintenance Building
Phase 7 – 5.3 Acres	D Residence, Maintenance Building, Main Entrance
Phase 8 – 9.1 Acres	Maintenance Building, Visitor Parking Structure
Phase 9 – 8.0 Acres	Visitor Parking Structure, Administration Offices/Services Building, Residence A
Phase 10 – 4.4 Acres	Services Building, Residence A
Phase 11 – 5.5 Acres	Administration Offices/Services Building, Residence B
Phase 12 – 7.1 Acres	Administration Offices/Services Building, Residence B
Phase 13 – 2.1 Acres	Recreation Area

Operational Schedule

Duration of each construction phase shall be submitted as part of final SWPPP.

F. Permits and Approvals

Table 2-5 Required Approvals

Type of Approval	Agency
Special Use Permit	Town of Warwick Planning Board
Site Plan	Town of Warwick Planning Board
Possible (non-use) variances a) Incursion of portion of one building into Ridgeline Overlay District b) Height of roadway lighting	Town of Warwick Planning Board
Blasting Permit	Town of Warwick Planning Board
Demolition Permit	Town of Warwick Planning Board
Building Permit	Town of Warwick Planning Board
Architectural Review	Town of Warwick Architectural Review Board
Water, Sewer, Road Access	Orange County Department of Public Works
Stormwater SPDES Permit	NYS DEC
Article 15—Protection of Waters Permit	NYS DEC
GML 239 Review	Orange County Planning Department
Notes: 1. The project is not located within the regulated Municipal Separate Storm Sewer System (MS4) for the Town of Warwick.	

*

A. Introduction

This Chapter will describe the geology that underlies the site, the soils contained on the site, and landforms which are present on the site. The suitability for these resources to support the proposed building site development will be explored as will measures necessary to safely construct the proposal and to mitigate erosion impacts. The likelihood of blasting being required is addressed, as are measures to protect area facilities and structures including the on-site dam. Previous use of the site and its potential effects on these resources including contamination and cleanup are described.

Generally, studies have found on-site soils and geology, with employment of certain engineering practices, suitable to support the proposed facilities. The proposal has been designed to adapt to the area terrain and leaves the large majority of steeply sloping areas and challenging soils undeveloped. The design takes advantage of the topography by siting most buildings close to the existing grade. However, the use of underground parking throughout the site has resulted in a net cut. Bedrock in the area is relatively weathered and much of this will be able to be removed with use of normal excavation methods. Limited blasting may be needed with the proposed project. If blasting is needed it will be performed in accordance with the current requirements of Chapter 63 of *the Code of the Town of Warwick, New York*. Adequate measures will be employed to mitigate impacts to area structures and the on-site Blue Lake Dam. On-site soils contain some chemical contamination and the Applicant proposes full remediation of all observed and suspected contaminated areas. Two shallow open-pit mines are located on the site. Formerly mined areas are not located in the vicinity of the proposed development and no changes are proposed.

B. Existing Conditions

Geology

The site is located within the Hudson Highlands physiographic province with Project Site bedrock consisting generally of undivided and mixed gneisses, specifically of hornblende-feldspar gneiss and quartz-plagioclase gneiss in the vicinity of the former International Nickel Company (INCO) sewage treatment plant. The Applicant contracted with Clough, Harbor and Associates (CHA) to produce the “Final Geotechnical Engineering Report” (see Appendix B-1) which shows that depth to bedrock varies considerably, ranging from 3 feet to more than 60 feet in the area of proposed development. The report also provides the results of the borings and test pits investigation, the locations of which are found in Figure 2 of the Report.

An earlier “Site Investigation Report” for the Former King’s College Property dated June 19, 2009 (see Appendix B-2) was prepared by CHA. Approximately one-third of the borings recorded in this report encountered bedrock. The “Final Geotechnical Engineering Report” classifies the rock and provides Rock Quality Designation (RQD) values. The granite bedrock has very poor-to-good RQD values ranging from 12 to 88 percent. The schist bedrock has poor-to-fair RQD values ranging from 42 to 66 percent.

Former Mining

The site was previously used for some open-pit mining of magnetite in the past. The site is located at the northern end of the Ringwood Group, an important iron-ore body between Sterling Lake, New York, and

Ringwood, New Jersey. In response to the Blue Lakes subdivision, a previous application for the site, a geotechnical investigation of past mining was performed¹. This investigation revealed that there were two areas used for previous open-pit mining identified as the Snyder and Hewitt mines, operated between the 1700's through approximately 1880. Both of these mines are located at the extreme southern end of the site in the area furthest from the existing INCO campus. Both mines are approximately 20 to 25 feet wide and a maximum of 25 feet deep. The Hewitt mine, which is the more southerly mine is approximately 80 feet long, while the Snyder mine is approximately 125 to 150 feet long. Both mines are partially filled with detritus² and water, approximately 6 to 8 feet from static water level to the surface. The mines will not be disturbed as part of the proposed project.

Because of the presence of these two open-pit surface mines, the geotechnical investigation also attempted to ascertain the extent of mining on the parcel southwest of Long Meadow Road (also known as County Route 84 [CR-84]) and to determine the possibility of subsurface mines being located on the site. Based on the investigation performed by Tectonic Engineering Consultants, the mining on the site is limited to the Hewitt and Snyder Mines and there is no indication of any extensive mining or subsurface mining. The conclusion was based on surface geologic mapping, electromagnetic conductivity, magnetometry, and soil borings in the vicinity of the known surface mines. Additional description of former mining and its implications are contained in the DEIS for The Kings College.

Radon

The site is located within the Reading Prong, a geologic formation known to produce radon. Measurable radon levels have been reported in the Town of Warwick and areas west of the site. According to the USEPA Radon Zones, as reported in the environmental site assessment prepared by A.V. Agovino & Associates (see Appendix B-3), the site has a low-to-moderate potential for radon exposure. The INCO buildings were tested for the presence of radon in 1991 (see Appendix B-4). Based on this testing, the average level of radon at five locations throughout the buildings was between 0.6 and 0.9 picocurie per liter. This is below the USEPA maximum contaminant level of 4 picocurie per liter. Further radon testing will be undertaken during construction. If the level of radon is found to be less than the maximum contamination level, as was the case in the 1991 study, no limitations will be imposed. If measured limits are higher, the Applicant will follow standard mitigation measures using guidelines set forth by the EPA and in the *American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) Indoor Air Quality Guide*. Additional discussion on the topic of radon is provided in Chapter 5, "Air Resources."

Soils

Predominant general on-site soils have been classified by the US Department of Agriculture, Soil Conservation Service, as Mardin-Erie, and Hollis Rock Outcrop, and Arnot-Swartswood-Hollis. Mardin-Erie soils are gently sloping to sloping; deep; moderately well-drained to somewhat poorly drained; medium-textured soils on uplands. These general soil types correspond with a strip along the southwest parcel boundary of the parcel southwest of Long Meadow Road (CR-84). The majority of both the parcel southwest and northeast of Long Meadow Road (CR-84) are classified as Arnot-Swartswood-Hollis which are sloping; shallow-to-deep over gneiss and schist; excessively to well drained; medium-textured soils on uplands. The more sloping areas of the parcel northeast of Long Meadow Road (CR-84) are Hollis Rock Outcrop which are sloping to steep; excessively to well drained; medium-textured shallow soils over schist, granite, and gneiss on uplands.

¹ Tectonic Engineering Consultants. Geotechnical Investigation for Blue Lake Subdivision, Prepared for Town of Warwick, NY, November 1989.

² Detritus - A loose mass of stones, silt, etc.

In their "Final Geotechnical Engineering Report," CHA provided an analysis of 18 test pits and 26 bore holes (see Appendix B-1). The logs show the following surficial (surface to bedrock) geological conditions: Layers of fine, medium, and coarse sand, gravel, clay, clayey silt, occasional trace organics, schists, and granite (boulders and cobbles). The sand was generally very compact and ranged in color from light brown/grey to dark brown.

A map of general soil types is included as Figure 3-1 Soils Map.

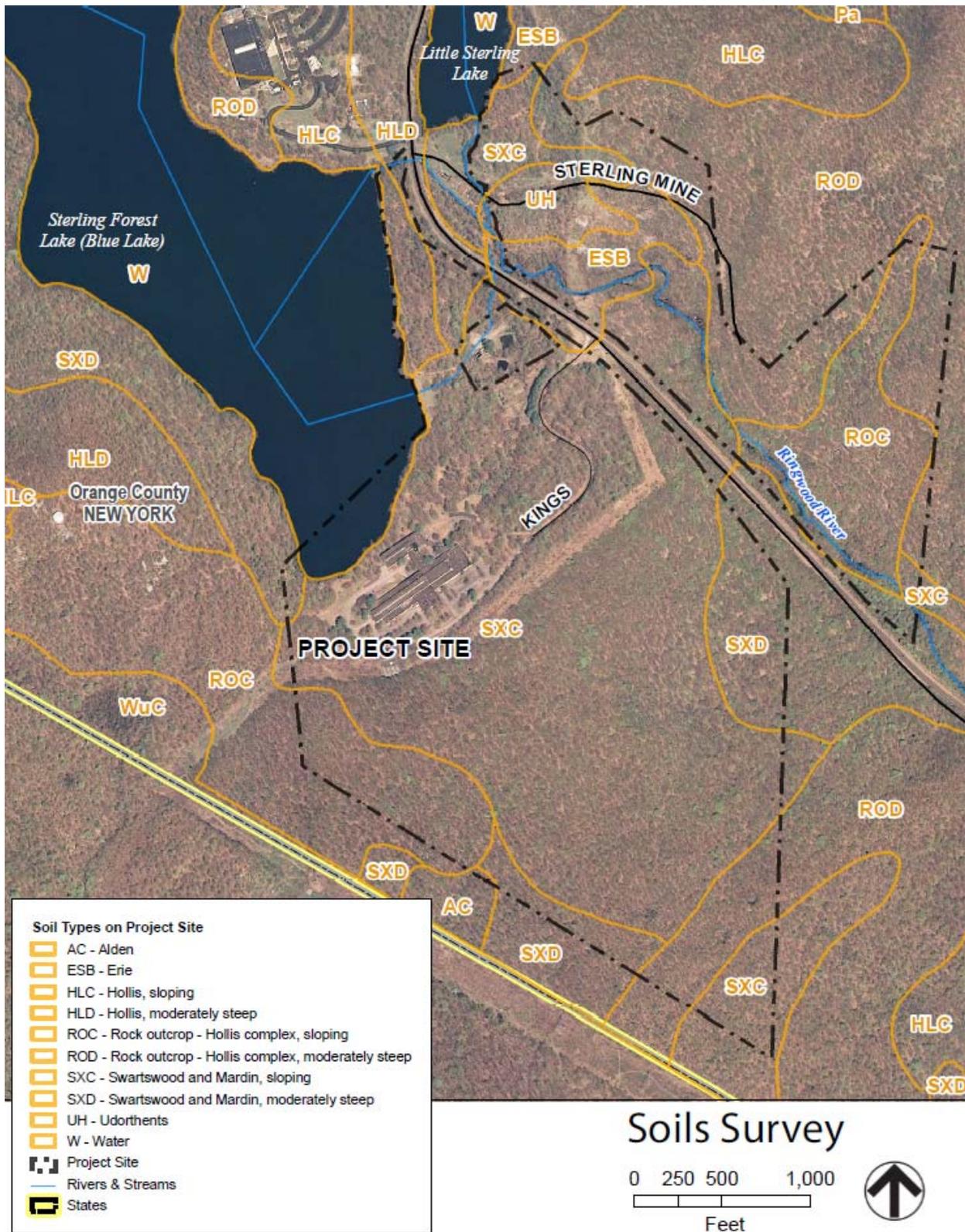


Figure 3-1 Soils Map

Section 4.3 of the “Final Geotechnical Engineering Report” discusses the subsurface stratigraphy encountered (see Appendix B-1). Figures 2 and 3 of the “Final Geotechnical Engineering Report” provide a boring and cross section location plan and geologic cross sections—see Appendix B-1.

Specific soil types and their properties are listed below:

ESB—Erie extremely stony soils, gently sloping

Erie soils are deep, somewhat poorly drained, soils with slopes ranging from 3 to 8 percent. A fragipan³ is present at approximately 46 inches deep, which results in a perched water table during the spring and other wet periods.

HLC—Hollis soils, sloping

Hollis soils are shallow, well-to-excessively drained soils with slopes ranging from 8 to 15 percent. Depth-to-underlying hard granitic bedrock is typically 18 inches. There is usually no perched water table except for poorly jointed areas which may exhibit brief wet periods in early spring.

ROC—Rock Outcrop-Hollis complex, sloping

This complex is comprised of exposed bedrock and shallow, somewhat excessively drained-to-well-drained Hollis soils with slopes ranging from 3 to 15 percent but dominantly 8 to 15 percent. Depth-to-underlying hard granitic bedrock is typically 14 inches for areas of Hollis soils. There is usually no perched water table except for poorly jointed areas which may exhibit brief wet periods in early spring.

ROD—Rock Outcrop-Hollis complex, moderately steep

This complex is comprised of exposed bedrock and shallow, somewhat excessively drained-to-well-drained Hollis soils with slopes ranging from 15 to 35 percent but dominantly 15 to 25 percent. Depth-to-underlying hard granitic bedrock is typically 13 inches for areas of Hollis soils. There is usually no perched water table except for poorly jointed areas which may exhibit brief wet periods in early spring.

SXC—Swartswood and Mardin very stony soils, sloping

These soils are comprised of well-drained-to-moderately well-drained Swartswood soils and moderately well-drained Mardin soils with slopes ranging from 3 to 15 percent but dominantly 8 to 15 percent. A fragipan is present at approximately 32 inches deep, which results in a perched water table during the spring and other wet periods.

SXD—Swartswood and Mardin very stony soils, moderately steep

These soils are comprised of well-drained-to-moderately well-drained Swartswood soils and moderately well-drained Mardin soils with slopes ranging from 15 to 35 percent but dominantly 15 to 25 percent. A fragipan is present at approximately 15 to 28 inches deep, which results in a perched water table during the spring and other wet periods.

³ Fragipan - A horizontal layer of soil that restricts water flow and root penetration.

UH—Udorthents, smoothed

These soils are formed in man-made cut-and-fill areas. These soils are generally excessively to well drained with content and properties varying greatly from site to site.

Soil Properties of SXC Soils Specifically

SXC—Swartswood and Mardin, very stony soils, sloping exclusively underlay the area of the site proposed for development. These soils were formed in glacial till deposits. The Swartswood soils have a lower silt content and higher sand content than the Mardin soils. The surface layer texture of these soils, excluding large stones, is gravelly loam, gravelly silt loam, gravelly fine sandy loam, or channery sandy loam. Stones and boulders greater than 10 inches in diameter are about 5 to 30 feet apart on the surface.

Typically the Swartswood soil has a 3-inch surface layer of very dark grayish brown gravelly loam. The subsoil is 59 inches thick. The upper part is strong brown gravelly loam over mottled yellowish-brown gravelly fine sandy loam. From 31 to 62 inches is a brown gravelly fine sandy loam, firm, and brittle fragipan. The substratum to a depth of 70 inches is brown gravelly fine sandy loam.

Typically the Mardin soil has a 6-inch surface layer of dark brown gravelly silt loam. The upper 6 inches of subsoil is yellowish-brown gravelly silt loam. Under this is a thin-leached layer of mottled pale-brown gravelly silt loam. From 17 to 60 inches is a firm, olive-brown channery silt loam fragipan.

SXC—Depth to Groundwater

In both the Swartswood and Mardin soils, the water table is perched above the fragipan early in spring at a depth of 2.0 to 4.0 feet.

SXC—Depth to Bedrock

In both the Swartswood and Mardin soils, the depth to bedrock is greater than 60 inches.

SXC—Drainage Characteristics

Permeability is moderate above the pan in both soils. It is slow or moderately slow in the pan and substratum in the Swartswood soil and is slow or very slow in the Mardin soil. Available water capacity, or the ability of the soils to hold water available for use by most plants, is low to moderate. Runoff is medium in both soils. These soils are not subject to flooding.

SXC—Engineering Properties

These soils are suitable for the construction of structures. The soils are deep-till deposits, which generally provide stable, relatively incompressible foundations for engineering works. If well compacted, fill material from these soils generally provides stable embankments. Steeper-cut slopes are commonly subject to surface sloughing and erosion. The soils have good compaction and load bearing qualities and are generally from 59 to 70 inches in depth. However, construction on Swartswood and Mardin soils will require the removal of large stones at or near the soil surface. In addition, the Swartswood soils pose a high risk of corrosion for concrete.

The soils are only moderately suitable for construction of local roads and streets and for lawns and landscaping due to slope and frost action. The soils are considered fair as road fill due to the frost action, and poor as topsoil due to large stones.

SXC—Erodability Factor

Erodability K factors (water sheet and rill flow) factors range from 0.17 to 0.28 tons per acre per year depending on the depth of soils and the content of Swartswood and Mardin soils.

SXC—Structural Stability

SXC soils are classified as AASHTO classifications A-1 through A-4. Fragments greater than 3 inches range from 0 to 25 percent. The existing large INCO industrial buildings demonstrate the ability for these types of soils to support structures.

Potential Existing Soil Contamination

Environmental site assessments (ESA) were prepared for the site by A.V. Agovino and Associates in 2005 (see Appendix B-3) and soil testing was conducted by VFS Environmental in 2006. In 2009, the Applicant commissioned its own ESA.

The ESA prepared in 2005 indicated a number of areas of concern including the former underground storage tanks (USTs), potential subsurface contamination due to the waste sewerage piping, potential subsurface contamination due to the filter sand beds from the sewage treatment plant in a nearby wooded area, the sewage treatment plant, a former drum storage area and potential subsurface contamination due to historic operations at the former INCO facility.

The 2006 VFS “Site Investigation Report” concluded that the majority of the areas of concern identified by the 2005 ESA have not resulted in any significant impact to the subsurface soils or groundwater. However, there were several areas of concern where potential impacts were identified and additional investigation was recommended by VFS, which included the following:

- Further investigation, including the installation of monitoring wells, in the area of the piping from the former INCO facility to the wastewater treatment plant.
- Further investigation, including the installation of groundwater monitoring wells, in the area of the sand filter material at the wastewater treatment plant.
- Further investigation, including the installation of groundwater monitoring wells, in the area of the former 8,000-gallon neutralization tank and 6,000-gallon settling tank.
- The installation of a groundwater monitoring well in the area of the outdoor drum storage area.
- Further investigation, including the installation of a groundwater monitoring well, in the area of Building A of the former INCO facility.

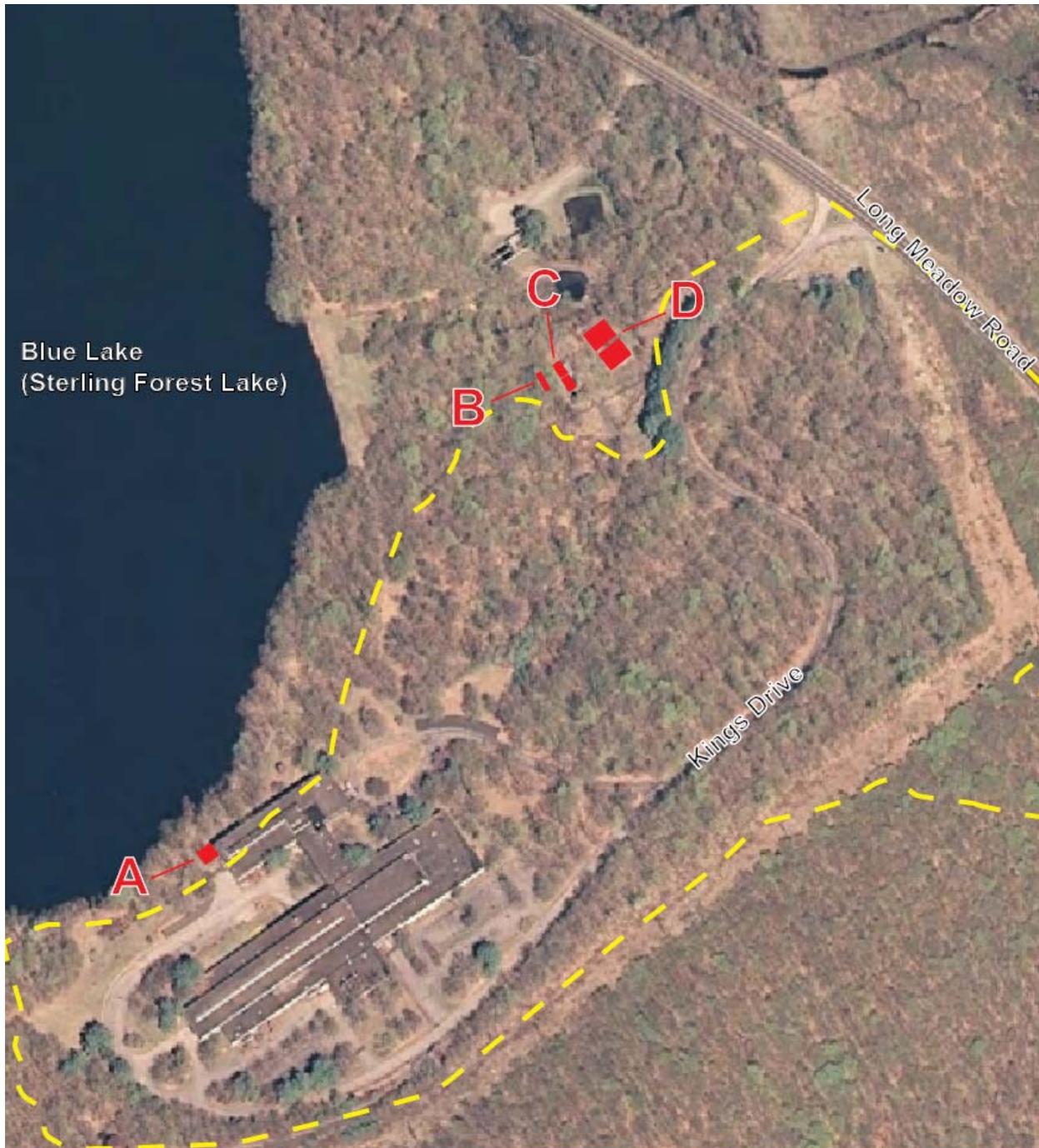
In response to these recommendations, Clough, Harbor and Associates performed a number of soil borings and installed a number of monitoring wells in 2009 in preparing its “Site Investigation Report” on behalf of the Applicant—see Appendix B-2.

This site investigation concluded and recommended the following:

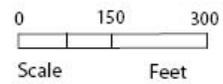
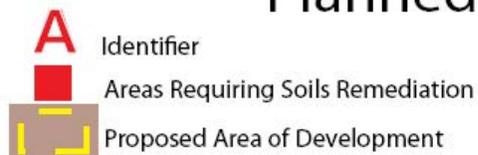
- Polyaromatic hydrocarbons (PAHs) are present near Building A (building closest to Sterling Forest Lake [Blue Lake]) at soil boring 23 (Area A on Figure 3-2 Soils Remediation Map). It was recommended that this limited area of soils (15 by 15 feet and 3 feet deep) be excavated and removed, and that foundation excavation be performed if this building is to be demolished.
- Thallium is present at slightly elevated levels across the site, which was determined to be a natural condition. No mitigation was recommended.
- Higher-than-average levels of PAHs were detected in the groundwater near the former wastewater treatment plant. It is recommended that soils near the former drum storage area and treatment plant (Areas B and C on Figure 3-2 Soils Remediation Map) be excavated and removed (50 by 50 feet and 6 to 8 feet deep) and that the area be monitored following removal.

- Nickel and titanium are present throughout the site consistent with background levels, although one concentration was found in the filter beds near the former drum storage area and wastewater treatment plant. This high concentration should also be addressed with the preceding removal of soils in the vicinity of the former drum storage area and treatment plant.
- Although no contaminated conditions were observed in 2009 at the sand filter beds (Area D on Figure 3-2 Soils Remediation Map), based on contamination observed in 2006, it was recommended that the entire filter beds (75 by 75 feet and 6 to 8 feet deep) be removed from the site.

There are no remaining areas of concern that have not been sampled by soil borings and monitoring wells.



Planned Soils Remediation



Source: CHA - May 2009

Figure 3-2 Soils Remediation Map

Topography

Long Meadow Road (CR-84) bisects the two halves of the Applicant's holdings through a valley following a stream bed with elevations rising on either side. The holdings can be categorized as sloping to moderately steep. The area northeast of the road that is proposed to remain vacant is categorized by a flat area along the stream corridor at the north end of the site rising to a ridge toward the northeast away from the road. As the stream travels south, it enters a more pronounced gulley, and the foot of the ridgeline to the northeast gets closer to the road.

The area to be developed is generally categorized as sloping land with grades from 8 to 15 percent, with a low elevation at Blue Lake of 640 feet above sea level to a high of approximately 700 feet above sea level. The area surrounding the former INCO site has been graded to a more moderately sloping plateau. The area to be developed is well above the principal roadway, Long Meadow Road (CR-84), which is located at 590 feet above sea level. Behind and to the southeast of this plateau, the land rises to a ridge with an elevation ranging from 785 to 805 feet above sea level before sloping back down to the southerly limits of the tract—see Figure 3-3 Slope Survey Drawing.

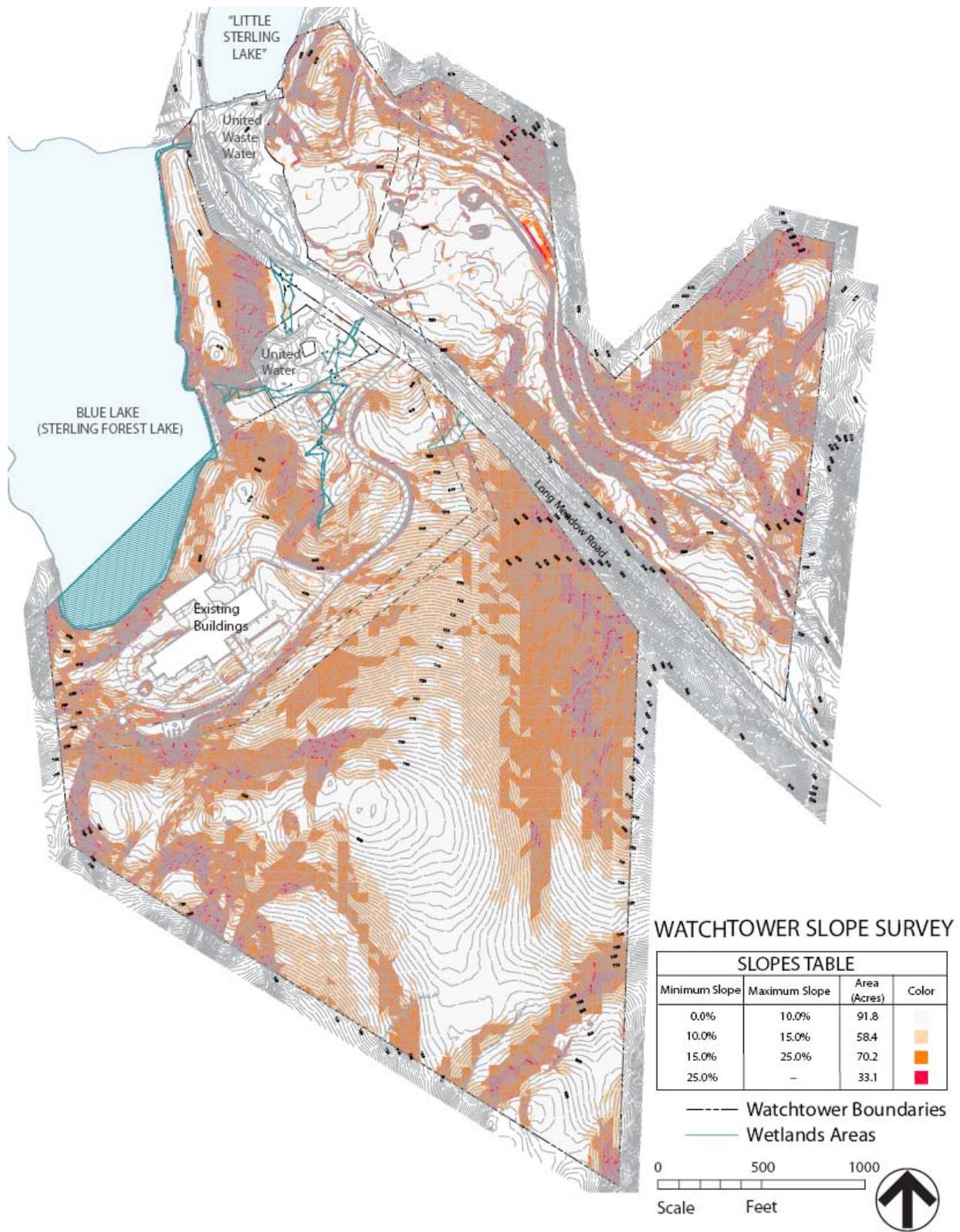


Figure 3-3 Slope Survey Drawing

C. Potential Impacts

Geology

The soil study performed by CHA indicates that there is a predominance of boulders and moderately-to-severely weathered rock below the surface at the proposed building site. The construction of the proposed buildings with subsurface parking will require significant excavation that may encounter this subsurface geology.

Soils

All of the disturbance proposed on the site will be proposed over Swartswood and Mardin very stony sloping soils. It is possible that seasonally high water may be encountered.

Topography

Overall, the site will be designed to blend and adapt to the existing topography while respecting the Ridgeline Overlay District height restrictions and keeping within the footprint of the former development. However, to accomplish this along with the goal of reducing site disturbance, the Applicant is proposing significant re-grading for the installation of parking structures, basements, footings, and foundations. This will result in an excess cut of approximately 300,000 cubic yards of excavated soil. Further contributing to this is the need for floors to have similar elevations due to the interaction between buildings. Also, in order to minimize surface parking, the Applicant is incorporating underground parking garages, which require further excavation. The Applicant is currently working with the civil engineer, geotechnical engineer, and architect to revise the finished floor elevations in order to reduce the amount of excavation required. Efforts are also being made to utilize excavated material at other locations on site.

D. Mitigation Measures

Geology

The soil study performed by CHA indicates that there is a predominance of boulders and moderately-to-severely weathered rock below the surface at the proposed building site.

As such, the majority of rock removal during excavation should be able to be performed primarily by normal excavation methods including the ripping of weathered rock. However, it is anticipated that some blasting may be necessary. If blasting is necessary, the potential noise, dust, and vibration impacts produced by blasting operations will be mitigated by implementation of a blasting plan that conforms to State and local codes. Licensed personnel will perform blasting in a manner that protects existing structures, and nearby property owners will be notified in accordance with code requirements.

The prudent selection of building types, building location, and designs will minimize the need for rock removal. Where bedrock is known to be present, its elevation has been factored into the design of the site.

The intent of the development is to reuse excavated rock on site. In order to accomplish this, rock crushing is planned. To limit noise and vibration impacts on adjacent recreational areas, rock crushing equipment will be located centrally. Hours of crushing will be restricted to daytime hours (8 a.m. to 4 p.m.) Monday through Friday.

Reusing material excavated on the site will significantly reduce the need to bring additional materials and trucks onto the site, thereby decreasing noise levels, truck traffic, and air emissions during the early phases of construction. However, excess fill will need to be exported as the result of placing much of the

site's parking underground, as well as building the site into the topography, in order to mitigate stormwater and visual impact. The quantity of excess fill will be finalized during the refining of the design in the site plan approval process.

Blasting Procedure

Blasting and rock crushing work will be completed on a continuous basis to minimize the length of time it will take, and thus minimize the impact on neighboring structures and passive recreational use of the surrounding parklands.

The blasting that will be conducted on this site will be done under strictly controlled conditions. The direction of the force will be controlled by the actual design of the blasting procedure.

Any blasting activity is regulated by the following agencies:

- Occupational Safety & Health Administration (OSHA) 29CFR 1910.109.
- US Department of Interior—Bureau of Mines.
- NYS Department of Labor—Division of Safety and Health.
- Town of Warwick—Town Clerk issues permit.

Prior to conducting any blasting activities, the depth to be blasted will be determined by soil borings. This information will be used to establish a blasting plan based on final grade for the area. As part of the site plan application, a blasting plan will be drawn by a licensed blaster, an application completed and submitted to the Town of Warwick Clerk for approval.

In addition to the approved blasting plan, a professional firm that specializes in blasting and vibration monitoring will conduct a pre-blast survey. This survey involves a detailed inspection of the interior and exterior of all buildings within 200 feet of the limits of the blasting, if any. Permission to enter upon lands of adjacent property will be obtained as necessary.

The inspection firm will be an independent firm who is not directly associated with the Project except for this specific service. The report will include pictures of the existing conditions of the structure and any present structural problems will be noted.

During the blasting activity itself, vibration monitors will be placed on the closest adjacent buildings. Vibration monitoring is measured in peak particle velocity and will not exceed seventy-five hundredth (0.75) inch per second for frequencies less than forty (40) hertz horizontal or two (2.0) inches per second for frequencies over forty (40) hertz. Although minor vibrations may be felt at these levels, they will not cause any harm to a building structure.

In addition to limiting peak particle velocity, pore water pressures should be monitored at the Blue Lake Dam throughout the blasting operation and they should be allowed to dissipate, if necessary, before subsequent charges are detonated.

The sound levels will also be monitored at the perimeter of the site and will be contained to a maximum of 134 decibels during the actual blast. The record of the vibrations and the decibel levels will be available to Town representatives on a continuing basis and a report will be issued at the end of the blasting which will include the levels of vibration and noise reached at the perimeter of the site.

Although there will be unavoidable impacts from blasting, the extent of the impacts will be mitigated to the maximum extent practical. The following safety measures will be taken:

- Only qualified blasting contractors with many years of experience will be employed for this project. The blaster will have the required State licensing and will be fully insured.
- A pre-blast inspection will be conducted by a professional firm that specializes in blasting and vibration monitoring. This report will be made available to adjacent owners.
- A blasting plan and application for blasting permit will be submitted to the Town for review and approval prior to start of the blasting.
- All New York State and Federal regulations will be followed with respect to blasting requirements.
- Blasting mats will be used whenever necessary to prevent fragments from leaving the site.
- During the blasting, vibration and sound level measurements will be taken to insure that all activities are in conformance with regulatory standards.
- The blasting contractor will limit the levels of vibrations to those below which will cause damage to adjacent structures and utilities.
- Any concerns by adjacent property owners will be addressed in a timely manner and the pre-blast inspection and actual monitoring reports will be available to any adjacent owner who has a concern.
- All blasted material will be used for on-site fill, subject to the approval of the Town Engineer or removed from the site.

Soils

The remedial actions for soil contamination indicated in Section C, “Potential Impacts,” above will be implemented prior to site construction.

CHA soil investigations indicate that the on-site soils are suitable for supporting the proposed site development on shallow spread foundations. Because the depth to bedrock differs across the site and because bedrock has a much higher bearing capacity (recommended up to 10 tons per square foot) than the sand and glacial till (recommended up to 3 tons per square foot), the proposed site buildings will require design specific to their location on the site, including consideration of the potential for differential settlement for some buildings. With proper design, CHA believes that differential settlement may be kept to less than one inch among footings.

On-site soils are adequate for reuse as subgrade fill with proper compaction. Excavated bedrock will be crushed and reused where appropriate, thus minimizing the amount of spoil to be removed from the site. Additionally, excavated boulders will be used throughout the site in rock gardens to mimic the natural woods. The “General Notes” on Figure 2-11, Proposed Landscaping Plan, indicate how boulders will be included in the landscaping—see full-size drawing, which is included in Appendix L.

It is anticipated that seasonal high ground water may be encountered during site construction depending upon the ultimate location and depth of the proposed structures. The Applicant will ensure that dry conditions are maintained so that foundation construction may be completed under dry conditions. Dewatering methods will be employed including the use of sumps and pumps, diversion and drainage ditches, toe drains, and other similar methods.

The subgrade beneath the proposed structures, backfill behind building foundations, and backfill behind basement walls will be maintained in dry conditions at all times to prevent wet slabs, cracking, and heaving. A drainage system will be designed to adequately reduce hydrostatic pressure behind basement walls and maintain the groundwater level six inches below basement floors.

Drain tile with crushed stone or gravel backfill will be placed adjacent to exterior footings at an elevation below floor slabs. Crushed stone or gravel backfill shall extend a minimum of 12 inches around the drain

tile. Drain tile will also be placed beneath floor slabs in the crushed stone subbase. All drain tiles will be connected to a storm sewer, day lighted at a lower elevation, or lead to a sump equipped with duplex pumps. Surface runoff will be diverted away from excavations during construction.

Because of the complexity of on-site soils, a qualified geotechnical engineer will be on site during excavation for foundations to ensure that all existing fill soils are removed beneath planned footings. The geotechnical engineer will carefully inspect final excavation surfaces for foundations and floor slabs to ensure that the subgrade has been properly prepared and is consistent with design recommendations.

Materials used as fill, including those used beneath footings, floor slabs, and pavement will be tested by a qualified soils laboratory to verify they meet the specified gradations and to determine their maximum dry density for compaction. In-place density tests will be performed to verify that compaction methods and equipment achieve the required densities.

Erosion control measures are listed in Table 3-1 Erosion Control Measures. Please see Appendix M, Stormwater Pollution Prevention Plan (SWPPP), for additional information including drawings depicting the locations of the various erosion control measures.

Table 3-1 Erosion Control Measures

Erosion Control Measure No.	Type	Description
1	Phasing	In order to minimize the overall amount of disturbed soil that will be subject to potential erosion at one time, the project will be phased. Each phase will disturb a maximum of 10 acres at one time with written authorization from the Department of Environmental Conservation (DEC). Additional phases will begin only when the prior phase is near completion and exposed soil has been stabilized. Refer to Drawing C-008 for overall phasing plan.
2	Existing Vegetation Protection	The preserved area of existing vegetation will be surrounded by a temporary orange-colored plastic mesh fence, and all trees on the perimeter of the protected area will be marked with a brightly colored ribbon. The fencing will be at least 3 feet tall and have openings no larger than 2 by 2 inches. Posts will be spaced a maximum of 6 feet apart. The temporary fencing will be installed at the drip/spread line of the trees, and undergrowth vegetation to be protected. Vehicles and equipment will not be able to enter the protected area.
3	Topsoil	Topsoil removed from the proposed construction areas will be stockpiled to create berms at different locations throughout the site. The stockpiles are in an area that will not interfere with construction phases and will be at least 15 feet from areas of concentrated flows or pavement. The slope of the stockpile will be roughened by equipment tracking and will not exceed 2:1 to prevent erosion. A silt fence will be installed at each stockpile. The area of each stockpile is included in the total area of disturbance for each construction phase (included in 10-acre limit).
4	Silt Fence	Silt fence will be installed at locations shown on the plans.

Table 3-1 Erosion Control Measures

5	Earth Dike	Temporary earth dikes will be constructed to route stormwater runoff at locations shown on the plans. The dikes will be constructed of compacted soil and will have a top width of 2 feet, a height of 18 inches, and 2:1 side slopes. The dikes will be stabilized by hydroseeding and mulching to prevent erosion within 7 days of being constructed.
6	Temporary Stabilization (Seeding)	Temporary vegetative cover will be established for areas of exposed soil where construction will cease for more than 7 days. During spring, summer, or early fall, seed with rye grass at 30 lbs/acre will be used. During late fall or early winter, seed Certified "Aroostook" winter rye at 100 lbs/acre will be used.
7	Hydromulching	Wood-fiber hydromulching will provide protection to exposed soils during short periods of construction. Hydromulch will be applied in areas that have been seeded for temporary or permanent stabilization. Straw mulch and wood fibers will be mixed with a tackifier and applied uniformly by machine.
8	Mulching (Hay/Straw)	Hay/straw mulch will provide protection to exposed soils awaiting permanent seeding or the establishment of shrub planting. Hay/straw mulch will be applied in areas that have been seeded for temporary or permanent stabilization. Mulch is to be installed at 2 tons per acre. Where wind or areas of concentrated water are a concern, mulch anchoring will be used.
9	Dust Control (Sprinkling)	Dust from the site will be controlled by using a mobile water truck to apply water to disturbed areas that are dry and susceptible to creating dust.
10	Storm Drain Inlet Protection (Before Paving)	Existing and newly constructed drain inlets will be protected using various methods, including silt fence, stone and block, and hay bales.
11	Stabilized Construction Exits (Before Paving)	Stone anti-tracking pads will be installed at all exits to prevent the off-site transport of sediment by construction vehicles. The stabilized exits will be at least 50 feet long, a minimum of 12 feet wide, flared at the end closest to the paved road, and will consist of 6-inch-thick layer of crushed stone. The crushed stone will be placed over a layer of geotextile filter fabric. Orange mesh fence will be installed along the length of the construction exit to keep construction vehicles from circumventing the tracking pads.

Table 3-1 Erosion Control Measures

12	Waste Materials (Including Recyclable and Hazardous)	<p>All waste materials will be collected and disposed of in trash dumpsters located in the combined staging area. Dumpsters will have secure watertight lids, and will be placed away from stormwater conveyance and drains.</p> <p>Wood pallets, cardboard boxes, and other recyclable construction scraps will be disposed of in a designated dumpster for recycling.</p> <p>All hazardous waste materials, such as oil filters, petroleum products, paint, and equipment maintenance fluids, will be stored in structurally sound and sealed shipping containers. A hazardous-materials storage area will be designated in the materials storage area. Secondary containment will be provided by spill pallets. No hazardous material will be disposed of in the on-site dumpsters.</p>
13	Combined Staging and Material Storage Area	<p>Construction equipment and maintenance materials will be stored at the combined staging area and material storage areas. Silt fence will be installed around the perimeter to designate the staging and materials storage area.</p>
14	Concrete Washout	<p>Construction washout areas will be installed at the site exits. A proprietary washout recycle unit will be utilized. Signs will be posted marking the location of the washout areas.</p>
15	Temporary Sump Pit	<p>The water table may be encountered during the construction of the building foundation, and dewatering measures may need to be implemented to provide a dry base for construction. A temporary pit will be constructed to trap and filter water for pumping to a temporary sediment basin. The sump pit will consist of a 24- or 36-inch-perforated vertical standpipe (corrugated plastic or PVC) in the center with a 12-inch base of NYS DOT #2 aggregate.</p>
16	Sanitary Waste	<p>Six portable toilets will be provided at the site near each phase of construction. The toilets will be located away from concentrated flow paths and traffic flow.</p>
17	Permanent Seeding	<p>All disturbed areas not stabilized with pavement or buildings will be seeded to provide perennial vegetative cover.</p>
18	Outfall Protection (Riprap)	<p>All pipe conduit outlets will utilize riprap protection to reduce the depth, velocity, and energy of water. Filter fabric shall be placed between riprap and the underlying soil.</p>
19	Flow-Thru Stormwater Planter	<p>Stormwater runoff from the new visitor parking decks is routed through a series of planters. The planters provide water quality treatment in areas where standard methods are not feasible. Each planter can receive runoff from a maximum of 15,000 sq ft.</p>
20	Sediment Trap (Temporary)	<p>Temporary sediment traps will be constructed for use during construction. The slopes of the traps will be stabilized using appropriate erosion control methods. Sizing of the traps will be according to the <i>New York Standards and Specifications for Erosion and Sediment Control</i></p>

Topography

Static-load bearing basement walls and retaining walls will be required to accomplish the site design. According to the geotechnical investigation, such walls can be accomplished with incorporation of proper drainage methods as detailed previously.

E. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16. These alternatives are designated as (1) no-action, (2) educational facilities, (3) low-height, and (4) as of-right. Geology, soils, and topography impacts associated with each of these alternatives are discussed below and compared to impacts attributable to the Applicant's proposed facility—see Figure 16-1 Low-Height Alternative, Figure 16-2 As-of-Right Residential Alternative, Figure 16-1 INCO Site Plan, and Figure 2-4 The Kings College Site Plan.

No-Action Alternative

Under this alternative the land will remain in its existing state including the abandoned INCO facility. Under this alternative the existing site will continue to naturalize. Without maintenance and over time, the on-site stormwater infrastructure will begin to fail resulting in soil erosion impacts. No impacts to topography or geology will be anticipated under this alternative. This alternative does not meet the goals of the Applicant.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990's by The King's College will be constructed. These facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students. The King's College DEIS stated that blasting will be required, but minimized based on adjustment to the grading plan based on more detailed site investigation. Less-detailed site investigations were conducted prior to laying out The King's College Plan. The total area of soil disturbance will amount to approximately 102 acres. Because significant surface parking was accommodated and generally the site was proposed to be built up and over the entire ridge, cuts and fills were able to be balanced, but significant visual impacts were possible and stormwater runoff was significantly higher. In regard to radon, The King's College DEIS measured radon levels below 4.0 pCi/l, but did not rule out the future presence of radon in proposed buildings. Hence, radon monitoring and mitigation, if necessary, were proposed.

With regard to topography the proposed Kings College utilized almost the entire tract southwest of Long Meadow Road (CR-84). This will modify the appearance of the entire hillside from several viewpoints and involve significant development above the 700-foot Ridgeline Overlay and Southern Walkkill Biodiversity (SWB) Area. This alternative does not meet the goals of the Applicant.

Low-Height Alternative

This alternative involves constructing lower profile structures at the Applicant's facilities, which will require larger building footprints to accommodate the same square footage as the Applicant's original proposal. As such, this alternative will increase the amount of area that will be disturbed during construction from 45 acres under the original proposal to 59 acres. Constructing a more sprawling site will likely result in less exportation of cut as the buildings will be built closer to grade rather than being built into the hillside. Additionally, resident parking garages will be two smaller structures with their base stories at-grade, compared with the preferred proposal which proposes a larger structure that is largely below grade. Visitor parking will be accommodated in surface parking lots, which will also eliminate the extent of cut.

While less cut will be required, the increased extent of impervious surface will result in increased surface runoff. This surface runoff will require additional storage areas for stormwater runoff rate attenuation in order to reduce erosion hazards. Also, the site footprint of this plan will increase the total number of trees cut and the area of soils that will be disturbed during the construction process.

With regard to topography, this proposal will disturb the entire hillside north of and to the top of the ridge resulting in a significant incursion into the 700-foot Ridgeline Overlay and SWB Area. This alternative meets the goals of the Applicant.

As-of-Right Alternative

This alternative assumes that the property will be purchased by a private developer and that new residential lots will be constructed, which will be unrelated to the Applicant's operations. Single-family residences will be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement.

Estimates show that approximately 200 acres of the 253-acre parcel are available for development of lots; the remaining 53 acres are reserved for infrastructure (i.e., roadways and stormwater facilities, open-space and contingency). Thus, this parcel could potentially accommodate up to 25 residences in a standard subdivision layout. This subdivision layout will be comprised of loop roads of significant length on the parcels on both sides of Long Meadow Road (CR-84). While total disturbance and total building footprints will be reduced with 25 large single-family detached residences, stormwater infrastructure will be installed throughout the site in multiple locations. Stormwater infrastructure will be maintained by Homeowners Association or the Town and in either event will be subject to greater potential for failure than the proposed actively managed site. This will result in greater potential erosion hazards. Development of individual home sites would likely not be subject to preparation of Stormwater Pollution Prevention Plans, also increasing the likelihood of soil erosion impacts.

With regard to topography, the entire site northeast and southwest of Long Meadow Road (CR-84) will be developed. Higher elevations will be sought for their area views resulting in a considerable incursion into the 700-foot Ridgeline Overlay and Southern Wallkill Biodiversity (SWB) Area, with corresponding greater viewshed impacts from the State Park.

Significant cuts will be required for subdivision roads in areas throughout the subdivision, but with good design it is likely that cuts and fills will be balanced. This alternative does not meet the goals of the Applicant. *

A. Introduction

This Chapter describes ground- and surface-water resources as they relate to the development of the Project Site. Aquifers, nearby wellheads, underground storage tanks, drainage patterns, wetlands and waterbodies, and the Sterling Forest Lake (Blue Lake) water supply, including the Blue Lake Wastewater Treatment Plant (Blue Lake STP) are all discussed in detail.

An evaluation of the potential impacts, including impacts from the application of pesticides, fertilizers, and road salt, is discussed at a level of detail that reflects the severity of the impacts and the reasonable likelihood of their occurrence. The document also quantifies stormwater flows and peaks, and discusses measures to ensure that stormwater in the post-development condition does not adversely affect downstream properties and drainage basins as a whole.

Proposed and potential mitigation measures as well as unavoidable adverse impacts for identified environmental impacts are discussed. The measures that are proposed to be taken to reduce impacts to these resources are described in detail. Finally, an evaluation of groundwater and surface water impacts associated with each of the four possible alternatives to the proposed project is provided.

B. Groundwater

Existing Conditions

The Project Site is located above the Highlands Aquifer System, which has been designated a sole-source aquifer by the U.S. Environmental Protection Agency (EPA). The aquifer system is in Precambrian and Paleozoic bedrock, with thin glacial deposits in uplands and thicker deposits in valleys. In the vicinity of the Project Site, groundwater moves through fractures in bedrock. With some exceptions, the potential for use of bedrock wells for public water supply is limited. Presently, the aquifer system located below the surface is replenished naturally through rainfall.

All underground storage tanks (USTs) previously on the Project Site were removed by The King's College prior to 2005 as indicated in point 1.3 of the Touro College/Meadow Creek Site Investigation and Development Review Report, dated November 14, 2005 (see Appendix C-1). These tanks included an 8,000-gallon neutralization tank and 6,000-gallon settling tank associated with the prior use of the site. Any contaminated soils were fully remediated to New York State Department of Environmental Conservation (NYSDEC) standards.

There are no existing NYSDEC-registered wells on the Project Site and no groundwater wells will be constructed as part of the proposed project. The nearest wells are located between 1 and 1.75 miles east of the Project Site in Rockland County; hence, no wellhead protection is proposed.

Potential Impacts

No impact to the Highlands Aquifer System is anticipated, nor is it anticipated that the proposed project will have a significant impact on the quantity or quality of groundwater resources. The increase of impervious areas after construction is complete will have some impact on groundwater recharge, but no effect on water quality due to the stormwater management system which will be designed in accordance with NYSDEC requirements. Refer to the Stormwater Pollution Prevention Plan (SWPPP) in Appendix M.

The use of pesticides and fertilizers on lawn areas may impact groundwater resources if overused or left unmitigated.

Bulk storage of petroleum products or other chemicals in underground tanks is not proposed. Therefore, there will be no potential impact on the groundwater from chemical storage or usage.

Mitigation Measures

The proposed project will disturb a total of 45 acres, or 18 percent of the entire property, of which only 30 acres are presently undeveloped, and is located such that impacts to environmentally sensitive areas are avoided or minimized. Although impacts to groundwater are minimal, mitigation measures include maintenance of permeable areas and existing vegetation where possible, best management practices for the application of landscape upkeep substances, location and design of the wastewater and stormwater treatment facilities, and conservation of water usage.

The Project Sponsor will take an integrated approach to pest management/removal and the use of organic fertilizer on landscaped areas of the site. The Project Sponsor has employed an Integrated Pest Management (IPM) Program at its other facilities and proposes the same for this project. IPM applies to turf grass and the finished site will include a very limited amount of turf grass—0.82 acres out of 45 acres of disturbed area will include lawns and reinforced turf.

IPM is an effective, yet environmentally sensitive, approach that reduces reliance on chemical pesticides. The basic principles of IPM applied by the Project Sponsor are as follows:

- Utilize organic fertilizers.
- Select plants suitable for site-specific conditions that are proven to be pest resistant.
- Mow grass to recommended height for specific grass species to maintain healthy plants that are less reliant on pesticides. Grass cuttings are allowed to fall (instead of bagging). Cuttings contribute nutrients to the soil, thus reducing the amount of organic fertilizer.
- Water turf grass during stressful periods, typically the summer months, to maintain healthy plants. Proper timing and amount of watering strengthens plants and makes them less susceptible to pests and less reliant on pesticides. Also, the Project Sponsor staggers watering of turf areas to avoid excess runoff.

Under this approach chemical usage is targeted to specific pests and problem areas that are specifically documented, as opposed to broadcast spraying. The Project Sponsor will continue to employ the judicious use of herbicides and pesticides only when appropriate and necessary. Chemical herbicide and pesticide types, as well as application rates, will vary according to the need.

Additionally, stormwater detention areas, restored buffers and vegetated swales will provide filtering of runoff before drainage into the wetlands and streams.

Use of road salt will be minimized (i.e., for safety and high traffic areas) to avoid run-off contamination. Where needed, it will be applied by mechanized spreaders or by hand. When heavy snow events are predicted, a thin application of salt may be used to prevent icing, thereby reducing the overall amount of salt required. Salt storage areas will be properly enclosed.

The underground snow-melt system proposed will be a hydronic system consisting of flexible tubing imbedded in the concrete pavement or below the interlocking pavers. The flexible tubing is filled with a mix of hot water and ethylene or propylene glycol in a closed loop that warms the pavement before or during a snow event.

Curbing will not be used on roadways in general since low-impact design is being used. In areas where curbing is required on streets and parking areas, it will channel stormwater runoff and snowmelt into

green infrastructure practices and standard stormwater practices. The methods implemented to handle stormwater are designed to facilitate groundwater recharge. Site maintenance personnel will periodically clean these structures to prevent sediment build-up. Refer to the SWPPP in Appendix M for the types and locations of these practices.

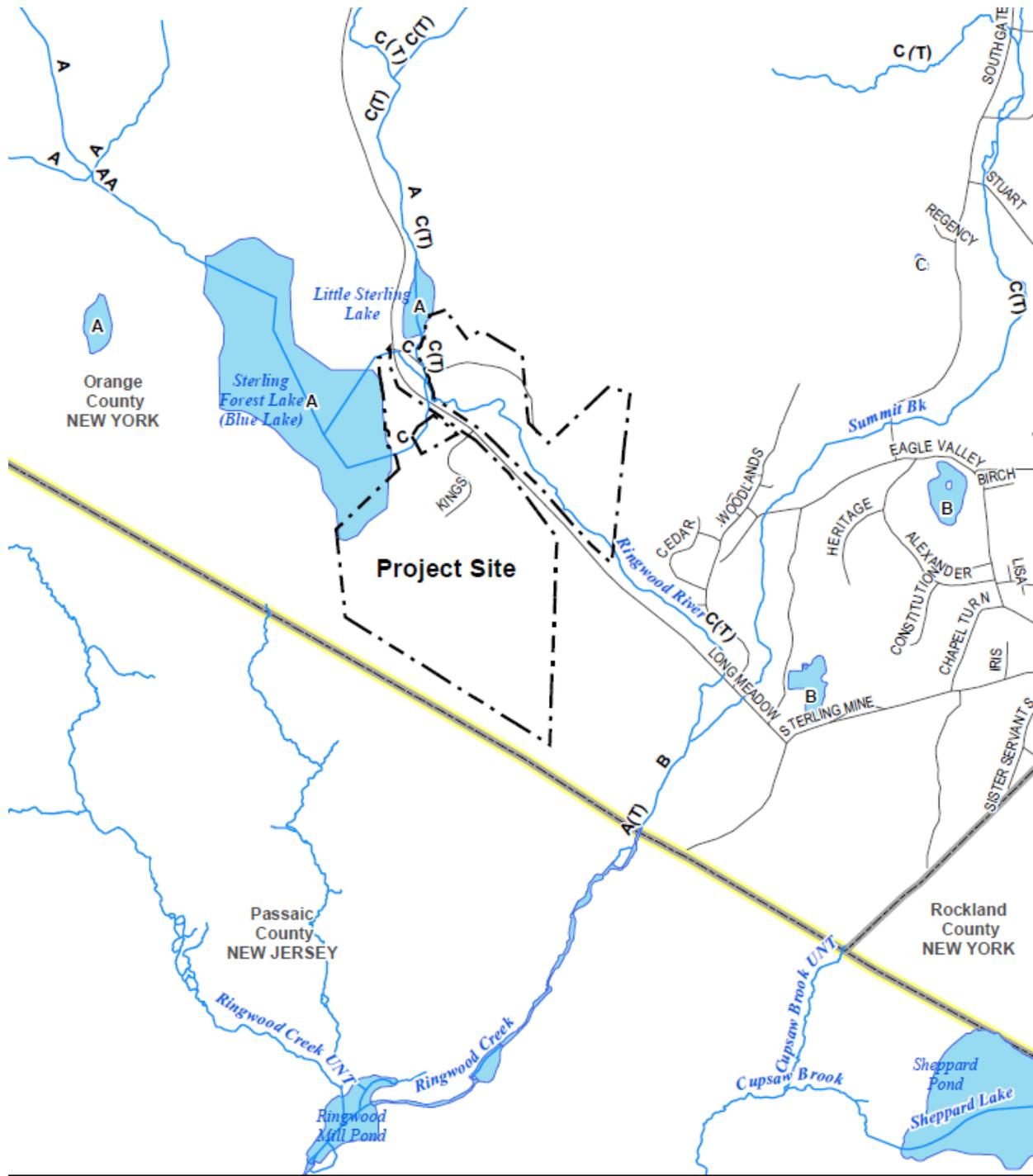
C. Surface Water Resources

Existing Conditions

Surface-water drainage on the property follows the predominant topography, flowing from higher elevation lands located near the south property line to the lower elevations occupied in the northwest by the existing International Nickel Company (INCO) facility as well as Blue Lake and to the northeast where Long Meadow Road (also known as County Road 84 [CR-84]) bisects the property. Drainage that flows to the northeast travels under CR-84 through various culverts that ultimately outfall to unnamed tributaries of the Ringwood River (see Appendix A-4 for the NYSDEC letter dated November 30, 2009, outlining the required permits). A portion of the stormwater is collected on the property through a series of catch basins. An existing closed drainage system conveys runoff from the catch basins and discharges untreated stormwater directly into Blue Lake.

In June 2010, the Project Sponsor contracted with Paulus, Sokolowski, and Saltor (PS&S) to carry out a Wetlands Survey (see Appendix C-2) in and around the proposed construction area. The survey identified several surface-water features on the property including open waters of the United States, federally protected wetlands, and NYSDEC-classified streams that are unnamed tributaries to the Ringwood River. The NYSDEC classifications reflect the designated “best uses.” The classifications of the waterbodies are illustrated in Figure 4-1 Water Classification.

The extent of on-site wetlands was determined by examining federal and state wetland maps and by field inspections undertaken on March 25, 2010. Additionally, the locations of federally protected wetlands were identified by a “Request for Jurisdictional Determination for Waters of the United States,” which was submitted to the U.S. Army Corps of Engineers (USACE) on September 3, 2010, by PS&S (permit is pending—see Appendix A-5). Aside from those described below, no additional unmapped wetlands or NYSDEC protected wetlands were identified by the Project Sponsor within the limits of disturbance of the proposed project. In addition, no disturbance is proposed to the 100-year floodplain of the Ringwood River. The location of streams, waterbodies, and wetlands in the vicinity of the Project Site is illustrated in Figure 4-2 Locations of On-Site Streams and Water Bodies.



Water Classification

- Lakes & Reservoirs
- Rivers & Streams
- Streets
- Project Site
- Counties
- States

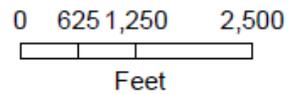


Figure 4-1 Water Classification



Figure 4-2 Locations of On-Site Streams and Water Bodies

Blue Lake

Blue Lake was reportedly created in 1953 when the Ringwood River was impounded by the construction of the Blue Lake Dam. The main dam is located approximately one-half mile from Long Meadow Road (CR-84). The principal spillway is located approximately 1,200 feet north of the main dam on the southwest corner of the intersection of Long Meadow Road (CR-84) and Sterling Mine Road.

According to the National Inventory of Dams, Blue Lake has a surface area of 115 acres, normal storage of approximately 1,200 acre feet, and a maximum storage of approximately 1,380 acre feet.

There are three distinct drainage areas that ultimately contribute to Blue Lake. The drainage areas encompass approximately 2.3 square miles and are illustrated in Figure 4-3 Blue Lake Watershed Delineation Map.

United Water draws and treats water from Blue Lake, which serves as the main potable water supply for approximately 1,200 people through approximately 193 connections. During 2009 an average of about 99,500 gallons of water per day was withdrawn from Blue Lake. Because of its use as a drinking water supply, Blue Lake is classified as a Class A waterbody and is subject to the NYSDEC Protection of Waters Regulatory Program. Blue Lake has a NYSDEC Water Body Segment ID No. 1501-0066 and Water Index No. NJ-13-2 P1021C. The Project Sponsor will be supplied treated water from Blue Lake as a customer to United Water—see “Willingness to Serve Letter” in Appendix H-1.

Ringwood River

The Ringwood River is located within the Ramapo River Watershed which is part of the Passaic River Basin primarily located in northern New Jersey. As illustrated in Figure 4-1 Water Classification, the stream classification of the portion of the River located within the property has been assigned a classification of C(T). Classifications are based on NYSDEC designations. Classification C is for waters supporting fisheries and suitable for non-contact activities; (T) indicates that a trout population may be supported. The Ringwood River has NYSDEC Water Body Segment ID No. 1501-0064 and Water Index No. NJ-113.

The portion of the Ringwood River that is located east of CR-84 is supplied by waters from Blue Lake to the west and Little Sterling Lake to the north. The river headwaters flow downstream from the Little Sterling Lake outfall past the Blue Lake STP where it merges with an unnamed tributary supplied by the emergency spillway of Blue Lake. After traversing the eastern portion of the property, the Ringwood River continues south crossing into New Jersey and Ringwood Mill Pond.

Wetland Delineation

Lands within the area west of CR-84 which will be disturbed by the proposed project were inspected by ecological consultants, PS&S, between March 24, 2010 and July 30, 2010. Several wetlands were identified and flagged. Refer to Figure 4-2 Locations of On-Site Streams and Water Bodies. None of the wetlands on site are isolated nor do they fall under the jurisdiction of the NYSDEC as they are all below the NYSDEC 12.0-acre minimum area threshold. The only agency with jurisdiction is the USACE.

Undeveloped portions of the property that are not proposed to be disturbed, including forested lands, upslopes to the south, and the entire portion of the property east of Long Meadow Road (CR-84), were not field-inspected for the presence/absence of unmapped wetland resources.

The proposed project will not disturb any of the delineated wetlands and where possible will provide an 86-foot buffer as additional protection.

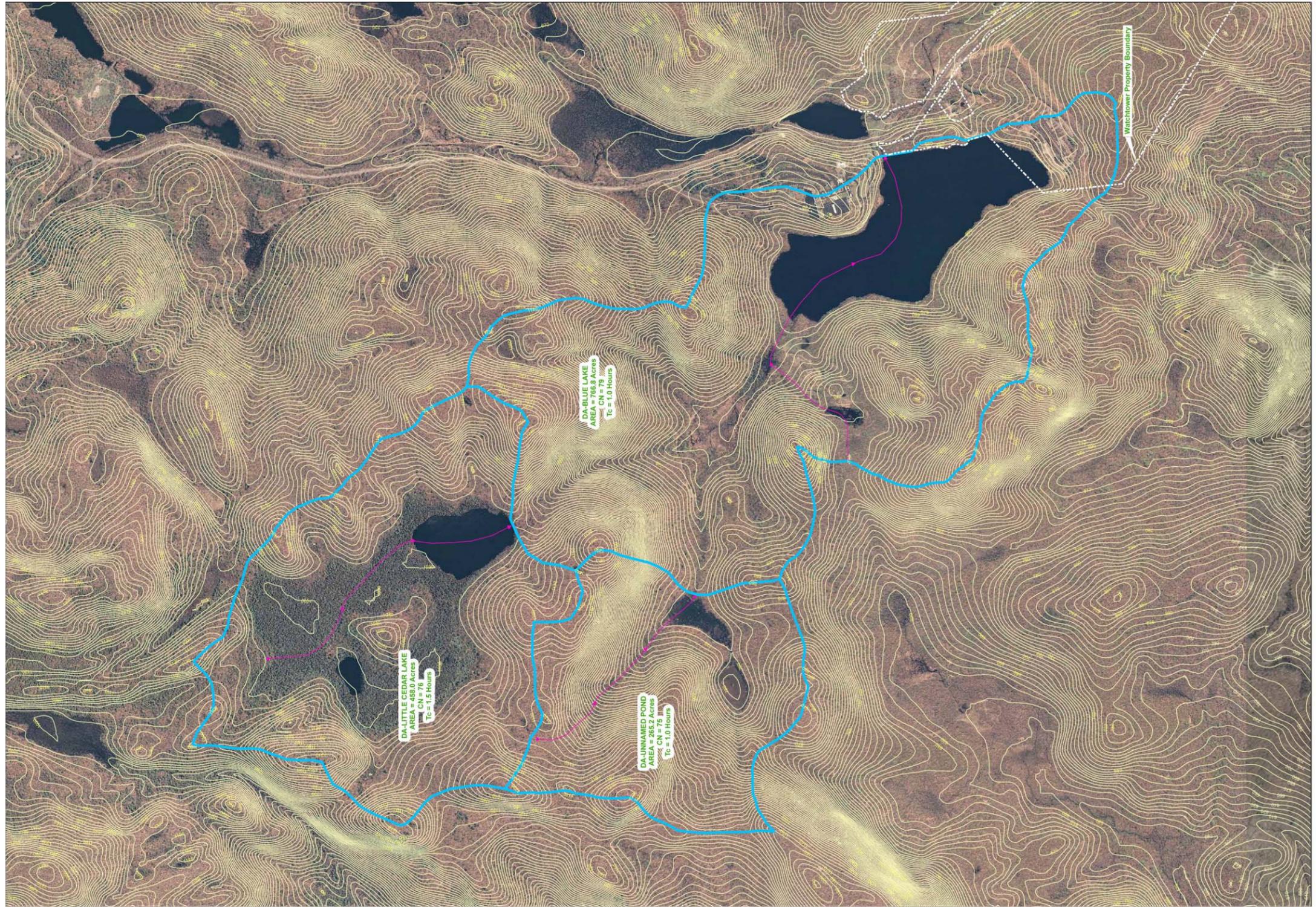


FIG. 2	Blue Lake Watershed Delineation Map Eagle Valley, Orange County, NY		Scale: 1" equals 600'																																																							
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<small>© 2009 CIA 111 Western Central P.O. Box 2556 • Albany, NY 12202-0556 Phone: (518) 462-4242 • www.ciaonline.com</small>																																																										
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No.	Submittal / Revision	Appr	By	Date																																																						

Figure 4-3 Blue Lake Watershed Delineation Map

Potential Impacts

The potential adverse environmental impacts to water resources associated with the proposed project include increased stormwater run-off volume from new impervious areas, increased run-off rates due to shorter travel of run off through pipes and compacted soils, and decreased groundwater recharge.

The project will avoid causing potential impacts to surface waters and wetlands by not directly disturbing wetlands, Blue Lake, or streams. More specifically, no water body or wetland fill, excavation, or clearing is proposed. In addition, there will be no stream disturbance, either temporary or permanent.

While the proposed impacts associated with the new impervious surface and change in land use will increase the peak flow rate and decrease water quality, strictly adhering to the requirements of NYSDEC stormwater regulations in the implementation of mitigation measures will reduce the rate to pre-existing conditions and improve water quality thereby eliminating potential impacts to surface water quality or aquatic habitats. Refer to the SWPPP in Appendix M for details on the stormwater management plan.

Changes in Drainage Patterns

An analysis of the pre- and post-development stormwater drainage patterns was performed to fully evaluate the effects of the proposed project. A pre- and post-development drainage basin map was created to show existing run-off patterns within basins that will be disturbed during the project. (See Figure 4-4 Pre-Development Drainage and Figure 4-5 Post-Development Drainage.) Basins with no proposed disturbance, like the area east of CR-84 and the south side of the property were not evaluated.

The disturbed areas were divided into six drainage areas. The basin map shows each basin's time of concentration path and ultimate outfall. A comparison of the pre- and post-development drainage patterns demonstrate that existing drainage patterns will largely remain in the post-development condition.

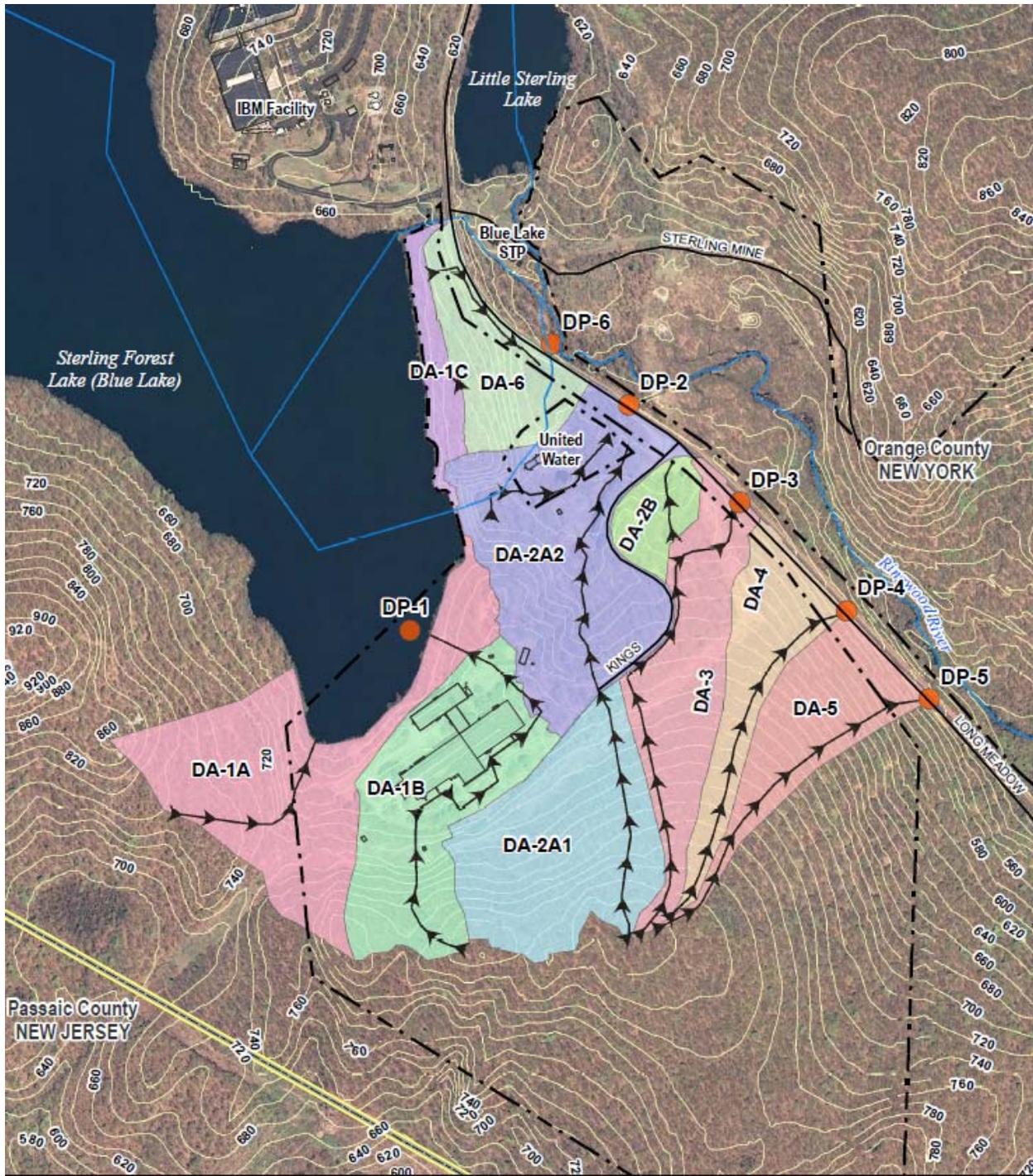
Drainage Areas DA-1B and DA-2A2's flow patterns are the most affected by the proposed project, but are also the drainage areas currently developed with no water quality measures in place.

Drainage Area DA-1B contains the existing INCO building and a large portion of the existing pavement and its associated stormwater inlets and pipes. Existing stormwater flows down the hill located to the south of the property toward the pavement surrounding the existing building. From there the stormwater flows into inlets and is conveyed via pipes to Blue Lake. The stormwater is not provided any attenuation or water quality before discharging to Blue Lake, which is a Class A water body.

Drainage Area DA-2A2 contains the asphalt-paved entrance road as well as the former wastewater treatment plant (STP) and the United Water property which includes an existing water treatment plant. Stormwater run off from the highpoint to the south travels overland to swales along the entrance road; from there it enters a culvert that discharges to a wetland. From the wetland it travels through a culvert under Long Meadow Road (CR-84) and into an unnamed tributary of the Ringwood River. Similar to DA-1B, the run off from the asphalt pavement and other impervious areas is not treated to provide water quality nor is its peak flow rate attenuated.

In the post-development drainage pattern, Drainage Areas DA-1B and DA-2A2 will be reduced in area. Additionally, DA-2A2 will be subdivided into DA-2A3 and DA-2A4. The reduced drainage areas will decrease the amount of impervious area flowing untreated and unattenuated into Blue Lake and the unnamed tributaries of the Ringwood River. The flow patterns of DA-1B and DA-2A2 will follow similar drainage patterns as the pre-existing condition.

Smaller changes in existing drainage patterns associated with auxiliary buildings and roads occur in the remaining areas.



Existing Condition Watershed Map

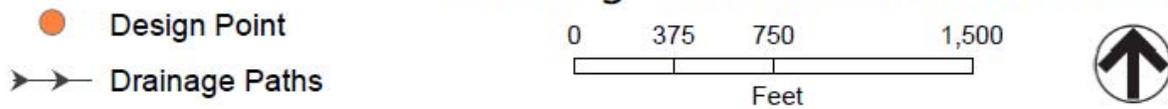
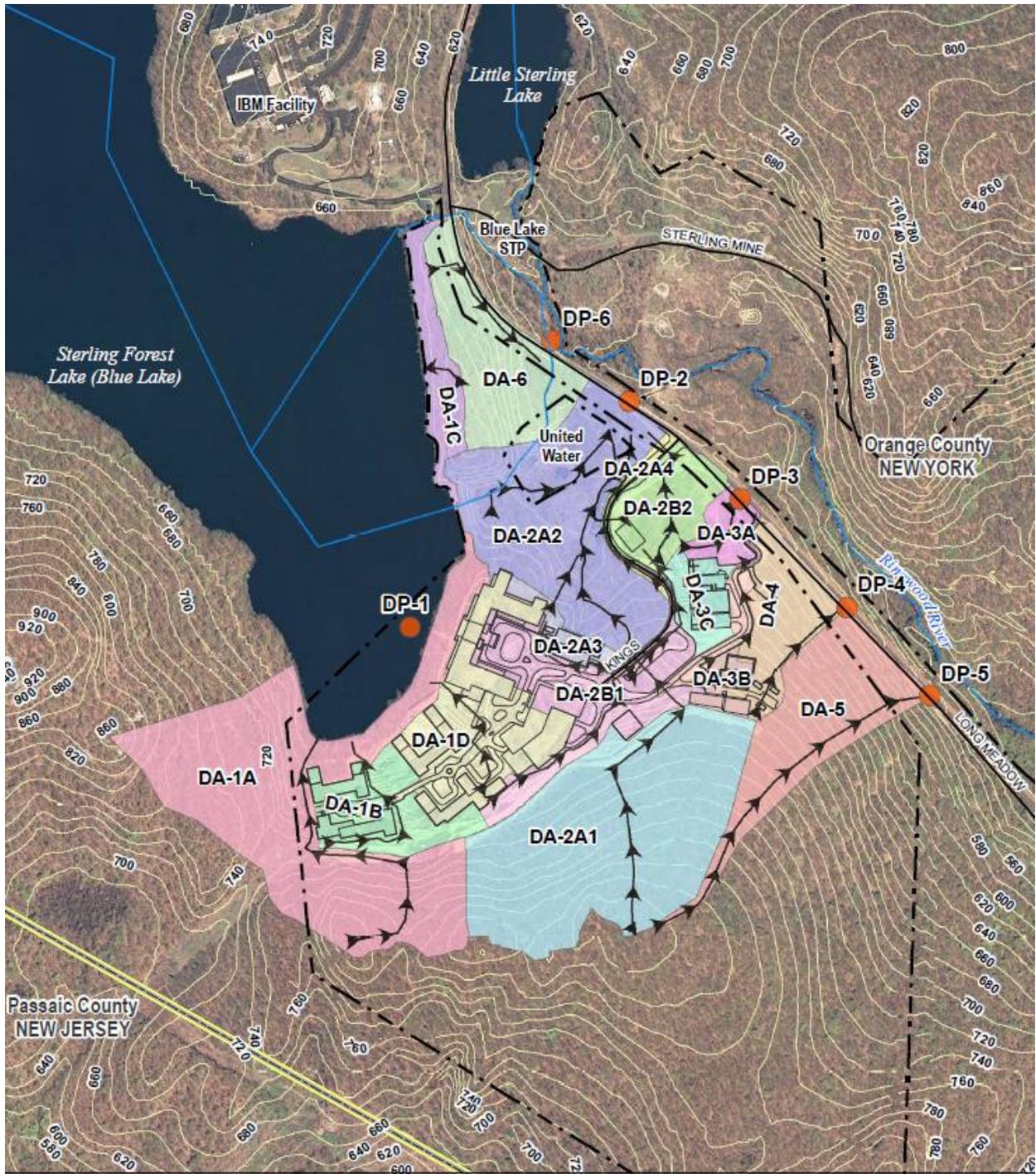


Figure 4-4 Pre-Development Drainage



Proposed Condition Watershed Map

- Design Point
- Drainage Paths

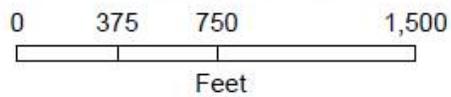


Figure 4-5 Post-Development Drainage

Hydrologic Analysis (Water Quantity)

The goal of the stormwater management plan is to limit the run-off rate of the developed basins to pre-existing conditions, and to provide the level of water quality required by the NYSDEC during and after construction.

Each of the six drainage areas includes a design point where the flow was analyzed. The design points are illustrated on the pre- and post-development drainage maps (refer to Figure 4-4 Pre-Development Drainage and Figure 4-5 Post-Development Drainage).

A hydrologic modeling program, *HydroCAD*, was used to determine existing peak flow conditions. This same model was used to develop the post-development stormwater management system. *HydroCAD* models the surface flow through proposed stormwater practices, calculating the plug-flow and center-of-mass detention time within the basins. A simultaneous routing process is used to evaluate the impacts associated with stormwater practices in series. The program is based on USDA's *Natural Resources Conservation Service (NRCS) Technical Releases TR20 and TR55*. *TR20* and *TR55* are tools that were developed to calculate the volume and peak discharge rates of stormwater runoff for rainfall events over a 24-hour period. Run-off volumes and rates are calculated by determining the curve numbers (CN) and calculating the time of concentration (T_c) for each subcatchment area depending on the given rainfall value. The CN values are based on the *TR55* table and the hydrologic soil group, cover type, hydrologic condition, and antecedent runoff condition. The T_c represents the time it takes for surface water to travel the hydraulically most distant point within the subcatchment area.

The following rainfall values for Orange County, shown in Table 4-1, were used in the analysis and are based on the 24-hour storm event. For the purposes of the hydrologic analysis, the run off was based on Type III rainfall distribution for the northeast region. These values represent the rainfall distribution for various storm frequencies.

Table 4-1 Rainfall Values¹

Storm Event (Year)	Rainfall Value (inches)
1	3.00
10	5.00
100	7.80

¹Source: Northeast Regional Climate Center

Water Quality

Impervious surfaces accumulate pollutants deposited from the atmosphere, leaked from vehicles, or windblown in from adjacent areas. During storm events, the pollutants quickly wash off, and are rapidly delivered to downstream waters. Some common pollutants include sediment, nutrients, organic carbon, bacteria, hydrocarbons, pesticides, and chlorides.

The site presently includes several impervious areas including buildings, asphalt parking lots, and driveways. The run off from these impervious areas presently travels untreated directly into Blue Lake, federally protected wetlands, or unnamed tributaries of the Ringwood River.

Safe Drawdown of Blue Lake

Blue Lake has remained full or near full in past years, with no significant natural drawdown. The outlet structures at Blue Lake were evaluated on two different criteria for their ability to drawdown the water stored behind the dam as outlined below:

- Assuming no inflow, the outlet structure has the capacity to drain 75 percent of the volume between design high water (DHW) of 644.6 feet and normal pool elevation of 640.4 feet within 48 hours.
- Assuming no inflow, the low-level outlet has the capacity to drain 90 percent of the volume below normal pool elevation of 640.4 feet (impounded by the dam) within 14 days.

The existing spillway has the capacity to drain 75 percent of the volume between the DHW elevation of 644.6 feet and normal pool elevation of 640.4 feet for the 150 percent of the 100-year storm within the allotted time (it is estimated to take 14.5± hours).

The low-level outlet (200-ft-long steel pipe with a 24-inch gate valve) has the capacity to drain 90 percent of the volume below normal pool elevation of 640.4 feet in 13.5± days. It should be noted that for the purposes of this analysis, detailed bathymetric data was not collected, and pond volumes were generated for Blue Lake using the *1953 Record Plans*.

Impacts on STP Receiving Stream

The State Pollution Discharge Elimination System (SPDES) permit for the Blue Lake STP, which has an expiration date of February 28, 2015, sets effluent limitations at 150,000 gpd.

It is not anticipated that the proposed project will cause any adverse impacts to the unnamed tributary to the Ringwood River. Wastewater from the proposed project is estimated at 80,000 gpd and is consistent with the influent for which the Blue Lake STP was designed and the proposed discharge from the proposed project is well below the plant capacity.

West Nile Virus and Access to Stormwater Detention Areas

The article “Stormwater Management Could Combat West Nile Virus,” published in the September 2003 issue of *Environmental Science and Engineering Magazine*, stated that recent field observations indicate that the mosquito species found in constructed wetlands and stormwater management ponds tend not to be of the variety that carry the West Nile virus; thus, these mosquitoes pose a low risk in spreading the virus.

Mosquitoes require standing water to complete their life cycles. Although the stormwater ponds proposed for this project are dry detention areas, the potential for water ponding exists, which could lead to mosquito production if left unmitigated.

The stormwater detention areas will include inlet and outlet structures housing 36-inch-diameter pipes. If left uncovered these pipes are large enough to be entered and could pose a safety hazard.

Mitigation Measures

Several stormwater management practices, including green infrastructure practices, standard stormwater management practices and alternative practices, will be implemented and have been designed for the proposed project using the *2010 New York State Stormwater Management Design Manual (NYSSMDM)*. These stormwater management measures will provide attenuation of the run-off flow rate, prevent downstream erosion and sedimentation, and reduce concentrations of pollutants in stormwater run off, thus, avoiding adverse impacts to Blue Lake, unnamed tributaries to the Ringwood River, and wetlands. By adhering to the stormwater management guidelines contained in these regulations, the proposed project will not result in adverse changes to the water quality or quantity of on-site and off-site streams and wetlands. Further discussion of these low-impact development strategies can be found in Appendix M—SWPPP.

Water Quality

The project has used the *NYSSMDM's* five-step site planning and stormwater management practices (SMP) selection process. The five steps used are:

1. Site planning to preserve natural features and reduce impervious cover.
2. Calculation of the water quality volume for the site.
3. Incorporation of green infrastructure techniques and standard SMPs with runoff reduction volume (RRv) capacity.
4. Use of standard SMPs where applicable, to treat the portion of water quality volume not addressed by green infrastructure practices and standard SMPs.
5. Design of volume and peak rate control practices where required.

The use of the five-step process has resulted in green infrastructure practices (GIPs) being incorporated throughout the development.

As shown on Figure 4-6 Green Infrastructure Practices and in the large-scale drawings that accompany this DEIS and the SWPPP (see Appendix M), several green practices including sheet flow to riparian buffers, disconnection of rooftops, tree planting, green roofs, stormwater planters, pervious pavers and porous pavement will provide water quality treatment for the proposed impervious areas. In addition to these green practices, several standard and alternative stormwater practices are being implemented on the site and include: bioretention ponds, perimeter sand filters and an underground wet vault. These practices will remove stormwater pollutants, including sediment, nutrients, and oxygen-demanding constituents, thus preventing adverse changes to run-off water quality leaving the Project Site.

Other green infrastructure practices were evaluated and deemed not feasible for the proposed project for the following reasons:

- **Conservation of Natural Areas:** The Project Sponsor is not placing any land in a permanent conservation easement. However, the Project Sponsor will follow an open-space design to preserve as much open space as possible and to ensure conservation of preserved lands to further the Town's open-space goals.
- **Vegetated Open Swale:** This practice was not used due to steep slopes along the entrance drive and secondary access driveway. The maximum recommended slope for this practice is 4-percent—proposed swales range in slope from 6 to 10 percent.
- **Stream Daylighting:** This practice is not applicable to the proposed project.
- **Rain Garden:** This practice was deemed not feasible because it is only suitable to treat roof areas of 1,000 square feet or less. The size of the proposed roof areas makes this impracticable.
- **Cisterns:** An analysis was performed to determine the feasibility of this practice. However, a water balance could not be achieved, especially during winter months.

Additionally, other standard stormwater management practices (SMPs) with RRv Capacity Deemed Not Feasible for Application on Proposed Project for the following reasons:

- **Infiltration Practices:** To determine suitable locations for infiltration practices, preliminary subsurface investigations were performed, which included 26 soil borings, 18 test pits, installation of 4 piezometers, and 3 infiltration tests. The investigations revealed that a high-water table is present in some locations. High-water table precludes these practices that require a minimum separation from groundwater to protect the sole-source aquifer. Steep slopes also preclude the use of these practices. The stormwater hotspot at the vehicle maintenance building also prohibits the use of infiltration

practices due to the potential to contaminate groundwater—see Clough Harbour Associates (CHA) “Final Geotechnical Engineering Report,” Figure 3 “Bedrock Contour Plan,” and Figure 4 “Groundwater Contour Plan,” in Appendix B-1.

- Dry Swale: This practice was not used due to steep slopes along the entrance drive and secondary access driveway. The maximum recommended slope for this practice is 4 percent—proposed swales range in slope from 6 to 10 percent.

Water Quantity

Table 4-2 Pre- and Post-Developed Peak Flow Comparison provides a summary of the pre-development and post-development water quantity at the six design points analyzed. As can be seen, all the design points experience either a decrease or no change in the post-development peak flow rate when compared to the pre-development flow rates. The complete hydrologic model input and output are included in the SWPPP located in Appendix M.

Table 4-2 Pre- and Post-Developed Peak Flow Comparison

Design Point	1-Year Storm (cfs)			10-Year Storm (cfs)			100-Year Storm (cfs)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
1	24.0	19.2	-4.8	61.4	54.7	-6.7	119.5	111.4	-8.1
2	1.2	1.2	0.0	15.5	15.4	-0.2	55.6	54.4	-1.2
3	4.1	4.0	0.0	13.6	10.0	-3.6	29.7	18.8	-10.9
4	2.9	2.8	-0.1	9.2	8.3	-0.9	19.9	17.4	-2.5
5	3.5	3.4	-0.1	10.9	10.6	-0.3	23.0	22.4	-0.7
6	6.9	6.9	0.0	13.5	13.5	0.0	19.0	19.0	0.0
Total	42.5	37.5	-5.0	124.0	112.4	-11.6	266.7	243.3	-23.4

Pollution Control During Construction

A complete Erosion and Sediment Control Plan, also included within the SWPPP, has also been developed to minimize impacts during construction. The plan measures will include the use of silt fencing, temporary sedimentation basins, seeding and mulching, and project phasing during the construction period—see Appendix M.

Post-Construction Inspection and Maintenance

Following completion of construction, a long-term inspection and maintenance program will be implemented to ensure the proper functioning of the stormwater management system. The program will be carried out by the Project Sponsor. A detailed checklist inspection and maintenance for each stormwater management practice is included in the SWPPP—see Appendix M.

West Nile Virus and Access to Stormwater Detention Areas

According to the Environmental Protection Agency’s *Stormwater Wet Pond and Wetland Management Guidebook*, “The most effective mosquito control program is one that eliminates potential breeding habitats. The *Guidebook* further states, “A maintenance program dedicated to eliminating potential breeding areas is preferable to controlling flying mosquitoes.”

Given that some species of mosquitoes can reach the adult stage in as little as four days from when the egg is laid, it is imperative that stormwater detention areas be designed to drain within an appropriate time period. Direction provided by NYSDEC requires that detention areas be flushed within 48 hours to prevent stagnant water. Thus, the design of the stormwater detention areas for this project will ensure that runoff is detained for no more than 48 hours. Additionally, the areas will be inspected after major storm events to ensure that no standing water or wet spots are present.

The inlet structures in the stormwater detention areas will include grates that block access to the 36-inch inlet pipe. The 36-inch outlet pipe terminates in an end wall and will be equipped with evenly spaced bars that block entry to the pipe. Additionally, plantings will be provided around the inlet and outlet structures to obscure them from view and deter public access.



Figure 4-6 Green Infrastructure Practices

D. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16 “Alternatives.” These alternatives are designated as (1) no-action, (2) educational facilities, (3) low-height, and (4) as-of-right. Groundwater and surface water impacts associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor’s proposed facility.

No-Action Alternative

Under this alternative, the land would remain in its existing state including the abandoned INCO facility. No change to ground or surface water would be seen under this alternative. This action does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990’s by The King’s College would be constructed. These facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students. The total area of disturbance would amount to approximately 102 acres, which is the largest of the four alternatives and would result in the greatest impact on water resources. This action does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower-profile structures at the Project Sponsor’s facilities, which would require larger building footprints to accommodate the same square footage as the Project Sponsor’s original proposal. For this reason, this alternative would increase the amount of area that would be disturbed during construction from 45 acres under the original proposal to 59 acres. Reducing building heights would increase stormwater run off and result in greater impacts to surface water bodies. Additionally, the increase impervious area would decrease groundwater recharge. This action meets the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property would be purchased by a private developer and that new residential lots would be constructed, which would be unrelated to the Project Sponsor’s operations. Single-family residences would be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement.

Estimates show that approximately 200 acres of the 253-acre parcel are available for development of lots; the remaining 53 acres are reserved for infrastructure (i.e., roadways and stormwater facilities, open-space, and contingency). Thus, this parcel could potentially accommodate 25 residences. The population density is estimated at 4.52 people per household¹. Therefore, approximately 113 residents can be anticipated under this alternative. The overall area to be developed with this alternative is 65 acres compared to 45 acres with the present proposal. Although there will be more road surface area with this alternative, there would be less building area compared to the present proposal. Therefore, it is expected that the volume impact on surface water bodies would be slightly less. However, it would be more

¹ Robert W. Burchell, Ph D., David Listokin, Ph D., and William R. Dolphin, M.A. Residential Demographic Multipliers—Estimates of the Occupants of New Housing.(New Brunswick, N.J.: Center for Urban Policy Research—Edward J. Bloustein School of Planning and Public Policy—Rutgers, The State University of New Jersey, 2006)

difficult to control the use and spillage of contaminants by individual homeowners, so the impact on surface water quality would be higher. This action does not meet the goals of the Project Sponsor. *

A. Introduction

The Project Sponsor engaged B. Laing Associates, Inc., to perform an air study to (1) determine the existing air quality conditions near the Project Site; and (2) simulate future air quality conditions (with and without the project) using computer modeling. Measured and calculated air quality parameters were compared against standards set forth by the New York State Department of Environmental Conservation (NYSDEC) to determine compliance. This Chapter summarizes the findings of this study. The complete report is provided in Appendix D-1, "Mobile Source Air Pollution Modeling," by B. Laing Associates.

B. Existing Conditions

Six common air pollutants are regulated by federal law; these are carbon monoxide (CO), lead, nitrogen dioxide (NO₂), ozone (O₃), particulate matter less than 2.5 microns (micrometers) in size (PM_{2.5}), and sulfur dioxide (SO₂). NYSDEC measures these pollutants at various locations across the state. The Project Site is located in Region 3, where four of the six contaminants are monitored: lead, ozone, particulate matter (<2.5 microns), and sulfur dioxide. Carbon monoxide is measured in Region 4, while nitrogen dioxide levels are measured in Region 2. These monitoring locations represent the closest and/or the most comparable environmental settings when compared to the Project Site. Figure 5-1 NYSDEC Air Monitoring Station Locations shows the locations of the air monitoring sites.

Air quality in the vicinity of the project generally does not exceed standards adopted by the NYSDEC, which are shown in Table 5-1.

Table 5-1 NYSDEC Ambient Air Quality Standards

Pollutant	Avg. Period	New York State Standards	
		Level	Statistic
Carbon Monoxide	8-hour	9 ppm	Maximum
	1-hour	35 ppm	Maximum
Lead ⁽¹⁾	Rolling 3-month average	0.15 µg/m ³	Maximum
Nitrogen Dioxide and Nitrogen Oxides (NOx) ⁽²⁾	Annual	0.05 ppm	Arithmetic Mean
	1-hour	0.100 ppm	3-year average
Particulate Matter ⁽³⁾ (PM ₁₀)	24-hour	150 µg/m ³	Maximum
Particulate Matter ⁽⁴⁾ (PM _{2.5})	Annual	15 µg/m ³	Arithmetic Mean
	24-hour	35 µg/m ³	3-year average
Ozone	8-hour	0.075 ppm	3-year average
	1-hour	0.12 ppm	Maximum
Sulfur Dioxide	Annual	0.03 ppm	Arithmetic Mean
	24-hour	0.14 ppm	Maximum
	3-hour	0.50 ppm	Maximum
	1-hour	0.075 ppm	3-year average
Hydrocarbons ⁽⁵⁾ (non-methane)	3-hour (6-9 am)	0.24 ppm	Maximum

Notes:

1. NYSDEC has not adopted a limit for lead. Maximum lead limit shown in table is based on federal standards.
2. Nitrogen dioxide (NO₂) is one of a group of highly reactive gasses known as "oxides of nitrogen," or nitrogen oxides (NOx). Other nitrogen oxides include nitrous acid (HNO₂) and nitric acid (HNO₃). While EPA's National Ambient Air Quality Standard covers this entire group of NOx, NO₂ is the component of greatest interest and the indicator for the larger group of nitrogen oxides. Thus, limits are set for NO₂.
3. NYSDEC has not adopted a limit for PM₁₀. Maximum PM₁₀ limit shown in table is based on federal standards.
4. NYSDEC has not adopted a limit for PM_{2.5}. Maximum PM_{2.5} limit shown in table is based on federal standards.
5. Data for measured hydrocarbons could not be found in the New York State Ambient Air Quality Report for 2009.

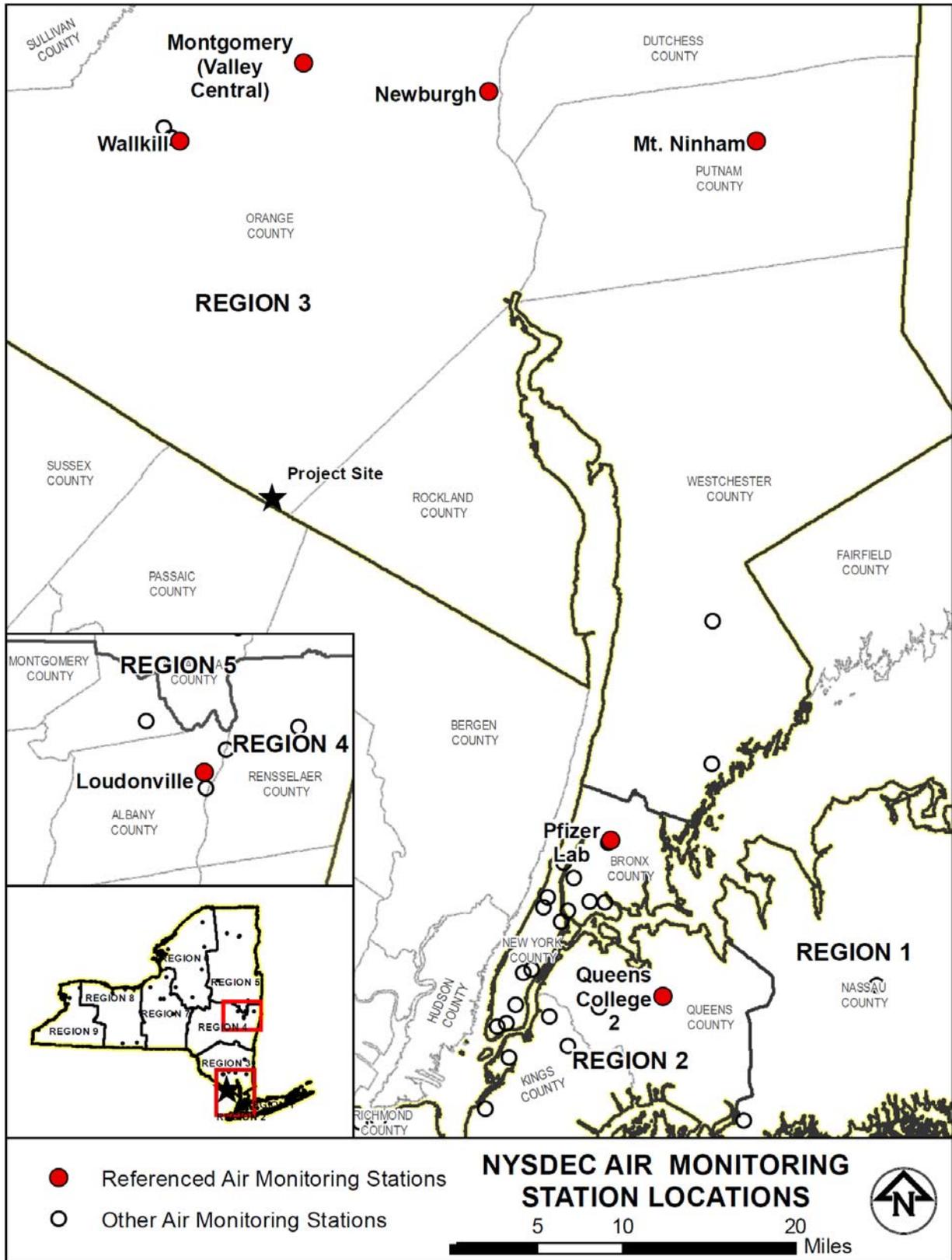


Figure 5-1 NYSDEC Air Monitoring Station Locations

Recent air quality data for the regional monitoring stations nearest and/or most comparable to the Project Site was obtained from the NYSDEC website at http://www.dec.ny.gov/docs/air_pdf/09annrpt.pdf and is summarized below. No data was provided for hydrocarbon measurements.

- In 2009, at the Loudonville station, maximum levels for CO were recorded at 1.0 ppm and 0.8 ppm for 1-hour and 8-hour periods, respectively. These values are below the respective maximum limits of 35 ppm and 9 ppm.
- In 2009, at the Wallkill station, the maximum quarterly average for lead levels was recorded at $0.069 \mu\text{g}/\text{m}^3$, which is below the limit of $0.15 \mu\text{g}/\text{m}^3$.
- In 2009, at the Botanical Gardens (Pfizer Lab) station, annual average NO_2 levels were recorded at 0.022 ppm, which is below the limit of 0.05 ppm. The highest average 1-hour concentration was measured at 0.086 ppm, which is below the limit of 0.100 ppm.
- At the Montgomery (Valley Central) station, O_3 values over a 3-year period from 2007 to 2009 were recorded at 0.076 ppm, which exceeded the limit of 0.075 ppm. In 2009, the 1-hour average O_3 level was measured at 0.098 ppm, which is below the limit of 0.12 ppm. O_3 is the only pollutant that exceeds the limit set by NYSDEC. However, ozone standards are not necessarily enforced at a local level since this pollutant is formed by hydrocarbon emissions that occur elsewhere and are carried into the region.
- In 2009, at the Queens College 2 station, the maximum 24-hour measurement of PM_{10} concentrations was recorded at $56 \mu\text{g}/\text{m}^3$, which is below the limit of $150 \mu\text{g}/\text{m}^3$.
- At the Newburgh station, annual $\text{PM}_{2.5}$ concentrations from 2007 to 2009 ranged between 7.9 and $10.6 \mu\text{g}/\text{m}^3$, with an average of $9.4 \mu\text{g}/\text{m}^3$, which is below the limit of $15 \mu\text{g}/\text{m}^3$. Over the same time period, the maximum $\text{PM}_{2.5}$ concentrations during a 24-hour period have averaged $25.7 \mu\text{g}/\text{m}^3$, which is below the limit of $35 \mu\text{g}/\text{m}^3$.
- In 2009, at the Mt. Ninham station, annual average SO_2 levels were measured at 1.1 parts per billion (ppb), which is below the limit of 30 ppb. Average SO_2 levels over a 24-hour period were recorded at 8 ppb, which is below the limit of 140 ppb. Maximum 3-hour levels for SO_2 were recorded at 17 ppb, which is below the limit of 500 ppb. The 3-year average from 2007 to 2009 was measured at 1.3 ppb, which is below the limit of 75 ppb.

Additionally, in accordance with the New York State Department of Transportation (NYSDOT) *Environmental Procedures Manual (EPM)*, a microscale analysis was conducted near the Project Site to determine existing CO and $\text{PM}_{2.5}$ concentrations. Although an analysis of PM_{10} is also required by the EPM, it was not performed for this project as New York State has not officially adopted the federal standard for this pollutant. (See Appendix D-2 for B. Laing's letter, dated May 20, 2011, explaining why PM_{10} analyses were not conducted.) No other pollutants are required to be analyzed by the EPM.

Using the *MOBILE 6.2* and *CAL3QHC* computer modeling software packages, existing levels of CO and $\text{PM}_{2.5}$ were modeled at 39 receptor sites located near and around the intersection of Long Meadow Road (also known as County Road 84 [CR-84]) and Sterling Mine Road (County Road 72 [CR-72]). This intersection will carry the majority of traffic passing through the area, which makes it the busiest of the intersections studied. Hence, if modeled air quality parameters are within applicable standards at this intersection, then it is presumed that air quality at less busy intersections would also be in compliance.

As shown in Table 5-1, NYSDEC limits CO concentrations to 9 parts per million (ppm) during an average 8-hour period and 35 ppm during a 1-hour period. Concentrations of $\text{PM}_{2.5}$ are limited to $15 \mu\text{g}/\text{m}^3$ during a year and $35 \mu\text{g}/\text{m}^3$ during a 24-hour period.

Table 5-2 summarizes the results of the modeling conducted for these two pollutants under 2010 conditions. The modeling was based on the results of analysis of peak AM traffic combined with worst-case meteorological conditions at the subject intersection. None of the results exceed the limits shown in Table 5-1.

**Table 5-2 Carbon Monoxide and Particulate Matter Results
—2010 Conditions at Long Meadow Road (CR-84) and Sterling Mine Road (CR-72)**

Receptor Location	Carbon Monoxide (ppm)		Particulate Matter PM _{2.5} (µg/m ³)	
	1-hour	8-hour	24-hour	Annual
1	3.20	2.27	20.60	9.40
2	3.20	2.27	21.00	9.48
3	3.20	2.27	21.00	9.48
4	3.10	2.20	20.60	9.40
5	3.10	2.20	20.60	9.40
6	3.10	2.20	20.60	9.40
7	3.30	2.34	21.00	9.48
8	3.30	2.34	21.00	9.48
9	3.40	2.41	21.00	9.48
10	3.40	2.41	21.00	9.48
11	3.40	2.41	21.00	9.48
12	3.60	2.55	21.00	9.48
13	3.40	2.41	21.00	9.48
14	3.20	2.27	20.60	9.40
15	3.20	2.27	20.60	9.40
16	3.20	2.27	20.60	9.40
17	3.40	2.41	21.00	9.48
18	3.40	2.41	21.00	9.48
19	3.40	2.41	21.00	9.48
20	3.40	2.41	21.00	9.48
21	3.50	2.48	21.00	9.48
22	3.90	2.76	21.00	9.48
23	3.30	2.34	21.00	9.48
24	3.20	2.27	20.60	9.40
25	3.20	2.27	20.60	9.40
26	3.30	2.34	21.00	9.48
27	3.40	2.41	21.00	9.48
28	3.40	2.41	21.00	9.48
29	3.40	2.41	21.00	9.48
30	3.40	2.41	21.00	9.48
31	3.50	2.48	21.00	9.48
32	3.30	2.34	21.00	9.48
33	3.30	2.34	21.00	9.48
34	3.40	2.41	21.00	9.48
35	3.40	2.41	21.00	9.48
36	3.40	2.41	21.00	9.48
37	3.40	2.41	21.00	9.48
38	3.20	2.27	21.00	9.48
39	3.20	2.27	20.60	9.40
Average	3.33 ppm	2.36 ppm	20.90 µg/m ³	9.46 µg/m ³
NYSDEC Limit	35 ppm	9 ppm	35 µg/m ³	15 µg/m ³
% of Limit	9.5%	26.3%	59.7%	63.1%

C. Potential Impacts

Vehicular Emissions

Air quality impacts due to vehicular traffic associated with the Project Sponsor's proposed project were evaluated for the year 2015 using the *MOBILE 6.2* and *CAL3QHC* computer modeling software packages. One scenario evaluated air quality impacts if the project was not constructed (2015 No-Build); while a second scenario included the full build-out of the project (2015 Build). Thus, the 2015 Build scenario demonstrates the influence that the project will have on projected air quality conditions. As in the case of 2010 modeling, 2015 modeling was based on the results of analysis of peak AM traffic combined with worst-case meteorological conditions at the subject intersection. Compared to 2010 conditions, the increase in traffic volume at the intersection of Long Meadow Road (CR-84) and Sterling Mine Road (CR-72) is 195 vehicles for the 2015 No-Build scenario and 234 vehicles for the 2015 Build scenario. Results for CO and PM_{2.5} under both scenarios are summarized in Table 5-3. None of the results exceed the limits shown in Table 5-1.

**Table 5-3 Carbon Monoxide and Particulate Matter Results
—2015 Conditions at Long Meadow Road (CR-84) and Sterling Mine Road (CR-72)**

Receptor Location	Carbon Monoxide (ppm)				Particulate Matter PM _{2.5} (µg/m ³)			
	1-hour		8-hour		24-hour		Annual	
	Build	No-Build	Build	No-Build	Build	No-Build	Build	No-Build
1	2.95	2.95	2.09	2.09	20.60	20.60	9.40	9.40
2	2.95	2.95	2.09	2.09	20.60	20.60	9.40	9.40
3	2.95	2.95	2.09	2.09	21.00	21.00	9.48	9.48
4	2.85	2.85	2.02	2.02	20.60	20.60	9.40	9.40
5	2.85	2.85	2.02	2.02	20.60	20.60	9.40	9.40
6	2.85	2.85	2.02	2.02	20.60	20.60	9.40	9.40
7	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
8	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
9	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
10	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
11	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
12	3.25	3.25	2.30	2.30	21.00	21.00	9.48	9.48
13	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
14	3.05	2.95	2.16	2.09	20.60	20.60	9.40	9.40
15	2.95	2.95	2.09	2.09	20.60	20.60	9.40	9.40
16	2.95	2.95	2.09	2.09	20.60	20.60	9.40	9.40
17	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48
18	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48
19	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48
20	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48
21	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48
22	3.45	3.45	2.44	2.44	21.00	21.00	9.48	9.48
23	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
24	2.95	2.95	2.09	2.09	20.60	20.60	9.40	9.40
25	2.95	2.95	2.09	2.09	20.60	20.60	9.40	9.40
26	3.15	3.05	2.23	2.16	21.00	21.00	9.48	9.48
27	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48

Receptor Location	Carbon Monoxide (ppm)				Particulate Matter PM _{2.5} (µg/m ³)			
	1-hour		8-hour		24-hour		Annual	
	Build	No-Build	Build	No-Build	Build	No-Build	Build	No-Build
28	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48
29	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48
30	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48
31	3.15	3.15	2.23	2.23	21.00	21.00	9.48	9.48
32	3.15	3.05	2.23	2.16	21.00	20.60	9.48	9.40
33	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
34	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
35	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
36	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
37	3.05	3.05	2.16	2.16	21.00	21.00	9.48	9.48
38	2.95	2.95	2.09	2.09	20.60	21.00	9.40	9.48
39	2.95	2.95	2.09	2.09	20.60	20.60	9.40	9.40
Average	3.06 ppm	3.05 ppm	2.17 ppm	2.16 ppm	20.88 µg/m ³	20.88 µg/m ³	9.46 µg/m ³	9.46 µg/m ³
NYSDEC Limit	35 ppm	35 ppm	9 ppm	9 ppm	35 µg/m ³	35 µg/m ³	15 µg/m ³	15 µg/m ³
% of Limit	8.7%	8.7%	24.1%	24.0%	59.6%	59.6%	63.0%	63.0%

Heating Plant Emissions

Geothermal and combustion-based heating options are being considered for the Project Site. If a combustion-based heating plant is used exclusively, the combined heat input of the boilers will be approximately 1,450 boiler hp or 48.5-million Btu/hr. It is anticipated that the geothermal heating option will be capable of supplying only a small portion of the overall heating capacity required for the site. Therefore, a boiler system will still be used in conjunction with the geothermal system. The boiler system under this option could be between 1,150 and 1,350 boiler hp. Thus, emissions under the geothermal option will not exceed those anticipated under the combustion-based heating option.

Facilities with a heat input exceeding 10-million Btu/hr are required to be registered by NYSDEC. The Project Sponsor currently operates two other facilities that are registered with the NYSDEC. Emissions at these facilities are capped by rule in accordance with 6 NYCRR 201-7.3, which stipulates that emissions cannot exceed 50 percent of the major stationary source thresholds for regulated air pollutants. It is expected that the proposed facility will also have its emissions capped by the same rule.

Table 5-4 identifies the emission caps; and, for comparison purposes it also includes the actual emissions at one of the Project Sponsor's existing facilities. The comparable existing facility has a boiler heat input capacity of 1,500 boiler hp; and, at the time the emissions were recorded, fuel oil with a sulfur content of 1.0 percent by weight was being used to operate the boilers. Since then, the facility has switched to fuel oil with a maximum sulfur content of 0.5 percent by weight. The proposed facility will use fuel oil with a maximum sulfur content of 0.5 percent by weight. Because the existing facility is larger in size and used fuel oil with higher sulfur content, emissions at the existing facility will represent the upper limit that could be anticipated at the Project Sponsor's proposed facility.

Table 5-4 NYSDEC Stationary Source Pollutant Limits for Facilities Capped by Rule

Pollutant	50% of Major Stationary Source Thresholds⁽¹⁾ (tons/year)	Actual Emissions for Comparable Facility⁽²⁾ (tons/year)
Nitrogen Oxides (NO _x)	50	9.41
Volatile Organic Compounds (VOC)	25	3.39
Total Hazardous Air Pollutants (HAP)	12.5	0.69
Highest Individual HAP	5	0.34
Particulate Matter (PM ₁₀)	50	1.07
Sulfur Dioxide (SO ₂)	50	32.19
Carbon Monoxide (CO)	50	2.12
Notes: 1. Source: 6 NYCRR 201-7.3 2. Source: 2009 Air Emissions – Annual Compliance Review, Registration ID: 3-5152-00026/02000, Facility DEC ID: 3-5152-00026		

Construction Activities

Construction of the project is expected to last approximately 60 months. Cut-and-fill activities will be completed during the first 30 months and will require the use of heavy equipment, which will result in a temporary increase in pollutant emissions during that time. Dust generated during site clearing, excavation, demolition, and grading activities will largely be limited to the first 30 months of the construction. The site is not in close proximity to public receptors; thus, the risk to public health is minimal.

Asbestos

In 2008 a licensed asbestos handling contractor was retained to remove asbestos from the existing on-site building, which will be demolished as part of this project. The asbestos in the building was fully remediated as per NYSDEC standards. The complete Asbestos Close-Out Package is in Appendix D-1, “Mobile Source Air Pollution Modeling,” by B. Laing Associates. The use of asbestos containing materials was largely discontinued beginning in the 1970s; however, the parcel was developed in the 1950’s prior to the ban of some asbestos containing construction materials. Therefore, the potential exists for encountering asbestos on the property in locations other than the existing building (e.g., in the underground utilities or at the non-operational wastewater treatment plant). If additional asbestos is encountered at the site, the Project Sponsor will take appropriate measures consistent with New York State Departments of Health (DOH), Labor (DOL) and NYSDEC for asbestos abatement and removal.

Radon

The U.S. Environmental Protection Agency (EPA) sets an Action Level for radon mitigation at 4.0 picocuries per liter (pCi/l). In 1991, the existing on-site building was monitored for the presence of radon at five worst-case locations. The readings ranged between 0.6 and 0.9 pCi/l, which are below the actionable level of 4.0 pCi/l. The results of the 1991 study are included in Appendix B-4 (November 4, 1991, letter from Leggette, Brashears & Graham, Inc.).

The presence of radon is typically less prevalent in large commercial buildings than it is in residences due to the use of HVAC systems that prevent radon gas from accumulating in the building. Although the presence of radon gas is currently not a concern, it cannot be ruled out for future buildings to be constructed on the site. Therefore, monitoring for the presence of radon is recommended and if required, mitigation will be implemented as described below.

D. Mitigation Measures

Unavoidable adverse air quality impacts include an increase in emissions and fugitive dust generation during construction and emissions from the heating plant. Mitigation measures to minimize these emissions are discussed below.

Vehicular emissions resulting from traffic generated by the project are not anticipated to impact air quality; hence, mitigation measures are not recommended for vehicular traffic.

Heating plant emissions at an existing similar facility operated by the Project Sponsor do not exceed state limits. However, to minimize air quality impacts, the Project Sponsor will use fuel oil with a maximum sulfur content of 0.5 percent by weight, which will further reduce the sulfur dioxide emitted by the heating plant.

Construction-related air quality impacts will largely be confined to the first 30 months of construction activity and generally will not be in proximity to public receptors. Best construction management practices (BMPs) will be employed to reduce soil erosion and possible sources of fugitive dust. This typically includes the daily use of water/spray trucks in dry periods, anti-tracking pads at construction entrances and installation of erosion and sediment controls per the SWPPP. Refer to Section 2 of Appendix M for a full list of BMPs to be employed on the Project Site during construction. Additionally, ultra-low sulfur fuel will be used in diesel equipment, thus further minimizing air quality impacts due to heavy construction equipment.

If encountered on site, asbestos will be abated by a licensed asbestos contractor. The qualified contractor will use personal protective equipment such as respirators, protective clothing, and eye protection to guard against exposure to asbestos. Proper work procedures will be employed such as erecting barricades, placing signs around the affected area and isolating the work area using polyethylene sheeting. Wetting of asbestos-containing materials and the use of HEPA filters in vacuums will also be used during removal and clean up. Asbestos will be disposed of in accordance with 6 NYCRR Part 364.

Radon monitoring will be conducted and mitigation will be implemented using guidelines set forth by the EPA and in the *American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) Indoor Air Quality Guide*. Mitigation includes the installation of a venting pipe from below the foundation to outside of the building; use of impermeable membranes to prevent radon gas from entering the building; and sealing openings and cracks in the foundation and around the perimeter of the structure.

E. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16 “Alternatives.” These alternatives are designated as (1) no-action, (2) educational facilities, (3) low-height, and (4) as-of-right. Air quality impacts associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor’s proposed facility.

No-Action Alternative

Under this alternative, the land will remain in its existing state including the abandoned International Nickel Company (INCO) facility. No change to existing air quality will be seen under this alternative. This alternative does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990's by The King's College will be constructed. These facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students. The total area of disturbance will amount to approximately 102 acres. Air quality will be impacted during construction and by vehicular traffic, which was estimated at 218 trips during the AM peak hour and 358 trips during the PM peak hour. The proposed campus will be heated using either natural gas or No. 2 oil, which will also impact air quality to some degree. In regards to radon, The King's College DEIS measured radon levels below 4.0 pCi/l, but did not rule out the future presence of radon in proposed buildings. Hence, radon monitoring and mitigation, if necessary, were proposed. After The King's College DEIS was prepared, the existing building was cleared of asbestos-containing material. This alternative does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower-profile structures at the Project Sponsor's facilities, which will require larger building footprints to accommodate the same square footage as the Project Sponsor's original proposal. As such, this alternative will increase the amount of area that will be disturbed during construction from 45 acres under the original proposal to 59 acres. Reducing building heights will not impact vehicular traffic or heating requirements. Radon will be monitored and mitigated, if necessary. This alternative meets the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property will be purchased by a private developer and that new residential lots will be constructed, which will be unrelated to the Project Sponsor's operations. Single-family residences will be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement.

Estimates show that approximately 200 acres of the 253-acre parcel are available for development of lots; the remaining 53 acres are reserved for infrastructure (i.e., roadways and stormwater facilities, open-space and contingency). Thus, this parcel could potentially accommodate up to 25 residences. The population density is estimated at 4.52 people per household¹. Therefore, approximately 113 residents can be anticipated under this alternative. The low number of residents suggests that the impact to air quality due to increased vehicular traffic and heating emissions will be negligible. Homes will likely be built using the EPA's *Radon-Resistant New Construction (RRNC)* standards for residential construction. This alternative does not meet the goals of the Project Sponsor. *

¹ Robert W. Burchell, Ph D., David Listokin, Ph D., and William R. Dolphin, M.A. Residential Demographic Multipliers—Estimates of the Occupants of New Housing.(New Brunswick, N.J.: Center for Urban Policy Research—Edward J. Bloustein School of Planning and Public Policy—Rutgers, The State University of New Jersey, 2006)

A. Introduction

This Chapter will provide a discussion of the habitat, vegetation, and wildlife that exists or is suspected to exist on the site, in Sterling Forest Lake (Blue Lake), and in the site's streams. This Chapter will disclose the protected vegetative and wildlife species that are suspected to exist in the area based on the New York and New Jersey Natural Heritage Databases. Efforts to investigate on-site habitats and the species suspected to exist or observed will be disclosed as will the principal conclusions of these efforts. Special studies commissioned to determine the presence and potential impacts to threatened or endangered species suspected to exist on site will also be disclosed. Refer to Chapter 4, "Water Resources," for additional information associated with impacts and mitigation of aquatic habitats.

The potential impacts of the proposed action will be assessed as will the comparative impacts of project alternatives. Where significant potential adverse impacts have been identified, measures will be proposed for mitigation.

The proposed project, which includes some limited disturbance of eastern deciduous hardwood forest (Appalachian oak hickory forest), will result in impacts to terrestrial wildlife and vegetation. This disturbance will be significantly less than the previously approved King's College application, and only a very small portion of this habitat on site will be disturbed. This habitat abounds in the surrounding parkland.

The Project Site, which is surrounded by several thousand acres of New York State and New Jersey State parkland, is suspected to contain habitat for many protected species. Protected species observed or believed to exist on site include hyssop skullcap, timber rattlesnake, eastern box turtle, red-shouldered hawk, and eastern bluebird—see Appendix A-4 for the New York State Department of Environmental Conservation (NYSDEC) letter dated November 30, 2009, outlining the required permits.

Incorporation of mitigation measures such as limiting the times of tree clearing and significant grading of the power-line right-of-way to winter months; establishing silt fencing around the entire area undergoing construction activities; installing bluebird nesting boxes in appropriate areas throughout the site; determining the existence of hyssop skullcap on site; and establishing protections and possible programs to encourage new colonies are anticipated to mitigate impacts.

The proposed action will result in improvements and ongoing maintenance to the Blue Lake Dam. An Emergency Action Plan for the Blue Lake Dam has been developed as the first step in defining the necessary improvements and maintenance needs for the dam and will be submitted to the NYSDEC for review within the next few months. Under a no-action alternative and without proper stewardship, it is likely that this dam will present an increasing risk to the on-site and downstream aquatic habitat. Further, potential on-site vegetation that requires early successional meadow or grassland habitat, such as hyssop skullcap, could be impacted by increasing woodland encroachment under a no-action alternative that did not provide property stewardship.

B. Existing Conditions

To establish existing conditions on the site, several surveys were performed between April and September of 2007 by Paulus, Sokolowski and Sartor (PS&S) (see Appendix E-1). Additionally, in 2005 a habitat assessment was performed for the site by Michael W. Klemens, L.L.C., discussing the overall site ecology and the suitability for development (see Appendix E-2). Both of these studies were performed for

a previous development interest (Touro College). Lastly, the “Terrestrial and Aquatic Ecology” section from The King’s College Draft Environmental Impact Statement (DEIS), deemed complete by the Town of Warwick Planning Board on January 20, 1999, provides some relevant background and is appended by reference and is available for review at Warwick Town Hall.

Based on this body of previous work, the Project Sponsor commissioned additional investigations. These include a summer woodland bat survey performed by Bat Conservation and Management in June of 2010, an updated “Ecological Resources Report” by PS&S including updated surveys conducted between May and July of 2010, a “2009 Timber Rattlesnake Study, and an “Additional 2010 Rattlesnake Study” prepared by Kathy Michell. The PS&S “Ecological Resources Report” including the bat survey is included as Appendix E-3. The rattlesnake studies are confidential and may not be appended to this document. The rattlesnake study has been filed with the New York State Department of Environmental Conservation, and a copy will be provided to the Town’s wildlife consultant for peer review if requested.

A list of all studies and correspondence are summarized in Table 6-1:

Table 6-1 Summary of Referenced Studies and Correspondence

Year	Title of Study	Author
1999	King's College DEIS	The Saratoga Associates
2005	Letter of findings regarding overall habitat assessment requested by Touro College	Michael W. Klemens
2005	Letter and Natural Heritage Report on Rare Species and Ecological Communities	New York State Department of Environmental Conservation
2005	Letter regarding rare species information	State of New Jersey Department of Environmental Protection
2007	Biological Studies Report Touro College Site	PS&S
2009	2009 Timber Rattlesnake Study	Kathy Michell
2010	Additional 2010 Rattlesnake Study	Kathy Michell
2010	Summer Woodland Bat Survey Watchtower Project	Bat Conservation and Management
2010	Ecological Resources Report Warwick, NY	PS&S
2010	Tree Location Survey	PS&S

The Project Site is located in the Hudson Highlands Physiographic Province of New York State. Upland valleys, slopes, upland ridges, rock outcrops, and wetlands are characteristic of this province. There is a wide diversity of plant communities that can occur in a relatively small area that is characteristic of plant communities throughout the Northeast.

The area under consideration is approximately 257 acres in size (including United Water’s parcel) and includes approximately 198.0 acres of forest, 33.8 acres of surface water, 11.6 acres of meadow and brushland, 8.8 acres of impervious surfaces and 4.8 acres of landscaped areas. There are approximately 2.9 acres of wetlands regulated by the United States Corps of Engineers in the project area. A map showing the locations of these land covers is provided as Figure 6-1 Land Use/Land Cover Map.

Habitat Assessment

As previously stated, Michael W. Klemens was tasked by Touro College in 2005 to provide a habitat assessment of the entire site now proposed for the Project Sponsor’s World Headquarters and to establish what additional studies or investigations may be required to move forward with a previously contemplated application. The Project Site is also adjacent to Warwick’s Biodiversity Overlay Zone. While not inside this zone, it is recognized that the areas surrounding the Project Site are an important

biodiversity asset. The Biodiversity Overlay District requires a habitat assessment be prepared for applications undergoing State Environmental Quality Review. Again, although the Project Site is not located within the Biodiversity Overlay District, providing a habitat assessment respects and recognizes the potential for sensitive species.

In preparing the “Habitat Assessment,” Mr. Klemens thoroughly reviewed available documentation including documentation from the previous King’s College DEIS application and documentation available from NYSDEC and performed two site visits. This “Habitat Assessment” is included in Appendix E-2. Mr. Klemens identified the following potential resources on the site, and recommended the following protections or further investigations with regard to those resources. It is noted that a map of these areas was not provided. However, a general location was given for the xeric chestnut oak community as being on a hillock outside the project boundary in the southwestern corner of the property. Recommendations were given for the areas were described.

Xeric Chestnut Oak Community

Recommendation: Avoid disturbance of this area.

Timber Rattlesnake

Recommendation: Perform investigation as to the use of the site for sunning and foraging, particularly the chestnut oak ridge community. Inquire to New Jersey Department of Environmental Protection (NJDEP) as well as NYSDEC for potential den sites.

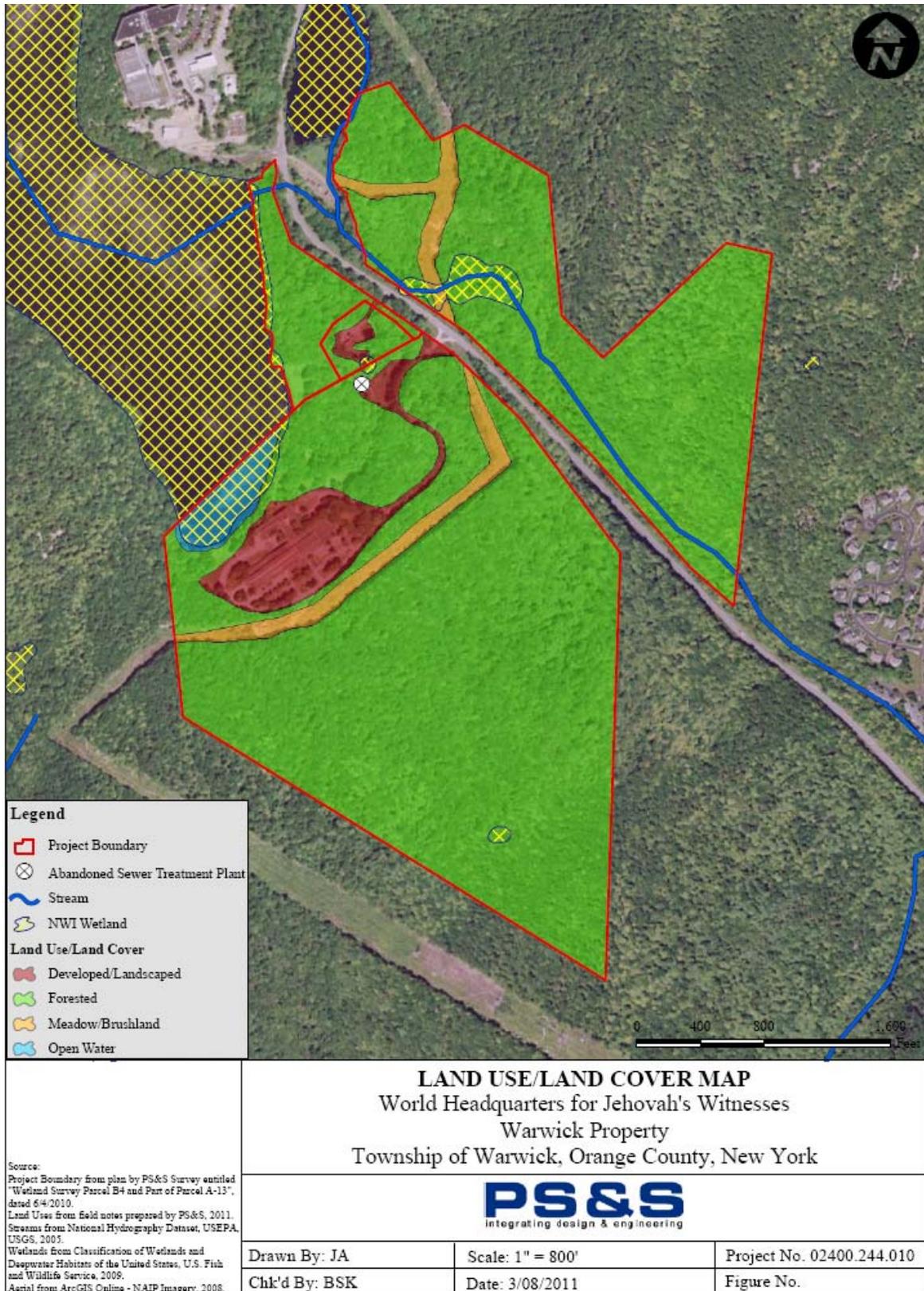


Figure 6-1 Land Use/Land Cover Map

Broad Valley in Extreme Southeast of Site with Intermittent Streams

Recommendation: Avoid disturbance of this area.

Abandoned Sewer Treatment Plant

Recommendation: Secure remaining chemicals located on site. The site is also noted as potential turtle and snake nesting habitat. Once secured and soil remediation is conducted, this area will be left undeveloped and allowed to return to its natural state.

Hognose Snake Habitat

Recommendation: Perform general herpetological survey with attention to this species.

Blue Lake

Recommendation: Provide 100-foot naturally vegetated buffer.

Ornamental Weeping Beech at Former International Nickel Company (INCO) Entrance

Recommendation: Remove vines from beech and prepare tree survey and tree preservation plan to preserve specimen trees around INCO site.

North Side of Long Meadow Road (CR-84)

Recommendation: Parcel north of road exhibits far greater biodiversity and parcel south of road is much better suited for development.

Other General Recommendations

Perform breeding bird survey, mammal field work, botanist update of The King's College DEIS vegetation study, ichthyologist sample update of Ringwood River, and Blue Lake fisheries data, or consult with DEC Region-3 fisheries biologist.

Existing Vegetative Communities

Vegetative communities were identified in The King's College DEIS and verified by Michael Klemens in 2005. PS&S performed a survey of 14 transects to determine vegetative associations in 2007 and 2010. See Appendix E-4 for the PS&S "Tree Location Survey."

The vegetation on the site is mostly second-growth upland eastern deciduous hardwood forest. Areas not defined by forest associations are a homogenization of hardwoods including oak, maple, ash, sweet birch, and hickory with an understory of flowering dogwood, blue beech, sassafras, and maple leaf viburnum. Generally areas with drier slopes have more white oaks and hickory; wetter and cooler locations are dominated by red and black oaks mixed with sweet birch; and lower elevations with deeper soils have more maple and ash. Generally the white, red, and chestnut oaks exist throughout the site, with co-dominant species defining the associations.

A Canadian hemlock association, almost completely dominated by these conifers, is located in two bands with northerly exposures near the center of the site. An additional association exists along the slopes of the Ringwood River to the northeast of Long Meadow Road (CR-84).

A section in the northeast corner of the site is an association of mature woodland with the largest trees on the site including large specimens of white ash, sugar maple, beech, and tulip tree with some oak, hickory, and sycamore also present. Spicebush dominates the understory in this association.

A chestnut oak-dominated association of hardwoods is located at the southern end of the site with sparse understory containing significant clumps of mountain laurel. This particular association is cited as significant by Michael Klemens in his “Habitat Assessment” and is identified as a xeric chestnut oak ridge community.

A mixed-association ash-maple successional group of hardwood is dominant on southwestern exposures. Most of the mature oaks in this group are dead or dying with understory dominated by young saplings of white ash, sugar maples, and maple leaf viburnum.

On lower slopes along the southwestern boundary of the site, the oak domination gives way to maple, ash, and hickory-dominated woodlands with an understory characterized by saplings of varying size.

Toward the center of the site a beech-maple association exists including nicely-developed American beeches.

A forested wetland community exists along the riparian corridor north of Long Meadow Road (CR-84). This community is dominated by red maple and white ash with understory of skunk cabbage, American hornbeam, sensitive fern, and jewelweed.

The NYSDEC has identified portion of the site and much of the surrounding State Park and environs as Appalachian oak hickory forest, and this ecological community has been identified on the Natural Heritage database as being important due to its size and setting. It is classified as Rank S4—apparently secure and does not qualify for specific legal protections.

It is noted that during surveys by PS&S, a NYSDEC-endangered species, hyssop skullcap, was observed on the site. The potential for protected species to exist on site is detailed hereafter.

It is further noted that in Mr. Klemens’s “Habitat Assessment,” it was determined that vernal pools were unlikely to exist to the south of Long Meadow Road (CR-84). Vernal pools were observed to the north of Long Meadow Road (CR-84) on lands proposed to be left in their natural state. Because no development is proposed on the parcels north of Long Meadow Road (CR-84), detailed studies were not pursued, although some background is provided herein.

A complete list of vegetative species observed on site is included in Table 6-2.

Table 6-2 Vegetative Species Observed On Site

Common Name	Scientific Name	Common Name	Scientific Name
Field horsetail	<i>Equisetum arvense</i>	Multiflora rose	<i>Rosa multiflora</i>
Cinnamon Fern	<i>Osmunda cinnamomea</i>	Wild-black cherry	<i>Prunus serotina</i>
Bracken fern	<i>Pteridium aquilinum</i>	Pin Cherry	<i>Prunus pensylvanica</i>
Maidenhair fern	<i>Adiantum pedatum</i>	Crabapple	<i>Pyrus coronaria</i>
Ebony spleenwort	<i>Asplenium platyneuron</i>	Birds foot trefoil	<i>Lotus corniculatus</i>
New York fern	<i>Thelypteris noveboracensis</i>	Crown vetch	<i>Coronilla varia</i>
Christmas fern	<i>Polystichum acrostichoides</i>	Virginia creeper	<i>Parthenocissus quinquefolia</i>
Sensitive fern	<i>Onoclea sensibilis</i>	Fox grape	<i>Vitis labrusca</i>
Hemlock	<i>Tsuga canadensis</i>	Red maple	<i>Acer rubrum</i>
White pine	<i>Pinus strobus</i>	Sugar maple	<i>Acer saccharum</i>
Tulip popular	<i>Liriodendron tulipifera</i>	Poison ivy	<i>Toxicodendron radicans</i>
Sassafras	<i>Sassafras albidum</i>	Tree-of-heaven	<i>Ailanthus altissima</i>
Spicebush	<i>Lindera benzoin</i>	Wood sorrel	<i>Oxalis stricta</i>
Japanese barberry	<i>Berberis thunbergii</i>	Jewelweed	<i>Impatiens capensis</i>
Witch hazel	<i>Hamamelis virginiana</i>	Queen Ann's lace	<i>Caucus carota</i>
Shagbark hickory	<i>Carya ovalis</i>	Spreading dogbane	<i>Apocynum androsaemifolium</i>
Mockernut hickory	<i>Carya tomentosa</i>	Indian hemp	<i>Apocynum cannabinum</i>
American beech	<i>Fagus grandifolia</i>	Common milkweed	<i>Asclepias syriaca</i>
White oak	<i>Quercus alba</i>	Morning glory	<i>Ipomoea purpurea</i>
Chestnut oak	<i>Quercus prinus</i>	Scutellaria integrifolia	<i>Hyssop skullcap</i>
Red oak	<i>Quercus rubra</i>	Jack-in-a-pulpit	<i>Arisaema triphyllum</i>
Black oak	<i>Quercus velutina</i>	Soft rush	<i>Juncus effusus</i>
American hornbeam	<i>Carpinus caroliniana</i>	Nut sedge	<i>Cyperus esculentus</i>
Black birch	<i>Betula lenta</i>	Rye spp	<i>Lolium spp</i>
Gray birch	<i>Betula populifolia</i>	Upland bentgrass	<i>Agrostis hyemalis</i>
Yellow birch	<i>Betula alleghaniensis</i>	Common reed	<i>Phragmites australis</i>
Pennsylvania smartweed	<i>Polygonum pensylvanicum</i>	Poa spp	<i>Poa spp</i>
Japanese knotweed	<i>Polygonum cuspidatum</i>	Deer-tongue grass	<i>Panicum clandestinum</i>
Cottonwood	<i>Populus deltoides</i>	Crab grass	<i>Digitaria filiformis</i>
Garlic mustard	<i>Alliaria petiolata</i>	Japanese stiltgrass	<i>Microstegium vimineum</i>
Mountain laurel	<i>Kalmia latifolia</i>	Cattail	<i>Typha latifolia</i>
Winter green	<i>Gaultheria procumbens</i>	False Helbore	<i>Veratrum viride</i>
Low bush blueberry	<i>Vaccinium angustifolium</i>	Large-flowered trillium	<i>Trillium grandiflorum</i>
Indian pipe	<i>Monotropa uniflora</i>	Indian cucumber root	<i>Medeola virginiana</i>
Dwarf spirea	<i>Spiraea latifolia</i>	Nodding trillium	<i>Trillium cernuum</i>
Wild strawberry	<i>Fragaria virginiana</i>	False Solomon's seal	<i>Smilacina racemosa</i>
Dwarf cinquefoil	<i>Potentilla canadensis</i>	Greenbrier	<i>Smilax rotundifolia</i>
Raspberry	<i>Rubus occidentalis</i>		

Source: Biological Studies Report: Touro College Site. PS&SPC, October 2007

Existing Rare or Protected Vegetative Species Known or Suspected to Exist On Site

As previously noted, hyssop skullcap, a New York State-endangered species was observed on site. This was the only rare or protected vegetative species observed on site during site investigations.

The Natural Heritage databases for New York and New Jersey were contacted in order to provide background on the rare or protected species potentially present on the site or in the vicinity. New Jersey was contacted given the site's proximity to the State boundary, and given the extension of protected parklands into that state.

The search of the New York Natural Heritage Databases (see Appendix E-5) yielded the following potential rare or protected species:

- Terrestrial starwort—*Callitriche terrestris*—NY Threatened Species.
- Green parrot's feather—*Myriophyllum pinnatum*—NY Endangered Species.
- Hyssop skullcap—*Scutellaria integrifolia*—NY Endangered Species.
- Michaux's blue-eyed grass—*Sisyrinchium mucronatum*—NY Endangered Species.

A search of the New Jersey Natural Heritage Database yielded no rare plant species or natural communities within one-fourth mile of the site. This letter is included in Appendix E-6.

An investigation of the identified potential protected vegetative species was performed by PS&S in 2007. The following are their conclusions with regard to the potential presence of the identified species on the Project Site.

Terrestrial Starwort

This species is typically found in damp shaded habitat. This is a small plant with tufted branches spreading along the ground or climbing nearby rocks or other objects. Potential habitat for this species on the site includes along the edge of Blue Lake, the edge of Ringwood River, and along the perennial stream located between the existing college and Sterling Forest Road. No terrestrial starworts were observed during the site investigation.

Green Parrot's Feather

This species is found primarily in ponds. Leaves are arranged in whorls of 3 to 5 leaves per whorl. Potential habitat for this species on the site is generally limited to Blue Lake. Green parrot's feather was not observed during site investigation.

Hyssop Skullcap

Hyssop skullcap is a summer perennial with a terminal raceme of purple-blue flowers. It is listed as a NYSDEC-threatened species. This species inhabits a wide range of habitats from pine-barrens to wet meadows. Typically, hyssop skullcap is found along the edge of roadsides, woodland borders, fields, and in wet meadows. Potential habitat for this species on the site includes the edge of Sterling Forest Road, the site access road and the power-line right-of-ways. Vegetation transects were run down the length of the power-line right-of-way, the most probable location for this species on site. Small colonies of hyssop skullcap were observed along the right-of-way portion of the proposed site in 2007. These colonies were not observed when transects were re-walked in 2010, potentially due to seasonal conditions.



Hyssop Skullcap

Photo: NY Natural Heritage

Program:

<http://www.acris.nynhp.org/image.php?id=343>

Michaux's Blue-eyed Grass

Michaux's blue-eyed grass is in the iris family. The flowering season for this species is summer. The six-petal flower is blue with a yellow center. The petals of the flowers have distinctly pointed tips. It is found in fields, meadows, bogs, and along forest edges. This species prefers areas of full sun throughout the day. Potential habitat for this species on site occurs along the power-line right-of-way. Vegetation transects were completed for the length of the power-line right-of-way and the wetlands south of the sewage treatment plant. Michaux's blue-eyed grass was not observed.

Existing Wildlife Species

An area's wildlife is dependent upon the quality of the habitat present. All organisms require food, water, cover, and living space. The relative lack or abundance of each of these resources and consideration of each species' life requisites helps to determine its potential presence or absence. If present, its distribution and population dynamics will also be dependent upon these habitat qualities. Population dynamics and distribution are also dependent on the size, shape, and complexity of the different vegetative communities and surrounding land uses. Wildlife species' tolerance of disturbance and human activity ranges from intolerant to dependent. Some species such as the white-tailed deer (*Odocoileus virginianus*) have demonstrated great adaptability and tolerance to human disturbance. A few species require disturbance in order to complete their life cycle yet other species are intolerant of most human disturbance.

Wildlife studies were conducted by PS&S morning, afternoon, and evening on eleven days between April and September of 2007 to characterize the general wildlife species utilizing the site, and to perform avian, herpetological, raptor, vegetational, and vernal pond surveys. Surveys performed by PS&S included a review of existing reports, review of New Jersey Department of Environmental Protection (NJDEP) and NYSDEC databases and field observations. Habitat characteristics observed during vegetation surveys, literature review, and database review were used to generate a list of species likely to occur on the site and potentially suitable habitat. Field observations were used to supplement existing information. Wildlife species expected to be found and observed on the site are listed in Table 6-3. The potential for each avian species to be breeding on the site is also listed in these tables.

Table 6-3 Wildlife Species Anticipated To Be Present On Site

Mammals	
Observed on the Touro College Site	
Commons Name	Scientific Name
Opossum	Didelphis marsupialis
Short-tailed shrew	Blarina brevicauda
Eastern mole	Calopus aquaticus
Bear	Ursus americanus
Raccoon	Procyon lotor
Striped skunk	Mephitis mephitis
Coyote	Canis latrans
Fox	Vulpes Fulva
Woodchuck	Marmota monax
Chipmunk	Tamias striatus
Gray squirrel	Sciurus carolinensis
Beaver	Castor Canadensis
Deer mouse	Peromyscus maniculatus
White-footed mouse	Peromyscus leucopus
Meadow vote	Micotus pennsylvanicus
Deer	Odocoileus virginianus
Amphibians and Reptiles	
Observed on the Touro College Site	
Common Name	Scientific Name
Musk turtle	Sternotherus odoratus
Box turtle	Terrapene carolina
Painted turtle	Chrysemys scripta
Snapping turtle	Chelydra serpentina
Five-linked skink	Eumeces fasciatus
Northern water snake	Nerodia sipedon
Garter snake	Thamnophis sirtalis
Black racer	Coluber constrictor
Red-spotted newt	Notophalmus viridescens
Red-backed salamander	Plethodon cinereus
Slimy salamander	Plethodon glutinosus
Two-lined salamander	Eurycea bislineata
American toad	Bufo americanus
Spring peepers	Pseudacris crucifer
Gray treefrog	Hyla versicolor
Green frog	Rana clamitans
Bull frog	Rana catesbeiana
Leopard frog	Rana pipiens

Birds Observed on the Touro College Site		
Common Name	Scientific Name	Breeding Status
Great cormorant	Phalacrocorax carbo	NOS ¹
Canada goose	Branta Canadensis	Confirmed ²
Mallard	Anas platyrhynchos	Confirmed
Wood duck	Aix sponsa	Suitable ³
Bufflehead	Bucephala albeola	NOS
Common merganser	Mergus merganser	Suitable
Hooded merganser	Lophodytes cucullatus	Suitable
Great blue heron	Ardea herodias	NOS
Wild turkey	Megeagris gallopavo	Confirmed
Red-tailed hawk	Buteo jamaicensis	Suitable
Osprey	Pandion haliaetus	Suitable
Turkey vulture	Cathartes aura	NOS
Red-shouldered hawk	Buteo lineatus	South of site ⁴
Morning dove	Zenaida macroura	Confirmed
Black-billed cuckoo	Coccyzus erythrophthalmus	Confirmed
Yellow-billed cuckoo	Coccyzus americanus	Confirmed
Ruby-throated hummingbird	Archilochus colubris	Confirmed
Piliated woodpecker	Dryocopus pileatus	Confirmed
Red-bellied woodpecker	Melanerpes carolinus	Suitable
Yellow shafted flicker	Colaptes auratus	Confirmed
Hairy woodpecker	Picoides villosus	Confirmed
Great crested flycatcher	Myiarchus crinitus	Confirmed
Eastern kingbird	Tyrannus tyrannus	Confirmed
Eastern peewee	Contopus virens	Confirmed
American crow	Corvus brachyrhynchos	Suitable
Blue jay	Cyanocitta cristata	Confirmed
Black-capped chickadee	Parus atricapillus	Confirmed
Tufted titmouse	Parus bicolar	Confirmed
White-breasted nuthutch	Sitta carolinensis	Confirmed
House wren	Troglodytes aedon	Confirmed
Gray catbird	Dumetella carolinensis	Confirmed
Northern mockingbird	Mimus polyglottos	Confirmed
American robin	Turdus migratorius	Confirmed
Eastern bluebird	Sialia sialis	Confirmed
Wood thrush	Hylocichla mustelina	Confirmed
Red-eyed vireo	Vireo olivaceus	Confirmed
Yellow-throated vireo	Vireo flavifrons	Confirmed

Source: Biological Studies Report: Touro College Site. PS&SPC, October 2007

1 NOS—Not on site. Either migratory species, no suitable habitat on site or no evidence of this species breeding on site.

2 Confirmed—Calling during the nesting season, observed carrying nesting material or observed in nest.

3 Suitable—Suitable habitat available on site but not confirmed.

4 Observed carrying prey items to location south of site.

Bat Surveys

A bat survey was conducted during the summer of 2009. Three bat species were captured on the site: big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), and little brown bat (*Myotis lucifugus*). Big brown bats roost in buildings and tree cavities. Eastern red bat roost in the foliage of trees, typically, near water. Little brown bats typically roost in building (barns, outbuildings, and attics). Nearly all of the forested area on the site provides suitable roosting habitat for eastern red bat. Trees with potentially suitable cavities for big brown bat are scattered throughout the site. No roosting bats were observed within the proposed limits of disturbance for the project during 2007 or 2010.

Vernal Pools

Although not located near or within the site's limits of disturbance, several investigations were made into the site's vernal pools. Spring peeper, gray tree frog, and American toad tadpoles were found in the vernal pool habitats. American toad was also observed during the road surveys.

Aquatic Wildlife

The NYSDEC last updated its fisheries data in 2000. Surveys conducted by the NYSDEC Bureau of Fisheries, Biological Survey Unit, on May 31, 2000, indicate that the lake supports a breeding population of lake trout (*Salvelinus namaycush*). In addition, rainbow (*Salmo gairdneri*) and brown trout (*Salmo trutta*) were stocked in the lake while it was under private ownership. Alewife (*Alosa pseudoharengus*) had been the main forage base in the lake; however, based on Wildlife Services (WS) DEC Bureau of Fisheries surveys conducted in 1998 and 2000, they are no longer present in the lake. The following species were collected by WSDEC during their 2000 survey:

- Smallmouth bass (*Micropterus dolomeiui*).
- Rock bass (*Ambloplites rupestris*).
- Largemouth bass (*Micropterus salmoides*).
- Bluegill (*Lepomis macrochirus*).
- Pumpkinseed (*Lepomis gibbosus*).
- Chain pickerel (*Esox niger*).
- Yellow perch (*Perca fluviatilis*).

The Ringwood River flows through the northeastern portion of the site (north of Long Meadow Road [also known as County Road 84]) in the area to remain undisturbed. The reach of the stream which flows through the site is identified as a Class C(T) freshwater. The NYSDEC defined best usage of Class C waters is fishing. These waters are suitable for fish propagation and survival. The water is also suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes. The (T) appearing after the standard designation indicates that the waters are suitable for supporting trout. In March 2007 the NYSDEC stocked 290 eight-to-nine-inch brown trout in the Ringwood River. Immediately downstream of the site, in New Jersey, the NJDEP stocks brown and rainbow trout in the river.

Existing Rare or Protected Wildlife Species Known or Suspected to Exist On or Near the Site

Based on field observations, the Klemens' Habitat Assessment report and inquiries to the NYSDEC and NJDEP Natural Heritage Program, a list of rare or protected species that could be inhabiting the site or its vicinity was assembled.

The following is a list of protected or rare wildlife species identified by the Natural Heritage Programs of NY and NJ during separate inquiries in 2005 and 2007:

- Timber rattlesnake—*Crotalus horridus*—NY Vulnerable and NJ Endangered Species.
- Marbled salamander—*Ambystoma opacum*—NY Special Concern and NJ Declining Species.
- Eastern box turtle—*Terrapene Carolina*—NY and NJ Special Concern Species.
- Wood turtle—*Clemmys insculpta*—NY Special Concern Species.
- Red-shouldered hawk—*Buteo jamaicensis*—NY Special Concern Species.
- Barred owl—*Strix varia*—NJ Threatened Species.
- Coopers hawk—*Accipter cooperii*—NY Special Concern and NJ Threatened Species.
- Great blue heron—*Ardea herodias*—NJ Stable Species.
- Veery—*Catharus fuscescens*—NJ Special Concern Species.
- Eastern bluebird—*Sialia sialis*—NY Special Concern Species.
- Arrowhead spiketail dragonfly—*Cordulegaster obliqua*—NY Imperiled Species.
- Sable clubtail dragonfly—*Gomphus rogersi*—NY Critically Imperiled Species.

The barred owl, great blue heron, and veery are not listed on the New York State List of Species of Greatest Conservation Need and pursuant to the adopted scope, do not require additional investigation. Nevertheless, Mr. Klemens opined in 2005 that a breeding bird survey will be sufficient to determine the presence of on-site breeding locations for these avian species. This survey as well as a raptor survey were conducted in 2007 and updated in 2010.

As stated previously, wildlife studies were conducted by PS&S morning, afternoon, and evening on eleven days between April and September of 2007 and updated between May and June of 2010 to perform avian, herpetological, raptor, and vernal pond surveys. Additionally, Kathy Michell, a noted expert herpetologist was retained and has performed investigations particular to the presence of snakes, especially timber rattlesnakes in 2009 and 2010. Lastly, although no reports were received from the Natural Heritage Programs and no evidence is indicated in Michael Klemens's Habitat Assessment, the Project Sponsor commissioned a summer bat survey (see Appendix E-3) to establish the presence or absence of Indiana bat on the site, given the presence of this species throughout Orange County.

Timber Rattlesnake

Based on the commissioned "Timber Rattlesnake Study," it was found that a number of timber rattlesnake den sites exist within two miles of the Project Site and rattlesnakes are known to forage in the forested areas of the site. The rattlesnake study performed in coordination with the NYSDEC involved detailed studies through 2009 and 2010 where rattlesnakes at area dens were radio-tagged to determine their movements through the two years.

Marbled Salamander

No evidence of marbled salamander larva or past evidence of breeding was discovered during investigations of wetlands and vernal pool areas in 2007 and 2010, and marbled salamander was not observed during investigations of amphibian breeding in emergent wetland areas. During surveys of road crossing amphibians and calling during rainy nights, no marbled salamanders were detected.

Eastern Box Turtle

The site provides adequate habitat for box turtles, which prefers open woodlands, pasture, and marshy meadows near streams or ponds. A live female box turtle was observed near the former INCO campus in 2007, and two turtle shells were also found. An immature box turtle was observed within the power-line right-of-way in 2010.

Wood Turtle

Potential breeding and overwintering habitat may exist for this species along the Ringwood River on the parcel north of Long Meadow Road (CR-84). This parcel is proposed to be preserved as open space. According to NYSDEC records, wood turtles are known to have been previously observed on the site; however, an investigation in 2007 and 2010 yielded no observations.

Red-Shouldered Hawk

Potential nesting habitat may exist along the second-growth wooded areas along the riparian corridor on the parcel north of Long Meadow Road (CR-84). This area is proposed to be preserved as open space. This riparian corridor crosses under Long Meadow Road (CR-84) south of the Project Site. No nests were identified and taped calls yielded no response. Red-shouldered hawks were observed foraging along the powerline right-of-ways in 2007, but based on observations it is believed the observed pair nest to the south of the site. No red-shouldered hawks have been observed on the site in 2010. The site is also bounded by two State Parks, Sterling Forest State Park and Ringwood Manor State Park, which provide suitable nesting and foraging habitat for this species. It is not anticipated that this species will be impacted by the proposed development—see Appendix E-3, PS&S “Ecological Resources Report.”

Cooper’s Hawk

The site’s wooded uplands provide adequate habitat for cooper’s hawk, which is tolerant to human activity. No nest sites or cooper’s hawk were observed on the site, although abundant suitable breeding and foraging habitat exists on the site and in the surrounding State Park.

Eastern Bluebird

Suitable open-country habitat exists for the eastern bluebird along the site’s power-line right-of-way, along the dike at the eastern end of Blue Lake and throughout the existing INCO campus. Numerous tree cavities exist along the edges of these open-county areas and numerous bluebirds were observed on the site.

Indiana Bat and Small-Footed Myotis

No Indiana bat or small-footed myotis were captured during a summer mist net survey conducted in accordance with protocols set forth in the US Fish and Wildlife Services Bat Recovery Plan. Three non-protected species encountered include the big brown bat, eastern red bat, and little brown bat.

Species of Greatest Conservation Need

New York currently lists some 537 Species of Greatest Conservation Need (SGCN). The basic criteria for listing a particular species as a SGCN include: 1) appears on federal list of threatened or endangered species; 2) appears on New York’s list of threatened, endangered, or species of special concern; 3) 20 or fewer elemental occurrences on the New York Natural Natural Heritage Program Database; 4) "best professional judgment" of NYSDEC staff experts.

Habitat assessment and impacts analysis for state-listed threatened and endangered species and state-listed species of special concern (there are no federally-listed species on the site) was discussed in the preceding

section. Other SGCN reported on the site include eastern red bat, black-throated blue warbler (*Dendroica caerulescens*), scarlet tanager (*Piranga olivacea*), worm eating warbler (*Helmitheros vermivorus*), five-lined skink (*Eumeces fasciatus*), northern black racer (*Coluber constrictor*), and snapping turtle (*Chelydra serpentina*).

Eastern red bat, black-throated blue warbler, scarlet tanager, and worm eating warbler, to varying degrees, require forest for their habitat. Five-lined skink and northern black racer will also use forested areas but also frequently use fields and developed areas for foraging and nesting. Snapping turtles are an aquatic species that use uplands for nesting.

Hognose Snake

Between 2007 and 2010 approximately 30–40 hours were spent searching for reptiles (including hognose snake) and amphibians and examining their potential habitat, including the former wastewater treatment plant, which was indicated in Dr. Klemens's Habitat Assessment as being potential habitat for the hognose snake. During these investigations, no indications of hognose snake were observed.

C. Potential Impacts

The proposed project intends to locate predominantly within recent previously disturbed areas surrounding the existing INCO building. These areas have already to some extent adapted to human disturbance subsequent to site grading, installation of utility infrastructure, construction of the building, and human occupancy of the areas. Although the INCO building itself has been vacant for several years, human occupancy of the area has been maintained periodically through the servicing of utility infrastructure present on the site. Although previously disturbed, the area closest to Blue Lake will be protected by maintenance of a buffer of at least 75 feet. The maintenance of this upland buffer will not only decrease the likelihood of impacts to aquatic species, but also to any waterfowl that may be utilizing the lake and its shores as habitat.

Two previously undisturbed areas are proposed for disturbance. These areas coincide with the proposed vehicle maintenance building and resident recreation/picnic area. Disturbance associated with the latter will be limited to site grading and installation of three minor recreation, storage, and convenience buildings. The graded area will be used for installation of court sport areas, such as basketball, tennis, and volleyball. Project implementation will require the disturbance of approximately 16–17 acres of forested habitat.

The newly disturbed areas are within close proximity to previously disturbed areas associated with the INCO building, Long Meadow Road (CR-84), and the Orange & Rockland utility right-of-way. They are in areas of the predominant eastern deciduous hardwood forest and transects in these areas did not indicate any unique vegetation.

Terrestrial Starwort

The proposed application maintains a buffer of at least 75 feet from Blue Lake and proposed no development north of Long Meadow Road (CR-84). Therefore no impacts to this protected species are anticipated.

Green Parrot's Feather

This plant is an aquatic plant, whose sole potential habitat is Blue Lake. No green parrot's feather was observed, and the project maintains a buffer of at least 75 feet from Blue Lake. Therefore no impacts to this protected species are anticipated.

Hyssop Skullcap

The proposed application involves some disturbance to the proposed power-line right-of-way, particularly for the installation of berms necessary for stormwater management, for possible undergrounding of the high-voltage power lines, and partially for installation of a roadway to the recreational fields and vehicle maintenance building. Identified threats to hyssop skullcap indicated on the New York Natural Heritage Program Guide for this species include succession of meadow and grassland to woody plants and potential deer browsing. The activities of the Project Sponsor near the power-line right-of-way will involve some clearing of trees and brush plants. If done correctly (see “Mitigation” section), this will help to manage the grassland habitat from woody plant succession.

Michaux’s Blue-Eyed Grass

No Michaux’s blue-eyed grass was observed on site and therefore no impacts to this protected species are anticipated.

Timber Rattlesnakes

The “Timber Rattlesnake Study” prepared by Kathy Michell opined the following as to the potential impacts on the project:

“Based on the data collected during 2009 and 2010 my associates and I believe that the proposed project will not have a negative effect on local timber rattlesnake populations. Although project sponsor’s property is within the possible range (typically accepted as [redacted] miles) of at least [redacted] dens we do not believe there is any significant habitat on the property west of Long Meadow road and certainly not within the area of the proposed project. Rattlesnakes may use forested areas on the property to forage, [redacted], that are not proposed for disturbance. Rattlesnake utilization of the forested areas on the property will not be affected by project sponsor’s use of the former industrial campus. There have been workers and security guards on the grounds of the site all year and no rattlesnakes have been observed. If the proposed project is allowed to proceed, no rattlesnake habitat will be lost or degraded, nor will rattlesnakes be excluded from any habitat.

“We believe that project sponsor’s proposed redevelopment of this former industrial site, while leaving the other forested areas of the property undisturbed, is the best possible use of the property from the perspective of timber rattlesnake conservation. Proposals of previous owners underscore this. Combining best use with the fact that the owners are “rattlesnake friendly” it makes sense to endorse their proposed project. When it comes to protecting timber rattlesnakes on private land there is no substitute for landowner stewardship.”⁵

Potential impacts from chance encounters during construction are possible and mitigations are proposed hereafter.

Marbled Salamander

Following thorough searches of amphibian presence and activity, no marbled salamander were observed on site; therefore impacts to this protected species are unlikely.

Eastern Box Turtle

Once construction activities are completed, the power-line right-of-way will be returned to its present open state. Additionally, the buffered open area near Blue Lake and additional open areas to be

⁵ Michell, Kathy. 2010 Addendum to Timber Rattlesnake Study. Narrowsburg, PA: Kathy Michell, Wildlife Consultant, 2010.

established near the recreational/picnic area will provide box turtles with additional open habitat. Potential impacts from chance encounters during construction are possible and mitigations are proposed hereafter.

Wood Turtle

No wood turtles were observed on site and suitable habitat is limited to the area north of Long Meadow Road (CR-84), which will remain undisturbed. Therefore, impacts to this protected species are not anticipated. Potential impacts from chance encounters during construction are possible and mitigations are proposed hereafter.

Red-Shouldered Hawk

Red-shouldered hawk are relatively tolerant of human disturbance. Further, there is adequate habitat in the surrounding area to compensate for the small decrease in habitat that will result due to the proposed action.

Coopers Hawk

No coopers hawk or nests were observed on site and impacts to this protected species are not anticipated. This species is relatively tolerant of human disturbance. There is adequate habitat in the surrounding area to compensate for the small decrease in habitat that will result due to the proposed action.

Eastern Bluebird

Significant disturbance is proposed within the site's existing bluebird habitat. It is likely that some trees containing nesting cavities will require removal to support site construction. Additionally, the power-line right-of-way will be significantly disturbed to construct stormwater infrastructure, proposed roads, and to possibly bury underground existing power lines. Mitigations to probable impacts to this species are proposed hereafter.

Indiana Bat and Small-Footed Myotis

No Indiana bat or small-footed myotis were observed on site and impacts to this protected species are not anticipated. Further, there is adequate habitat in the surrounding area to compensate for the small decrease in habitat that will result due to the proposed action.

Wetlands

The Project Site contains several areas of US Army Corps jurisdictional wetlands. These are described more fully in Chapter 4 "Water Resources." The Applicant will not be disturbing any wetlands and is planning to maintain buffers between 25 and 86 feet from all wetlands.

Aquatic Wildlife

Stormwater runoff has the potential to impact aquatic wildlife by increasing the temperature in receiving streams, if detained on-site for extended periods. Aquatic wildlife, such as trout, that require cold and cool water conditions would be adversely impacted by increased temperatures of stormwater runoff.

Invasive Species

The Project Site includes the disturbance and replanting of mostly previously disturbed areas, but also some areas of upland forest and meadow/brushland. This has the potential to encourage the proliferation of invasive species if not properly mitigated.

Species of Greatest Conservation Need

Project implementation is not anticipated to have any long-term impacts on five-lined skink, northern black racer, or snapping turtle habitat. Losses to some individuals may occur as a result of land clearing operations and additional motor vehicle activity on the site. These losses however are not anticipated to have any significant adverse impact on the species overall population. Construction of the project will result in the direct loss of approximately 16–17 acres of the approximately 198 acres of forested habitat on the subject property. Although this habitat is suitable for eastern red bat, black-throated blue warbler, scarlet tanager, and worm eating warbler, the forested areas disturbed are not particularly unique in character in comparison to the remaining forested areas. Direct impacts to individuals of these species could occur if tree clearing occurs during the nesting season (spring/summer). Given the extensive areas of other suitable habitat, the relatively small area of forest lost to project implementation should have no significant impact on these species' overall population. Much of the loss of existing habitat can likely be mitigated by enhancing the remaining forested areas through appropriate forest management activities.

D. Mitigation Measures

The following mitigation measures are proposed to reduce impacts to protected species:

Hyssop Skullcap

The Project Sponsor wishes to take actions for the protection of this valuable resource. However, the specific location of the hyssop skullcap within the power-line right-of-way in the 2007 habitat investigation performed for a previous owner by PS&S was not noted. The Project Sponsor retained PS&S in 2010 to update and supplement the studies. However, the species was not observed and the location within the power-line right-of-way of this species is unknown. Known threats identified on the *Natural Heritage Program Guide* include succession of open grassland and meadow to woody plants as well as potential deer browsing. The power-line right-of-way on the Project Site will be subject to both threats, although with recent stabilization of the site by the Project Sponsor, including establishing wildlife fencing and maintaining open areas, these threats are anticipated to be diminished.

The Project Sponsor proposes to reinvestigate the power-line right-of-way during the flowering period of June and during the fruiting period of July and August. If this species is discovered upon reexamination, measures will be taken to mitigate possible impacts. This may include one or more methods to be taken including:

- Minor modification to the grading plan to avoid disturbance of colonies if practicable.
- Retention of a qualified horticulturalist or landscape architect to identify suitable habitat on site and a program to establish a stable colony of the plants from seed.
- Possible incorporation of the plant into the site's landscape plan if practicable and desirable.
- Making seed available to NYSDEC and through NYSDEC to organizations or individuals intending to reestablish the species throughout the region, if practicable and desirable to DEC.
- The Project Sponsor will coordinate all mitigation activities with NYSDEC.
- In the event that no plants are observed upon reinvestigation, the Project Sponsor will limit significant grading and clearing activities within the power-line right-of-way to the period from October 1 through March 31. This period corresponds with the period after which seeds have been dispersed and before germination. Disturbance during this period will have the lowest potential for harming plants that may exist unknown on the site.

Timber Rattlesnakes

As cited in the “Timber Rattlesnake Study”:

“Watchtower recognizes that rattlesnakes are an integral part of the ecosystem and have no reservations about sharing their property with them. Just as New York State has an obligation to protect its indigenous species; Watchtower also recognizes their obligation to protect those species on their land. In the event that a rattlesnake is found in a parking lot or near the buildings where it would be unsafe, Watchtower would call one of the NYS DEC listed Nuisance Rattlesnake Responder volunteers or have someone on staff trained in the protocols to safely move them.

“Further, prior to construction, the area of disturbance will be bounded by silt fence to deter Timber Rattlesnakes that may be foraging in the area from entering the construction area. After installation of the fence, the fence will be inspected to prevent potential trapping of snakes inside the construction area.”

Wood Turtles and Eastern Box Turtles

Prior to construction, the area of disturbance will be bounded by silt fence to deter wood turtles in the area from entering the construction area. After installation of the fence, the fence will be inspected to prevent potential trapping of wood turtles inside the construction area.

Eastern Bluebird

In order to avoid direct impacts to eastern bluebirds, tree removal will be conducted from October 1 through March 31, after the population has migrated for the winter. Although no Indiana bats were observed on site and mitigation is not necessary for that species, limiting removal of trees to winter months corresponds with best management practices for the protection of that species as well.

Further, after disturbance of the power-line right-of-way, bluebird nesting boxes will be installed in this area, along the dike, and along the power-line right-of-way north of Long Meadow Road (CR-84) to encourage reestablishment of the bluebird populations in this area following construction.

Aquatic Wildlife

In order to reduce thermal impacts to streams, stormwater runoff is being designed with the minimum amount of extended detention required. In addition, the use of stormwater ponds is currently not proposed as the *2010 New York State Stormwater Management Design Manual* advises that "available evidence suggests that these practices can increase stream temperatures." Underground detention chambers will be used instead to maintain lower temperatures than if exposed to the sun in shallow ponds.

Invasive Species

Non-indigenous potentially invasive plant species currently exist on the site. All disturbed areas of exposed soils shall be promptly re-vegetated with rye or other quick-growing grasses consistent with best management practices of the erosion control plan. Care will be taken not to track plant propagules (e.g., root fragments) into undisturbed areas or areas of exposed soils. Upon completion of disturbance to the area, the soil will be replanted with appropriate native species. Based on such practices, there should not be any significant increase in invasive plant species on the site.

E. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16. These alternatives are designated as (1) no-action, (2) educational facilities, (3) low-height, and (4) as-of-

right. Impacts to terrestrial and aquatic ecology associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor's proposed facility.

No-Action Alternative

Under a no-action alternative it is likely that the existing buildings will remain vacant. Under this alternative, the impact to terrestrial ecology will likely be diminished. The exception to this may be to the protected hyssop skullcap, Michaux's blue-eyed grass, and eastern bluebird. Both of these plants are dependent on habitat remaining open in an early successional state. Without proper management of the site in an open condition, encroaching forest will eventually make the site unsuitable for these species.

The Project Sponsor proposes to take several steps to construct improvements to the on-site dam. Further, the Project Sponsor will likely occupy the site for the foreseeable future. During this time, the Project Sponsor will ensure proper ongoing maintenance of the dam. Without these improvements and ongoing management, a deteriorating dam may eventually become a risk over time to the on-site and area aquatic ecology associated with Blue Lake and its receiving stream. This action does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990's by The King's College will be constructed. These facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students. Under this previously approved King's College proposal, much of the site south and west of Long Meadow Road (CR-84) will have been cleared for construction of the proposed educational facilities and significant amounts of surface parking.

Although The King's College DEIS stated on the basis of a 1988 letter from DEC that no habitat for threatened or endangered species was known to have existed on the site, this has clearly been found to be inaccurate. The King's College proposed disturbance of most of the land southwest of Long Meadow Road (CR-84), and based on the habitat assessments performed for the proposed World Headquarters of Jehovah's Witnesses, it is likely that all of the species identified as being potentially present on site will be impacted without some additional mitigation. This action does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower-profile structures at the Project Sponsor's facilities, which will require larger building footprints to accommodate the same square footage as the Project Sponsor's original proposal. As such, this alternative will increase the amount of area that will be disturbed during construction from 45 acres under the original proposal to 59 acres. Constructing a more sprawling site will result in more disturbance to wooded habitat. This will increase the potential for impacts. It is likely that direct impacts to species could be largely mitigated with the installation of silt fencing; however, such proposal will also result in a reduction in habitat for such species. This action meets the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property will be purchased by a private developer and that new residential lots will be constructed. Single-family residences will be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement.

This alternative has the greatest potential for impacting protected species. This proposal will introduce human presence throughout the entire site and introduce loop roads and building sites potentially fragmenting much of the site's ecological communities. Northeast of Long Meadow Road (CR-84)

crossings will be required over streams and wetlands, thereby potentially impacting aquatic habitats. Potential marbled salamander and wood turtle habitat is mostly contained northeast of Long Meadow Road (CR-84). These species will only be impacted under an as-of-right alternative that proposed construction northeast of Long Meadow Road (CR-84).

Most of the potential impacts of developing southwest of Long Meadow Road (CR-84) will continue to be a concern. Introduction of roads to the area surrounding the on-site ridge could pose significant potential impacts. Most of these impacts are avoided or minimized under the preferred alternative. This action does not meet the goals of the Project Sponsor. *

A. Introduction

The Project Sponsor engaged John Collins Engineers, P.C., to perform a study to determine the existing traffic conditions near the Project Site and the potential future traffic impacts (with and without the project) using the methodologies of the *Highway Capacity Manual 2000 (HCM 2000)*. Existing traffic volumes and movements were measured and serve as a baseline for calculating future traffic volumes and movements. Existing and future traffic estimates were compared against standards set forth by the Institute of Transportation Engineers. This Chapter summarizes the findings of this study. The complete report is provided in Appendix F-1, “Traffic Impact Study,” by John Collins Engineers, P.C.

B. Existing Conditions

Traffic Analysis

A traffic analysis was conducted at seven roadway intersections near the Project Site. The traffic analysis included a determination of existing roadway characteristics, traffic volumes, and turning movements, as well as Level of Service (LOS). Additionally, these intersections were evaluated under future 2015 conditions with and without the Project Sponsor’s project to determine the traffic impacts attributable to the Project Sponsor’s facility. The intersections evaluated are listed below and shown in Figure 7-1.

1. Sterling Mine Road (County Road 72 [CR-72]) and Long Meadow Road (County Road 84 [CR-84]).
2. Long Meadow Road (CR-84) and Eagle Valley Road.
3. Long Meadow Road (CR-84) and Woodlands Drive.
4. Long Meadow Road (CR-84) and IBM Entrance/Beech Road.
5. NYS Route 17A and Long Meadow Road (CR-84)/Clinton Road.
6. Long Meadow Road (CR-84) and Site Access Driveway.
7. Sterling Mine Road (CR-72) and Sister Servants Lane/Eagle Valley Road.

Roadway Characteristics

Long Meadow Road (CR-84), a minor arterial, is a two-lane roadway with a pavement width of approximately 24 feet and shoulder width varying from 4 to 8 feet. The speed limit on this roadway is 55 mph.

Sterling Mine Road (CR-72), a minor arterial, is a two-lane roadway with a pavement width of approximately 24 feet and shoulder width varying from 4 to 8 feet. A portion of this roadway consists of three lanes—two eastbound lanes and one westbound lane. The speed limit on this roadway is 40 mph.

Eagle Valley Road (West), a local road, is a two-lane roadway with a pavement width varying between approximately 22 feet and 24 feet and no defined shoulders. The speed limit on this roadway is 30 mph.

Eagle Valley Road (East), a local road, originates along Sterling Mine Road (CR-72) approximately 3 miles east of Eagle Valley Road (West). This is a two-lane roadway with a pavement width varying between approximately 20 and 24 feet and no defined shoulders. Eagle Valley Road (East) has a restricted weight limit of 4 tons, excluding local delivery traffic. The speed limit varies between 30 and 35 mph.

NYS Route 17A, a major arterial, is a four-lane divided state highway, which converts to an undivided two-lane highway approximately 1 mile west and 1 mile east of its intersection with Long Meadow Road (CR-84). The speed limit on this roadway is 55 mph.



Figure 7-1 Area Map/Intersection Study

Traffic Counts and Turning Movements

The number of cars and the direction of their movement were periodically recorded in the area of the Project Site between April, May, and June of 2010 and between October 2010 and November 2010. Traffic counts and turning movement data were collected as follows:

- Traffic counts were recorded along Long Meadow Road (CR-84) north of Eagle Valley Road and south of Woodland Drive from April 30, 2010 at 12:00 PM to May 14, 2010 at 11:00 AM. Additional traffic counts were conducted at this location from October 12, 2010 at 2:00 PM to November 2, 2010 at 12:00 PM to account for traffic associated with the Forest of Fear event held at Sterling Forest.
- Traffic counts were recorded along Sterling Mine Road (CR-72) in the middle of Babcock Hill Road driveways from April 30, 2010 at 12:00 PM to May 13, 2010 at 3:00 PM. Additional traffic counts were conducted at this location from October 12, 2010 at 1:00 PM to November 2, 2010 at 7:00 AM to account for traffic associated with the Forest of Fear event held at Sterling Forest.
- Traffic counts were recorded along Long Meadow Road (CR-84) north of Kings College and south of IBM south gate from April 30, 2010 at 12:00 PM to May 14, 2010 at 11:00 AM.
- Traffic counts were recorded along Route 17A (100 feet east of Katrina Court) from October 12, 2010 at 2:00 PM to November 2 at 12:00 PM.
- Turning movements were recorded in the area during various days of the week of May 3, 2010 and June 1, 2010. During the weekdays, turning movements were recorded from 6:45 AM to 9:00 AM and again from 4:00 PM to 6:30 PM to account for peak morning and evening traffic. On the weekend, traffic movements were recorded from 9:00 AM to 12:00 PM.

This information provided a baseline value (future no-build) for the existing traffic volume, which was projected using a growth factor of 2 percent per year to determine the anticipated traffic volume in 2015. Based on NYSDOT historical data contained in the NYSDOT Traffic Volume Data Reports, for the last 10-year period, growth on the area roadways was less than 1 percent per year. The 2 percent per year factor was used to also account for other miscellaneous development traffic in the area which may occur. The future no-build traffic volumes account for other area developments (Sterling Mine Estates, Sterling Mine Active Adult, Tuxedo Reserve and The Rahda Soami Society/Sisters Servants Development), but not for the Project Sponsor's project—see Appendix F-1 for a description of these developments.

To determine the traffic volume generated by the Project Sponsor's project, a traffic count was conducted at the Project Sponsor's Watchtower Educational Center (WEC), which is an existing facility located in Patterson, New York. Although larger in size and population than the proposed project, the Patterson facility is similar in type of use to the proposed facility and implements the same arrangement whereby personnel both live and work on site. The Patterson facility includes 783 dwelling units and can house a maximum population of 1,550 persons, while the proposed facility will include 588 dwelling units and a maximum population of 1,000 persons. Traffic volumes from the Patterson facility were used to estimate traffic volumes that could potentially be generated by the Project Sponsor's proposed facility at maximum population.

Figures 2 through 5 in Appendix F-1, "Traffic Impact Study," by John Collins Engineers, P.C., summarize the existing traffic volumes and turning movements at the various intersections.

Level of Service

The *2000 Highway Capacity Manual* published by the Transportation Research Board determines the efficiency of a roadway intersection in terms of its Level of Service (LOS). The LOS is assigned based on the amount of delay caused by the control device (e.g., a stop sign or a traffic signal) at the intersection.

Signalized and unsignalized intersections have different criteria for LOS. Table 7-1 summarizes these criteria.

Table 7-1 LOS Criteria for Signalized and Unsignalized Intersections

Level of Service (LOS)	Control Delay per Vehicle Signalized Intersections	Control Delay per Vehicle Unsignalized Intersections
A	≤ 10.0 seconds	≤ 10.0 seconds
B	>10.0 and ≤20.0 seconds	>10.0 and ≤15.0 seconds
C	>20.0 and ≤35.0 seconds	>15.0 and ≤25.0 seconds
D	>35.0 and ≤55.0 seconds	>25.0 and ≤35.0 seconds
E	>55.0 and ≤80.0 seconds	>35.0 and ≤50.0 seconds
F	>80.0 seconds	>50.0 seconds

The LOS at each intersection was determined for existing conditions, 2015-No-Build conditions, and 2015-Build conditions. This information is summarized in Table 7-2 and is based on traffic generation of the existing Project Sponsor’s facility.

A separate determination of the LOS was performed, as a sensitivity analysis, using trip generation data published by the Institute of Transportation Engineers (ITE) for Use Categories 710 (Office) and 230 (Townhome). The separate analysis conducted using the ITE Trip Generation Estimates was performed to determine whether the roadway network could accommodate the increase in traffic from the proposed site if the trip generations were in fact closer to ITE estimates.

The live-work arrangement employed by the Project Sponsor allows residents to walk to their work locations using either the tunnels connecting the buildings or outside sidewalks. Depending on assignment, some residents may even live and work in the same building. Therefore, a very limited number of external trips will be made during the weekday business hours. This is in contrast to traditional mixed-use developments where many residents live at one location, but commute to their work location via personal vehicles or public transportation.

Therefore, in the sensitivity analysis, it was deemed unrealistic to assume that the full number of townhome and office trips will be external to the site. Rather, based on engineering judgment and knowledge of the Project Sponsor’s Patterson facility, which employs the same live-work arrangement, it was assumed that 60 percent of the office-related trips and 40 percent of the townhome-related trips will be external to the site. Internal trips, for example, a trip from the residential portion to the office portion of the site, will not involve any vehicles entering or exiting the site; therefore, internal trips will not impact the external roadway system. Table 7-2 summarizes the LOS based on the ITE traffic volumes. Regardless of the data used, the analyses indicate that the LOS at each intersection is acceptable and that the intersections can accommodate the Project Sponsor’s facility.

Table 7-2 Overall Level of Service (LOS)

Intersection	Type ⁽¹⁾	2010 Existing ⁽²⁾				2015 No Build ⁽²⁾				2015 Build ⁽²⁾				2015 Build (Sensitivity Analysis) ⁽³⁾			
		AM	PM	Sat	Sun	AM	PM	Sat	Sun	AM	PM	Sat	Sun	AM	PM	Sat	Sun
Sterling Mine Road (C.R. 72) & Long Meadow Road (C.R. 84)	Signalized																
	EB	B [18.8]	A [5.6]	A [5.8]	A [5.8]	C [33.0]	A [5.8]	A [6.0]	A [6.2]	C [32.9]	A [5.9]	A [5.9]	A [6.1]	C [32.3]	A [6.0]	A [5.9]	A [6.1]
	WB	A [2.7]	B [11.4]	A [5.1]	A [4.0]	A [2.8]	B [15.0]	A [5.1]	A [3.8]	A [2.7]	B [14.7]	A [4.6]	A [3.6]	A [1.9]	B [14.2]	A [4.7]	A [3.5]
	SB	C [30.7]	C [28.8]	C [28.6]	C [28.3]	C [31.4]	C [29.4]	C [29.2]	C [29.5]	C [32.3]	C [31.4]	C [30.9]	C [30.4]	C [35.4]	C [34.6]	C [30.0]	C [30.2]
	Overall	B [18.1]	B [12.2]	A [8.5]	A [8.1]	C [27.9]	B [15.1]	A [8.9]	A [9.1]	C [27.8]	B [15.9]	B [10.6]	B [10.0]	C [26.4]	B [16.7]	A [9.6]	A [9.7]
Long Meadow Road (C.R. 84) & Eagle Valley Road	Unsignalized																
	WB	B [10.0]	A [9.6]	A [9.3]	A [9.2]	B [10.5]	A [9.9]	A [9.6]	A [9.8]	B [10.8]	B [10.5]	B [10.4]	B [10.2]	B [12.5]	B [11.2]	B [10.1]	B [10.2]
	SB	A [7.5]	A [7.5]	A [7.5]	A [7.4]	A [7.6]	A [7.6]	A [7.5]	A [7.5]	A [7.6]	A [7.7]	A [7.7]	A [7.6]	A [7.9]	A [7.8]	A [7.6]	A [7.6]
Long Meadow Road (C.R. 84) & Woodlands Drive	Unsignalized																
	WB	B [10.2]	A [9.9]	A [9.5]	A [9.3]	B [10.7]	B [10.3]	A [9.9]	B [10.1]	B [11.1]	B [11.4]	B [11.1]	B [10.7]	B [13.1]	B [12.4]	B [10.6]	B [10.6]
	SB	A [7.5]	A [7.5]	A [7.4]	A [7.4]	A [7.5]	A [7.6]	A [7.5]	A [7.5]	A [7.6]	A [7.7]	A [7.6]	A [7.6]	A [7.9]	A [7.8]	A [7.6]	A [7.6]
Long Meadow Road (C.R. 84) & IBM Entrance / Beech Road	Unsignalized																
	EB	A [9.0]	A [9.4]	A [8.8]	A [8.7]	A [9.2]	A [9.6]	A [9.0]	A [9.1]	A [9.2]	A [9.8]	A [9.2]	A [9.1]	A [9.5]	A [10.0]	A [9.1]	A [9.1]
	NB	A [7.6]	A [7.4]	A [7.4]	A [7.4]	A [7.6]	A [7.5]	A [7.5]	A [7.5]	A [7.6]	A [7.5]	A [7.5]	A [7.5]	A [7.7]	A [7.5]	A [7.5]	A [7.5]
NYS Route 17A & Long Meadow Road (C.R. 84) / Clinton Road	Unsignalized																
	EB	A [7.4]	A [9.3]	A [7.8]	A [7.6]	A [7.5]	A [9.6]	A [7.9]	A [7.7]	A [7.5]	A [9.6]	A [7.9]	A [7.7]	A [7.5]	A [9.6]	A [7.9]	A [7.7]
	WB	B [11.0]	A [7.6]	A [7.9]	A [7.7]	B [12.3]	A [7.8]	A [8.1]	A [8.0]	B [12.4]	A [7.8]	A [8.2]	A [8.0]	B [13.0]	A [7.9]	A [8.2]	A [8.0]
	NB	C [15.4]	B [13.5]	B [11.1]	B [10.1]	C [22.9]	C [16.6]	B [12.0]	B [11.6]	C [23.6]	C [17.6]	B [12.6]	B [11.8]	D [29.4]	C [18.9]	B [12.3]	B [11.8]
	SB	C [18.6]	C [17.3]	B [12.2]	B [11.0]	D [25.7]	C [21.9]	B [13.8]	B [12.7]	D [26.5]	C [23.0]	B [14.6]	B [13.0]	D [32.2]	C [24.1]	B [14.4]	B [13.0]
Long Meadow Road (C.R. 84) & Site Access Driveway	Unsignalized																
	EB	--	--	--	--	--	--	--	--	A [9.4]	B [10.0]	A [10.0]	A [9.5]	B [10.9]	B [11.2]	A [9.5]	A [9.4]
	NB	--	--	--	--	--	--	--	--	A [7.6]	A [7.6]	A [7.6]	A [7.6]	A [8.0]	A [7.7]	A [7.6]	A [7.6]
Sterling Mine Road (C.R. 72) & Sister Servants Lane/Eagle Valley Road	Unsignalized																
	EB	A [7.7]	B [10.7]	A [8.3]	A [7.9]	A [7.8]	B [11.4]	A [8.5]	A [8.0]	A [7.9]	B [11.6]	A [8.7]	A [8.1]	A [8.2]	B [11.8]	A [8.6]	A [8.1]
	WB	B [11.2]	A [7.8]	A [7.9]	A [7.9]	B [12.2]	A [8.0]	A [8.1]	A [8.7]	B [12.3]	A [8.3]	A [8.3]	A [8.9]	B [12.6]	A [8.4]	A [8.2]	A [8.8]
	NB	C [16.4]	A [9.3]	A [9.5]	A [9.5]	C [19.2]	B [12.3]	A [10.8]	B [14.4]	C [19.6]	B [12.8]	B [11.3]	C [15.0]	C [20.4]	B [13.2]	B [11.1]	B [14.9]
	SB	E [47.2]	D [32.1]	C [15.9]	B [13.6]	E [40.3]	D [26.1]	C [15.1]	C [22.0]	E [42.1]	D [27.7]	C [16.4]	C [23.6]	E [48.9]	D [29.5]	C [16.0]	C [23.3]

Notes:
 1. Based on the *Highway Capacity Manual 2000*, an overall LOS is determined for signalized intersections only. Unsignalized intersections are assigned an LOS for each approach.
 2. Data for 2010 Existing, 2015 No Build, and 2015 Build scenarios includes trip generation data obtained from the Project Sponsor's existing facility located in Patterson, NY.
 3. Data for 2015 Build (Sensitivity Analysis) includes trip generation data obtained from the Institute of Transportation Engineers (ITE).

Accident Data

A list of accidents along Sterling Mine Road (CR-72), Long Meadow Road (CR-84), and Route 17A was compiled using data from the New York State Department of Motor Vehicles for a 36-month period from March 2007 to February 2010. A total of 44 accidents were reported during this time period. Approximately 52 percent of the accidents involved animal action or slippery pavement. Another 34 percent was attributable to driver error, speed, or alcohol; and the remaining 14 percent was due to other or unknown causes. Table A in Appendix F-1, "Traffic Impact Study," by John Collins Engineers, P.C., contains a list of these accidents.

It is not believed that the Project Sponsor's project will affect the number of accidents in the area since, as shown in Table 7-2 there is minimal impact to the LOS at nearby intersections.

Sight Distance Evaluation

Based on Automatic Traffic Recorder (ATR) Machine data collected along Long Meadow Road in the vicinity of the site access, it was determined that the 85th Percentile Speed is 60 miles per hour (mph). The existing sight distance was also measured at the site entrance which indicates that when looking left (north) from the entrance the sight distance is approximately 1,100 feet, while the sight distance to the right (south) is approximately 885 feet. Using Exhibit 9-55 on page 661 of the American Association of State Highway and Transportation Officials (AASHTO) publication titled "A Policy on Geometric Design of Highways and Streets," dated 2004, it was determined that for a design speed of 60 mph, a stopping sight distance of 570 feet and an intersection sight distance of 665 feet is required. Therefore, a vehicle traveling at 60 mph along Long Meadow Road would require a stopping sight distance of 570 feet to safely stop prior to the intersection. A vehicle entering the intersection from the site access would require an intersection sight distance of 665 feet to make a left turn onto Long Meadow Road without vehicles on Long Meadow Road having to slow down by more than 15 mph. Since the provided sight distances are greater than the AASHTO requirements, the sight distance requirements are met at the project's site access.

Public Transportation

Presently there is no demand for public transportation created by the site. The property has a full-time caretaker couple that has their own transportation. Currently there are no public transportation alternatives, which operate in the immediate vicinity of the proposed development along Sterling Mine Road or Long Meadow Road. However, in the Village of Sloatsburg and Town of Tuxedo there are Metro-North/New Jersey Transit train stations, which operate along the Port Jervis Line. The Sloatsburg station is approximately 5 miles from the proposed development while the Tuxedo Station is approximately 8 miles away. The Sloatsburg station contains 80 commuter parking spaces and no metered spaces while the Tuxedo station contains 245 commuter parking spaces as well as 24-hour metered parking spaces. Both stations provide free parking on weekends. A round-trip ticket from each of these stations to Penn Station in New York City costs approximately \$23.00. Tickets are also available for trips to other destinations along the Port Jervis Line. Additional information on each station as well as train schedules to and from New York City are contained in Appendix F-1, "Traffic Impact Study," by John Collins Engineers, P.C.

New Jersey Transit operates two buses from the Warwick Park and Ride to the New York City Bus Terminal. The Warwick Park and Ride is approximately 18 miles from the site location and a round-trip ticket for this bus costs \$30.00. The Route 196 is an express bus with 13 buses to New York City during the Morning Peak and 13 buses from New York City during the PM Peak period. The Route 197 is a local bus, which runs less frequently throughout the day both to and from New York City. Coach USA also operates a commuter bus route from Tuxedo and Sloatsburg to the Port Authority Bus Terminal in New

York City. Tickets for this route can be bought in Tuxedo at Bently's Deli on Route 17 and in Sloatsburg at Haas Pharmacy at 62 Orange Turnpike (Route 17). The bus stops at each of these locations. Free parking is also available at the Tuxedo stop as it is a Park and Ride location. A round-trip ticket from Sloatsburg to New York City costs \$25.90 while a round-trip ticket from Tuxedo costs \$27.50. The bus schedules are provided in Appendix F-1, "Traffic Impact Study," by John Collins Engineers, P.C. Table 7-3 below summarizes the buses and trains including the parking availability for each route, the cost of a round-trip ticket, the frequency of buses for each route, and the average length of each trip.

Table 7-3 Public Transportation Options to NYC

Type	Commuter Parking	Round-Trip Ticket Cost	Frequency	Average Trip Length
NJ Transit Bus from Warwick (Route 196)	Free Park & Ride	\$30.00	To NYC Departs every 10-15 mins. From 4:55 AM to 6:58 AM	1 hr., 43 mins.
			From NYC Departs every 15-20 Mins. From 3:00 PM to 7:10 PM	1 hr., 26 mins.
NJ Transit Bus from Warwick (Route 197)	Free Park & Ride	\$30.00	To NYC Departs at 4:38 AM and every 2 hours beginning at 8:10 AM	2 hr., 12 mins.
			From NYC Departs every 2 hrs. from 7:30 AM to 1:30 PM and at 7:30 PM, 9:30 PM, and 11:00 PM	1 hr., 57 mins.
Coach USA Bus from Tuxedo	Free Park & Ride	\$28.00	To NYC Departs every 15 mins. During AM Peak	1 hr., 10 mins.
			From NYC Departs every 5-15 mins. During PM Peak	0 hr., 56 mins.
Coach USA Bus from Sloatsburg	Unknown	\$26.00	To NYC Departs every 15 mins. During AM Peak	1 hr., 10 mins.
			From NYC Departs every 5-15 mins. During PM Peak	0 hr., 56 mins.
Train from Tuxedo	245 spaces with 24-hour metered parking, and free on weekends	\$23.00	To NYC Departs every 30 mins. During AM Peak	1 hr., 10 mins.
			From NYC Departs every 30-50 mins. During PM Peak	1 hr., 5 mins.
Train from Sloatsburg	80 spaces, free on weekends	\$23.00	To NYC Departs every 30 mins. During AM Peak	1 hr., 10 mins.
			From NYC Departs every 30-50 mins. During PM Peak	1 hr., 0 mins.

Construction Traffic

Construction is proposed to begin upon completion of the permit process in 2012 and is anticipated to continue for approximately four years. Once underway, construction truck traffic will include between 30 and 50 trips per day for approximately 3.5 years. Truck traffic will be present for approximately 3 to

4 years and will include dump trucks removing excess site material, along with semi-flatbed and box trucks transporting construction materials. The majority of the trucks will travel on Long Meadow Road south from 17A. The others will travel Highway 17 to Sterling Mine Road (CR-72) to Long Meadow Road (CR-84).

Special Event Traffic

Three special events that are projected to increase traffic will be held at the Project Site during the year. These events will take place the same time each year: (1) on the second Saturday in March; (2) on the second Saturday in September, and (3) on the first Saturday in October. All the events commence at 10:00 AM and are three hours long. Approximately 480 vehicles are projected to arrive at the site from other locations for these special events. It is projected that approximately 13 percent (63 vehicles) of off-site guests will arrive the night prior to the event. Another 22 percent (106 vehicles) will arrive before 9:00 AM the day of the event. The remaining 65 percent (311 vehicles) are projected to arrive during the last hour, or from 9:00 AM to 10:00 AM. The proposed action will include a total of 1,020 parking spaces, so all vehicles on site during these special events will be accommodated on site. Vehicular traffic exiting the site following the events is spaced out over the afternoon and evening, since many guests for the special events remain after the conclusion of the program to socialize with residents throughout the afternoon and evening.

Pedestrian and Bicycle Traffic

Provision will be made for bicycle parking at various locations throughout the site, although on-site bicycle traffic is expected to be minimal. Signage, speed tables, and striping will be provided to maintain low speeds (traffic calming) and to ensure pedestrian and vehicle traffic do not conflict. Pedestrian crosswalks will be provided to ensure safe and effective pedestrian travel.

C. Potential Impacts

The Project Sponsor's proposed project is not expected to have significant impacts on future traffic volumes, accident rates, or the public transportation system.

Based on trip generation data obtained from the Project Sponsor's Patterson facility, three of the seven intersections studied are expected to experience a minimal decrease in LOS under the 2015-Build scenario when compared to the 2015-No-Build scenario.

- The intersection of Sterling Mine Road (CR-72) and Long Meadow Road (CR-84) is expected to experience additional delays of up to 1.7 seconds per vehicle, lowering the LOS from A to B during the Saturday and Sunday peak hours.
- The intersection of Long Meadow Road (CR-84) and Eagle Valley Road will experience additional delays of up to 0.8 second per vehicle, decreasing the LOS from A to B during the weekday PM peak hour and during the Saturday and Sunday peak hours.
- The intersection of Long Meadow Road (CR-84) and Woodlands Drive will experience delays of up to 1.2 seconds per vehicle, decreasing the LOS from A to B during the Saturday peak hour.

Periodic road shoulder closures may be experienced during the installation of the force main, electrical work, spillway repairs, and possible gas-line installation.

The site entrance will be reviewed with the Orange County Department of Public Works (DPW) to determine if additional turning lanes and/or road widening are warranted for Long Meadow Road (CR-84) at the site's entrance.

Residents will need to travel to nearby train stations, airports, or one of the other complexes operated by the Project Sponsor for either personal or Project Sponsor-related business. Those without personal transportation or who wish not to use their personal vehicles will have an impact on the public transportation system, if other transportation arrangements are not made.

Traffic to the Project Site during the three weekends that special events are held may adversely impact traffic at nearby intersections. The greatest number of vehicles is projected to arrive during the one hour period (9:00 AM to 10:00 AM) prior to the start of the event.

D. Mitigation Measures

The Project Sponsor will comply with all local, county, and state regulations for construction traffic and road closures. Construction traffic will be limited to normal working hours.

During construction, truck traffic to and from the site will be routed along Long Meadow Road (CR-84), Sterling Mine Road (CR-72), NYS Routes 17 and 17A. No construction traffic will be routed along Eagle Valley Road due to the 4-ton weight limit. Other than coordination with the Orange County DPW, no further mitigation measures are proposed for traffic or transportation.

When completed, the majority of the residents of the facility will have private vehicles. Where necessary, Project Sponsor-provided shuttle service, or ride-sharing arrangements between residents will provide access to the train station, nearby airports, or the Project Sponsor's other complexes.

As has been done at other complexes owned and operated by the Project Sponsor, traffic attendants will be provided during special events to direct traffic. Half of the attendees will be instructed to arrive at the site from the north, utilizing Route 17A and Long Meadow Road (CR-84). The other half of attendees will be instructed to arrive at the site from the south, utilizing Sterling Mine Road (CR-72) and Long Meadow Road (CR-84). Both entrances to the site will be opened to minimize congestion on Long Meadow Road (CR-84). Exiting the site after the program will be managed in a similar fashion.

E. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16. These alternatives are designated as (1) no-action, (2) educational facilities, (3) low-height, and (4) as-of-right. Traffic impacts associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor's proposed facility. Three of the four alternatives do not meet the goals of the Project Sponsor. The fourth alternative results in more impervious cover and greater site disturbances. Thus, the proposed action is preferred over the alternatives.

No-Action Alternative

Under this alternative, the land would remain in its existing state including the abandoned INCO facility. No change to existing traffic or transportation would be seen under this alternative. This alternative does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990's by The King's College would be constructed. These facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students. Vehicular traffic generated by the college is estimated at 218 trips during the AM peak hour and 358 trips during the PM peak hour. The number of trips generated during the AM peak hour is approximately four times higher than the Project Sponsor's. Trips generated during the PM peak hour are approximately two times higher. Although the LOS at nearby intersections is expected to be similar to the Project Sponsor's original proposal, the LOS at the

site entrance would be expected to decrease from “A” under the Project Sponsor’s proposal to “B” for The King’s College proposal. This alternative does not meet the goals for the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower-profile structures at the Project Sponsor’s facilities, which would require larger building footprints to accommodate the same square footage as the Project Sponsor’s original proposal. This alternative would not change the proposed number of individuals that would live and work at the site. Thus, reducing building heights would not impact the volume of vehicular traffic or the expected LOS of nearby intersections. Accident rates would also not be affected by this alternative. This alternative meets the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property would be purchased by a private developer and that new residential lots would be constructed, which would be unrelated to the Project Sponsor’s operations. Single-family residences would be built at a density of 1 unit per 6 acres of land, which would result in a population of approximately 113 residents (assuming 25 homes with a population density of 4.52 residents per household¹). This number of residents is not expected to impact traffic, transportation, or LOS at nearby intersections. However, additional entrances to the subdivision would need to be constructed and sufficient sight distance would need to be maintained at each entrance. This alternative does not meet the goals of the Project Sponsor. *

¹ Robert W. Burchell, Ph D., David Listokin, Ph D., and William R. Dolphin, M.A. Residential Demographic Multipliers—Estimates of the Occupants of New Housing.(New Brunswick, N.J.: Center for Urban Policy Research—Edward J. Bloustein School of Planning and Public Policy—Rutgers, The State University of New Jersey, 2006)

A. Introduction

This Chapter will provide a discussion of the existing community services and facilities servicing the Project Site. This Chapter will disclose the existing service surplus or deficiencies that may exist for each service provider. The anticipated demand for service by the proposed facility will be discussed as will features of the proposal that are intended to reduce the demand on community services or facilities or to aid in the safe provision of emergency services on site. It should be noted that no person under the age of 19 is permitted to join the Worldwide Order or to reside on site. Members of the Worldwide Order who become pregnant during their residency leave the order in order to properly raise their family. Since there are no impacts to the Tuxedo Union Free School District, there is no analysis of the School District facilities contained herein.

Generally, the programmatic, operational, and physical features of the proposed project will significantly limit the demand for community, especially emergency, services compared to alternative uses of the site. On-site security and medical staff as well as fire suppression and recreational facilities that are proposed as part of the proposed project will significantly reduce the need for services provided by local taxing jurisdictions. The no-action alternative would see the existing facility remain vacant and return to a non-stabilized unsecured state, which would constitute an attraction to vandals and pose a safety hazard to trespassers. As-of-right alternatives such as the residential subdivision of the property would increase the demand for school services as well as local emergency services and recreation. Previously approved plans for an educational facility would increase the demand for community services as well, but this demand would be partially mitigated by the provision of on-site resources similar to the proposed project.

B. Existing Conditions

Police Protection

The Project Site is served by the Town of Warwick Police Department, which provides 24-hour coverage to an area encompassing approximately 104 square miles and includes both the Town and Village of Warwick. The department consists of 33 officers, 6 of whom are part time for a full-time equivalent (FTE) of 30 officers¹. The department has 15 marked police vehicles, 3 unmarked cars, 5 bicycles, and 3 motorcycles. The police force operates out of Town Hall, located at 132 Kings Highway, approximately 8 miles from the Project Site. Because of the intervening terrain between the Warwick Police Department and the Project Site, the shortest driving route between the site and Police Department is approximately 16.1 miles.

Based on the 2008 population estimate of the Town (31,288), the Police Department currently has a staffing level of approximately 1 full-time equivalent police officer for every 1,000 district residents. Standards promulgated by the Urban Land Institute in their publication, *Development Impact Assessment Handbook*² are for 2 full-time equivalent police personnel and 0.6 police vehicles per 1,000 residents (approximately three-fourths of which are needed to serve the residential population and one-fourth of which serve nonresidential uses). Counting only motor vehicles, the Police Department currently

¹ Based on a conversation with Warwick PD Chief Thomas McGovern, Jr., 6 part time police officers are equivalent to three full-time officers.

² Burchell, Robert W., David Listokin, et al. *Development Impact Assessment Handbook*. Washington, D.C.: ULI-the Urban Land Institute, 1994, p. 93.

maintains 0.64 vehicles per 1,000 residents. This indicates that the existing police force operates at approximately one half of the national planning standard. Police Chief Thomas McGovern³ verified that the department is currently also operating with fewer officers than New York State standards dictate based on calls for service.

Additional police coverage for the Project Site is available from the Orange County Sheriff's Office headquartered in the Village of Goshen; however, this department is at a distance of approximately 30 miles.

The New York State Police Troop F provides coverage for a five-county area (Rockland, Orange, Ulster, Sullivan, and Green counties) and employs approximately 500 personnel. Troop F has approximately 20 stations and is capable of drawing manpower from any of these stations in the event of an emergency. Troopers will respond to any complaint received regardless of jurisdiction. Troop F also provides special experts to local forces, including homicide investigators when requested.

Fire Protection

The Project Site is located in the Greenwood Lake Fire and Ambulance District. This district maintains a contract agreement with the Tuxedo Fire District to provide response to the Project Site. The Eagle Valley Firehouse is the closest Tuxedo Fire District facility and is located at 14 Scott Mine Road in Tuxedo, New York, approximately 2.5 driving miles away. The response time to the site is anticipated to be approximately 5 minutes. Other Tuxedo Fire District facilities are the Sterling Forest Fire Department at 1664 Sterling Mine Road, Tuxedo, New York, approximately 5.8 driving miles away, and Tuxedo Park Fire Department at 2 Contractor's Road in Tuxedo approximately 8 driving miles away. The Town of Warwick and the Town of Tuxedo participate in the Orange County and New York State 911 Emergency System which means all calls to 911 are dispatched through the County 911 Service Center in the Town of Goshen to the appropriate service provider.

Meetings were conducted in November 2010 with the Greenwood Lake Fire District and February 2011 with the incoming Chief of the Tuxedo Fire District. The following information was provided by Chief Ralph Brooks and Chairman Charles Jones of the Tuxedo Fire District:

- The department has 40 volunteers.
- Fire-fighting equipment includes:
 - Ladder 575, which is a 1997 Smeal with 75-foot rear-mount aerial ladder, 1500-gpm pump, and 500-gallon tank.
 - Rescue 568, which is a 1991 Pierce E-One with 18-foot walk-in heavy rescue ladder.
 - Engine 566, which is a 1987 Pierce E-One with 1500-gpm pump and 1000-gallon tank.
- The response time to the Project Site is approximately 10–15 minutes.

Ambulance

The Project Site is serviced by the Greenwood Lake Ambulance District which is located at 74 Windermere Avenue in Greenwood Lake and serves a 40-square-mile district which includes the Village of Greenwood Lake and portions of the Town of Warwick from Mount Peter to Tuxedo Mountain and to the Chester Town line, from the east and west shore lines to the State border and from the Appalachian Trail to the Lake itself. According to the Corps web site they currently have 45 members, three ambulance vehicles, and respond to an average of over 500 calls per year. The district boundaries

³ Telephone Interview of Police Chief Thomas McGovern by Max Stach of Turner Miller Group. January 14, 2011.

approximate the boundaries of Orange County Decennial Census Tract 148. The most recent population data (2000) for this census tract indicate a total population of 6,618 persons. Based on this population, the Greenwood Lake Volunteer Ambulance Corps provides an approximate service level of one volunteer staff person per 147 persons and responds to one call per 13.26 persons. The Urban Land Institute promulgates a standard of approximately 3 full-time personnel per 30,000 residents in their publication *Development Impact Assessment Handbook*.⁴ The Greenwood Lake Ambulance Corps provides the equivalent of 204 volunteer personnel per 30,000 residents. Although it is difficult to determine the equivalency of volunteer and full-time equivalent professional staff, using a ratio of 3 volunteers to a full-time professional, the Corps provides approximately 20 times the national standard.

According to the *Town Of Warwick, NY, 2008 Comprehensive Plan*, all districts participate in the State and County 911 Emergency System and offer reciprocal mutual aid to each other and adjacent towns and counties. Private ground Advanced Life Support (paramedic level training) is immediately available via local services as well as Rapid-Air Advanced Life Support which is available through the State Police helicopter lifeguard unit stationed at Stewart Airport and State Flight services out of Westchester Medical Center.

The Turner Miller Group (TMG) contacted the president of the Ambulance Corps, Eileen Diffley, by letter on January 7, 2011, to gather information on existing Corps equipment, staff, facilities, and ability to service the Project Site, but without response (see Appendix A-12). Subsequent efforts by TMG to contact the Ambulance Corps by phone were unfruitful.

Recreation Services

The following parks and recreational facilities exist in the Town of Warwick—see Table 8-1:

Table 8-1 Existing Park and Recreation Facilities

Name of Facility	Location	Facilities Offered	Size (Acres)
Neighborhood and Community Parks			
Warwick Town Park / Union Corners Park	Union Corners Road	Pavilions, golf course, baseball diamonds, soccer fields, playground equipment	47.9
Union Corners Sports Complex	Union Corners Road	Six multi-use fields, little league fields	64.3
Pine Island	Kay Road at Treasure Lane	Baseball fields, basketball court, playground, tennis court, and fitness station	4.8
Airport Park	Airport Road	Playground area, basketball courts, baseball diamond	4.4
Beaches			
East Shore Beach	Gamache Lane	Pavilion, playground equipment, beach with swimming area, volleyball courts	38
Wickham Lake	Off County Route 13	Fishing , boating, beach area	13

⁴ Ibid.

Natural Resource Areas			
Cascade Park	Cascade Lake Road	Fishing, picnicking, nature trails, natural area	504
County , State, and Nationally maintained park lands within the Town of Warwick			
Hickory Hill County Park	Off Route 17A	Picnic area, baseball fields, 18-hole golf course	708.5
Sterling State Forest	Southern tip of Town, accessible via Route 84 in the Town of Tuxedo	Fishing, biking, hunting, hiking, boating, natural trails	17,988, 8,668 within Town of Warwick
Wallkill River National Wildlife Refuge	Southwest portion of the Town	Nature trails, wildlife observation, fishing, canoeing	4,800, 222 within Town of Warwick

Source: Town of Warwick web site and Town Recreation Plan.

A number of pocket parks and small nature trails also exist throughout the Town as well as Mount Peter's Ski Area (privately-owned facility). According to the Town's Recreation Plan, the Town is in the process (in 2006) of clearing an additional 10 acres at the Union Corners Park in order to accommodate additional facilities. Sterling Forest State Forest is the closest facility to the Project Site. Figure 8-1 Community Services and Facilities shows the relationship between the site and area community services and facilities.



WATCHTOWER DEIS
 Community Services & Facilities
 Town of Warwick
 Orange County, New York

Legend

- Parcels
- Municipal Boundaries
- Watchtower Site
- County Parkland
- Waterbodies
- Community Services
- Roads

Locus Map

Map Number
1
 December 2010
 Prepared by: Turner Miller Group

Figure 8-1 Community Services and Facilities

C. Potential Impacts

Police Protection

Anticipated Demand

The proposed project will increase the number of residents within the Town of Warwick Police Department jurisdiction. Based on Urban Land Institute national standards, 2 police personnel are recommended for every 1,000 persons. Based on these national standards, the proposed development would require the addition of between 1.7 and 2.0 full-time equivalent police positions. Based on existing Warwick staffing levels, 0.85 to 1.0 full-time equivalent positions would be needed to maintain current service ratios. However, it is noted that the needs of the future residents will not be equivalent to the needs of the existing average Warwick resident.

The impacts of the proposal upon local law enforcement are expected to be comparable to the Project Sponsor's similar existing upstate facilities. The following comments from the Town of Shawangunk Police Department were reported in the *2008 Watchtower Farms Improvements Draft Environmental Impact Statement (DEIS)* prepared for improvements to the Project Sponsor's existing facility, which has over 1,000 residents in the Town of Shawangunk, Ulster County, New York:

"The Town of Shawangunk Police Department has responded to calls for assistance with petty mischief by outside parties, minor property damage, vehicle collisions, incomplete or abandoned 911 calls, and other miscellaneous matters. On average, they respond to calls relating to Watchtower Farms four times per year."

In response to a similar inquiry by the Project Sponsor related to the expansion of their Patterson Educational Facility, the Putnam County Sheriff's Office wrote:

"We do not anticipate a great impact to the Putnam County Sheriff's Department in providing police protection to the future residents of the Watchtower Site Expansion Project."—See Appendix A-6.

Between January 1, 2010, and December 31, 2010, the Warwick Police Department responded to 24,952 calls for police services.⁵ This is approximately 0.80 calls per Warwick resident per year. By comparison, the existing Project Sponsor's facility in Shawangunk generates a call rate of 0.004 calls per resident per year. Another way of stating this is that the entire 850- to 1,000-resident proposed development is likely to demand as many annual calls for service as five typical Warwick residents or approximately two average Warwick households.

Many factors contribute to this much lower-than-normal demand on police services. First, only adults will reside on site, and all residents will be members of a religious order. Before they become members of the Worldwide Order, members go through a strict screening process in order to verify, to the extent possible, that they are law-abiding and honest. Further, on-site security staff will maintain 24/7 physical and video surveillance of the property, buildings, and related facilities, which helps deter trespassing and vandalism. Security staff will receive training to assist with on-site storm preparation, accidents, intruders, stranded vehicles, and other on-site emergencies, contacting appropriate authorities as necessary. Facility activities, including emergency incident response, will be coordinated from a central desk, which will be equipped with radio and telephone communication. This central station will also be the monitoring location for all fire and building alarms. There will be full emergency back-up power generation facilities

⁵ Letter from Thomas E. Schweizer – Communications Supervisor – Town of Warwick Police Department – January 19, 2011

available in the event of an outage. Generators will be housed either within buildings or outdoors. Where installed outdoors, generators will be provided with sound-attenuated enclosures that offer an average of 75 dB(A) sound level at 23 feet using 2 inches of acoustic insulation and provided with insulated critical exhaust silencers.

Based on experience with the Project Sponsor's other facilities, it is unlikely that the proposed project would result in significant impacts to the Warwick Police Department.

Fire Protection

Anticipated Demand

The project will increase the number of residents within the Town of Tuxedo Fire District. Based on Urban Land Institute national standards, 1.65 full-time fire personnel are recommended for every 1,000 persons. Based on these national standards, the proposed development would require the addition of 1.4 to 1.65 full-time equivalent firefighter positions. According to the International Standards Organization (ULI does not suggest a standard), 3 volunteer firefighters are equivalent to a career firefighter. Based on these standards the proposed facility would demand an additional 4.2 to 4.95 volunteer firemen. However, it is noted that the needs of the future residents will not be equivalent to the existing needs of the average Warwick resident.

The construction and operation of the proposed project would be similar to the Project Sponsor's existing facility in Patterson, New York. The Patterson Fire Department No. 1, Inc., in a letter dated April 20, 2009, provided the following comments concerning its interactions with the Project Sponsor:

"According to our records, we have responded to approximately twelve fire calls and approximately fifteen EMS calls at this facility in the last ten years. These records were obtained through an address query of our NYFIRS (Fire Records) database. Of these, at least half of the fire and EMS runs were for motor vehicle accidents in the vicinity of the facility, which is located along a stretch of busy State Route 22. The remaining fire calls were for good intent, smoke investigation, rubbish, hazardous condition, and one building fire. All of these were minor in nature, lasting between 15 minutes and about one hour, with the exception of the building fire. The building fire, which occurred on 11/8/06, required the response of three fire departments, operating for approximately three hours. It started from a work light, accidentally knocked over into blown cellulose insulation in the attic of one of the office buildings. The fire was detected by the building's automatic fire alarm system, was small in nature, but required extensive overhaul and salvage operations due to the cellulose insulation and location of the fire in the attic. . . . I would characterize our responses to the facility over the last ten years as infrequent. All responses to the facility that I am aware of were met by security/site personnel, who quickly and professionally briefed the responders on the situation, and escorted them to the area. In addition, the staff at the Watchtower Educational Center has been extremely cooperative with the Patterson Fire Department, allowing us access to their facilities/properties for training purposes and to conduct our annual hose testing. In short, they have been good neighbors to the Patterson Fire Department"—see Appendix A-7.

Correspondence from the Shawangunk Valley Fire District, which serves the Project Sponsor's facility in the Town of Shawangunk, dated March 10, 2010, (see Appendix A-8) stated the following:

"The purpose of this correspondence is to describe the impact that the Watchtower Bible and Tract Society (Watchtower Farms) has on the volunteer fire and ambulance services provided by the Shawangunk Valley Volunteer Company. Our experiences with Watchtower Farms have included a spirit of cooperation and of support from the Watchtower Farm administration and personnel to our fire company. On average, the Shawangunk Valley Fire Company response history is minimal and may incur an average of only once per year. Our information does not include any statistical data on matters that the Watchtower Farm manages within the ability of

their own resources. We find the Watchtower Farms to be very self-sufficient and most willing to contribute and participate in community projects. Overall, we find the Watchtower Farms brings a positive presence to our community.”

Between January 1, 2010, and December 31, 2010, the Warwick Police Department dispatched 758 calls for fire services.⁶ This is approximately 24.23 calls per 1,000 Warwick residents per year. By comparison, the existing Project Sponsor’s facility in Patterson (current design population of 1,550 persons) generates 0.396 calls per 1,000 residents per year and the Shawangunk facility (design population of about 1,350 persons, recently increased to about 1,560) generates a call rate of 0.66 calls per 1,000 residents per year. The Shawangunk facility contains the Project Sponsor’s printing facilities, a more intensive use than the office and educational uses that are prevalent in the Patterson facility and that are planned in the proposed project. It is likely that the newer and more office-oriented proposed facility will demand service at a rate similar to the Patterson facility. Based on this, it may be assumed that the proposed facility will demand 0.396 calls per year or approximately one call for service every three years. Another way of stating this is the entire facility will generate the same demand annually as approximately 16.33 average Warwick residents (approximately 61 Project Sponsor’s residents demand the same service as one Warwick resident). Based on a 2000-Census-average-household size of 2.74 persons, this is equivalent to approximately 5.96 average Warwick households. See the “Mitigations” section for factors that will contribute to this much lower demand on fire services.

On February 21, 2011, a meeting was held between representatives of the Project Sponsor and members of the Tuxedo Fire District. In that meeting Chief Ralph Brooks and Chairman Charlie Jones along with other members of the Fire Department reviewed the drawings and design approach being proposed by the Project Sponsor. They indicated their general agreement with what is planned and made the following recommendations:

- 14-foot vertical clearance for all fire truck access routes.
- Verify that their trucks can maneuver the stabilized path along building face; they had their doubts about the turning radii used.
- Reinforced soil areas for fire trucks need to be clear of snow.
- In parking garages, design stairways that reach the roof, thus smoke can vent outside away from the attached buildings.
- Recommend secondary exits from tunnel.
- Recommend providing at least two Fire Department Connections (FDCs) at each building. Treat the Administration/Home offices as two buildings and provide four FDCs.
- Provide drop keys for elevators on each floor.
- Keep tunnels well lit from the floor up. Glowing tape is very helpful as well.
- It would be helpful if the second-to-last turnabout be sized for full turn of their trucks.
- Request self-closing doors controlled by the fire alarm system to be installed.
- Provide means of smoke venting in all structures.
- Consider a vehicle that can enter the garage structure to address a car fire. Car fires are more difficult to address with just men with hoses.

⁶ Letter from Thomas E. Schweizer, Communications Supervisor—Town of Warwick Police Department, January 19, 2011

The Project Sponsor will address these recommendations in the design phase.

Ambulance

The project will increase the number of residents within the Greenwood Lake Ambulance Corps jurisdiction. Based on Urban Land Institute national standards, 4.1 full-time EMS personnel are recommended for every 30,000 residents. Based on these national standards, the proposed development would require the addition of 0.12 and 0.137 full-time equivalent EMS positions. Because the existing Ambulance Corps has well over the national standard staffing level, it is assumed that the proposed facility would not result in significant service deficits. Further, it is noted that the proposed facility will include an on-site infirmary with licensed physicians, registered nurses, and certified emergency medical technicians present on site at all times. Additionally, a basic-life support (BLS) ambulance will be maintained on site for non-critical transport of patients to area medical facilities. The closest emergency medical facilities are Good Samaritan Hospital approximately 7.7 vehicle miles away and St. Anthony's Community Hospital approximately 19 vehicle miles away.

The ambulance policies and procedures for the proposed project will have been developed in harmony with the *NYS EMS Code* (Part 800) and Article 30 of the *NYS Public Health Law for EMS*. In addition, several automatic defibrillators will be located in various buildings, and the on-site registered nursing staff will have been trained in advanced cardiac life support. Many dozens of occupants also receive regular refresher training in cardio-pulmonary resuscitation (CPR).

As an example of the typical response process currently in place at the Project Sponsor's three existing facilities, the 24-hour on-site medical dispatch desk immediately informs the on-site responders who include emergency medical technicians, doctors, and registered nurses. If necessary, 911 is called for additional help.

Written comments have been received from emergency service providers in the Town of Patterson, New York (see Appendix A-7) and the hamlet of Wallkill, New York (see Appendix A-8) concerning their interactions with the Project Sponsor's facilities in those locations. In their letter, the Town of Patterson Assistant Chief Matthew J. Szpindor said:

"I would characterize our responses to the facility over the last ten years as infrequent. All responses to the facility that I am aware of were met by security/site personnel, who quickly and professionally briefed the responders on the situation, and escorted them to the area."

In the Shawangunk Valley Fire District letter (Wallkill), the Chairman of the Board of Fire Commissioners, Mr. Gerald Pratt, said in part:

"On average, the Shawangunk Valley Fire Company response history is minimal and may incur an average of only once per year...We find the Watchtower Farms to be very self-sufficient and most willing to contribute and participate in community projects. Overall, we find the Watchtower Farms brings a positive presence to our community."

The proposed project designates major access to all the residence buildings as "no parking—fire zones" in order to allow access to these areas by emergency vehicles at all times.

Recreation Services

The increased number of residents (850 to 1000) may increase usage of local parks and recreation facilities. The Urban Land Institute promulgates a standard of approximately 6.25-to-10.5 acres of parkland per 1,000 residents, approximately 1.25 to 2.5 of which should be active local parkland. Using this rate, the projected residents of the project would require 5.31-to-10.5 acres of parkland, approximately 1.06-to-2.5 acres of which should be local and actively-programmed recreation land. The amount of active parkland is more than satisfied on the proposed project's site. For specifics of site

recreational facilities, refer to the “Mitigation Measures” section. Also of note is the site’s location in an area noted for passive park resources. The site is surrounded on several sides by Sterling Forest State Park which contains almost 22,000 acres of pristine natural parkland. Additionally, the site is very close to Harriman State Park, another park within the Palisades Interstate Park System that contains more than 200 miles of hiking trails and several public beach and camping facilities. The site is also virtually contiguous with the Ringwood Manor State Park and Wanaque Wildlife Management Area in New Jersey which provide additional outdoor passive park opportunities. These large state parks more than satisfy the recreational needs of the future residents for approximately 6.75 acres of passive parkland.

D. Mitigation Measures

Police Protection

The proposed facility is not anticipated to result in a significant increase in demand for police resources—see Appendix A-10, record of conversation with Town of Warwick, Chief of Police, dated January 18, 2010[1].

Fire Protection

As described above in Section C, “Potential Impacts,” significant impacts to firefighting services are not anticipated, although the proposed project is likely to generate an occasional call for emergency fire response. The project has been designed with a number of features that reduce the likelihood of a significant fire event and that are designed to limit the spread of fire through the facility. Should a fire occur and emergency response be required, the proposed facilities include a number of features that will aid firefighters with the resources to safely attack the fire. In addition, in order to offset possible additional costs to the local fire district, the Project Sponsor will contribute the sum of \$2,000 per year to the Warwick Fire District. Payments will begin following receipt of the building permit.

Operational Mitigations

Fire prevention measures instituted by the Project Sponsor include a strict site-wide no-smoking policy and guidelines on the use of such items as candles, halogen lamps, and similar objects that have the potential to be ignition sources. As is the case at the Project Sponsor’s other facilities, each year every resident will receive fire safety reminders, view a fire safety video, and be required to read the fire escape plan for their room and building. There will be an annual fire safety inspection of each occupant room, storage area, and work area, looking for such things as hazardous use of candles, overloaded electrical outlets, and frayed cords. Additionally, each work group will include various fire and safety reminders in their regular meetings.

The proposed project will not involve industrial production, and any small hazardous materials storage locations for activities such as paint for building maintenance will be in specific fire-resistant locations equipped with the required ventilation, fire suppression systems, and spill containment equipment in accordance with the building and fire codes of New York State. The Project Sponsor will also maintain required inventories of chemicals on site, and their associated Material Safety Data Sheets (MSDS).

Design Features

Access to the site will be provided from Long Meadow Road (CR-84), and all major buildings will be connected by an internal loop driveway. A secondary emergency access from Long Meadow Road (CR-84) will also be provided. The internal loop driveway will be capable of carrying large equipment, such as fire apparatus—see Figure 8-2 Fire Apparatus Access Exhibit.

The landscaping plan has been designed with firefighting and rescue operation access in mind and trees and dense or uneven landscape features that would make firefighting and rescue operations difficult are not proposed in potential access areas.

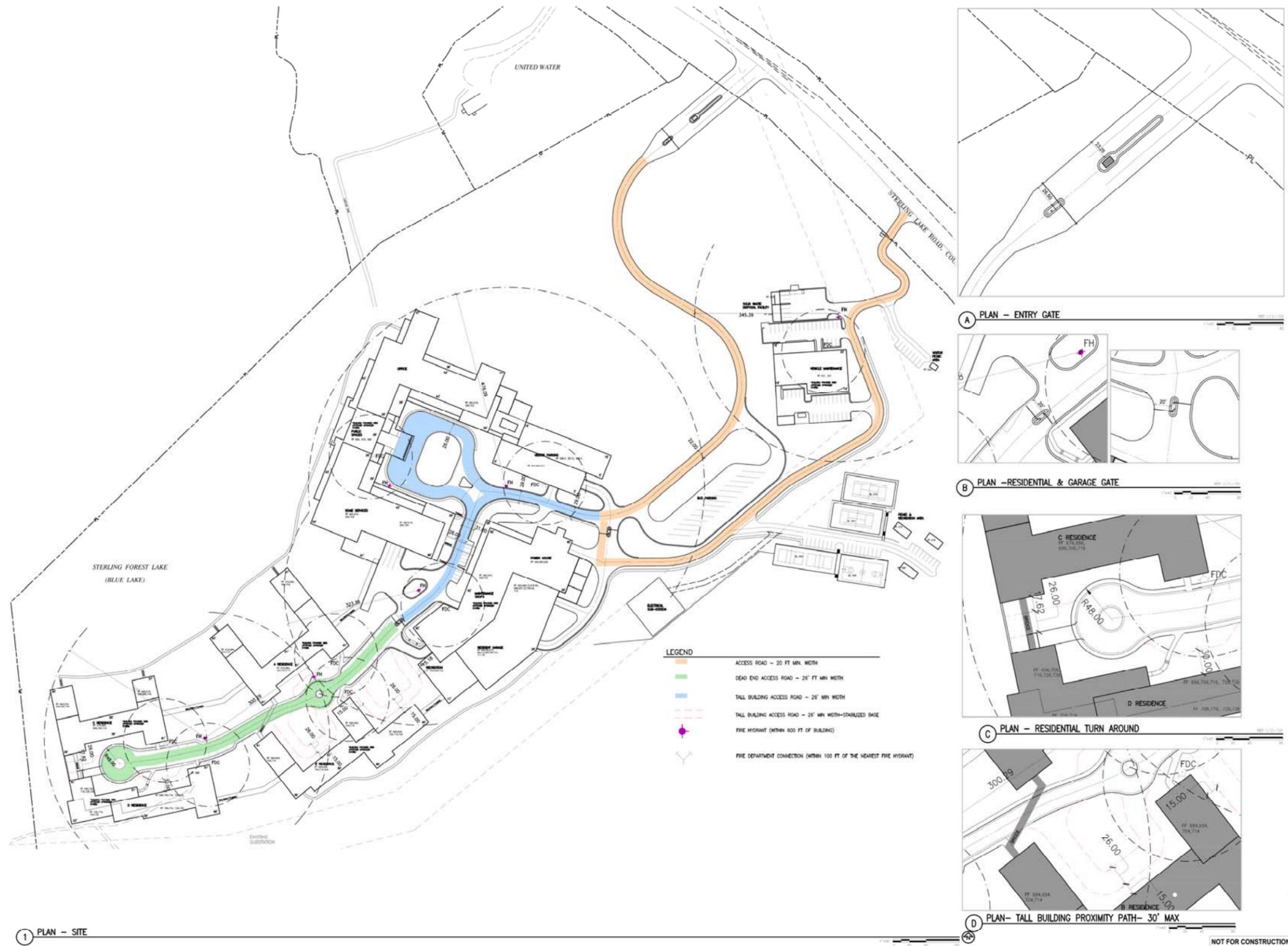


Figure 8-2 Fire Apparatus Access Exhibit

Proposed structures will be constructed of non-combustible and fire-resistant materials. Fire spread will primarily be limited to any combustible finishes. All proposed buildings will be compartmentalized with code-compliant fire-rated doors, partitions, and construction reducing the risk of fire spread. All buildings and parking garages with the exception of small recreational buildings and storage sheds will have standpipes and sprinkler systems installed.

The proposed buildings and additions will be built with the firefighting equipment:

- All buildings, with the exception of parking garages, will be equipped with a wet automatic sprinkler system and Class III standpipe and hose system, and a Siamese connection will be added to an accessible face of the building.
- The parking garages will have a dry-pipe Class III standpipe and hose system, and a Siamese connection will be added to an accessible face of the building.

Construction will meet the following building codes as applicable: *2010 Building Code of New York State*, *2010 Fire Code of New York State*, *NFPA 13—07* edition (Standard for the Installation of Sprinkler Systems), *NFPA 13R—2010* edition (Standard for the Installation of Sprinkler Systems in Residential Occupancies Up To and Including Four Stories in Height), *NFPA 14—07* edition (Standard for the Installation of Standpipes and Hose Systems), *NFPA 20-07* (Installation of Stationary Pumps for Fire Protection) and *2010 Fuel Gas Code of NYS*.

The Tuxedo Joint Fire District has a ladder truck equipped with a 75-foot ladder that will accommodate proposed building heights. With maximum building heights under 60 feet, all building floors would be accessible via this ladder truck, which will be provided parking areas either by means of reinforced soil or street directly in front of the buildings. Site design will include emergency access lanes that are in compliance with the *2010 Fire Code of New York State*.

Each building and residential unit will be equipped with alarms and smoke detectors. These alarms and detectors will be tied into the central monitoring system for the facility and maintained/tested as required. The sensors connected to this network will be tested regularly in accordance to *NFPA 25* and *NFPA 72*. The system will detect malfunctioning sensors so that they can be replaced. Each of the smoke alarms in the residence rooms will be regularly tested by hand to ensure proper operation. All buildings will have enclosed stairways exiting directly outdoors in compliance with the *2010 Building Code of New York State* and be equipped with standpipe systems and sprinkler systems as required by the *2010 Fire Code of New York State*. Design will emphasize life safety.

There will be adequate water resources for on-site use in fire protection, including Sterling Forest Lake (Blue Lake) (to which the fire department can directly access) and a 500,000-gallon elevated water tank connected to the facility-wide hydrant system.

Fire hydrants will be installed in the vicinity of the new buildings and within 100 feet of fire department connections, following criteria requested by the Tuxedo Joint Fire District and *NFPA 14-07*. The storage capacity of the elevated water-storage tank (500,000 gallons) meets the worst-case volume required by *NFPA 1142* (Standard on Water Supplies for Suburban and Rural Fire Fighting) for the building with the largest existing fire area at the proposed facility, which is the dry system within the garage with a design area of 2,535 square feet and worst-case flow demand of 700 gpm including hose streams for 60 minutes for a total of 42,000 gallons. The storage capacity meets minimum design flow for fire purposes of 2,000 gpm for two hours (240,000 gallons), and the one-day average demand of 85,000 gallons as required by the Orange County Department of Health. Siamese connections are provided for the new buildings as required by *Code*. Booster pumps would be installed as needed, particularly for the new residences, due to their elevation in relation to the water storage tank. Fire suppression system pumps will have emergency back-up power. These systems become active within 10 to 60 seconds of a power

disruption depending on the location. There will also be emergency generator power provided for the potable system as a secondary backup within 30 minutes.

Ambulance

Because the Greenwood Lake Ambulance Corps has adequate staffing and equipment to service the site and because on-site medical resources will be employed, no significant impacts to ambulance services are anticipated. The provision of on-site medical equipment and facilities may be considered mitigation of impacts; however, it is the policy of the Project Sponsor to provide these services to its resident members regardless of the availability of outside service.

In the case of a catastrophic event affecting the entire region, to the extent possible the Project Sponsor would fully cooperate with the department(s) taking the lead in the response.

Recreation Services

The grounds of the proposed project not being used for building site construction are being preserved in their natural state for passive enjoyment by facility residents. Several miles of walking trails are proposed through the private lands for the enjoyment of facility residents and to provide locations for residents to walk, pray, and meditate in quiet solitude and without distraction.

Additionally, the project proposes 70,000 square feet of active recreational facilities on site, including a number of outdoor tennis, volleyball, and basketball courts. Blue Lake may also be used for non-motorized boating. Indoor facilities totaling approximately 24,200 square feet are also proposed and would include weight/exercise room(s), an aerobics room, an indoor basketball court, racquetball courts, music/social rooms, a sauna, and a therapeutic pool.

The proposed plan maintains approximately 88 percent of the Project Site as open space. Based on this, under §75-3A(2)(a)[3] no recreation fee is anticipated to be levied on the project.

E. Alternative Mitigations

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16 “Alternatives.” These alternatives are designated as 1) no-action, 2) educational facilities, 3) low-height, and 4) as-of-right. Impacts to community facilities and services associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor’s proposed facility.

No-Action Alternative

Under this alternative, the land would remain in its existing state, including the abandoned International Nickel Company (INCO) facility. The no-action alternative would see the existing facility remain vacant and return to an unstabilized unsecured state, which would constitute an attraction to vandals and pose a safety hazard to trespassers. This action does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990’s by The King’s College would be constructed. These facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students.

Previously approved plans would increase the demand for community services as well. However, such facilities would likely incorporate on-site resources such as fire suppression systems and 24-hour security to partially mitigate impacts in a manner similar to the proposed action. It is unlikely that the College would maintain a fully staffed infirmary and EMS facilities, although some type of health clinic or on-site registered nurses would be likely for maintaining student health.

The chief difference between The King's College proposal and the Project Sponsor's proposal, in terms of demand for services, is that The King's College proposal was not proposed to be self-contained to the extent that the proposed project is. Teachers, staff, and students would all enter and exit the site frequently and utilize the surrounding area for shopping, services, and residency. This would result in greater demand for emergency services. Given the college environment and age of students, it is likely that a college use would have a higher demand for the services of police and fire departments than does the Project Sponsor's proposed project. Also, The Kings College proposal would have had growth-inducing impacts from teachers and staff moving into private residences in the area. This would result in secondary impacts to community services including to schools. This action does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower profile structures at the Project Sponsor's facilities, which would require larger building footprints to accommodate the same square footage as the Project Sponsor's original proposal.

There would be no appreciable difference on the demand for community services between the impact of the proposal and a reduced-height alternative. Lower-height buildings may be more accessible to fire services, but it has been verified that the Tuxedo Fire District has adequate equipment to service 60-foot-high buildings. This action meets the goals of the Project Sponsor.

As-of-Right Alternative

As-of-right alternatives, such as the residential subdivision of the property, would increase the demand for school services as well as local emergency services and recreation. Since the lots would be large, it is anticipated that under such an alternative, homes would be large and would likely generate larger families and greater numbers of schoolchildren than average homes. Specifically, the 25 five-bedroom homes that could hypothetically be built under an as-of-right subdivision plan would likely house 113 residents, 39.5 of which would be school-age children (see Chapter 12 for derivation). Based on national standards, this would demand 0.23 additional police officers, 0.19 additional volunteer firefighters, and 0.02 additional full-time equivalent EMS. The addition of 40 school-age children associated with an as-of-right alternative would result in a significant increase (6.25 percent) in the enrollment of the Tuxedo School District (2009 enrollment of 639). This action does not meet the goals of the Project Sponsor. *

A. Introduction

This Chapter discusses wastewater requirements of the Project Sponsor's facilities, where wastewater flow will be conveyed, and how it will be treated.

B. Existing Conditions

An existing wastewater treatment plant owned by United Water South County Sewer (SPDES Permit No. NY0028827) is located across Long Meadow Road (CR-84) from the Blue Lake Dam spillway as shown in Figure 2-2 Area Location Map. This facility, called the Blue Lake Wastewater Treatment Plant (Blue Lake STP), was completed in 2002. The original Blue Lake STP, located between the existing plant and Little Sterling Lake, had a capacity of 20,000 gallons per day (gpd), sufficient for only the nearby IBM facility. This old plant was removed after the completion of the existing plant.

The existing Blue Lake STP was designed for tertiary treatment to meet discharge limitations including seasonal nitrogen and phosphorus removal for what were the combined IBM and The King's College proposed flows and loads. At full build-out, the average wastewater flow for The King's College was estimated to be almost 130,000 gpd. The existing Blue Lake STP has a current SPDES permitted flow of 150,000 gpd and includes two outfalls that discharge treated effluent to the Ringwood River near its confluence with the unnamed branch coming from the Blue Lake Dam spillway. Based on communications with the Town of Warwick Planning Board and their consulting engineers, no other projects are currently planned in the area that would discharge wastewater to the Blue Lake STP.

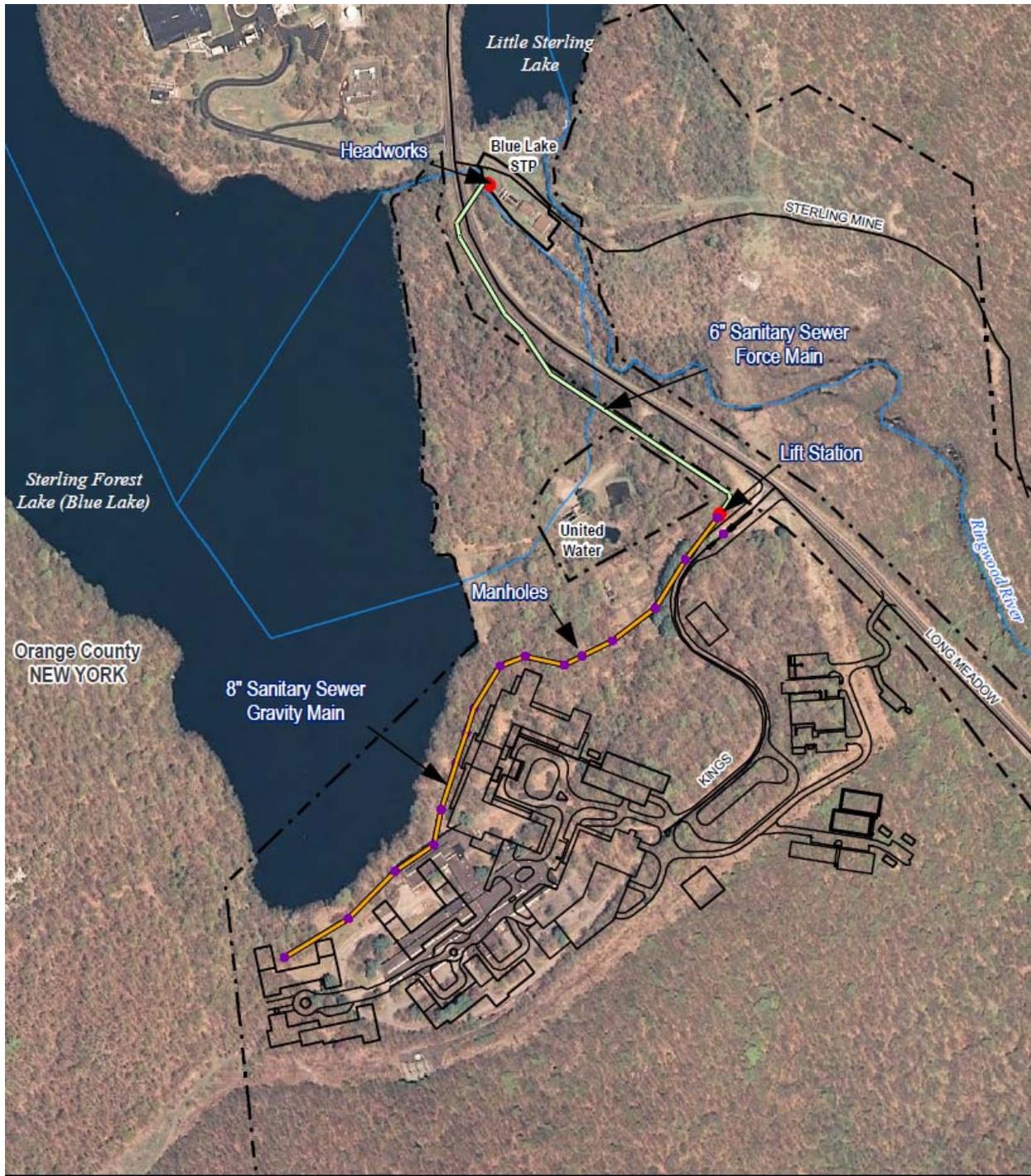
Historical per capita wastewater generation measured at the Watchtower Educational Center (WEC), another similar facility operated by the Project Sponsor in Putnam County (Patterson, New York), has averaged approximately 71 gallons per person per day. The WEC has been in operation for over 20 years. For reference, one year of monthly wastewater reports are included in Appendix G-1, "Summary of Per Capita Wastewater Generation and Water Demand." For design purposes, a per capita wastewater generation of 80 gallons per day is being implemented for this project; thus, at full future occupancy of 1,000 residents, the average daily wastewater generated by the proposed action is projected to be 80,000 gallons per day (gpd). During the last year, the maximum daily wastewater flow at the Patterson facility was approximately 111 gallons per person per day. For design purposes, a per capita peak daily wastewater flow of 120 gallons per day is being implemented for this project; thus, at full occupancy the peak daily wastewater flow is projected to be 120,000 gpd. (See Appendix G-2, United Water's letter of March 2011, stating their willingness to provide service.) Additionally, the existing Blue Lake STP will continue to have excess capacity after the wastewater needs of the Project Sponsor are met.

The proposed action is located at the property formerly owned by The King's College. By letter to The King's College, dated December 27, 2006 (see Appendix G-3), United Water stated that a treatment capacity of 130,000 gpd is available at the existing Blue Lake STP to serve the needs of the Project Sponsor's proposed development. The Project Sponsor has obtained assurances from United Water that any needed repairs to bring the wastewater plant up to operating capacity will be made before the force main is connected to the plant.

The existing site contains a network of sanitary sewer mains that will be abandoned and replaced as part of the proposed action. No existing sewer lines or force mains are anticipated to be used to convey the wastewater from the Proposed Action. Wastewater from the Project Sponsor's new facilities will be conveyed by new buried gravity sewer mains. These mains will be routed from the proposed buildings to

a trunk sewer line travelling parallel to the existing United Water water supply line and between that line and the proposed buildings. Both the water supply and sewer trunk lines will be on the lake side of the complex. Manholes will be provided at each change in direction or slope. Discharge from the gravity trunk sewer will require pumping to the Blue Lake STP via a new lift station and force main along Long Meadow Road (CR-84). The plant's existing headworks is currently equipped with a 6-inch pipe, separate from the existing influent main, which can be used to make the connection. A plan of the proposed gravity sewer, force main, and lift station is shown on Figure 9-1.

The new gravity sewer main, lift station, and force main are proposed to be constructed by the Project Sponsor or by an outside specialty contractor where directional drilling will be used for portions of the force main. The gravity sewer main is proposed to be 8 inches in diameter, while the force main will be 6 inches in diameter. The lift station will be equipped with two pumps (1 duty and 1 standby) rated at 430 gallons per minute (gpm) and 72.5 feet of head. At a flow rate of 430 gpm the velocity in the force main will be approximately 5 feet per second. The lift station's wet well will be 7.33 feet by 7.33 feet and 16 feet deep.



- Proposed Sewer Main**
- Manholes
 - Lift Station
 - Force main
 - Gravity Main
- Rivers & Streams
- Property Boundary
 - Counties
 - States

Proposed Sanitary Sewer Main

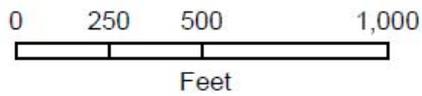


Figure 9-1 Plan of Sanitary Sewer Gravity and Force Mains

C. Potential Impacts

Installation of the proposed force main will require crossing a stream and Long Meadow Road (CR-84), which could impact the stream bed and traffic if the crossings are performed by open-cut methods.

Fats, oils, and grease in the wastewater stream can become a source of odors in the proposed lift station if left unmitigated.

Additionally, impacts to the community due to noise from the operating lift station were considered and are not significant given the depth of the lift station, the small capacity of the pumps, and the lack of residential receptors.

D. Mitigation Measures

The force main will be installed by means of directional drilling from the lift station to the headworks of the Blue Lake STP. This will eliminate the need to open-cut Long Meadow Road (CR-84) and the stream crossing thereby mitigating potential impacts. If directional drilling equipment interferes with traffic or road access, then appropriate traffic control measures will be implemented to direct vehicles such as advanced warning signs, flaggers, and traffic cones.

Preventing the fats, oils, and grease from entering the wastewater collection system will prevent odors from developing in the lift station. The kitchen facilities at the site will be equipped with grease traps to intercept fats, oils, and grease. The grease traps will be routinely cleaned and the debris will be disposed of with the solid waste.

E. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16 "Alternatives." These alternatives are designated as 1) no-action, 2) educational facilities, 3) low-height, and 4) as-of-right. Wastewater impacts associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor's proposed facility.

No-Action Alternative

Under this alternative, the land would remain in its existing state including the abandoned INCO facility or it could be reoccupied by a similar user. No change to existing wastewater treatment requirements would be seen if the site remained unoccupied. If the site were reoccupied by a similar user, wastewater generated would be approximately 45,000 gpd which, if domestic, could be treated at the Blue Lake STP. Any industrial wastes would need at least pre-treatment at an on-site plant before being discharged. This alternative does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990's by The King's College would be constructed. These proposed facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students. The total wastewater that would be generated by this alternative is 130,000 gpd. The original plan for The King's College was to either construct an on-site STP or expand the old Blue Lake STP; however, after The King's College DEIS was prepared, the existing Blue Lake STP was constructed. Therefore, if similar facilities were to be constructed on this parcel, it is likely that wastewater flow would be conveyed to and treated at the existing Blue Lake STP. This alternative does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower-profile structures at the Project Sponsor's facilities and would not affect the proposed number of individuals that would live and work at the site. As such, the wastewater generated by this alternative would be the same as the Project Sponsor's original proposal. This alternative meets the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property would be purchased by a private developer and that new residential lots would be constructed, which would be unrelated to the Project Sponsor's operations. Twenty-five single-family residences would be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement. Based on the NYSDEC *Design Standards for Wastewater Treatment Works*, a five-bedroom home could produce approximately 550 gpd of wastewater. Thus, approximately 13,750 gpd of wastewater can be anticipated under this alternative. Wastewater generated under this alternative would likely be treated at the Blue Lake STP. This alternative does not meet the goals of the Project Sponsor. *

A. Introduction

This Chapter discusses potable water and fire-flow requirements of the Project Sponsor's facilities as well as the water supply source.

B. Existing Conditions

An existing surface water treatment plant owned by United Water New York/Blue Lake System is located between the Blue Lake Dam and Long Meadow Road (CR-84). United Water is permitted by the state to draw and treat water from Blue Lake for public consumption under Public Water System ID (PWSID) NY3512132. The plant draws water from Sterling Forest Lake (Blue Lake) via an 8-inch line through the on-site dam. This line is fed by a submerged intake which limits the drawdown of Blue Lake to about 4 feet below the spillway crest. After filtration and further treatment, water is pumped to the distribution system into a 500,000-gallon storage tank, which supplies the distribution system when the pumps are not running. The storage tank is located on a hill southwest of Blue Lake, with the base elevation at 947 feet and with an overflow at 972 feet.

The plant presently supplies IBM, the Blue Lake Wastewater Treatment Plant (Blue Lake STP), and the Woodlands residential community, in addition to the Project Sponsor's property. Based on communications with the Town of Warwick Planning Board and their consulting engineers, no other projects are currently planned in the area that would draw water from Blue Lake or impose an additional demand on the existing surface water treatment plant.

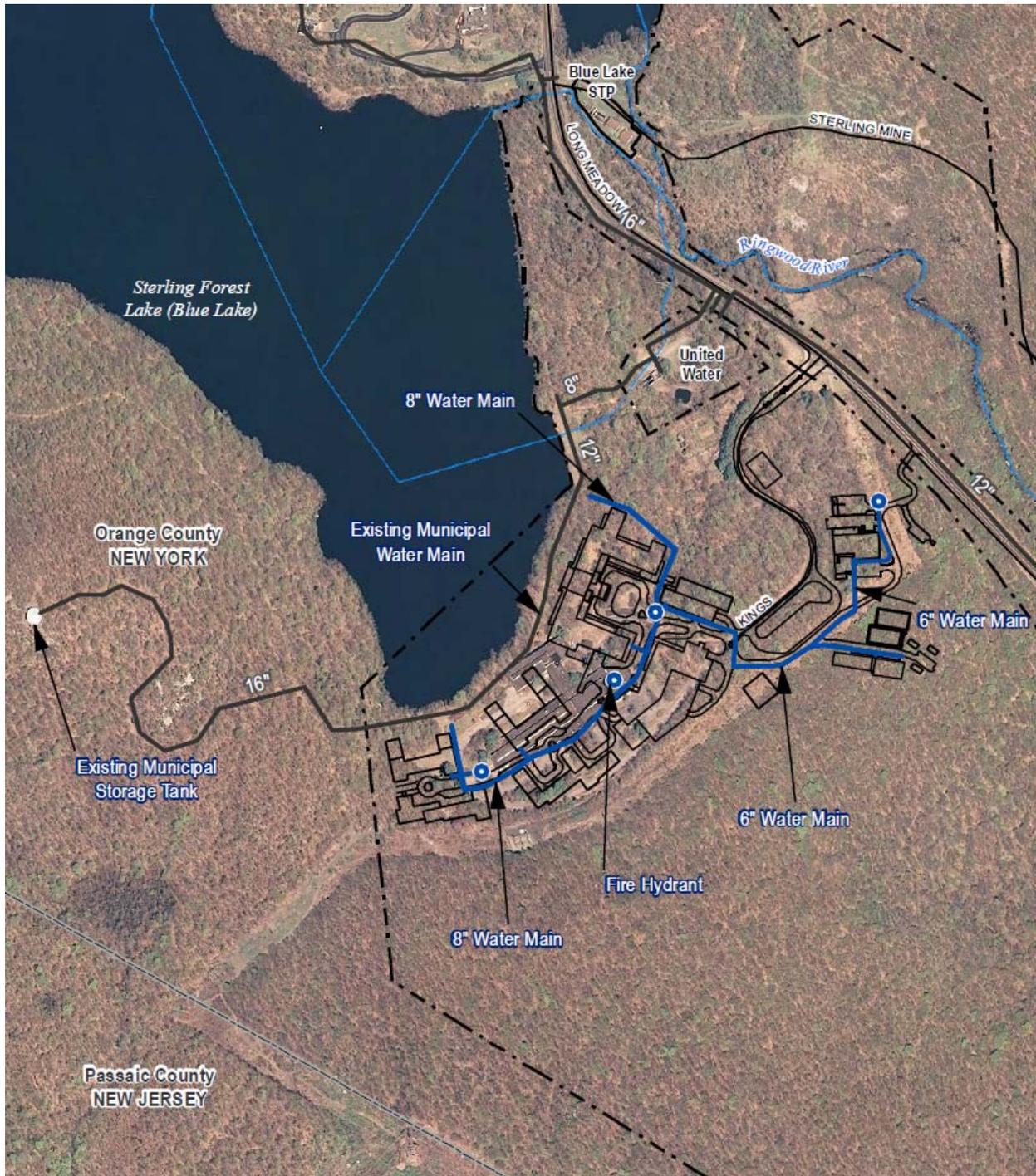
Historical per capita water demand measured at the Watchtower Educational Center (WEC), another similar facility operated by the Project Sponsor in Putnam County (Patterson, New York), has averaged approximately 78 gallons per person per day. The WEC has been in operation for over 20 years. For reference, one year of monthly water reports are included in Appendix G-1, "Summary of Per Capita Wastewater Generation and Water Demand." For design purposes, a per capita water demand of 85 gallons per day is being implemented for this project; thus, at full future occupancy of 1,000 residents, the average daily potable water demand for the proposed action is projected to be 85,000 gallons per day (gpd). During the last year, the maximum daily water demand at the Patterson facility was approximately 122 gallons per person per day. For design purposes, a per capita peak water demand of 145 gallons per day is being implemented for this project; thus, at full occupancy the peak water demand is projected to be 145,000 gpd. The majority of the projected average daily demand will occur between 5:30 a.m. and midnight. No on-site storage tanks are expected to be required.

By "willingness to serve" letter, dated October 25, 2010, United Water has indicated that an allotment of 147,000 gpd (maximum per day) available treatment capacity could be provided from their Blue Lake Water Treatment Plant to serve the proposed development of the former King's College property (see Appendix H-1). The current United Water Plant system capacity is 650,000 gpd (maximum daily).

The existing International Nickel Company (INCO) building has a self-contained fire protection system consisting of a water storage tank and fire hydrants adjacent to the building. The water tank is no longer in service. The water system on the site has sufficient capacity and pressure to meet all necessary fire protection criteria without installation of booster pumps. Proposed fire-flow and storage are required to be 2,000 gallons per minute (gpm) for 2 hours (240,000 gallons) kept as a reserve above the domestic water requirements. New water mains will be constructed to replace the existing on-site piping network. The proposed pipes will be cement-lined ductile iron pipe with a 6-inch-minimum diameter and will provide

service to all the buildings and the recreation area. An overall plan of the water facilities is shown in Figure 10-1 Water Facilities Overall Plan.

The typical proposed water pressure at the ground floor of the proposed buildings is anticipated to be 120 pounds per square inch (psi). The distribution mains to the various proposed buildings will be designed to maintain the pressure to meet fire protection needs for standpipes and sprinkler systems. However, this pressure shall be reduced for domestic water by pressure reducing valves within buildings to achieve a suitable domestic use pressure of not more than 65 psi for normal plumbing fixtures.



-  Water Main
-  Fire Hydrants
-  Rivers & Streams
-  Property Boundary
-  Counties

Proposed Potable Water Main

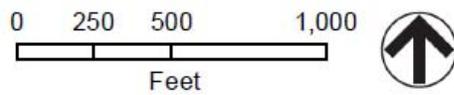


Figure 10-1 Water Facilities Overall Plan

C. Potential Impacts

The proposed action will generate an average daily per capita wastewater flow of 85 gallons. This impact is not significant when compared to the overall historical per capita water demand of Orange County, which, according to the final Water Master Plan adopted by Orange County on October 7, 2010 (see <http://waterauthority.orangecountygov.com>), is 118 gallons per person per day. Even so, the Project Sponsor proposes to further minimize water consumption as described below under Section D, “Mitigation Measures.”

Installation of the proposed water infrastructure will require connection to the existing 16-inch water pipeline that runs along Sterling Forest Lake (Blue Lake). This pipeline is owned and operated by United Water. No new construction is planned outside of the defined project area for water supply.

D. Mitigation Measures

Although the existing United Water supply infrastructure and distribution system can adequately supply the proposed project’s water supply needs, the Project Sponsor is planning to voluntarily implement the following water-saving fixtures and practices to minimize the potable water requirements of the site:

- Install low-flow showerheads with a maximum flow rate of 1.5 gpm.
- Install dual-flush flushometers in women's restrooms.
- Install high-efficiency urinals in high-use areas in men's restrooms.
- Install dual-flush gravity tank toilets in residence rooms.
- Install water conserving washing machines in the personal laundry areas.
- Utilize recycled stormwater to provide non-potable water for cooling towers.

Connection to United Water’s existing potable water pipeline will be made using “hot tapping” methods whereby the existing pipeline remains in service. The connections will include backflow preventers and water meters to measure consumption.

E. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16. These alternatives are designated as 1) no-action, 2) educational facilities, 3) low-height, and 4) as-of-right. Water supply impacts associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor’s proposed facility.

No-Action Alternative

Under this alternative, the land would remain in its existing state including the abandoned INCO facility or it could be reoccupied by a similar user. No change to existing water supply requirements would be seen if the site remained unoccupied. If the site were reoccupied by a similar user, water requirements are assumed to be approximately 45,000 gpd, which could be supplied from the United Water New York/Blue Lake System. This alternative does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990’s by The King’s College would be constructed. These proposed facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students. The total potable water supply that would be

required by this alternative is 144,000 gpd. This alternative does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower-profile structures at the Project Sponsor's facilities and would not affect the proposed number of individuals that would live and work at the site. As such, the water supply required by this alternative would be the same as the Project Sponsor's original proposal. This alternative meets the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property would be purchased by a private developer and that new residential lots would be constructed, which would be unrelated to the Project Sponsor's operations. Twenty-five single-family residences would be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement. For this study, it is assumed that domestic water use is equivalent to wastewater generated. Based on the NYSDEC *Design Standards for Wastewater Treatment Works*, a five-bedroom home could produce approximately 550 gpd of wastewater. Thus, approximately 13,750 gpd of potable water requirements can be anticipated under this alternative. The water is likely to be supplied by United Water New York/Blue Lake System. This alternative does not meet the goals of the Project Sponsor. *

A. Introduction

This Chapter will discuss the amount of solid waste anticipated to be generated by the proposed project, any relevant town and/or county plans and policies regarding the management of solid waste as well as any mitigation measures that the Project Sponsor has in mind for the proposed project.

B. Existing Conditions

The most recent Solid Waste Management Plan accepted by Orange County, New York, was prepared in 1991 and updated in 1995–1996. The County is currently undertaking the process of updating the Solid Waste Management Plan in response to the recent release by the New York State Department of Environmental Conservation (NYSDEC) of the policy document, “Beyond Waste.” As of July 30, 2010, Orange County has retained a consultant—Cornerstone Environmental Group, L.L.C.—and has solicited input from municipalities.

The Solid Waste Management Plan contained several recommendations regarding the collection and processing of solid wastes. The 1991 Plan was somewhat aggressive with the County proposing the expansion of its facilities including expanding the existing Orange County Landfill, constructing a new in-county landfill, constructing two materials recycling facilities for processing of commingled materials, expanding waste collection and monitoring through the establishment of waste districts and starting a program for curbside pickup and collection of household hazardous waste. After several years this original plan was significantly scaled back due to cost, physical, regulatory, and political realities. The 1995–1996 update instead recommended continuing reliance on private contract collection, processing, hauling, and disposal. Household hazardous waste was proposed to be accepted on certain dates at a central New Hampton collection site. Processing of recyclable materials and disposal was proposed to be handled by private contract or by small municipal facility. Administrative licensing requirements for private contractors were proposed in the place of administrative County waste districts.

Since the 1995 Plan Update, the County has generally continued to rely on municipalities or private contracts for materials collection, processing, and ultimate disposal. The County maintains three solid-waste transfer stations which accept separated recyclables, yard waste, and residual waste. The nearest to the Project Site is the New Hampton transfer station, located coterminous with the County Fire Training Center.

The Town of Warwick requires all commercial properties to contract for trash collection and collection of recyclables. The Town of Warwick only provides recycling pickup from residential property.

C. Potential Impacts

Based on similar facilities owned and operated by the Watchtower Bible and Tract Society of New York, the anticipated average amount of municipal solid waste that will be generated is 3.39 pounds per capita per day. Based on an average overnight population of 1,000 people (maximum future expansion), the anticipated monthly total is 101,710 pounds (30,520 pounds of which is to be recycled). This is below the national average published by EPA (for 2008) of 4.50 pounds per capita per day.

The Applicant would store solid waste on site and have it hauled on a regular basis by third-party vendors. Table 11-1 lists the anticipated average monthly solid-waste generation with the quantity per capita and frequency of pick-up after the proposed project is completed.

Table 11-1 Anticipated Average Daily/Monthly Municipal Solid-Waste Generation

Waste	Quantity (lbs per capita)		Total Monthly Quantity (lbs)	Vendor	Frequency of Pick-up
	Per day	Per month (x 30)			
General Solid Waste	2.37	71.19	71,190	Third-party	4 times/month
Cardboard	0.30	8.95	8,950	Third-party	2-3 times/month
Paper	0.20	5.99	5,990	Third-party	1 time/ month
Bottles/Cans	0.22	6.58	6,580	Third-party	1-2 times/month
Metal	0.30	9.00	9,000	Third-party	1 time/month
Total	3.39	101.71	101,710		
Source: Watchtower Bible and Tract Society of New York, Inc.					

Table 11-2 describes waste that is generated from routine operations and maintenance activities on site.

Table 11-2 Operational and Maintenance Solid-Waste Generation

Waste	Quantity	Frequency of Pick-up	Remarks
Construction and Demolition Debris	30 cubic yards	1 time/month	
Grease / Grit	1,000 gallons	4 times/year	Siphoned directly from interceptors
Waste Anti-freeze and Oil	300 gallons	1 time/month	Vehicle maintenance
Medical Waste	1 quart	4 times/month	
Hazmat Chemical Waste	55 gallons	1 time/month	Paint, solvents, lubricants, etc.
Source: Watchtower Bible and Tract Society of New York, Inc.			

D. Mitigation Measures

As part of the proposed project, the Project Sponsor would include an on-site recycling facility. The proposed recycling facility would handle all of the non-hazardous waste and recyclable materials generated on site. As mentioned above, 101,700 pounds of solid waste, along with the operational and maintenance solid waste mentioned in Table 11-1, is expected to be generated each month. Of this, it is anticipated that a minimum of 30,520 pounds will be recycled, that is 30 percent of the mixed solid waste generated by the facility. This includes glass, metal, plastic, cardboard, and paper waste streams. Table 11-3 lists the anticipated average monthly solid-waste generation to be recycled.

Table 11-3 Average Monthly Recyclable Municipal Solid-Waste Generation

Waste	Total Quantity (lbs)	Quantity Per Capita (lbs)	Recyclable Quantity (lbs)	Recyclable Quantity Per Capita (lbs)
General Municipal Solid Waste	71,190	71.19	None	None
Cardboard (Recycled)	8,950	8.95	8,950	8.95
Paper (Recycled)	5,990	5.99	5,990	5.99
Bottles/Cans (Recycled)	6,580	6.58	6,580	6.58
Metal (Recycled)	9,000	9.00	9,000	9.00
Total:	101,710	101.71	30,520	30.52

Source: Watchtower Bible and Tract Society of New York, Inc.

The Applicant will engage several vendors to haul solid waste off site, depending on the nature of the waste, to be disposed of at the proper facilities as required by the municipality. Provision for the collection of the recyclable materials will be available at each building and will be sized to meet or exceed minimum standards required by the Green Globes™ System. The standards stipulate at least 20 square feet of designated storage space for recyclables per 10,000 square feet of space or 100 square feet for buildings greater than 50,000 square feet. These storage rooms will be sized to provide adequate space for the temporary sorting and storage of recyclables at the collection points near the sources of waste on each floor. In addition, larger recyclable storage rooms located near each loading dock will serve as a collection point for each building.

E. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16 “Alternatives.” These alternatives are designated as (1) no-action, (2) educational facilities, (3) low-height, and (4) as-of-right. Solid-waste impacts associated with each of these alternatives are discussed below.

No-Action Alternative

Under this alternative, the land would remain in its existing state including the abandoned International Nickel Company (INCO) facility. No change to existing solid-waste generation would be seen under this alternative. This action does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

The 1999 King's College "Draft Environmental Impact Statement" (DEIS) and "Final Environmental Impact Statement" (FEIS) are the sources for the following data regarding the King's College educational facility. Under this alternative, facilities similar to those proposed in the 1990's by The King's College would be constructed. These facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students.

A private hauling company will carry refuse from the proposed college campus to a County transfer station and subsequently to an out-of-state disposal site. Based on the projected campus population of 1,500 students and 260 faculty and staff, and a conservative residential waste generation rate of 5 pounds per day, the proposed project can be expected to generate approximately 1,600 tons of solid waste per year. In 1996, the Orange County's Department of Environmental Facilities and Services estimated that 71 percent of the County's solid waste was disposed and 29 percent recycled. Using these figures, it can be concluded that approximately 1,140 tons of solid waste generated by The King's College would be disposed and 460 tons recycled.

It should be noted that the above calculations assume that all members of the college community will be on the campus 365 days per year. The official school year will be considerably shorter, and not all students will live on-campus, so the actual volumes of solid waste generated by the project could be significantly less than indicated.

The college infirmary will generate medical wastes as defined by 6 NYCRR Part 364.9. The college would comply with state and federal regulations pertaining to the segregation, packaging, storage, and labeling of wastes. As a small generator (i.e., under 50 pounds of regulated waste per month) the college would be allowed to transport the waste to a NYSDEC-approved disposal facility.

The college chemistry laboratories will generate hazardous waste as defined by 6 NYCRR Part 371.3. The King's College chemistry laboratories would be used primarily for undergraduate instruction, with 25–30 students per semester performing small-scale standard experiments, mostly in general and organic chemistry. In addition, some faculty members would use the laboratories for research on a part-time basis. The laboratory wastes are disposed in two methods—dry packing and wastewater. Organic solvents, heavy metal salts, and any other hazardous materials are stored in safety cabinets for dry packing and removal by a licensed waste hauler. All student experiments would be supervised by faculty to ensure that disposal of materials occurs in the required manner. The amounts of materials disposed are small on an annual basis. This action does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower-profile structures at the Project Sponsor's facilities, which would require larger building footprints to accommodate the same square footage as the Project Sponsor's original proposal. As such, this alternative would increase the amount of area that would be disturbed during construction from 45 acres under the original proposal to 59 acres. Reducing building heights would not impact the anticipated waste generation for the proposed facility. This action meets the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property would be purchased by a private developer and that new residential lots would be constructed, which would be unrelated to the Project Sponsor's operations. Single-family residences would be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement.

Estimates show that approximately 200 acres of the 253-acre parcel are available for development of lots; the remaining 53 acres are reserved for infrastructure (i.e., roadways and stormwater facilities, open-space and contingency). Thus, this parcel could potentially accommodate up to 25 residences. Based on widely accepted population multipliers (see chapter 12 for derivation), approximately 113 residents can be anticipated under this alternative. At the US average rate of 4.34 pounds per person per day,¹ 1.46 pounds of which is recycled, the as-of-right development could be anticipated to generate 490 pounds of solid waste per day, 165 pounds of which would be recycled. This would be equivalent to 14,700 pounds per month of total solid waste, 4,950 pounds per month of which would be recycled. This action does not meet the goals of the Project Sponsor. *

¹ United States Environmental Protection Agency. Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2009.

A. Introduction

This Chapter will describe the fiscal impacts to taxing jurisdictions that are likely to occur as a result of the action. The existing and projected tax revenues will be described as will the costs to community services. The discussion of costs will be somewhat reliant on the discussion contained in Chapter 8, “Community Services and Facilities.”

The proposed project will not result in significant increased costs. The Warwick Fire District #2 has a contract agreement with the Tuxedo Fire District to provide service to the Project Site. This agreement will not change regardless of this project and therefore the Warwick Fire District will experience no change in revenue or cost associated with the action. The proposed project will increase demand on the Tuxedo Fire District, without providing additional revenue. It is anticipated that the increased cost to the Tuxedo Fire District will be approximately \$1,350 to \$1,600 per year. Although no significant impacts are anticipated, the Project Sponsor is proposing to contribute \$2,000 per year to Warwick Fire District #2 to help to offset the cost of fire protection.

B. Existing Conditions

The existing Project Site is comprised of seven tax parcels located within the unincorporated Town of Warwick, Orange County, Warwick Fire District #2 (Greenwood Lake Fire Department), Greenwood Lake Ambulance District, and the Tuxedo Union Free School District. For the Town of Warwick, the Project Site is potentially subject to taxation for the General, Part Town, Open Space—Purchase of Development Rights, and Highway Funds. Prior to the Project Sponsor acquiring the parcels, the entire site was subject to Section 420-b of the New York State Real Property Tax Law (RPTL), and then, four of the seven parcels were fully exempt under the preceding owners—Touro College and earlier The King’s College—two religious organizations intending to use the property for private religious educational facilities. Since the Project Sponsor’s purchase of the Project Site, all seven parcels have received full exemption under Section 420-a of the RPTL. (See Appendix A-11, Town of Warwick letter, dated August 23, 2010.) Table 12-1 and Table 12-2 describe the current valuation and taxes paid to each jurisdiction. The existing parcels paid a total of \$9,863.86 in 2010.

Table 12-1 Existing Valuation

Tax ID	Use	Market Value	Assessed Value	2010 Exemption
15-1-2.22	Vacant	\$85,400	\$11,700	No
15-1-2.3	Vacant	\$134,300	\$18,400	No
85-1-4.1	STP	\$235,000	\$32,200	Yes
85-1-4.2	Road	\$1,500	\$200	Yes
85-1-5.1	Vacant	\$507,300	\$69,500	Yes
85-1-5.2	Manufacturing	\$2,215,300	\$303,500	Yes
85-1-6	Vacant	\$375,900	\$51,500	No

Source: Orange County Office of Real Property, 2010

Table 12-2 2010 Taxes Paid (2009–2010 School)

Tax ID	Orange County	Warwick Town	Warwick Open Space	Warwick Highway	Warwick Pt Town	Greenwood Lk Amb	Warwick Fire #2	Tuxedo School	Total
15-1-2.22	\$281.77	\$61.31	\$17.12	\$78.94	\$37.44	\$13.58	\$45.00	\$879.13	\$1,414.29
15-1-2.3	\$443.12	\$96.43	\$26.92	\$124.15	\$58.89	\$21.36	\$70.77	\$1,382.57	\$2,224.21
85-1-4.1	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
85-1-4.2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
85-1-5.1	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
85-1-5.2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
85-1-6	\$1,240.25	\$269.89	\$75.36	\$347.49	\$164.82	\$59.79	\$198.07	\$3,869.69	\$6,225.36
Total	\$1,965.14	\$427.63	\$119.40	\$550.58	\$261.15	\$94.73	\$313.84	\$6,131.39	\$9,863.86

Source: Orange County Office of Real Property, 2010

These revenues are collected for a number of purposes as described below:

Orange County

Orange County provides a wide range of services to its residents. Revenue collected by the County is used for a wide variety of purposes spanning from social purposes such as Medicaid and public health to maintenance of County highways to operation of the County Sheriff’s Office and County Jail. The County operates a mass transit system, a waste transfer station, and a mental health facility, among others. County departments are charged with providing a myriad of services including insuring safe potable water, encouraging economic development and dispatching 911 phone calls. Generally, the County budget is so large and funded by a variety of revenue sources, such as sales tax and intergovernmental transfers, that the costs and revenues associated with even sizable individual local projects generally do not have a significant fiscal impact.

Town of Warwick

The Town of Warwick General Fund collects real property taxes for a number of functions affecting all Town residents, including residents within the Town's Villages. These include day-to-day operations of the Town Hall, as well as operating budgets of the Town's Supervisor and Assessor's Offices. The Clerk's Office is responsible for issuing a number of licenses and maintaining records; the Town Court administers justice within the Town; and the Department of Elections conducts elections within the Town. Traffic control signs are maintained, and dogs and animals are controlled. The General fund includes the personal service costs of the Highway Superintendent's Office as well as the operations of the Dial-a-Bus. The Town operates a number of social programs, including aid and advice for veterans, agriculture, small businesses, and the aging. The General fund pays for recreational programs, including maintenance of Town Parks, programs for youth, and celebrations. Lastly, a significant portion of the Town's General fund goes to employee benefits.

Warwick Open Space—Purchase of Development Rights (PDR)

The Town's Open Space PDR fund is used to repay the bond taken for the purchase of development rights of agricultural lands and other lands that were deemed worthy of preservation by the Town of Warwick.

Warwick Highway

The Highway fund is used to fund the maintenance of the Town's highways and bridge infrastructure, including winter snow plowing, summer mowing, and brush removal.

Warwick Part Town

The Warwick Part Town fund is used to collect real property taxes for services that are offered solely to residents and property owners outside of the Villages. This is generally limited to services associated with land use and building regulation, but also includes some supplemental Town services such as additional youth programs and additional recordkeeping costs associated with the Town Clerk's maintenance of vital statistics. Police services are funded through the Part Town fund.

Greenwood Lake Ambulance

The Greenwood Lake Ambulance District provides emergency medical services to its district.

Warwick Fire District #2 (Greenwood Lake Fire Department)

The Warwick Fire District #2 provides emergency firefighting and rescue services to its district.

Tuxedo Union Free School District

The Tuxedo Union Free School District provides public educational service to youths within its district.

C. Potential Impacts

Revenue

The Project Sponsor intends to maintain exempt status over all tax parcels. Based on this, the proposed project is not anticipated to increase tax revenues to any taxing jurisdiction.

Costs

The proposed project is designed to be self-sustaining and to require few public services. The project is anticipated to have the following cost impacts on the community:

Orange County

Although being located on a County road and having somewhat of a significant resident population, the proposed development is not likely to significantly increase costs to the County. As detailed in Chapter 7, “Traffic and Transportation,” the proposed development will not result in a significant increase in usage of County roads.

Town of Warwick

The proposed development will contain several recreational resources on site and it is unlikely that the proposed project will significantly impact the Town’s recreation budget. No Dial-a-Bus use is anticipated as the Project Sponsor operates its own shuttles for off-site travel. Generally, there is a very low-to-absent incidence of criminal activity in the Project Sponsor’s existing facilities and it is not anticipated that the project will result in a significant increase in Town Court costs.

Warwick Open Space

The proposed development will not increase the Town’s costs associated with repayment of the Open Space–PDR bond.

Warwick Highway

The project is not located on a Town road and there are no Town of Warwick roads between the site and regional arterials that are likely to be frequently used for travel between the Applicant’s other facilities. It is not likely that the project will result in increased costs to the Town’s Highway Department.

Warwick Part Town

The demand of the proposal on Police services is detailed in Chapter 8. “Community Services and Facilities.” In summary of the applicable portions of that chapter, based on experience with the Project Sponsor’s other facilities located in similar communities in the Towns of Patterson and Shawangunk, it is anticipated that the level of service that will be demanded from the Police Department will be similar to that demanded by one single-family detached Warwick residence. This does not present a significant additional cost to the department.

Greenwood Lake Ambulance

The demand on ambulance services is detailed in Chapter 8. In summary of the applicable portions of that chapter, the proposed project will include on-site infirmary, doctors, nurses, and emergency medical technicians. It will be operated similarly to the Patterson facility, so ambulance service will only be requested if the on-site ambulance is out of service or if additional transport is required. Because of this there is not anticipated to be a significant demand for ambulance service.

Warwick Fire District #2

The Warwick Fire District #2 has a contractual agreement with the Tuxedo Fire District to provide services to the site. The proposed project will not affect this agreement and therefore it will not result in increased costs to the District. The demand on firefighting services is detailed in Chapter 8. In summary of the applicable portions of that chapter, the proposed project will result in the same level of demand as approximately 16.3 average Warwick residents.

Based on the recently accepted “Warwick Views DEIS,” the average cost per capita for fire services in the Town of Warwick is \$43.67. Using the demand equivalency of 16.3 average Warwick residents as described in Chapter 8, the proposed project will cost the fire district approximately \$712 in annual costs.

Tuxedo Union Free School District

No school-aged children will reside at the site. The project will not result in any increased costs to the Tuxedo Union Free School District.

D. Proposed Mitigation

The proposed project is not likely to result in significant additional increases in cost to the Orange County, Town Fund, Town Highway, Open Space, Part Town, and ambulance taxing jurisdictions. The fire district will experience increased costs and a net negative fiscal impact, but this is likely to be insignificant in comparison to the total budget of the Tuxedo Fire District. Although no significant impacts are anticipated, the Project Sponsor is proposing to contribute \$2,000 per year to Warwick Fire District #2 to help to offset the cost of fire protection.

E. Alternative Mitigation

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16. These alternatives are designated as (1) no-action, (2) educational facilities, (3) low-height, and (4) as-of-right. Fiscal resource impacts associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor's proposed facility.

No-Action Alternative

Under this alternative, the land would remain in its existing state including the abandoned INCO facility. As long as the Project Site was utilized by the Project Sponsor, no real property taxes would be paid. Should the property be sold to a non-tax-exempt entity, the project parcels would pay nominal amounts of real property tax revenue to all taxing jurisdictions. This action does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990's by The King's College would be constructed. These facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students.

Under a proposed religious educational facility as was previously approved, the project would result in increased costs. The chief difference between The King's College proposal and the Project Sponsor's proposal, in terms of fiscal impact and demand for services, is that The King's College proposal was not self-contained to the extent that the proposed project is. Teachers and staff would utilize the surrounding area for shopping, services, and residency. However, the cost of ambulance, fire department, and police services would undoubtedly be higher than for the proposed project, although to what extent is difficult to identify. The King's College type of alternative would not result in increased revenues to tax jurisdictions. This action does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower-profile structures at the Project Sponsor's facilities, which would require larger building footprints to accommodate the same square footage as the Project Sponsor's original proposal.

There would be no appreciable difference between the fiscal impact of the proposal and a reduced-height alternative. This action does meet the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property would be purchased by a private developer and that new residential lots would be constructed, which would be unrelated to the Project Sponsor's operations. Single-family residences would be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement.

Estimates show that approximately 200 acres of the 253-acre parcel are available for development of lots; the remaining 53 acres are reserved for infrastructure (i.e., roadways and stormwater facilities, open-space and contingency). Thus, this parcel could potentially accommodate up to 25 residences in a standard subdivision layout. This subdivision layout would be comprised of loop roads of significant length on the parcels on both sides of Long Meadow Road (County Road 84 [CR-84]).

It is difficult to determine what the values of hypothetical homes in this area would be. A significant amount of road infrastructure and grading costs would be borne by the developer in improving the parcels to allow for subdivision. It is likely that a hypothetical developer would therefore be required to pursue construction of luxury homes similar to those constructed near Sterling Lake (Sterling Pines) to the north. Based on these homes, an assessed value of \$97,500 per home was assigned consistent with a home valued at \$750,000. These homes were estimated to be five-bedroom single-family detached residences with 4.52 residents and 1.58 school-aged children.¹ Table 12-3 describes the fiscal impact that would likely result from each hypothetical residence.

Table 12-3 As-of-Right per Unit Fiscal Impact²

Taxing Jurisdiction	Tax Rate	Per Unit Tax Revenue	Per Capita Cost	Per Unit Cost	Total Net Cost
Orange County	\$24.76	\$2,414.30	\$116.83	\$528.07	\$1,886.22
Warwick Town	\$14.98	\$1,460.26	\$118.46	\$535.44	\$924.82
Greenwood Lk Amb	\$1.30	\$126.28	\$10.47	\$47.32	\$78.96
Warwick Fire #2	\$3.28	\$319.71	\$43.67	\$197.39	\$122.32
Tuxedo School	\$75.14	\$7,326.11	\$15,444.66	\$24,402.56	-\$17,076.44
All Jurisdictions	\$119.45	\$11,646.66	\$15,734.09	\$25,710.78	-\$14,064.12

Based on the above-listed information, the net fiscal cost per unit of a hypothetical \$750,000 five-bedroom, single-family detached residence would be approximately -\$14,000. The as-of-right alternative of 25 homes would therefore result in a total net fiscal deficit of approximately \$350,000. This deficit would be fueled by the school district costs of the development, which would be experienced by the Tuxedo Union Free School District and which would amount to more than \$425,000 more in new costs experienced than new revenue. All other jurisdictions would receive modest increases in revenue ranging from approximately \$2,000 (ambulance) to \$47,150 (County). This action does not meet the goals of the Project Sponsor. *

¹ Robert W. Burchell, Ph D., David Listokin, Ph D., and William R. Dolphin, M.A. Residential Demographic Multipliers—Estimates of the Occupants of New Housing.(New Brunswick, N.J.: Center for Urban Policy Research—Edward J. Bloustein School of Planning and Public Policy—Rutgers, The State University of New Jersey, 2006)

² Per Capita cost for all jurisdictions from the DEIS for Warwick Views reflecting 2007 cost per capita for school district is 2009-2010 tax levy divided by 2009-2010 enrollment. All rate data as reported by Orange County Real Property Tax Service for 2007 for all districts except Tuxedo School District which is for 2009.

A. Introduction

The following analysis is based on *The DEC Policy System*, Program Policy DEP-00-2, “Assessing and Mitigating Visual Impacts,” issuance date, July 31, 2000. The general procedure involves preparing an inventory of aesthetic resources, performing a visual assessment, considering the potential significance of the impact, and determining what mitigation measures may be necessary. Accompanying this section is the “Visual Resources Analysis” located in Appendix I-1 of this DEIS.

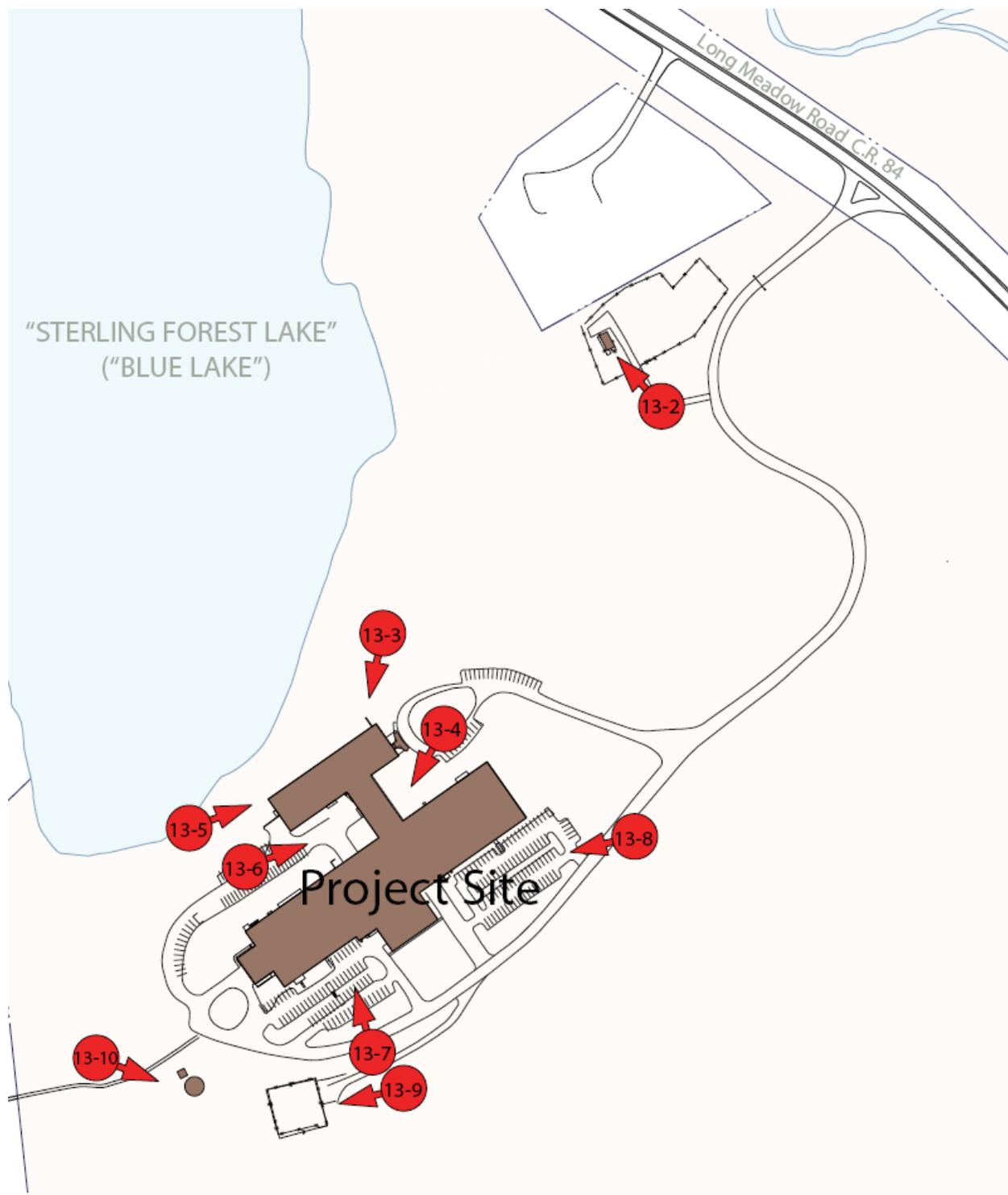
B. Existing Conditions

Property Description

The subject property is approximately 253 acres of land traversed by a portion of the Old Sterling Mine Road, as well as by a portion of Ringwood Brook. Approximately 7.8 acres of the site are meadow/brushland; 220.5 acres are forest; 0.7 acres are wetland (jurisdictional and non-jurisdictional); 6.8 acres are existing roads, pavement, structures, and other impervious surfaces; and 8.9 acres are existing landscaped area. The main portion of the property consists of a 168-acre tract formerly owned by International Nickel Company (INCO).

There are various-sized structures of differing functions presently located on the property; most are remnants of the INCO facility which was operated between the years 1960 and 1987. The buildings sat unused for twenty-one years until the property was purchased in July 2009 by the Project Sponsor. When acquired, the buildings were in an extremely deteriorated condition from lack of use, little-to-no maintenance, theft, and vandalism. The landscaping had been unattended and the buildings and developed site were overgrown with vegetation. The property and its structure could be described as vacant and dilapidated thus resulting in a blighting appearance on the viewshed. Since acquisition, the Project Sponsor has endeavored to care for the buildings to extend their appearance and useful life. (See Figure 13-1 for a description of the existing structures located on the site.) There is also an abandoned wastewater treatment plant located near the site entry (see Figure 13-2) that has also fallen into disrepair.

At the developed portion of the site there is an office building connected to a large industrial building. These buildings comprise a total footprint of approximately 121,000 square feet (see Figure 13-3, Figure 13-4, Figure 13-5, Figure 13-6, Figure 13-7, and Figure 13-8). The height of the existing office building is 38 to 51 feet above the grade at the lakefront side of the building including the 9-foot-high penthouse. The other sides of the building average 29 feet. The building height of the existing industrial building ranges from 19 to 34 feet above the existing grade. The Orange and Rockland Utilities, Inc., (O&R) maintains an existing electrical substation as shown in Figure 13-9. There is also an existing elevated water tank and adjacent pump house currently being used for the fire protection water supply documented in Figure 13-10. The current developed area makes up 14.8 acres of the site.



Existing Site Map with Photo Key



Figure 13-1 Existing Site Map with Photo Key



Figure 13-2 Existing Abandoned Wastewater Treatment Plant



Figure 13-3 Existing Office Building Looking West



Figure 13-4 Existing Courtyard between Office and Industrial Buildings, Looking West



Figure 13-5 Existing Office Building Looking Southeast



Figure 13-6 Existing Courtyard Between Office and Industrial Buildings, Looking East



Figure 13-7 Existing Industrial Building Looking Northeast



Figure 13-8 Existing Industrial Building Looking West



Figure 13-9 Existing Orange and Rockland Utilities (O&R) Electrical Substation



Figure 13-10 Existing Fire Protection Supply Tank and Equipment Building

Property History and Environmental Setting

The Project Site was formerly a part of the extensive undeveloped Sterling Forest, L.L.C., lands in the southeastern corner of the Town of Warwick. Approximately 15,000 acres of the property are now part of the Sterling Forest State Park. In addition, Ringwood State Park located in the State of New Jersey borders the Project Site to the south. Among the remaining privately held "out-parcels" within this forest landscape are a few sparsely developed corporate office uses, including a large IBM facility on the north boundary of the property. A residential development is located approximately 1,800 feet from the southeast boundary.

The following is an "Inventory of the Aesthetic Resources" within a five-mile radius of the Project Site:

Property On or Eligible for Inclusion in National and State Register of Historic Places

- Tuxedo Park, Orange County, New York: The Village of Tuxedo Park is located within the southern part of the Town of Tuxedo, near NY Route 17 and the NYS Thruway. It was founded in 1886 and has many examples of Tudor Revival, Italianate, and Queen Anne styles of architecture, by renowned architects such as McKim, Mead & White, Sturgis and Russell. The Village was added to the National Register of Historic Places on March 13, 1980, Reference No. 80002740.
- Long Pond Ironworks, Long Pond Ironworks State Park, West Milford, Passaic County, New Jersey: The ruins of the Long Pond Ironworks, founded in 1750, consist of three furnaces and 12 other structures on 1,450 acres within the Long Pond Ironworks State Park. It was added to the National Register of Historic Places in 1974, Reference No. 74001189.
- Ringwood Manor, Ringwood State Park, Ringwood, Passaic County, New Jersey: The Ringwood Manor is a graceful country manor house providing a home to a number of the ironmasters of the area including Robert Erskine, Surveyor-General to the Continental Army in 1777. The site, with its beginnings in 1700, consists of four buildings and one other structure on 7,240 acres within the Ringwood State Park. It was added to the National Register of Historic Places in 1966, Reference No. 66000471.

State Parks

- Sterling Forest State Park, Tuxedo Park, Orange County, New York: Sterling Forest State Park comprises nearly 18,000 acres of natural refuge amidst one of the nation's most densely populated areas. It serves as a watershed area for the surrounding municipalities, as well as an outdoor recreation area. Within the park are 27 marked trails, including the Appalachian Trail traversing the northern section of the park. Also located within the park are the ruins of the Sterling Furnace, a historic site where iron and steel were manufactured beginning in 1751.
- Harriman State Park, Rockland, and Orange Counties: As the second largest park in the New York State Park system, Harriman State Park is comprised of over 46,000 acres. The park has over 200 miles of hiking trails, 31 lakes, multiple streams, and scenic vistas.
- Ringwood State Park, Ringwood, Passaic County, New Jersey (also known as Ramapo State Forest): The 5,000-acre park is located in the heart of the Ramapo Mountains. The park contains the historic Ringwood Manor, the Shepherd Lake Recreation Area, and the State Botanical Garden at Skylands Manor.
- Long Pond Ironworks State Park, West Milford, Passaic County, New Jersey: Bordering the New York State border and Sterling Forest State Park, the Long Pond Ironworks State Park includes the Wanaque Wildlife Management Area and Long Pond Ironworks historic site.

Federally Designated Trail

- Appalachian Trail: About three miles of the New York–New Jersey Appalachian Trail system run within five miles of the existing Project Site. The Appalachian Trail was designated a National Scenic Trail by Congress in 1968.

The project region itself is primarily wooded and mountainous, with many small lakes and streams. The surrounding state parkland is primarily used for recreational activities and open-space preservation. Existing hiking trails are located along the west side of Sterling Forest Lake (Blue Lake) and an existing public cartop boat launch is found at the north end of Blue Lake.

Viewshed Analysis

An extensive analysis was made to determine the viewshed from which the existing site is visible. Areas given particular attention are the views of the site entrance from Long Meadow Road (CR-84) and views from Sterling Forest State Park, especially along blazed trails, park facilities, and from the fire tower as requested in the Scoping Document. Figure 13-11 pinpoints the locations where photographs were taken for documentation (see also the detailed view in Figure 13-12). These are within a five-mile radius of the site and are identified as the extent of view from each: whether it is a full view, partial view, or is not in view.

Table 13-1 provides the reference data used for the basis of the analysis, specifying the dates, location, and elevation from which each documented view is taken. To give a comprehensive understanding, most photographs were taken in both “summer condition” and “winter condition.” The “summer condition” illustrates how the foliage fully blocks or heavily obscures the views in most cases. The “winter condition” illustrates the full visual impact of the existing site during the six-to-seven months of the year when deciduous tree covering is not present.

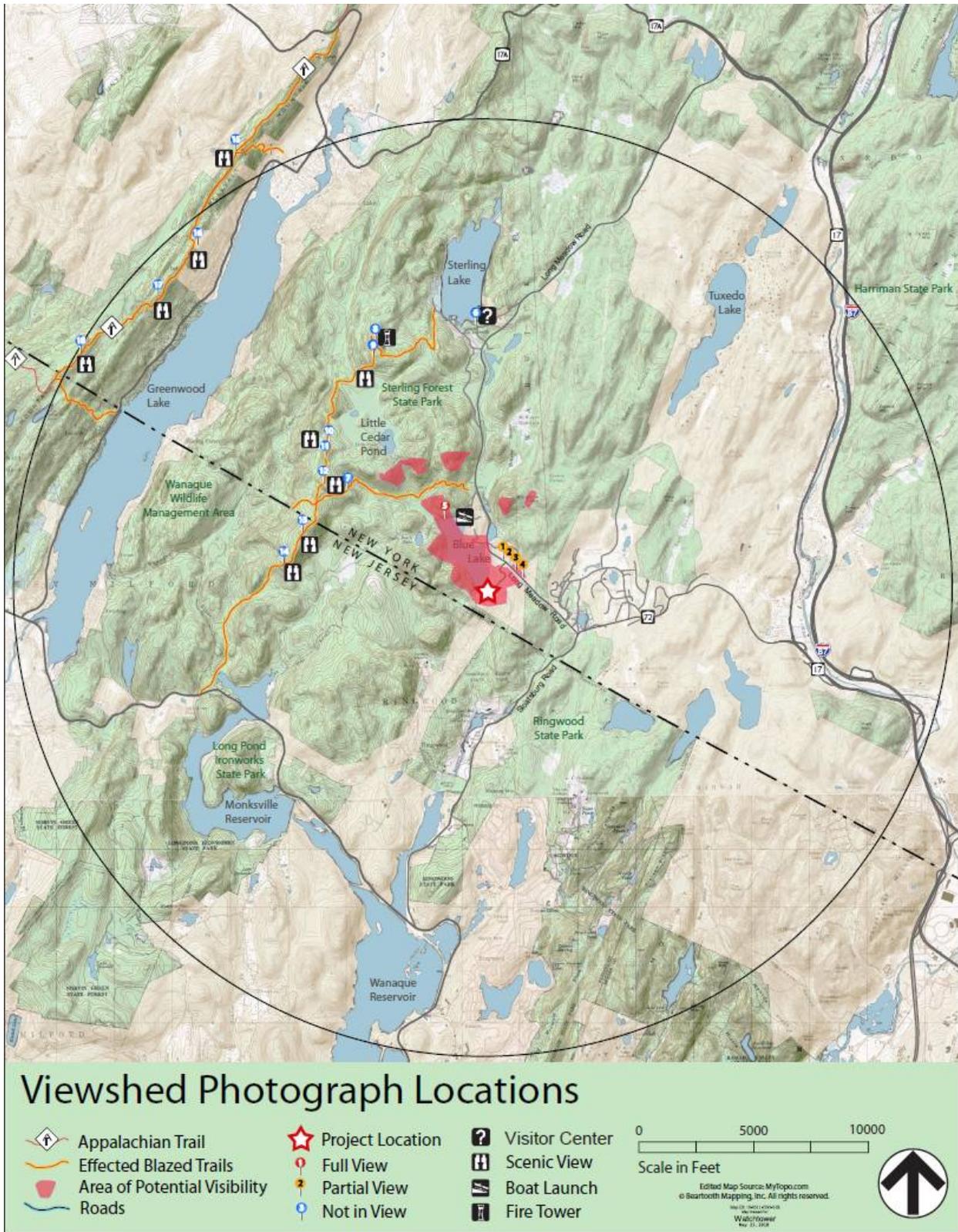


Figure 13-11 Viewshed Photograph Location Map

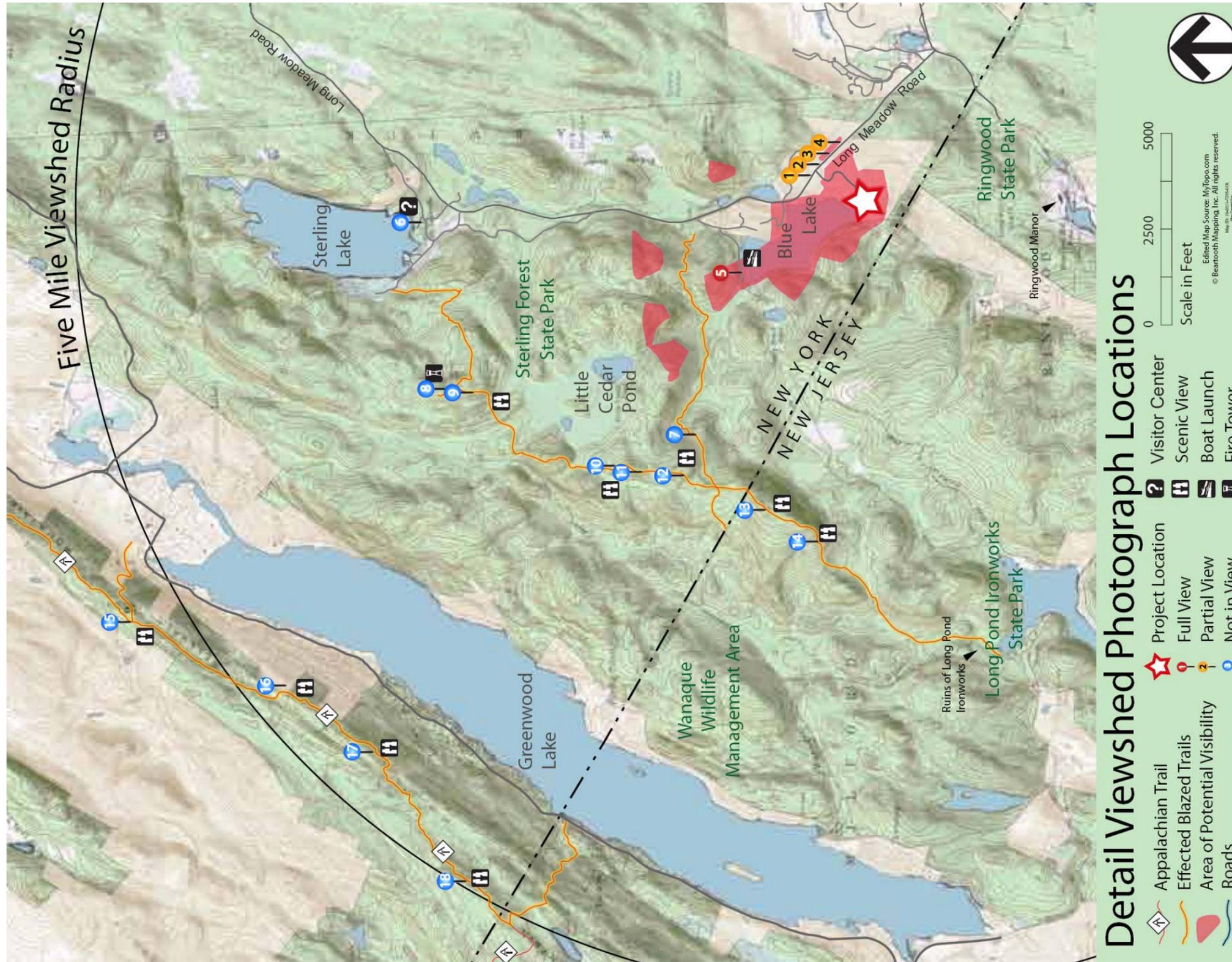


Figure 13-12 Detail Viewshed Photograph Location Map

Table 13-1 Viewshed Photograph Reference Data

No.	Summer Photo Date	Winter Photo Date	Location	Physical Location	Elevation (Meters)
1	6/22/10	3/18/10	Long Meadow Road	Lat N41 9.7207' Lon W74 15.1619'	194
2	-	2/23/10	Long Meadow Road	Lat N41 9.6668' Lon W74 15.0764'	195
3	-	2/23/10	Long Meadow Road	Lat N41 9.3911' Lon W74 15.3767'	195
4	-	2/23/10	Long Meadow Road	Lat N41 9.3721' Lon W74 15.0767'	190
5	6/15/10	3/18/10	Blue Lake Boat Launch	Lat N41 10.1154 Lon W74 15.7955'	194
6	-	12/15/10	Sterling Forest State Park Visitors Center	Lat N41 11.7159 Lon W74 15.2398	248
7	6/17/10	3/24/10	Lake Trail (near Sterling Ridge Trail)	Lat N41 10.3783' Lon W74 17.0548'	301
8	6/18/10	3/8/10	Fire Tower	Lat N41 11.7159' Lon W74 16.7108'	413
9	6/18/10	3/19/10	Sterling Ridge Trail	Lat N41 11.5723' Lon W74 16.7181'	389
10	6/18/10	3/19/10	Sterling Ridge Trail	Lat N41 10.7421' Lon W74 17.2780'	389
11	6/18/10	3/19/10	Sterling Ridge Trail	Lat N41 10.5908' Lon W74 17.3224'	360
12	6/18/10	3/19/10	Sterling Ridge Trail	Lat N41 10.4156' Lon W74 17.3455'	368
13	6/17/10	3/19/10	Sterling Ridge Trail	Lat N41 10.0074' Lon W74 17.5663'	376
14	6/17/10	3/19/10	Sterling Ridge Trail	Lat N41 9.7243' Lon W74 17.7462'	326
15	7/1/10	3/25/10	Appalachian Trail & Summit of Blue Trail	Lat N41 13.5359' Lon W74 18.3125'	388
16	7/1/10	3/25/10	Appalachian Trail	Lat N41 12.5525' Lon W74 19.0493'	403
17	7/1/10	3/25/10	Appalachian Trail	Lat N41 12.2361' Lon W74 19.3343'	399
18	7/1/10	3/25/10	Appalachian Trail	Lat N41 11.7075' Lon W74 20.3262'	441

Concerning the existing viewshed at the site entrance on Long Meadow Road (CR-84), two locations were selected to demonstrate the visual impact from the adjacent country road. The location farthest north on the road, approximately 100 feet from the entrance, shows the existing site entrance as it comes into the view of vehicles traveling in a southeast direction on Long Meadow Road (CR-84), as shown in Viewshed Location #1 (see Figure 13-13). When traveling in the opposite direction, approximately 100 feet from the entrance, Viewshed Location #2 shows the view of the existing site entry as seen from vehicles traveling northwest on Long Meadow Road (CR-84)—see Figure 13-17.

Concerning the views from hiking trails within Sterling Forest State Park, eight locations were selected to ascertain the visual impact. These areas were chosen since they provide scenic views in the direction of the existing site and/or are at highpoints of the surrounding terrain, including the fire tower. These include the location of the public boat launch at Blue Lake. These are documented in Figure 13-11 and Figure 13-12 as to those having a full view, partial view, or are not in view of the proposed project. These figures also indicate “Areas of Potential Visibility” although a thorough investigation revealed only two actual vantage points, each of which are approximately one-quarter mile off of the blazed trail. Photographs were taken of each of these areas, among many others, to document the findings.

Incorporated in this section is the location where the site is shown in full view, namely the Blue Lake boat launch, Viewshed Location #5 (see Figure 13-23 and Figure 13-25). There was no observable visual impact from the Sterling Forest State Park blazed trails, Visitor Center, or fire tower at Location #6 through Location #12 on the Viewshed Photograph Location Map in Figure 13-11 and Figure 13-12. (For sections, see Appendix I-1 “Visual Resources Analysis—Line of Site from Point of Interest 7, 8, 11 and 12.”). When considering the “Visual Resources Analysis,” there is no terrain that blocks the Line of Site from Point of Interest 10. A determination that the site is “not in view” was established since it is blocked from sight by the existing trees and vegetation in both the “winter” and “summer” conditions as shown in Figure 13-27 and Figure 13-28. (For section, see Appendix I-1 “Visual Resources Analysis—Line of Site from Point of Interest 10.”)

Two additional scenic views were included along the Sterling Ridge Trail once it crosses the New Jersey State border into Long Pond Ironworks State Park at Location #13 and Location #14 on the Viewshed Photograph Location Map in Figure 13-11 and Figure 13-12. These locations are also documented as providing no view of the proposed project. (For sections, see Appendix I-1 “Visual Resources Analysis—Line of Site from Point of Interest 13 and 14.”)

Four locations were selected along the Appalachian Trail where there are scenic views at locations #15 through #18 on the Viewshed Photograph Location Map in Figure 13-11 and Figure 13-12. These locations are documented as not providing a view of the existing site because of the mountainous terrain blocking the line of sight—also see Appendix I-1 “Visual Resources Analysis—Line of Site from Point of Interest 16 to 18.”

Since the Project Site is visible from certain areas of the Sterling Forest State Park, an estimate of the number of visitors who will annually view the project while at the Park was provided. Table 13-2 below is based upon the Sterling Forest State Park Manager’s letter dated March 11, 2010—see Appendix I-2.

Table 13-2 Annual Number of Visitors to Sterling Forest State Park

Time Period	Number of Visitors
April 1, 2008 to March 31, 2009	166,819
April 1, 2009 to March 8, 2010	164,662
April 1, 2010 to March 31, 2011	170,000 to 180,000 (estimate)

C. Potential Impacts

The existing visual character of the site is predominantly composed of three elements: the forested slopes of the site, the existing INCO buildings on the shore of Blue Lake, and meadow/brush land in the existing cleared easement used and maintained by O&R.

As described in Chapter 2, “Project Description,” the proposed project of a religious administrative campus is comprised of approximately eight new buildings, including new utilities, recreational amenities, open-space areas for common use by residents and visitors, parking, and driveways. These will be largely contained within the area previously developed by INCO. As proposed, the new buildings will consist of a total footprint of approximately 360,000 square feet. The maximum height of any building is 60 feet. The outdoor recreation facilities are comprised of two tennis courts, a basketball court, and two sand volleyball courts of regulation size. These are located southeast of the proposed buildings. They shall be set back from Long Meadow Road (CR-84) of sufficient distance to be obscured by the foliage in all seasons. The building located on the east side of the property and closest to Long Meadow Road (CR-84) is setback approximately 330 feet from the road.

In order to reduce the overall impervious area and visual impact roads and parking areas, surface-paved parking areas were kept to a minimum. This objective is achieved by the inclusion of enclosed parking garages which will meet 85 percent of the parking requirements.

The proposed site design locates the majority of the proposed buildings in the previously developed area and results in many visual benefits. In summary, the benefits of the proposed site design are:

- The first benefit of this layout is that the buildings are kept near the lake at a lower elevation resulting in proposed building heights that fall well below the ridgeline from any viewpoint beyond the property line. The outcome is that the viewshed of the Project Site is mainly determined by topography and vegetation to the Blue Lake basin.
- A second benefit is the reduction of the overall impact on the site physically and visually. The majority of the disturbance to the site is within the previously disturbed area, limiting the spread of the development and thus minimizing the increase in visibility. This reduces the area of existing woodland needing to be cleared for the proposed project to 16.5 acres with 5 acres being reforested following construction. The majority of the property will remain in its current condition as forested slopes.
- Although the proposed project does have an increase in building footprint and building heights, the increased visibility is minimal because the proposed buildings will generally still only be visible from viewpoints where the existing buildings can already be seen. The increase in visibility is offset by the qualitative improvement of the view from the existing abandoned and deteriorated structures which have existed for 21 years to a maintained site of detailed architectural design.
- Following construction of the proposed project, the developed area of the site will total 45 acres. Forested slopes will continue to make up the dominant portion of the Project Site (i.e., 186.5 acres).
- As a third benefit from the proposed project, the Project Sponsor is in discussion with O&R, concerning the possibility of burial of the existing overhead power lines within the existing 100-foot-wide easement. Also being discussed is the relocation and updating of the existing electrical substation, to reduce its size and improve the overall aesthetics. The maintenance of the easement made up of meadow/brush land will be enhanced by the Project Sponsor.
- A fourth benefit from the proposed project is the proposed visual improvement in the area of the existing wastewater treatment facility. This area of improvement is near the existing site entry where the abandoned wastewater treatment facility is located. The Project Sponsor is proposing to demolish the existing structures and roadway, remediate the existing sand filters, and redevelop this area as a wetland buffer using native planting as part of the action.
- Water and sewer services to the site will continue to be provided by United Water, which maintains an existing water tank with a storage capacity of 500,000 gallons to the west of the property (within Sterling Forest State Park property). No visible modifications are proposed to this tank that will result in a visual impact.
- As a fifth benefit from the proposed project, the existing elevated water tower located within the property will be demolished along with the adjacent equipment building (see Figure 13-10). No additional water towers are proposed.
- To accommodate necessary communications infrastructure, two rooftop platforms are proposed for the installation of a cellular/two-way radio antenna array. Additional dish-type receiver antennas are proposed on the maintenance building and each residence building for Master Antenna Television (MATV) reception. These antenna installations are proposed in locations that minimize the visual impact from the direction of sensitive views.

The developed areas of the site will fall almost entirely outside the boundaries of the Ridgeline Overlay District. The small portion that falls within this district will be sensitively developed, restricting site clearing and grading to the minimum necessary and in harmony with the current requirements of Chapter 164-47.1 of the *Code of the Town of Warwick, New York*—see Figure 2-6 “SWBP and 700’ Ridgeline Overlay District.”

Viewshed Analysis

An extensive analysis was made to determine the locations within the viewshed where the proposed project will be visible from and to determine the severity of the visual impact. Areas given particular attention are the views of the site entrances from Long Meadow Road (CR-84) and views from Sterling Forest State Park, along blazed trails and at park facilities and as requested in the Scoping Document. Park facilities were determined to include the Visitor Center, fire tower, and Blue Lake boat launch. Figure 13-11 pinpoints the locations where photographs were taken for documentation (also in detail view in Figure 13-12). These are within a five-mile radius of the site and are identified as the type of view from each: whether it is a full view, partial view, or is not in view.

Table 13-1 provides the reference data used for the basis of the analysis, specifying the dates, location, and elevation from which each documented view is taken. To give a comprehensive understanding, most photographs were taken in both “summer condition” and “winter condition.” The “summer condition” illustrates how probable the foliage will fully block or heavily obscure the views. The “winter condition,” included for all photos, indicates the full visual impact of the development during the six-to-seven months of the year when deciduous tree covering is not present. The study includes photosimulations in both the summer and winter seasons where possible. These clearly demonstrate the extent that the Project Site is likely to be observed—see Figure 13-13 through Figure 13-28.

Views of the Project Site were taken using a Nikon camera that was equipped with a GPS reader that registered the camera’s longitude, latitude, and altitude. This information was coordinated and transferred to the proposed Project Site plan so that the accuracy of the photosimulation could be confirmed. Five 4-foot diameter, red weather balloons were typically used for the photosimulation. One balloon was located at the northeast corner of the proposed office building with the top of the inflated balloon at a height corresponding to the proposed office building height. Since this first balloon was not visible in the treeline, a second balloon was lofted at the same location 100 feet higher to allow for visual registry of the building corner. A third balloon was located at the northwest corner of the proposed residence building with the top of the inflated balloon at a height corresponding to the proposed residence building height. As with the proposed office building, a fourth balloon was lofted at the same location 100 feet higher to allow for visual registry since the third balloon was not visible in the treeline. The fifth balloon was lofted at the corner of the proposed residence building, east of the location of the third and fourth balloons.

The weather on the date of the study was overcast skies with a light 6–12 mph wind. The initial setup and general approach was witnessed by Stacey Calta, Dan Duthie (Conservation Board) and Mark Wheeler (Conservation Board).

Concerning the view from Long Meadow Road (CR-84), undeveloped woodlands and reforested areas will continue to surround the proposed development, effectively screening the majority of the project from public viewpoints along the adjacent county road. The main project entrance will be developed in the same location as the existing entrance with adjustments for improved access to the driveway to enhance safety. To monitor admission to the site, a gatehouse and an entrance gate will be positioned inside the property line. This will be located approximately 160 feet from Long Meadow Road (CR-84). This entrance will be used for daily operations, including visitors and deliveries. Low visibility fencing (8-foot-high “game” fencing made of wood post uprights and metal wire mesh) enclosing the project vicinity would extend from each side of gate to provide further security. Two locations were selected to demonstrate the visual impact from the adjacent country road. Both locations show the proposed site

entrance as it comes into the likely view of vehicles traveling in each direction on Long Meadow Road (CR-84), approximately 100 feet from the entrance (see Figure 13-14 and Figure 13-16). Figure 13-15 and Figure 13-17 show the visual impact on these two views by means of photosimulations. As pictured, the proposed landscaping will replace the existing lawn area with reforestation to the extent possible without affecting line of sight views. This will enhance the natural characteristics of the existing road as well as supplement the vegetative screening of the proposed building closest to the road—the vehicle maintenance building located approximately 330 feet from Long Meadow Road. While aspects of this building may have increased visibility from specific locations along the road, especially at the O&R easement with no tree coverage, by means of the reforestation efforts the majority of the views will be appreciably obscured. Additionally, an identification sign will be designed and placed in harmony with the current requirements of Chapter 164-43.1 of the *Code of the Town of Warwick, New York*, at the entry. Overall, the proposed improvements to the use and aesthetics of the existing entrance, along with the setback of the gate, gatehouse, and other buildings serve to curtail additional visual impact.

A second site entrance road, located approximately 500 feet southwest of the existing entrance will be created as required by the fire code and desired by Project Sponsor for operational flexibility. This entry will be locked and will primarily be used for emergencies. Two locations were selected to demonstrate the visual impact from Long Meadow Road (CR-84). Both locations show the proposed site entrance as it comes into the likely view of vehicles traveling in each direction along the country road, approximately 100 feet from the entrance road—see Figure 13-20 and Figure 13-22.



Figure 13-13 Viewshed Photograph—Location #1, Winter Condition



Figure 13-14 Viewshed Photosimulation—Location #1, Winter Condition



Figure 13-15 Viewshed Photograph—Location #1, Summer Condition



Figure 13-16 Viewshed Photosimulation—Location #1, Summer Condition



Figure 13-17 Viewshed Photograph—Location #2, Winter Condition



Figure 13-18 Viewshed Photosimulation—Location #2, Winter Condition



Figure 13-19 Viewshed Photograph—Location #3, Winter Condition



Figure 13-20 Viewshed Photosimulation—Location #3, Winter Condition



Figure 13-21 Viewshed Photograph—Location #4, Winter Condition



Figure 13-22 Viewshed Photosimulation—Location #4, Winter Condition

Concerning the views from hiking trails within Sterling Forest State Park, it is noted that Sterling Forest State Park requires hikers to keep on blazed trails.¹ Eight locations (Location #5 to Location #12) were selected to ascertain the visual impact and if effected, be developed by photosimulation. These areas were chosen since they provide scenic views in the direction of the existing site and/or are at high points of the surrounding terrain, including the fire tower. These include the location of the public boat launch at Blue Lake and the Sterling Forest State Park Visitors Center as well. These are documented in Figure 13-11 and Figure 13-12 as to those having a full view, partial view, or are not in view of the proposed project. To give a comprehensive understanding, a photograph was taken in both “summer condition” and “winter condition” and a photosimulation developed for each condition. Incorporated in this section is the location where the site is shown in full view, namely the Blue Lake boat launch, Viewshed Location #5 photosimulation (see Figure 13-24 and Figure 13-26). As illustrated in the visual resources analysis, there was no observable visual impact from the Lake Trail at Location #7, the fire tower located at Location #8, or on the Sterling Ridge Trail at Location #9 to Location #12—see Figure 13-11 and Figure 13-12. (For sections, see Appendix I-1 “Visual Resources Analysis—Line of Site from Point of Interest 7, 8, 11 and 12.”) When considering the Visual Resources Analysis, there is no terrain that blocks the Line of Site from Point of Interest 10. A determination that the potential project is “not in view” was established since it is blocked from sight by the existing trees and vegetation in both the “winter” and “summer” conditions as shown in Figure 13-27 and Figure 13-28. (For section, see Appendix I-1 “Visual Resources Analysis—Line of Site from Point of Interest 10.”)

Two additional scenic views were included along the Sterling Ridge Trail once it crosses the New Jersey State border into Long Pond Ironworks State Park located at Location #13 and #14 on the “Viewshed Photograph Location Maps” in Figure 13-11 and Figure 13-12. These locations are also documented as providing no view of the proposed project. (For sections, see Appendix I-1 “Visual Resources Analysis—Line of Site from Point of Interest 13 and 14.”)

Four locations were selected along the Appalachian Trail where there are scenic views at Locations #15 to #18 (see Figure 13-11 and Figure 13-12). None of these locations provide a view of the proposed Project Site due to the mountainous terrain blocking the line of sight—see Appendix I-1 “Visual Resources Analysis—Line of Site from Point of Interest 16 to 18.”

¹ New York–New Jersey Trail Conference. Sterling Forest Trails—Trail Map 100—2008 Edition, Mahwah, NJ: 2008.



Figure 13-23 Viewshed Photograph—Location #5, Winter Condition



Figure 13-24 Viewshed Photosimulation—Location #5, Winter Condition



Figure 13-25 Viewshed Photograph—Location #5, Summer Condition



Figure 13-26 Viewshed Photosimulation—Location #5, Summer Condition



Figure 13-27 Viewshed Photo—Location #10, Winter Condition



Figure 13-28 Viewshed Photo—Location #10, Summer Condition

The analysis of views from Sterling Forest State Park, New Jersey State Parks, and the Appalachian Trail demonstrate that visibility of the site will largely remain limited to areas where the existing site is currently visible, namely from the Boat Launch, Long Meadow Road (CR-84), and non-marked wood roads within the Blue Lake basin. As stated previously, Sterling Forest State Park requires that hikers stay to blazed trails; and hiking along wood roads is discouraged as they “may be overgrown, indistinct and impossible to follow.”² All Sterling Forest State Park blazed trails are totally screened by intervening vegetation or terrain.

The Scoping Document directs that views “especially from hiking trails and fire towers in the Park” be defined. Of these, only one location provides a full view of the project: the public boat launch at Location #5 on the “Viewshed Photograph Location Map” in Figure 13-11 and Figure 13-12 and as shown in the photosimulations in Figure 13-24 and Figure 13-26. “Areas of Potential Visibility” are also indicated on Figures 13-11 and Figure 13-12, although a thorough investigation revealed only two actual vantage points, each of which are approximately one-quarter mile off the blazed trail.

The only private improved land that will afford views of the site is the existing IBM office facility located on the opposite shore Blue Lake. The most visible elements of the proposed campus from these locations will be those structures which extend above the existing tree canopy. The proposed roadways, surface parking, parking garages, and recreation courts will remain largely screened from IBM office facility view.

Views of the site from the boat launch and the IBM office facility exist today and are characterized by the existing dilapidated building. Post construction, the proposed development will improve the quality of views of the site, although the total number and height of buildings will increase.

The remaining sites included in the “Inventory of the Aesthetic Resources” mentioned above were also considered in this analysis and none were found to present views of the proposed development because of intervening vegetation or terrain. These will include those on the National and State Register of Historic Places and the State Parks: the Village of Tuxedo Park, Long Pond Ironworks and Ringwood Manor, and Harriman State Park.

Site Lighting

Site lighting is proposed to utilize full cut-off fixtures for the following areas of the proposed project: roadways and parking, pedestrian walkways and spaces, service areas, building entrances, main site entrance, and outdoor recreation area. The effect of the proposed site lighting, including internal building lighting, may result in increased visual impact within a limited viewshed above existing site conditions, or conditions that existed previously at the INCO facility. As discussed above, the viewshed of the Project Site is limited by topography and vegetation to the Blue Lake basin. Within this area there are three primary receptors which will be impacted by the proposed site lighting. These are the private IBM facility on the northeast side of Blue Lake, woods roads within Sterling Forest State Park within the Blue Lake basin, and the public boat launch located at the north end of Blue Lake. Considering that the boat launch is substantially used for daytime recreational activities, the impact of proposed site lighting on recreational users within the viewshed will be minor. Similarly, the majority of employees and visitors to the IBM site are present during daylight hours, and IBM contains its own site lighting.

From Long Meadow Road (CR-84), the proposed illumination of the majority of the on-site buildings and parking will not be visible from Long Meadow Road (CR-84) due to the topography and vegetation along the roadway, except those on the roadside perimeter of the development. This impact will increase during the six-to-seven months of the year when deciduous tree covering is not present. The site entrance will continue to be provided with street lighting and a lighted entry sign is proposed. Lighting on the buildings

² Ibid.

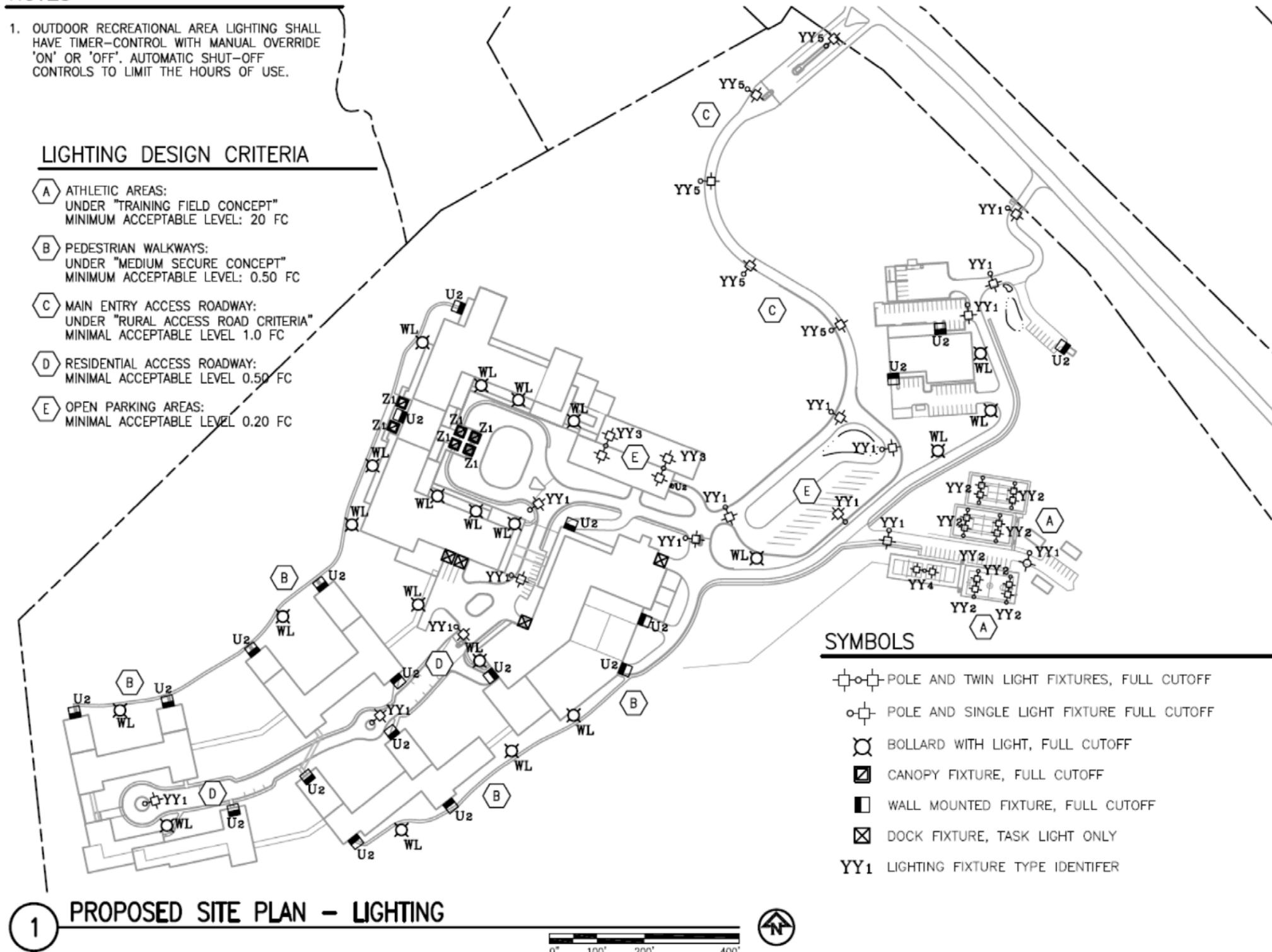
and roadways located on the east side of the site, closest to Long Meadow Road (CR-84) will be visible due to the proximity to the road. However, the appearance of a limited number of lights visible through the trees from Long Meadow Road (CR-84) will be consistent with similar lighting at the Woodlands, IBM, and United Water's area facilities—see Figure 13-29 Proposed Site Lighting–A and Figure 13-30 Proposed Site Lighting–B. The type and spacing of fixtures are indicated in Figure 13-29 Proposed Site Lighting–A. Design lighting levels (foot-candle) are provided on Drawing E-001, “Site Lighting Plan” in Appendix I-3. A summary chart showing the minimum, maximum, and average levels is provided in Table 13-3. If no mitigation measures are taken there is a potential impact to nighttime views.

NOTES

1. OUTDOOR RECREATIONAL AREA LIGHTING SHALL HAVE TIMER-CONTROL WITH MANUAL OVERRIDE 'ON' OR 'OFF'. AUTOMATIC SHUT-OFF CONTROLS TO LIMIT THE HOURS OF USE.

LIGHTING DESIGN CRITERIA

- (A) ATHLETIC AREAS:
UNDER "TRAINING FIELD CONCEPT"
MINIMUM ACCEPTABLE LEVEL: 20 FC
- (B) PEDESTRIAN WALKWAYS:
UNDER "MEDIUM SECURE CONCEPT"
MINIMUM ACCEPTABLE LEVEL: 0.50 FC
- (C) MAIN ENTRY ACCESS ROADWAY:
UNDER "RURAL ACCESS ROAD CRITERIA"
MINIMAL ACCEPTABLE LEVEL 1.0 FC
- (D) RESIDENTIAL ACCESS ROADWAY:
MINIMAL ACCEPTABLE LEVEL 0.50 FC
- (E) OPEN PARKING AREAS:
MINIMAL ACCEPTABLE LEVEL 0.20 FC



SYMBOLS

- ☐-○-☐ POLE AND TWIN LIGHT FIXTURES, FULL CUTOFF
- ☐ POLE AND SINGLE LIGHT FIXTURE FULL CUTOFF
- ⊗ BOLLARD WITH LIGHT, FULL CUTOFF
- ▣ CANOPY FIXTURE, FULL CUTOFF
- WALL MOUNTED FIXTURE, FULL CUTOFF
- ⊗ DOCK FIXTURE, TASK LIGHT ONLY
- YY1 LIGHTING FIXTURE TYPE IDENTIFIER

1 PROPOSED SITE PLAN - LIGHTING

Figure 13-29 Proposed Site Lighting-A

POLE: 12'-0" - 15'-0" MAX

EXTENDED POLE MOUNT
12" SQ
FULL CUTOFF

**FIXTURE-YY1 (SINGLE)
FIXTURE-YY3 (DOUBLE)**
100W, HIGH PRESSURE SODIUM

POLE MOUNT
AREA CUTOFF

YY1

CLEAR, TEMPERED GLASS LENS IS HELD IN A DIE CAST, RECESSED DOOR FRAME. LENS FRAME SUPPLIED WITH MTG. FOR OUTDOOR ACCESSORIES SUCH AS

COMPLETE SILICONE GASKETING AROUND LENS FRAME & AT MTG. MEETS U.L. STANDARD FOR WET LOCATIONS. STANDARD 480 VOLT BALLAST.

LAMPS - 100 WATT HPS

HOUSING IS SEAMLESS DIE CAST ALUMINUM. MEDIUM BRONZE, ACRYLIC POWDER FINISH.

FULL CUTOFF, FORWARD THROW DISTRIBUTION. POLE MOUNTS ARE COMPLETELY GASKETED AT FIXTURE, PROVIDE ENCLOSED WIRING CHAMBER.

POLE: 30'-0" MAX

RECREATIONAL LIGHTING

EXTENDED POLE MOUNT
12" SQ
FULL CUTOFF

**FIXTURE-YY2 (SINGLE)
FIXTURE-YY4 (DOUBLE)**
1000W, METAL HALIDE

POLE MOUNT
AREA CUTOFF

YY2

CLEAR, TEMPERED GLASS LENS IS HELD IN A DIE CAST, RECESSED DOOR FRAME. LENS FRAME SUPPLIED WITH MTG.

COMPLETE SILICONE GASKETING AROUND LENS FRAME & AT MTG. MEETS U.L. STANDARD FOR WET LOCATIONS. STANDARD 480 VOLT BALLAST.

LAMPS - 1000 WATTS MH

HOUSING IS SEAMLESS DIE CAST ALUMINUM. MEDIUM BRONZE, ACRYLIC POWDER FINISH.

COMPLETELY GASKETED AT FIXTURE, PROVIDE ENCLOSED WIRING CHAMBER.

POLE: 20'-0" - 25'-0" MAX

EXTENDED POLE MOUNT
12" SQ
FULL CUTOFF

FIXTURE-YY5
150W, HIGH PRESSURE SODIUM

POLE MOUNT
AREA CUTOFF

YY5

CLEAR, TEMPERED GLASS LENS IS HELD IN A DIE CAST, RECESSED DOOR FRAME. LENS FRAME SUPPLIED WITH MTG.

COMPLETE SILICONE GASKETING AROUND LENS FRAME & AT MTG. MEETS U.L. STANDARD FOR WET LOCATIONS. STANDARD 480 VOLT BALLAST.

LAMPS - 150 WATT HPS

HOUSING IS SEAMLESS DIE CAST ALUMINUM. MEDIUM BRONZE, ACRYLIC POWDER FINISH.

FULL CUTOFF, FORWARD THROW DISTRIBUTION. POLE MOUNTS ARE COMPLETELY GASKETED AT FIXTURE, PROVIDE ENCLOSED WIRING CHAMBER.

10" L X 6" W

BALLAST

FIXTURE-U2
70W, HIGH PRESSURE SODIUM

OUTDOOR SECURITY
LIGHT PERIMETER CUTOFF

U2

WALL PERIMETER CUTOFF OPTICS: WALL MTD. FIXTURE DESIGNED FOR WIDE LIGHT DISTRIBUTION. FOR INTERIOR AND EXTERIOR USES.

HOUSING: DIE-CAST ALUMINUM FINISHED IN BRONZE THERMO-SET POWDER PAINT. POLYCARBONATE LENS.

INTERNAL POLISHED ALUMINUM SHROUDS ARE DESIGNED TO REFLECT THEIR ENVIRONMENT. THEY ARE ALSO EASILY REMOVABLE FOR PAINTING IF DESIRED.

LAMPS SHALL BE INDUCTION TYPE.

8.9"

40"

FIXTURE-WL
70W, HIGH PRESSURE SODIUM

BOLLARD

WL

EXTRUDED ALUMINUM HOUSING WITH STEEL FRAME SUPPORTS.

INJECTION MOLDED CLEAR POLYCARBONATE LENS.

STANDARD 120/277 VOLT BALLAST.

FINISH: ACRYLIC THERMOSET BRONZE POWDER FINISH.

UL LISTED FOR WET LOCATION.

12"

12"

FIXTURE-Z1
100W, HIGH PRESSURE SODIUM

RECESSED CANOPY LIGHT

Z1

WHITE STANDARD POWDER FINISH.

ALL FIXTURES ARE STANDARD WITH 277V HIGH POWER FACTOR BALLAST.

UL LISTED.

MOUNTING: FOUR STEEL "L" BRACKETS ARE PROVIDED TO ATTACH THE HOUSING TO CEILING MATERIAL.

TEMPERED GLASS LENS.

Figure 13-30 Proposed Site Lighting-B

D. Mitigation Measures

The proposed new buildings have been designed in cooperation with the award-winning architectural firm of Perkins Eastman. Care was taken to develop a design which blends with the scenic rural environs while minimizing impact on the view corridor. In addition, the exterior finish colors will be chosen in conformance with Town's Biodiversity Color Chart—see Appendix I-4.

Although minimally increased from the existing impact, the view afforded from the Sterling Forest State Park boat launch was carefully analyzed. This consideration is reflected in the small overall footprint and warm palette color and textures which blend well with the natural surroundings. The building heights are limited to an overall height of 60 feet.

Mitigation strategies can be categorized into three general groups: design and siting, landscape design, maintenance, and offsets.

Design and Siting

Structures have been sited to provide a sufficient distance between the buildings to appear as separate edifices in a general balance of massing harmonious to the eye. In addition, several techniques are employed to visually break down the overall massing of the larger buildings. One technique is varying the planes of the building façade and the heights of differing building sections to make the buildings appear as separate structures. The façades of the larger buildings will in some cases be interrupted with other elements, such as projecting porches, recessed wings, or columns, to reduce the appearance of mass. In the case of the residence buildings, the layout of a “U-shaped” building around large courtyards will help to boost the effect of separate structures. A second technique of providing different fenestration size, types, and patterns will be implemented, minimizing sections of uninterrupted walls. These measures will be complemented by a third technique; the use of exterior finish materials of natural stone and masonry with varying shades and textures.

The selection of natural stone and masonry is intended to ground the buildings into their immediate surrounding when combined with a careful color selection of the materials. The architectural feature of providing a building “base” of stone will augment the overall appearance and provide human scale.

While flat roofs will be used on a majority of the buildings to allow ecologically sensitive “green roofs” to be developed for sustainability benefits and further visual mitigation, efforts will be made to vary the heights of building sections and to elevate stair towers to provide visual relief. The roofs of the residence buildings will be designed using a complementary combination of gable-roof lines intersecting with flat roofs. The gable roofs will be featured at the building ends facing Blue Lake to soften the appearance of the structures from the distant views.

Mechanical equipment will be screened from public view, in most cases locating it inside the buildings or behind screened walls. Site utilities will be buried where possible; or when not possible, they will be screened by using fencing, walls, vegetation, or mechanical rooms scaled to resemble outbuildings. Heating, ventilation, and air conditioning equipment typically mounted on the roof will be situated behind sloped roofs, projections, or at the rear of buildings so that it is beyond the sight lines as viewed from the boat launch.

All practical efforts will be made to conceal paved areas. Paved areas are significantly reduced by providing enclosed below-grade parking garages for the majority of the parking needs. Remaining surface parking is proposed at the rear or side of buildings and landscape is provided to screen these areas.

Landscape Design

A careful analysis was performed of methods to preserve the existing vegetation by minimizing clearing and grading in the development. The Project Site will be predominantly undeveloped, allowing the area to retain more forested land, virtually eliminating the visual impact from most surrounding locations. Care has been taken to maintain all of the mature forest vegetation along the background ridge line. The buildings have been located, for the most part, in the existing cleared area. Impacts on scenic views from adjacent properties and parklands will be minimized by developing the campus as close to the existing topography as possible.

Since a road buffer is critical for softening the impact of large buildings along roadways, efforts have been made to retain the natural vegetation and terrain of the existing site along the road to provide screening. The project development has been placed with sufficient distance from the road to maintain the natural character of Long Meadow Road (CR-84) as a rural country road. Underground storage chambers are planned rather than a typical detention basin in the existing lawn area on the south side of the entry as a component of the Stormwater Management Plan. The existing lawn area and vegetation at the entry will be replaced with plantings of native trees, shrubs, and ground cover to reduce the visual impact of the buildings located at the east side of the site. A similar planting approach will be used at the development of a secondary site entry to the south side of the existing entry which will require the removal of some of the natural vegetation.

At the central part of the development, it is the Project Sponsor's vision that the campus be a blend of facilities interspersed with forested area that will reflect the beauty of the adjacent parkland and retain the feel of a woodland site.

Additionally, the landscape design proposes significant new plantings to re-vegetate the disturbed areas with native planting further mitigating views from off-site as well as enhancing the aesthetic character of the campus. The landscaping features of the site will also incorporate the "green" stormwater practices as encouraged by the New York State Department of Environmental Conservation (NYSDEC). Features of stormwater control include "green roofs," "stormwater planters," "bioretention areas," and "riparian buffers." With the exception of the green roofs, these stormwater methods will be mixed with areas of restored woodland and rock gardens of low shrubs and perennials. The existing boulders and rock outcroppings will be retained for re-use in the landscaping plan. Unnatural expanses of large lawn areas are not a part of the landscaping scheme. The planting plan provides visual interest in all four seasons by including deciduous trees, conifers, shrubs, and perennials. The purpose of these plantings is not only to mitigate off-site visual impact, but also reestablish a woodland character to the campus compatible with the surrounding natural landscape.

A lacustrine buffer will be provided at the 100-foot lakefront wetland setback. A minimum of 25-feet along the water's edge will remain undisturbed as required by the NYDEC. The remaining 75-feet will be vegetated for use as a "riparian buffer," a feature of the stormwater "green" practices encouraged by the NYSDEC. This approach will maintain existing open habitat currently being utilized by bluebirds and other protected species. Landscaping in this buffer will specifically be designed to protect the water quality by trapping sediments and pollutants that will otherwise run off the land and into the water while also mitigating the visual impact of the proposed project on the views from across Blue Lake.

Site Lighting

The lighting plan will be designed to provide nighttime illumination at intensity levels to avoid lighting "hot spots" while, at the same time, be adequate for public safety and security. Lighting is proposed for the following areas: primary roadways and parking, pedestrian walkways and spaces, service areas, building entrances, main site entrance, and outdoor recreation area by means of pole-mounted roadway lights and lighting bollards (see Figure 13-30 Proposed Site Lighting-B). The driveway lights are not

intended to uniformly illuminate the entire road, but to light the intersections of travel and a few points along the way as is typical of rural roads. The Project Sponsor plans to construct enclosed parking garages which will meet 85 percent of the parking requirements, thereby reducing the overall visible lighting associated with surface parking.

The proposed lighting will be night-sky friendly. The pole-mounted driveway lights are Illuminating Engineering Society (IES) designated “full cut-off” fixtures that do not provide any upright above horizontal, thus avoiding night trespass and night-sky glow. This approach is part of the initiative to address green building design issues using The Green Globes™ System. Lighting bollards will be located around the building entrances and sidewalks. These fixtures are designed as low-wattage, low-intensity fixtures providing minimal uniform illumination housed in an ornamental package. In some instances, wall-mounted “full cut-off” fixtures will be located over emergency exit doorways at some locations of the buildings to provide low-level lighting to reduce night trip hazards. The courts of the outdoor recreation area will have lights on timer-control with a manual override “On” or “Off.” Automatic shut-off controls will limit the hours of use.

The height of the proposed lighting will be controlled to minimize visual impact, shielding overflow lighting and any glare affecting off-site locations. Specifically, the fixture heights will be lower than the general height of the on-site tree canopy. Lighting for roadways and parking will not exceed 25 feet in height and pedestrian walkway lighting will not exceed 12 feet in height. Bollard lighting is typically waist height to reduce glare and direct light only where needed, on the walkways. As indicated in Table 13-3, site lighting levels lean towards the minimum level in order to reduce the impact on nighttime views. Athletic areas will have “Trained Field Concept” lighting levels of 20 foot candles rather than the higher “Spectator Sport” levels. Outdoor recreational lighting in the athletic areas shall have a timer-control with manual override to limit nighttime use which will mitigate potential impacts.

Table 13-3 Lighting Design Calculations Summary in Foot-Candles (fc)

Label	Average fc	Maximum fc	Minimum fc
Athletic Areas	19.0	41.0	7.87
Parking Areas	0.40	20.0	0.0
Main Entry Access Roadway	0.66	7.85	0.0
Residential Access Roadway	0.45	19.0	0.0
Pedestrian Walkways	0.63	6.23	0.01

E. Alternative Comparison

No-Action Alternative

The no-action alternative is the scenario that will occur if no development were to take place at the site. Under this alternative, the proposed areas of disturbance will remain in their current state and there will be no change to the visual environment. The previously disturbed areas of the property will remain as they currently are with deteriorated buildings and structures, overgrown landscaped area, and considerable amounts of existing deteriorated paved areas. This action does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

The King’s College Alternative is the scenario that will occur if the property were developed as a 1,500-person campus as indicated on the site plan approved on January 5, 2000. Under this alternative,

approximately 102 acres (61 percent of the 168-acre parcel on the west side of Long Meadow Road (CR-84) were to be disturbed with a sizeable number of those being located in the Ridgeline Overlay District. Consequently, the impact to the forested woodland slopes on the overall property will be much greater when compared to the proposed project. The site plan was to include a considerable amount of paved area to provide the needed access roads and surface parking as well as a substantial amount of cleared area for the athletic fields and running track, located at the top of the ridge.

Based on the landscaping description found in the text portion of the DEIS, The King's College had planned to landscape approximately 54.1 acres of disturbed area which is larger than the Project Sponsor's entire area of proposed development. Additionally, The King's College DEIS states: "...the affect of the lighting of site facilities including, internal building lighting, and external roadway parking lot, walkway, site security and athletic field lighting may result in heightened visual impact within a limited viewshed above existing site conditions, or conditions which existed previously at the former INCO facility."

When compared to the proposed project, the visual impact within the viewshed areas will be greater since the development will extend up and over the ridge around the opposite side from Blue Lake. While there will be little impact to the views from Long Meadow Road (CR-84), the views from Sterling Mine Road (CR-72) will be visually impacted due to the higher elevation of the development and the removal of forested areas on the property. This action does not meet the goals of the Project Sponsor.

Low-Height Alternative

The low-height alternative is the scenario that will occur if the property were developed with a maximum height of 40 feet and 3 stories or less. Under this alternative, approximately 59 acres (35 percent of the 168 parcel on the southwest side of Long Meadow Road [CR-84]) will be disturbed. The decision to restrict the height will force the development to spread out in order to meet the needed square-footage requirements. Impacts to the forested woodland slopes on the overall property will increase and construction will be proposed within the Ridgeline Overlay District by the developed area extending further south up a northerly facing hillside. The site plan will need to include a considerable amount of additional paved area to provide the needed access roads. Although the building heights will be lower than those of the proposed project, the visual impact within the viewshed areas will be greater since the development will ascend up the mountainside and the shorter buildings will be proposed at higher altitudes possibly extending above the ridge-top profile from public vantage points.

Landscaping will also be more widespread when compared to the proposed action, given that this alternative will require greater areas of disturbance and approximately twice the number of buildings. Additionally, this alternative proposes more surface parking, roadway, and pedestrian walkways than the proposed action. Thus, site lighting will increase resulting in additional pole-mounted lights and bollards.

While there will be minimal impact to the views from Long Meadow Road (CR-84), the views from Sterling Mine Road (CR-72) will be visually impacted due to the higher elevation of the development, the likelihood of the buildings at the highest elevations being seen. This action meets the goals of the Project Sponsor.

As-of-Right Alternative

The as-of-right alternative is the scenario that will occur if the property were developed as a residential subdivision as allowed by current zoning laws. Under this alternative, the property (including parcels on both sides of Long Meadow Road [CR-84]) will be divided into 25 separate residential lots with 9 open space parcels and 5 right-of-way parcels. While the overall building footprints will be relatively small, the disturbance to the overall property will be much greater. The disruption to the forested woodland slopes resulting from the construction of the subdivision infrastructure, the roads and utilities, will be

considerable. While the visual impact within the Blue Lake basin will be minimized, an increased amount of viewshed areas will be visually impacted since the residential development will extend up and over the ridge around the opposite side from Blue Lake.

Landscaping will likely be provided on each residential lot; however, the designs and upkeep may vary throughout the development as each homeowner will be responsible for the landscaping on their property. Longer roadways are required in this alternative when compared to the proposed action. Hence, more pole-mounted lighting will be required for this alternative.

The Ridgeline Overlay District regulations will encourage the appropriate use of colors and materials and siting of homes on lots. The views from Long Meadow Road (CR-84) will be somewhat impacted by the relocation of the existing site entry and the addition of two other entries. Also, it is likely the views from Sterling Mine Road (County Road 72 [CR-72]) will be visually impacted due to the higher elevation of the development. This action does not meet the goals of the Project Sponsor. *

A. Introduction

A Phase IA Cultural Resources Investigation was performed for the proposed project by Dr. Eugene J. Boesch during the spring and summer of 2010. The “Phase IA Archaeological Investigation of the Area of Potential Effect” involved documentary research on the Euro-American history and Native American cultural history of the Area of Potential Effect (APE) for the Project Site and its vicinity.

This Chapter describes the results and findings of the Phase IA Cultural Resources Investigation. (See Appendix J-1 for a copy of the complete cultural resources investigation as well as Appendix A-4 for the New York State Department of Environmental Conservation [NYSDEC] letter, dated November 30, 2009, outlining the required permits). Proposed and potential mitigation measures as well as unavoidable adverse impacts for identified impacts are discussed. The measures that are proposed to be taken to reduce impacts to these resources are described. Finally, an evaluation of alternative ground and surface water implementing measures is made.

B. Existing Conditions

A pedestrian reconnaissance was conducted on May 26, 2010 and June 4, 2010. Based on the documentary research and pedestrian reconnaissance, the archaeological sensitivity of the project area was assessed. Assessment of pre-contact period sensitivity was based on the location of known archaeological sites reported in the literature as well as a consideration of the present and former topographic and physiographic characteristics of the Project Site. Assessment of historic period sensitivity was based on an analysis of eighteenth to twentieth century maps as well as a review of secondary sources. A detailed description of the document research for the Native American and historic periods are included as part of Appendix J-1.

The Area of Potential Effect (APE) is approximately 45 acres of the entire land holdings (referred to as the Warwick property) of the Project Sponsor—see Figure 14-1 Warwick Archaeological Survey Areas.

The Phase IA archaeological study was prepared in accordance with the United States Secretary of the Interior’s guidelines for archaeological surveys and the guidelines and standards currently adopted by the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP; New York Archaeological Council 1994, 2000; New York State Office of Parks, Recreation and Historic Preservation 2005). The objectives of the study were to determine the sensitivity of the Warwick property’s APE for the presence of Pre-Contact period and Historic period archaeological resources and to recommend any necessary further investigations.

Previous Archaeological Investigations within the Project Vicinity

One cultural resource investigation that included the current Warwick property and APE was identified as part of the Phase IA investigation. That study was undertaken as part of an environmental impact statement for an earlier unrelated King’s College proposal. The study found no archaeological sites or other cultural resources within the APE for The King’s College project, which was much larger and included the entire APE for the currently proposed project. While the actual report for the prior investigation could not be located at NYSOPRHP, its results are reflected in a (Gillespie 1988) letter from that agency to Mr. Robert G. Torgersen, landscape architect for the project. (See Appendix J-2 for a copy of the letter.) The letter stated that:

“The project area has been comprehensively surveyed by a qualified professional and reviewed by this office. To the best of our knowledge, the project area contains no buildings, objects, or districts which are eligible for or included in the National or State Registers of Historic Places.”

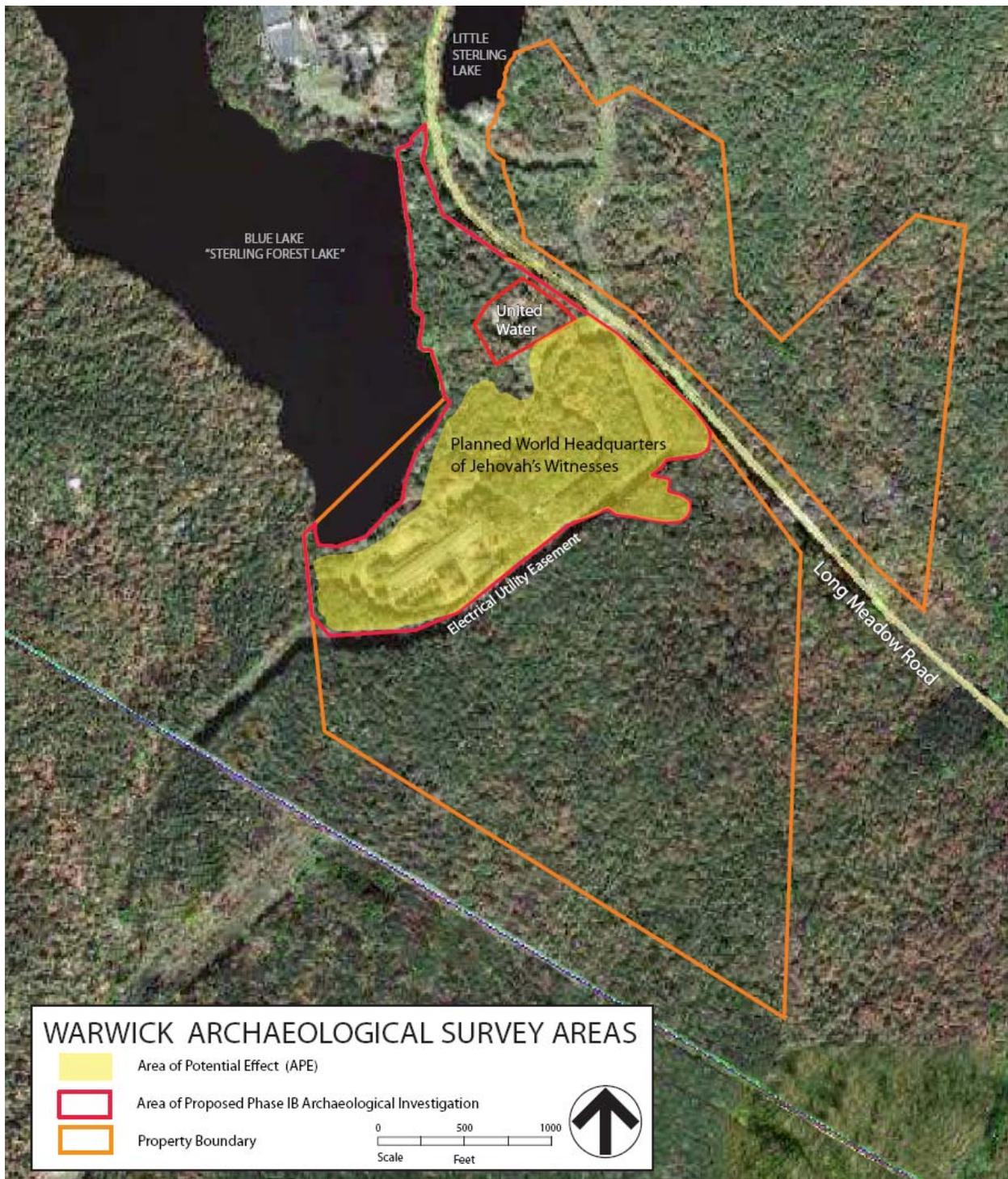


Figure 14-1 Warwick Archaeological Survey Areas

The letter also indicated that there are no previously reported archaeological sites within or adjacent to The King's College property or immediately adjacent to it based on the NYSOPRHP sensitivity model (Gillespie 1988; The Saratoga Associates 1993).

The archaeological report, however, did identify resources associated with historic period iron mining in a portion of The King's College property that was located outside of The King's College APE (and outside of the currently proposed project's APE). According to the 1993 EIS:

"The location of the [King's College] site in the lower portion of the Town of Warwick has a long history of iron mining operations. There are remains of several smelting furnaces and associated historic structures in the lower portion of the Sterling Forest. In addition, there are remains of two 1800's open pit mines for iron ore on the property. These abandoned mines are located adjacent to the New Jersey border on a portion of the [King's College] project site that will remain undeveloped. Both are narrow, open pits about 20 feet in width by 60 to 150 feet in length and about 25 feet in depth. There are no apparent mine shafts or other subterranean mines on the site (The Saratoga Associates 1993).

It is noted that the area of the Project Site with the identified mines will also remain undeveloped as part of the currently proposed project.

The 1993 EIS also states that:

"Native Americans were present in southern New York as early as 10,000 B.C. Prehistoric sites in the Highlands environmental zone, of which Sterling Forest is a part, are generally small sites utilized for seasonal harvesting of wild plant foods and temporary hunting camps. There are three recorded prehistoric archaeological sites in the Sterling Forest holdings [none of which are within a mile of the current project area] but none are known to exist on the [King's College] project site itself."

A subsequent 1999 review of The King's College project by NYSOPRHP indicated that it was the agency's opinion that The King's College project would have no impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places (Pierpont 1999).

No other cultural resource investigations were identified in the collections and files of the New York State Office of Historic Preservation or the New Jersey State Historic Preservation Office as having been conducted within one mile of the currently proposed project.

Properties Listed on the New York State and National Registers of Historic Places in the Project Vicinity

No properties listed, or now considered eligible for listing, on the New York State or National Registers of Historic Places are located within the project property or on parcels immediately adjacent to it (Shaver 1993; NYSOPRHP 2010a, 2010b). Such properties also are not located within at least one mile of the project area, including lands within the State of New Jersey (Shaver 1993; NYSOPRHP 2010a, 2010b; New Jersey State Office of Historic Preservation 2010).

C. Potential Impacts

Ground disturbance in the approximately 45-acre APE will generally occur within the existing developed portion of the Warwick property, formerly occupied by the International Nickel Company (INCO), and immediately adjoining undeveloped areas. Ground disturbance will result from the demolition of existing buildings and construction of a religious administrative campus. New road construction, installation of utilities, and landscaping also will occur within the APE as part of construction activities.

Native American Period Sensitivity

Pre-contact period sites have not been recorded within the Project Site or its immediate vicinity. Occupations that have been recorded in the region are generally restricted to rockshelter sites, lithic procurement sites, and campsites. The latter are generally located on raised ground overlooking some of the area's rivers and wetlands. Such areas of high ground overlooking watercourses traditionally have been considered sensitive for the presence of Native American sites.

The current and former environmental setting of most of the current project area is similar to that of known Pre-Contact period camp sites. Specifically, these are the property's terrace-like locations and other relatively level, raised areas overlooking the valley that now contains Sterling Forest Lake, its outlet stream, and adjoining wetlands. Such locations within the current APE, where undisturbed, are considered to be sensitive for the presence of Pre-Contact period archaeological resources. Sterling Forest Lake was created in 1956 when the stream that ran through the valley was dammed inundating the area. The stream was the outlet for Little Cedar Pond, located northwest of the project area.

Portions of the APE immediately south of Sterling Forest Lake, however, have been disturbed as a result of the construction of the INCO facility during the early 1960's. Numerous multi-story buildings associated with the facility are present there. Their location constitutes the developed portion of the APE. The amount of construction that has occurred there would have disturbed or destroyed any Pre-Contact period sites that may have been present.

No caves or rockshelters or outcrops of chert, quartz, quartzite, or other useable lithics were identified during the pedestrian reconnaissance of the project area.

The portion of the APE that is sensitive for the presence of Native American period archaeological resources is illustrated on Figure 14-2 Archaeologically Sensitive Portion of Area of Potential Effect.

Historic Period Sensitivity

Portions of the current APE fronting onto Long Meadow Road (also known as County Road 84 [CR-84]) and its vicinity within the project's western parcel are considered to be sensitive for Historic period archaeological resources associated with the mid-to-late nineteenth century Sterling Works. The Sterling Works was an iron producing community established in 1847–1848 by the Sterling Company. The Works included a furnace and forge, a number of support structures (church, store, shop, etc.), worker residences, and associated outbuildings. Many of the community's structures were located east of Long Meadow Road (CR-84) and will not be impacted by the proposed development project. Some of the associated structures, however, formerly were located within the current project's APE fronting onto what is now Long Meadow Road (CR-84) and its vicinity. These include:

1. A blast furnace formerly located in the northern most portion of the APE. Although the furnace was demolished in 1955, sub-surface evidence for it or the activities that occurred there may remain.
2. Three other structures located near the furnace in the northern most portion of the APE. Two of the structures were identified on mid-nineteenth century maps as a store and a shop.
3. A possible residence located just north of the outlet of what is now Sterling Forest Lake. The former location of the structure within the APE is north of the current entrance to the project area.
4. Three mid-nineteenth century structures, likely a residence and outbuildings, situated within the southeastern most corner of the current APE, near what is now Long Meadow Road (CR-84).

The former vicinities of these structures appear to be relatively undisturbed and it is possible that sub-surface features, deposits, or other stratigraphic evidence for them, or the activities that occurred within and around them, may remain.

Remains of former charcoal making bottoms and colliers huts also may be located within the APE or other portions of the project area.

The portion of the APE that is sensitive for the presence of Historic period archaeological resources is illustrated on Figure 14-2 Archaeologically Sensitive Portion of Area of Potential Effect.

Seven other structures associated with the Sterling Works shown on the 1859 map were located within what is now the eastern parcel of the current project area. One of these was the residence of William Sharp, a second was a forge, and a third is identified on the map as a Methodist-Episcopal Church. The other structures located there likely were residences. None of these former building locations will be impacted by the current project.

D. Mitigation Measures

Phase IB-level archaeological testing will be undertaken in the archaeologically sensitive portion of the APE for the Project Site. Such testing will determine whether any possibly significant archaeological resources are present. Specifically, areas of relatively level ground are considered to be archaeologically sensitive for the presence of Pre-Contact period archaeological resources while locations fronting onto Long Meadow Road (CR-84) or its vicinity are sensitive for mid-to-late nineteenth century archaeological resources associated with the iron producing Sterling Works/Sterling Furnace community. Upon completion of a final site development plan for the proposed project, a Phase IB-level investigation work plan will be developed detailing the scope of the recommended testing within the APE and submitted to NYSOPRHP for review.

Although the developed portion of the current APE for the project formerly would have been sensitive for the presence of Pre-Contact period sites, the area has been disturbed by construction of the former INCO facility. Accordingly, Phase IB-level archaeological testing of that part of the current APE is not warranted.

The portion of the current project area located east of Long Meadow Road (CR-84) will not be disturbed as a result of the proposed project. However, if future construction activities occur within that parcel, and if warranted, Phase IB-level testing would be conducted.

No further mitigation measures are proposed.

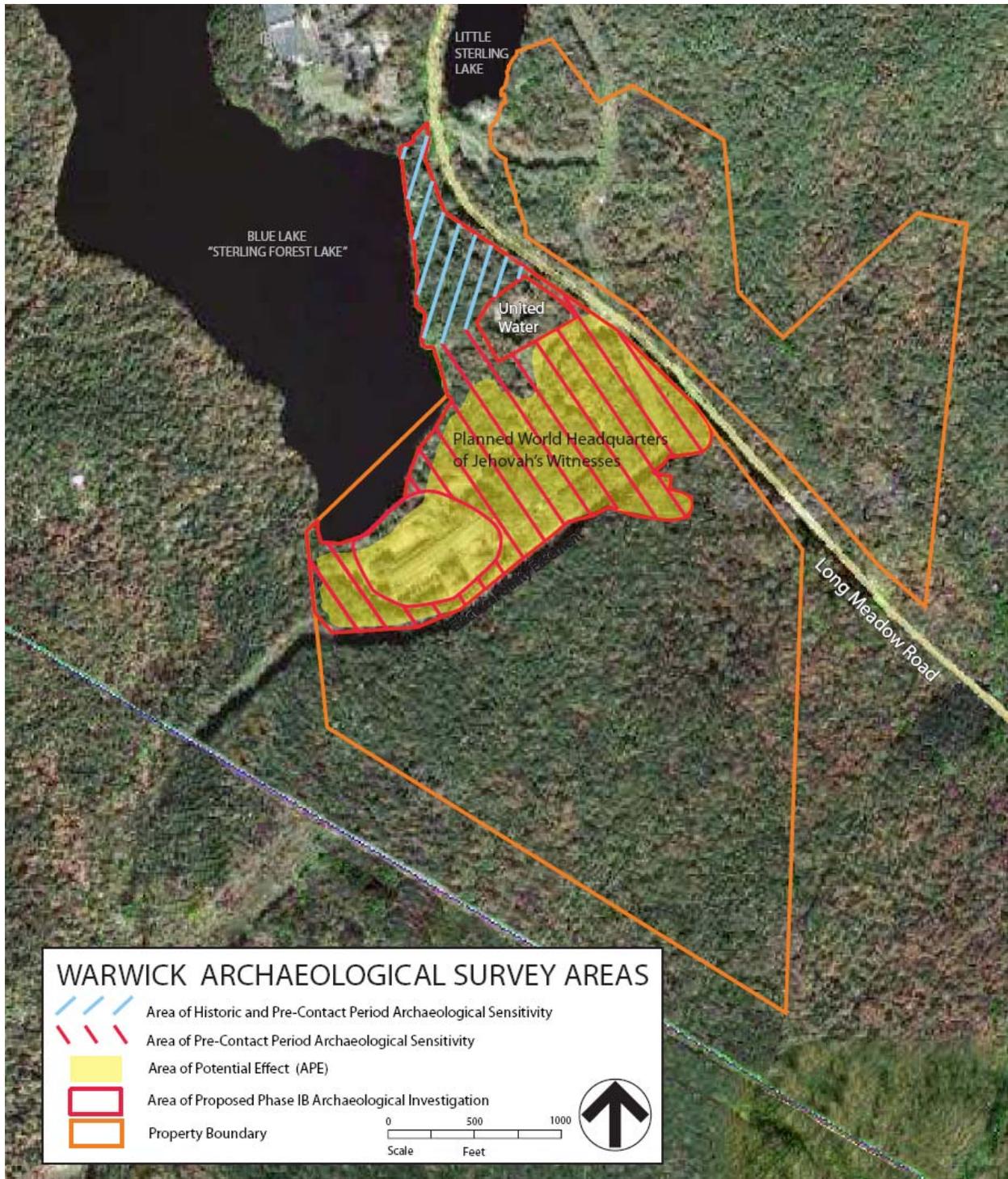


Figure 14-2 Archaeologically Sensitive Portion of Area of Potential Effect

E. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16 “Alternatives.” These alternatives are designated as 1) no-action, 2) educational facilities, 3) low-height, and 4) as-of-right. Cultural, historic, and archaeological impacts associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor’s proposed facility.

No-Action Alternative

Under this alternative, the land would remain in its existing state including the abandoned INCO facility. No change to any cultural, historic, or archaeological resources would be seen under this alternative. This alternative does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990’s by The King’s College would be constructed. These facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students. The total area of disturbance would amount to approximately 102 acres. It is not likely that any cultural, historic, or archaeological resources would be impacted; however, a Phase IB-level archaeological study would need to be undertaken for the Project Site to determine whether any possibly significant archaeological resources are present. This alternative does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower profile structures at the Project Sponsor’s facilities, which would require larger building footprints to accommodate the same square footage as the Project Sponsor’s original proposal. As such, this alternative would increase the amount of area that would be disturbed during construction from 45 acres under the original proposal to 59 acres. The increased level of disturbance associated with this alternative could potentially have some impact on cultural, historic, or archaeological resources; however, as discussed above, a Phase IB-level archaeological study would need to be undertaken for the Project Site to determine whether any possibly significant archaeological resources are present. This alternative meets the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property would be purchased by a private developer and that new residential lots would be constructed, which would be unrelated to the Project Sponsor’s operations. Single-family residences would be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement.

Estimates show that approximately 200 acres of the 253-acre parcel are available for development of lots; the remaining 53 acres are reserved for infrastructure (i.e., roadways and stormwater facilities, open-space and contingency). Thus, this parcel could potentially accommodate up to 25 residences. Based on widely accepted population multipliers (see Chapter 12 for derivation), approximately 113 residents can be anticipated under this alternative. The potential increased level of disturbance associated with this alternative could potentially have some impact on cultural, historic, or archaeological resources; however, as discussed above, a Phase IB-level archaeological study would need to be undertaken for the Project Site to determine whether any possibly significant archaeological resources are present. This alternative does not meet the goals of the Project Sponsor. *

A. Introduction

This Chapter identifies and summarizes those adverse environmental impacts that can be expected to occur, with or without possible mitigation measures.

B. Potential Impacts and Mitigation Measures

The proposed action will result in a number of potential impacts that cannot be avoided. Although these impacts cannot be avoided, the Project Sponsor has proposed a number of mitigation measures that will reduce their likelihood of occurrence or scope of impact:

- Increased susceptibility to erosion from the loss of natural vegetation on the site during construction: As part of the Stormwater Pollution Prevention Plan (SWPPP) (see Appendix M) the Project Sponsor will implement an Erosion and Sediment Control Program in accordance with New York State Department of Environmental Conservation (NYSDEC) regulations during construction. This program will include measures such as spill prevention measures, phased construction activities that limit the construction activity to a maximum of ten acres at any one time, and temporary stabilization measures for all areas disturbed during construction. These combined mitigation measures will reduce the likelihood and scope of potential soil erosion.
- Blasting and permanent alteration to geology: The Project Sponsor has proposed mitigation measures to reduce or eliminate adverse impacts arising from blasting or the alteration of geology. Any required blasting will be performed in accordance with the current requirements of Chapter 63 of the *Code of the Town of Warwick, New York*. Licensed personnel will perform blasting and adequate measures will be employed to mitigate impacts to area structures and the on-site Blue Lake Dam. The potential noise, dust, and vibration impacts produced by blasting operations will be mitigated by implementation of a blasting plan that conforms to State and local codes, and nearby property owners will be notified in accordance with code requirements.
- Increase to the volume of stormwater runoff from new impervious areas: As part of the SWPPP, the Project Sponsor has designed a stormwater management system that will provide stormwater treatment per the NYSDEC regulations (see Appendix M). The stormwater runoff rates from new impervious areas will be equal or less than preconstruction rates. The proposed stormwater management plan will include sheet flow to riparian buffers, disconnection of rooftops, green roofs, stormwater planters and pervious pavers, bioretention ponds, and sand filters. These mitigation measures will reduce or eliminate impacts associated with the increased volume of runoff.
- An increase in emissions and fugitive dust generation during construction and emissions from the heating plant: Local public receptors are limited, and the Project Sponsor has proposed a number of mitigation measures to reduce the scope of air impacts. Fugitive dust will be controlled by means of a mobile water truck that will regularly apply water to disturbed areas susceptible to creating dust once grading activities commence. Pollutants in construction equipment emissions will be minimized by the use of ultra-low sulfur fuel. The heating plant will use fuel oil with a maximum sulfur content of 0.5 percent by weight, further minimizing the impact to air quality.
- Disturbance to two previously undisturbed eastern deciduous hardwood forest areas, although these areas are not identified as unique or having relative importance: The impact will be reduced by the

Project Sponsor by keeping the developed area and resultant clearing to a minimum. Additionally, approximately five acres of the site will be reforested after grading activities.

- Disturbance to an area potentially supporting hyssop skullcap, a New York State-protected vegetative species: The Project Sponsor proposes to reinvestigate the power-line right-of-way during the hyssop skullcap flowering period of June and during the fruiting period of July and August. If this species is discovered upon reexamination, measures will be taken to mitigate possible impacts. This may include one or more methods to be taken including:
 - Minor modification to the grading plan to avoid disturbance of colonies if practicable.
 - Retention of a qualified horticulturalist or landscape architect to identify suitable habitat on site and a program to establish a stable colony of the plants from seed.
 - Possible incorporation of the plant into the site's landscape plan if practicable and desirable.
 - Making seed available to NYSDEC and through NYSDEC to organizations or individuals intending to reestablish the species throughout the region, if practicable and desirable to DEC.
 - The Project Sponsor will coordinate all mitigation activities with NYSDEC.
 - In the event that no plants are observed upon reinvestigation, the Project Sponsor will limit significant grading and clearing activities within the power-line right-of-way to the period from October 1 through March 31. This period corresponds with the period after which seeds have been dispersed and before germination. Disturbance during this period will have the lowest potential for harming plants that may exist unknown on the site.
- Disturbance to habitat supportive of eastern bluebirds, a New York State-protected wildlife species: In order to avoid direct impacts to eastern bluebirds, tree removal will be conducted from October 1 through March 31, after the population has migrated for the winter. Further, after disturbance of the power-line right-of-way, bluebird nesting boxes will be installed in this area, along the dike, and along the power-line right-of-way north of Long Meadow Road (CR-84) to encourage reestablishment of the bluebird populations in this area following construction.
- Potential chance encounters with red-shouldered hawks, a New York State-protected wildlife species: Potential nesting habitat may exist along the second-growth wooded areas along the riparian corridor on the parcel north of Long Meadow Road (CR-84). This area is proposed to be preserved as open space. This riparian corridor crosses under Long Meadow Road (CR-84) south of the Project Site. No nests were identified and taped calls yielded no response. Red-shouldered hawks were observed foraging along the power-line rights-of-way in 2007, but based on observations it is believed the observed pair nest to the south of the site. No red-shouldered hawks have been observed on the site in 2010. The Project Site is also bounded by two State Parks, Sterling Forest State Park and Ringwood Manor State Park, which provide suitable nesting and foraging habitat for this species. It is not anticipated that this species will be significantly impacted by the proposed development.
- A multi-year investigation identified timber rattlesnakes traveling, foraging, and gestating in the hills around the site. However none were observed on the site. Nevertheless, there may be potential for chance encounters with timber rattlesnakes, eastern box turtles, and wood turtles, all New York State-protected wildlife species: Mitigation measures have been proposed to reduce the likelihood of chance encounters. Prior to construction, the area of disturbance will be bounded by silt fence to deter timber rattlesnakes and wood turtles in the area from entering the construction area. After installation of the fence, the fence will be inspected to prevent potential trapping of timber rattlesnakes or wood turtles inside the construction area. In the event that a rattlesnake is found in a parking lot or near the buildings where it would be unsafe, the Project Sponsor will call one of the NYSDEC-listed Nuisance

Rattlesnake Responder volunteers or have someone on staff trained in the protocols to safely move them.

- A minimal increase in the volume of traffic and delays through local intersections: This increase is not significant based on industry accepted standards. Factors that minimize traffic impacts include the live-work arrangement employed by the Project Sponsor whereby members of the Worldwide Order reside and work at the facility. Additionally, the Project Sponsor will provide shuttle service between the Project Site and its other complexes. These two factors greatly reduce that amount of commuter traffic that is generated by the project.
- A minimal increase in the demand for police, fire, and ambulance services: The Project Sponsor proposes on-site security and medical staff as well as fire suppression equipment that greatly minimize the need for these community services.
- A minimal increase in the demand for recreation services: The Project Sponsor proposes the construction of indoor and outdoor recreation spaces. Outdoor recreation is anticipated to include two tennis courts, two volleyball courts, a basketball court, and picnic tables. Indoor recreation will include a small swimming pool, basketball and racquetball courts, aerobic exercise, and games rooms. Libraries will also be provided for the residents. These mitigation measures will reduce the impact on community recreation services.
- An increase in the volume of wastewater received by the local wastewater treatment facility (STP): United Water has indicated its willingness to treat wastewater generated by the proposed project at its Blue Lake Wastewater Treatment Plant (Blue Lake STP) (see Appendices G-1 and G-2.) The Project Sponsor will be responsible for constructing a lift station and force main to deliver wastewater to the headworks of the Blue Lake STP. Additionally, the existing Blue Lake STP will continue to have excess capacity after the wastewater needs of the Project Sponsor are met.
- An increase in the demand for potable water: United Water has indicated its willingness to provide potable water for the proposed project from its United Water New York/Blue Lake System (see Appendix H-1). Although the existing United Water supply infrastructure and distribution system can adequately supply the proposed project's water supply needs, the Project Sponsor is planning to voluntarily implement water-saving fixtures and practices to minimize the potable water requirements of the site. These include low-flow showerheads, dual-flush flushometers and gravity tank toilets, high-efficiency urinals, water-conserving washing machines, and the use of recycled stormwater to provide non-potable water for cooling towers.
- An increase in the volume of solid waste generated locally: The Project Sponsor's rate of solid waste generation will be lower than the national per-capita average. Mitigation measures include an on-site recycling facility to handle non-hazardous waste and recyclable materials generated on site. Approximately 30 percent of the solid waste generated by the facility will be recycled. This includes glass, metal, plastic, cardboard, and paper waste. Additionally, the Project Sponsor will contract with third-party vendors to haul and dispose of solid waste and recyclable material at appropriate facilities.
- A minimal increase in costs to the local fire district: Although the increase in cost will likely be insignificant in comparison to the local fire district's budget, the Project Sponsor is proposing to contribute \$2,000 per year to Warwick Fire District #2 to help to offset the cost of fire protection.
- A minimal impact to views from the public boat launch at the north side of Blue Lake and from the adjacent private lands of IBM: The visual impact will be minimized by varying the planes of building façades and the heights of differing building sections to make the buildings appear as separate structures. The Project Sponsor also proposes the use of nature stone and masonry along with a warm color palette and textures, which blend well with the natural surroundings. Mechanical equipment and

paved areas will also be screened from public view. The majority of parking is included in covered garages, which greatly reduces the amount of paved areas.

- A minimal increase in the amount of light visible at the sight during nighttime hours: The Project Sponsor believes that the appearance of the sight will improve qualitatively from the existing site appearance and several mitigations have been proposed to limit the scope of impacts from site lighting. Mitigation measures include limited use of lights along the main roadway which will illuminate intersections and a few points along the roadway—a technique typical in rural settings. Pole-mounted lighting will include induction-type fixtures that do not provide any up-light, thus avoiding night trespass and night-sky glow. Waist-high bollard lighting will also be used to reduce glare and direct light only where needed, on the walkways.
- The proposed project will disturb areas of the site that may contain historic and archaeological resources: Prior to the completion of the SEQR process, Phase IB-level archaeological testing will be undertaken in the archaeologically sensitive portion of the areas to be disturbed. Such testing will determine whether any possibly significant archaeological resources are present. A Phase IB-level investigation work plan will be developed detailing the scope of the recommended testing and submitted to New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) for review. *

A. Introduction

In addition to the proposed plan, the following alternatives, as set forth in the Scoping Document, are examined in this DEIS:

- No-action alternative.
- Educational facilities previously approved proposal.
- Low-height alternative.
- As-of-right alternative.

SEQRA requires that an evaluation of each alternative should be at a level of detail sufficient to permit a comparative assessment of the alternatives discussed. Table 16-1 is provided to assist in this comparison.

Table 16-1 Summary Comparison of Alternatives

Areas of Potential Impact	Proposed Project	No-Action/Reoccupy by Similar User Alternative	Educational Facilities Alternative	Low-Height Alternative	As-of-Right Alternative
Land/Demographics					
Population, Employees, Students	1,000 residents	440 employees ⁽¹⁾	1,500 students + 260 staff	1,000 residents	113 residents
Area of Disturbance (Total)	45 acres	15 acres ⁽²⁾	102 acres	59 acres	65 acres
Disturbance of Slopes 15–25%	2 acres	0 acres	26 acres	13.7 acres	14 acres
Disturbance of Slopes >25%	0.5 acres	0 acres	5 acres	3.4 acres	3.8 acres
Impervious Surface	13.0 acres	6.8 acres	31.7 acres	31 acres	25.7 acres
Buildings					
Total Building Area (except parking)	1,140,200 sq ft	198,000 sq ft	706,000 sq ft	1,140,200 sq ft	80,000 sq ft
Total Covered Parking Area	341,000 sq ft	None	None	None	None
Maximum Height	60 ft or less	50 ft or less	60 ft or less	40 ft or less	35 ft or less
Minimum Distance to Public Road	330 ft	1,380 ft	980 feet	429 ft	150 ft
Parking Spaces	870 (garage), 1,020 (total)	246	1,370	630 (garage), 1,020 (total)	None
Infrastructure and Utilities					
Water	85,000 gpd	Unknown	144,000 gpd	85,000 gpd	13,750 gpd
Wastewater	80,000 gpd	45,000 gpd ⁽³⁾	130,000 gpd	80,000 gpd	13,750 gpd
Stormwater	Underground stormwater chambers @ 26,500 cu ft	No detention; all runoff into Blue Lake	6 detention basins @ 560,000 cu ft	1 detention basin @ 318,500 cu ft	Unknown
Solid Waste	427 tons/year—disposed 183 tons/year—recycled	Unknown	1,140 tons/year—disposed 460 tons/year—recycled	427 tons/year—disposed 183 tons/year—recycled	88 tons/year—disposed 30 tons/year—recycled
Electricity	2,100 kVA	Unknown	Unknown	Unknown	500 KVA ⁽⁴⁾
Heating Fuel	Geothermal with boilers or Conventional Fuel Oil Boilers w/ heat input = 48.5 million Btu/hr	Conventional Fuel Oil Boilers w/ heat input = 40 million Btu/hr	Unknown	Geothermal with boilers or Conventional Fuel Oil Boilers w/ heat input = 48.5 million Btu/hr	Residential installations using natural gas or heating oil
Community Services					
Police, Fire, and Ambulance	Minimal	Minimal	Minimal	Minimal	Minimal
Recreation	Minimal	Minimal	Minimal	Minimal	Minimal
Schools	Minimal	Minimal	Minimal	Minimal	Significant
Traffic					
Weekday AM Peak (Trips—Entry/Exit)	23 / 30	203 / 41	129 / 86	23 / 30	8 / 22
Weekday PM Peak (Trips—Entry/Exit)	44 / 115	32 / 182 ⁽⁵⁾	163 / 195	44 / 115	16 / 9
Saturday Peak (Trips—Entry/Exit)	81 / 116	Minimal	Minimal	81 / 116	Minimal
Sunday Peak (Trips—Entry/Exit)	41 / 58	Minimal	Minimal	41 / 58	Minimal

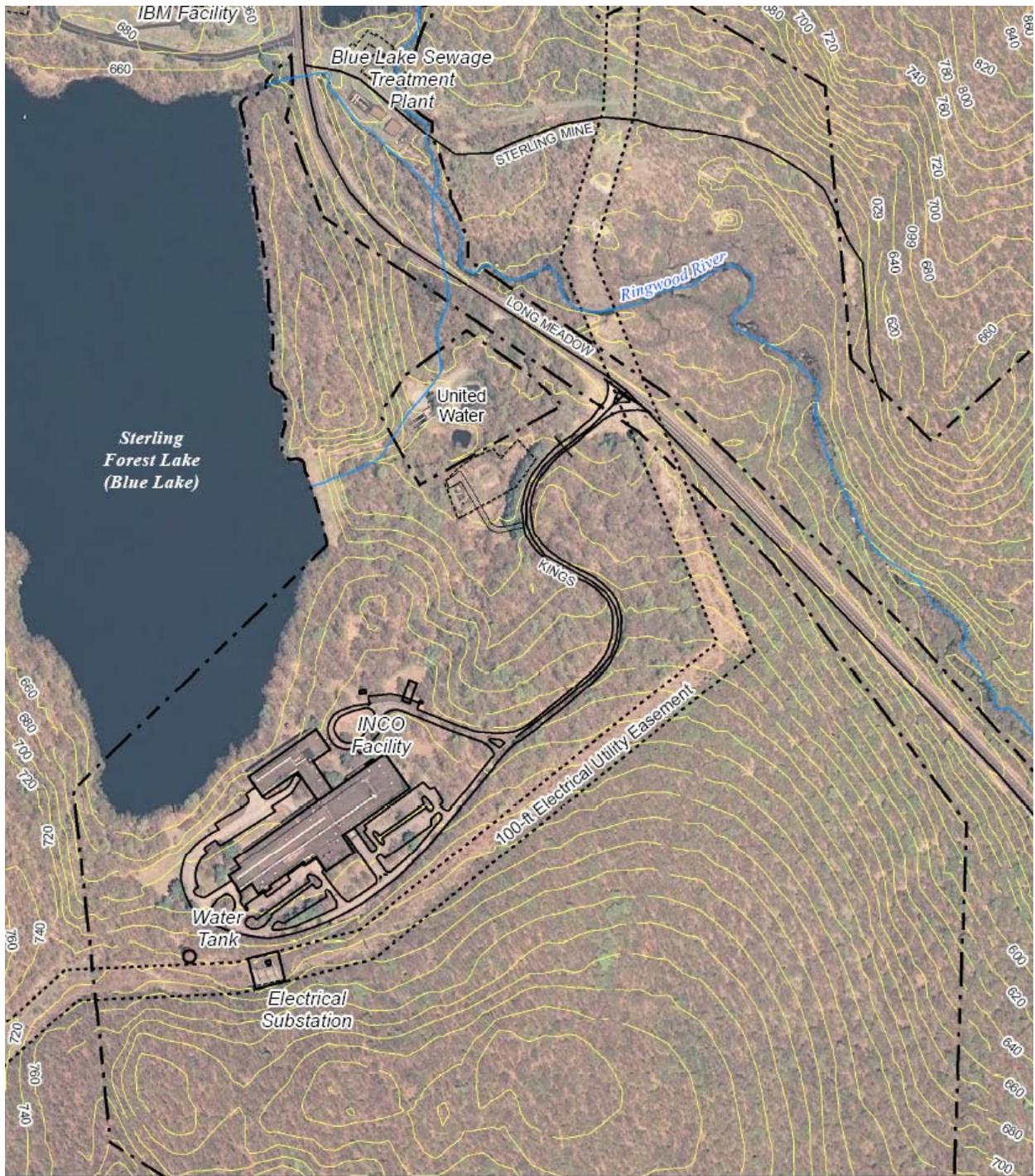
Summary Comparison of Alternatives (cont'd)

Areas of Potential Impact	Proposed Project	No-Action/Reoccupy by Similar User Alternative	Educational Facilities Alternative	Low-Height Alternative	As-of-Right Alternative
Other					
Geology, Soils and Topography	Minimal	Minimal	Significant	Significant	Moderate
Groundwater and Surface Water	Minimal	Significant	Minimal	Minimal	Minimal
Air Resources	Minimal	Minimal	Minimal	Minimal	Minimal
Terrestrial and Aquatic Ecology	Minimal	Potentially Significant	Significant	Moderate	Moderate
Visual Character	Minimal	Minimal	Significant	Significant	Minimal
Cultural, Historic and Archaeological	Further Study Recommended	None	Further Study Recommended	Further Study Recommended	Further Study Recommended
Fiscal Impacts	Minimal	Minimal	Significant	Minimal	\$350,000 Net Deficit
Zoning	Land Conservation	Land Conservation	Land Conservation - Requires variance for 4-story buildings and Special Permit	Land Conservation - Requires Special Permit	Land Conservation

- Notes:
1. Based on 2.2 employees per 1,000 sq ft in *ITE Trip Generation Manual*, 4th ed.
 2. Calculated based on 102 total acres minus 87 newly disturbed acres for The King's College.
 3. Based on CHA Site Investigation Report, June 2009.
 4. Electrical demand based on approximately 20 KVA per home.
 5. Based on ITE Trip Generation Table for Land Use Code 760—Research & Development.

B. No-Action Alternative

This alternative assumes that no action is taken on the part of the Project Sponsor to develop the proposed project or that the existing site could be reoccupied by a user similar to the International Nickel Company (INCO). INCO utilized the site as their headquarters office and for research and development. The research and development at the Blue Lake facility was related to metal plating processes. The facility was not used for production. If this site is reoccupied by a similar user, environmental impacts to the site will be similar to those present during the time the INCO facility was in operation. A discussion is included below of such impacts—see Figure 16-1 INCO Facility Site Map.



INCO FACILITY SITE MAP

- Streets
- - - Property Line

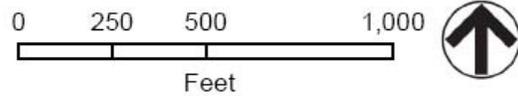


Figure 16-1 INCO Facility Site Map

Geology, Soils, and Topography

This alternative will involve less impact to geology, soils, and topography when compared to the proposed project seeing that limited site disturbance is expected to occur if the existing property is reoccupied by a user with similar operations to INCO. It is expected that the existing building could be rehabilitated and reused; therefore no impact is expected with regards to site geology, soils, or topography.

Mining

There are two small abandoned open-pit mines located on the site. A detailed geotechnical investigation was performed to delineate subsurface conditions and determine the potential or presence of mining at the site. The results of this investigation confirmed that there were no indications of open or filled voids and/or loose and highly fractured rock. Thus, there was no indication of lateral shafts or adits in the subsurface. The area immediately surrounding these small mines will remain undisturbed forest and it is likely that the mines will remain in their current state since no production will be done at this facility.

Water Resources

This alternative will have a greater impact to water resources than the proposed project. When the INCO facility was in operation, hazardous waste was produced in the research facility and collected in stainless-steel 5-gallon containers in each laboratory. The INCO service crew collected the containers and deposited the materials in 55-gallon drums.

Groundwater

Waste materials were collected in the holding and drums, which were kept in one location near the bay area of the building until 10 or 15 drums accumulated, and at another location near the wastewater treatment plant (used as an overflow and only seldom). When enough drums accumulated, a commercial hauling firm collected the materials. Although no spills were reported, storing the drums on site presents the potential for leaking and seepage into the groundwater system.

Surface Water

The wastewater treatment plant (STP) was equipped with pH sensors to divert incoming waste into holding tanks in the event that any chemical waste was mistakenly discharged into waste drains. Hence, the potential exists that some waste material could fail to be diverted, enter the STP, and be discharged into the receiving stream.

Additionally, no stormwater detention was provided on the site so all stormwater runoff was directed into Blue Lake. Potential impacts will include silt deposition and the introduction of contaminants into the lake.

Air Resources

This alternative will have slightly less impact on air resources as the proposed project.

Vehicular Emissions

Although traffic turning in and out of the facility will increase, it is not believed to cause considerable queuing. Hence, air quality impacts associated with vehicular traffic are expected to be similar to those under the proposed development.

Heating Plant Emissions

Two 600-hp boilers were previously used for heating the INCO facility. Heating oil was stored in two 20,000-gallon underground storage tanks that have since been removed from the site. The capacity of the boilers requires that the boilers be registered by the State. As such, they would have been a minimal source of air pollution.

Construction Activities

Minimum-to-no earthmoving is anticipated, thus little fugitive dust will be generated during construction activities. Little-to-no impact to air quality is anticipated as a result of construction activities.

Asbestos

In 2008, a licensed asbestos handling contractor was retained to remove asbestos from the existing building, thus it can be reoccupied without the need to perform asbestos abatement. No impact to air quality will be anticipated due to asbestos.

Radon

In 1991 the existing on-site building was monitored for the presence of radon at five worst-case locations. The readings ranged between 0.6 and 0.9 pCi/l, which are below the actionable level of 4.0 pCi/l. It is likely that radon will have minimal impact on air quality.

Terrestrial and Aquatic Ecology

The alternative will have no impact to terrestrial ecology, but it will have greater impact to aquatic ecology than the proposed project. No additional forest or vegetation will be removed from the site; hence there will be no impact to terrestrial wildlife habitat. However, aquatic life will be impacted by the lack of stormwater detention. Potential impacts will include some siltation in the Ringwood River, stormwater runoff into Blue Lake, and introduction of nutrients and contaminants into the surface water system, which will adversely affect aquatic ecology.

Traffic and Transportation

This alternative will have greater impact to traffic and transportation than the proposed development. Traffic generated by the INCO facility is estimated at 244 trips during peak AM hours and 214 trips during peak PM hours, which is approximately eight times the volume that will be anticipated for the proposed project. This increase in volume entering and exiting the site will increase traffic on Long Meadow Road (aka County Road 84 [CR-84]) and Sterling Mine Road (aka County Road 72 [CR-72]). Weekend traffic attributable to the INCO facility is thought to have been negligible.

Community Services and Facilities

The INCO facility will have comparable impact to community services and facilities as the proposed development.

Police

The potential for vandalism and criminal mischief on the property has increased since the property has been abandoned and the facility left vacant. The Town of Warwick Chief of Police confirmed that the site has been the target of vandals in the past and that the police department has had to respond to the site multiple times over the years. (See Police letter in Appendix A-10.) Once the building is reoccupied and the property maintained, there is expected to be minimal impact on police services.

Fire and Ambulance

The former INCO facility was equipped with a fire protection system that included a water storage tank, pumps, and piping. It is presumed that a similar occupant will utilize this system and also include safety equipment required in facilities performing laboratory research. Both the Greenwood Lakes and Tuxedo fire districts will respond to firm alarms at this facility. The response time is generally shorter for the Tuxedo fire district. The local ambulance corps will also have been affected by the new occupancy of the former INCO site.

Infrastructure and Utilities

The INCO facility will have greater impact on infrastructure and utilities than the proposed development.

Wastewater

Previous documents indicate that the on-site wastewater treatment plant was constructed to treat a capacity of 45,000 gpd, suggesting that this was the anticipated wastewater flow of the INCO facility. Over the years, the permitted discharge limit of the plant was decreased to 22,000 gpd, then to 10,000 gpd before it was taken out of service. If an occupant conducting similar research and development activities as the INCO facility were to make use of the property, it is likely that the plant will need to be significantly rehabilitated or a new plant constructed to treat industrial wastewater. It is assumed that domestic wastewater would be discharged to the existing Blue Lake STP.

Water Supply

For the purposes of this study, it is assumed that the potable water requirement of this alternative is equivalent to the wastewater generated, or 45,000 gpd. As such, the potable water needs of this facility are less than the proposed development. The site is likely to be provided potable water by the United Water New York/Blue Lake System.

Solid Waste

Previous reports indicate that solid waste generated by the INCO facility was placed in 5-gallon buckets and 55-gallon drums. The drums were stored on the site in groups between 10 and 15 until they could be removed for disposal. There is no indication that hazardous waste was present on the site; however, site visits indicate that several chemicals, solvents, and acids were also stored on the site and disposed of in the buckets and drums. Therefore, it appears that the majority of the solid waste generated by the facility was non-recyclable and is likely greater in volume than solid waste generated by domestic users such as the proposed development.

Power

Previous site visits indicate that existing transformers are likely leaking and will require replacement with upgraded units prior to the site being reoccupied. On-site electrical cabling will also likely require replacement. An existing 6,250-kVA power substation is located near the site and is likely sufficient to meet the power needs of this alternative with little-to-no impact to existing infrastructure. Therefore, incoming power to the site appears to be adequate.

Fiscal Resources

Under this alternative, the property will be eligible for taxation by Orange County, the Town of Warwick, Greenwood Lake Ambulance District, Warwick Fire District #2, and the Tuxedo Union Free School District. This alternative will generate more tax revenue when compared to the proposed development, which is tax exempt.

Visual Character

Under this alternative, the proposed areas of disturbance will remain in their current state and there will be no change to the visual environment. The previously disturbed areas of the property will remain as they currently are with deteriorated buildings and structures, overgrown landscaped area, and considerable amounts of existing deteriorated paved areas. If the site were reoccupied by a similar user, it is assumed that the buildings and exterior of the property will be rehabilitated; thus improving the visual character of the property.

Cultural, Historic, and Archaeological Resources

This alternative would have involved comparable impacts to cultural, historic, and archaeological resources when compared to the proposed development.

The Project Site contains no buildings, objects, or districts which were eligible for or included in the National or State Registers of Historic Places. The location of this site, however, has a long history of iron mining operations. There are the remains of several smelting furnaces and associated historic structures in the lower portion of the Sterling Forest. There are the remains of two 1800's open-pit mines for iron ore on the property. These abandoned mines are located adjacent to the New Jersey border on a portion of the Project Site that was to remain undeveloped. There are no apparent mine shafts or other subterranean mines on the site. The areas adjacent to the Project Site are essentially rural with no nearby homes.

Since reopening this facility will not involve mining or production, the potential to impact existing site features is minimal.

C. Educational Facilities Alternative

The King's College proposal included construction of a four-year liberal arts college for 1,500 students on the 168-acre former INCO property with the intention of beginning to admit freshman students in the fall of 2001. Construction was expected to begin in summer 1999 and to be phased incrementally until complete occupancy was achieved in three-to-seven years. Proposed facilities are shown on Figure 16-2 Kings College Proposal and were to include:

- The existing INCO building, which consists of 198,000 square feet of floor space, was to form the core of the new campus. Adaptive reuse and building additions would have resulted in a total of 377,450 square feet of floor space in this main building to accommodate administrative and faculty offices, classrooms/labs, food service, support facilities, student/campus center, theater/performing arts center, library, and gymnasium/indoor pool.



Area of Development Under King's College Proposal

Source: Kings College DEIS - January 20, 1999

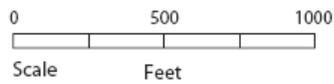


Figure 16-2 Kings College Proposal

- On-campus student housing was to be constructed on the hillside to the southeast of the existing INCO building. A complex of six (6) residence halls, totaling approximately 320,000 square feet and made up of suite-type and single- and double-dormitory-type living units, were proposed. Married student housing for 40 couples was to be constructed adjacent to the student dormitory buildings. A variance was required to permit the proposed dormitories to be constructed to a height of four stories.
- A 42,170-square-foot Chapel Music Center was planned for a site immediately northeast of the main building.
- An athletic complex was to be constructed on the plateau at the top of the campus hill and would have included an all-weather track/multi-use field, soccer, and baseball fields, tennis courts, and other passive recreational areas. The recreational complex was to be serviced by a 3,000-square-foot athletic field building and a 4,050-square-foot campus service building was to be located near the recreational fields.
- The existing on-site 10,000-gpd wastewater treatment plant (STP) was to be replaced with a new STP located at the site of the existing Blue Lake STP. This new plant was completed in 2002 in conjunction with the South County Sewer Corporation (SCSC) and is capable of treating the 130,000 gpd of sewage that will be generated by The King's College.
- Land area had been reserved adjacent to the main building for development of a future educational facility, assumed to be approximately 50,000 square feet in size.
- A total of 1,370 (31 handicapped) parking spaces were to be provided on-campus. The total parking lot pavement area was to amount to approximately 13.3 acres in 21 separate lots.
- The construction of a complete loop road was to provide improved vehicular circulation and emergency access throughout the campus.

The King's College proposal would have had the following impacts in comparison to the proposed action as described below.

Geology, Soils, and Topography

The proposed King's College development was to encompass approximately 102 acres of the 168-acre Project Site, including 31.7 acres of impervious surface.

The King's College proposal would have involved greater impacts to soils and geology when compared to the Project Sponsor's proposal since 102 acres were to be disturbed as opposed to only 45 acres under the Project Sponsor's project.

Soils

With The King's College development the soils would have been exposed to erosion on occasion during the construction period due to clearing and grading of the sites. Soils that were disturbed were to be compacted and/or replaced during site construction. In areas to be covered with either buildings or pavement, the soil surface was to be entirely removed, stockpiled, and reused at another area of the site. To mitigate any potential adverse impacts to the project soils due to erosion during construction operations, a detailed erosion and sedimentation control plan was to be developed. The plan was to be developed for land clearing, land grading, and construction stages.

Topography

Grading of existing topography would have been required with The King's College development to provide for foundation construction, roadways and parking areas, stormwater conveyance swales and

detention ponds, and other site improvements. Due to careful siting of new construction, most of the existing topography was to remain unchanged. Any impacts to topography in development areas were to be minimized by designing and constructing facilities as close to the existing grades as possible. Roadways and parking lot alignments and cross-slopes were to limit the amount of disturbance and earthmoving required. Disturbed areas were to be stabilized in accordance with the sediment and erosion control plan to be prepared for the project.

Blasting

To the maximum extent practicable, The King's College site plan was designed to minimize cuts in areas of known shallow bedrock to avoid excessive rock excavation. All rock blasting was to be conducted in accordance with a site-specific blasting safety plan and by a licensed blasting contractor. Where feasible, the excavated rock was to be stockpiled and used as a sub-base material for on-site land reclamation. It was the intent of The King's College to comply with all applicable regulations and industry standards governing blasting safety, mitigation, and monitoring. No indirect or operational impacts to subsurface geology were expected to result as part of The King's College project.

Mining

There are two small abandoned open-pit mines located on the site. A detailed geotechnical investigation was performed to delineate subsurface conditions and determine the potential or presence of mining at the site. The results of this investigation confirmed that there were no indications of open or filled voids and/or loose and highly fractured rock. Thus, there was no indication of lateral shafts or adits in the subsurface. The area immediately surrounding these small mines was to remain undisturbed forest. The nearest proposed development to the mine locations was the overflow parking adjacent to the proposed athletic fields, approximately 200 feet to the north. The nearest proposed structure was approximately 1,000 feet north of the mine location.

Study by Tectonic Engineering indicated that there was no potential of large-scale mining which could significantly impact the site. The open mines were to be backfilled such that the ground surface will be uniform with the surrounding topography. The backfill was to occur in a controlled manner which would have minimized potential settlement. The blasted rock excavated during site preparation was to be used for filling.

Water Resources

The King's College proposal would have involved greater impact to water resources when compared to the proposed development, since the Project Sponsor's proposal is to pursue compliance with a number of the new Department of Environmental Conservation's (DEC) "green practices" regulations. Additionally, the Project Sponsor's proposal is to develop 45 acres of the property; The King's College proposal was to develop 102 acres, which will create more impervious cover and have a greater impact on stormwater management.

Groundwater

Although impacts to groundwater were minimal, mitigation measures included maintenance of permeable areas and existing vegetation where possible, best management practices for the application of lawn care substances and road salt, location and design of the wastewater and stormwater treatment facilities, and conservation of water usage. The use of chemical fertilizers, pesticides, and herbicides was to be limited to the athletic fields where minimal amounts were to be used to maintain healthy turf. The King's College was to use organic methods of pest removal and composted manure in other landscaped areas of the site. Only organic fertilizer was to be used on groundcover planted for soil stabilization in areas other than the athletic fields.

Surface Water

Siltation from exposed soils, stormwater, and treated wastewater effluent constituted the most significant concerns regarding surface water resources. Adherence to the sediment and erosion control plan and stormwater management plan was to minimize but not entirely eliminate the impacts of runoff. The wastewater effluent was to be treated and discharged within the SPDES permit levels required according to the New York State water quality standards and anti-degradation policy. A Waste Assimilative Capacity Study was conducted to determine appropriate wastewater treatment measures. Tertiary level treatment was to be provided year-round, with a significant water quality benefit. Because of the protection to be provided by the facility, there was to be negligible adverse impacts on the downstream water supply.

Stormwater

To minimize the impacts of stormwater runoff, a complete stormwater management program was being prepared for the project according to the Town of Warwick recommendations and the *Stormwater Management Guidelines for New Development* published by the New York State Department of Environmental Conservation (NYSDEC). The peak flow rate and quality of runoff that reaches surface water during and after construction was to be as close as practical to predevelopment conditions. Potential impacts will include some siltation in the Ringwood River, stormwater runoff into Blue Lake, and introduction of nutrients and contaminants into the surface water system. These impacts were to be substantially mitigated by detention facilities and the implementation of the soil erosion and sedimentation control plan and the stormwater management plan. Additionally, the site design substantially avoided site disturbance within 100 feet of Blue Lake. The existing wooded and lawn buffer along the shoreline was to be maintained. This would have benefited the quality of Blue Lake by filtering sediments and other contaminants.

Air Quality

The King's College proposal would have involved slightly greater impacts to air quality when compared to the proposed development.

Vehicular Emissions

A minimal increase of carbon monoxide and other pollutants typical of internal combustion engines would have resulted with The King's College proposal. This increase would have been attributable to emissions from construction vehicles during construction and automobiles traveling to and from the site. Traffic improvements were identified in The King's College DEIS to minimize congestion and vehicle delay; thereby reducing vehicular impacts on air quality. Although the increase in these pollutants would have been unavoidable, federal and state air quality standards were not to be exceeded.

Heating Plant Emissions

The King's College was to be heated using boilers burning No. 2 heating oil. At the time The King's College DEIS was prepared, combustion facilities using No. 2 heating oil were exempt from State permits and certifications to construct and operate. Hence, The King's College DEIS concluded that this facility will not have an impact on air quality. The current NYSDEC air quality regulations require that any fossil-fuel burning facility with heat input of more than 10-million Btu per hour be registered with the State. Based on the size of the King's College, it is believed that the boiler facility will require registration, but not necessarily permitting. Therefore, air emissions are likely to be below the required thresholds set by NYSDEC.

Construction Activities

Most of the dust generated by soil removal and earthwork would have settled within several feet of the disturbed area. Some minor amounts of smaller dust particles might have been carried off the site, depending on climate conditions. This impact was to be minimized by assuring proper construction practices, such as fugitive dust control measures recommended in the sediment and erosion control plan and proper equipment operation.

Asbestos

In 2008, a licensed asbestos handling contractor was retained to remove asbestos from the existing on-site building. The use of asbestos containing materials was largely discontinued beginning in the 1970s; however, the parcel was developed in the 1950's prior to the ban of some asbestos-containing construction materials. Therefore, the potential exists for encountering asbestos on the property in locations other than the existing building (e.g., in the underground utilities or at the non-operational wastewater treatment plant). The King's College would have conducted additional inspections to determine if other forms of asbestos were present in the former INCO building. If additional asbestos material was found, such material would have been removed, encapsulated, or otherwise mitigated in accordance with all applicable Environmental Protection Agency (EPA) of NYSDEC regulations.

Radon

Upon completion of construction, structures were to be screened in accordance with federal guidance to determine if a problem existed. If necessary, follow-up tests were to be completed according to EPA guidelines to determine long-term average exposure. If this analysis confirmed high radon levels, mitigation was to be accomplished. The nature of the proposed structures was to serve to partially mitigate the health impacts of radon should the problem exist on the site. Mitigation, if necessary, was to rely on prevention of radon entry and ventilation. Adverse health impacts due to radon accumulation were to be minimized through building construction techniques detailed in guidelines published by the United States EPA and by the Bureau of Environmental Radiation Protection of the NYS Department of Health.

Terrestrial and Aquatic Ecology

The King's College proposal would have involved greater impact to terrestrial and aquatic ecology when compared to the proposed development since the Project Sponsor's proposal is to pursue compliance with the new DEC's "green practices" regulations. Additionally, the Project Sponsor's proposal is to develop 45 acres of the property, whereas King's College proposal was to develop 102 acres.

There would have been a loss of forest and other vegetation and with that a loss of wildlife habitat. However, this alternative was to avoid direct disturbances to wetlands or floodplains, thereby eliminating the need for mitigation measures. Some nutrient loading of aquatic habitat in Blue Lake and Ringwood River would have also resulted. Such impacts would have resulted from removal of wooded habitat to allow site development. These impacts include the loss of forest cover, development of impervious area, and increased nutrient levels in wetlands. While the impacts on wildlife and vegetation were unavoidable in these areas, mitigation measures were to minimize impacts as much as possible. Mitigation measures included the implementation of a stormwater management plan and maintaining a large, undisturbed wooded area on the southern and eastern portions of the site. Limiting and properly managing the use of pesticides, herbicides, and fertilizers on the proposed college campus was to minimize associated adverse effects.

The layout of site facilities was designed to limit tree removal to the minimum necessary to meet the campus development requirements. Significant forested areas were to remain around the perimeter of the campus as well as along the shoreline of Blue Lake and in front of campus buildings. Significant forested

areas were also to be maintained along the visible ridge to the south of the residential village to minimize visual impact from the surrounding State Park lands. Much of the disturbed areas not otherwise constructed upon were to be re-vegetated with significant massing of native species.

The overall impact on vegetation associated with construction of the proposed college campus was to be greater than the present proposal, with approximately 39 percent of the site left undeveloped. Clearing of natural vegetation was to be limited to those sites proposed for actual development, and no rare or endangered species or habitats were to be affected. The proposed development was to reserve the majority of the site as a contiguous natural area.

Traffic and Transportation

The King's College proposal would have involved slightly greater impacts to transportation when compared to the proposed development.

Development of the college campus would have increased traffic on Long Meadow Road (CR-84) and Sterling Mine Road (CR-72), and would have affected traffic on other nearby roads to a lesser degree. However, the traffic generated by the campus will not have required any major transportation improvements and nearby intersections would have continued to function at an acceptable level of service, even with the addition of background growth and campus traffic.

According to the traffic study prepared for the proposed project, the peak-hour traffic entering the campus will be approximately 163 vehicles and the peak-hour traffic volume exiting the campus will be approximately 195 vehicles at site build-out (assumed to be 2008). The Level of Service for traffic turning out of The King's College driveway was to be Level of Service B or higher at all times, indicating no significant queuing at the proposed intersection.

The existing road system was of sufficient capacity to substantially mitigate any traffic impact associated with both the proposed college and anticipated future traffic growth. The current access drive to the site was to be upgraded and designed similar to a boulevard (wide center median) which would have provided two means of emergency access and egress for the site. Additional emergency access was to be provided through the creation of a loop road that would have provided two means of access to the dormitories.

Community Services

The King's College proposal would have involved comparable impacts to community services when compared to the proposed development.

Police

Adverse impacts on police services were also expected to be minimal. Given the code of conduct required by The King's College, the need for police service associated with criminal activity was expected to be limited. Police were to periodically patrol the college and were to be required to respond to emergencies at the site. The college was to provide on-campus security to minimize the use of municipal and state police services.

Fire and Ambulance

The King's College proposal would have affected both the Greenwood Lakes and Tuxedo fire districts. The Tuxedo district will also respond to alarms in this portion of the Town of Warwick. The response time is generally shorter for the Tuxedo fire district. The local ambulance corps will also have been affected by the new occupancy of the former INCO site. It was expected that use would have required significantly more calls from the police and fire services than the proposed project. An estimate was provided of 24 calls each per year.

Infrastructure and Utilities

The King's College proposal would have involved greater impacts to infrastructure and utilities when compared to the proposed development.

Wastewater

In 2002 The King's College proposal caused the construction of a new wastewater treatment plant (STP) at the site of the existing Blue Lake STP in conjunction with the South County Sewer Corporation (SCSC). This facility has a maximum capacity of 150,000 gpd which was to accommodate the full build-out requirements of The King's College (130,000 gpd) as well as the existing 20,000 gpd capacity of Blue Lake STP. A lift station and approximately 1,900 linear feet of 6-inch PVC force main were required to convey wastewater from The King's College site to the Blue Lake STP site. The lift station was to be located at the site of the existing INCO STP and was designed in accordance with the recommended standards for wastewater facilities.

The King's College proposal would have resulted in the treatment and discharge of treated effluent to an outfall tributary of the Ringwood River. Tertiary-level treatment was to be provided year-round, with a significant water quality benefit to downstream receptors. Phosphorus removal was to also be provided to minimize impacts. No adverse effect on downstream uses was anticipated since the plant was to be operated accorded to SPDES permit conditions. The SPDES permit was to be developed according to water quality standards and the State's anti-degradation water quality policy.

Water Supply

The King's College proposal was expected to result in the consumption (including system losses) of an average of approximately 144,000 gallons per day of water from Blue Lake. This is approximately 10,000 gallons per day more than could be served by the South County Water Corporation. However, 144,000 gpd was a conservative estimate, which included a 20-percent contingency factor for unidentified future growth beyond the projected campus population. The King's College maintained a deeded right to draw up to 250-million gallons annually directly from Blue Lake. If future growth exceeded the capacity of the South County Water Corporation to serve the campus, The King's College was to draw and treat additional water from Blue Lake in compliance with all applicable laws and regulations.

Solid Waste

The impacts on solid-waste disposal facilities were to be small to moderate. The college will generate less than one-half of one percent of the solid waste currently disposed of by Orange County. A private hauler was to transport college-generated solid waste to an appropriate designated County waste disposal facility. The college was to participate in all mandatory County and State recycling programs.

Power

The King's College proposal was to have no adverse impact on the Orange and Rockland Power Company. The college would have resulted in greater electrical energy consumption, but the utility had adequate production and transmission capacity to serve this demand.

Fiscal Resources

Taxes

The Project Site was assessed at \$1,720,600, which was to yield annual tax revenue of approximately \$124,000 (1998 dollars). Since The King's College is a tax-exempt institution, the taxing jurisdictions will not have realized any future tax benefit from this property. The lack of tax revenue would have been

offset somewhat by an increase in retail and commercial growth, cultural and educational benefits, and employment opportunities. The new occupancy of the site would have increased the demand for police, fire, ambulance, and public educational services. To compensate for the use of community service without benefit of municipal or County tax revenue, The King's College was to provide the following payments to mitigate any fiscal impacts:

- 15 partial scholarships of \$1,000 each per academic year, to students of Orange County families who had been accepted for enrollment at The King's College in the form of the "Orange County Resident Grant."
- An annual contribution of \$3,600 to the Greenwood Lake Fire District and an annual contribution of \$3,600 to the Greenwood Lake Ambulance District.
- Use of the college athletic facilities for formal athletic and cultural programs by the School Districts and Towns of Warwick and Tuxedo Park on a scheduled basis.

Visual Character

The King's College proposal would have involved greater impacts to visual character when compared to the proposed development.

Fourteen new buildings or building additions would have been sited throughout the property. In addition, 84.2 acres of existing woodland would have been cleared. The total developed area of the site would have been 102 acres or 60.6 percent of the Project Site as opposed to 45 acres or 18 percent under the proposed project.

The Ridgeline Overlay District did not exist when The King's College prepared its proposal, thus, several structures would have extended above the existing tree canopy and above the 700-foot-maximum elevation required in the Ridgeline Overlay District. Previous documentation by The King's College indicates that the maximum elevation at the Project Site would have been 800 feet. Although substantial areas of existing vegetation were to be maintained around the perimeter of the site, structures which extend above the existing tree canopy would have been visible. Additionally, this alternative would not have been in compliance with requirements of the Ridgeline Overlay District.

Views of the project were most likely to occur from locations along Sterling Mine Road (CR-72) and the northern and western shore of Blue Lake, including the adjacent IBM facility. Additional views of proposed structures located on the highest portions of the site may have been possible from other locations in the vicinity.

Cultural, Historic, and Archaeological Resources

The King's College proposal would have involved comparable impacts to cultural, historic, and archaeological resources when compared to the proposed development.

There were to be no adverse impacts on historic and archaeological resources as a result of The King's College proposal. The Project Site contains no buildings, objects, or districts which were eligible for or included in the National or State Registers of Historic Places. The location of this site, however, has a long history of iron mining operations. There are the remains of several smelting furnaces and associated historic structures in the lower portion of the Sterling Forest. There are the remains of two 1800's open-pit mines for iron ore on the property. These abandoned mines are located adjacent to the New Jersey border on a portion of the Project Site that was to remain undeveloped. There are no apparent mine shafts or other subterranean mines on the site. The areas adjacent to the Project Site are essentially rural with no nearby homes.

Land Use and Zoning

The King's College proposal would have involved greater impacts to land use and zoning when compared to the proposed development.

At the time of The King's College proposal, the entire eastern portion of the Town of Warwick was zoned "Planned Development" (PD), in which all proposed uses are by special permit from the Planning Board. The uses permitted in this zone include: professional offices, research centers, single- and multi-family residential housing, retail and commercial establishments, etc., all by special permit. The King's College project was consistent with the goals of the *Town of Warwick Comprehensive Plan* in place at that time. Since then, the Town of Warwick has updated its *Comprehensive Plan*, adding a Ridgeline Overlay District and a Biodiversity Conservation District.

At the time of The King's College DEIS, development in the vicinity was concentrated along major and secondary roads in the region and followed the requirements of the Town zoning regulations. The Project Site is effectively surrounded by the 15,000-acre Sterling Forest State Park. There was to be an unavoidable change in land use at The King's College site. Some of the vacant forest areas were to be converted to athletic fields, roads and parking, dormitories, and other site improvements.

The fourth level of the existing INCO building is comprised of mechanical equipment space, including a substantial amount of monitors and fume stacks. This level was to be replaced by classrooms, laboratories, faculty offices, library, prayer chapel, and mechanical space. The King's College had presented the project architectural plans to the Town of Warwick Architectural Review Board for advisory review and comment. The King's College had submitted an application to the Town of Warwick Zoning Board of Appeals for a height variance. The building height and number of stories complied with the *New York State Code Rules and Regulations*, Part 705.5 Special Conditions—see Figure 2-4, "The King's College Site Map," in Chapter 2, "Project Description."

D. Low-Height Alternative

This alternative assumes that the Project Sponsor will develop the site with a maximum building height of 40 feet. To accommodate the same building square footage, approximately 59 acres of the site will be disturbed as opposed to 45 acres under the current proposal—see Figure 16-3 Low-Height Alternative.

Geology, Soils and Topography

The low-height alternative will involve greater impacts to soils and geology when compared to the Project Sponsor's project since 59 acres will be disturbed as opposed to only 45 acres under the current proposal.

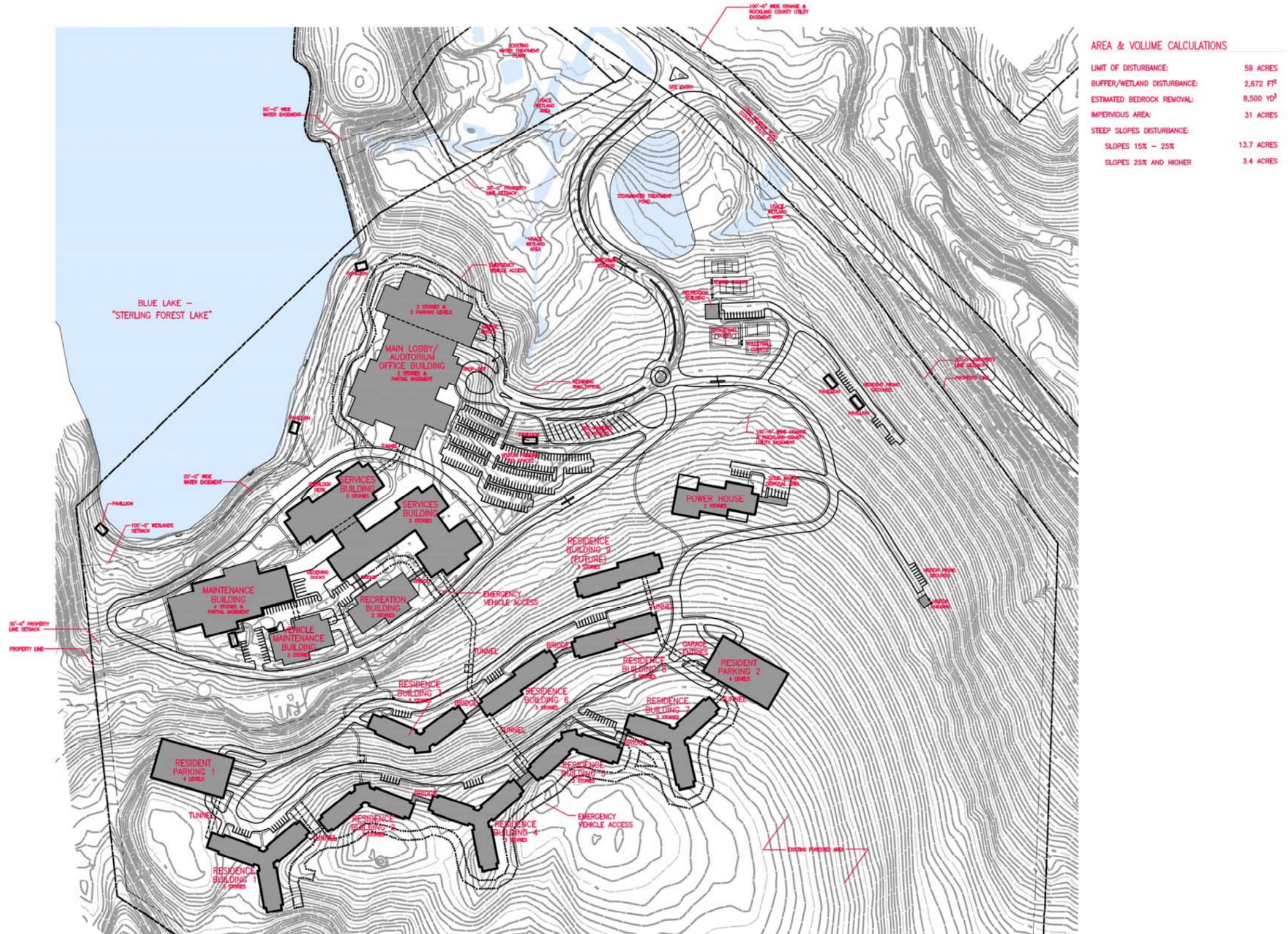


Figure 16-3 Low-Height Alternative

Soils

This alternative will expose an additional area to erosion during the construction period than the current proposal. An erosion and sedimentation control plan will be developed to mitigate any potential adverse impacts to the project soils due to erosion during construction operations.

Topography

The disturbance of slopes between 15 percent and 25 percent will increase from 2 acres to approximately 13.7 acres under this alternative. The disturbance of slopes greater than 25 percent will increase from 0.5 acres to approximately 3.4 acres. Additionally, the Ridgeline Overlay District will be compromised because the development will extend above the top of the ridge, thus having an adverse visual impact when compared to the current proposal.

Blasting

If blasting is required under the current proposal, then it is likely that additional blasting may be required under this alternative since a larger area will be excavated. A blasting plan will be prepared and all blasting will be performed in accordance with state and local codes.

Mining

This alternative is not expected to encroach on the locations of the two existing open-pit mines. As under the current proposal, the open-pit mines will remain as is.

Water Resources

The low-height alternative will result in a greater impact to water resources than the Project Sponsor's current proposal.

Groundwater

Impervious cover in this alternative is anticipated to be 31 acres, while the impervious cover under of the current proposal is 13.0 acres. The increased impervious area under this alternative will result in less groundwater recharge when compared to the proposed project. As in the current proposal, the Project Sponsor will use an integrated pest management approach for pest removal and composted manure for fertilizer on landscaped areas of the site. Additionally, bulk storage of petroleum products or other chemicals in underground tanks are not proposed. Therefore, there will be no potential impact on the groundwater from chemical storage or usage.

Surface Water

Increased impervious area will create additional stormwater runoff when compared to the current proposal. The stormwater detention volume will also increase from 26,500 cubic feet under the current proposal to 318,500 cubic feet for this alternative. Disturbing more area during construction also carries the potential for greater silt deposition in Blue Lake and the Ringwood River. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented to minimize the impacts to surface water.

Air Resources

This alternative will have a greater impact on air quality during construction than the proposed development because of the larger extent of excavation required. Reducing building heights will not impact vehicular traffic or heating requirements. The impact due to the presence of asbestos or radon will

remain the same as in the current proposal. Asbestos will be removed or abated and radon will be monitored and mitigated, as in the current proposal.

Terrestrial and Aquatic Ecology

This alternative will have a greater impact on terrestrial and aquatic ecology when compared to the proposed development since this alternative will disturb more land area.

There will be additional loss of forest and other vegetation and with that a loss of wildlife habitat. However, as in the current proposal, the low-height alternative will avoid direct disturbances to wetlands or floodplains, and will maintain a 75-to-86-foot buffer around Blue Lake. Increased surface water runoff will also impact aquatic ecology. A SWPPP and stormwater detention will be implemented to minimize impacts to surface water and aquatic ecology.

Traffic and Transportation

This alternative is expected to have the same impact on traffic and transportation as the current proposal, with the exception that all on-site parking will be outdoors. The current proposal calls for the majority of parking to be located in covered garages.

Community Services and Facilities

This alternative would have the same impact on community services and facilities as the current proposal. The Project Sponsor will provide on-site security and medical staff. Additionally, fire suppression and recreational facilities will be maintained by the Project Sponsor.

Infrastructure and Utilities

Impacts to infrastructure and utilities under the low-height proposal are expected to be the same as the current proposal. Wastewater generated and water demand are expected to remain the same, as the number of individuals on the site will not change. Similarly, solid waste generated and power requirements to the site are expected to be the same under both the low-height alternative and the current proposal.

Fiscal Resources

Taxes

The nature of the facility will not change under the low-height alternative, thus, the facility will remain tax exempt.

Visual Character

The low-height alternative will result in greater impacts within the viewshed area when compared to the current proposal. The development will ascend up the mountainside and the building height will extend above the top of the ridge, thus compromising the Ridgeline Overlay District. While there will be minimal impact to the views from Long Meadow Road (CR-84), the views from Sterling Mine Road (CR-72) will be visually impacted due to the higher elevation of the development.

Cultural, Historic, and Archaeological Resources

This alternative will have comparable impacts to cultural, historic, and archaeological resources when compared to the proposed development. The Project Site contains no buildings, objects, or districts which were eligible for or included in the National or State Registers of Historic Places.

E. As-of-Right Alternative

This project alternative analyzes development of an alternate land use on the Project Sponsor's property in accordance with existing zoning regulations, but will not accomplish the goals being sought by the Project Sponsor. Regulations set forth by the *Town Zoning Code* for the Land Conservation (LC) district in which the Project Site is located allows for detached single-family residences on lots of at least six acres. (See Appendix K-1, "Civil Basis for As-of-right Design.") For this analysis, the number of single-family residential lots that could potentially be subdivided on the property was calculated and a sketch subdivision plan was created. This alternative assumes that the property will be purchased by a private developer and that new residential lots will be occupied by the general public and not be associated with the Project Sponsor's operations. To be conservative, these residences are assumed to be five-bedroom houses approximately 3,200 square feet in area. Subsequently, potential impacts from this type of development were assessed.

Estimates show that approximately 200 acres of the 253-acre parcel are available for development of lots; the remaining 53 acres are reserved for infrastructure (i.e., roadways and stormwater facilities, open space and contingency).

Although the Town encourages a subdivision to be developed as a cluster subdivision in order to preserve important open lands, the as-of-right alternative has been developed as a conventional subdivision. The reason for this is that the clustering designation is made by the Town Planning Board and requires approval for the higher density of five acres per lot. This alternative assumes no additional waiver or approvals are required from the Town.

For a conservative estimate and to show the greatest possible number of potential subdivided lots, environmentally sensitive areas were not considered in the calculation of the number of lots. Accounting for environmentally sensitive areas could potentially reduce the number of total subdivided lots, and it is assumed that these factors will be considered if this alternative is realized.

This alternative must comply with Chapter 137, (Subdivision of Land) and Chapter 164-40, (Zoning Regulations) of the *2002 Zoning Law of the Town of Warwick, New York*. Section 164-40 of the *Code* refers applicants to the Table of Bulk Requirements 164-10N, which contains the following stipulations for the number of subdivided lots permitted in LC Zoning—see Table 16-2 Summary of Parcel Calculations

Table 16-2 Summary of Parcel Calculations

Parcel Portion	Area (in acres)
Total Parcel Size:	253
Infrastructure (-15%):	(38)
Contingencies (-6%)	(15)
Acres available for development	200
Number of Residential Lots Allowed (6 acres/lot)	33
Number of Residential Lots Proposed	25
Note: Use Group: y	

The Project Sponsor’s property could be subdivided into 33 lots, occupied by single-family residences. However, taking into account the shape of the property, existing steep slopes, proposed road circulation, minimal disturbance of natural features (Ringwood River and wetlands) and necessary stormwater management areas, it was determined feasible to subdivide the property into 25 lots ranging in size from 6.0 to 10.9 acres—see Figure 16-4 As-of-Right Residential Option.

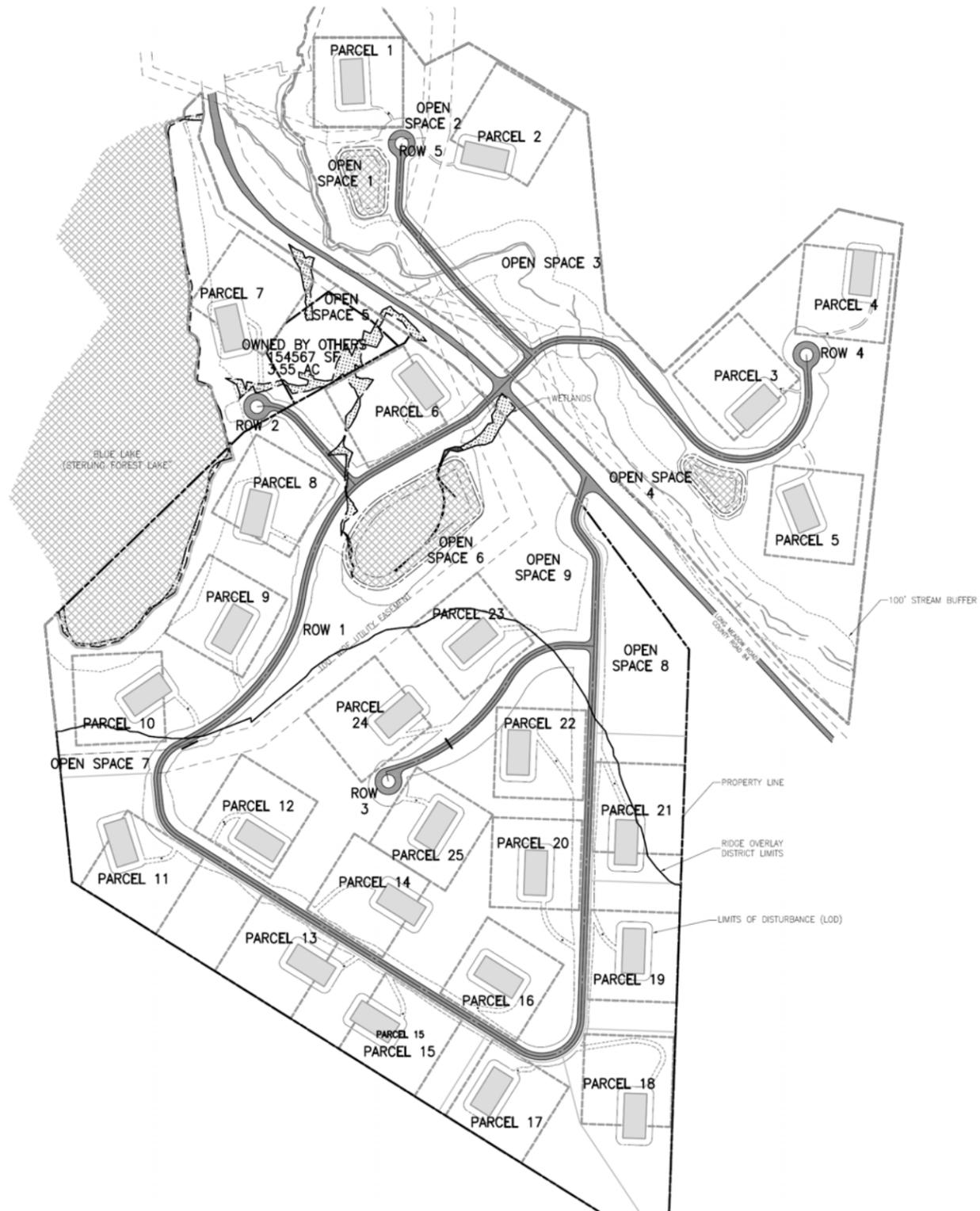
Lot size standards for subdivisions pursuant to Chapter 164-40 are shown in Table 16-3.

Table 16-3 LC One-Family Dwelling Standards

Standard	Requirement
Minimum lot size	261,360 sq ft (6 acres)
Maximum building height	35 ft
Maximum impervious coverage	10%
Side yard setback	75 ft
Rear yard setback	100 ft
Note: Portion of property lies within Ridgeline Overlay Zone which has a structure height limit of 25 feet (164.47.1)	

Geology, Soils, and Topography

This alternative will result in a total of 80,000 square feet of new building coverage whereas the proposed project will result in approximately 1,140,200 square feet of new building coverage. However, in this alternative, a very significant increase in area of disturbance will be required as compared with the proposed project. This alternative will result in a total of 65 acres of disturbed area whereas the proposed project will result in 45 acres of disturbed area. Greater areas of steep slopes will also be disturbed. Under this alternative, the disturbance to slopes greater than 25 percent will total 3.8 acres as compared to 0.5 acres for the proposed project.



SUBDIVISION-PARCEL TABLE

RESIDENTIAL LOT PARCELS

1	6.93
2	9.34
3	6.89
4	9.50
5	8.3
6	6.26
7	10.43
8	6.59
9	7.02
10	7.23
11	8.17
12	7.51
13	6.00
14	6.50
15	6.00
16	6.51
17	7.41
18	7.08
19	6.07
20	6.02
21	6.05
22	6.38
23	6.00
24	6.00
25	6.77
TOTAL	176.96 ACRES (70%)

OPEN SPACE PARCELS

1	6.97
2	2.19
3	8.43
4	15.39
5	0.44
6	16.29
7	0.98
8	4.28
9	4.68
TOTAL	60 ACRES (24%)

RIGHT OF WAY PARCELS

1	9.78
2	0.93
3	1.58
4	2.50
5	1.60
TOTAL	16.39 ACRES (6%)

SITE DATA - LONG MEADOW RD

TAX ID	SBS BLK1, LOTS 2,22,2,3,4,1,4,2,5,1,5,2,6,0
TOTAL SITE AREA	253 AC.
NEIGHBORHOOD	09320
ZONING	LC-LAND CONSERVATION
OVERLAY DISTRICT	RL-02, BC-0
SCHOOL DISTRICT	TUXEDO

**REQUIRED YARD SETBACKS-
LC - LAND CONSERVATION**

	MINIMUM	PROPOSED
FRONT	100'	100'
SIDE 1	75'	75'
SIDE 2	75'	75'
REAR	100'	100'

**DENSITY CALCULATIONS-
CONVENTIONAL SUBDIV**

TOTAL SITE AREA:	253 ACRES
LAND FOR LOTS:	200 ACRES
MAX PERMITTED DENSITY (LC ZONING):	6 ACRES/LOT
MAX NUMBER OF LOTS ALLOWED:	33 LOTS
NUMBER OF LOTS PROPOSED:	25 LOTS

AREA & VOLUME CALCULATIONS

	AC	%
TOTAL GROSS AREA:	253	100%
TOTAL LOT PARCELS:	177	70%
TOTAL ROAD PARCELS:	16	5%
TOTAL OPEN SPACE PARCELS:	60	25%

LIMIT OF DISTURBANCE:	65 AC
BUFFER/WETLAND DISTURBANCE:	63,250 FT2
ESTIMATED BEDROCK REMOVAL:	1,550 FT3
IMPERVIOUS AREA	25.7 AC
STEEP SLOPES DISTURBANCE	
SLOPES 15% - 25%	14 ACRES
SLOPES 25% AND HIGHER	3.8 ACRES

UTILITIES

POTABLE WATER AND SANITARY SEWER AVAILABLE FROM SOUTH COUNTY WATER CORPORATION-UNITED WATER & SEWER

TYPICAL LOT COVERAGE

TYPICAL LOT SIZE:	6 ACRES
RESIDENCE FOOTPRINT:	3,200 FT2
DEVELOPED AREA:	20,000 FT2
IMPERVIOUS AREA:	10,000 FT2

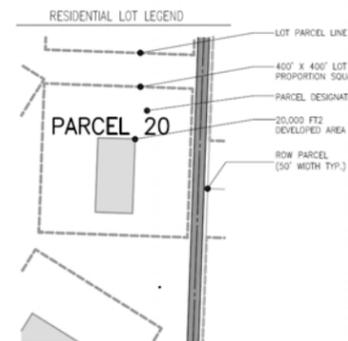


Figure 16-4 As-of-Right Residential Option

Water Resources

Groundwater

This alternative includes 25.7 acres of impervious cover, while the impervious cover of the proposed project is estimated at 13.0 acres. The additional impervious cover will result in less groundwater recharge when compared to the proposed project. The types of fertilizer applied to each lawn and the pest control methods will be left to the discretion of each homeowner. These may have an impact on groundwater resources.

Surface Water

In this alternative, five new single-family residences will be developed on the eastern side of Long Meadow Road (CR-84). Ringwood River traverses this section of the property. Residences will need to be developed around this watercourse. The proposed project has been designed to avoid watercourses to the extent practicable; this alternative could have a greater adverse impact on surface water bodies.

In this alternative, a large amount of new impervious surfaces will result from construction of new houses, driveways, and access roadways. The additional impervious surface area will result in an increase in stormwater run-off volume and peak flows. A stormwater management plan will be developed to convey stormwater runoff to drains and detention basins thereby protecting the surface water from sedimentation and contamination. Impervious surfaces will be more scattered in this alternative than with the proposed project.

Air Resources

Vehicular Emissions

Vehicular traffic under this alternative is expected to be significantly less than traffic generated by the proposed project. However, both this alternative and the proposed project will have minimal impact on air quality.

Heating Plant Emissions

Each residence will include its own heating system, which will be exempt from permitting and registration by the state. Small residential installations are not expected to have a significant impact on air quality.

Construction Activities

This alternative will include disturbance of 65 acres spread across the entire property on both sides of Long Meadow Road (CR-84). The proposed project consists of 45 acres of disturbed area, which are confined to the south side of Long Meadow Road (CR-84). Construction activities under this alternative are expected to have more impact on air quality than the proposed project.

Asbestos

In 2008, a licensed asbestos-handling contractor was retained to remove asbestos from the existing on-site building. The use of asbestos-containing materials was largely discontinued beginning in the 1970s; however, the parcel was developed in the 1950's prior to the ban of some asbestos-containing construction materials. Therefore, the potential exists for encountering asbestos on the property in locations other than the existing building (e.g., in the underground utilities or at the non-operational

wastewater treatment plant). If additional asbestos material is on this site, it will need to be removed, encapsulated, or otherwise mitigated in accordance with all applicable EPA or NYSDEC regulations.

Radon

The parcel is located in an area identified by the United States EPA as having the “highest potential” for radon presence. The presence of radon is typically less prevalent in large commercial buildings than it is in residences due to the use of HVAC systems that prevent radon gas from accumulating in the building. Based on estimates provided by the New York State Radon Office, 11 to 20 percent of homes in this area are expected to experience long-term radon exposure that is above 4.0 pCi/l, which is the limit set by EPA.

It is likely that Radon-Resistant New Construction (RRNC) will be employed under this alternative. RRNC prevents the entry of radon gas into the home. Similar techniques, which apply to commercial and low-rise residential buildings, will be utilized for the proposed project. Therefore, the impact from radon is expected to be minimal for both this alternative and the proposed project.

Terrestrial and Aquatic Ecology

This alternative will involve greater impact to terrestrial and aquatic ecology when compared to the proposed development due to the larger area of disturbance and greater impervious area. Approximately 65 acres, spread across the entire property, will be disturbed under this alternative. The Project Sponsor’s proposal involves disturbing 45 acres concentrated in one section of the parcel on the south side of Long Meadow Road (CR-84). Additionally, this alternative will result in 25.7 acres of impervious area, while the Project Sponsor’s proposal results in a significantly smaller impervious area of 13.0 acres.

Development of the parcel with single-family residential units will require significant forest clearing and will cause substantially more habitat fragmentation than the proposed project. Significant adverse impacts to the site’s flora and fauna will result. Both this alternative and the proposed project will avoid direct disturbances to wetlands or floodplains, thereby eliminating the need for mitigation measures. Some nutrient loading of aquatic habitat in Blue Lake and Ringwood River will result from removal of wooded habitat to allow site development.

Traffic and Transportation

In this alternative, overall traffic impacts will be similar to the proposed project. During weekday AM and PM peak hours, vehicle trips in and out of the 25-lot subdivision will be about 30 and 25, respectively. With the proposed project, AM and PM peak vehicle trips will be approximately 53 and 159, respectively. Although the number of trips generated by the current proposal is greater than this alternative, the subdivision will require three new entrance roads to provide access from Long Meadow Road (CR-84). The main Project Site driveway should be monitored in the future for the possible installation of a traffic signal due to the additional traffic.

Community Services and Facilities

Based on widely accepted population multipliers (see Chapter 12 for derivation), this 25-lot development could result in the potential population increase of 113 people. Although this number is significantly less than the 1,000 that will be added by the proposed project, it will likely include approximately 39 school-age children needing to be assimilated into the public school system (Tuxedo Park School District). In addition, these residences will not benefit from security and emergency response services that the Project Sponsor will provide, resulting in a greater burden to municipal police, fire, and emergency medical services.

Infrastructure and Utilities

This alternative will potentially add 113 new residents to the property. Additional population will increase demand on water supply and utilities, as described below, but will result in less impact when compared with the proposed project.

Wastewater

Based on the NYSDEC *Design Standards for Wastewater Treatment Works*, a five-bedroom home could produce approximately 550 gpd of wastewater. Thus, approximately 13,750 gpd of wastewater can be anticipated under this alternative. Wastewater generated under this alternative will likely be treated at the Blue Lake STP.

Water Supply

Assuming that the water supply was equivalent to the amount of wastewater generated, each residence will require a water supply of 550 gpd. Therefore, this alternative will increase overall water demand by approximately 13,750 gpd. Potable water for this alternative will likely be supplied from the United Water New York/Blue Lake System.

Solid Waste

The impact on solid waste facilities due to this alternative is minimal. The EPA estimated that solid waste generation across the US in 2009 averaged 4.34 pounds per person per day. Based on this rate, this alternative has the potential to generate approximately 88 tons of solid waste per year. On a per capita basis, this alternative results in more solid waste generation than the proposed project.

Power

It is estimated that each home will have a peak electrical demand of approximately 20 kVA, for a total of 500 kVA for this alternative. The total peak electrical demand is significantly lower than the proposed project; however, per capita electrical demand is higher than the proposed project. It is likely that the Orange & Rockland Utilities will serve this subdivision.

Fiscal Resources

The creation of 25 single-family residences will increase the tax base for the Town, but will also increase expenditures for the Town. According to the American Farmland Trust (see Appendix K-2) for every \$1.00 of revenue generated by residential development, the median increase of expenditures is \$1.16 to support infrastructure and municipal services. Four nearby communities were analyzed in the study and included the following Towns with their respective revenue-to-expenditure ratios: Amenia (1:1.23), Fishkill (1:1.23), Red Hook (1:1.11), and Kinderhook (1:1.05). Therefore, single-family residential development is often more costly for a community than a sufficient revenue source and therefore this alternative will have an adverse economic impact. Although the proposed project will be tax-exempt, the site will also be self-sufficient and maintain its own infrastructure and not rely heavily on municipal services.

Visual Character

In this alternative, undeveloped portions of the Project Sponsor's property east of Long Meadow Road (CR-84) will be converted into five single-family residential lots. Single-family residences spread out over the property, particularly along Long Meadow Road (CR-84), will diminish the appearance of open space that exists today and that will be preserved in the proposed project. This effect will be an adverse visual impact.

Cultural, Historic, and Archaeological Resources

The archaeology study determined that there are no sensitive areas that will be disturbed and no buildings, objects, or districts were eligible for or included in the National or State Registers of Historic Places. However, depending on the placement of residences in this alternative, the archaeology study may need to be expanded.

Land Use, Zoning, and Public Policy

This alternative will comply with zoning regulations in the *Town Code*. However, it will create a 25-lot single-family residential subdivision that will be out of character with the Long Meadow Road (CR-84) corridor. *

A. Introduction

This Chapter summarizes the proposed project and its environmental impacts in terms of the loss of environmental resources, both in the immediate future and in the long term.

B. Commitment of Resources

Some small areas of existing undeveloped land will be committed to development of structures, roads, and landscaped areas. Other irreversible and irretrievable commitments of resources include:

- As a result of grading activities, the upper geological formation on portions of the site will be irreversibly altered.
- As a result of grading and filling activities, the soil composition and characteristics of portions of the site will be irreversibly altered.
- The proposal will irreversibly alter the site's topography.
- The proposal will require the use of materials and energy for the construction of structures and site improvements.
- The proposal will irreversibly alter areas of eastern deciduous forest to developed land.
- The proposal will consume 85,000 gallons per day of potable water.
- The proposal will reduce the available capacity of the Blue Lake Wastewater Treatment Plant (Blue Lake STP) by 80,000 gallons per day.
- The proposal will consume 52,610 Mbtu per year of energy. *

A. Introduction

This Chapter describes the potential growth inducing impacts the Proposed Action may have on the community.

B. Regional Acquisition of Goods and Services

The proposal involves the relocation of up to 850 resident members of the Worldwide Order from the existing Watchtower Facility in Brooklyn, New York, to the Project Site with the potential for future growth to 1,000 residents. The introduction of these persons residing and working on the site will increase the local demand for goods and services. While Watchtower makes every effort to use its own resources efficiently, Watchtower will make substantial annual purchases of goods and services in the local region in support of the proposed facility. Excluding capital expenditures for new buildings or expanding properties, Watchtower will make purchases from the following regional industries:

1. Food and food preparation.
2. Construction, including specialized contractors, design consultants, and related construction materials necessary for ongoing maintenance operations.
3. Telephone services.
4. Utilities, including gas and electricity.
5. Miscellaneous services.
6. Retail goods.
7. Health care services.

In addition, each member of the Worldwide Order receives monthly financial support that typically will be spent locally and contributes to regional economic activity.

C. Visitors and Tourism

Watchtower World Headquarters will draw visitors to the region for the following two reasons:

1. As the headquarters for Watchtower activities conducted worldwide—and one of the three facilities in New York State that support the activities of Jehovah's Witnesses—based on past experience, over 70,000 persons from around the world can be expected to visit the headquarters annually.
2. Additionally, based on past experience at other facilities, it can be expected that friends and family members of on-site residents from outside the New York metropolitan area will regularly come to visit the facilities and surrounding area, often eating and lodging overnight at local commercial establishments.

D. Growth-Inducing Aspects

Growth from Facility Operations

The increase in local purchases both by facility operations and by visitors has the potential to significantly impact the local economy. To the extent that goods and services are purchased locally and current supply is at or near demand, the construction and operation of the facility may result in increased growth in the area in such sectors as:

- Agriculture and food.
- Wholesale sales including office supply, fuels, and janitorial supplies.
- Retail sales including apparel, housewares, and others.
- Utilities including water, sewer, electric, gas, and telephone.
- Personal services.

At this time it is difficult to estimate the operational expenditures of the future facility. However, inquiries are being made to area growers about purchasing locally-grown food on an ongoing basis.

Tourism

The increase in regional economic activity is much easier to anticipate based on the availability of data on tourism expenditures from Orange County. It is anticipated that visitors to the facilities will spend their money on:

- Accommodations.
- Private recreation including theaters, museums, historic sites, local attractions, etc.
- Retail sales including service stations, outdoor outfitters, and general merchandise.
- Food and beverages.
- Transportation including taxis, car rental, and mass transit.

The most recent data available of Orange County Tourist expenditures is from 1998. According to this data, it was anticipated that an overnight guest in the county spends \$89.36 per day, a visitor staying with friends spends \$70.29 per day and a day tripper spends \$24.89 per day. Adjusting this amount to 2009 dollars¹, this equates to \$132.48 for overnight guests, \$104.21 for those staying with friends, and \$36.90 for day trippers. Based on past experience with Watchtower's Brooklyn facility and given the remoteness of the site, the Project Sponsor anticipates an average visitor stay in the area for 1.5 days. It was further assumed that of the visitors, 60 percent would be day trippers, 15 percent would be staying with friends within the County, and 25 percent would seek accommodations in the County.

Based on these assumptions, visitors to the facility are anticipated to spend \$7,443,420 annually within the County. It is anticipated, based on a more recent tourism study², that these expenditures will be distributed as follows:

¹ By using a multiplier derived from comparing the 1998 and 2009 Bureau of Labor Statistics, *Consumer Expenditure Survey Average Entertainment Expenditures* totals for the Northeast Region, \$2,627/\$1,772 = 1.4825.

² Tourism Economics. *The Economic Impact of Tourism in New York State - Hudson Valley Focus*. Oxford, UK: May 2010

Table 18-1: Direct Expenditures from Tourism

Type of Expenditures	% of Expenditures	Annual Direct Economic Activity
Retail and Service Stations	19.00%	\$1,414,250
Recreation	9.00%	\$669,908
Transportation	22.00%	\$1,637,552
Overnight Accommodations	23.00%	\$1,711,987
Food & Beverage	27.00%	\$2,009,723
		\$7,443,420

Using the Regional Input-Output Modeling System (RIMS II), the impact of these expenditures on the regional economy (Orange County and directly adjacent Counties) is calculated in Table 18-1. The impact on the regional rather than County economy was analyzed, because it was assumed that, in addition to those in Orange County, many visitors to the site will seek points of interest in other Hudson Valley Counties, Northern New Jersey, and Northwestern Pennsylvania.

Table 18-2: Impact of Tourism Expenditures on Regional Economy

Category	RIMS Multipliers			Total		
	Output	Earnings	Employment	Output	Earnings	Employment
Retail Trade	1.7501	0.4281	15.6276	\$2,475,079	\$605,440	22
Amusements, Gambling, Recreation	1.7235	0.3859	17.6104	\$1,154,586	\$258,517	12
Transit and ground passenger transportation*	1.7795	0.5354	25.7075	\$2,914,024	\$876,746	42
Accommodation	1.7792	0.4093	13.5565	\$3,045,967	\$700,716	23
Food services and drinking places	1.7911	0.3972	20.4191	\$3,599,616	\$798,262	41
Total				\$13,189,271	\$3,239,682	140

The tourism generated by the facility is likely to result in a total increase to the region of approximately \$13 million and increase demand for approximately 140 new employees. Of the 140 positions created, it is anticipated that approximately 106 of the positions would be directly induced by the expenditures of the tourists, while the remainder would be due to indirect effects as the increased activity ripples through the regional economy. *

A. Introduction

This Chapter summarizes the proposed project and its environmental impacts in terms of the use of energy by the proposed project. It identifies the energy sources to be used, anticipated levels of consumption and ways the Project Sponsor proposes to reduce energy consumption, including the incorporation of Green Globes™ design, construction and facility operational standards.

B. Existing Conditions

The existing International Nickel Company (INCO) buildings comprise a total area of approximately 198,000 square feet. These facilities, constructed in 1962, housed research and development laboratory space and also included foundry operations for use in conjunction with their laboratory research. The existing facilities are abandoned and as such would have no anticipated energy usage.

The U.S. Department of Energy, on their Energystar® web site, currently states: “Labs are energy intensive using 5 to 10 times more energy per square foot than an average office building.” According to the U.S. Department of Energy Energystar® web site, the highest respective Energy Use Index (EUI) for any of these three proposed uses is for offices, with an average energy use of 93 kBtu/square foot/year. Industrial uses, such as a foundry, are considered major energy consuming processes, and are more energy intensive than a laboratory use. If the existing facilities were reused for a similar lab and industrial use with the same floor area it could consume approximately 93,000–186,000 Mbtu/year.

C. Potential Impacts

The proposed new development would contain a total of 1,140,200 square feet, divided amongst office, residential, and services/maintenance building spaces. The proposed new development comprises 5.5 times more space than the existing uses. However, the existing uses were at least 5 to 10 times more energy intensive than an average office building, which is the most energy-intensive use being proposed for the new development. Also, the EUI for the new development is targeted to be more than 45 percent lower than the average office, residence, or services/maintenance building. Thus it can be concluded that the new development will use considerably less energy, less than 50 percent the anticipated energy with the continued use of the existing or similar facilities.

Typically, energy consumption is anticipated for the construction in addition to the proposed project. Short-term energy would be consumed during the construction of the proposed project consisting of power needed to operate equipment and tools and fuel to operate construction vehicles.

Long-term energy consumption by the 1,140,200 square feet of office, residential, and ancillary service spaces would be required of various energy sources for space heating, air-conditioning, domestic water heating, and lighting. No. 2 fuel oil and natural gas are the predominant fuel sources for heating; and electric is the predominant energy source for cooling.

Table 19-1 illustrates the anticipated energy impact of the proposed project if it were designed and constructed as the typical *NYS Building and Energy Code*-compliant building. Figures provided for the average EUI of each respective building type are based on information published by the U.S. Department of Energy.

Table 19-1 Energy Impact Based on Average Code-Compliant Building

Building Type	Proposed sq ft per Building Type	Average EUI per U.S. Department Of Energy Stats	Consumption Annually
Office	250,200	93 kBtu/sf/yr	23,268 MBtu/yr
Residence	494,000	86 kBtu/sf/yr	42,484 MBtu/yr
Service	396,000	77 kBtu/sf/yr	30,492 MBtu/yr
Totals:	1,140,200	N/A	96,244 MBtu/yr

D. Mitigation Measures

Table 19-2 illustrates the anticipated energy impact of the proposed project based on a sustainable design approach. This reflects a target of at least a 45-percent reduction in energy use compared to the average code-compliant building.

Table 19-2 Projected Energy Impact Based on Sustainable Design Approach

Building Type	Proposed sq ft per Building Type	Projected EUI	Projected Annual Consumption
Office	250,200	51 kBtu/sf/yr	12,760 MBtu/yr
Residence	494,000	47 kBtu/sf/yr	23,218 MBtu/yr
Service	396,000	42 kBtu/sf/yr	16,632 MBtu/yr
Totals:	1,140,200	N/A	52,610 MBtu/yr

Energy and Sustainable Design Practices Summary

The buildings in this complex are projected to score in the top 15 percent in terms of minimizing energy consumption, according to the Department of Energy’s Target Finder energy performance rating tool. For example, the energy consumption expected for the proposed residence buildings will be approximately 45 kBtu per square foot per year. The average for this type of building in the same geographic area is 86 kBtu per square foot per year. This reflects a reduction in energy usage and carbon emissions of 47 percent over the average building of this type. Similar percentages in energy savings with respect to the average building are expected for the proposed offices and maintenance buildings on the site.

The new residences, office, service, and maintenance buildings will be designed to accepted sustainability standards. The goal of the Project Sponsor is to achieve a three Green Globes™ award level in sustainable design through the Green Globes™ System. This roughly corresponds to a “LEED® Green Building Rating System™ *Gold* award level.

According to the <http://www.thegbi.org> web site, the Green Globes™ system is a voluntary, consensus-based, national rating system developed by the not-for-profit organization, Green Building Initiative (GBI). Their stated mission is:

“...to accelerate the adoption of building practices that result in energy-efficient, healthier, and environmentally sustainable buildings by promoting credible and practical green building approaches for residential and commercial construction.

“Green Globes™ emphasizes state-of-the-art strategies for sustainable site development, energy efficiency, water savings, resources and materials selection and waste management, emissions control and indoor environmental quality. Green Globes™ is a practical rating tool for green building design and construction that provides immediate and measurable results for building owners and occupants.”

The web site continues:

“The Green Globes™ System is a revolutionary green management tool that includes an assessment protocol, rating system and guide for integrating environmentally friendly design into commercial buildings. Once complete, it also facilitates recognition of the project through third-party review and assessment. It’s an interactive, flexible and affordable approach to environmental design.”

Sustainable design initiatives will include all of the following:

Site Development

- Undeveloped areas to remain undisturbed.
- Landscaping will integrate native planting and naturalization.
- “Heat island” effect to be minimized by using shading, high-albedo paving surfaces, and green roofs.
- Exterior lighting to minimize glare, night trespass, and night sky glow.
- Design to reduce bird collisions with buildings.
- Natural habitat cores and corridors are to be preserved.
- Site grading will increase infiltration.
- Reduce run-off by use of plants, trees, detention ponds, and infiltration trenches.
- Use of indigenous plants in landscaping will reduce water use and reduce pest infiltration.

Energy

- DOE Energy Star Target Finder rating of 85 percent or better (indicates upper 15 percent).
- Shading devices, low-emissivity (low-e) glazing to reduce heat infiltration and thus reduce energy use.
- Building envelope to optimize energy savings.
- High-efficiency lamps, ballasts, and lighting controls to save energy.
- Variable frequency drives (VFDs), energy-efficient motors, and elevators to be installed.
- Transportation—commuting to and from site—will have minimal effects on fossil-fuel consumption since the proposal is for a live/work site.

Water

- Consumption targets—less than 10 gallons per square foot per year in offices and 11,000 gallons per dwelling unit per year in residences.
- Water-saving fixtures to be installed.

Resources and Materials

- Use of locally manufactured materials.
- Materials with low volatile-organic-compound (VOC) content to be used.
- Recycled content to comprise a minimum of 10 percent of all construction materials.
- Durable and low-maintenance materials to be used.
- Strategies to reuse and recycle demolition waste.

Emissions

- Low ozone-depleting refrigerants to be used.
- All new combustion equipment to meet Energy Star or other energy saving standards.

Indoor Environmental Quality

- Ventilation rates to comply with *ASHRAE Standard 62.1-2004* for indoor air quality.
- Strategies to control sources of indoor pollutants.
- Strategies to optimize lighting comfort for occupants, maximizing daylighting.
- Strategies to provide acoustic comfort.

In addition to the energy-efficient practices incorporated into the sustainable design approach, required energy conservation measures will be incorporated in the design of each specific building. At no time will the energy conservation measures fall below the standards mandated in the current *Energy Conservation Construction Code of New York State (ECCCNYS)*. The code specifies, within each given climate zone, basic requirements that would be applied to the building envelope, mechanical systems, and lighting as mandatory for residential and commercial buildings.

With regard to the design of building envelopes, the *ECCCNYS* requires the following:

- Insulation R-values, glazing, and door U-factors to be certified by the National Fenestration Rating Council (NFRC) or by using default values found in the tables included in the *Code*.
- Insulation levels for walls, roofs, below-grade walls, and floors over outdoor air or unconditioned space meet or exceed minimum thermal resistance levels.
- Insulation levels for glazing areas, and U-factors for windows and skylights meet or exceed minimum efficiency levels.
- The building envelope to be sealed to limit air leakage.
- Vapor retarders to be installed in non-vented framed ceiling, wall, and floor areas.

With regard to the design of water heating equipment, air-cooling and heating mechanical systems, the *ECCCNYS* requires the following:

- HVAC equipment complies with performance requirements.

- Include temperature and humidity controls as required.
- Comply with ventilation standards set forth in the *Building Code of New York State (BCNYS)*, and include shut-off dampers and economizer cooling capability as required.
- Insulation R-values for ducts, plenums, and piping meet or exceed minimum thermal resistance levels and are properly sealed.
- Installation completion includes commissioning and balancing of systems.

In terms of lighting standards, the *ECCCNYS* requires the following:

- Manual or automatic controls or switches that allow occupants to dim lights and turn them on or off when appropriate.
- Total connected loads for indoor lighting systems do not exceed power allowances as specified in the code for each building.
- Exterior lighting to comply with energy-efficiency criteria as specified in the *Code*.

The proposed project would be required to comply with the above requirements of the *ECCCNYS*.

E. Alternative Comparison

Four alternatives to the proposed project have been identified and are discussed in detail in Chapter 16. These alternatives are designated as 1) no-action, 2) educational facilities, 3) low-height, and 4) as-of-right. Energy-use impacts associated with each of these alternatives are discussed below and compared to impacts attributable to the Project Sponsor's proposed facility.

No-Action Alternative

Under this alternative, the land would remain in its existing state including the abandoned INCO facility or it could be reoccupied by a similar user. No change to existing energy requirements would be seen if the site remained unoccupied. If the site were reoccupied by a similar user, energy requirements are assumed to be approximately 93,000–186,000 MBtu/year. This alternative does not meet the goals of the Project Sponsor.

Educational Facilities Alternative

Under this alternative, facilities similar to those proposed in the 1990's by The King's College would be constructed. These proposed facilities included approximately 706,000 square feet of total building area and 1,370 parking spaces to accommodate 1,500 students. According to the U.S. Department of Energy statistics, the typical EUI for a college is 120 kBtu/square foot/year. Thus, the total energy that would be required by this alternative is approximately 84,720 MBtu/year. This alternative does not meet the goals of the Project Sponsor.

Low-Height Alternative

This alternative involves constructing lower-profile structures at the Project Sponsor's facilities and would not affect the proposed number of individuals that would live and work at the site. In this option the development would be spread out and the same volume would have a greater surface area. As such, the energy required by this alternative would be slightly higher than the Project Sponsor's present proposal with an approximate energy consumption of 55,230 MBtu/year. This alternative meets the goals of the Project Sponsor.

As-of-Right Alternative

This alternative assumes that the property would be purchased by a private developer and that new residential lots would be constructed, which would be unrelated to the Project Sponsor's operations. Twenty-five single-family residences would be built at a density of 1 unit per 6 acres of land, which is the current zoning requirement. For this study it is assumed that energy use would be per the U.S. Department of Energy's published standards for single-family detached homes: 43 kBtu/square foot/year, with an average square footage of 3,200. Total annual energy usage for the 25 single-family residences would therefore total 3,440 MBtu/year under this alternative. This alternative does not meet the goals of the Project Sponsor. *