

PROPOSED HARTLEY ROAD ELECTRICAL SUBSTATION

Hartley Road and Cheechunk Road
Goshen, New York

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Volume I

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Town of Walkkill Town Board
Town of Walkkill Planning Board
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Orange County Planning Department
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NYSDEC Division of Environmental Permits –Region 3
NYS Department of Agriculture & Markets
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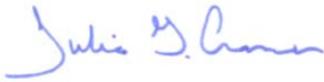
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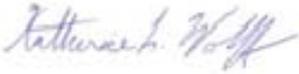
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ACRONYM LIST

AASHTO: American Association of State Highway and Transportation Officials
APE: Area of Potential Effects
ASGEC: Amy S. Greene Environmental Consultants, Inc.
BMP: Best Management Practice
CERCLIS: Comprehensive Environmental Response Compensation and Liability Information System
CFR: Code of Federal Regulations
cfs: Cubic Feet/Second
CO: Commercial/Office – Mixed Use zoning district
c.y.: Cubic yard
dB: Decibels
dB(A): A-weighted Decibels
DBH: Diameter at Breast Height
DEIS: Draft Environmental Impact Statement
DGA: DiGioia, Gray & Associates
EAF: Environmental Assessment Form
EIS: Environmental Impact Statement
ESCP: Erosion & Sedimentation Control Plan
FEIS: Final Environmental Impact Statement
FEMA: Federal Emergency Management Agency
ft.: Feet
ft. msl: Feet Above Mean Sea Level
GIS: Geographic Information Systems
GVWR: Gross Vehicle Weight Rating
IEEE: Institute of Electrical and Electronics Engineers
JD: Jurisdictional Determination
kV: Kilovolt
LED: Light-emitting Diode
LTC: Load Tap Changers
mG: MilliGauss
MTP: Maintenance and Traffic Protection Plan
MUTCD: Manual on Uniform Traffic Control Devices
MVA: Megavolt-amperes
NEMA: National Electrical Manufacturers Association
NEC: National Electric Safety Code
NHP: National Heritage Program
NRCS: Natural Resource Conservation Service
NWP: Nationwide Permit
NYCRR: New York Code of Rules and Regulations
NYSDEC: New York State Department of Environmental Conservation
NYSOPRHP: New York State Office of Parks, Recreation, and Historic Preservation
OAA: Ostergaard Acoustical Associates
ORU: Orange and Rockland Utilities, Inc.
ORMC: Orange Regional Medical Center
PEM: Palustrine Emergent
PFO: Palustrine Forested

ACRONYM LIST

PSC: Public Service Commission
PSS: Palustrine Scrub/Shrub
RGAI: Richard Grubb & Associates, Inc.
ROW: Right of Way
RU: Rural Zoning District
SSURGO: Soil Survey Geographic Database
SEQRA: State Environmental Quality Review Act
SPCC: Spill Prevention, Control, and Countermeasure
SPDES: State Pollutant Discharge Elimination System
sq. ft.: Square feet
SR: Scenic Road Overlay District
SWPPP: Stormwater Pollution Prevention Plan
USACE: United States Army Corps of Engineers
USDA: United States Department of Agriculture
USEPA: United States Environmental Protection Agency
USGS: United States Geological Survey
VCI: Valuation Consultants, Inc.

1 EXECUTIVE SUMMARY

Orange and Rockland Utilities, Inc. (ORU) has applied to the Town of Goshen Town Board and the Planning Board for a Special Use Permit and Site Plan Approval to construct a new electrical substation on a 48.73-acre site (Site) located between Hartley Road and Cheechunk Road in the Town of Goshen in Orange County, New York. The Proposed Project also includes associated improvements to the distribution network along roads in the vicinity of the Site.

The New York State Environmental Conservation Law provides state policy to conserve, improve, and protect natural resources and the environment as well as prevent, abate, and control water, land, and air pollution so that the health, safety, and welfare of its citizens are enhanced. To help conform with the Environmental Conservation Law, the New York State Environmental Quality Review Act (SEQRA) was enacted to ensure that all agencies conducted their affairs with an awareness of their stewardship of natural resources and that they have an obligation to protect the environment for the use and enjoyment of future generations. It is SEQRA's intention that the protection and enhancement of the environment, human, and community resources should be given appropriate weight with social and economic considerations in reaching decisions on proposed activities. In New York State, all projects or activities requiring state or local permits are required to have an environmental impact assessment (using the Environmental Assessment Form (EAF)) performed as per the New York State Environmental Quality Review Act (SEQRA), Environmental Conservation Law Article 8, and implementing regulations set forth in 6 New York Code of Rules and Regulations (NYCRR) Part 617. Based on the significance of a project's/activity's environmental impacts identified in the EAF, further study of potential impacts may or may not be warranted. If further study of potential impacts is warranted, an Environmental Impact Statement (EIS) is developed for the project/activity.

For the proposed Hartley Road Substation, ORU submitted the EAF on February 1, 2011 that identified significant impacts from the project. Therefore, the Town of Goshen Planning Board required an EIS to be prepared. A scoping session was held on April 21, 2011 and a Scoping Document was prepared to guide the development of the Draft Environmental Impact Statement (DEIS). The Final Scoping Document was approved on May 5, 2011 by the Town of Goshen Planning Board. This DEIS was prepared for the Town of Goshen Planning Board, the lead agency for this project, in compliance with the New York State Environmental Quality Review Act (SEQRA) to thoroughly discuss existing conditions, potential impacts, and proposed mitigation for various environmental resources related to how the proposed project will affect the conditions in the vicinity of the Site. Involved and interested agencies include:

Agency	Required Permit/Approval
<i>Town of Goshen</i>	
Town of Goshen Board	• Special Use Permit for Electrical

	<p>Substation</p> <ul style="list-style-type: none"> • Acceptance of Conservation Easement (subject to authorization by the NYS Public Service Commission).
Town of Goshen Planning Board	<ul style="list-style-type: none"> • Site Plan Review
Goshen Zoning Board of Appeals	<ul style="list-style-type: none"> • Variances for site usage (Height variance for overhead transmission lines and aboveground variance for electric line less than 138kV)
Goshen Highway Superintendent	<ul style="list-style-type: none"> • Highway Work Permit
State and Federal	
New York State Department of Environmental Conservation (NYSDEC)	<ul style="list-style-type: none"> • SPDES General Permit for Stormwater Discharge from Construction Activities and Operation of Electrical Substation
New York State Public Service Commission	<ul style="list-style-type: none"> • Approval of Conservation Easement
U.S. Fish and Wildlife Service	<ul style="list-style-type: none"> • Endangered Species Act -- Section 7 consultation for Indiana Bats and Bog Turtles
U.S. Army Corps. of Engineers	<ul style="list-style-type: none"> • Section 404/401, Nationwide Permit 12
Other Interested Agencies	
Town of Goshen Environmental Review Board	<ul style="list-style-type: none"> • Advisory report to Town of Goshen Planning Board
Orange County Department of Planning	<ul style="list-style-type: none"> • GML § 239-M referral
Goshen Building Department	<ul style="list-style-type: none"> • Building Permit

ORU is proposing this Project to relieve excess electrical loading of existing substations and distribution circuits in the area. The physical location of the Proposed Project was selected as it is centrally located between other existing substations owned by ORU that are presently heavily loaded by customer usage. One of these substations, South Goshen Substation, is operating close to normal design capacity even with ORU currently transferring some of the South Goshen load to nearby substations. Also, heavily loaded circuits from substations in the Middletown area are currently providing service to Orange Regional Medical Center (ORMC). The construction of this proposed substation will reduce the existing load on the South Goshen Substation and Middletown substations as well as associated distribution circuits, all of which increase service reliability (including service to Goshen and ORMC), and allow for future upgrades to South Goshen Substation, which will further strengthen the electrical

system in the area. Section 2.3 provides further details on the purpose, need, and benefits of this project.

The Site consists of open fallow fields and shrub land (former farmland) and wooded areas. The Property is undeveloped, with the exception of overhead high voltage (69 kV and 138 kV) electric transmission lines that cross the southwestern portion of the property in an existing ORU right-of-way (ROW). The Site includes the following zoning districts regulated by the Town of Goshen: Rural (RU), Scenic Road Overlay (SR), Commercial/Office – Mixed Use (CO), Flooding and Ponding Overlay, Stream Corridor and Reservoir Watershed Overlay, and an aquifer overlay district. The topography of the site is gently rolling with elevations ranging from 370 feet above mean sea level (ft. msl) to 450 ft. msl. Cheechunk Creek flows in a southwest direction across the eastern portion of the Site, outside of the proposed limits of disturbance.

The Proposed Project will disturb a total of 7.06 acres of land: 6.31 acres will be on the Site for the new substation; 0.75 acre will be off site associated with distribution network improvements. The proposed substation would be centrally located on the western half of the property in the southwest corner of an open fallow field bordered by stone walls. An access driveway entrance would enter the Site via an existing opening in the stone wall along Cheechunk Road. Project construction would take place in 2 phases over a 17-month period, and would create approximately 1.2 acres of substation (gravel) pad and impervious surface (paved access driveway) at the Site. Project construction would include construction of the access road and maintenance driveway, stormwater management system, proposed substation, concrete pads for towers, transmission connection line, land grading activities, and installation of a landscaped berm and landscape plantings.

In order to better redistribute the electric load leaving the substation, ORU has also proposed improvements to the electrical distribution network along Cheechunk Road, Owens Road, Echo Lake Road, and Hartley Road within the Town's ROW. These improvements will consist primarily of new distribution circuits installed in underground conduits within the roadway ROWs. The circuits will eventually tie into the existing overhead distribution network. Approximately 0.75 acre will be disturbed within existing highway ROWs during distribution network improvements.

Anticipated impacts to land use are minimal. Construction of the proposed substation, access driveway, screening, and stormwater controls would result in the reduction in size of an existing open fallow field and loss of scattered trees on the property.

In order to minimize impacts to current land uses, ORU incorporated many rural siting practices into the substation design. ORU will maintain existing stone walls and trees to the greatest extent practicable and has planned a significant landscaping buffer. Portions of the open fallow field will be converted into the substation, paved access road, earthen berm, and landscape buffer. Other portions will remain open. ORU will also route the new distribution lines along Cheechunk Road, Owens Road, Echo Lake

Road, and Hartley Road primarily through underground conduits within Town ROWs. The completed project will have 1.2 acres of land converted to substation and paved driveway. All other areas will have natural surfaces. Additionally, ORU is proposing a conservation easement to be established for 28.74 acres (59% of total Site) in the eastern portion of the Property.

Minor visual impacts are anticipated as a result of the proposed project. From most of the adjacent roads, parcels, and Orange County Heritage Trail, the proposed substation would be partially or completely obscured by mature vegetation, the natural terrain, or distance during most of the year. ORU has proposed a number of measures to mitigate visual impacts, including: maintaining existing trees and stone walls to the greatest extent practicable, engineering a bend in the access road to obscure the view of the substation, locating the substation at the lowest possible elevation without encroaching into wetlands, and installing a landscaped berm and 50-foot landscape buffer on the north side of the proposed facility.

Impacts to vegetation and wildlife are expected to be minimal. Vegetation will be disturbed and wildlife temporarily displaced within the 6.31-acre limits of disturbance (12.9 % of the Site) during construction. Approximately 87.1% of the 48.73-acre Site will remain undisturbed. ORU will maintain existing trees, vegetation, and habitat wherever possible, and has proposed a 28.74-acre conservation easement in the eastern portion of the property for open space pending New York State Public Service Commission (PSC) and Goshen Town Board approvals. At project completion, 1.2 acres of land will be permanently converted to substation and paved access driveway, leaving 47.53 acres (over 97%) as open space. Additionally, since the substation will be predominantly unmanned and unlit, wildlife are expected reestablish usage on all areas of the Site outside the fenced substation once construction is complete.

The Project limits of disturbance will not intersect Cheechunk Creek, its tributaries, or floodplains, and, therefore, impacts to onsite wetlands (± 13.4 acres) and streams will be avoided with the exception of small areas of wetland impacts at the transmission line connection location (where the existing overhead transmission line is connected to run lines to/from the substation). Permanent jurisdictional wetland impacts will occur on 0.003 acre; temporary wetland impacts will occur on 0.090 acre; and wetlands that will have manual tree removal will occur on 0.066 acre. With the Stormwater Pollution Prevention Plan (SWPPP) design, existing drainage patterns and volume will not be altered by the Proposed Project. ORU has designed a Grading Plan, an Erosion & Sedimentation Control Plan (ESCP), and an SWPPP in accordance with New York State law to protect existing surface water features and wetlands to the greatest extent practicable.

No impacts to stormwater runoff are anticipated as a result of the Proposed Project. ORU proposes to install a stormwater management system including a bioretention area and dry extended detention basin. These stormwater best management practices (BMPs) will provide water quality treatment and flow control, respectively, of stormwater

on the Site. Additionally, the Proposed Project includes a Grading Plan, an ESCP, and an SWPPP to control stormwater runoff. A Spill Prevention Control & Countermeasure (SPCC) Plan has also been developed to prevent and respond to releases of oil. These plans have been included in the DEIS as figures or appendices.

Minimal impacts to existing geology, topography, and soils are anticipated in conjunction with the Proposed Project. Construction would require grading of the existing terrain, which will require excavation of approximately 7,221 cubic yards (c.y.) of material and placement of approximately 9,073 c.y. of earth within the project limits of disturbance. Extra fill will be imported because of the earthen berm along the north side of the Site. Although the likelihood is small, soil contamination could also potentially occur as a result of oil releases from equipment on the Site. In order to mitigate these potential impacts, ORU would implement the practices described in the ESCP, Grading Plan, and SPCC Plan. No impacts to groundwater beneath the Site are anticipated.

No long-term (permanent) impacts from traffic are anticipated from the proposed substation since the substation will be predominantly unmanned with the exception of occasional maintenance/inspections. Minimal short-term (temporary) impacts to existing traffic and transportation are anticipated as a result of the Proposed Project. These impacts would occur during construction as a temporary increase in traffic in the vicinity of the Site from construction and delivery vehicles, as well as employee vehicles. Construction activities will be occurring over a period of 17 months with an average work force of 10 employees. Additional traffic impacts, such as temporary lane closures, would occur during distribution system improvements along the surrounding roadways. Within the 17-month construction period, distribution line improvements are expected to last 3 to 4 months. ORU will comply with the minimum sight distances in accordance with industry standards. ORU will mitigate short-term traffic impacts with traffic controls (e.g., flagmen). A Maintenance and Traffic Protection (MTP) Plan will also be prepared by ORU as a mitigation measure for traffic impacts.

Short-term or long-term impacts to cultural resources or electromagnetic fields are not anticipated as a result of the Proposed Project. A cultural resource survey was conducted on the property, which detected no cultural resources within the "Area of Potential Effects." Likewise, existing electromagnetic fields were surveyed at the Site and compared to a computer-generated model of post-construction conditions. For the electromagnetic field, post-construction condition simulations found that levels along the property boundaries were well below the New York State PSC limit of 200 milliGauss (mG) and were similar to other common household items (included on **Table 4**).

Although there are short-term negative impacts on noise due to construction activities, there are no permanent long-term noise impacts to the surrounding area. The substation is being designed with low noise transformers. A noise survey compared existing noise levels to a computer-generated simulation of post-construction conditions. The simulated operational noise levels indicated negligible increases in noise levels at one (of four) locations analyzed. All other surveyed locations did not have any

discernible differences in noise levels. The proposed earthen berm will further reduce noise levels emitted to the surrounding area. Short-term noise impacts will be mitigated by limiting work to normal business hours and maintaining equipment properly.

The Proposed Project is not anticipated to increase demand on town services (i.e., Fire Department or Police Department) or decrease market values of adjacent properties. Based on the fiscal analysis conducted, the Proposed Project will have a positive impact on the surrounding community. The Proposed Project will add more than \$490,000 of tax revenue to the Town of Goshen and Orange County and generate some temporary construction employment. No financial mitigation measures are necessary for the Project.

Construction of the Proposed Project will occur in 2 phases over a period of approximately 17 months. Construction activities will create standard impacts to existing resources: dust and air quality, visual aesthetics, noise, erosion of soil, stormwater runoff, clearing of vegetation, and traffic. These impacts are mostly temporary in nature and will be mitigated using standard practices such as dust suppression, visual screening mechanisms, noise reduction practices, erosion and sediment control, stormwater management, and traffic safety measures.

Four alternatives are evaluated for the proposed substation. These alternatives are:

- No Action alternative,
- Alternative onsite locations for the proposed substation,
- Failure to secure a variance to allow overhead transmission of the connection line, and
- Trenching of the distribution network improvements along the south side of Cheechunk Road.

The No Action alternative concluded that without the Proposed Project, electrical supply to Goshen and surrounding areas would fall below acceptable operating ranges as demand surpasses supply. Two alternative onsite locations were evaluated and found to be not viable options due to the increased amount of negative impacts. Additionally, the alternative evaluating the failure to secure a variance to allow overhead transmission lines were found to have greater negative impacts than if the overhead connection line were allowed. The alternative for the trenching of the distribution network improvements along the south side of Cheechunk Road has been incorporated into the design of the Proposed Project and is discussed throughout the DEIS.

As with many construction projects, there are certain unavoidable adverse impacts associated with construction activities. These impacts include: use of energy, loss of natural wildlife habitat, loss of wetland, and visual, traffic and noise impacts. These

impacts and associated mitigation measures are discussed thoroughly within this report. Additionally, there are resources that must be irreversibly and irretrievably committed for a successful completion of the Proposed Project. These irreversible and irretrievable commitments are standard for any construction project and include energy and natural materials needed for construction.

The Proposed Project was also evaluated for its potential as a growth inducing impact on the area. However, electrical substations generally are constructed in reaction to population or economic growth in an area and may only indirectly promote planned or unplanned growth. The proposed Hartley Road Substation is being constructed to lighten the electrical demand load on already existing substations in the surrounding area. Therefore, it is being constructed in reaction to growth, but may indirectly promote future growth in the area by allowing the electrical supply grid to meet greater demand.

Based on the thorough analysis of existing conditions, potential impacts, and proposed mitigation for the Proposed Project and several alternatives, it was determined that the Proposed Project provides the best alternative for the construction of an electrical substation at this Site. Potential impacts identified have been mitigated in accordance with various regulatory requirements and, in some cases, to the greatest extent practicable.

2 DESCRIPTION OF PROPOSED ACTION

ORU is proposing to construct a new electrical substation on Cheechunk Road in the Town of Goshen to improve electrical reliability and meet the needs of a growing consumer base in the surrounding Orange County area. The Proposed Project will consist of the development of a new electrical substation constructed on an engineered gravel pad, installation of ancillary equipment, construction of an access driveway off of Cheechunk Road, an overhead transmission connection line to bring electricity to the substation, distribution lines to distribute electricity to the surrounding area, onsite maintenance road, stormwater detention pond and treatment system, and an earthen berm and landscaping to minimize visual impacts.

In accordance with the New York State SEQRA, ORU has submitted the project for SEQRA review. The lead agency (Town of Goshen Planning Board) requested that an Environmental Impact Statement (EIS) be completed for the Proposed Project. A scoping session was held on April 21, 2011 and a Scoping Document was prepared to guide the development of an appropriate Draft EIS. The Final Scoping Document was approved on May 5, 2011 by the Town of Goshen Planning Board. The project was declared an Unlisted SEQRA Action. **Appendix A** includes the completed Environmental Assessment Form (EAF), Final Scoping Document, and pertinent correspondence.

2.1 SITE LOCATION AND DESCRIPTION

The Proposed Project Site for the new electrical substation is an irregularly shaped parcel consisting of 48.73 acres located at the eastern corner of the intersection of Hartley Road and Cheechunk Road in the Town of Goshen, Orange County, New York (**Figure 1**). The street address is 157 Cheechunk Road and the tax map designation for the Site is Section 12, Block 1, Lot 1.7. Cheechunk Road abuts the property to the north and west. Hartley Road abuts the property along the southwestern edge of the property. Eastern portions of the property abut private lands. The Site is currently undeveloped and had historically been used for agricultural purposes. Based on historic aerial photos, cultivation appears to have stopped prior to the early 1990s (Historic Aerials, 2011, and Google Earth, 2011). Overhead high voltage electric transmission lines and associated lattice towers cross the southwestern corner of the property adjacent to Hartley Road in an existing ORU ROW. The property consists of fallow open fields, shrubby areas, and forests. Cheechunk Creek crosses the eastern section of the property in a southwesterly direction. **Figure 2** presents existing conditions at the Site. Sheet 2 of 12 in **Appendix B** also presents existing conditions at the Site. Tax parcels are identified in **Figure 3**.

The site has gently rolling topography (**Figure 1**) with elevations between 370 ft. msl along the southwestern boundary and 450 ft. msl along the northern boundary (CMX, 2011). Hills and swales are aligned in a northeast/southwest direction. Western portions of the property slope gently to the southwest. Cheechunk Creek flows in a southwesterly direction across the eastern portion of the Site (**Figure 2**). No state wetlands or wetland buffers have been mapped on the Site by the New York State Department of Environmental Conservation (NYSDEC) (NYSDEC Division of Environmental Permits – Region 3, 2011). However, some wetland areas, subject to federal jurisdiction, have been delineated on the property and are discussed further in Section 3.4.

The Site is primarily comprised of open fallow fields, shrub land, and wooded land. Two federal wetlands have been delineated onsite and are present adjacent to Cheechunk Creek and in the southwestern areas of the Site. Although there are no existing buildings on the Site, there are existing stone walls, which will be maintained to the maximum extent practicable. There is also an existing overhead transmission line ROW along the southwestern side of the Site. **Figure 2** presents an aerial overview of the Project Site showing existing conditions, including the stone walls. Existing conditions are also presented on Sheet 2 of 12 in **Appendix B**. Based on a review of historical aerial photos (Historic Aerials, 2011), the majority of the Site was used for agricultural purposes prior to the 1960s. From the 1960s to the early 1990s, the agricultural use of the property lessened and many areas have grown in with trees or shrubs. Agricultural use of the property appears to have ceased prior to the mid-1990s (Historic Aerials, 2011 and Google Earth, 2011).

The surrounding area is characterized as a combination of single-family residential homes, agricultural land, open fallow land, wooded land, and the Orange County Jail. Residential properties exist along Cheechunk Road to the north and west of the Site. Agricultural land exists to the northwest. Forested land exists to the southwest, south, southeast, east, and northeast of the Site. Open fallow land exists to the south and southwest. The Orange County Jail is located to the southeast. Additionally, the Orange County Heritage (Walking) Trail is located across Hartley Road to the southwest of the Site (**Figure 2**).

The property is located in several different zoning districts: Rural District (RU), Commercial/Office Mixed-Use District (CO), Scenic Road Overlay District (SR) for Owens Road, the Floodplain and Ponding Area Overlay District, and the Town of Goshen Stream Corridor and Reservoir Watershed Overlay District. The Site is also located within the Town of Goshen AQ-6 Aquifer Overlay District. Zoning districts and overlays are depicted in **Figure 4** and are discussed in greater detail in Section 3.1.

Municipal water and sanitary sewer are not available to the area. Private residences are served by private wells and septic systems. Electricity is provided by ORU via overhead electrical service. Natural gas is also not provided to the area. Police protection is provided by Town, County, and State agencies. Fire protection is provided by the Goshen volunteer fire department. Highway service is provided by the Town of Goshen.

As per the Scoping Document, Kleinfelder also researched landfills and Superfund sites in the surrounding area. There are no active solid waste landfill facilities in the Town of Goshen based on the NYSDEC online database (NYSDEC, 2011). Two former landfills are listed on the NYSDEC Environmental Site Remediation Database (NYSDEC, 2011). These sites are the Orange County Landfill, located approximately 1.5 miles to the southwest of the Site, and the Al Turi Landfill, located approximately 0.5 mile to the southwest of the Site (**Figure 1**). The Orange County Landfill is also listed by the US Environmental Protection Agency (USEPA) on the Superfund database as a Non-National Priorities List Site with a No Further Remedial Action Planned designation (USEPA, 2011). Although Al Turi Landfill has been closed, there is a landfill gas-to-energy plant at the landfill that is still in operation (**Figure 1**).

2.2 DESCRIPTION OF PROPOSED ACTION

The new electrical substation proposed by ORU will be located in the western half of the Site and is mostly located in an existing field. The project will disturb a total of 7.06 acres of land: 6.31 acres will be on the Site; 0.75 acre will be offsite associated with distribution network improvements. The land where the substation is sited is in the rural (RU) zoning district. **Figure 5** shows the Proposed Project. **Figure 6** shows a more detailed view of the substation. A full size Proposed Site Plan is included as Sheet 4 of 12 in **Appendix B**.

Although considered an industrial use, substations are allowed in RU zones through the issuance of a Special Use Permit. ORU has applied for a Special Use Permit from the Goshen Town Board and has also applied for site plan approval from the Goshen Town Planning Board. No waivers are anticipated for the construction of the proposed substation. However, ORU will be applying for two site usage variances: a variance for the construction of aboveground electric transmission lines less than 138 kV, and a variance for height for the construction of overhead transmission lines over 35 ft. high.

This project proposes the installation of the new Hartley Road Substation with two (2) 50 Megavolt-amperes (MVA) 138/69 to 13.2 kV (dual) transformer banks with Load Tap Changers (LTC), new 13.2 kV switchgear with ten circuit positions, in which six (6) distribution circuits will be utilized upon initial construction. There will be provisions for four future circuits. The high-side of the station will be constructed to operate at either 69kV or 138kV, pending the future upgrades of Lines 24/25 from 69kV to 138kV construction. The transformers are approximately 24 ft. long, 20 ft. wide, and 19 ft. high to the top of terminals. Additionally, the substation will include two double circuit "H" frame poles 68 ft. high with a 16-foot high dynasphere on top for lightening protection (total height 84 ft.). The substation will be fenced with vehicle and pedestrian gates at the front (north side) of the Project and a pedestrian gate at the back. **Figure 6** shows the layout and major features of the substation.

The substation will be accessed from Cheechunk Road via a driveway that will upgrade an existing entrance way off Cheechunk Road. The driveway will be 20 ft. wide and 945 ft. long and will be constructed of an 8-inch gravel base, 4 inches of asphalt concrete Type 3 Binder Course, and a 2-inch asphalt concrete Type 6F Top Course.

The substation will only be lit in the event of emergency work. In addition to the fence, other security measures include security cameras and remote monitoring of equipment.

A bioretention system for water quality and flow control and stormwater dry-extended detention basin for additional flow control will also be constructed as part of the Project to the southwest of the proposed substation (**Figure 5**). The bioretention system has a surface area of 6,480 sq. ft. and a depth of approximately 4 ft. The stormwater dry-extended detention basin has an area of 9,560 sq. ft. and a depth of 5.5 ft.

An overhead transmission connection line will be constructed from the existing overhead lines in the ROW along Hartley Road to bring electricity into the substation. Three mono-poles, double circuit poles (81.5 ft. high) will be constructed in the existing ROW along Hartley Road to connect to the existing transmission lines and will replace the existing transmission tower. The transmission connection line will require the installation of two mono-poles, double circuit poles (71 and 72 ft. high) to carry overhead electric transmission lines between the connection location and the substation (**Figure 5**). This connection location and connection line area will need to be cleared for construction, resulting in 0.003 acre of permanent wetland impacts (127 sq. ft. for pole foundations), 0.090 acre (3,930 sq. ft.) of temporary wetland impacts and approximately

0.066 acre (2,875 sq. ft.) of manual tree cutting in a wetland. Underground distribution lines will be installed under the access driveway to connect to the existing electric distribution network. An additional gravel maintenance road will be constructed around the northwest and southwest sides of the substation for access to the stormwater management features and transmission connection line. This gravel maintenance road will be 12 ft. wide and 741 ft. long. Once constructed, the substation will be screened from Cheechunk Road and Owens Road by landscaping and an earthen berm.

ORU has also proposed improvements to the electrical distribution network along Cheechunk Road, Owens Road, Hartley Road and Echo Lake Road, within the Town Highway ROW. These improvements will improve the distribution network and better redistribute the electric load going out of the substation. All distribution lines will exit the substation underground and eventually rise and connect to the existing overhead distribution system. Improvements along the adjacent roads will be the installation of predominantly underground conduits for the new distribution lines. In addition to underground conduits, there will be associated manholes, riser poles, and pull boxes. **Figures 5 and 7** illustrate proposed distribution network improvements along these roads. Overall, approximately 6.31 acres of land on the Site will be disturbed and approximately 0.75 acre of land will be disturbed offsite associated with distribution network upgrades.

Since the Proposed Project will be constructed on the western portion of the property, ORU is proposing to set aside approximately 28.74 acres (59% of the total area, 48.73 acres) of primarily wooded land in the eastern portion of the property as a conservation easement, pending approval from the New York State Public Service Commission. This area also includes Cheechunk Creek and associated wetland.

The proposed Project falls within the boundaries of six different zoning districts/overlay districts established by the Town of Goshen, including:

- 1) The Rural Zoning District;
- 2) Commercial/Office Mixed-Use Zoning District;
- 3) Scenic Road Overlay District;
- 4) The Town of Goshen Flooding and Ponding Overlay District,
- 5) Town of Goshen Stream Corridor and Reservoir Watershed Overlay District,
- 6) Town of Goshen AQ-6 Aquifer Overlay District.

Zoning districts and overlays are depicted in **Figure 4**. Zoning is discussed in greater detail in Section 3.1.

2.3 PROJECT PURPOSE, NEED, AND BENEFITS

The Hartley Road area in Goshen, New York is centrally located between other existing substations owned by ORU: Shoemaker, South Goshen, and East Wallkill substations (**Figure 8**). The distribution banks of these three substations serve a combined 17,300 customers, and are presently heavily loaded. The construction of the new Hartley Road Substation will insure a reliable electrical supply to the existing loads in Goshen and

facilitate the future upgrade of the South Goshen Substation. The electric usage growth rate in the area served by these three existing substations has averaged over 4.0% annually. While economic challenges in the region have currently reduced growth rates (only 1.8% increase in 2009), the general demand for more electrical supply is anticipated to grow continuously through the next decades. Although recent upgrades to the Washington Heights and Silver Lake Substations and the construction of the new Westtown Substation (**Figure 8**) have provided load relief and backup for the Shoemaker and East Walkkill Substations, these measures have provided minimal relief for the South Goshen Substation.

The South Goshen Substation is operating close to capacity during the peak season and is expected to its normal rating by 2013. This typically occurs during the months of June, July, and August. To keep the South Goshen Substation below its normal rating during these times, load is transferred from the South Goshen Substation to nearby substations through distribution circuits. Even with these efforts, as the load in the Goshen area continues to grow, the South Goshen Substation is still nearing normal design capacity. In addition, transferring load to the adjacent distribution circuits may negatively impact customer reliability in the Goshen area due to the increased length and loading of these existing circuits. Construction of the Hartley Road Substation will reduce the load on the South Goshen Substation (**Figure 8**) and allow for future upgrades to the South Goshen Substation. The new circuits from Hartley Road Substation will reduce the length and customer count of the existing South Goshen Substation circuits hereby increasing reliability to the Goshen area customers. In addition, this substation will provide the capability to supply power to the proposed Orange County Government Center in Goshen and the new ORMC in the Town of Walkkill. The new ORMC is currently being supplied by heavily loaded circuits from Silver Lake and East Walkkill Substations.

2.4 CONSTRUCTION IMPACT

Construction of the substation will disturb a total of 6.31 acres of the Site (12.9% of the total property). An additional 0.75 acre will be disturbed during distribution network improvements in existing highway ROWs. ORU proposes to construct the substation in a two-phase construction plan and anticipates that construction will be completed in 17 months.

The first phase of construction will include:

- implementation of erosion and sediment control practices
- construction of the access driveway to the Site
- staging area construction
- tree clearing and grubbing
- pre- construction of stormwater system features and temporary sediment basin
- construction of the onsite gravel maintenance road

The second phase of construction will include:

- substation construction
- distribution line construction
- foundations for transmission poles
- transmission line construction
- final construction of stormwater system
- berm construction
- final site restoration
- landscaping

Distribution line construction will include improvements to the distribution network along Cheechunk, Owens, Hartley, and Echo Lake Roads. The construction will involve mostly trenching underground electrical conduits within existing Town ROWs. Associated manholes, riser poles, and pull boxes will also need to be installed.

There will likely be short-term positive impacts from the Proposed Project on the economy with the creation of new temporary construction jobs and associated required services. There will be short-term negative impacts on noise, traffic, air quality (dust), stormwater, soils, vegetation, wetlands, and visual aesthetics created during the construction process. These negative impacts will be mitigated using various methods during the construction period. Negative impacts to visual resources will occur until disturbed vegetation regrows. A small (0.003 acre) permanent loss of wetlands will occur due to this Proposed Project. Although the substation itself will produce a minor negative impact on visual aesthetics, impacts on visual aesthetics have been mitigated to the greatest extent practicable. Additionally, the proposed conservation easement on the eastern portions of the property will have a positive impact on visual aesthetics and wildlife habitat by allowing this land to remain undeveloped open space. Long-term, there will be a positive impact on the reliability of electrical service to consumers in the area as well as annual tax revenues to the town and school district. Section 3.0 describes these impacts in greater detail.

2.5 LIST OF PERMITS AND APPROVALS

Table 1 summarizes the reviews, approvals, and permits required for the proposed Project.

Table 1
Regulatory Reviews, Approvals & Permits
Required for Proposed Hartley Road Substation

Agency	Required Permit/Approval
<i>Town of Goshen</i>	
Town of Goshen Board	• Special Use Permit for Electrical

	<ul style="list-style-type: none"> Substation Acceptance of Conservation Easement (subject to authorization by the NYS Public Service Commission).
Town of Goshen Planning Board	<ul style="list-style-type: none"> Site Plan Review
Goshen Zoning Board of Appeals	<ul style="list-style-type: none"> Variances for site usage (Height variance for overhead transmission lines and aboveground variance for electric line less than 138kV)
Goshen Highway Superintendent	<ul style="list-style-type: none"> Highway Work Permit
State and Federal	
New York State Department of Environmental Conservation (NYSDEC)	<ul style="list-style-type: none"> SPDES General Permit for Stormwater Discharge from Construction Activities and Operation of Electrical Substation
New York State Public Service Commission	<ul style="list-style-type: none"> Approval of Conservation Easement
U.S. Fish and Wildlife Service	<ul style="list-style-type: none"> Endangered Species Act -- Section 7 consultation for Indiana Bats and Bog Turtles
U.S. Army Corps. of Engineers	<ul style="list-style-type: none"> Section 404/401, Nationwide Permit 12
Other Interested Agencies	
Town of Goshen Environmental Review Board	<ul style="list-style-type: none"> Advisory report to Town of Goshen Planning Board
Orange County Department of Planning	<ul style="list-style-type: none"> GML § 239-M referral
Goshen Building Department	<ul style="list-style-type: none"> Building Permit

2.6 EIS DISTRIBUTION

In accordance with the SEQRA, the lead agency for the Proposed Project was designated as the Town of Goshen Planning Board (Burke, Miele & Golden, 2010). Agencies with authority to grant permits as described under SEQRA, and additional related agencies that will receive a copy of the DEIS and Final Environmental Impact Statement (FEIS) are listed in **Table 2**.

Table 2
Interested Agencies for DEIS & FEIS Distribution

Agency	Address
Goshen Town Board	41 Webster Avenue, Goshen, NY 10924
Town of Goshen Environmental Review Board	41 Webster Avenue, Goshen, NY 10924

Town of Goshen Building Inspector	41 Webster Avenue, Goshen, NY 10924
Town of Walkill Town Board	99 Tower Drive, Middletown, NY 10941
Town of Walkill Planning Board	99 Tower Drive, Middletown, NY 10941
Town of Wawayanda Planning Board	80 Ridgebury Hill Road, Slate Hill, NY 10973
Orange County Department of Health	124 Main Street, Goshen, NY 10924
Orange County Planning Department	124 Main Street, Goshen, NY 10924
NYSDEC Division of Environmental Permits – Region 3	21 South Putt Corners Road, New Paltz, NY 12561
NYS Office of Parks, Recreation & Historic Preservation	PO Box 189, Peebles Island, Waterford, NY 12188
NYS Department of Transportation	32-33 Route 6, Middletown, NY
NYS Department of Transportation SEQRA Unit - Traffic Engineering & Safety Division	4 Burnett Boulevard, Poughkeepsie, NY 12603
NYS Office of Parks Recreation & Historic Preservation	Empire State Plaza Agency Building 1. Albany NY, 12238
NYS Department of Agriculture & Markets	10-B Airline Drive, Albany, NY 12235
Dennis P. Caplicki, Esq.	158 North Main Street Florida, NY 10921
Alan S. Lipman, Esq.	1 Harriman Square, Goshen, NY 10924

3 EXISTING CONDITIONS, ANTICIPATED IMPACTS, AND PROPOSED MITIGATION MEASURES

3.1 LAND USE, ZONING AND PUBLIC POLICY

3.1.1 LAND USE

3.1.1.1 EXISTING CONDITIONS

The Project Site includes 48.73 acres of forested land and open and shrubby fields located at the eastern corner of the intersection of Hartley Road and Cheechunk Road in the Town of Goshen, Orange County, New York (**Figures 1 and 2**). The street address is 157 Cheechunk Road and the tax map designation is Section 12, Block 1, Lot 1.7 (**Figure 3**).

Based on a review of historical aerial photos (Historic Aerials, 2011), the majority of the Site was farmed prior to the 1960s. From the 1960s to the mid-1990s, many of the fields were abandoned and became overgrown with trees and shrubs as agricultural activities on the Site decreased. Active cultivation appears to have stopped by the mid-1990s (Historical Aerials, 2011, Google Earth, 2011). The Site is currently undeveloped with the exception of overhead high voltage electric transmission lines that cross the southwestern corner of the property adjacent to Hartley Road within an existing ORU ROW (**Figure 2**). The open fallow field where the proposed substation pad is located appears to have been the last field abandoned.

Surrounding land uses include agricultural lands to the northwest and fallow former agricultural land to the south. The Orange County Jail and Orange County 911 Center are located to the southeast. Industrial land exists to the southwest, which is a former landfill and active landfill gas-to-energy plant owned by Al Turi Landfill, Inc. A quarry exists further to the southwest. Forested land exists to the southwest, south, southeast, east, and northeast of the Site. The Orange County Heritage Trail, a recreational walking/biking trail, lies to the south of Hartley Road and follows the former railroad line. Surrounding land uses are shown on **Figure 9**. Residential properties are located along Cheechunk Road to the north and west of the Site. The area is served by private wells and septic systems, as municipal systems are not available. Electricity in this area is provided by ORU.

The former Al Turi landfill and its active landfill gas to energy plant are located at 73 and 91 Hartley Road, approximately 0.5 and 0.4 mile from the Proposed Project, respectively (**Figure 1**). The USEPA has included this property on the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) list of "potential Superfund sites currently or previously investigated for release or threatened release of hazardous waste materials where there are no further actions

planned” (USEPA, 2011). This privately owned landfill has been permanently closed in compliance with USEPA and NYSDEC closure procedures.

Based on the Orange County Agricultural District map (2010), the Site is not part of an Orange County Agricultural District (**Figure 10**), although many surrounding properties are included in this district (e.g. 212 Cheechunk Road, to the northwest). ORU has submitted an Agricultural Data Statement to the Town of Goshen making the Town aware of the proposed substation project as part of the Planning Board and Special Use permit process.

Should ORU be required to install an underground connection line (in place of the proposed overhead connection line), there would be additional impacts to land use. Underground trenching would have greater disturbance on the land and would require the construction of a transition yard in a wetland area. There would be additional wetland impacts and visual impacts from Hartley Road and the Heritage Trail. The underground transmission connection line is discussed further as an alternative in Section 5.2.

3.1.1.2 POTENTIAL IMPACTS

In total, approximately 6.31 acres of the 48.73-acre Site will be developed for construction of the new substation, including the substation pad (less than one acre), access driveway, landscape screening, transmission connection location, transmission connection line, and stormwater system. Construction of the substation, access driveway, landscape buffer, and landscaped berm will result in the loss of the open field and scattered trees on the property. However, the proposed project includes only 1.2 acres of substation pad and paved access road. The remaining area of the open field will be landscaped. Additionally, land use impacts will be primarily visual in nature. The closest substation equipment would be located 215 ft. from the nearest road (Cheechunk Road) and would overlap the Owens Road Scenic Corridor Overlay District. A number of mitigation measures have been incorporated into the design of the substation to minimize impacts to the Owens Road Scenic Corridor Overlay District and are discussed in Section 3.2.

Should ORU be required to install an underground connection line (in place of the proposed overhead connection line), there would be additional impacts to land use. Underground trenching would have greater disturbance on the land and would require the construction of a transition yard in a wetland area. There would be additional wetland impacts and visual impacts from Hartley Road and the Heritage Trail. The underground transmission connection line is discussed further as an alternative in Section 5.2.

ORU has proposed improvements to the electrical distribution network along Cheechunk Road, Owens Road, Echo Lake Road, and Hartley Road within the Town’s ROW. The existing overhead distribution network will remain in place with

improvements designed for new circuits exiting the substation. **Figures 5 and 7** illustrate proposed distribution network improvements along these roads. All new distribution lines will be routed underground. All existing overhead distribution circuits will be reused. Additionally, ORU will install the necessary associated manholes, riser poles, and pull boxes. These additional facilities will be within the existing ROWs for the Town roads and are not expected to impact land use.

The Proposed Project is considered an industrial use of the property, even though it will be predominantly unmanned and will only be providing additional electricity load to the community. Although the proposed substation differs in land use from nearby agricultural and residential uses to the north of the Site, the Proposed Project is consistent with other industrial/commercial land uses to the southwest, south, and east (e.g., quarry, former landfill, jail, 911 center), and the Proposed Project will fit into the rural nature of the area. Additionally, the Site is located within an Orange County targeted Growth Area (see Section 3.1.4.1). The Site already has an existing overhead transmission line, which will be utilized, resulting in a short connection line to the substation. The completed project will have only 1.2 acres of developed land (substation pad and driveway). The remainder will be landscaped or retain preconstruction rural land characteristics.

The Orange County Heritage Trail passes south of the site. The Proposed Project will not impede use of the trail, though there may be limited views of the substation during winter months. Section 3.2 discusses potential visual impacts and proposed mitigation measures in greater detail.

In keeping with the rural nature and scenic quality of the area, the substation has been designed in an open field area, as far as possible from roads and neighbors without impacting wetlands. This design also retains existing stone walls and minimizes tree clearing. A 28.74-acre conservation easement has also been proposed for the eastern portion of the Site. This would have a positive impact on land use by mandating that this land remain open space.

As the Project Site is within the AQ-6 aquifer zone, ORU will comply with the conditions set forth in §97-27 of Article V of the Goshen Zoning Code, which regulates nonresidential uses in the AQ-6 watershed. This section states that nonresidential uses which are not served by public sewer and public water should be evaluated on a case-by-case basis for their impact on groundwater supply and quantity. Because the substation will not require the physical presence of personnel on a regular basis, there will be no onsite need for potable water or septic. Therefore, there will be no impacts to groundwater supplies from human usage associated with this Project. Additionally, the Proposed Project includes provisions for recharging groundwater from the stormwater system as per NYSDEC guidelines for designing stormwater systems.

3.1.1.3 PROPOSED MITIGATION

ORU will comply with the Town of Goshen zoning requirements to minimize impacts to land uses within and near the Project Site. ORU has applied for Special Use Permit Approval to allow for the construction of this Proposed Project, as well as designing the facility in accordance with Town of Goshen Rural Siting Principals. In order to preserve current land uses within the project vicinity and to promote open space in the area, ORU has proposed a 28.74-acre conservation easement in the eastern portion of the Site. This conservation easement would comprise 59% of the total Site.

The fallow field will be transitioned to substation, driveway, earthen berm, and landscape buffer. Only 1.2 acres will be converted into the substation and paved access driveway. The remainder of the Site will retain the rural nature of the surrounding area. By using an existing laneway onto the Site for access and maintaining existing trees and stone walls along Hartley and Cheechunk Roads, ORU will limit tree clearing and maintain existing land uses to the maximum extent practicable. During operation, the Site will be unmanned and predominantly unlit, further limiting land use impacts. In addition to visual screening provided by existing trees along Cheechunk Road (which will be maintained), ORU will add an earthen berm along the front (north side) of the Project Site, and has engineered a bend in the Site access road to help offset visual impacts. Additionally, the landscaping plan, which was developed in accordance with the Town Zoning Code 97-75 by a landscape architect, includes a 50-foot wide landscaped buffer on the north side of the substation, facing Cheechunk Road. Additional landscaping will be installed on the west side of the substation near the detention pond and along the driveway and substation fence line. These screening measures will help the Project blend with surrounding land uses and maintain the integrity of the scenic overlay district. The proposed conservation easement will also ensure that current land uses and open space are indefinitely preserved across the remainder of the Site.

ORU will use underground circuit distribution in the proposed improvements to the distribution network wherever possible to avoid impacts to current land uses in the vicinity of the Project Site. New distribution lines will be routed through underground conduits along the southern end of Owens Road and western end of Cheechunk Road, as well as along Echo Lake Road and Hartley Road.

No mitigation measures are needed for the Proposed Project with regard to impacts on ground water supply and quantity since no impacts were identified.

3.1.2 ZONING

3.1.2.1 EXISTING CONDITIONS

The Site intersects five zoning districts overseen by the Town of Goshen, as described below. The zoning districts are illustrated in **Figure 4**. Zoning district definitions were obtained from the Town of Goshen Zoning Code.

- The majority of the property falls within the Town of Goshen rural zoning district (RU), established “to promote agriculture and compatible open space and rural uses and to guide residential development so that it protects large blocks of the Town’s open space. RU establishes a maximum height of human structures of 35 ft. (Town of Goshen Zoning Code).
- The portion of the Site located east of Cheechunk Creek is within the commercial/office mixed-use zoning district (CO), which was established “to allow areas for well-buffered light industrial, service commercial, office, and research facilities with minimal visual impact. Such districts may also include, where compatible, housing and limited retail commercial development intended to support the primary uses or to provide adaptive reuse for existing commercial or industrial buildings.”
- The northwestern portion of the Site is within the Owens Road scenic corridor, which is part of the Scenic Road Corridor Overlay District. This district “protects the scenic character of roads in the town that are in areas that remain substantially undeveloped and/or provide important scenic views, pursuant to the Town’s ‘Open Space and Farmland Plan’ as it may be amended from time to time (Town of Goshen Zoning Code).” This overlay district includes all areas within 500 ft. of the road’s ROW (Town of Goshen Zoning Code, 2009).
- The area along Cheechunk Creek contains the Floodplain and Ponding Area Overlay District. The purpose of the Floodplain and Ponding Area Overlay District is to control development within areas subject to periodic inundation and ponding. This overlay district is defined as areas within Federal Emergency Management Agency (FEMA) 100-year floodplain (Town of Goshen Zoning Code).
- The area along Cheechunk Creek contains the Stream Corridor and Reservoir Watershed Overlay District. The purpose of this overlay district is to preserve the scenic character of streams and reservoirs and protect water quality, as well as reduce the risk of damage from flooding. This overlay district is defined as areas within 150 ft. of mean high water line of streams within the district (Town of Goshen Zoning Code).
- The entire Site is located within the AQ-6 Aquifer Overlay District, which protects groundwater resources that provide both public water supplies and drinking water for private wells. AQ-6 indicates that the maximum allowable density for residences in this district is one per six acres (Town of Goshen Zoning Code).

The land surrounding the Site includes the RU zoning district to the west, north and immediate south, CO zoning district to the east and southeast, and industrial (I) zoning district to the southwest (**Figure 4**). Zoning in I districts allows “industrial and related uses that are not compatible with most commercial, office or residential uses, in isolated and well-buffered locations.” Lands within a 0.5-mile radius of the Site also include a small area to the southwest located within the AQ-3 Aquifer Overlay District. The AQ-3 district has a maximum allowable density of one residence per three acres (Town of Goshen Zoning Code).

The majority of the surrounding properties are located within a residential zoning district (RU). Based on the Town of Goshen Zoning Code (Chapter 97), this district allows multiple type of uses, including:

- Residential Uses: single family dwelling, two-family dwelling, multifamily dwelling, accessory apartment, residential care facility and planned adult community.
- Business Uses: agricultural, composting facility, craft workshop, home occupation, bed and breakfast, kennel, office, public utility facility, recreational business, restaurant, retail business, and service business.
- Other Uses: veterinary hospital and wireless communication facility.
- Community Uses: cemetery, educational.

Some of these uses (including electrical substations) require special permit use by the Town Board. **Figure 9** indicates current land usage in the vicinity of the Site.

Areas along the unnamed tributary and the Wallkill River within 0.5 mile of the Site are within the Floodplain and Ponding Area Overlay District. The unnamed tributary to the Wallkill River is also in the Stream Corridor and Reservoir Watershed Overlay District (**Figure 4**).

Although the Scenic Road Corridor Overlay District was established in 2004, public substations/ utility facilities continue to be an allowable use on the Site through a Special Use Permit issued by the Town Board. Based on the location of the Proposed Project within the zoning districts described above, ORU applied to the Town Board for a special use permit and to the Town Planning Board for site plan review. Additionally, ORU representatives submitted a scoping document and discussed potential zoning implications of the project at the Town Planning Board meeting on April 21, 2011 (Town of Goshen Planning Board Meeting Minutes, 2011). Zoning variances will also be applied for the height of transmission poles so as to allow for the installation of an overhead transmission connection line to the substation. The scoping document was adopted on May 5, 2011.

3.1.2.2 POTENTIAL IMPACTS

The footprint of the proposed substation, portions of the gravel maintenance road and bioretention system, the driveway, and earthen berm will be located in the Scenic Road

Corridor Overlay District for Owens Road. The substation would potentially have a negative impact on the aesthetic value of the scenic nature of the area which the Scenic Road Overlay District is trying to maintain. However, the substation has been designed with many features to mitigate aesthetic impacts to the greatest extent practicable (see Section 3.1.3)

The RU zoning district has a maximum height allowance of 35 ft. (Town of Goshen Zoning Code). Proposed mono-poles are as high as 81.5 ft.; the H-frame pole within the substation is 68 ft. high with a 16-ft. high dynasphere (lightning rod) at the top. Pole heights are in accordance with the National Electric Safety Code (NESC) (2011). Therefore, a variance must be allowed for project construction. The RU zoning district also requires 138 kV or less electric lines to be routed underground. The 138 kV connection line is proposed to be above ground. Therefore, a variance must be allowed for connection line construction.

There will be no other compliance issues with zoning from the Proposed Project since public utility substations are allowed through the issuance of a Special Use Permit in the RU zoning district.

3.1.2.3 PROPOSED MITIGATION

ORU has applied for a Special Use Permit to construct the proposed substation. Variances for pole height and the requirement of underground burial of the connection line will be applied for. Although the Scenic Road Overlay District is impacted by the Proposed Project, ORU is proposing 215 ft. of setback for the substation, an extensive earthen berm, a curved driveway to the substation, and a significant landscaping plan to minimize the visual impact of the Project. These mitigation measures will assist with screening the Project from the view on Owens Road. The substation has also been sited at the lowest elevation possible without impacting wetlands. A conservation easement has also been proposed which will help retain the rural nature of the area by preserving open space. Visual impacts and mitigation measures are discussed further in Section 3.2.

3.1.3 PUBLIC POLICY

3.1.3.1 EXISTING CONDITIONS

The Orange County Comprehensive Plan

The Orange County Comprehensive Plan was most recently updated in 2010, and outlines the county's targeted priority growth areas, defined as areas that are "significant in a region with a largely rural history and character because they provide a sense of place and a focus of services amid larger areas of open space, agriculture, forest lands, and rural residential neighborhoods." According to the Orange County

Comprehensive Plan, “It is within the boundaries of the Growth Areas that the County encourages additional urban/village growth, such as higher density residential, commercial and certain industrial uses and other community services.”

This Project is located within a priority growth area and consistent with the Orange County Comprehensive Plan in two respects. First, it would provide added infrastructure and energy requirements necessary to fulfill the projected development of this targeted growth area. Second, it supports one of the key strategies for achieving the open space goals outlined in the 2010 comprehensive plan: “Preserve vital open space lands including environmentally sensitive lands.” By setting aside the Cheechunk Creek floodplain and associated wetlands as part of a proposed 28.74-acre permanent conservation easement, ORU is helping the County to protect this environmentally sensitive hydrologic system and adjacent habitat.

Town of Goshen Comprehensive Plan

The proposed project is consistent with Goals #5 and #7 of the Town of Goshen Comprehensive Plan (2008). Goal #5 is to “Protect and enhance open space and public space” by “actively utilizing conservation easements through zoning and the purchase of farmland and other open space.” By proposing a permanent 28.74-acre easement, and developing only a small portion (1.2 acres of substation pad and paved access road) of the project site, ORU is contributing to this open space goal outlined in the Comprehensive Plan. The Proposed Project is also consistent with Goal #7, “Encourage appropriately sited development and protect environmental assets.” This goal includes the following objectives: 1) “Ensure that development proposals are appropriately sited considering the surrounding topography (including factors such as soil type, elevation and adjacent development) and available/appropriate infrastructure”; and 2) “Protect wetlands, including, but not limited to, NYSDEC and Army Corps Wetlands.” ORU has taken care in siting the proposed substation appropriately with respect to surrounding topography, soil type, wetlands, elevation, and adjacent development. The substation would connect to existing ORU overhead transmission and distribution lines, thereby making efficient use of available and appropriate infrastructure, eliminating the need for larger, potentially more disruptive infrastructure projects.

3.1.3.2 POTENTIAL IMPACTS

The proposed project supports and is consistent with the applicable comprehensive planning documents for the Town of Goshen and Orange County regarding open space and development policies. Therefore, no potential impacts to public policy are anticipated as a result of the proposed project.

3.1.3.3 PROPOSED MITIGATION

Because no impacts to public policy are anticipated, no mitigation methods are proposed. However, it is important to note that the potential to set aside 28.74 acres of open space aligns this project well with existing policies. Environmentally friendly site design, which incorporates wetland avoidance wherever possible, use of vegetated buffers, and visual screening further supports these policies.

3.2 VISUAL CHARACTER

3.2.1 EXISTING CONDITIONS

The Site is currently undeveloped with the exception of overhead high voltage electric transmission lines and towers that cross the southwestern corner of the Property adjacent to Hartley Road within an existing ORU ROW. The existing lattice-structure towers within the ROW are over 70 ft. high. Although there are no existing buildings on the Site, there are several existing stone walls, which will be maintained to the maximum extent practicable. Stone walls are shown on **Figure 2**. Surrounding land uses include: agricultural lands to the north of the Site; vacant fallow land to the south; commercial/office developments further to the south and east (including the Orange County Correctional Facility); and industrial land (landfill) to the southwest. Forested land exists to the southwest, south, southeast, east, and northeast of the Site. The Orange County Heritage Trail parallels Hartley Road to the south of the Site. Residential properties are located along Cheechunk Road to the north and west of the Site. Existing electric distribution lines in the vicinity of the Site are overhead lines following roadways. **Figure 2 and Figure 9** provide an aerial overview of the Project vicinity.

A visual assessment from public roads was documented through a visual analysis conducted by CMX (2011) on July 15th, 2010 (leaf on) and December 9th, 2010 (leaf off). **Figure 11** depicts the visual assessment locations used by CMX. **Appendix C** provides the complete visual analysis report, including maps, photos, and descriptions of the seven views captured in the analysis. **Figures 12A** through **12L** illustrate existing and proposed views from the seven different view locations.

View 1 (Figures 12A and 12F) – Approximately 600 ft. west of the proposed access point along Cheechunk Road (approximately 168 feet from the intersection of Hartley Road and Cheechunk Road), looking southeast toward the proposed substation from a distance of approximately 650 ft. The existing view includes herbaceous grass cover and cattails in the foreground. Further behind the cattail stand, cover includes a mixture of low-lying shrubs and moderate deciduous tree coverage including both young and mature trees.

View 2 (Figures 12B and 12G) – Approximately 100 ft. north of the proposed access point along Owens Road, looking south toward the proposed substation from a distance of approximately 215 ft. from the property line. The existing view includes a combination of mature and immature trees along the road and a series of overhead

transmission lines in the foreground. There appears to be a clearing beyond the trees toward the location of the proposed substation, but summer tree cover is sufficiently dense to obscure it from view.

View 3 (Figures 12C and 12H) – Approximately 450 ft. east of the proposed access point along Cheechunk Road, looking southwest toward the substation from a distance of approximately 500 ft. The existing view includes a narrow strip of herbaceous plants along the roadside, and a tree line consisting of young and mature trees along the road. Beyond the tree line is an open clearing that is primarily obscured by the foliage and vegetation along the road especially during “leaf on” conditions.

View 4 (Figures 12D and 12I) – Approximately 700 ft. southeast from the intersection of Cheechunk Road and Hartley Road along Hartley Road (near the Heritage Trail), looking northeast toward the proposed substation from a distance of approximately 650 ft. The existing view across the road includes a wide swath of herbaceous vegetation and tall grasses lining the road. Several overhead transmission lines parallel the road above this open area. Beyond the herbaceous clearing there is a dense line of slightly taller shrubs, transitioning to a tall wall of mature trees which obscure the areas further from the road during leaf on and leaf off conditions.

View 5 (Figures 12E and 12J) – Approximately 50 ft. north of the proposed access point along Cheechunk Road, looking south toward the proposed substation from a distance of approximately 350 ft. A dense wall of trees and vegetation line the road except for the very center of the view, which faces a clearing in the roadside vegetation. The clearing opens to a large field comprised of herbaceous vegetation and tall grasses. A tall thicket of trees and shrubs borders the edges of the clearing.

View 6 (Figure 12K) – Approximately 500 ft. west from the intersection of Echo Lake Road and Hartley Road along Echo Lake Road, looking east toward the proposed substation from a distance of approximately 1,250 ft. This existing view follows the road to the intersection. Both sides of Echo Lake Road are lined with thick vegetative growth, including grasses, shrubs, and trees. Four utility poles line the road, and a framework of overhead utility lines crisscrosses above the Echo Lake Road/Hartley Road intersection. Tree and shrub growth continues beyond the intersection, primarily obscuring a clearing which can faintly be seen in the background, even in winter “leaf off” conditions.

View 7 (Figures 12L) – 1,100 ft. southeast from the intersection of Cheechunk Road and Hartley Road along Hartley Road (near the Heritage Trail), looking north toward the proposed substation from a distance of approximately 875 ft. The existing view across Hartley Road includes dense herbaceous and shrub cover in the foreground, and a mature stand of deciduous trees in the background which obscure the areas further from the road in all seasons. An overhead transmission line parallels the north side of the road.

On March 30, 2011, CMX also performed a viewshed analysis from the Heritage Trail looking toward the proposed substation at 17 equally spaced locations during leaf off conditions (**Figure 13**). The analysis is included in the Visual Resource Evaluation Report in **Appendix C**.

3.2.2 POTENTIAL IMPACTS

The Proposed Project would modify 6.31 acres of the existing property to include a new electrical substation, stormwater system, transmission and distribution lines, and extend an access driveway from an existing laneway onto the Site. The remaining 42.42 acres of the Property would remain undisturbed. The substation would be situated at an approximate elevation of 398 ft. msl (CMX, 2011), with portions of the proposed substation equipment reaching an approximate maximum height of 84 ft. (484 ft. msl) (top of 16 ft. dynasphere on top of 68 ft. H-frame pole). However, most of the equipment would be no higher than 16 ft. Only the H-framed pole and its dynasphere extend above 26 ft. At the transmission connection location, the three connection mono-poles would be 81.5 ft. high. The two proposed mono-poles along the connection line would be 71 ft. and 72 ft. high.

As part of the project design, the proposed substation has been sited at the lowest possible elevation without encroaching into wetland. Design also includes a significant 6-foot high earthen berm and 50-foot wide landscaped buffer. The access driveway is curved to screen direct sight lines to the substation. Additionally, equipment coloration (light grey/green) has been selected to blend with natural vegetation colors.

In order to evaluate the impacts to view sheds associated with the Proposed Project, ORU contracted CMX to conduct a “leaf on” and “leaf off” visual assessment at pre-determined locations around the Site. **Appendix C** provides the complete visual resource evaluation, including site descriptions and photographs taken from each pre-determined viewpoint, as well as simulations of the proposed views that have been rendered using 3D imaging software.

Based on field investigations conducted on July 15, 2010 and December 9, 2010 by CMX, four of the five summer “leaf on” locations (Locations 1 through 5 on **Figure 11**) surveyed would have visible views of the top 15 to 20 ft. of the proposed substation during “leaf on” time periods (**Figures 12A through 12E**). The top 20 to 25 ft. of the proposed substation would be visible from all seven winter “leaf off” locations surveyed (**Figures 12F through 12L**). The results of the visual impact simulation for each view described above are as follows:

View 1 (Figures 12A and 12F) – Approximately 600 ft. west of the proposed access point along Cheechunk Road, looking southeast toward the proposed substation from a distance of approximately 650 ft. The top 15-20 ft. of the proposed substation structure would be visible during summer “leaf on” conditions, and the top 20-25 ft. of the

structure would be visible during winter “leaf off” conditions when winter vegetative die-off reduces screening in this area.

View 2 (Figures 12B and 12G) – Approximately 100 ft. north of the proposed access point along Owens Road, looking south toward the proposed substation from a distance of approximately 215 ft. from the property line. During “leaf on” conditions the substation would barely be visible from this location. Winter views would reveal the portion of the structure above the 6-foot tall landscaped berm through the branches and trunks of existing trees.

View 3 (Figures 12C and 12H) – Approximately 450 ft. east of the proposed access point along Cheechunk Road, looking southwest toward the substation from a distance of approximately 500 ft. During “leaf on” conditions the substation would barely be visible from this location. Winter views would reveal the portion of the structure above the 6-foot tall landscaped berm through the branches and trunks of existing trees.

View 4 (Figures 12D and 12I) – Approximately 700 ft. southeast from the intersection of Cheechunk Road and Hartley Road along Hartley Road (near the Heritage Trail), looking northeast toward the proposed substation from a distance of approximately 650 ft. The proposed substation would not be visible during “leaf on” conditions. The top 15-20 ft. of the structure would be minimally visible through the trunks and branches of the existing deciduous trees during “leaf off” months. Views of the “H” frame pole would be obscured by tree trunks and branches.

View 5 (Figures 12E and 12J) – Approximately 50 ft. north of the proposed access point along Cheechunk Road, looking south toward the proposed substation from a distance of approximately 350 ft. Portions of the top of the substation structure would be visible from this location year-round.

View 6 (Figures 12K) – Approximately 500 ft. west from the intersection of Echo Lake Road and Hartley Road along Echo Lake Road, looking east toward the proposed substation from a distance of approximately 1,250 ft. The top 10-15 ft. of the proposed substation structure would be barely visible during “leaf off” months and would not be visible from this location during “leaf on” months.

View 7 (Figures 12L) – 1,100 ft. southeast from the intersection of Cheechunk Road and Hartley Road along Hartley Road (near the Heritage Trail), looking north toward the proposed substation from a distance of approximately 875 ft. The proposed steel mono-poles associated with the connection line located along Hartley Road within the 100-foot wide ORU ROW would be visible from this view. The top 10-15 ft. of the substation structures would be barely visible during “leaf off” months and would not be visible from this view during “leaf on” months.

Additionally, CMX performed a view shed analysis from the Heritage Trail towards the proposed substation on March 30, 2011 at 17 equally spaced locations along the trail during “leaf off” conditions (**Figure 13**). View 1 through View 17 depicts the existing

views of the proposed substation with simulated approximate structure heights from the perspective of the Heritage Trail (**Appendix C**). The analysis concluded that the top 15-20 ft. of the proposed substation would be visible from 13 of the 17 views. The proposed substation would be primarily obscured by existing vegetation, particularly during summer “leaf on” months when the trail is more heavily used.

Based on the visual resource evaluation, most of the photographed locations – with the exception of the main entrance to the substation – did not reveal significant views of the proposed substation. The majority of the proposed substation would be partially or completely obscured by existing mature vegetation, the natural terrain, or distance. Only the top 15-20 ft. of the structure would be visible from the areas with views of the substation year-long. The areas with views of the substation only during winter “leaf off” conditions would experience greatly reduced visibility due to vegetative growth during “leaf on” months.

The proposed Project is designed to be unlit during normal operations, and will have exterior lighting to be used only in the event of equipment problems when night time substation restoration work is needed and during any nighttime snow removal. Whenever electric power is operating properly, the substation will be unlit. Exterior lighting treatments would include a total of 14 pole- or wall-mounted light-emitting diode (LED) floodlights pointing at 0° or 30° from vertical to protect night skies from light pollution. Eight lights will be mounted along the perimeter fence posts at a height of 14 ft.; six lights would be mounted on interior equipment at a height of 10 ft. The lighting plan is included as **Figure 14**. Lighting is designed for the illumination of the substation in the event that emergency servicing or snow removal is needed during nighttime hours. As shown on **Figure 14**, the 0.1 ft. /candle contour is within 6 ft. of the substation. Therefore, there would be no visual impacts from substation lighting on nearby properties.

At project completion, there would be minimal adverse impacts to the character of the surrounding area. Although the substation would be partially visible at several locations, especially during leaf off, the surrounding area will still maintain a rural character since the substation itself will permanently occupy 1.1 acres of land and will be surrounded on all sides (except for the access driveway) by vegetation or landscaping. At night, there will be no impact from the unlit substation, unless there is nighttime power restoration or snow removal work occurring. Additionally, residential property values will not suffer from the minimal impacts to visual resources. Residential property values and potential impacts are discussed more fully in Section 3.11.

Visual quality during construction would be temporarily impacted since the landscaping and earthen berm would not be the first features constructed. However, visual impacts during construction are short term. Additionally, vegetation along Cheechunk Road will be left in place and will provide some screening during construction.

There would also be short term negative impacts on visual aesthetics during distribution network improvements along Cheechunk, Owens, Echo Lake, and Hartley Roads as the new distribution circuits are trenched. Improvements also include pull boxes, manholes, and riser poles. Once the improvements have been made, the remaining permanent fixtures will be the pullboxes, manholes, and riser poles. These are not sizable features, and, therefore, long term visual impacts are negligible.

3.2.3 PROPOSED MITIGATION

Due to the potential negative impacts on visual aesthetics around the property, ORU has designed several mitigation measures into the Proposed Project to minimize the short term construction and/or long term impacts on visual resources to the greatest extent practicable. The substation has been set back 215 ft. from Cheechunk Road and has been located at the lowest possible elevation without encroaching into wetlands. ORU is providing screening by engineering a bend in the site access road to further screen the substation from views at the Owens Road/Cheechunk Road intersection and down the access driveway. ORU is also constructing a major landscaped earthen berm (approximately 6 ft. high and 530 ft. long) along Cheechunk Road. Additional mature landscaping will also be added around the proposed substation (**Figure 5**) as part of the landscaping plan. The landscape buffer between the substation and Cheechunk Road is 50 ft. wide. There is also landscaping planned for the driveway, substation fence line, and bioretention and stormwater basins. **Figure 15** provides the proposed landscaping plan. Planting materials were selected by a landscape architect for aesthetic and strategic purposes. The proposed landscape plan would buffer and protect views of the substation from adjacent properties. For example, evergreen trees are grouped to screen selected views such as structures and detention basins year-round. Native trees and shrubs would provide additional screening and habitat for wildlife in the area. ORU is mitigating visual impacts by using the existing laneway onto the Site for Site access and by maintaining existing trees and stone walls along Hartley Road and Cheechunk Road. By limiting tree clearing, ORU would allow existing vegetation to further screen the property. The existing vegetation will play an important role in screening the substation throughout the life of the project, from the first phase of construction to the full maturation of landscaping planted on the Site. Additionally, as plantings mature, the visual impact associated with the Proposed Project will diminish. **Figure 16** depicts a simulation of View 5 at 10 years post-construction and shows increased visual screening from landscape maturation.

The open framework and light grey/green colors of the substation structures are designed to reduce visual impacts on the surrounding landscape and aesthetics. The Site will be unmanned and unlit when the facility is operating, further reducing visual impacts. When lighting is necessary, the lighting plan for the substation has been designed so that there is no impact to surrounding properties or night skies. Therefore, no mitigation measures are necessary for lighting.

Additionally, the substation has been designed to keep the maximum amount of mature wooded growth for maintaining and preserving existing views in the project vicinity. In light of the existing conditions on the Site and proposed mitigation measures described in this section, visual impacts to the surrounding community, including the Heritage Trail, have been minimized to the maximum extent practicable.

The proposed mitigation measures incorporated into the substation design will also help minimize impacts to the character of the surrounding area by helping the area retain its rural character. No mitigation measures are proposed for residential property values since residential property values (as discussed in Section 3.11) are not affected by the addition of a substation to a neighborhood.

The visual short term and long term impacts caused by the improvements to the distribution network will be mitigated by restoring trenches to pre-construction surfaces as quickly as possible. Trenches in roadways will be restored to grade and repaved. Repavement may be seasonally dependent. Trenches along shoulder areas will be restored to grade and reseeded.

3.3 VEGETATION AND WILDLIFE

3.3.1 EXISTING CONDITIONS

The Project Site consists of several vegetative communities including deciduous hardwood forests, abandoned former agricultural fields, and emergent and shrub wetlands. These vegetative communities, as well as residential lots, define the area surrounding the Site and are shown on **Figure 17**.

The majority of the wetland areas are palustrine emergent wetlands, dominated by purple loosestrife (*Lythrum salicaria*), cattail (*Typha* spp.), reed canary grass (*Phalaris arundinaceae*), sedges (*Carex stipata*, *Carex crinita*, *Carex stricta* and *Carex vulpenoidea*), soft rush (*Juncus effusus*), goldenrods (*Solidago* spp.), sensitive fern (*Onoclea sensibilis*) and iris (*Iris versicolor*). The scrub-shrub wetlands were dominated by various dogwood species (*Cornus* spp.), northern arrowwood (*Viburnum recognitum*), and willow (*Salix* spp.). Vegetative species information was provided in Kleinfelder (2011) and by United States Department of Agriculture National Resource Conservation Service (USDA NRCS) (2011).

The deciduous hardwood forests contain upland and wetland areas. The forested wetlands had a dominant canopy of pin oak (*Quercus palustris*), American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), and red maple (*Acer rubrum*). The forested uplands were comprised mostly of deciduous hardwoods, predominantly eastern cottonwood (*Populus deltoides*), black cherry (*Prunus serotina*) and tree of heaven (*Ailanthus altissima*). The majority of the upland trees were between 5 and 11 inches in diameter at breast height (DBH).

The area of disturbance for the Proposed Project occurs mainly within an open fallow field, but encroaches into small portions of scrub-shrub wetland, forested wetland, and upland forest. At the request of ORU, a plant specialist from Kleinfelder conducted a flora survey of the proposed substation footprint and immediate area in August 2011. Three main habitat types were observed within the proposed 6.31-acre substation area. These consisted of fallow agricultural field, early stage deciduous forest, and mixed emergent/forested wetland. The complete flora survey report is included as **Appendix D** and includes species lists.

Based on the observations made during the flora survey, no known protected or sensitive species occur within the proposed project area. The fallow fields were dominated by common wormwood (*Artemisia vulgaris*) and wrinkleleaf goldenrod (*Solidago rugosa*). The canopy of the forested areas was mainly a monoculture of common buckthorn (*Rhamnus cathartica*) while the ground layer vegetation was highly variable. The wetland overstory was predominantly green ash (*Fraxinus pennsylvanica*) with some shrub cover of silky dogwood (*Cornus amomom*). Ground layer vegetation was highly variable depending on the degree of previous farming disturbance.

In July 2010, CMX surveyed 126 trees to evaluate tree species and size distribution within forested areas lying within the footprint of the limit of disturbance on the Site. According to the 2010 CMX survey (**Appendix E**), the majority of the site was comprised of white ash (*Fraxinus americana*) and black cherry (*Prunus serotina*), which comprised 64 and 11 percent of the trees surveyed, respectively. The remaining species included: shagbark hickory (*Carya ovate*, 7%); sugar maple (*Acer saccharum*, 5%); pin oak (*Quercus palustris*, 5%); honey locust (*Gleditsia triacanthos*, 2%); American elm (*Ulmus americana*, 1%); eastern cottonwood (*Populus deltoids*, 1%); eastern red cedar (*Juniperus virginiana*, 1%); and ailanthus (*Ailanthus altissima*, 1%) (CMX, 2010).

Tree sizes were measured as diameter at breast height (DBH), and ranged from 5 to 25 or more inches DBH (CMX, 2010). Thirty eight percent of trees were 5 to 10 inches DBH, thirty eight percent were 11 to 15 inches DBH; fourteen percent were 16 to 20 inches DBH; and ten percent of trees measured 21 inches DBH or more. Additional details as well as tables and graphs representing the data collected during the tree survey are provided in **Appendix E**. CT Male Associates (2011) created a Tree Survey map (**Figure 18**) which shows locations of trees greater than 8 inches DBH with respect to the Proposed Project. Although the Scoping Document requires 12 inches DBH or higher trees to be identified, an 8-inch DBH tree survey has been provided in accordance with Site Plan review documents.

In 2009, CMX conducted an ecological screening of the project site that incorporated: 1) Geographic Information Systems (GIS) mapping of protected species and significant natural communities catalogued by the NYSDEC; 2) consultation and written correspondence with the NYSDEC and NYSDEC Natural Heritage Program (NHP) concerning protected species; and 3) a list of Federally listed species protected by the

United States Fish and Wildlife Service (USFWS). Results of the CMX screening are included in **Appendix E**.

The review of NYSDEC GIS mapping did not indicate the presence of protected or sensitive species or significant natural communities within the project site boundaries (**Figure 18A**). In a written response from the NHP dated October 2, 2009, the NHP indicated that there are no known records of state listed animals, plants, significant natural communities, on or in the immediate vicinity of the site. The NYSDEC provided written correspondence dated October 29, 2009 stating that there are no state listed species on or near the project site according to the State's Master Habitat Databank, and that an Article 11 Protected Species Permit is not required for site development (NYSDEC, 2009). These conclusions were confirmed on July 25, 2011 through renewed consultation with the NYSDEC. Pertinent correspondence documents from the NYSDEC with NHP evaluation are included in **Appendix F**.

A review of federally protected species for Orange County indicated four species resided in Orange County: threatened bog turtle, endangered Indiana bat, threatened small whorled pogonia, and endangered dwarf wedgemussel (USFWS, 2011). There are no suitable habitats within the Proposed Project Site for the dwarf wedgemussel and the small whorled pogonia. The pogonia favors secondary growth or mature forests, and the dwarf wedgemussel prefers streams to rivers with moderate currents. The Project Site is within the area for the threatened Bog Turtle and endangered Indiana bat.

ORU retained with a certified bog turtle surveyor (Amy S. Greene Environmental Consultants, Inc. (ASGEC)) to conduct a Phase I Bog Turtle Habitat Evaluation in July 2010 (**Appendix G**). The survey confirmed that although bog turtle habitat is present onsite, the habitat is poor quality, and it is doubtful that the wetlands onsite support a population of bog turtles (ASGEC, 2010). However, since the Phase I confirmed that potential habitat was present, a subsequent Phase II Bog Turtle survey was conducted by Bagdon Environmental in collaboration with Kleinfelder in June 2011. The Phase II Survey exceeded the survey efforts described in the USFWS Bog Turtle Recovery Plan (2001) and confirmed that bog turtles are not present at the Site (Kleinfelder, 2011). A copy of the Phase II Survey is included in **Appendix H**. This information was presented to the USFWS on August 19, 2011. A response from the USFWS is pending.

On August 30, 2011, Kleinfelder conducted a habitat assessment of the Proposed Project limit of disturbance (6.31 acres) and immediate vicinity to determine if suitable habitat for Indiana bats (*Myotis sodalis*) was present. Based on this field investigation, only three trees were identified as potentially having attributes suitable for use as roost or maternity trees. These include an 18-inch and a 30-inch diameter shagbark hickory (*Carya ovata*) and a 12-inch diameter elm snag (Kleinfelder, 2011). As shown on **Figure 18**, both hickories and the snag will not be impacted by site development. Based on this survey, the 6.31-acre disturbance area of the proposed substation is not viewed as offering favorable roosting habitat. The proposed footprint may offer value

for foraging, but not roosting. The Indiana Bat Habitat Assessment report is included in **Appendix I**.

3.3.2 POTENTIAL IMPACTS

Project construction will impact approximately 6.31 acres of the 48.73 acre Site. Within the 6.31-acre limit of disturbance, there will be the substation pad, access road, onsite maintenance road, transmission and distribution lines, stormwater management system, landscaping, and the earthen berm (**Figure 5**). These earth disturbance activities would remove the existing vegetation and temporarily displace local wildlife to areas outside of the construction zone. Incidents of wildlife mortality in association with the planned construction activities are anticipated to be minimal, but some loss of small immobile species is possible. Most wildlife will flee the area with the start of construction and relocate to nearby undisturbed areas (e.g., 42.42 undisturbed acres onsite).

The majority of vegetation removed will be herbaceous plants with lesser amounts of trees and shrubs. The project has been designed to minimize the limit of disturbance including maintaining some undisturbed areas inside the outer limits of disturbance. Grading has also been minimized (**Figure 19**). Trees have been left undisturbed as much as possible. Only 2.15 acres of tree and shrubs will be cleared within the 6.31-acre limit of disturbance.

ORU has designed the Project to protect existing trees as much as practicable. A total of 84 trees greater than 8 inches DBH will be cleared during Project construction (**Figure 18**). A total of 30 trees greater than 8 inches DBH will be cleared along the transmission connection line. Six of those trees are located within wetland boundaries and will be removed manually so as not to impact the wetland with mechanical equipment. Stumps and roots will remain. This area of the wetland will be altered as the overstory is removed. The remainder of the trees on site will be cleared and grubbed via mechanical means.

The Proposed Project will negatively impact habitats and vegetative communities in the open fallow field, the deciduous hardwood forest/palustrine forested wetland, the fallow agricultural field/palustrine emergent wetland, and the ROW palustrine scrub-shrub wetland. However, these communities will not be entirely eliminated from the Site; other areas with these communities will remain undisturbed (**Figure 17**). Additionally, the potential for soil erosion will increase during construction as ground covers are disturbed. Heavy precipitation coming in contact with exposed soil will potentially increase the amount of sediment in runoff. Unchecked runoff would negatively impact wetland and/or surface water quality. However, an ESCP as well as an SWPPP have been included in the design of the Proposed Project to control erosion and sediment runoff and are discussed further in Section 3.4.3. Wetland and surface water resources are discussed further in Section 3.4. Therefore, there would be no offsite impacts on surface water quality.

Based on the Phase I and II Bog Turtle surveys, no bog turtles were present on site. Therefore, there will be no impacts to bog turtles. Based on the Indiana Bat Habitat Assessment, there were three potential roost trees identified that will not be impacted during project construction. Overall the area of disturbance does not offer favorable roosting habitat, although the Site may offer value for foraging. Impacts by the Proposed Project on Indiana bats for foraging or roosting are negligible.

Improvements to the distribution network along adjacent roadways are not expected to impact vegetation or wildlife. Most underground conduits will be trenched beneath or adjacent (shoulder) to roadways. Trenching conducted on shoulders (unpaved) will be restored to grade and reseeded with a native mix. Areas where pullboxes, riser poles, or manholes will be installed are small in footprints and will have negligible impacts on vegetation and wildlife.

Once the project is constructed and in operation, wildlife will return to the Site, especially since the Site is usually unmanned and unlit. Therefore, habitats will be re-established. Vegetative communities established by the landscape plan will complement existing vegetative communities by using native species. Although most of the onsite open field will be lost, areas to the east of the substation will remain as open field, and there are other open fields in the area. Other portions of the onsite open field will be replaced by the substation pad, landscape buffer, and berm. Except for the 1.2 acres of pad and the paved driveway, the land will be grassed stormwater basins, landscape buffer with trees and shrubs, herbaceous and shrub vegetation along the connection line, and a gravel maintenance road.

Since the substation will be fenced and secured with locking gates, the potential for hazards to or hazards caused by terrestrial wildlife are negligible. The Proposed Project will require the use of existing and proposed aboveground facilities, including towers, poles, transformers, and other overhead lines. These electrical facilities may threaten avian wildlife in two ways: 1) Electrocutation when an animal contacts two lines or a line and pole simultaneously; and 2) collisions with overhead lines. Electrocutation due to wildlife contact may result in injury or death of the animal, as well as power outages that may jeopardize the reliability of electrical service. Collisions generally occur near water bodies and in areas that coincide with migratory paths and feeding or nesting sites. However, there are no migratory paths or feeding/nesting sites in the vicinity.

Although the potential exists for avian wildlife collisions or electrocution, the length of the transmission connection line has been minimized to the greatest extent practicable by the Proposed Project, and is only 0.14 mile (740 ft.) long. In comparison with the existing overhead transmission in existence in the area, this new lines represents a negligible increase in overhead transmission. Additionally, ORU rarely finds dead birds on existing substations. There are no migratory paths or feeding/nesting sites in the vicinity. Therefore, the overall impact on avian species would be negligible.

Following construction, ORU will conduct an annual herbicide application within the substation fence only as part of standard substation maintenance procedures used at all substations. Herbicides used are approved by the USEPA and NYSDEC and are also standard to the industry. The herbicides will be applied as per labeling.

The transformers will emit a negligible amount of heat under normal operating conditions. Additionally, transformers are monitored around the clock by ORU's control center. If a transformer malfunctions and begins to overheat, the control center is able to disconnect the transformer from the system to avoid any failure or catastrophe. Therefore, there will be no detectable temperature impacts to vegetation or wildlife from the proposed substation.

Thermal impacts may also be caused by the transfer of heat from impervious surfaces to stormwater runoff and by the increase of exposure to the sun on water resources caused by the removal of vegetation from the landscape. For the Proposed Project, thermal impacts to runoff that may affect water quality or downstream wetland habitats are considered to be negligible. Because of the relatively small (1.2 acres) area of impervious surface compared to the overall watershed, the amount of runoff from the Proposed Project is small compared to the overall watershed. Additionally, runoff from impervious surfaces of the Proposed Project would be directed towards grassed swales and then to the bioretention area where it is expected to filtrate and transfer any heat to soils. At its shortest distance, runoff from impervious surfaces is expected to travel 500 feet (CMX, 2011) prior to reaching the nearby wetland area. The length of the travel path is expected to greatly reduce any thermal impact. Additionally, the landscaping plan would provide shade to some impervious surfaces (e.g., along driveway) which also greatly reduces temperature of pavement. Thermal impacts to runoff are also discussed in Section 3.5.2.

The potential for the Proposed Project to cause a fire or explosion is negligible. There are no existing underground utilities (gas, electric) on the Site or adjacent roadways. During construction activities, underground utility mark-outs will be conducted prior to any intrusive work. Prior to any trenching work for distribution lines, the following procedures will be implemented:

- Survey the area of disturbance
- Create a Site plan for proposed improvements and a Maintenance Protection of Traffic Plan
- Obtain a road opening permit from the Town
- Call for underground utility mark-out
- Conduct a pre-construction meeting
- An ORU inspector will oversee any utility work to verify safety
- If underground utilities are detected, hand digging is used in areas near the underground utility.

Once the project is complete, the potential for transformers to catch fire or explode is negligible. The transformers are monitored constantly by the ORU control center. If overheating is detected, the control center has the ability to take the transformer offline before it reaches a critical state. Additionally, ORU implements an Emergency Management Plan for every substation site.

3.3.3 PROPOSED MITIGATION

ORU proposes to reduce potential impacts to vegetation and wildlife by minimizing natural habitat disturbance and tree clearing, and maintaining existing trees to the greatest extent practicable. ORU will also institute a time restriction for tree removal to minimize vegetative and wildlife impacts. The following tree protection techniques will also be employed during construction.

- Mark trees to be saved with surveyor's flagging or ribbon.
- Construct barricades made of wood or welded wire fencing around trees to establish a tree protection zone. Extend barricades as far out as the branch spread of the trees.
- Place Tree Protection Signs on barricade.
- Designate one corridor for site access, preferably where the driveway or parking area will be located.
- Limit construction equipment access, material storage, fuel tanks, chemical or cement rinsing, vehicle parking and site-office locations to non-tree areas.
- Place heavy equipment, supplies, ditches, and underground utility lines outside the tree protection zone.
- Include a tree protection clause in the construction contract forbidding grading, filling, ditching, equipment parking, or material storage within the tree protection zone. Include penalties for violations of the tree protection clause and damage to trees.

The Proposed Project will be constructed predominantly in an open fallow field. Although a good portion of vegetative habitat will be lost, it will be replaced mostly by the landscaped buffer area and berm, which will still provide wildlife habitat. Portions of the field to the east of the substation will be retained.

Once areas are cleared, potential erosion and sediment runoff from cleared areas during construction activities will be mitigated through an ESCP and SWPPP as part of the design to provide erosion and sediment runoff control and stormwater pollution prevention measures. Areas involved in the distribution network improvements are also included in the ESCP and SWPPP. These plans have been developed in accordance with NYSDEC protocol and are discussed in greater detail in Section 3.4.3.

Although the Proposed Project will displace wildlife during active construction activities, wildlife will be able to relocate to surrounding undisturbed areas of the Site and nearby vicinity. Once construction is complete, the Proposed Project with its extensive

landscaping (**Figure 15**) will allow for habitat to be re-established. The final development (substation and paved access driveway) covers 1.2 acres. The remainder of the Site (approximately 47.5 acres) will be kept as open space and provide wildlife habitat. Additionally, since the substation will be unmanned except for periodic maintenance, wildlife communities are likely to re-establish habitats onsite once construction is complete. It should be noted that establishment of the conservation easement will provide a continued, protected forest habitat for many land and tree dwelling species.

Since distribution network improvement work will have negligible impacts on vegetation and wildlife, no mitigation measures are needed. However, vegetated areas disturbed during improvements will be reseeded using a native mix. Negligible impacts were identified for endangered and threatened species and dealt with Indiana bat foraging habitat loss. USFWS review of the Indiana Bat Habitat Assessment is pending. Since impacts were negligible, no mitigation measures are necessary.

With the proposed design of the project, the potential impact from temperature and hazards to/ hazards caused by wildlife is negligible. The transformers emit negligible amount of heat under normal operating conditions. The substation is being designed with a security fence with locking gates. The length of transmission connection line has been minimized and is a negligible addition to the existing transmission line network. Therefore, no other mitigation measures are necessary.

Thermal impacts to stormwater runoff from the Proposed Project that may affect water quality and downstream wetlands habitats are negligible. Measures incorporated into the project design have greatly mitigated potential thermal impacts. These measures include shading from the landscape plantings, the stormwater management system design, and the distance of the project from wetlands.

Fire and explosion are always a potential risk during excavation and trenching work, especially where underground utilities exist. However, no known underground utilities exist onsite or along adjacent roadways which are in the area of disturbance. Additionally, ORU has standard procedures in place for excavation and trenching work to minimize the potential for fire or explosion. Therefore, the potential impact has been determined to be negligible for this Project. No additional mitigation measures are necessary.

ORU will use NYSDEC and USEPA approved herbicides on an annual basis to control weeds within the fence line of the substation. The herbicides will be applied according to label instructions and in accordance with standard industry practices. Therefore, impacts to vegetation have been mitigated to the maximum extent practicable.

3.4 WETLANDS AND SURFACE WATER HYDROLOGY

3.4.1 EXISTING CONDITIONS

The Site is within the Walkill River watershed, and includes two principal wetland areas and Cheechunk Creek. Surface water bodies are depicted on **Figure 2**. Federal and state designated wetlands and associated buffers in the vicinity are depicted on **Figure 20**. Onsite wetlands were delineated by CMX on November 24, 2009 and December 2nd, 2009, and are shown in **Figure 21**. These wetland delineations were verified through a jurisdictional determination performed by the U.S. Army Corps of Engineers (USACE) on August 5, 2010 (**Appendix J**).

3.4.1.1 WETLANDS

There are no NYSDEC-designated wetland onsite, and Cheechunk Creek (R3UBH) was the only federally-designated wetland feature on the Site (**Figure 20**). Since the NYSDEC has been re-mapping jurisdictional wetlands in Orange County, Kleinfelder contacted NYSDEC regarding any changes to mapping in the vicinity of the Site on August 3, 2011 and confirmed that no changes to NYSDEC designated wetland boundaries have been made in the vicinity of the Site (**Appendix J**). Therefore, there are no NYSDEC-designated wetlands or buffer areas on or immediately adjacent to the Site.

Based on the Jurisdictional Determination issued by the USACE on August 5, 2010 (**Appendix J**), two federal jurisdictional wetlands were present on the Site (**Figure 21**). Wetland A is located in the southeastern portion of the Site, with Cheechunk Creek flowing through the center. Wetland B is located in the northwestern portion of the Site.

Based on the onsite wetland delineation, Wetland A is a palustrine forested (PFO) wetland approximately 7.95 acres in size (CMX, 2010, and ASGEC, 2010). Vegetation consists of swamp white oak (*Quercus bicolor*), red maple (*Acer rubrum*), and green ash (*Fraxinus pennsylvanica*) in the tree layer and lizard-tail (*Saururus cernuus*), cardinal flower (*Lobelia cardinalis*), pickerel weed (*Pontederia cordata*), and winged monkey flower (*Mimulus alatus*-OBL) in the herbaceous layer. Soils for this Site are primarily silt loams and gravelly silt loams. The wetland is located within the floodplain of Cheechunk Creek, a perennial stream.

Wetland B is a palustrine emergent/scrub shrub/forested (PEM/PSS) wetland approximately 5.45 acres in size (CMX, 2010, and ASGEC, 2010). Dominant vegetation consists of tussock sedges, skunk cabbage (*Symplocarpus foetidus*), common reed (*Phragmites australis*), cinnamon fern (*Osmunda cinnamomea*), and broad-leaved cattail (*Typha latifolia*) in the herbaceous layer and silky dogwood (*Cornus amomum*), red-panicked dogwood (*Cornus racemosa*), and spicebush (*Lindera benzoin*) in the shrub layer. Wetland soils are saturated and consist of silt loams and gravelly silt loams. The wetland originates from several groundwater seeps, which flow offsite but

are connected to the Wallkill River unnamed tributary that is located on the south side of Hartley Road (**Figure 20**).

These wetlands were determined by the USACE in 2010 to be jurisdictional waters of the U.S. due to their connectivity to the Cheechunk Creek tributary system. The Jurisdictional Determination (JD) letter from the USACE is included in **Appendix J**.

3.4.1.2 SURFACE WATER HYDROLOGY

The Site is within the Wallkill River watershed. The Wallkill River is located approximately 1,000 feet west of the Site (**Figure 1**) and is the nearest navigable waterway. The river flows in a northerly direction in the vicinity of the Site and eventually discharges into the Hudson River.

Cheechunk Creek is located in the eastern portion of the Site and flows southwest across the property before passing offsite and joining an unnamed tributary of the Wallkill River to the south of the Site (**Figure 20**). This tributary flows northwest into the Wallkill River.

Two wetlands (Wetland A and Wetland B) are also located onsite and were discussed in Section 3.4.1.1. Both wetland systems eventually discharge to the unnamed tributary (**Figure 21**).

Cheechunk Creek, the unnamed tributary, and the Wallkill River (in the vicinity of the Site) are designated as Class C streams by the NYSDEC (2011). Class C streams are suitable for fish, wildlife propagation, and recreation (Title 6 NYCRR Part 701.8). These three surface water bodies are also within the Town of Goshen Floodplain and Ponding Area Overlay District and the Stream Corridor and Reservoir Watershed Overlay District (**Figure 4**).

FEMA Flood Hazard maps were reviewed online for floodplain information (NYSDEC, 2011 and FEMA, 2011) and are illustrated in **Figure 22**. Areas along the Cheechunk Creek valley are within the floodplain corridor associated with the Wallkill River. The property contains 9.15 acres of floodplains along the Cheechunk Creek valley. Floodplain designations along the Cheechunk Creek correspond with the Town of Goshen Floodplain and Ponding Overlay District (**Figure 4**). Land within this district is within the FEMA 100-year floodplain. Based on the FEMA map, floodplain areas onsite are Zone A with a 1 percent minimum annual chance of flood and an associated buffer area of 0.2 percent or 1 percent shallow flood (NYSDEC, 2011). The substation Project area is outside of any flood zones.

Surface water runoff from the Proposed Project area currently flows southwest to a culvert under Hartley Road. The existing drainage area for the Proposed Project is illustrated in **Figure 23**. The culvert under Hartley Road has been designated as the

design point for stormwater routing and design calculations provided in the SWPPP (CMX, 2011) (**Appendix K**).

3.4.2 POTENTIAL IMPACTS

The total area to be disturbed onsite by the Proposed Project is 6.31 acres. Approximately 0.003 acre of permanent impacts to wetlands (127 sq. ft. for pole foundations at the connection location) are anticipated as a result of project construction (CMX, 2011) (**Figure 5**). There will also be 0.090 acre (3,929 sq. ft.) of temporary impact to wetlands as a result of the project and approximately 0.066 acre (2,875 sq. ft.) will be altered (manual tree removal), but not lost (CMX, 2011). These wetland impacts will occur in Wetland B (**Figure 21**) at the transmission connection location in the southern corner of the Site by Hartley Road (**Figure 5**). Temporary access and equipment staging areas will cause the temporary wetland impacts. With the completion of tower construction, areas of temporary impacts will be restored. The 0.066-acre wetland area undergoing manual tree removal is being altered for the connection line and will have a diminished value due to the need to keep tall trees from regenerating. Since the Proposed Project will permanently impact less than 0.1 acre of federal wetlands, it can be authorized under the USACE Nationwide Permit Program (i.e. NWP 12- Utility Line Activities.) Since no NYSDEC-designated wetlands are impacted, no permits are required from the NYSDEC.

During construction of the Project, existing surface water runoff patterns will not change. All runoff from the Project area will flow to the design point (**Figure 24**). **Figure 19** shows the grading plan for the Proposed Project. Wetlands will receive the same amount of runoff after construction as before, and the discharge destination (unnamed tributary) will remain the same.

An additional 0.75 acre will be disturbed during distribution network improvements. Improvements include trenching to lay underground electrical conduits, installation of manholes, pullboxes, and riser poles. These improvements will not impact surface water runoff patterns since trenches will be restored to grade and repaved (in roadways) or reseeded (on shoulder). Permanent features (e.g. pullboxes) are small in size and will not affect runoff patterns.

Additionally, the potential for soil erosion will increase during construction as ground covers are disturbed. Heavy precipitation could come in contact with exposed soil and could potentially increase the amount of sediment in runoff. Unchecked runoff would negatively impact wetland and/or surface water quality. An SWPPP (**Appendix K**) and an ESCP (**Figure 25**) have been developed for the Proposed Project in accordance with NYSDEC protocols to control stormwater runoff and soil erosion. Distribution network improvement areas are included in the ESCP and SWPPP.

The Proposed Project includes a stormwater management system with a bioretention area for water quality and flow control, and a stormwater dry-extended detention basin

for additional flow control. The stormwater management system is designed to slowly discharge surface water from the stormwater detention basin to Wetland B. Wetland B will receive the same amount of surface water runoff after construction as under existing conditions.

There are no potential impacts to existing onsite or offsite floodplains as all areas of disturbance are located outside floodplain boundaries. There will also be no impacts to flood levels as there are no increases in stormwater runoff after construction. Additionally, the proposed project affects a very small area of the entire watershed that contributes runoff to surface water bodies during flooding events.

3.4.3 PROPOSED MITIGATION

This project was carefully sited to avoid wetland and stream features on the site to the maximum extent practicable. Less than 0.003 acre of wetland will be permanently impacted. In areas of temporary wetland impact, the wetland will be disturbed during construction, then restored. Wetland elevations will be restored to their original contours, and wetland vegetation restored with an appropriate seed mix for the Site. All areas where permanent vegetation has died or failed to meet the revegetation requirement shall be replanted and appropriately stabilized as a condition of the wetland permit. Seeded area maintenance will be scheduled, and areas will be checked for erosion.

Potential impacts to wetland and surface water bodies will be mitigated during and after construction through the use of erosion and sediment control measures and the construction of a bioretention area and stormwater detention pond. The ESCP has been prepared as per NYSDEC guidelines and is provided in **Figure 25**. The bioretention area and stormwater detention pond are illustrated on **Figure 5**. An SWPPP has been developed for the proposed Site development in accordance with the NYSDEC regulations (**Appendix K**). The bioretention area is designed to provide surface water quality mitigation. The stormwater detention pond is designed to mitigate volume of surface water with a slow controlled discharge to Wetland B. These stormwater control practices are discussed more in Section 3.5.

To avoid impacts to water quality from surface water runoff at project completion, ORU will stabilize disturbed areas in accordance with the best management practices (BMPs) described in the Post Construction Site Restoration Plan as follows:

- All areas of the construction site not otherwise covered by permanent pavement or structures must be stabilized with a uniform perennial vegetative cover.
- All plant species used (seed and/or rootstock) will be native species.

There are no mitigation measures needed for floodplains or flood levels since there are no impacts on floodplains and flood levels.

3.5 STORMWATER MANAGEMENT

3.5.1 EXISTING CONDITIONS

The existing Site is undeveloped, except for overhead power lines that cross the southwestern corner of the Site adjacent to Hartley Road. The property is located within the Walkkill River Watershed, which is a part of the Hudson River Watershed. Cheechunk Creek crosses the eastern portion of the property in a southwesterly direction (**Figure 2**). The Site topography ranges from a high of approximately 450 ft. msl along the northern property boundary, to a low of approximately 370 ft. msl along Hartley Road (**Figure 1**). The property includes two drainage areas, formed by the existing topography. In the northwestern half of the property, surface water runoff discharges into an unnamed tributary of the Walkkill River. In the southeastern half of the property, surface water runoff discharges into Cheechunk Creek before entering the unnamed tributary of the Walkkill River. The unnamed tributary joins the Walkkill River, which flows in a northeasterly direction (**Figure 1**). Surface water runoff from the Proposed Project area currently flows into onsite wetlands, which drain through existing culverts under Hartley Road and into the unnamed tributary to the Walkkill River. **Figure 23** depicts existing overland flow patterns in the Proposed Project area (Subarea 1) at the Site. In Subarea 1, existing overland runoff flows toward an existing culvert under Hartley Road. This entrance into the culvert has been designated as the Design Point for the SWPPP.

According to the Federal Emergency Management Agency (FEMA) Flood Plain Hazard Map (2011), the areas of the Site immediately adjacent to Cheechunk Creek are located within FEMA flood zones AE and X (**Figure 22**). Zone AE is the base floodplain of Cheechunk Creek, and Zone X indicates areas of moderate flood hazard between the limits of the 100-year and 500-year floods. These areas are also within the Town of Goshen's Floodplain and Ponding Area Overlay District and Stream Corridor and Reservoir Watershed Overlay District (**Figure 4**). The FEMA Flood Plain Hazard Maps and Town of Goshen mapping do not indicate the presence of floodplains within the area of the proposed substation, distribution network improvements, and associated limits of disturbance.

3.5.2 POTENTIAL IMPACTS

Construction of the proposed substation would disturb approximately 6.31 acres of the 48.73-acre Site, and could impact stormwater flow and water quality, as described in this section. Project construction would take place in two phases over a 17-month period. Although construction will add 1.2 acres of impervious surface and substation (190 ft. x 190 ft. gravel pad) (CMX, 2011) to the existing Site, all post-development subareas will have similar drainage patterns and hydrologic characteristics to pre-development conditions. Post-development drainage patterns discharge to the same design point as pre-construction drainage patterns.

Construction will convert the existing drainage area (Subarea 1) of the proposed substation to four separate drainage areas (Subareas 1A, 1B, 1C, and 1D) (**Figure 24**). All post-development subareas will have similar drainage patterns as pre-development conditions.

Subarea 1A is 3.016 acres (CMX, 2011) and includes the areas directly involved in development of the substation (driveway, substation, staging area, most of the maintenance road, and bioretention area).

Subarea 1D is 0.464 acre (CMX, 2011) and is adjacent to and downstream of a proposed bioretention area. Subarea 1D includes a portion of the maintenance road and the dry-extended stormwater detention pond. Stormwater runoff from Subareas 1A and 1D will pass through a series of field inlets, perimeter swales, and a trench drain. This stormwater will then flow through the bioretention area and the dry-extended stormwater detention basin. The stormwater detention basin is designed to control discharge to the wetland area. **Figure 24** depicts post-development stormwater runoff patterns.

Subarea 1B is 0.979 acre and includes the northeastern side of the berm (CMX, 2011). Surface water runoff from Subarea 1B would be directed northwest to a culvert under the access driveway, and then via overland flow to the design point.

Subarea 1C is 2.988 acres and includes the area south of the staging area and substation pad (CMX, 2011). Overland flow from Subarea 1C would flow into the swale on the southeast side of the staging area, then directed into a culvert under the maintenance road, and then via overland flow to the design point (**Figure 24**).

Water quality impacts could result from: 1) Erosion and sedimentation caused by grading during project construction; or 2) Releases of oil from oil-containing equipment (e.g. transformers).

At the start of construction, a temporary sedimentation basin will be created in the location of the final dry-extended detention basin for erosion and sediment control during construction activities as part of the ESCP (**Figure 25**). The temporary sediment basin will be the same size as the final dry-extended detention basin, approximately 10,237 sq. ft. (0.235 acre) (CMX, 2011). A temporary riser shall be installed prior to and maintained during construction activities to allow for stormwater outflow from the basin. At the end of the second phase of construction, the riser will be removed and the temporary sedimentation basin will be converted into the permanent dry-extended detention basin when grading is completed and soil is stabilized. Therefore erosion and sedimentation will be controlled throughout construction and post-construction.

Releases of oil from oil-containing equipment (e.g. transformer oil, defined as highly refined mineral oil) could potentially impact stormwater runoff from the Site. Each of the proposed transformers contains approximately 9,830 gallons of oil. Releases of transformer oil could occur from seam failures or spills during maintenance. The

transformers have been designed with secondary containment features. If the secondary containment features were somehow breached, a release could occur. The stormwater management system is designed to funnel any pollutants in runoff into the bioretention area.

In accordance with New York State General Permit guidelines, CMX (2011) modeled pre- and post-development conditions peak rate stormwater runoff calculations for 1-, 10-, 25-, and 100-year storm events (**Table 3**). The 1-year storm event is analyzed to assess stream channel protection, the 10-year event provides information regarding over-bank flood protection, and the 25-year and the 100-year storm events provide estimates of impacts from extreme storm events. These estimates facilitate proper planning to ensure that the stormwater system can appropriately handle runoff from storms of varying intensities. Based on the proposed design, post-construction peak runoff rates are less than pre-development rates.

Table 3: Pre- and Post-Development Stormwater Peak Runoff Discharge Rates at the Hartley Road Culvert (Design Points)

Design Storm (year)	Pre-Development Peak Runoff (cubic feet/second (cfs))	Post-Development Peak Runoff (cfs)
1	5.52	4.14
10	17.01	15.64
25	21.77	19.36
100	29.00	25.60

Source: SWPPP, CMX, 2011.

As discussed in Section 3.3.2, thermal impacts may also be caused by the transfer of heat from impervious surfaces to stormwater runoff and by the increase of exposure to the sun on water resources caused by the removal of vegetation from the landscape. For the Proposed Project, thermal impacts to runoff that may affect stormwater quality or downstream wetlands are considered to be negligible. Because of the relatively small (1.2 acres) area of impervious surface compared to the overall watershed (42.35 acres (CMX, 2011)), the amount of runoff from the Proposed Project is small compared to the overall watershed. Additionally, runoff from impervious surfaces of the Proposed Project would be directed towards grassed swales and then to the bioretention area where it is expected to filtrate and transfer any heat to soils. Runoff from heavy storm events would overflow the bioretention area into the dry-extended stormwater retention basin with a metered outlet structure. No permanent pools were included in the design of the stormwater management system, thus limiting sun exposure.

At its shortest distance, runoff from impervious surfaces is expected to travel 500 ft. (CMX, 2011) prior to reaching the nearby wetland area. The length of the travel path is expected to greatly reduce any thermal impact. Additionally, the landscaping plan would provide shade to some impervious surfaces (e.g., along driveway) which also greatly reduces temperature of pavement. Thermal impacts to runoff are also discussed in Section 3.5.2.

The installation of the distribution network improvements along adjacent roadways will disturb 0.75 acre and will involve trenching to lay underground circuit conduits, and the installation of pull boxes, manholes, and riser poles. Trenching will occur in the roadway or along the shoulder and will occur in segments. Once a segment is complete, the trench will be restored to grade. Trenches in roadways will be repaved and trenches in shoulder areas will be reseeded with a native mix. Therefore, trenches are not expected to impact stormwater runoff patterns or rates. Pull boxes, manholes, and riser poles have small footprints and would have negligible impacts on stormwater runoff patterns or rates. ORU has included ESCP features along the improvement lines to manage erosion and runoff.

3.5.3 PROPOSED MITIGATION

Stormwater management practices will be implemented in compliance with the applicable federal, state, and local regulations. Because the proposed Project would result in land disturbances greater than one acre (7.06 acres overall disturbance: 6.31 acres onsite and 0.75 acre offsite), the NYSDEC requires coverage under the General Permit (GP-0-10-001) be obtained. The General Permit requires submittal of an SWPPP, which includes stormwater management practice design and certification by a licensed professional engineer. The NYSDEC and the Town of Goshen Building Department, Planning Board, and Zoning Board will review the SWPPP. In order to achieve compliance with these regulations, the post-development stormwater management system must conform to 2010 NYSDEC Stormwater Manual and local regulations.

On behalf of ORU, CMX (2011) has developed a SWPPP for the proposed project detailing a maintenance program for the stormwater management facilities to promote successful operation and longevity of the system. **Appendix K** provides a copy of the SWPPP. In accordance with NYSDEC guidance provided through the “2010 New York State Stormwater Management Design Manual”, Project grading and drainage plans were designed to capture and treat all stormwater runoff from impervious surfaces on the Site. In order to provide flow control and water quality treatment for stormwater runoff, ORU will implement two best management practices (BMPs): a bioretention area (NYSDEC F-5) and a dry-extended detention pond. Both BMPs will provide flow control, and the bioretention area will additionally provide water quality treatment of stormwater runoff. The project has been designed so that pre- and post-construction drainage patterns do not differ, and peak runoff rates after construction are less than pre-construction rates (**Table 3**).

The bioretention area has been designed with a volume of 15,750 cubic ft. The dry-extended stormwater detention pond has been designed with a storage volume of 33,280 cubic ft. As required by the NYSDEC, the proposed bioretention area must provide 5,626 cubic ft. of volume to treat stormwater runoff and must be able to retain 6,300 cubic ft. of stormwater runoff (CMX, 2011). Therefore, the bioretention area is more than adequate to meet NYSDEC stormwater design requirements.

Stormwater runoff discharged to the bioretention area from the Project Area will first undergo dry pretreatment as it enters a grass swale. The pre-treatment process removes sediments and large particles, reducing maintenance requirements and prolonging the life of bioretention area. Following pre-treatment, stormwater runoff will then enter the bioretention area, which provides water quality treatment by filtering runoff through an organic media, including 2 to 3 inches of mulch, 2.5 to 4 ft. of soil, filter fabric, and gravel (CMX, 2011). The filtered water will enter a perforated pipe, then flow to the dry-extended stormwater detention pond and drain to the nearby wetland. High flows generated by large storm events will be diverted to the dry detention basin and slowly released into the nearby wetland, thus providing channel protection and flow control.

According to the NYSDEC pollutant removal rating system, the bioretention method received a “good” removal rating for phosphorus, nitrogen and metals such as cadmium, copper, lead, and zinc. The removal rating for pathogens such as Coliform, Streptococci, and E. Coli is “fair” (NYSDEC, 2010). The NYSDEC recommends the bioretention practice for highly impervious areas, where vehicle tires can transport pollutants, and pollutant removal ratings assume transport by vehicle tires. Because high traffic flows are not anticipated around the proposed Site, pollutant transport and importation would be comparatively less than the levels assumed by the NYSDEC. The system is, therefore, conservatively designed to treat runoff that is more polluted than actual conditions anticipated at the Site. Finally, a landscaping plan (**Figure 15**) including grass cover and native species would further aid in pollutant absorption within the system and impede stormwater runoff.

ORU plans to control erosion and sedimentation and re-establish vegetation as soon as practicable following construction. Proposed soil erosion and sediment control devices include protective earthmoving procedures and grading practices, soil stabilization, check dams, and silt fencing. Additionally, the contractor will adhere to the recommended stockpile locations and staging areas depicted on the ESCP (**Figure 25**).

Additional BMPs included in the site planning process include:

- Preservation of wetland areas and water resources. Aside from minor permanent (0.003 acre) and temporary (0.090 acre) disturbances for the construction of steel towers at the transmission connection location, the entire substation was designed outside of wetland areas.

- Locating the Proposed Project in less sensitive areas. The majority of project disturbances will occur away from tree lines.
- Reduction of clearing and grading. The limits of disturbance are generally located on flat terrain and in fallow open fields.
- Reduction of impervious cover. Switchgear, electrical equipment, and related machinery will rest on a gravel bed. No sidewalk is proposed for this Proposed Project and a minimal parking area is proposed for maintenance vehicles.

The ESCP also incorporates the area of disturbance associated with the distribution network improvements (0.75 acre). Check dams and silt fencing will be used to control erosion and sedimentation along roadways where improvements are proposed.

In the event of a release of oil or other hazardous substance at the Site, spill prevention, controls, and countermeasures have been included in the design of the Proposed Project. Potential releases from oil-containing equipment (e.g., transformers) at the Site will be mitigated by the inclusion of secondary containment features around the equipment and the development of an SPCC Plan, which provides spill prevention methods, spill response instructions, and reporting information (**Appendix L**). In addition, the substation equipment, including transformer oil levels, is monitored around the clock, seven days a week. Secondary containment structures are concrete sumps filled with gravel. The base of the sump is constructed of an oil-stop polymer that stops oil, but allows water to pass through. Secondary containment features are designed to hold 110% of the storage capacity of the transformer plus a 4-inch rainfall event (13,209 gallons). The secondary containment features designed for the proposed substation has a 13,235 gallon capacity. If a release were to breach the secondary containment features, ORU has committed manpower and resources to respond to and clean up the spill and any impacted media.

The SPCC Plan will be used to respond to release of oil or other hazardous substances. The SPCC Plan provides spill response procedures, chains of command, reporting requirements, and timeframes for actions.

ORU does not anticipate that implementation of the SWPPP will adversely affect the existing drainage patterns. Construction and implementation of a bioretention area and dry extended stormwater detention basin would reduce peak runoff rates and pollutant loading rates, enabling the system to meet or exceed water quality and volume requirements, reducing risk for flooding downstream. In order to maintain the proper function of the drainage and erosion and sediment facilities, ORU will implement the maintenance plan outlined in the SWPPP. The proposed stormwater system would comply with the NYSDEC Phase II Stormwater Permit Program (2003) and applicable erosion and sediment control requirements. Therefore, no further mitigation is required.

Thermal impacts to stormwater runoff from the Proposed Project that may affect water quality and downstream wetlands are negligible. Measures incorporated into the project design have greatly mitigated potential thermal impacts. These measures include

shading from the landscape plantings, the stormwater management system design, maintaining the riparian buffer between the stormwater management system and the wetland area, and the distance of the project from wetlands.

3.6 GEOLOGY, TOPOGRAPHY, AND SOILS

3.6.1 EXISTING CONDITIONS

The Site lies within the Hudson-Mohawk Lowlands and Taconic Mountains section of the Ridge and Valley Physiographic Province, which is underlain by Proterozoic and Ordovician-Age shale and sandstone (Isachsen et al., 2000). The Hudson-Mohawk Lowlands, generally referred to as the Great Valley (Cressey, 1977), were created largely by the actions of groundwater and surface water slowly dissolving and eroding the softer shale and limestone bedrock beneath much of the region. Surficial geologic deposits throughout the valley area consist of glacial and outwash deposits associated with continental glaciation (Caldwell, et. al., 1986). There are few bedrock outcrops in the area.

Underlying bedrock consists of shale, argillite, and siltstone from the Normanskill Formation (Fisher et. al, 1970). Based on Caldwell, et. al. (1986), unconsolidated surficial geologic deposits consist of kame deposits in the northwestern portion of the Site, while the remainder of the property is dominated by glacial till.

The regional topography is characterized by elongated parallel mountain ridges that are oriented northeast to southwest and separated by long continuous valleys with a trellised drainage pattern. As shown on the Goshen 7.5 Minute United States Geological Survey (USGS) Topographic Map (**Figure 1**), the elevation around the proposed substation ranges from 370 ft. msl (in the southwest corner of the site by Hartley Road) to 450 ft. msl (along the northern border). In the western area of the Site, the topography slopes from northeast to southwest and continues offsite to the unnamed tributary. Cheechunk Creek crosses the eastern portion of the Site from northeast to southwest. Topography in the eastern portion of the Site slopes towards Cheechunk Creek.

Soils at the Site are predominantly comprised of Mardin gravelly silt loam (**Figure 26**). These loamy soils are derived predominately from acid sedimentary rock. The soil in the Project area is classified as moderately well-drained gravelly silt to a depth of five feet. Surface soil types in the area were classified according to the USDA SSURGO database (2011) as follows: AdB (Allard silt loam, 3 to 8 percent slopes), BnC (Bath-Nassau channery silt loams, 8 to 15 percent slopes), CnB (Chenago gravelly silt loam, 3 to 8 percent slopes), ErA (Erie gravelly silt loam, 0 to 3 percent slopes), ErB (Erie gravelly silt loam, 3 to 8 percent slopes), Ma (Madalin silt loam), MdB (Mardin gravelly silt loam, 3 to 8 percent slopes), MdC (Mardin gravelly silt loam, 8 to 15 percent slopes), Pg (Pits, gravel), RSD (rock outcrop-Nassau complex, hilly), SXC (Swartswood and Mardin very stony soils, sloping), and UnB (Unadilla silt loam, 0 to 8 percent slopes).

Figure 26 represents soil distributions across the Site. **Appendix M** presents soil types and locations in greater detail.

Based on the USGS Open File Report 97-241 (1998), groundwater is present at an elevation of approximately 380 feet in the vicinity of the Site. Since shallow groundwater flow directions generally mirror surficial topography, the shallow groundwater flow direction in the vicinity of the Site is estimated to be to the southwest toward the unnamed tributary to the Wallkill River. The overall groundwater flow of the area is expected to be toward the Wallkill River, the major waterway in the area. Groundwater beneath the western portion of the Site is part of a NYSDEC-designated Principal Aquifer system associated with coarser deposits along the Wallkill River (NYSDEC, 2011, and Bugliosi and Trudell, 1988).

To better characterize onsite geological conditions in the vicinity of the proposed substation, a geotechnical investigation was conducted by DiGioia, Gray & Associates (DGA) in June 2010. The report is included as **Appendix N**. Six geotechnical borings were advanced in the vicinity of the proposed substation pad (**Appendix N**). Borehole depths ranged from 5.5 ft. below ground surface (bgs) to 23.3 ft. bgs (DGA, 2010). Based on the data collected, bedrock underlying the Site consists of shale, sandstone, and siltstone and is present at relatively shallow depths (1.5 to 14 ft. bgs) (DGA, 2010). The bedrock surface was found to slope to the southwest. Unconsolidated deposits consisted of glacial till (silty clay to silty sand with rocks and boulders). Therefore, site-specific data indicate that coarser deposits associated with the Principal Aquifer system were not present beneath the proposed substation.

Depth to groundwater readings were attempted to be taken by DGA at each boring location at the soil/bedrock interface and at the completion of drilling at the location. Most borings were dry for both readings (DGA, 2010). Groundwater was recorded at the soil/bedrock interface in only one boring indicating that static groundwater levels during the investigation (July 2010) were below the surface of the bedrock unit. However, seasonal variations do exist in groundwater levels beneath the Site. As discussed in Section 3.4, groundwater seeps contributed to Wetland B in the northwestern portion of the Site. However, these seeps are expected to be seasonal and precipitation dependent.

3.6.2 POTENTIAL IMPACTS

Approximately 6.31 acres of the Site and 0.75 acre along adjacent roadways will be disturbed during construction of the substation and distribution network, respectively. Potential impacts to the soils and geology could include excavation and/or displacement of native surface and subsurface materials during grading and trenching. ORU does not anticipate that blasting of rock will be required for the Proposed Project including distribution network improvements.

ORU will implement construction of the Project in two phases of construction. The first phase of construction will include: implementation of erosion and sediment control features, construction of the access driveway to the Site, staging area construction, tree clearing, construction of temporary sediment basin and preconstruction of the stormwater system features, and construction of the onsite gravel maintenance road. The second phase of construction will include: substation construction, distribution line construction, and foundations for transmission poles, transmission line construction, berm construction, final site restoration, and landscaping.

A cut and fill plan is illustrated in **Figure 27**. According to a cut and fill analysis, a total of 7,221 c.y. of material will be excavated, and approximately 9,073 c.y. of material will be filled (CMX, 2011). All cut soil will be stockpiled as needed and reused onsite. Approximately 1,852 c.y. of additional soil will need to be imported onto the Site (CMX, 2011) to help establish the screening berm.

Due to the volume of earth movement and the removal of existing vegetation, rainfall events during construction activities may cause the erosion of exposed soil. Trenching activity along adjacent roadways for distribution network improvements may also cause erosion. However, the use of appropriate best management practices and erosion and sediment controls will be instituted to prevent the offsite migration of sediment and the degradation of waterways and wetlands. Stockpiled soil will be stabilized and ESCP controls will be implemented as needed. The design of the Project includes an ESCP (**Figure 25**).

No groundwater will be used for human consumption, and no sanitary wastes will be disposed of at the site since the substation will be unmanned except for occasional maintenance activities.

Releases of oil from oil-containing equipment (e.g. transformers) has the potential to negatively impact soil and groundwater on the Site. Each of the proposed transformers contains 9,830 gallons of oil. Releases could occur from seam failures or spills during maintenance. The Proposed Project has been designed with secondary containment features around transformers as well as remote alarm systems. Secondary containment features are designed with capacity for 110% volume of transformers plus a 4-inch rainfall event. Due to the quantity of oil stored in the transformers, an SPCC Plan has also been developed for the substation, which provides spill response procedures, chain of command, spill reporting information and timeframes. A monthly inspection is also performed. The SPCC Plan is provided in **Appendix L**.

3.6.3 PROPOSED MITIGATION

ORU will mitigate erosion of exposed soil using soil erosion and sediment controls during construction. A temporary sedimentation basin will be constructed in the initial phase of construction and converted to the dry-extended stormwater detention basin at the end of the project. Grading plans (**Figure 19**) have minimized the amount of earth

work needed for the project. Exposed areas will be reseeded when construction is complete in that area or when idle for 14 days. **Appendix K** presents the SWPPP. The ESCP is illustrated in **Figure 25**. These documents were developed in accordance with the requirements of the NYS Standards and Specifications for Erosion and Sediment Control and NYSDEC Phase II Stormwater Permit Program, which describe the proposed mitigation measures for preventing soil erosion and sedimentation during and after construction. During all construction Phases, stockpiled soil will be located in designated staging areas and stabilized as needed, in accordance with NYSDEC regulations and the ESCP created for this project.

Long term mitigation measures include grading to direct stormwater runoff from the substation to a bioretention area and stormwater detention pond to treat stormwater runoff from the proposed Project (**Figure 19**) and reseeding. Appropriate pollution prevention controls have been incorporated into site design to safe guard the subsurface and aquatic environment from long term impacts. The SWPPP is provided in **Appendix K**. Stormwater pollution and erosion prevention measures are discussed further in Section 3.5.3.

Because the substation will be unmanned there are no impacts on groundwater from human consumption. Therefore, no mitigation measures are needed.

Potential releases from oil-containing equipment at the site will be mitigated by the inclusion of secondary containment features around the equipment and the development of an SPCC Plan (**Appendix L**). The substation equipment, including transformer oil level gauges, is monitored around the clock, seven days a week. Secondary containment structures are concrete sumps filled with gravel. The base of the sump is constructed of an oil-stop polymer that stops oil, but allows water to pass through. Secondary containment features are designed to hold 110% of the storage capacity of the transformer plus a 4-inch rainfall (13,235 gallons). Monthly visual inspections are also performed. If a release were to breach the secondary containment features, ORU has committed manpower and resources to respond to and clean up the spill and any impacted media within 24 hours.

3.7 TRAFFIC AND TRANSPORTATION

3.7.1 EXISTING CONDITIONS

There are four rural town roads adjacent to the site: Cheechunk Road, Echo Lake Road, Hartley Road, and Owens Road (**Figure 2**). Traffic consists of both passenger vehicle and commercial trucks (especially on Cheechunk Road) with higher volumes during morning and evening commute hours. Posted speed limits on all four roads are 35 miles per hour.

The ROWs for these roads are maintained by the Town of Goshen. These ROWs permit the town to perform maintenance work, such as brush or snow removal, without

prior consent of the owner of the adjacent property. Cheechunk and Echo Lake Roads are the most frequently traveled roads of this group, with very little traffic passing along Hartley Road and Owens Road. Owens Road is classified as a scenic road in the Town of Goshen Scenic Roads Overlay District (**Figure 4**). This overlay district is discussed further in Section 3.1.2.

Based on a July 21, 2011 Town of Goshen Planning Board decision, a traffic study to quantify traffic volumes and flow patterns was not required since existing traffic volumes were not readily available and the Proposed Project will have a negligible impact on traffic.

3.7.2 POTENTIAL IMPACTS

According to the Town of Goshen Code §97-50N(2), "Any development application for which a [traffic impact study] is not submitted shall provide sufficient information to ensure safe entering and exiting conditions (e.g. sight distance, driveway width and grade) at all proposed ingress and egress points." Through a sight distance evaluation, ORU determined that the post-construction sight distance to the access driveway entrance point would be 246 ft. west of the driveway entrance, and 478 ft. east of the driveway entrance (**Figure 5**). While the Town of Goshen does not cite specific sight distance standards, these sight distances are consistent with the standards recommended by the American Association of State Highway and Transportation Officials (AASHTO) "Policy on Geometric Design of Highways and Streets Exhibit 3-1 (2004)," which lists a calculated stopping sight distance of 246.2 ft. for rural roads with a posted speed limit of 35 miles per hour.

There will be no long-term impacts to traffic in the surrounding neighborhood. The substation is designed for unmanned operation. Inspections and maintenance work will be performed during normal working hours.

Construction activities will have a short-term negative impact on traffic with additional worker vehicles and vehicles associated with delivery of equipment and soil. Construction will require importation of approximately 1,852 c.y. (CMX, 2011) (93 construction truck loads) of fill for construction of the landscaping berm. Berm construction is expected to last approximately two weeks. This will temporarily increase traffic on the local roads within the project vicinity. The movement of construction equipment as well as electrical equipment and daily worker traffic flow is expected to result in a temporary daily increase in traffic on local roads. However, since construction is scheduled to last 17 months and occur during normal business hours, this is a temporary impact only.

In accordance with the required approvals to transport the transformers across structures in lower New York, a 13 axle trailer will be used. Any required permits from the NYS Department of Transportation to transport transformers will be obtained for this action. This transport method is equivalent in weight to snowplow trucks loaded with

salt, local dump trucks loaded with stone or asphalt, or loaded garbage trucks. This method is also well within the allowable tolerances of the Federal Bridge Gross Weight Formula.

As part of the improvement of the distribution system along Cheechunk, Echo Lake, Owens, and Hartley Roads, ORU will bury the new distribution lines. The buried distribution lines will be trenched beneath roadways or along shoulders. Therefore, there will also be short-term negative impacts on traffic during these trenching procedures, which may result in temporary lane closures. Lane closures will only occur during normal daytime working hours. Trenching is expected to last no more than four months and will occur during the second phase of project construction. Roadways will be restored to grade and repaved (seasonally dependent). Shoulders would be restored to grade and reseeded with a native mix.

Although trenching involves a higher risk of explosion and fire because of the potential to encounter underground utilities, ORU has standard procedures in place for any intrusive groundwork. Prior to any trenching work for distribution lines, the following procedures will be implemented:

- Survey the area of disturbance
- Create a Site plan for proposed improvements and a Maintenance Protection of Traffic Plan
- Obtain a road opening permit from the Town
- Call for underground utility mark-out
- Conduct a pre-construction meeting
- An ORU inspector will oversee any utility work to verify safety
- If underground utilities are detected, hand digging is used in areas near the underground utility.

There are no known underground utilities within the area of ground disturbing activities. Therefore, there is little chance of fire or explosion during trenching activities. Additionally, the improvements to the distribution network will increase the reliability of the electrical system and improve visual aesthetics since the new circuit lines will not be aboveground.

3.7.3 PROPOSED MITIGATION

ORU will prepare and implement an MTP Plan for construction of the Proposed Project and all improvements on adjacent roads as part of the construction permit application. The MTP Plan focuses on traffic safety and will follow current recommendations in the Manual on Uniform Traffic Control Devices (MUTCD) for one-lane closures on local roads.

Due to the current volume of traffic flow on the rural roads surrounding the Site and the limited access requirements associated with maintenance of the proposed electrical

substation, ORU does not anticipate that traffic mitigation measures will be necessary. Traffic impacts associated with the proposed Project are anticipated to be negligible, and the access driveway meets the AASHTO sight distance standards as well as the traffic standards cited in the Town of Goshen code §97-50N(2). Therefore no long-term mitigation measures are needed since there are no long term impacts to traffic.

Proposed construction practices for the access driveway are consistent with the Town's Rural Siting Principles as described in §97-41 of the Town Code: "Minimize clearing of vegetation at the edge of the road, clearing only as much as is necessary to create a driveway entrance with adequate site distance. Use curves in the driveway to increase the screening of buildings." By engineering a bend in the access driveway, preserving existing vegetation along Cheechunk Road, and installing landscaping and a berm, ORU will screen the facility in accordance with the Town's rural siting principals.

Vehicular traffic due to construction activities will occur during normal business hours. Approximately 10 workers (maximum expected is 25 workers) are expected to be onsite at one time. Traffic controls, such as "Truck Entering" signs, will be outlined in the MTP Plan and will be employed to minimize traffic impacts. Additional traffic controls (e.g., flagmen) will be employed for large equipment (e.g., transformers on tractor trailers) deliveries to ensure the safety of drivers.

Additionally, short-term impacts on traffic from distribution line improvements (including trenching within roadways) will be mitigated with the use of flagmen, signs, and cone zones to ensure the safety of drivers. Safety procedures for the distribution network improvements will also be included in the MTP Plan. Lane closures are only expected to be during normal daytimes working hours. Work on distribution line improvements will also occur during off-rush daytime hours.

Potential fire and explosion risks during trenching procedures are being mitigated via ORU standard operating procedures for intrusive utility work and were discussed in Section 3.7.2.

3.8 CULTURAL RESOURCES

3.8.1 EXISTING CONDITIONS

The NYSDEC was contacted regarding known archaeological resources listed by the New York State Museum and the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP). The NYSDEC responded that the project is located within an area considered to be sensitive with regard to archaeological resources (NYSDEC, 2011). This letter is included in **Appendix F**. Therefore, a Phase IA and IB Archaeological Survey were performed on the Site in September 2010 by Richard Grubb & Associates, Inc. (RGAI) (**Appendix M**). The survey investigated potential historic and prehistoric resources within 0.5 mile of the Site and also in relation to the Area of Potential Effects (APE) on the Site in accordance with SEQRA (6NYCRR

Part 617) requirements, NYSOPRHP standards, New York State Archaeological Council standards, and 36 Code of Federal Regulations (CFR) Part 61. These standards govern how cultural investigations are conducted in New York State. The APE is defined as the area within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The APE includes the proposed substation, stormwater detention pond, landscaping, access and utility roads, and connection line corridor.

No registered archaeological sites are located within the APE. However, the survey identified 13 pre-historic archaeological sites within one mile of the APE. The three nearest sites were: a site located approximately 80 ft. south of the APE; a site located approximately 80 ft. north of the APE; and a site located approximately 600 ft. southwest of the APE (RGAI, 2010). No further information was available regarding the sites within 80 ft. The site located approximately 600 ft. away is a possible pre-historic camp, but is not considered to represent a potentially significant archaeological resource (RGAI, 2010). These sites and their exact locations were not available in the Phase IA and IB Survey.

No significant cultural resources are present within or adjacent to the APE (RGAI, 2010). However, RGAI (2010) identified two properties within 0.5 mile of the APE that are eligible for listing on the National Register of Historic Places: 212 Cheechunk Road (located 150 ft. northwest of the APE) and 331 Echo Road (RGAI, 2010). However, the property at 331 Echo Lake Road was field-verified by Kleinfelder to be greater than 0.5 mile from the Site. **Figure 28** shows the location of 212 Cheechunk Road with respect to the Site. Although eligible for national listing, the 212 Cheechunk Road property is not currently listed on the national or state register (NYSOPRHP, 2011). The Town of Goshen historian was also contacted by Kleinfelder, but provided no additional information.

On site investigations (e.g., test pitting) by RGAI (2010), indicated that no prehistoric or historic cultural materials were recovered from within the APE. Three stone farms rows (a.k.a, stone walls) were identified and are shown on **Figure 2**. However, these were not considered to represent potentially significant archaeological resources, and no further archaeological survey was recommended (RGAI, 2010). Since 212 Cheechunk Road is not currently listed on the National Register of Historic Places, an architectural survey of the 212 Cheechunk Road property is not required as part of the SEQRA permit.

3.8.2 POTENTIAL IMPACTS

Since no significant cultural, historic, or prehistoric resources were found on or adjacent to the APE, there are no potential impacts from the proposed project on cultural resources. Although the residence at 212 Cheechunk Road is eligible for listing on National Register of Historic Places, an architectural survey is not required by SEQRA since the property is not currently listed.

3.8.3 PROPOSED MITIGATION

No mitigation is needed for cultural resources since there were no potential impacts identified. However, ORU will retain the existing stone walls to the maximum extent practicable. The proposed access road and onsite gravel maintenance road use existing openings in the walls. Several rural siting design elements will also help screen the proposed Project from adjacent properties: landscape buffer, project set back from the road, the lower elevation of the proposed substation, minimizing tree clearance, and the curved access driveway.

3.9 EMF ANALYSIS

Any object with an electric charge has a voltage at its surface and can create an electric field. When electric charges move together an electric current is created, which then creates a magnetic field. Magnetic fields occur naturally and are one of the basic forces of nature. The strength of a magnetic field (measured in mG) depends on the magnitude of the current, the configuration and size of the source, spacing between conductors, and distance from the source. **Table 4** provides a list of common appliances and the magnetic fields they produce.

Table 4 Magnetic Fields From Household Appliances		
Appliance	AC Magnetic Field (mG)	
	12" Away	Maximum
Electric Range	3 to 30	100 to 1,200
Electric Oven	2 to 5	10 to 50
Garbage Disposal	10 to 20	850 to 1,250
Refrigerator	0.3 to 3	4 to 15
Clothes Washer	2 to 30	10 to 400
Clothes Dryer	1 to 3	3 to 80
Coffee Maker	0.8 to 1	15 to 250
Toaster	0.6 to 8	70 to 150
Crock Pot	0.8 to 1	15 to 80
Iron	1 to 3	90 to 300
Can Opener	35 to 250	10,000 to 20,000
Mixer	6 to 100	500 to 7,000
Blender, Popper, Processor	6 to 20	250 to 1,050
Vacuum Cleaner	20 to 200	2,000 to 8,000
Portable Heater	1 to 40	100 to 1,100
Fans/ blowers	0.4 to 40	20 to 300
Hair Dryer	1 to 70	60 to 20,000
Electric Shaver	1 to 100	150 to 15,000
Color TV	9 to 20	150 to 500
Fluorescent Fixture	2 to 40	140 to 2,000
Fluorescent Desk Lamp	6 to 20	400 to 3,500
Circular Saws	10 to 250	2,000 to 10,000
Electric Drill	25 to 35	4,000 to 8,000

*Source: Enertech Consultants (2010).

3.9.1 EXISTING CONDITIONS

The Site is predominantly undeveloped and currently has no electromagnetic signature, except for the existing ORU transmission line along Hartley Road (**Figure 2**). The existing overhead transmission line includes three distinct high power transmission lines (Lines 24, 25, and 27) crossing the southern corner of the property along Hartley Road on a northwest/southeast existing ROW. Line 24 and Line 25 are a double circuit 69 kV line; Line 27 is a single circuit 138 kV line. The existing distribution system in the area, which distributes electricity to neighboring properties, consists of overhead 13.2 kV lines along Cheechunk, Owens, Echo Lake, and Hartley Roads.

A Magnetic Field Modeling Assessment was conducted by Enertech Consultants (2010) to address the potential impacts from the increase in magnetic fields as a result of the Proposed Project. The Assessment report is included in **Appendix O**. Enertech

Consultants (2010) developed a computer model to simulate existing magnetic field conditions of the Site at a height of one meter aboveground surface in accordance with Institute of Electrical and Electronics Engineers (IEEE) Standards. The computer model was used to calculate a magnetic field contour map of the Site. **Figure 29** presents the magnetic field contour map under peak loading conditions for existing conditions at the Site. The existing overhead transmission lines are the dominant magnetic field source at the Site. The highest calculated magnetic field level for the existing conditions at the Site (approximately 15.6 mG at peak loading) is found at the centerline of the 138 kV circuit (Line 27) (Enertech Consultants, 2010). Magnetic field levels at the Site range from 15.6 mG to about 0 mG (Enertech Consultants, 2010).

Although there are no health-based magnetic field standards at the federal level, the New York State PSC has a limit of 200 mG at the edge of a ROW for overhead transmission lines under maximum loading conditions (Enertech Consultants, 2010). Therefore, existing magnetic field levels under peak loading at the Site are well below the New York State limit of 200 mG.

3.9.2 POTENTIAL IMPACTS

The Proposed Project would connect to the existing 69 kV transmission Line 24 and route it into the proposed substation. A new 69 kV transmission line (Line 241) would be routed back out onto the existing ROW. Three new mono-poles would be installed to replace an existing lattice tower at the connection location. Additionally, two new double circuit mono-poles would be installed along connection line to route the overhead Line 24 and 241 into and out of the proposed substation, respectively. The connection line will be 0.14 mile (740 ft.) long.

The proposed substation would convert 69 kV electrical power to 13.2 kV power, which would be distributed from the substation to nearby customers via underground distribution lines. The proposed substation would contain two 50 MVA transformers, 10 circuit breakers, buswork, and associated switchgear module. Distribution to nearby customers is proposed to be via six underground distribution circuits, which would be routed out along the existing driveway to connect with the existing overhead distribution system (**Figure 5 and Figure 7**). The distribution circuits will be installed in concrete encased conduits and would be trenched three to four feet below ground surface. The proposed project includes improvements to the existing distribution system along Owens, Cheechunk, Echo Lake, and Hartley Roads. Improvements would include the installation of underground conduits for distribution circuits, pull boxes, manholes, and riser poles. Two of the circuits would be routed to Owens Road (underground); the remaining four circuits would be routed to Cheechunk Road and Echo Lake Road (mostly underground, but with some overhead sections), with two circuits ending along Hartley Road (underground).

The computer analysis performed by Enertech Consultants (2010) to simulate the magnetic field conditions at a height of one meter above ground surface at peak loads

(based on 2010 data) calculated a magnetic field contour map for the proposed substation with transmission and distribution lines for a 2012 projected loading scenario. **(Figure 30)** shows that the magnetic field configuration has been influenced by the proposed project and associated transmission and distribution lines. Magnetic field levels for 2012 project loading scenario range from over 50 mG inside the proposed substation to approximately 0 mG **(Figure 30)** (Enertech Consultants, 2010). Additionally, magnetic field levels along the property boundaries in the vicinity of the proposed substation range from 25.6 mG (where Lines 24 and 25 cross the property boundary along Hartley Road) to about 0 mG (Enertech Consultants, 2010). Magnetic field levels in the vicinity of where the distribution lines exit the proposed substation onto Cheechunk Road were no higher than 5 mG (Enertech Consultants, 2010). By comparison, fluorescent light fixtures emit 2 to 40 mG of magnetic field (at a distance of 12 inches) **(Table 4)**. Therefore, magnetic field levels for the proposed Project under 2012 projected loading scenarios are well below the New York State PSC limit of 200 mG.

Although there is a slight projected increase in the magnetic field levels at the property boundary due to the Proposed Project (maximum 25.6 mG along Hartley Road), there are no residences within the 25 mG contour and all calculated levels along the property boundary are well below the New York State PSC limit of 200 mG and are similar to other common household items. Enertech Consultants (2010) also researched potential health effects caused by EMF on animals and reported that overall animal studies do not support the occurrence of health effects due to EMF. Therefore, there are no potential adverse impacts from the proposed Project from EMF.

3.9.3 PROPOSED MITIGATION

No mitigation measures are necessary for magnetic fields caused by the proposed substation including distribution lines. All magnetic field levels, including those inside the proposed substation, are well below the New York State PSC limit. Additionally, ORU incorporates measures into their designs to minimize magnetic field emissions from underground distribution circuits as a standard best management practice.

3.10 NOISE

3.10.1 EXISTING CONDITIONS

The Site is undeveloped, except for an existing ORU overhead transmission line along the southern side of the property along Hartley Road. Except for any noise emitted by the transmission line, there are no other human noise sources on the Site. Residences are located to the north, south, and west of the proposed substation. Surveys of existing ambient sound were conducted by Ostergaard Acoustical Associates (OAA) in June 2010. The OAA report is included as **Appendix P**. OAA included both long-term

48-hour A-weighted sound level monitoring and short-term octave band sound pressure level measurements during the daytime.

Four monitoring locations were selected to typify the following locations:

- L1 – Residence located south of the proposed substation;
- L2 – ORU property line to the southeast of the proposed substation, in the north corner of a cleared field;
- L3 – ORU property line to the east of the proposed substation, on the south side of Cheechunk Road and east of Owens Road;
- L4 – ORU site property line, across from residential structures to the west of the Site, on the southeast side of Cheechunk Road between Echo Lake Road and Owens Road.

These locations are shown as L1 to L4 on **Figure 31**. The four automated sound level monitors recorded data for 24 hours on Friday, June 25, 2010, 24 hours on Sunday June 27, 2010, and 10-minute octave band sound levels were recorded on June 24, 2010. Results found that the minimum sound level that was exceeded 90 percent of the time ranged from 31 to 41 A-weighted decibels (dB(A)) at the 4 monitored locations and 32 dB(A) at the residential property line located closest to the sound-sources of the Proposed Project (Tax Parcel 10-1-66) (between L3 and L4) (**Figure 31**) (OAA, 2010).

Results indicate that L1 exhibited typical results for sound monitored along a roadside, where sound levels are low during sleeping hours and increase during the daytime and evening due to vehicular traffic activity. Sound measurements at L2 did not correspond to typical human activities, and were believed to be influenced by the field fauna (insect) activity. This is largely a result of substantial natural habitat surrounding the recording station. Sound measurements at L3 and L4 exhibited typical results for noise meters placed along roads where vehicles cause sporadic and large changes in sound levels with the background levels slowly rising during the day and falling during sleeping hours (OAA, 2010).

3.10.2 POTENTIAL IMPACTS

The proposed substation will include switchgear, two 50 MVA transformers, circuit breakers, power lines, and other ancillary equipment. ORU is purchasing low-noise transformers for this project. These transformers will be primarily cooled by natural convection. Supplemental forced air cooling utilizing integral fans may be used as necessary. The transformers will produce steady “hum” 24-hours a day through normal operations (OAA, 2010). The manufacturer’s sound data sheets show the low-noise transformers have a maximum National Electrical Manufacturers Association (NEMA) rating of 60 dB(A) (OAA, 2010). ORU anticipates that the actual sound emission will be 58 dB(A) based on similar equipment in similar locations. However, the 60 dB(A) sound emission level was modeled by OAA (2010) as a worst case scenario.

Based on the results of the sound emission modeling performed by OAA (2010), the highest sound emissions from the transformers will range from 15 to 27 dB(A) at the 4 locations monitored for ambient sounds and 31 dB(A) at the residential property line located closest to the proposed equipment (Tax Parcel 10-1-66) and are well below the Town of Goshen Noise Code of 75 dB(A) quantitative limit (Town of Goshen Code Chapter 70). A contour map of sound emissions expected from the substation with all transformer fans operating (worst case) is included as **Figure 32**.

The anticipated minimum sound level that will be exceeded 90 percent of the time ranged from 31 to 41 dB(A) at the 4 monitored locations and 35 dB(A) at the residential property line located closest to the proposed substation equipment (Tax Parcel 10-1-66). **Table 5** presents existing acoustical data as well as modeled acoustical data for the Proposed Project for the four acoustical monitoring locations as well as the property line of the closest residence (Tax Parcel 10-1-66). The table also calculates the change in noise levels between existing conditions and conditions when the substation is operational. As shown on **Table 5**, this represents a change of between 0 to 1 dB(A) at the 4 monitored locations and 3 dB(A) at the residential property line located closest to the proposed substation equipment. According to OAA (2010), a change in the sound level of 0 to 2 decibels (dB) is not noticeable to the human ear; a change of 3 to 4 dB is noticeable to the human ear only when compared directly between 2 different steady noise conditions.

Table 5
Pre- and Post-Construction Noise Levels

Location	Minimum Measured Hourly L ₉₀ (Existing Conditions)	Future Transformer Emissions	Future L ₉₀ (Post-Construction Conditions)	Difference Between Existing and Future L ₉₀
1	41	15	41	0
2	39	25	39	0
3	31	20	31	0
4	32	27	33	1
Closest residence (between Locations 3 and 4; Tax Parcel 10-1-66)	32	31	35	3

Source: OAA, 2010.

Background sound levels to the south and east of the proposed transformers will not be affected by the substation's sound emissions. According to OAA (2010), acoustical impacts of the proposed substation will be minimal to the surrounding area and it is unlikely that a listener will hear the substation above the ambient sound level at the residential property line located closest to the proposed substation equipment (Tax

Parcel 10-1-66). **Figure 32** graphically shows sound emission contours for the proposed substation at 5 ft. above grade with all transformer cooling fans operating (worst case). Additionally, inclusion of the earthen berm in the design of the Proposed Project came after the acoustical survey was completed. The proposed berm would further reduce noise levels along Cheechunk Road in the vicinity of the closest residential property line (Tax Parcel 10-1-66) and L3. Therefore, the permanent long-term impact on noise levels from the Proposed Project is negligible.

However, short-term impacts to the noise levels are anticipated during construction activities. Additional sources of noise during construction activities include construction and delivery vehicles and construction activities. ORU anticipates that construction of the proposed substation will take approximately 17 months and includes the improvements to distribution lines along adjacent roadways. No blasting of rock is anticipated.

3.10.3 PROPOSED MITIGATION

Based on the findings by OAA (2010), no long-term noise mitigation is proposed for the proposed substation following construction. However, it should be noted that the proposed soil berm will further reduce long-term noise impacts at the surrounding residential properties. ORU will also be using low-noise cooling fans on the transformers at the substation to further reduce the noise emissions.

Short-term noise impacts from construction related activities will be mitigated by keeping vehicles properly serviced to minimize vehicular noise. Additionally, construction work will be performed during normal construction hours of 8 am to 6 pm (the Town of Goshen allows 8 am to 8 pm weekdays) to minimize impacts on the surrounding residential properties (Town of Goshen Noise Code Chapter 70). According to the proposed two-phased construction sequence, the first phase of construction will include:

- implementation of erosion and sediment control practices
- construction of the access driveway to the Site
- staging area construction
- tree clearing and grubbing
- pre-construction of stormwater system and temporary sediment basin
- construction of the onsite maintenance road.

The second phase of construction will include:

- substation construction
- distribution line construction
- transmission line construction
- final construction of stormwater system
- berm construction
- final site restoration

- landscaping

3.11 FISCAL ANALYSIS AND SOCIO-ECONOMIC IMPACTS

3.11.1 EXISTING CONDITIONS

The Proposed Project Site is located at 157 Cheechunk Road on a 48.73-acre property that is zoned rural and commercial/office mixed use (Tax ID: 12-1-1.7). A total of 0.92 acre of the Site is classified as undeveloped and 47.81 acres are classified as residual (Orange County, 2011).

In Orange County, the full market property value is determined by the local tax assessor. New York State sets the equalization rate for each town. The 2011 equalization rate for Goshen is 62.25% (Town of Goshen Tax Assessor, 2011), which is used to determine the county taxes.

The 2011 full market value of the Site was \$508,800 while the land and total assessment values of the property were \$316,700 (Orange County, 2011). Relevant tax districts include: Orange County, Town of Goshen, Goshen Highway Department, PT Town (Part of Town outside Village), and the Goshen Volunteer Fire Department. Each taxing district currently assigns a tax rate per \$1,000 of the land value assessment. The 2011 County and Town taxes were \$4,436.78. School taxes for Goshen Central School District were \$10,191.60.

Property tax information was obtained from the Orange County Department of Real Property Tax Service Agency Image Mate On-Line Real Database. Property tax information from the Town of Goshen is updated on a weekly basis to this county database. The property tax assessment information included in this section was obtained on September 30, 2011.

The properties surrounding the site are generally single family residential properties to the northeast, north, and west; agricultural land to the northwest, vacant fallow land to the south; industrial land (landfill) to the south, and commercial/office mixed use land (county jail and 911 center) to the southeast and east. **Figure 33** shows properties located within 300 ft. of the Site. Assessed values and taxes of properties within 300 ft. of the Site are included in **Table 6**.

Table 6
Property Assessments and Taxes within 300 ft. of Site*

Parcel ID	Zoning/ Property Class	Acres	Full Market Value Assessment	Total Assessment	County Taxes (Including Exemptions)	School Taxes (Including Exemptions)
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10-1-60.22	CO/ Correctional Facility	80.10	\$79,523,700	\$49,503,500	\$0	\$0
10-1-93	CO/ SF	1.90	\$465,863	\$290,000	\$4,398.96	\$8,547.38
10-1-92	CO/ SF	7.70	\$618,200	\$384,800	\$5,390.82	\$11,598.10
Parcel ID		Acres	Full Market Value Assessment	Total Assessment	County Taxes (Including Exemptions)	School Taxes (Including Exemptions)
10-1-65	RU/ Vacant	5.70	\$83,200	\$51,800	\$725.70	\$1,666.95
10-1-64	RU/ SF	3.60	\$433,700	\$270,000	\$3,782.54	\$7,903.77
10-1-13.1	RU/ SF	1.80	\$314,400	\$195,700	\$2,741.64	\$4,725.74
10-1-67.22	RU/ SF	2.40	\$336,900	\$209,700	\$2,937.77	\$5,963.28
10-1-95	RU / SF	63.10	\$875,500	\$545,000	\$26,151.40	\$16,753.43
10-1-67.21	RU/ SF	2.00	\$404,500	\$251,800	\$3,922.63	\$7,318.07
10-1-66	RU/ SF	5.00	\$363,100	\$226,000	\$3,166.12	\$6,487.82
10-1-11.2	RU/ Dairy Farm**	96.00	\$759,400	\$472,700	\$5,849.59	\$12,790.10
12-1-3.23	CO/ Correctional Facility	101.00	\$80,975,600	\$50,407,300	\$0	\$0
12-1-2.1	CO/ SF	34.00	\$313,700	\$195,300	\$8,568.10	\$5,499.88
12-1-19	I/ Vacant	25.30	\$253,000	\$157,500	\$2,888.74	\$5,068.45
12-1-1.2	I/ Landfill	52.90	\$529,000	\$329,300	\$8,058.20	\$10,597.08
12-1-7.2	I/ Vacant	3.30	\$32,900	\$20,500	\$378.25	\$659.70
12-1-1.6	RU/ SF	1.80	\$361,400	\$225,000	\$3,152.12	\$6,455.64
12-1-1.42	RU/ SF	3.90	\$325,600	\$202,700	\$2,839.71	\$5,738.01
12-1-1.3	RU/ Vacant Livestock	5.30	\$50,000	\$31,100	\$937.23	\$1,000.81
12-1-2.3	CO,RU/	31.20	\$205,900	\$128,200	\$6,180.92	\$4,125.55

	Vacant					
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*Tax Information provided by Orange County, 2011.

** Property Class is listed on Property Detail Sheet as Dairy Farm. However, residential uses are also associated with the parcel.

Zoning Designations:

CO: Commercial/Office Mixed-Use
I: Industrial
RU: Rural

Property Class Designations:

SF: Single Family

Tax ID 10-1-60.22: This 80.10-acre property (0.69 acre primary) is zoned commercial/office mixed-use and is located at 110 Wells Farm Road and 6 ½ Station Road. The property is the site of the Orange County Jail and Sheriff's Department pump house #89. The 2011 tax assessment valued the land at \$1,003,500 and the total assessment at \$49,503,500. The full market value of this property was \$79,523,700 based upon the total assessment.

Tax ID 10-1-93: This 1.90-acre property (0.92 acre primary, 0.98 acre residual) is zoned commercial/office mixed-use and is located at 1 Caralex Lane. The 2011 tax assessment valued the land at \$61,100 and the total assessment at \$290,000. The full market value of this property was \$465,863 based upon the total assessment.

Tax ID 10-1-92: This 7.70-acre property (0.92 acre primary, 6.78 acres residual) is zoned commercial/office mixed-use and is located at 3 Caralex Lane. A 2011 tax assessment valued the land at \$82,600 and the total assessment at \$384,800. The full market value of this property was \$618,200 based upon the total assessment.

Tax ID 10-1-65: This 5.70-acre property (0.92 acre primary, 4.78 acres residual) is zoned rural and is located at 129 Cheechunk Road. A 2011 tax assessment valued the land and the total assessment at \$51,800. The full market value of this property was \$83,200 based upon the total assessment.

Tax ID 10-1-64: This 3.60-acre property (0.92 acre primary, 2.68 acres residual) is zoned rural and is located at 131 Cheechunk Road. A 2011 tax assessment valued the land at \$78,100 and the total assessment at \$270,000. The full market value of this property was \$433,700 based upon the total assessment.

Tax ID 10-1-13.1: This 1.80-acre property (0.92 acre primary, 0.88 acre residual) is zoned rural and is located at 133 Cheechunk Road. A 2011 tax assessment valued the land at \$58,800 and the total assessment at \$195,700. The full market value of this property was \$314,400 based upon the total assessment.

Tax ID 10-1-67.22: This 2.40-acre property (0.92 acre primary, 1.48 acres residual) is zoned rural and is located at 136 Cheechunk Road. A 2011 tax assessment valued the

land at \$73,800 and the total assessment at \$209,700. The full market value of this property was \$336,900 based upon the total assessment.

Tax ID 10-1-95: This 63.10-acre property (0.92 acre primary, 12.00 secondary, 36.85 acres residual, and 13.60 wasteland) is zoned rural and is located at 132 Cheechunk Road. A 2011 tax assessment valued the land at \$233,900 and the total assessment at \$545,000. The full market value of this property was \$875,500 based upon the total assessment.

Tax ID 10-1-67.21: This 2.00-acre property (0.92 acre primary, 1.08 acres residual) is zoned rural and is located at 138 Cheechunk Road. A 2011 tax assessment valued the land at \$63,000 and the total assessment at \$251,800. The full market value of this property was \$404,500 based upon the total assessment.

Tax ID 10-1-66: This 5.00-acre property (0.92 acre primary, 4.08 acres residual) is zoned rural and is located at 32 Owens Road. A 2011 tax assessment valued the land at \$91,500 and the total assessment at \$226,000. The full market value of this property was \$363,100 based upon the total assessment.

Tax ID 10-1-11.2: This 96.00-acre property (95.08 acres pasture) is zoned rural and is located at 212 Cheechunk Road. A 2011 tax assessment valued the land at \$119,500 and the total assessment at \$472,700. The full market value of this property was \$759,400 based upon the total assessment.

Tax ID 12-1-3.23: This 101.00-acre property (61.00 acres residual, 40.00 acres pasture) is zoned commercial/office mixed-use and is located at 47 6 ½ Station Road. The property is the site of the Orange County Jail. A 2011 tax assessment valued the land at \$903,800 and the total assessment at \$50,407,300. The full market value of this property was \$80,975,600 based upon the total assessment.

Tax ID 12-1-2.1: This 34.00-acre property (2.00 acres primary, 32.00 acres residual) is zoned commercial/office mixed-use and is located at 108-112 Hartley Road. A 2011 tax assessment valued the land at \$113,200 and the total assessment at \$195,300. The full market value of this property was \$313,700 based upon the total assessment.

Tax ID 12-1-19: This 25.30-acre property (2.00 acres undeveloped, 23.30 acres residual) is zoned industrial and is located at 103 Hartley Road. A 2011 tax assessment valued the land at \$157,500 and the total assessment at \$157,500. The full market value of this property was \$253,000 based upon the total assessment.

Tax ID 12-1-1.2: This is a 52.90-acre property (2.00 acres undeveloped, 50.90 acres residual) that is zoned industrial and is located at 111 Hartley Road. The property is part of the Al Turi landfill. A 2011 tax assessment valued the land and total value of the property at \$329,300. The full market value of this property was \$529,000 based upon the total assessment.

Tax ID 12-1-7.2: This 3.30-acre property (3.30 acres residual) is zoned as industrial and is located at 119 Hartley Road. A 2011 tax assessment valued the land and total value of the property at \$20,500. The full market value of this property was \$32,900 based upon the total assessment.

Tax ID 12-1-1.6: This 1.80-acre property (0.92 acre primary, 0.88 acre residual) is zoned as rural and is located at 216 Cheechunk Road. A 2011 tax assessment valued the land at \$64,600 and the total assessment at \$225,000. The full market value of this property was \$361,400 based upon the total assessment.

Tax ID 12-1-1.42: This 3.90-acre property (1.00 acre primary, 2.90 areas residual) is zoned as rural and is located at 214 Cheechunk Road. A 2011 tax assessment valued the land at \$56,300 and the total assessment at \$202,700. The full market value of this property was \$325,600 based upon the total assessment.

Tax ID 12-1-1.3: This 5.30-acre property (5.30 acres residual) is zoned as industrial and is located at 121 Hartley Road. A 2011 tax assessment valued the land and the total assessment at \$31,100. The full market value of this property was \$50,000 based upon the total assessment.

Tax ID 12-1-2.3: This 31.20-acre property (2.00 acres primary, 29.20 acres residual) is zoned as rural and commercial/office mixed-use. The property is located at 114 Hartley Road. A 2011 tax assessment valued the land and the total assessment at \$128,200. The full market value of this property was \$205,900 based upon the total assessment.

3.11.2 POTENTIAL IMPACTS

A primary concern of many local residents when an electrical substation is proposed is what effect the substation will have on property values and the ability to sell their home. To provide some information on this subject, ORU contracted Valuation Consultants Incorporated (VCI) to review sales of residential properties close to other existing electrical substations in Orange County to measure potential impacts of substations on residential values. VCI's report is included as **Appendix Q**. The analysis conducted by VCI (2010) compared home sales close to electrical substations with sales of similar properties that are distant from substations. Sales of properties proximate to the Harriman substation in Harriman, New York and the Hunt electrical transfer station in Greenwood Lake, New York were compared to similar homes that were not proximate to these facilities, but in the same market area. VCI concluded that the sales close to electrical substations are no less lucrative than sales of comparable residences located a further distance from substations. Using these data, VCI concluded that no impact on property values is anticipated as a result of constructing the proposed Hartley Road electrical substation.

The Proposed Project would benefit the affected taxing districts. Based on the estimated \$18,000,000 construction cost and estimated assessed value of \$11,205,000 for the Hartley Road substation, estimated property tax revenue for all taxing districts would be approximately \$504,730 per year. Orange County taxes would be approximately \$58,400 in property tax revenue, and Town taxes would be approximately \$98,580 in property tax revenue for all Town taxing authorities. The Goshen Central School District would receive \$347,750. Services required to support the Proposed Project would be limited to Department of Public Works, police, fire, and ambulance services, but the actual demand for these services is expected to be negligible. In addition, there would be no financial demand on local school district services as a result of this project. Therefore, there would be a net gain of \$490,460 in taxes with negligible demand on services.

The Proposed Project will have minimal impact upon the aesthetic nature of the community character (Section 3.2), but is not expected to impact population patterns as shown by the VCI report (2010). Additionally, an average of 10 temporary construction jobs for 17 months of construction are expected to be created to support this Proposed Project.

3.11.3 PROPOSED MITIGATION

Based on the analysis performed by VCI, the proposed project would not negatively impact neighboring residential property values. The project would provide a net addition in property tax revenues to all tax districts (including school), in addition to providing temporary employment opportunities. Therefore, no mitigation for fiscal or socioeconomic impacts would be necessary.

Minimal impacts to the aesthetic nature of the area have been mitigated to the greatest extent practicable and include vegetative screening, earthen berm, curved driveway, maximum setback from the road without impacting wetlands, and low elevation setting.

4 CONSTRUCTION IMPACTS

4.1 CONSTRUCTION SCHEDULE

The Preliminary Construction Schedule presented in **Table 7** provides a schedule for completion of the Proposed Project. It is currently expected that construction will occur in 2 phases over a period of approximately 17 months. Additionally, construction work will be performed during normal construction hours of 8 am to 6 pm (the Town of Goshen allows between 8:00 am and 8:00 pm, weekdays, or 9:00 am to 8:00 pm weekends and holidays) to minimize impacts on the surrounding residential properties (Town of Goshen Noise Code Chapter 70).

Table 7 - Preliminary Construction Schedule

Phase	Description of Construction
1	Implementation of erosion and sediment control practices.
1	Construction of access driveway to the Site.
1	Perform tree clearing and grubbing operations.
1	Construction of temporary staging area.
1	Pre-construction of stormwater system including temporary sediment basin.
1	Construct onsite gravel maintenance road.
2	Construction of substation.
2	Distribution line improvements.
2	Transmission line construction.
2	Final construction of stormwater system.
2	Construction of berm
2	Conduct final site restoration
2	Install landscaping.

4.2 DUST AND AIR QUALITY

Under the NYSDEC Phase II Stormwater Permit Program, the contractor must make provisions for dust control. During the course of construction, the contractor is required to provide appropriate measures for the cleaning of vehicle tires prior to exiting the Site and to suppress dust resulting from earth moving activities. These activities would be monitored with construction logs in accordance with NYSDEC requirements. The following methods would be implemented during construction to minimize impacts on air quality, where feasible:

- During periods of dry weather, water all active construction areas at least twice daily or as required to control dust;

- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard;
- Pave, apply water daily to, or apply (nontoxic) soil stabilizers on, all unpaved access roads, parking areas, and staging areas at the construction site;
- Sweep (with water sweepers) all paved access roads, parking areas, and staging areas as needed;
- Sweep streets (with water sweepers) if soil is visible on adjacent public streets, as needed;
- Hydro-seed/seed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas that will be inactive for 14 days or more);
- Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (dirt and sand);
- Install silt fence/check dams or other erosion control measures to prevent silt runoff to public roadways, as needed;
- Reduce idling of internal combustion engines to the greatest extent possible;
- Maintain construction equipment properly and tune engines to minimize exhaust emissions.

4.3.1 NOISE RESOURCES

All construction activities would be conducted in a manner so as to comply with the Town of Goshen Noise code Chapter 70, which regulates noise. The purpose of this chapter is to prohibit any loud, raucous, disturbing, or unnecessary noise. Below are specific sections of the Town Code which outline noise deemed to be unnecessary noise.

- The sound produced by the use of any motorized cycle or vehicle so operated or in such a manner as to create loud and unnecessary grating, grinding, rattling, or other noise.
- The sound produced by the discharge into the open air of the exhaust of any steam engine, stationary internal-combustion engine or motor vehicle engine, except through a muffler or other device which effectively prevents loud or explosive noises therefrom.
- The sound produced by the erection or construction, including excavation, demolition, alteration or repair, of any structure other than between 8:00 am and 8:00 pm, weekdays, or 9:00 am to 8:00 pm weekends and holidays, prevailing time, except in case of urgent necessity in the interest of public safety as determined by the Code Enforcement Officer or pursuant to other applicable law adopted by the Town Board of the Town of Goshen.
- The creation of loud and excessive noise in connection with the loading or unloading of any vehicle, or the opening and destruction of bales, crates,

and containers in such a manner as to create an unreasonable or unnecessary noise of unreasonable extent and duration.

- The sounding of any horn or signal device on any vehicle, except as a warning signal pursuant to the provisions of Subdivision 1 § 375 of the Vehicle and Traffic Law of the State of New York.
- The creation of any loud or raucous noise which causes public inconvenience or alarm or disturbs the public's peace, comfort, and tranquility.
- Operation of certain motor vehicles: including operation of any motor vehicle with a gross vehicle weight rating (GVWR) in excess of 10,000 pounds, or any auxiliary equipment attached to such vehicle for a cumulative period longer than 5 minutes in any hour on public or private property while the vehicle is stationary.
- The creation of any noise which exceeds 75 dB(A) at the adjoining property line.

The Town Code for Noise allows "sounds created by public utilities in carrying out operation of their franchises" as a permitted noise.

4.4 SEDIMENT AND EROSION CONTROL

The sediment and erosion control plan has been developed in accordance with the NYSDEC Phase II Stormwater Permit Program, the New York State Standards and Specifications for Erosion and Sediment Control, and Town of Goshen Zoning Code §97-42. Erosion and sediment control devices will incorporate permanent and temporary methods that include silt fencing, temporary sediment traps and basins, hay bales, level spreaders, permanent and temporary ditches and diversions, and water bars along the access roads to limit the potential of soil losses, rutting and channelization of the soil.

For additional detailed information of the erosion and sediment control practices refer to Section 3.5.

4.5 TEMPORARY AIR QUALITY IMPACTS

Construction equipment operating on the Site and construction employee vehicles being driven to and from the Site will produce emissions as a result of fuel combustion. However, these emissions are generally insignificant in comparison to the emissions produced by the general public using area roadways. In addition, the emissions produced by construction equipment operating on this Site will disperse into the atmosphere before they impact any of the adjacent properties because of the significant distance between the on-site sources and adjacent properties.

4.6 TEMPORARY NOISE IMPACTS

Ambient daytime noise levels would increase in the immediate vicinity of the Site during construction. These impacts would include noise from the operation of construction equipment, the loading and unloading of materials and the movement of construction vehicles. **Table 8** provides a summary of noise levels that can be expected from various types of equipment at various distances.

Table 8
Construction Noise Levels (dB(A))

Equipment/Activity		Maximum Sound Level (dB(A))		
Distance from Source	50 feet	200 feet	500 feet	1000 feet
Backhoe	82-84	70-72	62-64	56-58
Blasting	93-94	81-82	73-74	67-68
Concrete Pump	74-84	62-72	54-64	48-58
Generator	71-87	59-75	51-67	45-61
Loader	86-90	74-78	66-70	60-64
Rock Drill	83-99	71-87	63-79	57-73
Trucks	81-87	69-75	61-67	55-61

Changes in noise levels of less than 3 dB(A) are typically not noticed, while increases of 20 dB(A) or more are considered significant. It should be noted that distance to the noise source and the specifics of the Site play a significant role in determining the level of impact an increase in noise levels will have on adjoining properties and neighborhoods in the immediate vicinity of the Site.

Local daytime ambient noise levels due to construction activity can vary greatly depending on the location of the equipment on the Site and the number of sources operating at the same time. Since blasting is not anticipated during construction, the noise levels within the Site are projected to temporarily range from 65 dB(A) and 90 dB(A) during construction dependent on the location of the noise source on the Site at any given time. These noise levels are only anticipated during specific construction activities. During the majority of the workday, overall noise levels at the property line will be minimal or of a temporary nature. It is anticipated that nearby properties would experience temporary elevated noise levels during the construction period during normal business hours.

4.7 SLOPES

During the initial construction of the substation, runoff from undisturbed upland areas will be diverted around the construction area by utilizing temporary diversion ditches at the perimeter of the substation pad. By diverting runoff from this area, around the disturbed portion of the Site, there would be a significant reduction in the amount of

runoff over the disturbed soils and a reduction of the likelihood of any rutting, erosion or sediment transfer, and slope failure. Also, construction of the temporary sediment basin would be utilized to capture runoff and slowly discharge the water back through the wetland area. By controlling runoff with these types of measures, erosion, sediment transport and slope failure would be limited. For this project, the temporary sediment basin and temporary outlet control structure would be the rough-graded, dry-extended stormwater detention pond (**Figure 25**).

4.8 TREES

The Proposed Project has been sited to preserve as many existing trees as possible given zoning, wetland, and visual constraints. Approximately 2.15 acres (93,871 sq. ft.) of trees and shrubs will need to be cleared for the Proposed Project. However, a large portion of the Site (approximately 47.5 acres) is being preserved in a natural state. At project completion, only 1.2 acres will contain the substation and paved access road. The remainder of the Site (47.5 acres) will contain forests, wetlands, berm and landscape buffer, grass swales, and stormwater system.

4.9 CONSTRUCTION RELATED TRAFFIC

4.9.1 CONSTRUCTION ACTIVITIES AND EQUIPMENT

Equipment that would be used to construct the Proposed Project includes, but is not limited to, earth-moving equipment (i.e., bulldozers, front-end loaders, etc.), associated trucks and trailers for site clearing, earth and potential rock excavation, grading equipment for rough and final grading, concrete trucks and pumps for concrete work, cranes and paving equipment for bituminous paving. All vehicles will comply with applicable weight and size limitations in accordance with Chapter 89, Vehicles and Traffic, of the Code of the Town of Goshen.

ORU proposes to use the following route as their means of accessing the site with heavy equipment and deliveries during construction: Route 17M to Hartley Road, to Cheechunk Road, to Site access driveway. This route would avoid as much residential neighborhoods as possible, and the southern end of Hartley Road is already used by heavy truck traffic to access Al Turi Landfill. ORU confirmed this route as the most acceptable route for construction equipment and deliveries with the Town of Goshen Highway Superintendent on December 14, 2011. The Town of Goshen Code (§89.19) has 5 ton weight limit restrictions on local roadways, including Hartley, Cheechunk, and Owens Roads. However, the Code does allow for local deliveries.

Due to the size of the Site and the proposed development area, construction traffic to and from the Site is not expected to be excessive. The heaviest volume of construction traffic is expected to occur at the beginning of construction as site clearing and rough grading is conducted, and when asphalt and building materials are delivered to the site.

Based upon engineering estimates, a total of approximately 7,721 c.y. of material will be cut and approximately 9,073 c.y. will be filled (CMX, 2011). All suitable cut soils will be reused onsite and stockpiled in the staging area. The balance, or approximately 1,852 c.y. of clean weed-free soil, will be imported to the Site and used for berm construction (CMX, 2011). Imported material will be transported by approximately 93 20-cubic yard truck loads. Berm construction is estimated to occur over a period of two weeks. Therefore, there will be a large number of construction truck traffic bringing fill onto the site for a short time period during berm construction. It is anticipated that most construction trips would travel to and from the Site via Cheechunk Road. As necessary, traffic flag men will be provided to insure smooth traffic flow during construction.

Once construction machinery reaches the Site, it is likely to remain on site until completion of grading and excavation. The heaviest volume of construction traffic is expected at the beginning of construction as site clearing and rough grading is conducted, and during the months that concrete and substation materials are transported to the site. Construction material storage, equipment staging and soil stockpiling will occur adjacent to the east side of the proposed substation (**Figure 5**).

The two transformers will be the heaviest equipment delivered to the Site. In accordance with the required approvals to transport the transformers across structures in lower New York, a 13 axle trailer will be used. The transformers will be delivered one unit per load. Any required permits from the NYS Department of Transportation to transport the transformers will be obtained for this action. This transport method is lower in weight per axle to snowplow trucks loaded with salt, local dump trucks loaded with stone or asphalt, or loaded garbage trucks. This method of transport is also well within the allowable tolerances of the Federal Bridge Gross Weight Formula. Therefore, there will not be any impacts to local roadways. There will only be short-term impacts to traffic during construction activities.

Since construction activities are anticipated to last 17 months, snow removal will also occur as needed during construction of the Proposed Project. ORU snow plow equipment is not expected to be stored at the Site, but rather dispatched to the Site on an as needed basis. The snow plow equipment would conduct snow removal and then leave the Site. Snow will be piled to the east of the substation pad (**Figure 5**).

4.9.2 CONSTRUCTION STAGING AND STORAGE

Construction staging and storage would be located at the interior of the Site along the proposed access road in the area south of the proposed berm and east of the access driveway (**Figure 5**).

Dumpster container(s) for construction debris and trash would be located on the Project Site at the staging area. Periodic removal and replacement of these dumpsters would take place during the course of construction. ORU will be responsible for maintaining a clean and orderly site, controlling trash and debris.

Since the Site has limited space within the area of disturbance, ORU would be required to pay special attention to the logistics of deliveries so that materials arrive on time to facilitate incorporation into the Site.

Stockpiles of snow from snow removal activities are slated to be placed to the south of the staging area and southeast of the substation pad (**Figure 5**).

4.9.3 SITE SECURITY

Public access to the Site would be prohibited. There will be equipment and materials on Site that require security and protection from vandalism or theft. This will be dealt with by the installation of construction fencing.

4.10 POTENTIAL IMPACTS

Short-term construction activities would likely result in several temporary impacts on the Project Site and in the surrounding area, some of which cannot be avoided. These impacts are a result of the clearing and grading operations, rock removal (if necessary), and construction of the proposed substation and associated site improvements. The anticipated short-term construction impacts are as follows:

- Soil disturbance due to site grading and excavation activities.
- Operation of construction vehicles and equipment would have temporary impacts on traffic in the area of the Site for the duration of the construction period.
- Additional traffic impacts would be caused by underground and overhead electrical distribution improvements along adjacent roads.
- Visual quality of the area would be temporarily impacted by the presence of construction vehicles and equipment.
- Noise levels are anticipated to elevate as a result of construction activities, including operation of vehicles and machinery.
- Minor releases of emissions from construction vehicles and fugitive dust from construction activities.

4.11 MITIGATION MEASURES

The above short-term impacts would be mitigated by strict adherence to the Town of Goshen Codes and implementation of United States Department of Transportation's MUTCD. The following mitigation measures pertain to the above impacts in the same order as listed above:

- An ESCP has been designed for the Site in order to protect against soil loss due

- to construction activities;
- Construction traffic would utilize appropriate maintenance and traffic control protections, in accordance with the construction documents, and an MTP Plan will also be implemented;
 - Construction fencing and gates will be installed at the entrance to the Site to provide security.
 - The access driveway has been designed with a curve to minimize visual impacts.
 - Conditions of Chapter 70 "Noise" of the Town Code would be strictly adhered to. In addition, construction work will be performed in such a manner in order to minimize impacts to neighboring properties; and
 - Dust emissions would be kept to a minimum through wet suppression and by disturbing specific portions of the Site one at a time. Mulches, seeding and other approved methods of ground covers will be utilized during construction to keep dust to a minimum. Also, street sweeping will be performed when necessary.
 - Minimizing the use of more than one machine at a time will also reduce dust, noise, and the need for traffic control.

The implementation of these mitigating measures would prevent significant adverse environmental impacts as a result of the construction activity associated with this Proposed Project.

5 ALTERNATIVES TO THE PROPOSED PROJECT

Under SEQRA, the DEIS must include a description and evaluation of the range of reasonable alternatives to the Proposed Project that are feasible while maintaining the objective of the action. One alternative that must be evaluated is the No Action Alternative: what would happen to the Site in the foreseeable future without the Proposed Project. Other alternatives evaluated ways in which to reduce certain impacts that the Proposed Project will have. Due to the sensitivity of the Scenic Road Corridor Overlay district, alternatives evaluated by this DEIS looked to reduce impacts on visual aesthetics and zoning by siting the proposed substation outside of the Scenic Road Corridor Overlay district. An alternative for underground transmission lines to the substation was also evaluated to reduce visual impacts along the Heritage Trail and to be in compliance with the current Town of Goshen Zoning Code. Each alternative was evaluated for potential impacts on various resources, and advantages and disadvantages of each alternative were listed.

5.1 NO ACTION ALTERNATIVE

If no action were taken to construct the proposed substation, the Site would remain in its current undeveloped state. The possibility of negative impacts associated with grading, erosion, noise, dust, and visual impacts resulting from the proposed construction activities would cease to exist. Minimal visual impacts from the completed substation

would also not exist. Under this alternative, the Town of Goshen would not receive the benefits of an additional \$490,460 in tax revenue, nor the environmental and aesthetic values attributed to the proposed conservation easement. In the absence to the conservation easement, the property could be sold and developed in such a way (e.g., residential development) as to cause more environmental impacts than the issues addressed in this document.

Without assistance to support the current peak demand growth rate of 2.4% in the region, the existing South Goshen Substation transformer will exceed its normal rating by 2013. The transformer at South Goshen is already peaking over its nameplate rating. The minimal long distribution ties to adjacent stations that used to provide backup are now providing load relief, and, therefore, backup is significantly reduced under contingency conditions. This could affect commercial enterprises, residential service, and the ORMC. Upgrading the South Goshen Substation is currently not possible without assistance from the proposed Hartley Road Substation to serve the load while the construction on South Goshen is performed.

5.2 FAILURE TO SECURE VARIANCE TO ALLOW OVERHEAD TRANSMISSION LINE

With respect to this project, ORU is proposing to obtain a zoning variance to allow overhead lines on the transmission connection line. Under this Alternative, ORU would not secure the zoning variance and would need to route the connection line underground (**Figure 34**). Under current Town of Goshen Zoning Code, electrical power lines transmitting less than 138 kV must be buried in underground conduits. Therefore, without a variance, the connection line would need to be trenched.

Under this Alternative, ORU would need to construct an 80 ft. by 60 ft. (4,800 sq. ft.) transition yard and associated access driveway at the connection location. A portion of the transition yard layout and access driveway encroaches into wetlands (**Figure 34**). The transition yard would require two H-frame structures that connect existing overhead transmission lines and transition them to underground conduits. These H-frame structures would be 60 ft. high (68 ft. above existing grade). Additionally, one existing utility pole will be removed, one existing pole will be relocated, and two guys would be installed along the existing transmission line. The removed pole will be replaced by the H-frame structures in the transition yard.

The location of the proposed transition yard is at the lowest point on the property with no existing availability to properly design stormwater features. To install the transition yard, the yard pad and a surrounding apron would need to be built up for proper stormwater drainage. This would increase the amount of fill needed/truck traffic. The amount of area needed to construct the pad, associated apron, and stormwater features would impact more wetlands than the Proposed Project. It is estimated that 0.26 acre (11,141 sq. ft.) of permanent wetland impacts and 0.067 acre (2,939 sq. ft.) of temporary wetland impacts would result from this Alternative. Additionally, 0.036 acre (1,560 sq. ft.) of wetlands would have trees manually cleaned for trenching activities.

Additionally, an underground transmission connection line would require excavating a trench to lay transmission lines into and out of the substation. Approximately 0.33 acre (14,482 sq. ft.) of vegetation would need to be cleared to allow workers and equipment access for trenching activities. Lesser amounts of vegetation and trees would need to be cleared than if the connection line were overhead. Under this alternative, the visual impact of the project from Hartley Road (View 7 – **Figure 12L**) would be greater due to the transition yard.

The advantages to this alternative would be:

- Connection to the substation would meet zoning codes requiring transmission lines less than 138 kV to be buried.
- Less vegetation and trees would need to be cleared along the connection line.

The disadvantages to this alternative would be:

- This Alternative is a difficult design to engineer since the transition yard would need to be raised and stormwater features would need to be constructed in a limited amount of area. There would also be engineering design issues for grading, access to the transition yard, wetlands, and high water table.
- This Alternative would be a much more expensive design to implement due to additional costs for design and construction of the transition yard as well as the cost to install the transmission lines underground.
- A considerable amount of filling would be needed to construct the access driveway, transition yard, and associated apron. This would increase construction time and truck traffic.
- This Alternative would increase impacts to wetlands as more wetlands will be impacted for the construction of the transition yard, associated apron, access driveway, and the excavation of trenches for the underground lines.
- This Alternative would increase visual impacts along the Heritage Trail and Hartley Road because of the location of the transition yard (80 ft.) from the Heritage Trail, with limited space for screening.

This Alternative requires avoidance of the best engineering design practices and Site Planning and Siting Rules of the transition yard and associated stormwater protection features. This Alternative will also require greater permanent wetland impacts (0.26 acre) and construction costs while having a significant visual impact on Hartley Road and the Heritage Trail. Therefore, this Alternative is not a viable option.

5.3 ONSITE ALTERNATE LOCATIONS FOR THE PROPOSED FACILITY

Onsite Alternative Location 1:

This location proposes the substation outside the Scenic Road Corridor Overlay District boundary, but still on the western portion of the Site. Onsite Alternative Location 1 is southeast of the proposed location along the southeastern property line (**Figure 35**) at an elevation of 410 ft. msl, which is 10 ft. higher than the Proposed Project. Under this Alternative, the stormwater detention basin and the bioretention pond would be in the same location as the Proposed Project. Since the substation would be located closer to the connection location, the transmission connection line would be shorter.

The advantages of Onsite Alternative Location 1 would be:

- The location is outside the Scenic Road Corridor Overlay District boundary.
- The transmission connection line would be shorter, so fewer poles would be needed along the connection line. Only one mono-pole is needed for the connection line.

The disadvantages of Onsite Alternative Location 1 would be:

- The location is 10 ft. higher in elevation. Therefore, it is more visible from Owens and Cheechunk Roads, Hartley Road near the connection location, and the Heritage Trail.
- A portion of Onsite Alternative Location 1 is within the minimal setback to the property line (25 ft.) along the southeast property boundary to the open fallow field, so it would be very visible (especially during winter) from the Heritage Trail.
- Since a portion of Onsite Alternative Location 1 is within setback requirements, a variance would be needed for the setback.
- The Onsite Alternative Location 1 would need to remove considerably more of the existing stone walls on the property.
- The Onsite Alternative Location 1 would be closer to the proposed conservation easement.
- The conservation easement under the Proposed Project may not be pursued for this location. Therefore, the ability to retain the eastern portion of the property as open space may be lost.
- The Onsite Alternative Location 1 would be located over an existing aquatic feature (intermittent stream) that would need to be diverted around the substation. Therefore, there would be a significant change to existing drainage patterns and potential impact to Wetland B.
- The Onsite Alternative Location 1 encroaches into a forested area and would require more tree clearing.
- The proposed landscape plan and earthen berm would not be sufficient to screen the location as well as the Proposed Project since Onsite Alternative Location 1 is at a higher elevation.

- Onsite Alternative Location 1 would require additional engineering, more site development costs and rock removal (blasting).
- Onsite Alternative Location 1 does not meet Rural Siting Rules of the Town of Goshen.

Onsite Alternative Location 2

This alternative location also proposes the substation outside the Scenic Road Corridor Overlay District Boundary, and is just east of the stone wall that separates the western and eastern portions of the Site (**Figure 36**). Onsite Alternative Location 2 is in a steeper area of the Site and is completely forested. The elevation of a substation constructed at Onsite Alternative Location 2 would be approximately 430 ft. msl, 30 ft. higher than the Proposed Project. The bioretention pond and stormwater detention basin would need to be relocated to the southeast of Onsite Alternative Location 2. Onsite Alternative Location 2 would require a longer driveway and longer connection line.

The advantages of Onsite Alternative Location 2 would be:

- The Onsite Alternative Location 2 is outside of and further from the Scenic Road Corridor Overlay District boundary.
- The visual impact from along Owens Road would be lessened since this location is further from the road.

The disadvantages of Onsite Alternative Location 2 would be:

- The location is 30 ft. higher in elevation and would be more visible.
- Significant tree clearing would be required for the driveway, substation pad, stormwater features, access road, and connection line.
- The transmission connection line for Onsite Alternative Location 2 would be longer, but would still need only 2 utility poles.
- Significant grading and significant rock removal would be required to construct the substation pad, driveway, and stormwater features due to the topography of this location.
- The proposed conservation easement would not be possible under this Onsite Alternative Location 2 since this location is completely within the proposed easement area.
- Onsite Alternative Location 2 would need to remove considerably more of the existing stone walls on the property.
- Due to the higher elevation, the substation would be more visible from Cheechunk Road, Hartley Road and the Heritage Trail.
- The substation would be closer to private residences.

Both alternative locations have greater disadvantages than advantages, making them not viable alternatives. Therefore, the Proposed Project location is the location with the least amount of negative impacts.

5.4 TRENCHING ALONG SOUTH SIDE OF CHEECHUNK ROAD FOR ELECTRICAL UTILITY CONNECTION

ORU is designing the Proposed Project with distribution lines trenched along the south side of Cheechunk Road. Therefore, this alternative has been incorporated into the existing design. The design for trenching of distribution lines was switched from the north side of Cheechunk Road to the south side of Cheechunk Road in the vicinity of Owens Road and 212 Cheechunk Road so that there would be less impact on private property owners. **Figure 5** illustrates the layout of the underground utility lines along Cheechunk Road.

6 UNAVOIDABLE ADVERSE IMPACTS

During the implementation of any project, certain unavoidable impacts occur that cannot be mitigated. Energy usage is one of these. Energy is required to do or build anything. Energy use in the project area during the construction would temporarily increase during the 17-month construction window. However, this use of energy will provide a more reliable and less stressed electrical supply system in the local area.

Approximately 6.31 acres of land that is currently natural wildlife habitat will be disturbed. However, at project completion only 1.2 acres (substation and access road) will not return to usable wildlife habitat since there is a significant landscape plan and little human activity for the substation. Additionally, the surrounding rural landscape as well as the potential preservation of 28.74 acres with a conservation easement that will protect habitat and open space will significantly offset the temporary and permanent habitat loss.

Traffic and noise impacts will be temporary during the construction period only. Visual impacts will also occur, but based on the visual assessment, these impacts are considered minor and have been mitigated to the greatest extent practicable.

Wetlands and vegetation (trees) will also be impacted by the Proposed Project. Approximately, 0.090 acre of wetland will undergo temporary disturbance and 0.003 acre of wetland will be subjected to permanent disturbance as a result of project construction. Additionally, approximately 0.66 acre of wetland will be altered due to manual tree removal for the construction of overhead power lines. A total of 6.31 acres on site will be disturbed. Approximately 2.15 acres of trees will be cleared for construction of the proposed project: 1.47 acres will be cleared for the substation and 0.68 acre will be cleared for the overhead connection line to the substation.

7 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Development of the project will result in disturbance to 6.31 acres of land that is currently an open fallow field, forested areas, and wetland. After completion of the

proposed construction, approximately 42.42 acres will remain undisturbed including 12.65 acres of Federal wetland. Only 1.2 acres will be developed with substation pad and paved access road; other areas around the substation will be grassed or landscaped. Additionally, pending PSC approval, a conservation easement has been proposed for 28.74 acres in the eastern portion of the property. As a result, approximately 90 percent of the property will remain undeveloped and will consist of wildlife habitat areas and open space.

The finite resources that will be irretrievably committed by implementation of the proposed action are the materials and energy required for construction and for maintenance of the project afterward. Construction will involve the commitment of a variety of natural resources. These include, but are not necessarily limited to, concrete, asphalt, steel, other metals, lumber, paint products, transformer oil, and other building materials. However, it should be noted that many of the materials accumulated for construction may at some time be recycled or reused. The operation of construction equipment will result in the consumption of fossil fuels and other finite energy sources.

8 GROWTH INDUCING IMPACT

Growth rates and patterns are influenced by various local, regional, and national forces that reflect ongoing social, economic, and technological changes. Ultimately, the amount and location of population growth and economic development that occur in a specific area are controlled, to some extent, by local and county governments through zoning, land use plans and policies, and decisions regarding development applications. Local government and other regional, state, and federal agencies also make decisions about infrastructure (roads, water and sewer facilities) that may influence growth rates and the location of future development.

The construction of electric substations generally occurs in reaction to population or economic growth, and, subsequently, they may only indirectly promote or encourage planned or unplanned growth. Electric supply is often considered a “given” resource and population and economic growth generally does not tend to consider its impacts on electrical usage. ORU is then required to provide sufficient electricity to keep pace with population and economic growth.

The Hartley Road substation has been proposed to reduce the electrical load on surrounding substations, which are currently heavily loaded, and to provide more reliable electrical service to the surrounding Goshen/ Middletown area. This proposed project will also enable the future upgrade of the South Goshen substation, which will exceed its normal rating in 2013. The Project has not been proposed to induce growth in the area. Population and economic growth in the area is expected to occur regardless of the Proposed Project. However, the Project may assist planned or unplanned growth in the area by its ability to help ORU’s electrical supply grid meet a greater load demand. Therefore, there may be indirect effects by the Hartley Road Substation on population or economic growth, but no direct correlation with growth is anticipated.

9 LIMITATIONS

“This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder’s profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This report may be used only by the Client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report.

The work performed was based on project information provided by Client. If Client does not retain Kleinfelder to review any plans and specifications, including any revisions or modifications to the plans and specifications, Kleinfelder assumes no responsibility for the suitability of our recommendations. In addition, if there are any changes in the field to the plans and specifications, Client must obtain written approval from Kleinfelder’s engineer that such changes do not affect our recommendations. Failure to do so will vitiate Kleinfelder’s recommendations.”

10 REFERENCES

- American Association of State Highway and Transportation Officials. Policy on Geometric Design of Highways and Streets. 2004.
- Amy S. Greene Environmental Consultants, Inc. Phase I Habitat Survey for Bog Turtle, Hartley Road, Goshen, New York. September 21, 2010.
- Burke, Miele & Golden, LLP. Lead Agency Determination for Orange and Rockland Utilities. November 29, 2010.
- Bugliosi, E.F. and Trudell, R.A. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York – Lower Hudson Street. USGS Water Resources Investigation Report 87-4274. 1988.
- Caldwell, Donald H. Surficial Geologic Map of New York, Lower Hudson Sheet. 1989.
- CMX. Cut and Fill Plan, October 2011.
- CMX. Erosion and Sedimentation Control Plan. October 2011.

CMX. Existing Conditions Drainage Area Map. September 2011.

CMX. Grading Plan, October 2011.

CMX. Memorandum: Outline of Protected Species for the Hartley Road Substation.
March 11, 2011.

CMX. Proposed Condition Drainage Area Map. September 2011.

CMX. Proposed Site Plan. October 2011.

CMX. Stormwater Pollution Prevention Plan. October 2011.

CMX. Visual Resource Evaluation for Proposed Hartley Road Electrical Substation.
August 2011.

CMX. Wetland Delineation Plan, 2010.

Cressey, George B. Edited by John H. Thompson. Geography of New York State. Pg.
19-53. Syracuse University Press, Syracuse, New York. 1977.

C.T.Male Associates. Onsite Alternative Location 1 Plan. October 2011.

C.T.Male Associates. Onsite Alternative Location 2 Plan. October 2011.

C.T.Male Associates. Tree Survey Map. October 2011.

DiGioia Gray & Associates. Subsurface Exploration Report. July 12, 2010.

Enertech Consultants. Magnetic Field Modeling Assessment. Proposed Hartley
Substation. December 12, 2011.

ESRI Online Map Services. Accessed at <http://www.esri.com> on August 10, 2011.

Federal Emergency Management Agency Site. Accessed at:
<http://hazards.fema.gov/wps/portal/mapviewer> on August 3, 2011.

Figliomeni, Michelle. Town of Goshen Historian. Contacted October 3, 2011.

Fisher, D.W., Y. Isachsen, and V.R. Lawrence, editors. Geological Map of New York,
The University of the State of New York. 1970. Accessed at:
[http://www.nysm.nysed.gov/gis/bedrock_scans/Lower Hudson Bedrock Sheet.jpg](http://www.nysm.nysed.gov/gis/bedrock_scans/Lower_Hudson_Bedrock_Sheet.jpg)
on August 9, 2011

Google Earth. Accessed on October 10, 2011.

Historic Aerials. NETR Site. Accessed at: <http://www.historicaerials.com/> on August 9, 2011.

Institute of Electrical & Electronics Engineers. Accessed at: <http://www.standards.ieee.org> on August 24, 2011.

Isachsen, Y.W., E. Landing, J.M. Lauber, L.V. Rickard, and W.B. Rogers, editors. Geology of New York: A Simplified Account, Second edition. New York State Museum. NYS Geological Survey. Albany, New York. 2000.

Kleinfelder. Draft Spill Prevention, Control, and Countermeasure Plan. Proposed Hartley Road Substation. November 3, 2011.

Kleinfelder. Indiana Bat Habitat Assessment Report. September 2011.

Kleinfelder. Phase 2 Bog Turtle Surveys. Hartley Road Substation, Town of Goshen, Orange County, New York. August 19, 2011.

Kleinfelder. Proposed Hartley Road Electrical Substation Flora Surveys. September 7, 2011.

National Electric Safety Code (NESC) Standards. Accessed at: <http://standards.ieee.org/findstds/standard/NESC-2012.html> on October 3, 2011.

New York State Archaeological Council Standards. Accessed at: <http://www.archnet.asu.edu/tropical> on August 24, 2011.

New York State Department of Environmental Conservation Active Municipal Solid Waste Landfill Database. Accessed at: <http://www.dec.ny.gov/chemical/37552.html> on June 30, 2011.

New York State Environmental Quality Review Act. Title 6 NYCRR Part 617.

New York State Department of Environmental Conservation. Division of Environmental Permits, Region 3, Hartley Road Substation. April 6, 2011.

New York State Department of Environmental Conservation, Division of Fish, Wildlife & Marine Resources. New York Natural Heritage Program. July 25, 2011.

New York State Department of Environmental Conservation, Division of Fish, Wildlife, and Marine Resources. New York Natural Heritage Program. October 29, 2009.

New York State Department of Environmental Conservation. New York State Regulatory Freshwater Wetlands for Orange County. Accessed at: <http://www.fws.gov/wetlands/Data/Mapper.html> on June 24, 2011.

New York State Department of Environmental Conservation. Protection of Waters, Article 15, Environmental Conservation Law Implementing Regulations, Classification of Waters accessed at: <http://www.dec.state.ny.us/website/dcs/streamprotection/index.html> on August 18, 2011.

New York State Department of Environmental Conservation. Title 6 NYCRR Part 701.8; Class C fresh surface waters. February 16, 2008. Accessed at: <http://www.dec.ny.gov/regs/4592.html#15987> on August 9, 2011.

New York State Department of Environmental Conservation Environmental Site Remediation Database. Accessed at: www.dec.ny.gov/cfmx/extapps/derexternal/haz/results.cfm?pageid=3 on July 07, 2011.

New York State Department of Environmental Conservation. New York State Stormwater Management Design Manual. 2010.

New York State Department of Environmental Conservation,. Overview of the Municipal Separate Storm Sewer Systems (MS4) Phase II Stormwater Permit Program. August 2003.

New York State Department of Environmental Conservation. FEMA Floodplain Maps, Orange County, New York. August 3, 2009. Accessed at: <http://www.dec.ny.gov/imsmaps/ERM/viewer.htm> on August 2, 2011.

New York State Department of Environmental Conservation. Primary and Principal Aquifers in New York State. Accessed at: <http://www.dec.ny.gov/lands/52251.html> on September 13, 2011.

New York State Department of Environmental Conservation. New York State Standards and Specifications for Erosion and Sediment Control. August 2005.

New York State Department of Environmental Conservation. Regulatory Freshwater Wetlands for Orange County Maps. Accessed at: <http://www.dec.ny.gov/animals/38801.html> on August 9, 2011.

New York State Office of Parks, Recreation, and Historic Preservation. Contacted October 5, 2011.

Orange County Comprehensive Plan: Strategies for Quality Communities, 2003, Updated 2010. Accessed at:

http://www.orangecountygov.com/filestorage/124/1362/1460/4304/OrangeCounty_Comprehensive_Plan_2010_update.pdf on August 17, 2011.

Orange County Image Mate Online Database. Accessed at:
<http://propertydata.orangecountygov.com/imate/search.aspx> on September 30, 2011.

Orange County Tax Map Department. Orange County Agricultural District Map. 2010.

Ostergaard Acoustical Associates. Analysis of Acoustical Impact, Hartley Road and Cheechunk Road, Goshen, New York. July 13, 2010.

Pinheiro, James. New York State Department of Environmental Conservation, Region 3. Contacted August 3, 2011.

Richard Grubb & Associates, Inc. Phase IA and IB Archaeological Survey: Hartley Substation. September 2010.

Roger G. Torgersen Landscape Architecture and Environmental Services. Planting Plan. August 2011.

Title 36 Code of Federal Regulations Part 61.

Town of Goshen Code, Chapter 70 (Noise). Accessed at:
<http://www.ecode360.com/?custId=GO0551> on August 8, 2011.

Town of Goshen Code, Chapter 89 (Vehicles and Traffic). Accessed at:
<http://www.ecode360.com/?custId=GO0551> on August 8, 2011.

Town of Goshen Code, Chapter 97 (Zoning). Accessed at:
<http://www.ecode360.com/9942089> on August 9, 2011.

Town of Goshen Comprehensive Plan Update and Associated Zoning and Town Code Amendments, 97-27 Aquifer Overlay District (AQ-3 and AQ-6). Goshen, New York. July 2008. Accessed at:
<http://www.townofgoshen.org/pbminutes/minutes/Goshen%20Draft%20GEIS%20July%202008.pdf> on August 9, 2011.

Town of Goshen Highway Superintendent. Contacted by ORU on December 14, 2011.

Town of Goshen Planning Board, Approved Minutes. May 5, 2011. Accessed at:
<http://www.townofgoshen.org/pbminutes/minutes/TOGPB05052011.pdf> on August 9, 2011.

Town of Goshen, Updated Comprehensive Plan for the Town of Goshen. Goshen, New York. Public Hearing Draft. July 17, 2008. Accessed at: <http://www.townofgoshen.org/pbminutes/minutes/Goshen%20Comp%20Plan%20-Public%20Hearing%20Draft%20-%207-17-08.pdf> on August 10, 2011.

Town of Goshen Planning Board, Approved Minutes, April 21, 2011. Accessed at: <http://www.townofgoshen.org/pbminutes/minutes/TOGPB05052011.pdf> on August 9, 2011.

Town of Goshen, New York Zoning Map. February 2009. Accessed at <http://www.townofgoshen.org/ProposedZoningDocs/TownofGoshen.pdf> on August 8, 2011.

Town of Goshen Tax Assessor. Contacted September 30, 2011.

United States Army Corps of Engineers. Request for Department of Army Jurisdictional Determination. August 05, 2010.

United States Department of Agriculture, Natural Resources Conservation Services. The PLANTS Database. Accessed at: <http://plants.usda.gov> on August 23, 2011.

United States Department of Agriculture Soil Survey Geographic (SSURGO) Database. Accessed at: <http://wwwsoils.usda.gov/survey/geography/ssargo> on August 9, 2011.

United States Environmental Protection Agency. Superfund Site Database. Accessed at: <http://cumulis.epa.gov/supercpad/cursites/srchsites.cfm> on June 30, 2011.

United States Fish and Wildlife Service. National Wetlands Inventory Maps. Accessed at: <http://www.fws.gov/wetlands/Data/Mapportion.html> on August 9, 2011.

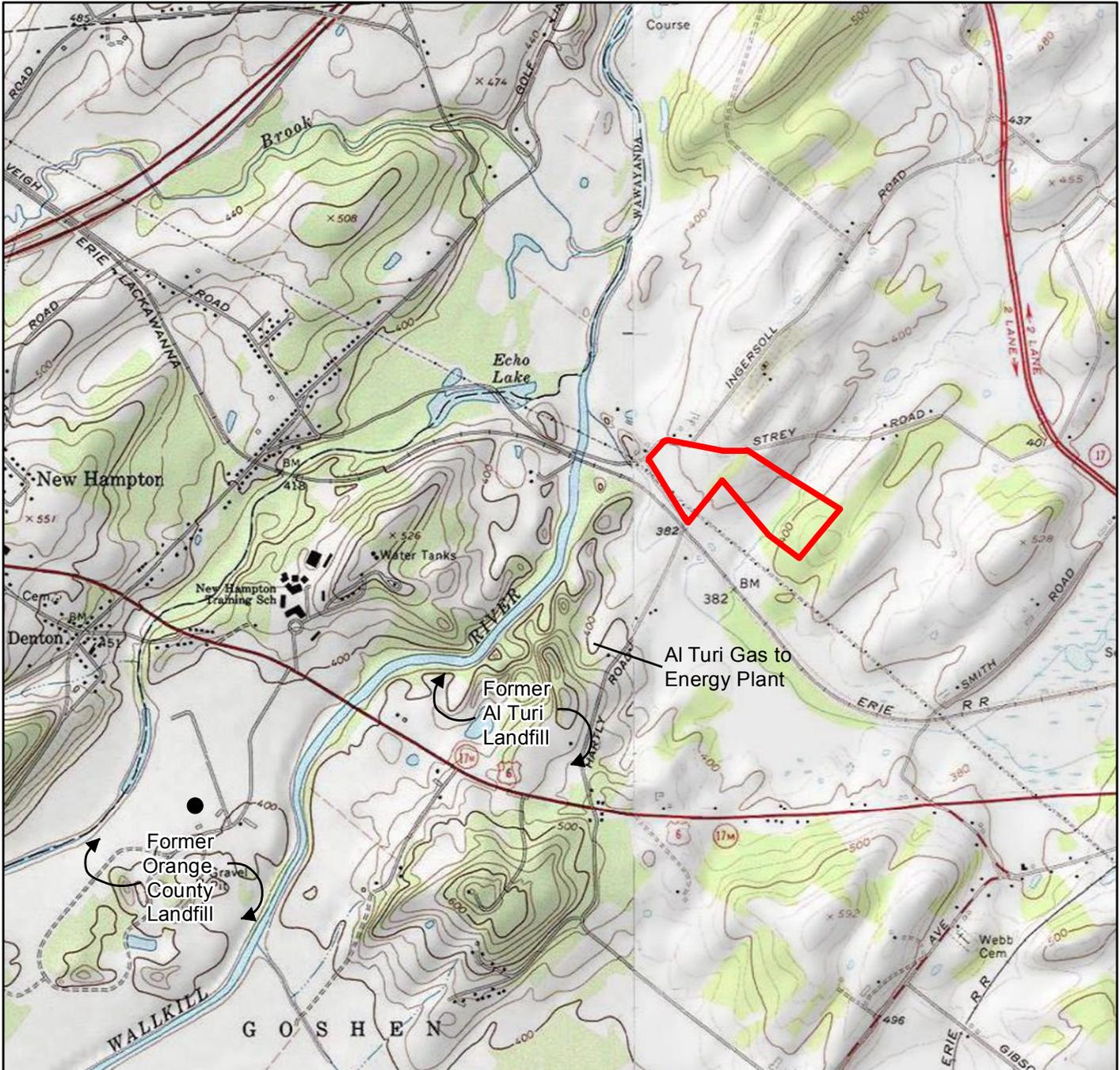
United States Fish and Wildlife Service. Species Report Database. Accessed at: http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=36071 on August 18, 2011.

United States Geological Survey. 7.5-Minute Series Topographic Map. Goshen, New York Quadrangle. Photorevised 1967.

United States Geologic Survey. Open File Report 97-241. Geohydrology and Water Quality of the Walkkill River Valley near Middletown, New York. 38 pages. 1998.

Valuation Consultants, Inc. Impact of Proposed Electrical Substation on Nearby Residential Values. Hartley Road/Cheechunk Road, Goshen, New York. November 19, 2010.

FIGURES



LEGEND

 PROJECT AREA

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LATITUDE: 41° 24' 37.6"N
LONGITUDE: 74° 22' 08.1" N

UTM: 4584514.06 N
552744.60 E

ZONE: 18T



APPROXIMATE SCALE (FEET)

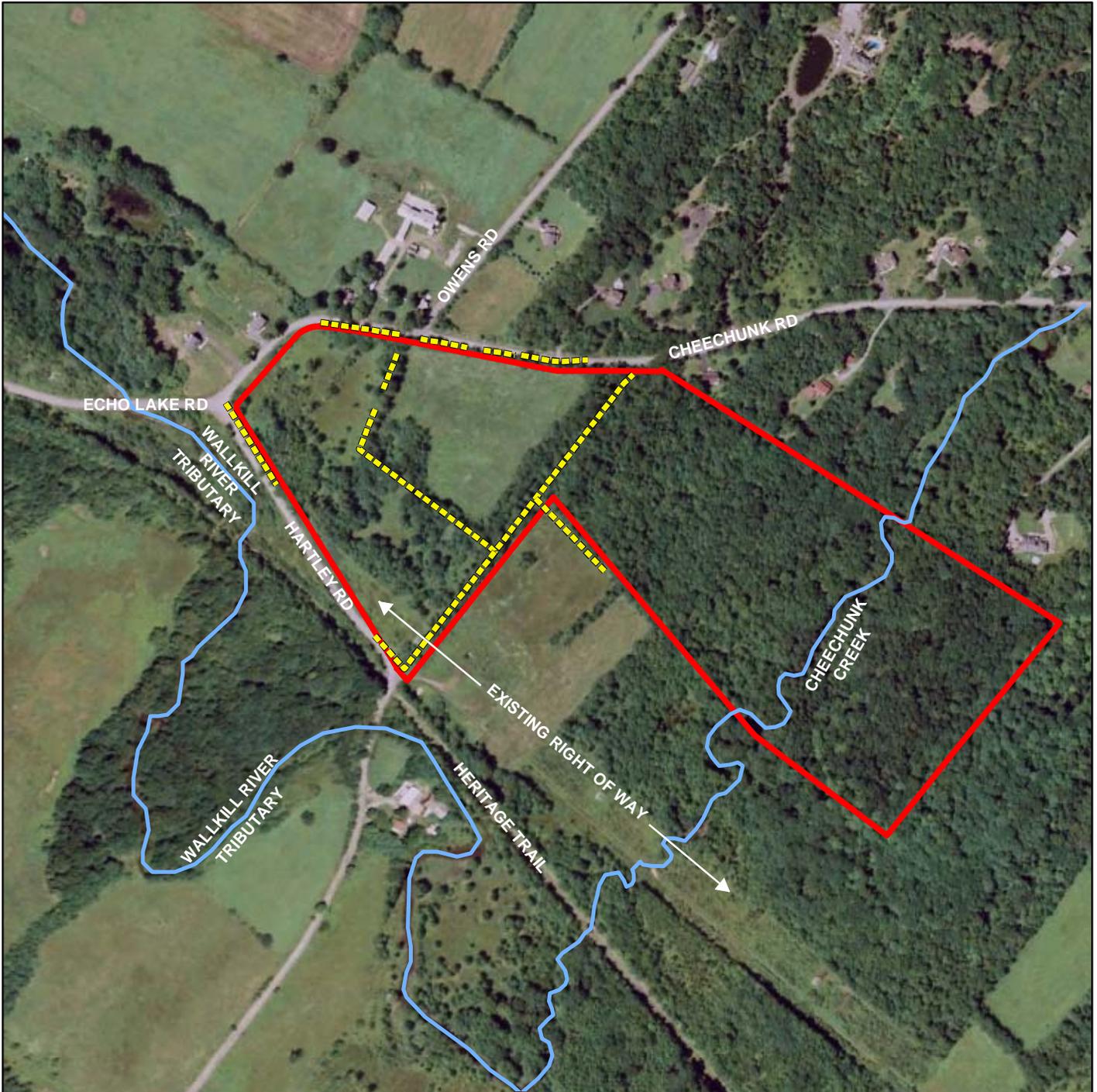



PROJECT NO.	119978
DRAWN:	08/18/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11A186.MXD

SITE VICINITY MAP

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE:
1

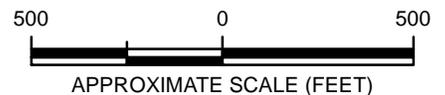


Base Map:
Imagery
from ESRI online Services

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LEGEND

- EXISTING STONE WALL
- PROJECT AREA



	PROJECT NO. 119978	EXISTING SITE CONDITIONS	FIGURE: 2
	DRAWN: 10/31/2011		
	DRAWN BY: SC	HARTLEY ROAD SITE ORANGE & ROCKLAND UTILITIES, INC. TOWN OF GOSHEN ORANGE COUNTY, NEW YORK	
	CHECKED BY: JGC		
FILE NAME: SLC11A178.MXD			



Base Map:
Imagery
from ESRI online Services

LEGEND

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- SITE
- 12-1-2.2 6.5A PARCEL ID AND ACREAGE



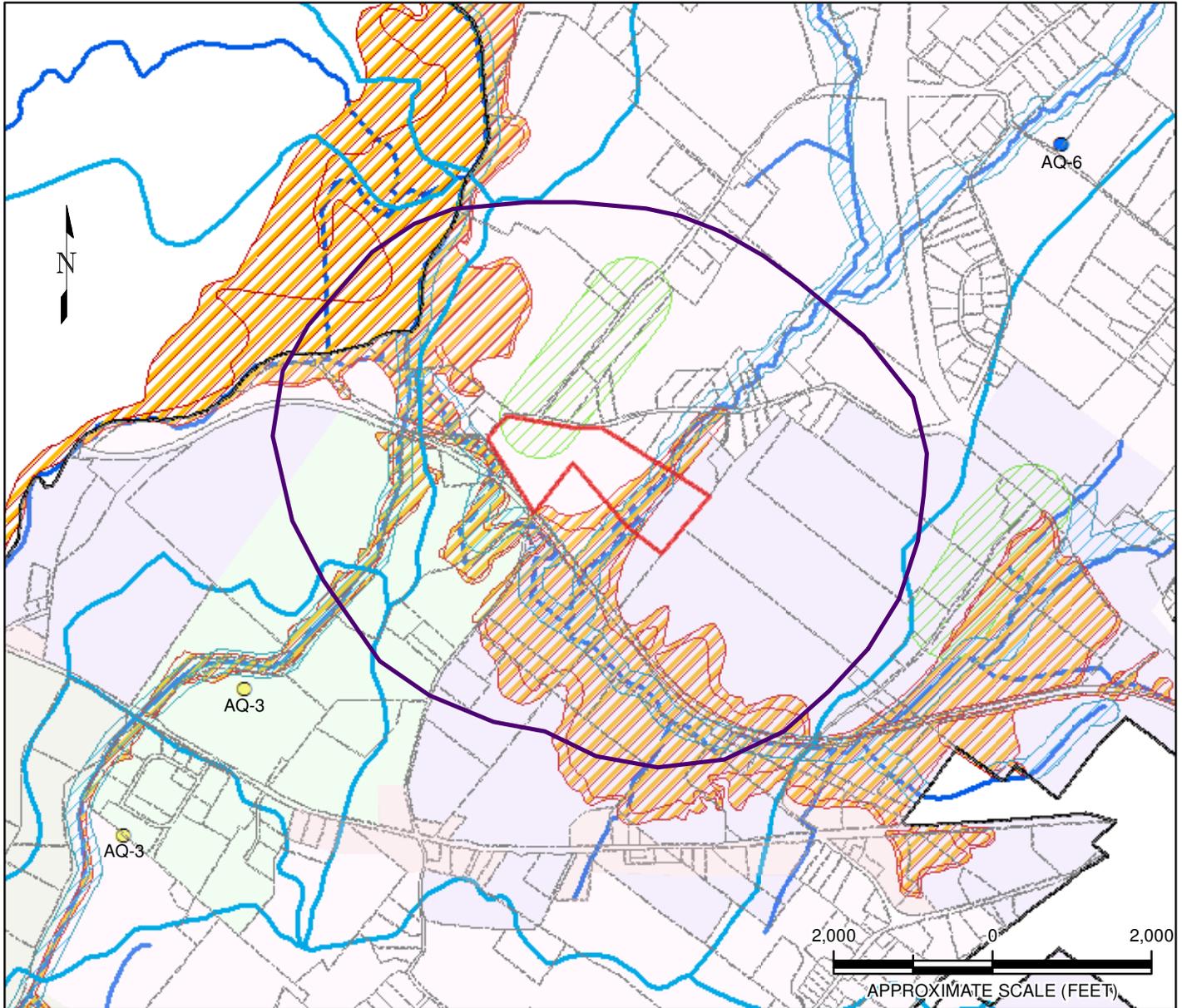
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PROJECT NO.	119978
DRAWN:	08/18/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11A181.MXD

TAX PARCEL MAP

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE:
3



Legend

- Project Area
- Municipal Boundaries
- County Road
- Federal Highway
- Interstate
- Local Road
- State Route

- 1/2 Mile Radius
- Streams
- Watershed Boundaries

Aquifers

- AQ-3
- AQ-6

Zoning Overlay Districts

- AI, Agricultural/Industrial
- CO, Commercial/Office Mixed-Use
- HC, Highway Commercial
- HR, Hamlet Residential
- I, Industrial
- RU, Rural

- Soil Mining Overlay
- Scenic Road Corridor Overlay
- Floodplain and Ponding Area Overlay
- Stream Corridor and Reservoir Watershed Overlay

Sources: Orange County, New York - Dataset layers

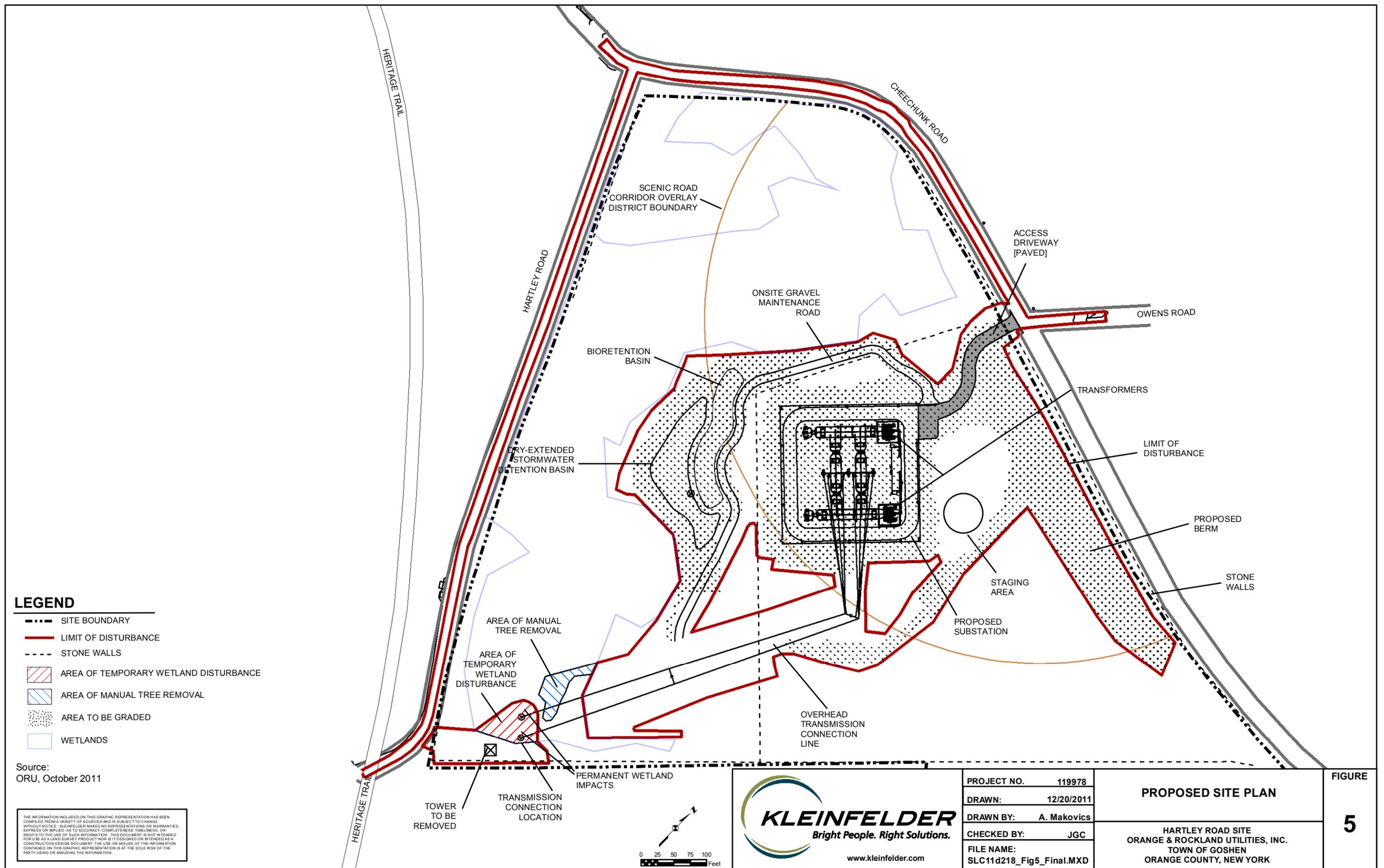
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DRAWN BY:	CTH
CHECKED BY:	JGC
FILE NAME:	SLC11A182.MXD

ZONING OVERLAY MAP
HARTLEY ROAD SITE ORANGE & ROCKLAND UTILITIES, INC. TOWN OF GOSHEN ORANGE COUNTY, NEW YORK

FIGURE:
4



LEGEND

- SITE BOUNDARY
- LIMIT OF DISTURBANCE
- - - STONE WALLS
- ▨ AREA OF TEMPORARY WETLAND DISTURBANCE
- ▩ AREA OF MANUAL TREE REMOVAL
- AREA TO BE GRADED
- WETLANDS

Source:
ORU, October 2011

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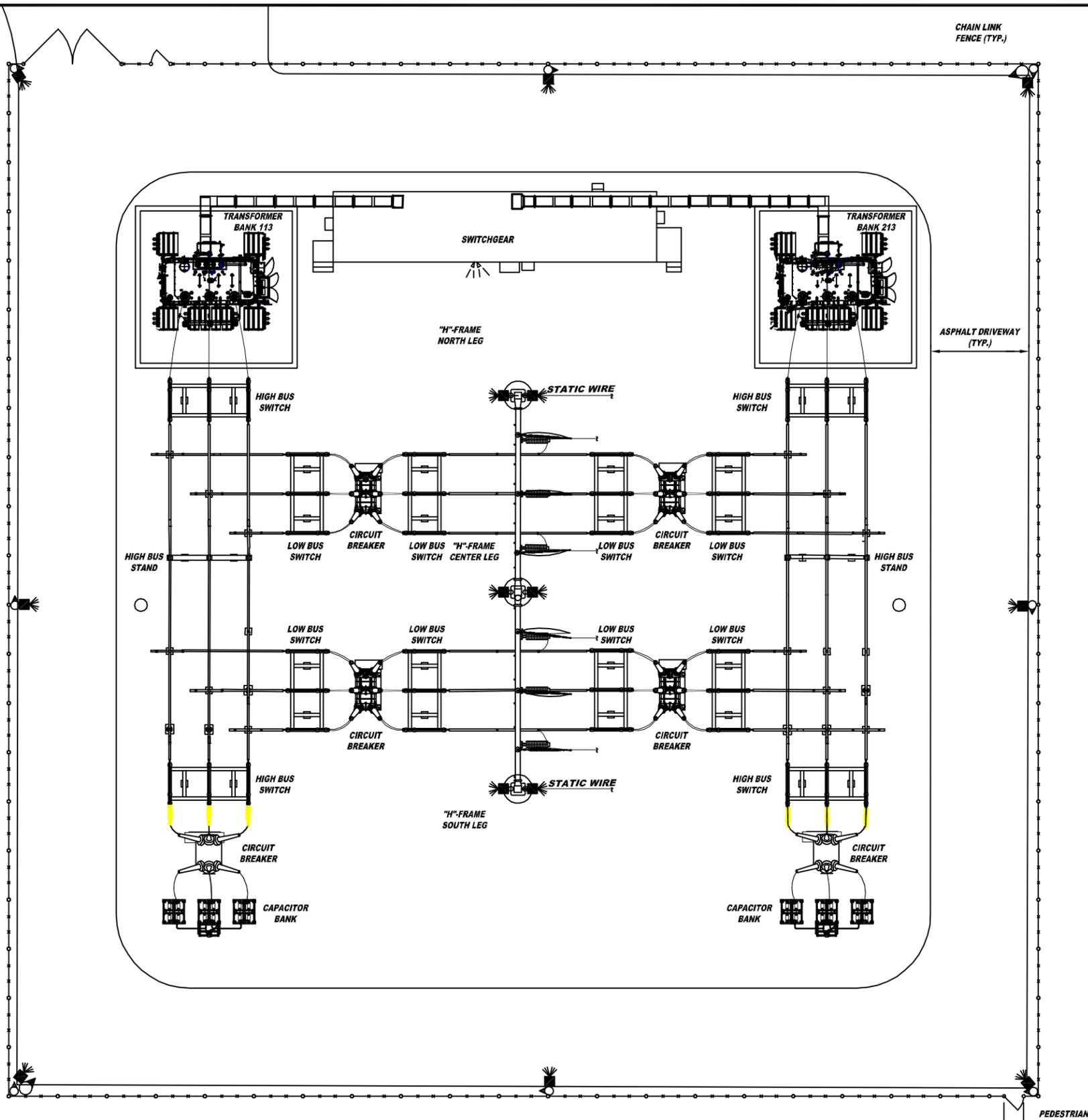
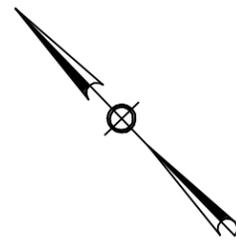
PROJECT NO.	119978
DRAWN:	12/20/2011
DRAWN BY:	A. Makovics
CHECKED BY:	JGC
FILE NAME:	SLC11d218_Fig5_Final.MXD

PROPOSED SITE PLAN
HARTLEY ROAD SITE ORANGE & ROCKLAND UTILITIES, INC. TOWN OF GOSHEN ORANGE COUNTY, NEW YORK

FIGURE
5

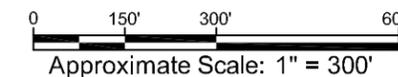
PLOTTED: 20 Oct 2011, 4:11pm, SConteras

CAD FILE: L:\2011\Projects\119978\ LAYOUT: FIG 6



LEGEND

-  PAN, TILT, ZOOM CAMERA
-  FIXED CAMERA, I.R. ILLUMINATOR, MOTION DETECTOR & LOUD SPEAKER
-  LIGHT



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SOURCE:
ORU, OCTOBER 2011.



PROJECT NO. 119978
 DRAWN: 10/20/2011
 DRAWN BY: SC
 CHECKED BY: JGC
 FILE NAME: SLC11d259.dwg

SUBSTATION DETAIL PLAN

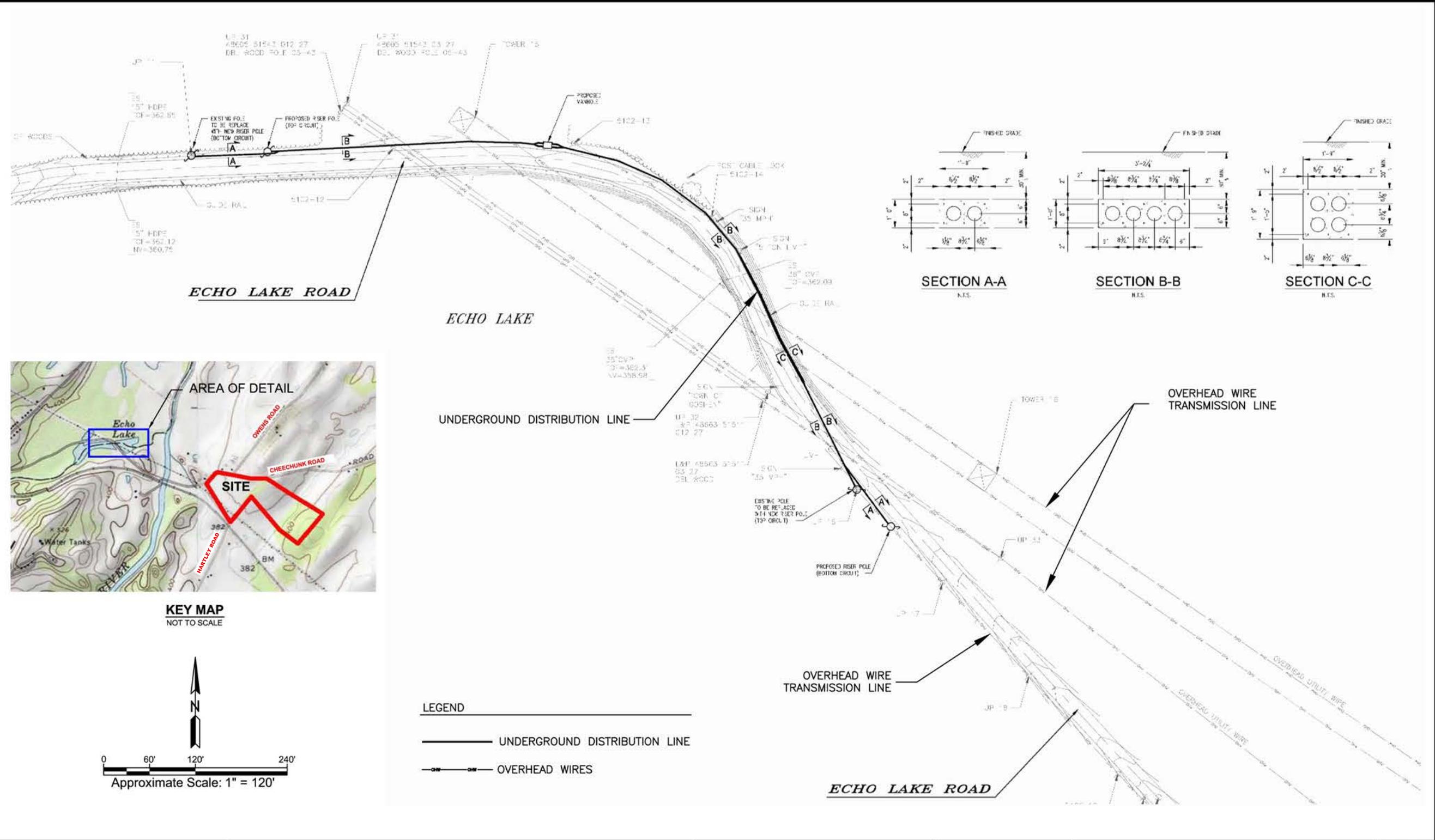
HARTLEY ROAD SITE
 ORANGE & ROCKLAND UTILITIES, INC.
 TOWN OF GOSHEN
 ORANGE COUNTY, NEW YORK

FIGURE

6

PLOTTED: 19 Dec 2011, 2:02pm, JSala

CAD FILE: C:\Users\JSala\Documents\Archive\PROJECTS\119978\ LAYOUT: FIG 7
SALT LAKE CITY, UT



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Source:
Echo Lake Road Conceptual Distribution Conduit Layout Plan, CMX, 2011.



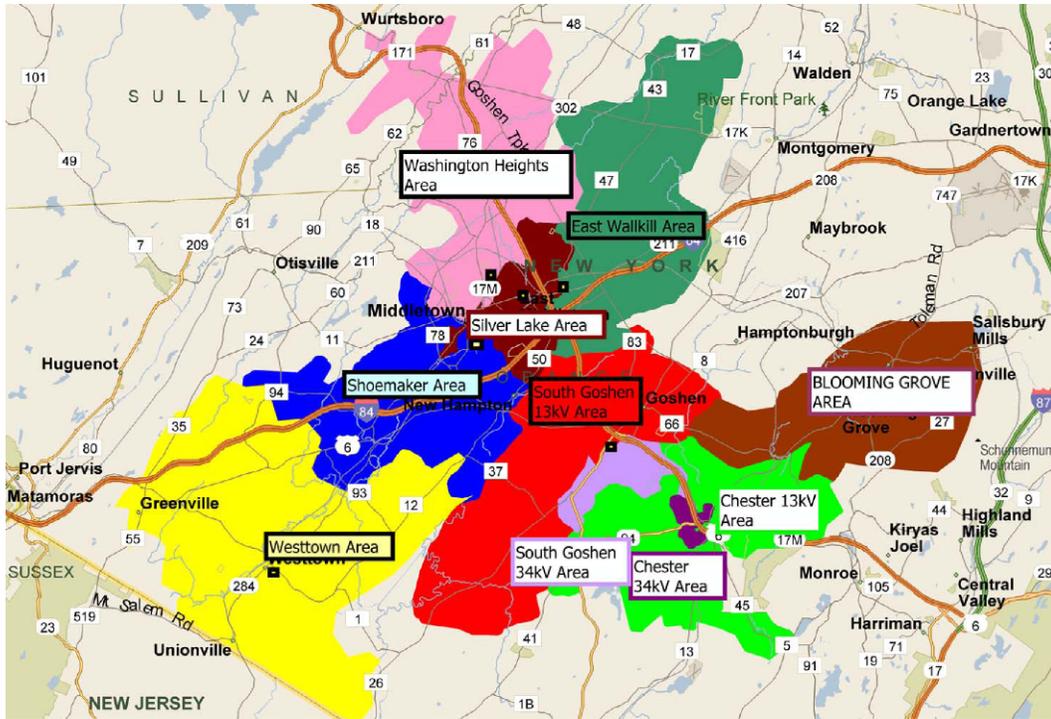
PROJECT NO.	119978
DRAWN:	12/19/2011
DRAWN BY:	SC/JDS
CHECKED BY:	JGC
FILE NAME:	SLC11d200.dwg

**ECHO LAKE ROAD
DISTRIBUTION IMPROVEMENTS**

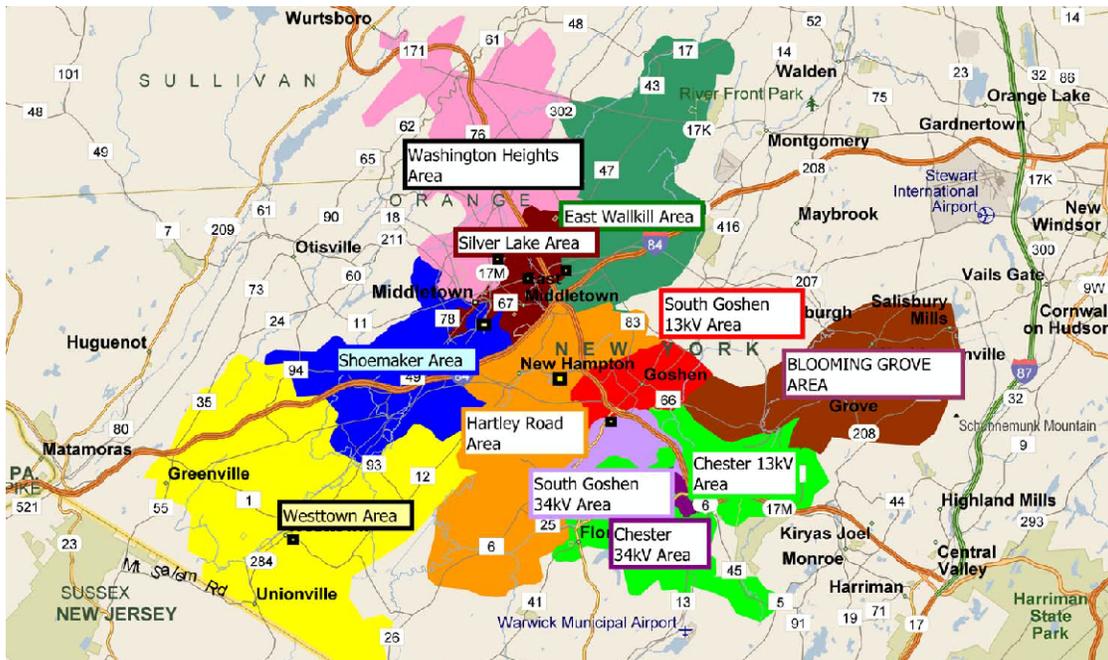
HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE
7

PRIOR TO CONSTRUCTION OF THE HARTLEY ROAD SUBSTATION



AFTER THE CONSTRUCTION OF THE HARTLEY ROAD SUBSTATION



Source: Orange & Rockland Utilities, Inc., 2011

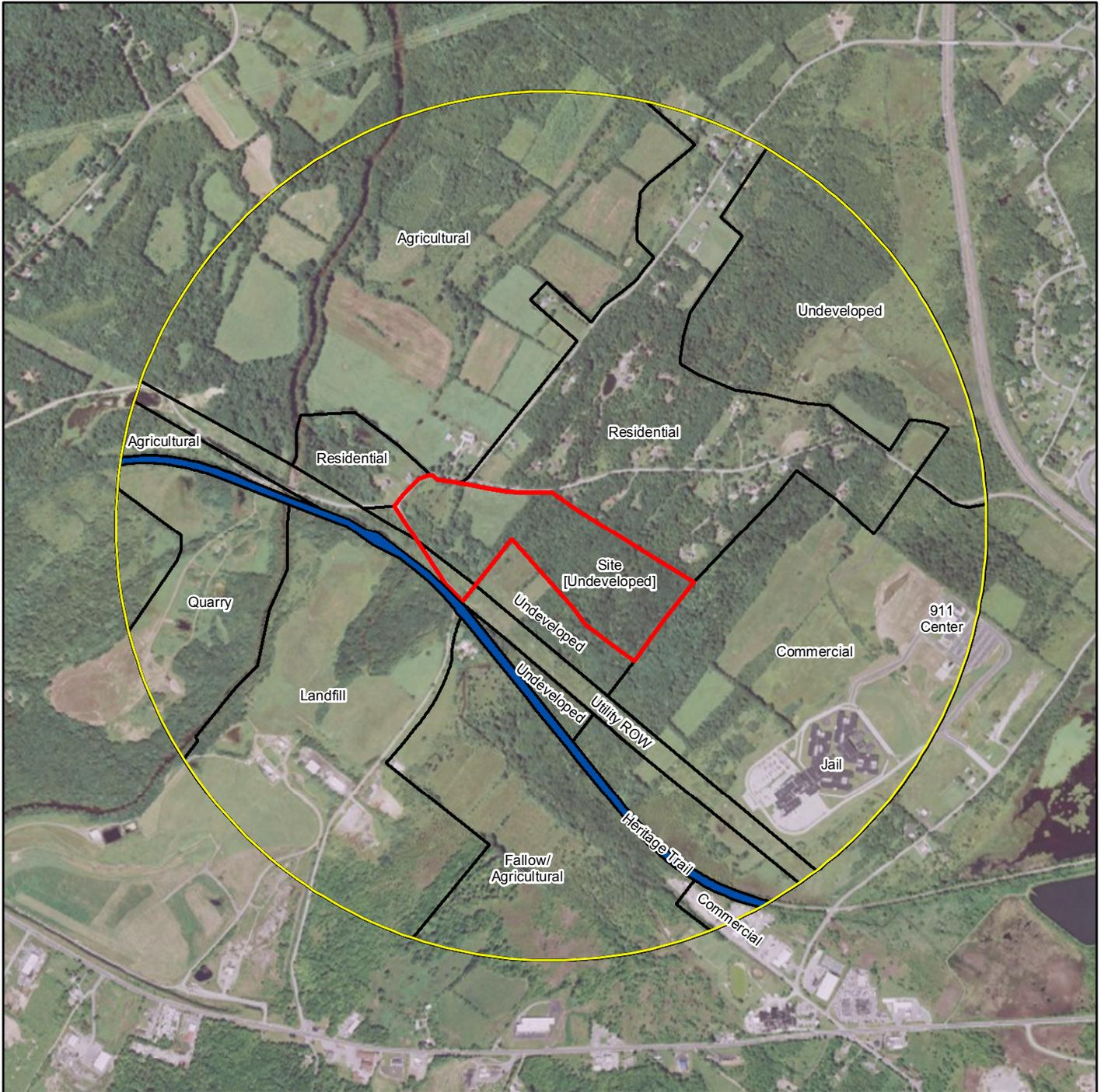


PRE & POST - CONSTRUCTION SUBSTATION COVERAGE AREAS

HARTLEY ROAD SITE
 ORANGE & ROCKLAND UTILITIES, INC.
 TOWN OF GOSHEN
 ORANGE COUNTY, NEW YORK

FIGURE

8

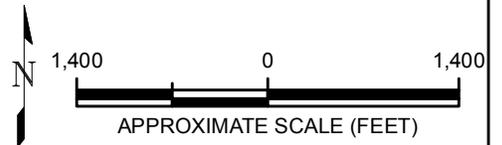


Base Map:
Imagery
from ESRI online Services

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LEGEND

- SITE
- 1/2 MILE RADIUS

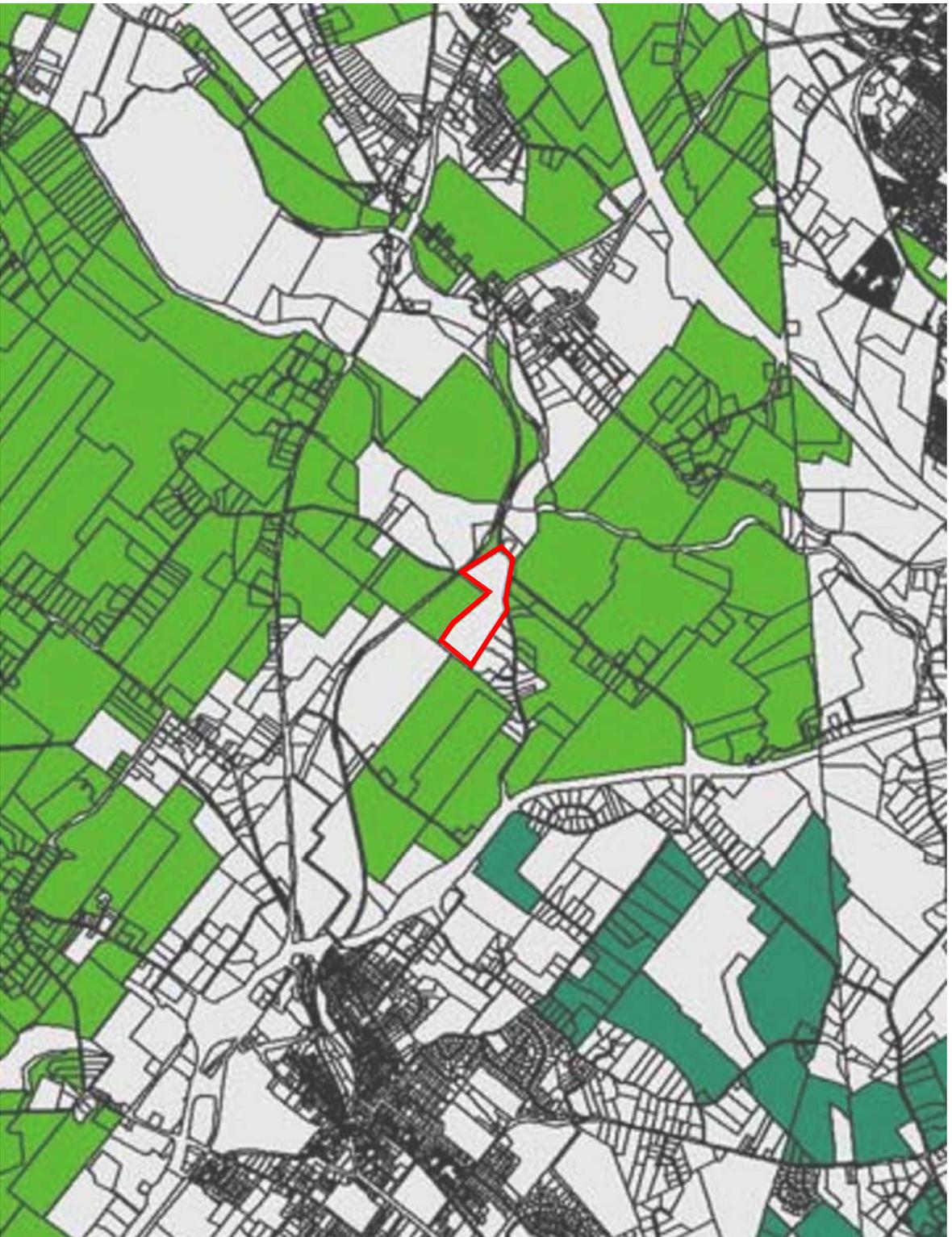


PROJECT NO.	119978
DRAWN:	12/16/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11A212.MXD

LAND USAGE MAP

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE:
9



0 150' 300' 600'

Approximate Scale: 1" = 300'

- Legend**
- Agricultural District 1
 - Agricultural District 2
 - Parcel Boundaries
 - Site

Source: Orange County Agricultural District Map 2010.

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CHECKED BY:	JGC
FILE NAME:	SLC11d211.dwg

AGRICULTURAL DISTRICT MAP

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE
10



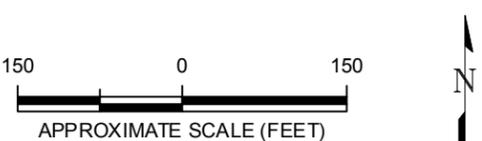
Base Map:
Imagery
from ESRI online Services

Source:
Visual Resource Evaluation, CMX, July 2011

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LEGEND

●	PHOTO No.
■	SUBSTATION POLES
●	POLE/RED BALLOON
●	PROPOSED TOWERS



PROJECT NO.	119978
DRAWN:	12/19/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11A174.MXD

VISUAL ASSESSMENT LOCATIONS
HARTLEY ROAD SITE ORANGE & ROCKLAND UTILITIES, INC. TOWN OF GOSHEN ORANGE COUNTY, NEW YORK

FIGURE:
11



VIEW 1 EXISTING



VIEW 1 PROPOSED



View 1 location is 600 feet west of proposed substation driveway and in front of a residence.

**Figure 12A
SUMMER VIEW 1**

Source: Visual Resource Evaluation, CMX, July 2011



VIEW 2 EXISTING



VIEW 2 PROPOSED



View 2 location is on Owens Road, approximately 100 feet from proposed substation driveway.

**Figure 12B
SUMMER VIEW 2**

Source: Visual Resource Evaluation, CMX, July 2011



VIEW 3 EXISTING



VIEW 3 PROPOSED



View 3 location is approximately 450 feet east of proposed substation driveway along Cheechunk Road.

**Figure 12C
SUMMER VIEW 3**

Source: Visual Resource Evaluation, CMX, July 2011



VIEW 4 EXISTING



VIEW 4 PROPOSED (NO VIEW)



VIEW 5 EXISTING



VIEW 5 PROPOSED



View 5 location is approximately 50 feet north of proposed substation driveway on Cheechunk Road.

**Figure 12E
SUMMER VIEW 5**

Source: Visual Resource Evaluation, CMX, July 2011



VIEW 1 EXISTING



VIEW 1 PROPOSED



VIEW 2 EXISTING



VIEW 2 PROPOSED



View 2 location is on Owens Road, approximately 100 feet from proposed substation driveway.

**Figure 12G
WINTER VIEW 2**

Source: Visual Resource Evaluation, CMX, July 2011



VIEW 3 EXISTING



VIEW 3 PROPOSED



View 3 location is approximately 450 feet east of proposed substation driveway along Cheechunk Road.

**Figure 12H
WINTER VIEW 3**

Source: Visual Resource Evaluation, CMX, July 2011



VIEW 4 EXISTING



VIEW 4 PROPOSED



View 4 location is on Hartley Road, approximately 700 feet southeast of the Cheechunk/Hartley Road intersection.

**Figure 121
WINTER VIEW 4**

Source: Visual Resource Evaluation, CMX, July 2011



VIEW 5 EXISTING



VIEW 5 PROPOSED



View 5 location is approximately 50 feet north of proposed substation driveway on Cheechunk Road.

Figure 12J
WINTER VIEW 5

Source: Visual Resource Evaluation, CMX, July 2011



VIEW 6 EXISTING



VIEW 6 PROPOSED



View 6 location is on Echo Lake Road, approximately 500 feet west of the intersection of Hartley and Cheechunk roads.

**Figure 12K
WINTER VIEW 6**

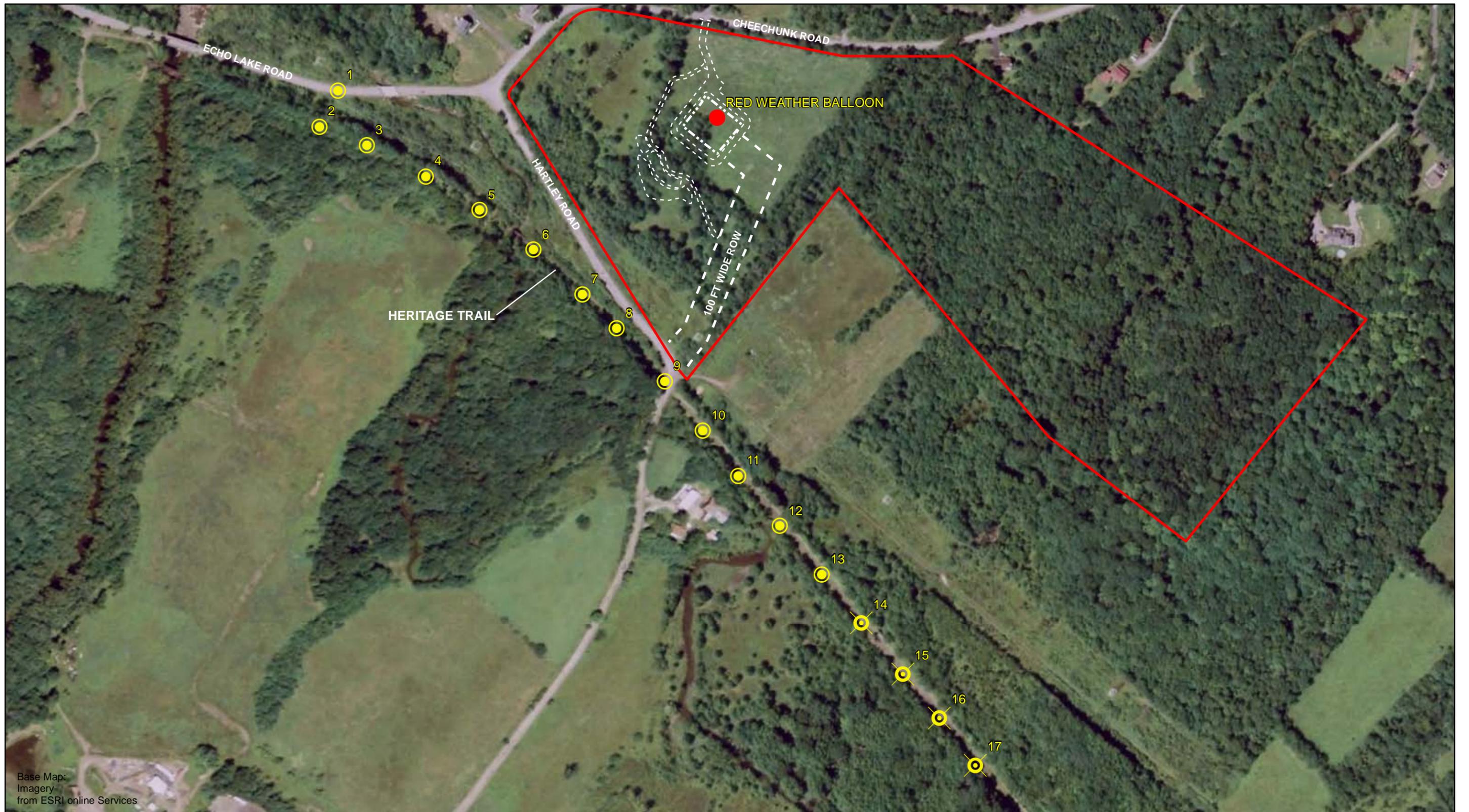
Source: Visual Resource Evaluation, CMX, July 2011



VIEW 7 EXISTING



VIEW 7 PROPOSED



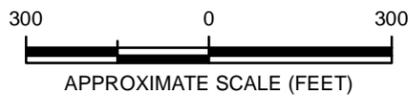
Base Map:
Imagery
from ESRI online Services

Source:
Visual Resource Evaluation, CMX, July 2011

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LEGEND

- POLE RED BALLOON
- VISIBLE
- ⊗ NOT VISIBLE



PROJECT NO.	119978
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DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11A175.MXD

**VISUAL ASSESSMENT LOCATIONS
ALONG HERITAGE TRAIL**

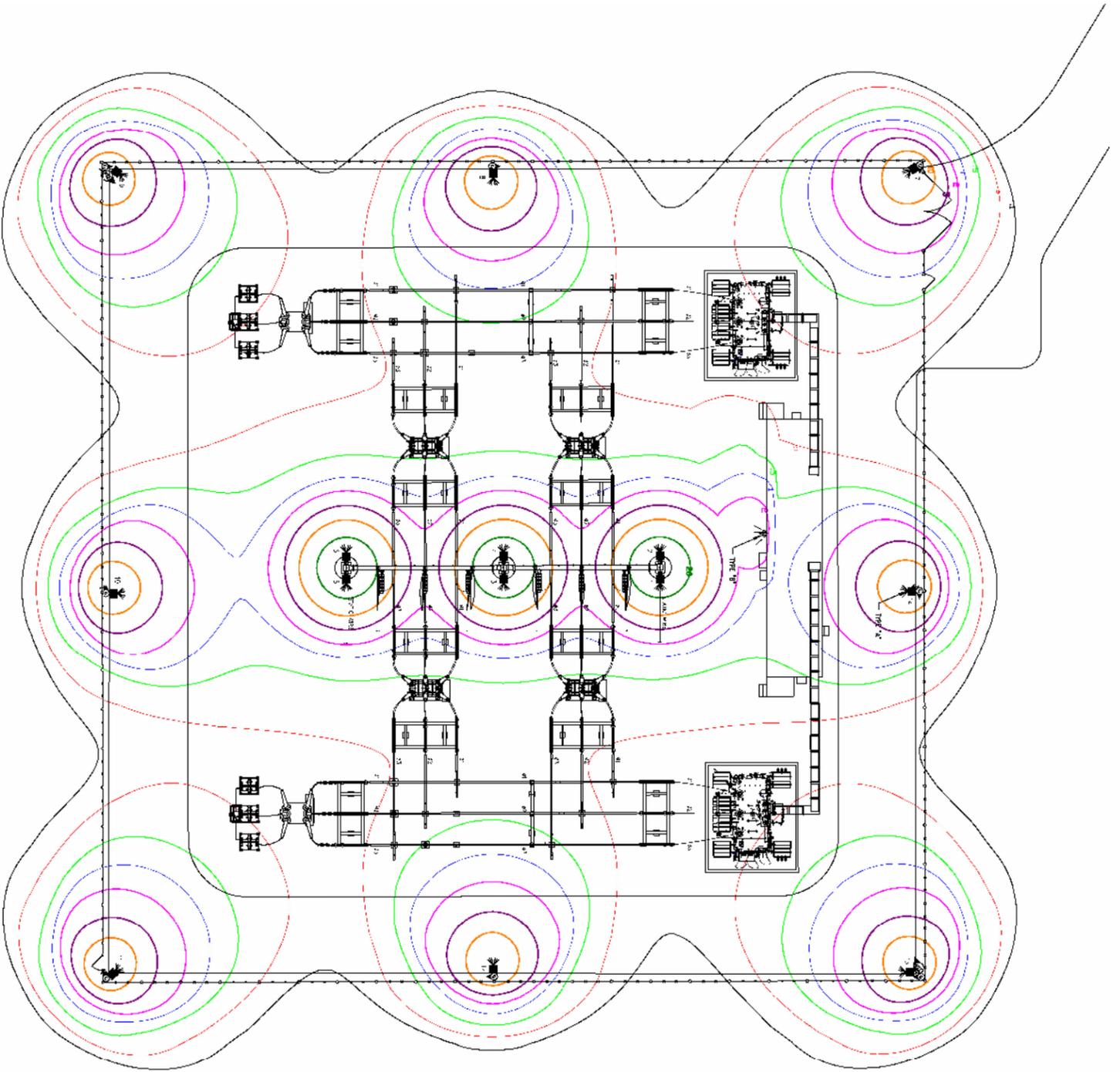
HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE:
13

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Source:
Lighting Plan, ORU, 2011



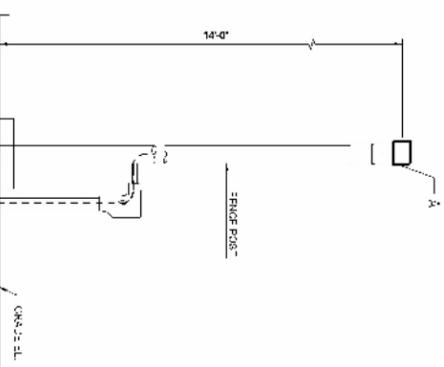
Luminaire Chart

Label	Qty	Catalog no.	Description	Lamp	Lumens	Watts
A	14	Pole Mounted	LEDTRONICS	LED Floodlights	7383	147
B	1	Wall Mounted	Cooper Lighting	Lumark	6300	70

Luminaire Locations

No.	Label	x	y	z	Orientation	Tilt
L-1	A	0	0	14	0	0
L-2	A	0	0	14	180	0
L-3	A	0	40	14	0	0
L-4	A	0	40	14	180	0
L-5	A	0	-40	14	0	0
L-6	A	0	-40	14	180	0
L-7	A	-102	106	14	315	30
L-8	A	-102	-3	14	0	30
L-9	A	-102	-103	14	45	30
L-10	A	5	-103	14	90	30
L-11	A	104	-103	14	135	30
L-12	A	104	-3	14	180	30
L-13	A	104	106	14	225	30
L-14	A	5	106	14	270	30
L-15	B	-8.7	67	10	270	0

Hartley Road Lighting



FOOTCANDLE LEVEL	FOOTCANDLE
RING COLOR	FOOTCANDLE
Orange	10
Yellow	5
Green	2
Blue	1
Purple	.5
Red	.2
Black	.1

LIGHTING PLAN

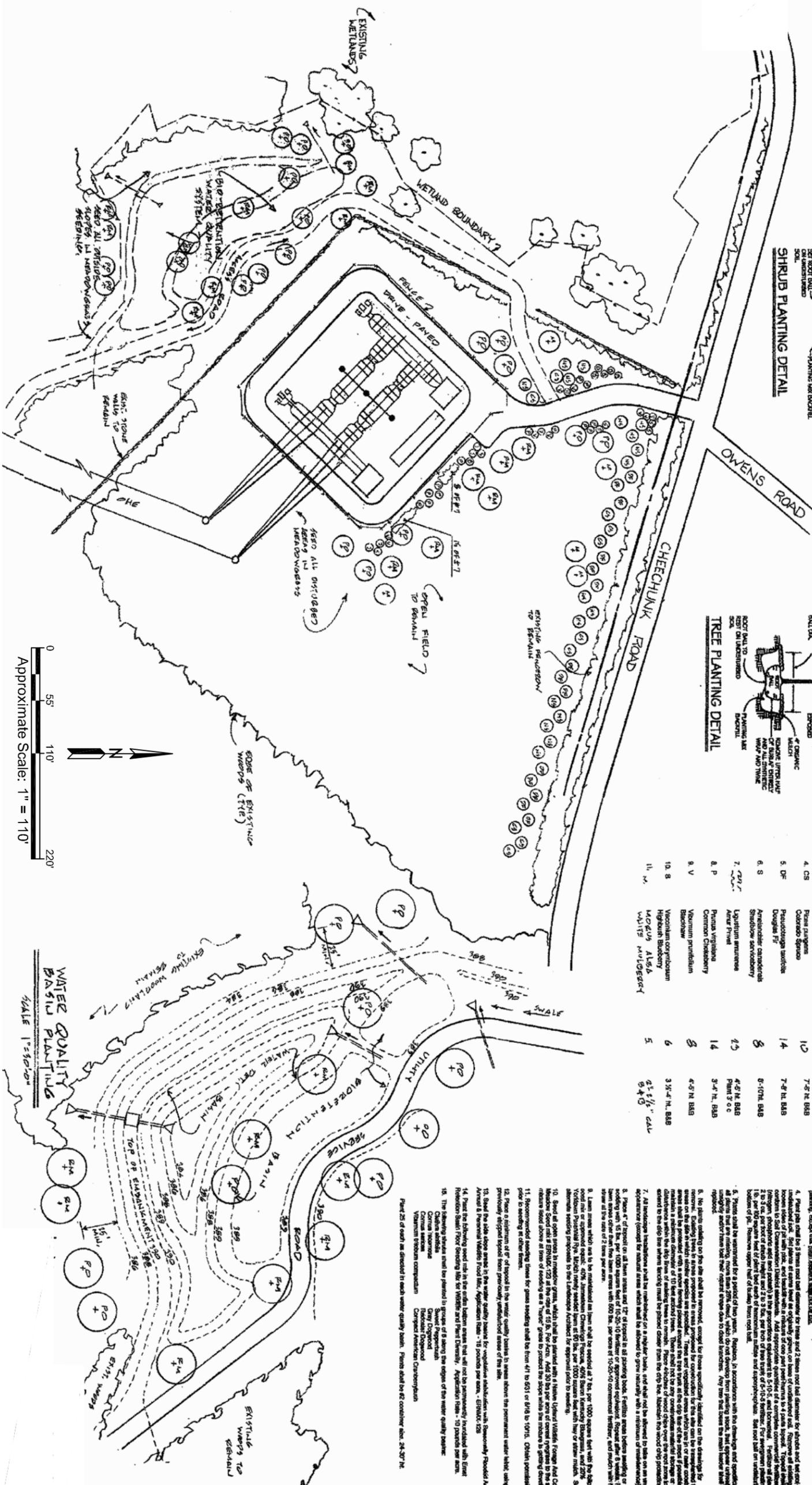
PROJECT NO. 119978
DRAWN: 11/01/2011
DRAWN BY: SC
CHECKED BY: JGC
FILE NAME: SLC11d200.dwg

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE

14





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Source: Planting Plan - Robert G. Torgersen Landscape Architecture & Environmental Services, 2011



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DRAWN BY: SC
CHECKED BY: JGC
FILE NAME: SLC11d200.dwg

LANDSCAPE PLAN
HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
ORANGE COUNTY, NEW YORK



Source:
CMX, 2011

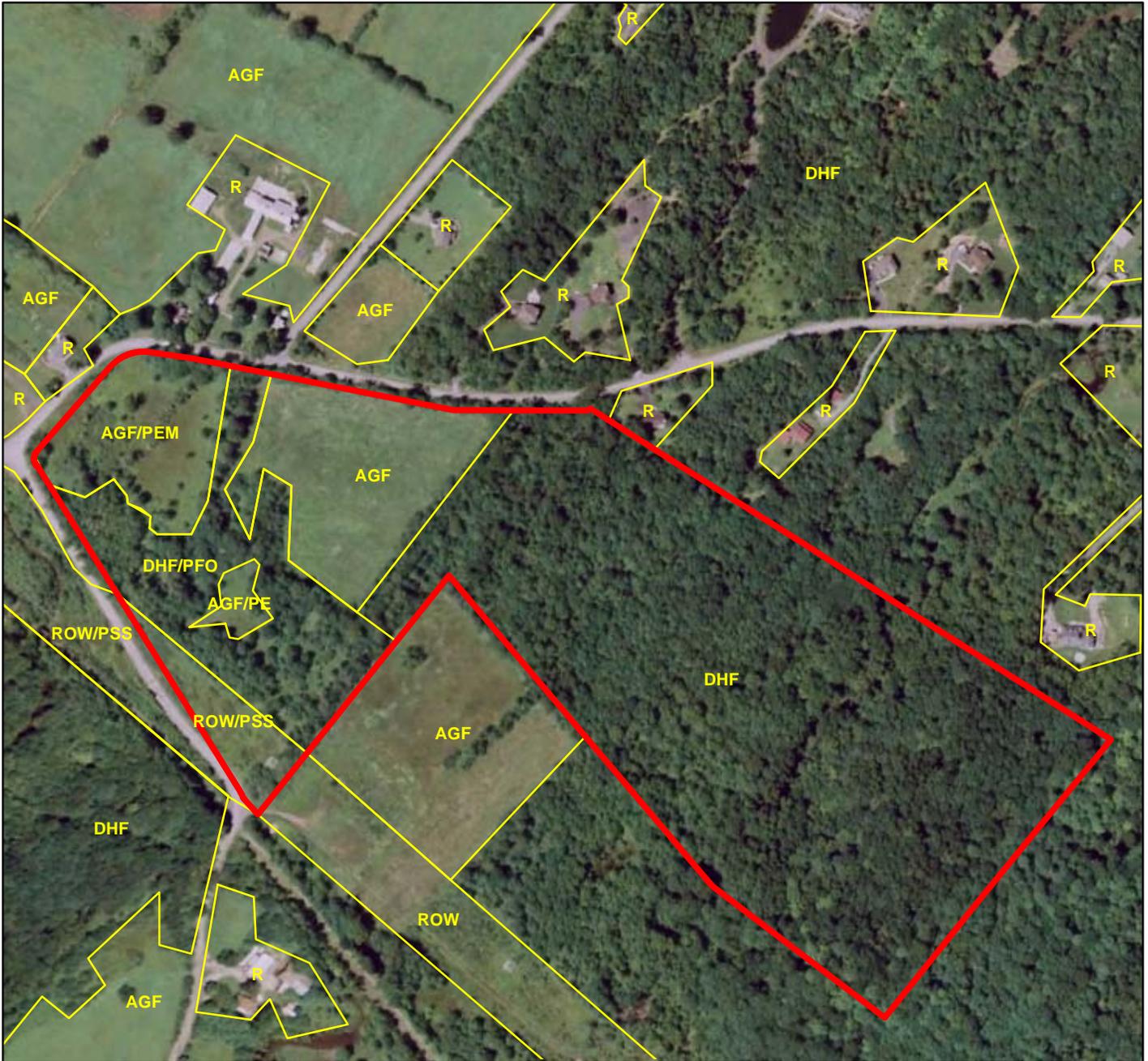
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PROJECT NO.	119978
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DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d238.dwg

VIEW 5 10 YEARS POST-CONSTRUCTION
HARTLEY ROAD SITE ORANGE & ROCKLAND UTILITIES, INC. TOWN OF GOSHEN ORANGE COUNTY, NEW JERSEY

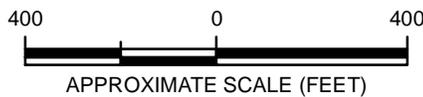
FIGURE	16
--------	----



Sources:
Soil Survey Geographic (SSURGO)
database for Orange County, New York

LEGEND

- PROJECT AREA
- ROW RIGHT OF WAY
- R RESIDENTIAL
- AGF AGRICULTURAL FIELD (ACTIVE OR FALLOW)
- DHF DECIDUOUS HARDWOOD FOREST
- PFO PALUSTRINE FORESTED WETLAND
- PEM PALUSTRINE EMERGENT WETLAND
- PSS PALUSTRINE SCRUB-SHRUB WETLAND



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PROJECT NO.	119978
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DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11A190.MXD

VEGETATIVE COVER

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

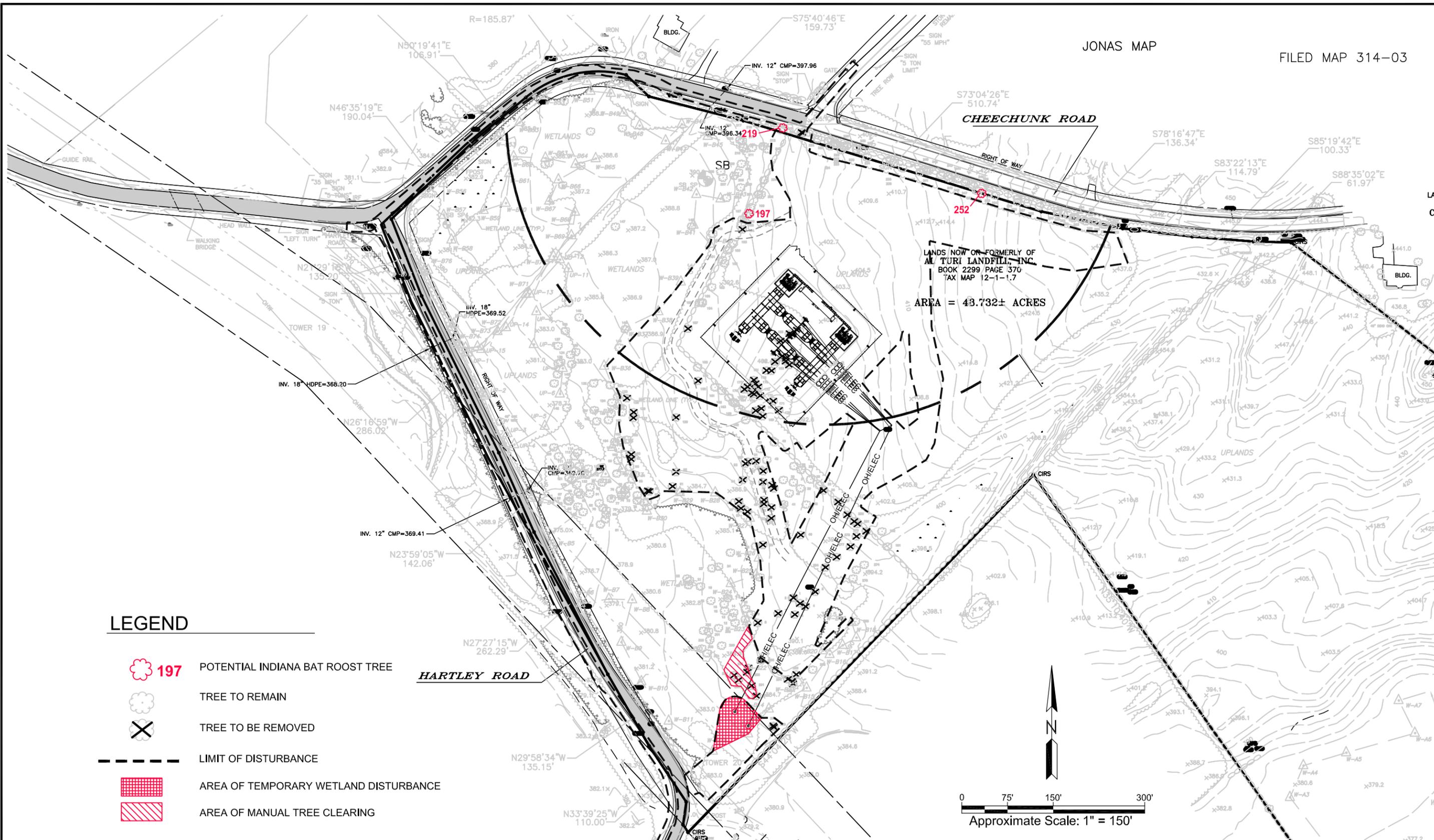
FIGURE:
17

PLOTTED: 19 Dec 2011, 2:09pm, JSala

CAD FILE: C:\Users\JSala\Documents\Archive_PROJECTS\119978\ LAYOUT: FIG 18
SALT LAKE CITY, UT

JONAS MAP

FILED MAP 314-03



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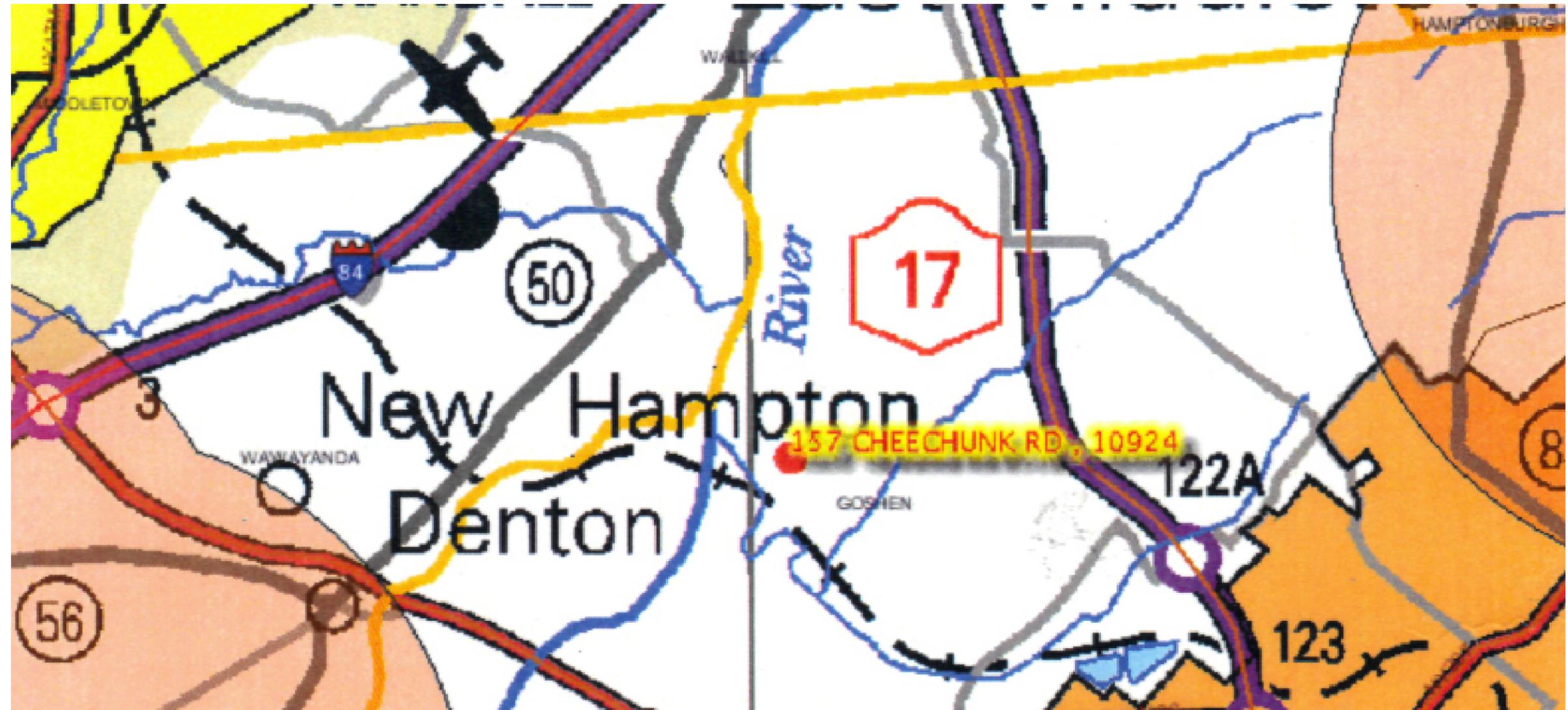
Source:
ORU, October 2011.



PROJECT NO.	119978
DRAWN:	12/19/2011
DRAWN BY:	SC/JDS
CHECKED BY:	JGC
FILE NAME:	SLC11d266.dwg

TREE PLAN	
HARTLEY ROAD SITE ORANGE & ROCKLAND UTILITIES, INC. TOWN OF GOSHEN ORANGE COUNTY, NEW YORK	

FIGURE
18



LEGEND

-  Classified Water Bodies
-  Rare Plants and Rare Animals
-  Significant Natural Communities
-  Natural Communities Vicinity

Source:
NYSDEC Environmental Resource Mapper, 2011

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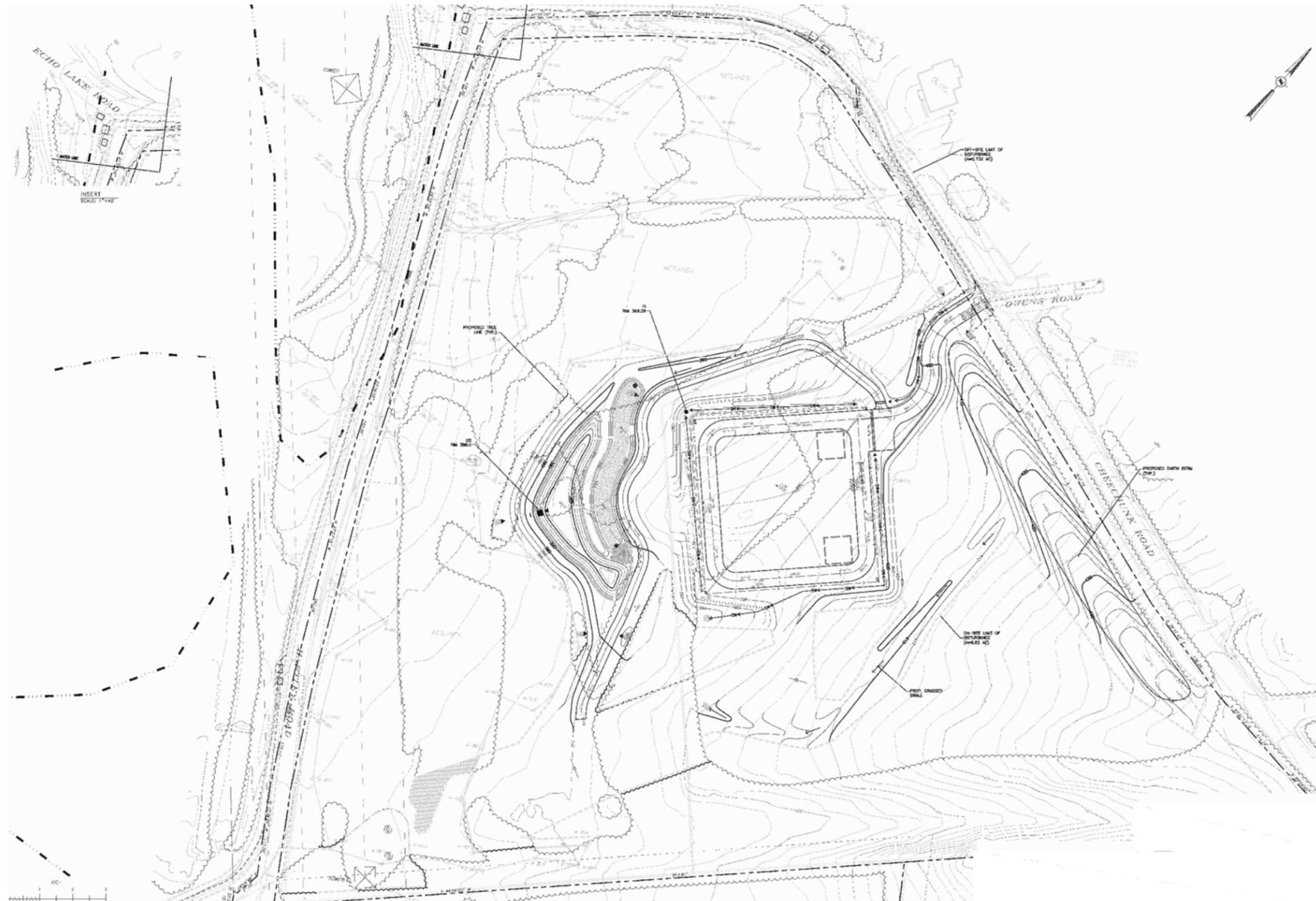



PROJECT NO.	119978
DRAWN:	12/20/2011
DRAWN BY:	A. Makovics
CHECKED BY:	JGC
FILE NAME:	SLC11AXXX_Figure18A.MXD

NYSDEC-Listed Species Habitat Map

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE
18A



LEGEND	
	TREE > 12" DBH
	WOODED AREA
	EXISTING STONE WALLS
	PERMANENT WETLAND IMPACTS
	TEMPORARY WETLAND IMPACT
	LIMIT OF DISTURBANCE
	SCENIC ROAD CORRIDOR OVERLAY DISTRICT BOUNDARY



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Source:
ORU, October 2011.



PROJECT NO.	119978
DRAWN:	10/28/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d270.dwg

GRADING PLAN

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE

19



Legend



-  100' Buffer around NYSDEC Wetlands
-  Project Area
-  NWI Wetlands
-  NYSDEC Wetlands
-  Stream

WETLAND CLASSIFICATIONS:

- R2UBH - Riverine, Lower Perennial, Unconsolidated Bottom, Diked/Impounded
- R3UBH - Riverine, Upper Perennial, Unconsolidated Bottom, Diked/Impounded
- PUBHx - Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

Sources:
 National Wetlands Inventory Map, U.S. Fish and Wildlife Service, National Wetlands Inventory, St. Petersburg, Florida, 1981-2006.
 New York State Regulatory Freshwater Wetlands for Orange County, New York State Department of Conservation (NYSDEC), Latham, NY 1999.

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 <p>KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com</p>	PROJECT NO. 119978	<p>NWI & NYSDEC WETLANDS MAP</p>	<p>FIGURE: 20</p>
	DRAWN: 10/24/2011		
	DRAWN BY: SC	<p>HARTLEY ROAD SITE ORANGE & ROCKLAND UTILITIES, INC. TOWN OF GOSHEN ORANGE COUNTY, NEW YORK</p>	
	CHECKED BY: JGC		
FILE NAME: SLC11A188.MXD			

PLOTTED: 24 Oct 2011, 3:48pm, SContreras

CAD FILE: L:\2011\Projects\119978\ LAYOUT: FIG 21
SALT LAKE CITY, UT



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BASE MAP:
from C.T. Male Associates, P.C.
Wetland Delineation by CMX, 2010

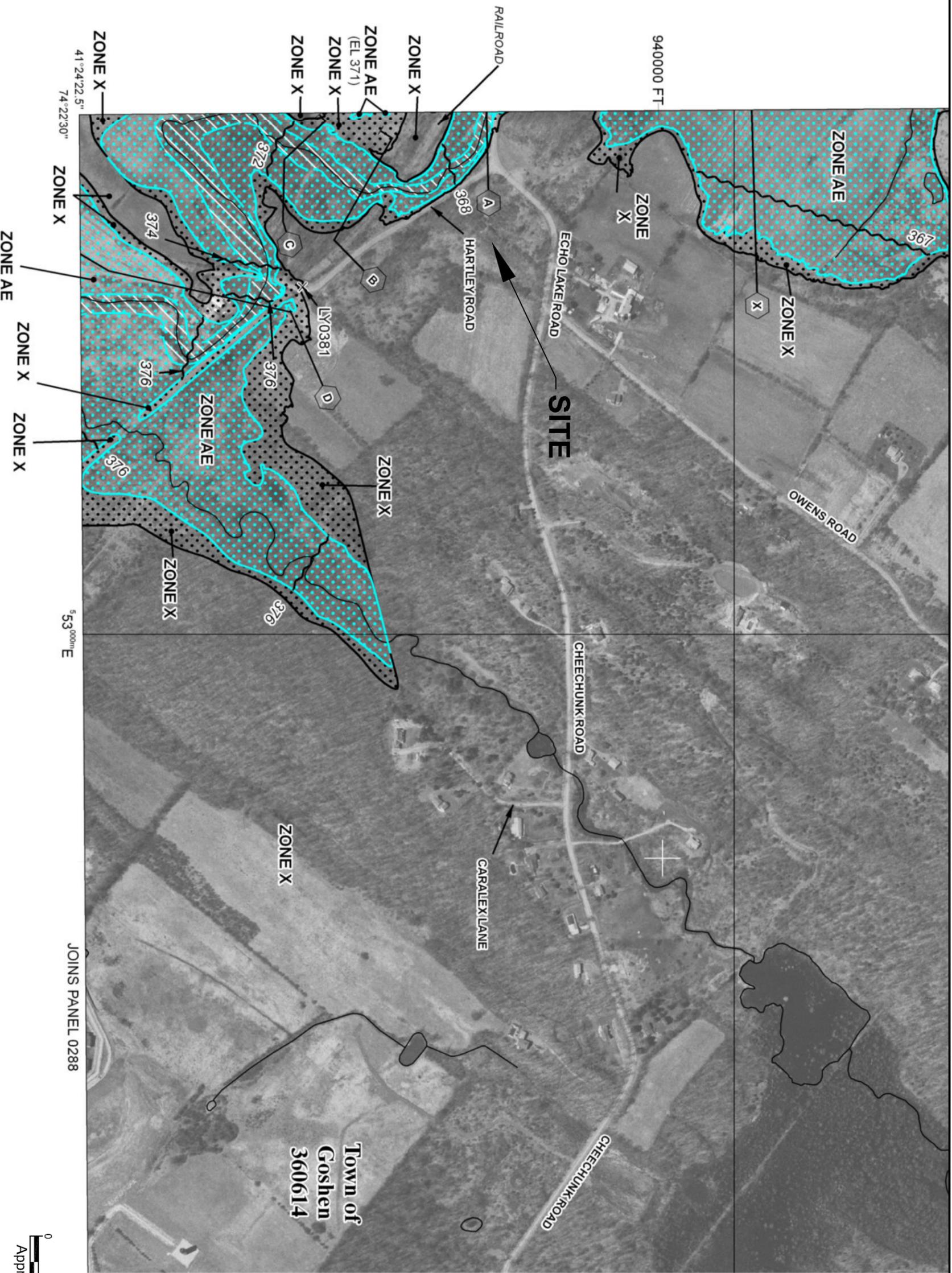
KLEINFELDER
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www.kleinfelder.com

PROJECT NO.	119978
DRAWN:	10/24/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d206.dwg

ONSITE WETLAND DELINEATION

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE
21



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Source:
 SWPPP, CNX, 2011



PROJECT NO.	119978
DRAWN:	10/24/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d263.dwg

FEMA FLOODPLAIN MAP
 HARTLEY ROAD SITE
 ORANGE & ROCKLAND UTILITIES, INC.
 TOWN OF GOSHEN
 ORANGE COUNTY, NEW YORK

FIGURE

22

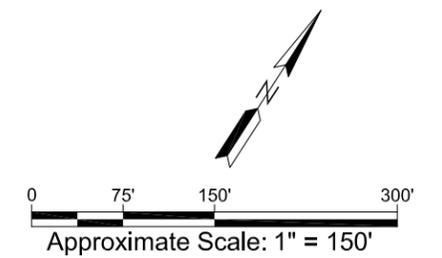
PLOTTED: 03 Nov 2011, 4:25pm, SContreras

CAD FILE: L:\2011\Projects\119978\ LAYOUT: FIG 23
SALT LAKE CITY, UT



LEGEND

EXISTING DRAINAGE AREA



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Source:
Existing Conditions Drainage Area Map, CMX, 2011.



PROJECT NO.	119978
DRAWN:	11/03/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d225.dwg

EXISTING DRAINAGE AREA

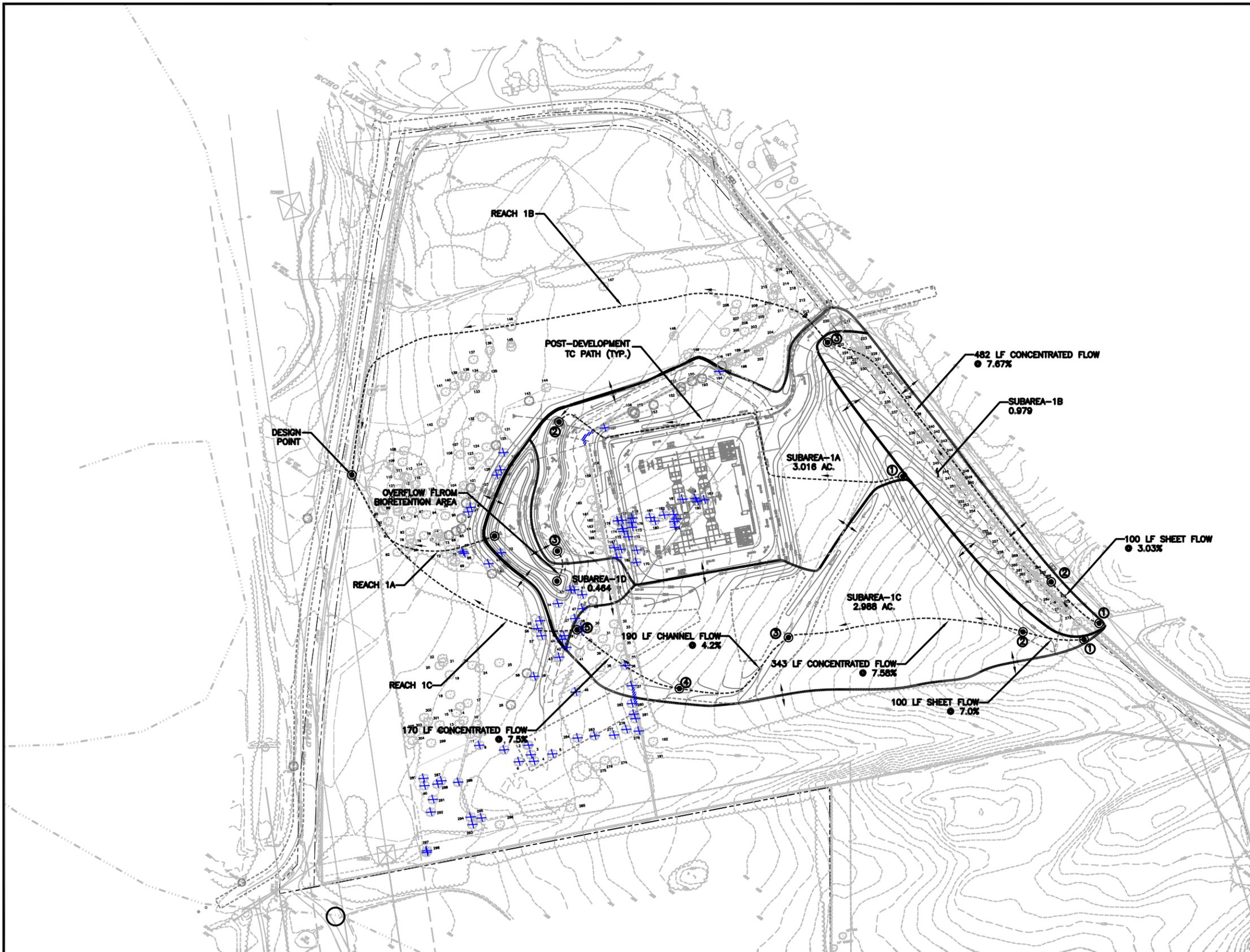
HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE

23

PLOTTED: 04 Nov 2011, 8:51am, SContreras

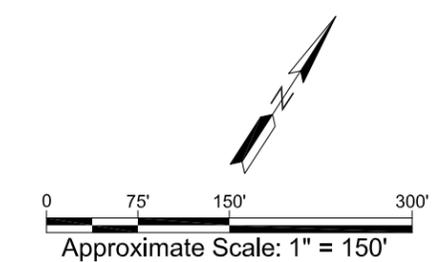
CAD FILE: L:\2011\Projects\119978\ LAYOUT: FIG 24
SALT LAKE CITY, UT



LEGEND

— POST-CONSTRUCTION DRAINAGE AREAS

⊕ TREE TO BE REMOVED



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Source:
Proposed Conditions Drainage Area Map, CMX, 2011.

PROJECT NO.	119978
DRAWN:	11/04/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d225.dwg

POST-CONSTRUCTION DRAINAGE AREAS

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE
24

PLOTTED: 01 Nov 2011, 10:46am, SContreras

CAD FILE: L:\2011\Projects\119978\ LAYOUT: FIG.25
SALT LAKE CITY, UT

TEMPORARY SEDIMENT BASIN
(TO BECOME PERMANENT
DRY-EXTENDED STORMWATER
DETENTION BASIN)

SCENIC ROAD
OVERLAY
BOUNDARY

CONSTRUCTION ENTRANCE

STAGING AREA

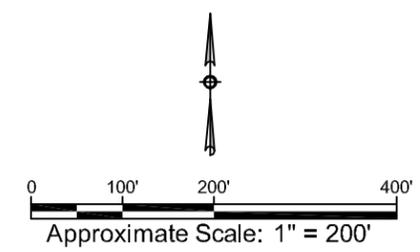
TEMPORARY SOIL
STOCKPILE AREA

SNOW
STOCKPILE

CONSTRUCTION
ENTRANCE

LEGEND

-  TREE TO BE REMOVED
-  TREE TO REMAIN (WITHIN PHASE I AREA)
-  WOODED AREA
-  EXISTING STONE WALLS
-  PHASE I AREA
-  SNOW STOCKPILE
-  HAYBALES
-  SILT FENCE
-  CHECK DAMS



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Source:
CMX, October 2011.



PROJECT NO.	119978
DRAWN:	11/01/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d269.dwg

EROSION AND SEDIMENT CONTROL PLAN

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

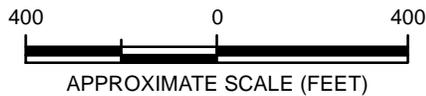
FIGURE
25



Sources:
Soil Survey Geographic (SSURGO)
database for Orange County, New York

LEGEND

Project Area



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SOILS LIST:

- Ab - Alden silt loam
- AdA - Allard silt loam, 0 to 3 percent slopes
- AdB - Allard silt loam, 3 to 8 percent slopes
- BnC - Bath-Nassau channery silt loams, 8 to 15 percent slopes
- CnB - Chenango gravelly silt loam, 3 to 8 percent slopes
- ErA - Erie gravelly silt loam, 0 to 3 percent slopes
- ErB - Erie gravelly silt loam, 3 to 8 percent slopes
- Fd - Fredon loam
- HoC - Hoosic gravelly sandy loam, 8 to 15 percent slopes
- Ma - Madalin silt loam
- MdB - Mardin gravelly silt loam, 3 to 8 percent slopes
- MdC - Mardin gravelly silt loam, 8 to 15 percent slopes
- My - Middlebury silt loam
- Pg - Pits, gravel
- RbA - Rhinebeck silt loam, 0 to 3 percent slopes
- RSD - Rock outcrop-Nassau complex, hilly
- SXC - Swartwood and Mardin very stony soils, sloping
- UnB - Unadilla silt loam, 0 to 8 percent slopes

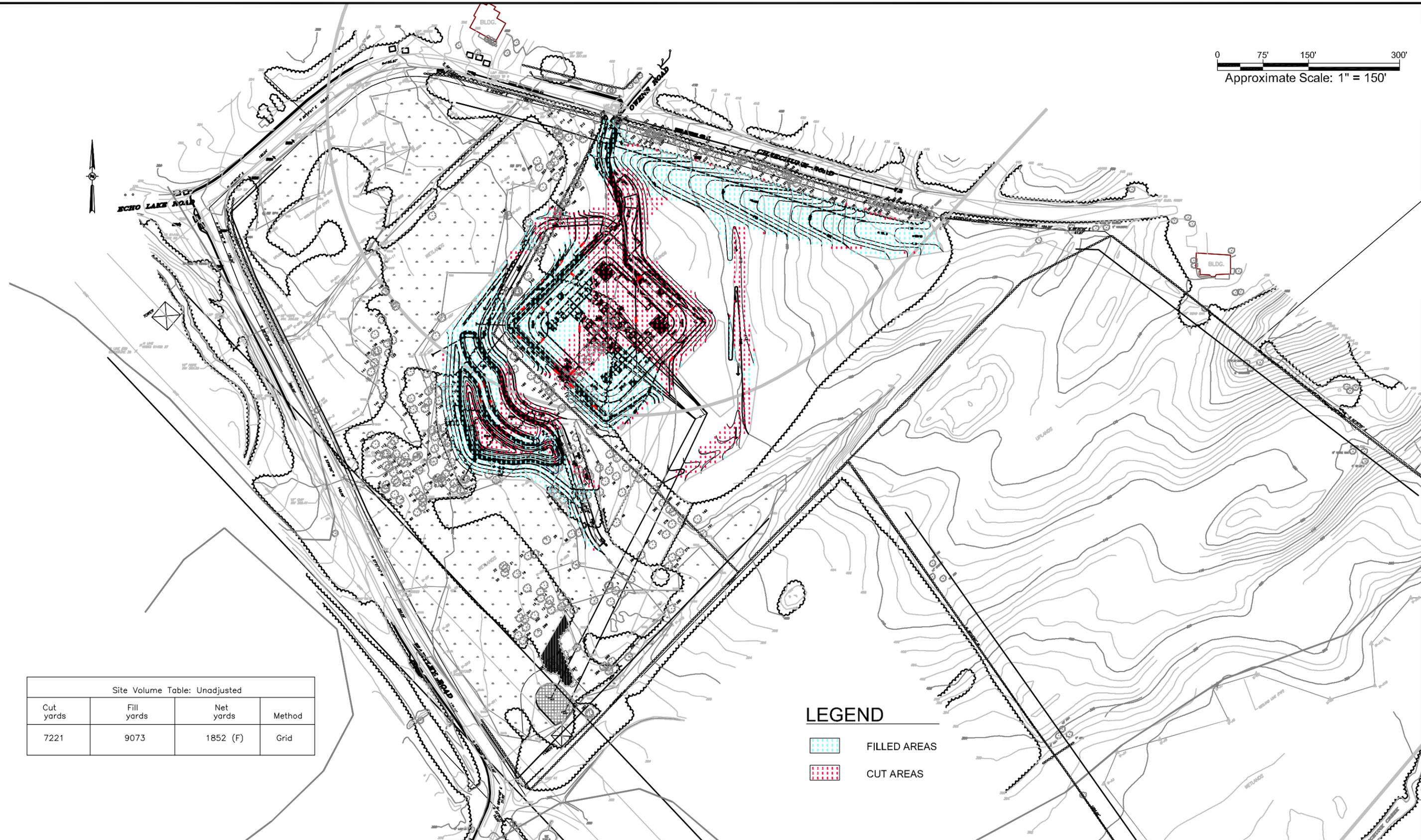
PROJECT NO.	119978
DRAWN:	10/24/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11A189.MXD

SSURGO SOILS MAP

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE:

26



Site Volume Table: Unadjusted			
Cut yards	Fill yards	Net yards	Method
7221	9073	1852 (F)	Grid

LEGEND

- FILLED AREAS
- CUT AREAS

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Source:
CMX - Cut and Fill Plan, CMX, 2011.

PROJECT NO.	119978
DRAWN:	11/04/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d218_new.dwg

CUT AND FILL PLAN

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

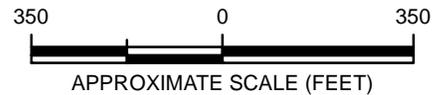


Base Map:
Imagery
from ESRI online Services

LEGEND

 PROJECT AREA

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DRAWN:	10/24/2011
DRAWN BY:	SC
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FILE NAME:	SLC11A187.MXD

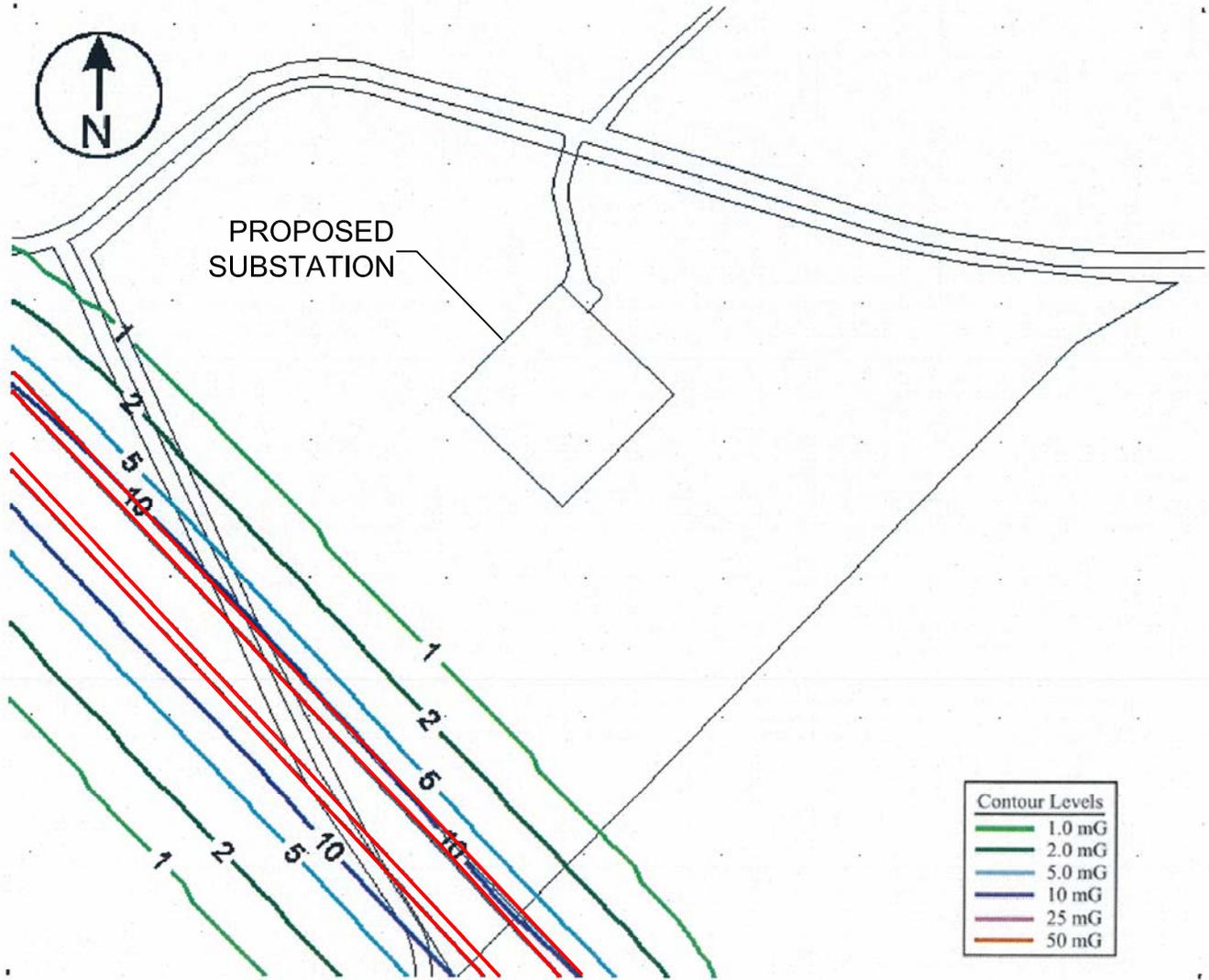
**NATIONAL REGISTER
OF HISTORIC PLACES -
ELIGIBLE HOME LOCATION**

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE:
28



PROPOSED
SUBSTATION



Contour Levels	
	1.0 mG
	2.0 mG
	5.0 mG
	10 mG
	25 mG
	50 mG

Overhead Transmission Lines in Right of Way

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SOURCE:
MAGNETIC FIELD MODELING ASSESSMENT REPORT
ENERTECH CONSULTANTS, 2010



PROJECT NO.	119978
DRAWN:	10/24/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d214.dwg

**EXISTING
ELECTROMAGNETIC FIELD**

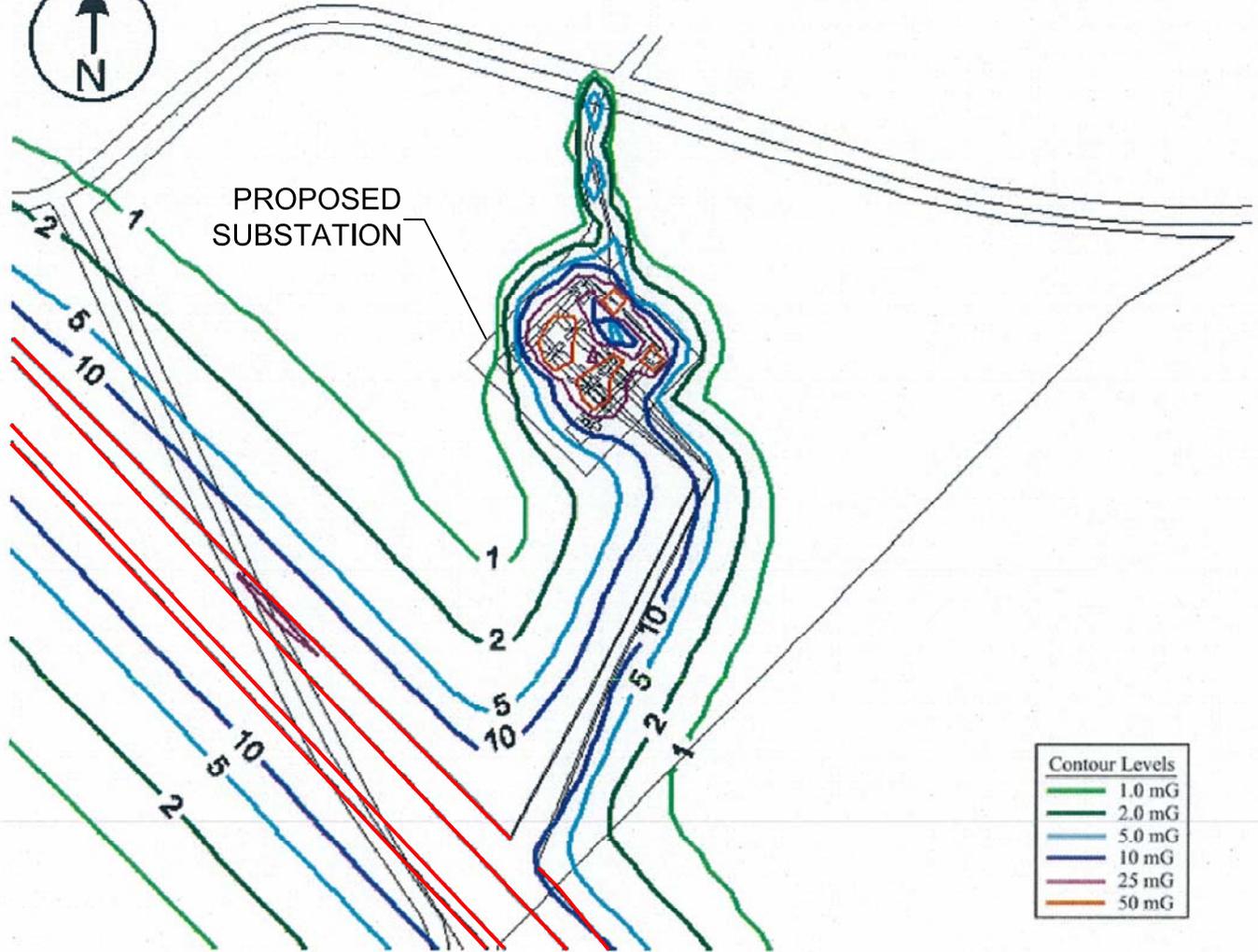
HARTLEY ROAD SITE
ORANGE AND ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE:

29



PROPOSED
SUBSTATION



Contour Levels	
—	1.0 mG
—	2.0 mG
—	5.0 mG
—	10 mG
—	25 mG
—	50 mG

— Overhead Transmission Lines in Right of Way

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SOURCE:
MAGNETIC FIELD MODELING ASSESSMENT REPORT
ENERTECH CONSULTANTS, 2010



PROJECT NO.	119978
DRAWN:	10/24/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d214.dwg

**POST-CONSTRUCTION
ELECTROMAGNETIC FIELD**

HARTLEY ROAD SITE
ORANGE AND ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE:

30



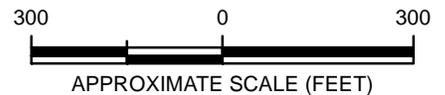
Base Map:
Imagery
from ESRI online Services

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LEGEND

 SITE

Source:
Analysis of Acoustical Impact Report
OAA, 2010



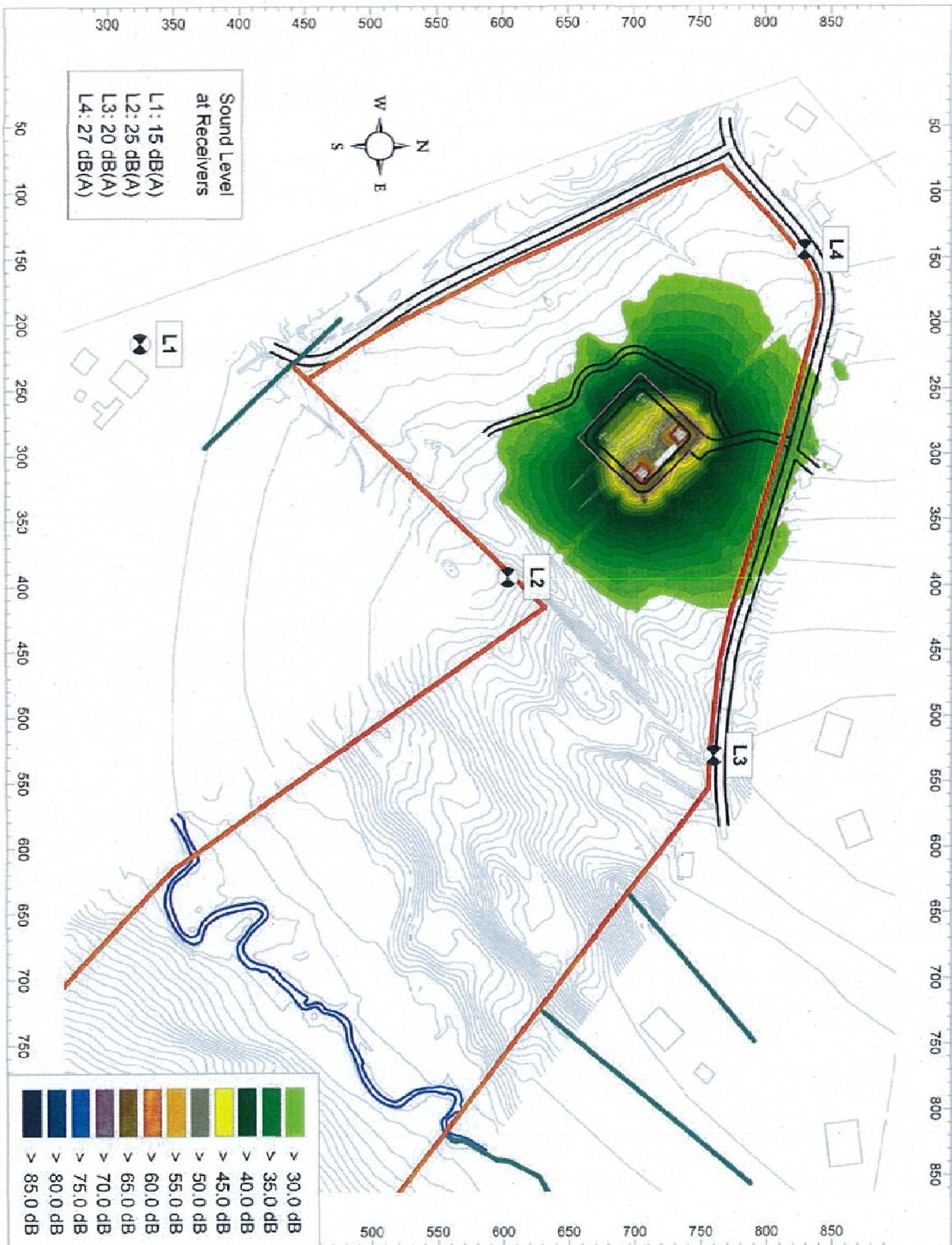

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PROJECT NO.	119978
DRAWN:	10/24/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11A173.MXD

**ACOUSTICAL
MONITORING LOCATIONS**

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE:
31



Source: Analysis of Acoustical Impact, OAA, 2010.
 Note: Sound emission contours at 5 feet above grade with all transformer cooling fans on.

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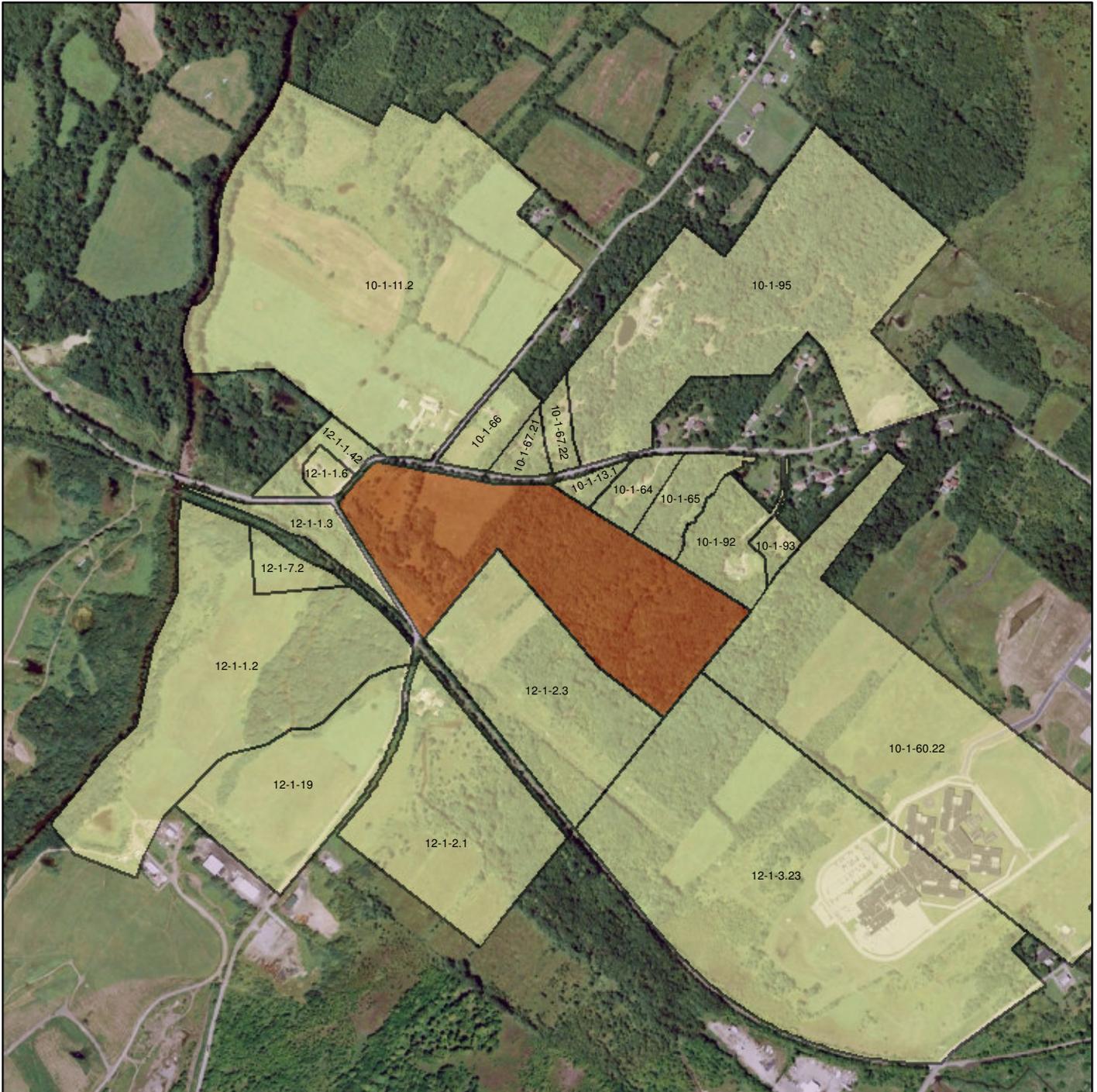


PROJECT NO.	119978
DRAWN:	10/25/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d211.dwg

POST-CONSTRUCTION A-WEIGHTED SOUND EMISSION CONTOUR MAP

HARTLEY ROAD SITE
 ORANGE & ROCKLAND UTILITIES, INC.
 TOWN OF GOSHEN
 ORANGE COUNTY, NEW YORK

FIGURE 32



Base Map:
Imagery
from ESRI online Services

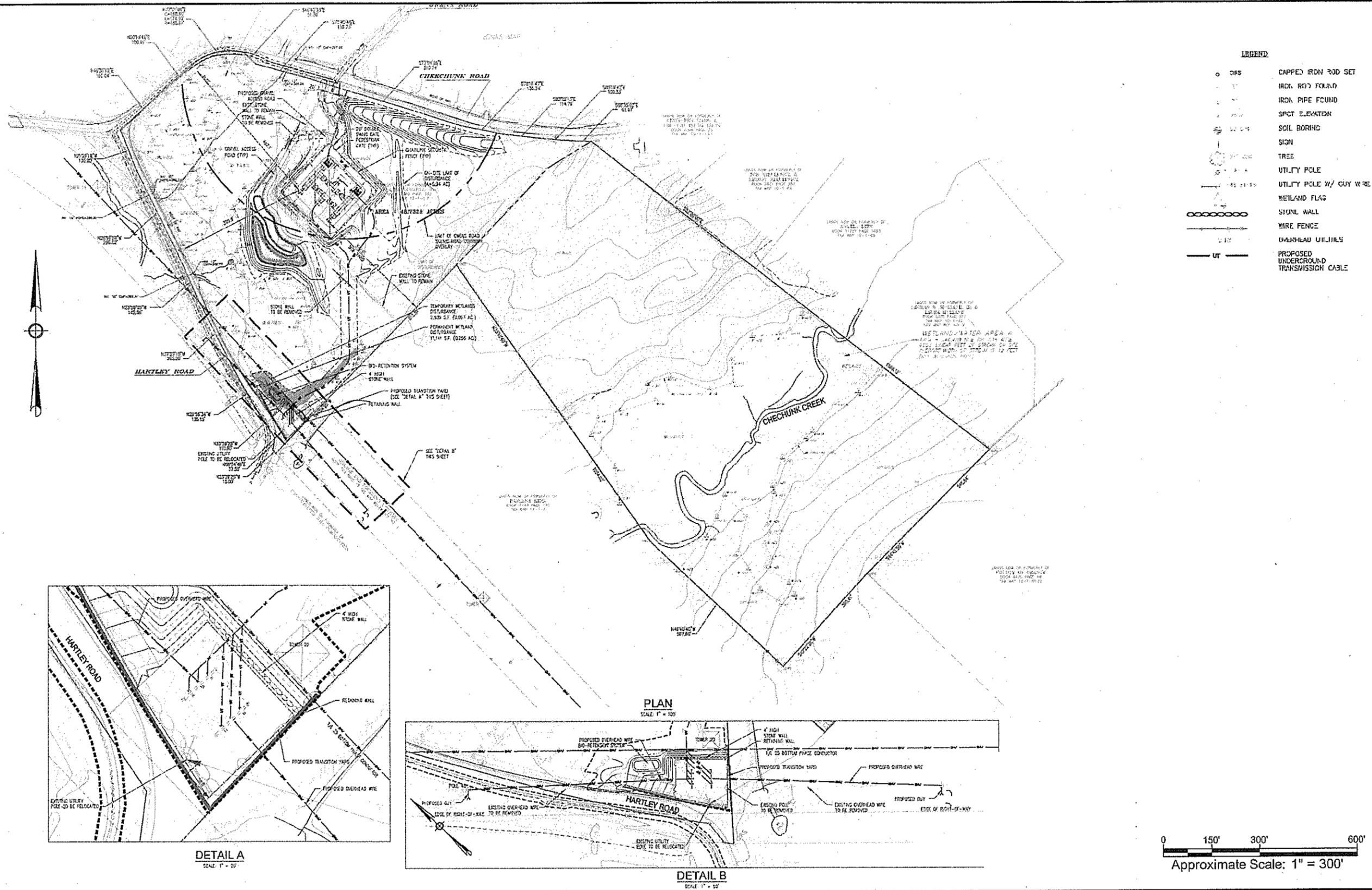
LEGEND

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- SITE
- PROPERTIES WITHIN 300 FEET OF SITE



	PROJECT NO. 119978	<p>PROPERTIES WITHIN 300 FEET OF SITE</p> <p>HARTLEY ROAD SITE ORANGE & ROCKLAND UTILITIES, INC. TOWN OF GOSHEN ORANGE COUNTY, NEW YORK</p>	FIGURE:
	DRAWN: 10/25/2011		33
	DRAWN BY: SC		
	CHECKED BY: JGC		
	FILE NAME: SLC11A161.MXD		



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Source:
ORU, October 2011.



PROJECT NO.	119978
DRAWN:	10/26/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d267_image.dwg

ALTERNATIVE FOR UNDERGROUND TRANSMISSION INTO SUBSTATION

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

PLOTTED: 26 Oct 2011, 12:25pm, SContreras

CAD FILE: L:\2011\Projects\119978\ LAYOUT: FIG 35
SALT LAKE CITY, UT



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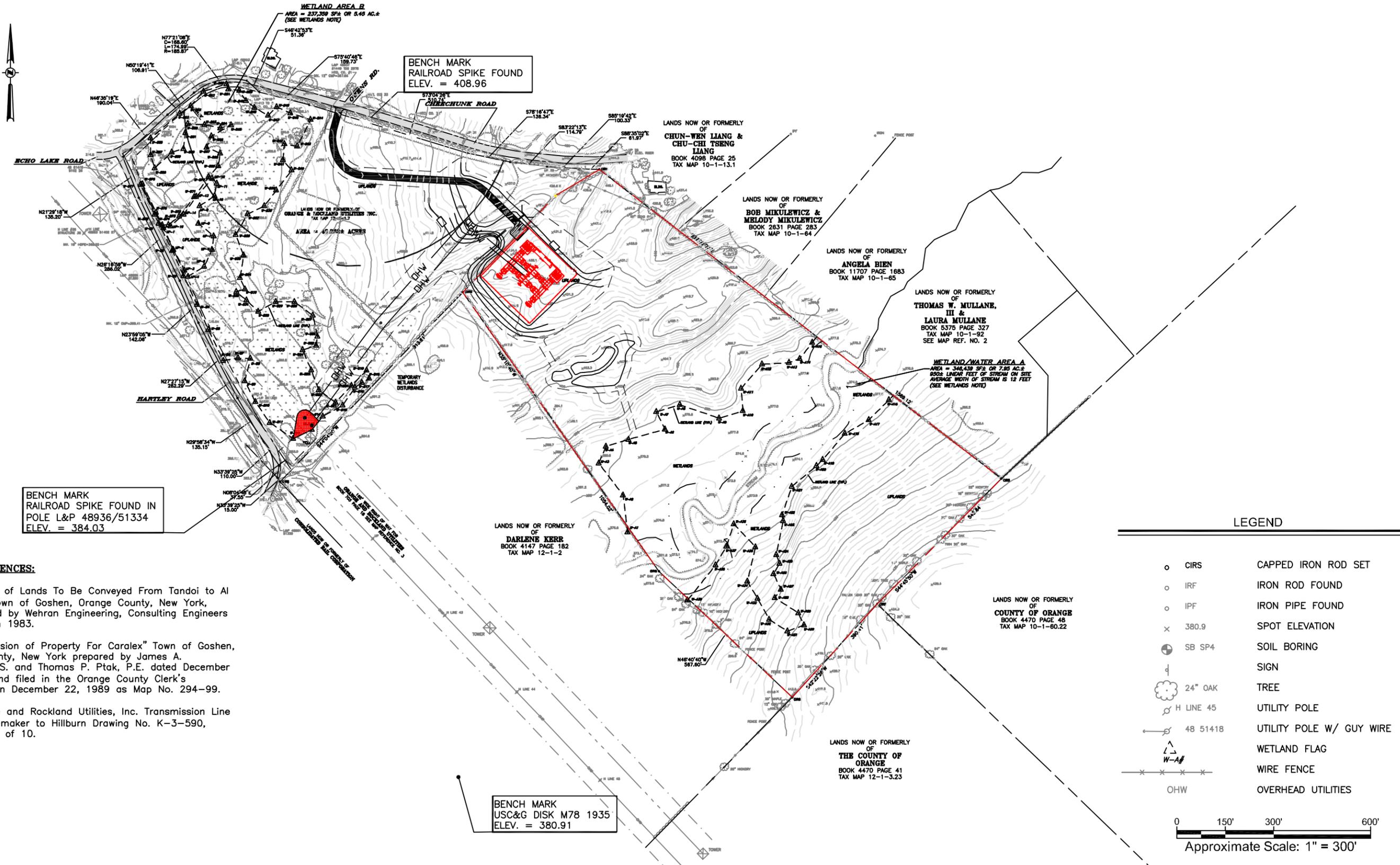
SOURCE:
CT MALE ASSOCIATES, OCTOBER 2011.

PROJECT NO.	119978
DRAWN:	10/26/2011
DRAWN BY:	SC
CHECKED BY:	JGC
FILE NAME:	SLC11d257.dwg

ONSITE ALTERNATIVE LOCATION 1

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

FIGURE
35



MAP REFERENCES:

1. "Survey of Lands To Be Conveyed From Tandoi to Al DeMarco" Town of Goshen, Orange County, New York, prepared by Wehran Engineering, Consulting Engineers dated March 1983.
2. "Subdivision of Property For Caralex" Town of Goshen, Orange County, New York prepared by James A. Dillin, L.S. and Thomas P. Ptak, P.E. dated December 30, 1998 and filed in the Orange County Clerk's Office on December 22, 1989 as Map No. 294-99.
3. "Orange and Rockland Utilities, Inc. Transmission Line 24/25 Shoemaker to Hillburn Drawing No. K-3-590, Sheet 6 of 10.

LEGEND

○ CIRS	CAPPED IRON ROD SET
○ IRF	IRON ROD FOUND
○ IPF	IRON PIPE FOUND
× 380.9	SPOT ELEVATION
⊕ SB SP4	SOIL BORING
⊕	SIGN
⊕ 24" OAK	TREE
⊕ H LINE 45	UTILITY POLE
⊕ 48 51418	UTILITY POLE W/ GUY WIRE
△ W-A#	WETLAND FLAG
— x — x — x — x	WIRE FENCE
— — — — —	OVERHEAD UTILITIES

0 150' 300' 600'
Approximate Scale: 1" = 300'

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SOURCE:
CT MALE ASSOCIATES, OCTOBER 2011.

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DRAWN:	10/25/2011
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CHECKED BY:	JGC
FILE NAME:	SLC11d258.dwg

ONSITE ALTERNATIVE LOCATION 2

HARTLEY ROAD SITE
ORANGE & ROCKLAND UTILITIES, INC.
TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK