

2006 Wild Blue Lupine
(*Lupinus perennis*) Baseline
Survey Report for Various
National Grid Rights of Way
throughout New York State

April 5, 2007
Amended: February 2009



Prepared for:

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1.0 INTRODUCTION

In 2006, baseline monitoring activities were undertaken to record the extent of wild blue lupine (*Lupinus perennis*), the sole larval food source of the federally and New York State-endangered Karner blue butterfly (*Lycaeides melissa samuelis*), along electric and natural gas rights of way (ROWs) maintained by National Grid. This Baseline Surveying Report documents the results of that monitoring. The information included in this report will be used to support the development of a Habitat Conservation Plan (HCP) and application for an Incidental Take permit for the Karner Blue Butterfly per requirements set forth by the Endangered Species Act of 1973, as amended, and its implementing regulations (50 CFR Parts 13 and 17).

The ROWs monitored are located in three separate Karner blue butterfly recovery units designated by the USFWS and NYSDEC. These areas are designated as the Glacial Lake Albany Recovery Unit (Warren, Saratoga, Schenectady, and Albany Counties), the Rome Sand Plains Potential Recovery Unit (Oneida County), and the Tonawanda Potential Recovery Unit (Niagara, Orleans, Genesee, and Erie Counties).

2.0 METHODS

The survey protocol/methodology was developed by The Chazen Companies (TCC) with assistance from Dr. Donald Leopold of the SUNY College of Environmental Science and Forestry as part of an agreement among National Grid, USFWS, and the NYSDEC in May of 2006. GIS datasets depicting the locations of the electric and gas rights of way (ROW) within each of the aforementioned recovery units were provided to TCC by National Grid. These areas were overlain on other various GIS datasets including county Soil Survey data from Saratoga, Albany, Schenectady, Warren, Oneida, Orleans, Genesee, and Erie counties, National Wetlands Inventory Mapping, and NYSDEC wetland mapping. Areas along the ROW where hydric soils, non-sandy soils (as described in each respective county Soil Survey), and wetlands are mapped were omitted from the field survey as these areas are not conducive to the growth and propagation of wild blue lupine. Finally, the NYSDEC provided National Grid with information on specific locations of wild blue lupine within Albany, Schenectady, Warren, and Saratoga Counties where sufficient data regarding these populations have been gathered, thereby allowing for their omission from this survey.

The portions of the ROWs to be included in the field survey were then overlain on planimetric mapping for use during the field survey. Topographic mapping by the U.S. Geological Survey (USGS) and/or aerial photography was also reviewed prior

to the initiation of field activities in order to determine portions of ROW located within heavily urbanized areas. These areas were also omitted from the field survey. The ROWs which were surveyed will herein be referred to as the Project Area. During the field investigation, if an area was observed as active agricultural land it was not surveyed further. A set of maps showing the Project Area overlain on the appropriate USGS topographic quadrangles is included as Appendix A, "Maps of the Project Area."

Field surveys took place in 2006 during the weeks of May 15, 22, 29, and June 5. The survey was scheduled to coincide with the blooming of wild lupine to increase the likelihood of observing its distinct blue flowers. The southernmost ROWs within the Project Area were surveyed first and survey activities progressed successively northward, concluding in the western New York Counties (Genesee, Erie, and Oneida counties).

Each segment of ROW within the Project Area was traversed from terminus to terminus implementing a zigzag walking pattern. The lateral extents of each "zigzag" spanned the sections of the ROW area that appeared to be actively maintained by National Grid. These sections were typically approximately 55 feet wide. The frequency of each "zigzag" was such that the entire Project Area was inspected. Any lupine populations encountered were sketched and notes were recorded regarding other potential nectar species for the Karner blue butterfly located nearby (within 200 meters of the lupine populations and visible from within the ROW). Descriptions of the Project Area and distinct location markers were also noted.

Within each recorded population of blue lupine, one permanent stake (one metal spike set flush with the ground and, surrounded by a 2" diameter section of white PVC for the purposes of enhancing the visibility of each stake, which was set 2" to 3" above the ground) was placed at the approximate center of a one square meter plot within each mapped population. The square meter plot was subjectively placed within an area of each lupine population where the plants were most dense. The individual flowering spikes within each square meter plot were counted. An estimation of the total number of flowering lupine spikes within a population was also made by the observer.

Additionally, any Karner blue butterflies or frosted elfins (*Callophrys irus*: a butterfly listed as threatened in the State of New York which possesses habitat requirements similar to the Karner blue butterfly) encountered during field activities were noted.

A field data sheet was used to record this information at each location where lupine was encountered. The data sheets were also used to record general notes

describing the location of lupine populations and if they appeared to have been recently disturbed due to the dumping of refuse or all-terrain vehicle (ATV) use. Cover types of areas adjacent to the rights of way were also noted.

Using a Trimble® GeoXH GPS unit, which possesses an accuracy of less than one meter, positions were recorded along the perimeter of each wild blue lupine population which was greater than one square meter in areal cover. For populations less than one square meter, a single position was recorded in the approximate center of the population. Areas where small multiple populations occurred (less than one square meter in size) were recorded as an aggregate population. The amount of wild blue lupine within each aggregate population was estimated and percent areal cover was assigned. All GPS data were adjusted using real time correction data from land based transponder stations available online. Once the area of total wild blue lupine populations was tabulated, the percentage of wild blue lupine cover within the aggregate populations was computed.

Each mapped population then received an alphanumeric designation. The letter portion of the designation corresponded to the USGS quadrangle where each population is located and the numeric portion of the designation corresponds to the sequenced order in which the population was surveyed. The designations of specific areas that were used as part of the survey conducted by Dr. Donald Leopold of the SUNY College of Environmental Science and Forestry in 1994¹ were retained as these lupine populations were re-surveyed during the 2006 baseline survey activities. Because 71 populations were identified during Dr. Leopold's 1994 survey activities, the sequenced designation of new populations identified in the 2006 baseline survey by TCC or populations identified by the NYSDEC which are not included in Dr. Leopold's 1994 survey begins with the number 72.

In addition, a GIS dataset was provided to TCC by the NYSDEC depicting the location and extent of blue lupine populations within the Project Area. For populations included in the NYSDEC dataset which overlap with populations surveyed by TCC, the polygons were merged and the outer boundary of the merged polygon was used for acreage calculations and is depicted as such on the maps included as Appendix C, "Maps Depicting Surveyed Blue Lupine Populations". For populations included in the NYSDEC dataset which are within close proximity to the survey data prepared by TCC, both populations were used and assigned separate population designations.

With the exception of a distribution line located in the Rome Sand Plains Potential Recovery Unit, no distribution lines were surveyed by TCC during this

¹ Leopold, D.J., Smallidge, P.J., Locations of blue lupine (*Lupinus perennis* L.) populations on Niagara Mohawk Power Corporation Rights-of-Way in the Hudson Valley Sand Belt 1995

baseline monitoring study. Although some GIS information was supplied by the NYSDEC for lupine populations located along portions of the distribution lines within the aforementioned recovery units, these populations are not included in this reporting effort. The NYSDEC-based GIS information that is specific to National Grid's electric distribution lines will be considered and potentially surveyed during the development of the Habitat Conservation Plan.

3.0 RESULTS

Below is a description of each area (organized by 7.5' USGS topographic quadrangle) where blue lupine was surveyed by TCC. A spread sheet was prepared listing vegetation species observed within the vicinity of each surveyed population of blue lupine, as well as, approximate quantifications of the amount of flowering blue lupine spikes present at the time of the survey within each colony. This spread sheet is included as Appendix B, "Summary of Field Data Sheets". Appendix C, "Maps Depicting Surveyed Blue Lupine Populations", illustrates the location of each surveyed population on each topographic quadrangle.

Populations previously surveyed by the NYSDEC located within 200 feet on either side of the assumed ROW but beyond 27.5 feet from the centerline of each assumed ROW (accounting for a survey width of 55 feet) are also depicted on the maps included as Appendix C. These populations are given an alphanumeric designation preceded by the letters "OPA" ("Outside Project Area"). The letter portion of the designation corresponded to the USGS quadrangle where each population is located and the numeric portion of the designation corresponds to the sequenced order in which the population appears from north to south (e.g., "OPA-GF01"). Populations previously surveyed by the NYSDEC that are located outside a ROW but within parcels owned by National Grid are given a numbering scheme similar to the other population groups but are preceded by the letters "NGP" ("National Grid Parcel") (e.g., NGP-GF01). Each topographic quadrangle has accompanying detail sheets depicting each mapped polygon overlain on aerial photography.

Appendix D, "Maps of Project Area Containing No Blue Lupine", depicts the portions of the ROWs on those USGS quad sheets where no blue lupine was observed during 2006 field activities or where areas that were omitted from the survey because they did not meet TCC's screening criteria (i.e., wrong soil types, presence of wetlands) and therefore, were not conducive to the growth and propagation of wild blue lupine. These New York USGS quad sheets include; Medina, Knowlesville, Akron, Oakfield, Lee Center, Westernville, Rome, Warrensburg, Lake George, Lake Luzerne, Hudson Falls, Porter Corners, Fort Miller, Middle Grove, Quaker Springs, Schuylerville, Pattersonville, Burnt Hills, Mechanicville, Altamont, Troy South, Clarksville, and Ravena.

A chart listing the acreage of each population or portion of population within each width of ROW area (approximately 55 feet wide) surveyed by TCC in 2006, populations previously surveyed by the NYSDEC within each ROW, and populations located within non-ROW parcels owned by National Grid is included as Table 3.12.1 “Total Area of Blue Lupine Surveyed within the Project Area”. A photographic log documenting the field activities and showing some of the populations of blue lupine is included as Appendix E, “Photographic Log.”

As stated in Section 2.0, the amount of wild blue lupine within each aggregate population was estimated and the percent areal cover was assigned to each population. The mapped population data provided by the NYSDEC does not assign a percent of areal cover to each population, so it is assumed that each population consists of 100% areal cover of blue lupine within each mapped polygon for those populations mapped by the NYSDEC. Therefore, in order to maintain consistency with the dataset supplied by the NYSDEC, the acreages of blue lupine listed in Table 3.12.1 do not account for partial areal cover of blue lupine within each surveyed polygon but instead, assume 100% areal cover.

3.1 Verona Quad

Population VE92 --This population of blue lupine was surveyed along a portion of a roadside distribution line located north of Passer Road. The ROW is oriented east-west. The upland portions of this ROW consist mostly of herbaceous vegetation with relatively small amounts of shrub cover. Dominant species include bramble (*Rubus* sp.) and little bluestem (*Schizachyrium scoparium*). An unvegetated trail is located along this ROW adjacent to the surveyed blue lupine population. The mapped polygon for population VE92, as illustrated on the mapping included as Appendix C consisted of approximately 8% cover of blue lupine during the survey activities conducted by TCC. This lupine population was not previously surveyed by Dr. Leopold or the NYSDEC.

3.2 Glens Falls Quad

Population GF46 - This population of blue lupine was surveyed along a section of the Spier-Butler 4 and Spier-Mohican Transmission 7 Lines. This population is located approximately 100 feet east of Saratoga Road. This population is marked by Unique Habitat signs. The topography is gently rolling with large areas of open sand and well worn ATV trails. The surrounding area is largely developed. The dominant vegetation within the area consists of little bluestem, bracken fern, pitch pine, whorled loosestrife, cinquefoil, and many dead oak saplings. The mapped polygon for population GF46 is illustrated on the mapping included as Appendix C and consisted of approximately 2% cover of blue lupine (TCC 2006). GF46 represents a population previously surveyed by Leopold (Leopold 1995).

Population GF47 - This population of blue lupine was also surveyed along a section of the Spier-Butler 4 and Spier-Mohican 7 Transmission Lines. This population is located east of the I-87 Northway accessed from Redmond Road and is approximately 1/8 mile west of population GF48. The land is flat to gently rolling and both sides of the ROW are wooded with little to no development. Population GF47 generally follows the northern tree line and is diffuse, yielding to the taller ferns and saplings. The dominant vegetation within the area consists of white pine, black oak, spreading dogbane (*Apocynum androsaemifolium*), bird's-foot trefoil (*Lotus corniculatus*), and whorled loosestrife (*Lysimachia quadrifolia*). The mapped polygon for population GF47 is illustrated on the mapping included as Appendix C and consisted of approximately 2% cover of blue lupine (TCC 2006). GF47 represents a population previously surveyed by Leopold (Leopold 1995).

Population GF48 - This population of blue lupine was also surveyed along a section of the Spier-Butler 4 and Spier-Mohican 7 Transmission Lines. This population is located east of I-87 accessed from Redmond Road. The population is located between Redmond Road and I-87 adjacent to the north tree line approximately 1/3 mile east of Redmond Road. The land is flat to gently rolling and both sides of the ROW are wooded with little to no development. Population GF48 generally follows the tree line and is diffuse. The dominant vegetation within the area consists of black oak (*Quercus velutina*), white pine (*Pinus strobus*), bracken fern (*Pteridium aquilinum*), common cinquefoil (*Potentilla simplex*), and various unidentified grass species. The mapped polygon for population GF48 is illustrated on the mapping included as Appendix C and consisted of approximately 5% cover of blue lupine (TCC 2006). GF48 represents a population previously surveyed by Leopold (Leopold 1995).

Population GF54 - This population of blue lupine was surveyed along a section of the Warrensburg-Queensbury 9 and Fort Gage-Queensbury 2 Transmission Lines. This population is located south of Round Pond accessed from the north side of Oakwood Drive. The ROW is bordered to the east by Club View Way (a private road). The topography is rolling with large hills. This population is marked with DEC Unique Habitat signs and is found approximately 500 feet north of Oakwood Drive and approximately 20 feet from Club View Road. The dominant vegetation at this site consists of black oak, red maple (*Acer rubrum*), whorled loosestrife, wild strawberry, bracken fern, white pine, and spreading dogbane. The mapped polygon for population GF54 is illustrated on the mapping included as Appendix C and consisted of approximately 15% cover of blue lupine (TCC 2006). GF54 represents a population previously surveyed by Leopold (Leopold 1995).

Population GF69 - This population of blue lupine was surveyed along a section of the Mohican-Butler 18, Spier-Mohican 7 Lines. This population is located north of Reservoir Road and east of Saratoga Road, and can be accessed from Reservoir Road. The topography is flat to slightly rolling with exposed sandy soils and worn

ATV trails. The lands adjacent to the population are undeveloped. The dominant vegetation at this site includes red pine (*Pinus resinosa*), black oak, quaking aspen, common cinquefoil, whorled loosestrife, and little bluestem. The mapped polygon for population GF69 is illustrated on the mapping included as Appendix C and consisted of approximately 30% cover of blue lupine (TCC 2006). GF69 represents a population previously surveyed by Leopold (Leopold 1995).

Population GF75 - This population of blue lupine was surveyed along a section of the Queensbury-Henry St 14 Transmission Line. This population is located south of the Aviation Shopping Mall parking lot and was found along the west side of an ATV trail approximately 1000 feet south of the mall parking lot. The topography is rolling with forested lands adjacent to the ROW and undeveloped between the mall and I-87. Both sides of the ROW are forested and a wetland is located to the east. The dominant vegetation within the mapped area consists of pitch pine, black oak, wild strawberry, cinquefoil, bastard toadflax (*Comandra umbellata*), and bracken fern. The mapped polygon for population GF75 as illustrated on the mapping included as Appendix C and consisted of approximately 5% cover of blue lupine (TCC 2006). GF75 represents a blue lupine population that was not previously mapped by Leopold or the NYSDEC.

Population GF76 - This population is located approximately 1/6 mile south of population GF75 also along a section of the Queensbury-Henry St 14 Transmission Line. Both sides of the ROW are forested with a foot path meandering in and out of the ROW. The topography is rolling with forested lands adjacent to the ROW. The dominant vegetation at this site consists of bracken fern, whorled loosestrife, pitch pine, black oak, bramble species, and various moss species. The mapped polygon for population GF76, as illustrated on the mapping included as Appendix C consisted of approximately 7% cover of blue lupine (TCC 2006). GF76 represents a blue lupine population that was not previously mapped by Leopold or the NYSDEC.

3.3 Gansevoort Quad

Population GS72 - - This population of blue lupine was surveyed along a portion of the Natural Gas Pipeline E12-9. Population GS72 is located southeast of Saratoga Road, just south of Fawn Road. It is located at the roadside entry to the ROW, which was accessed from a gravel driveway leading to a private residence. The gas line is oriented southwest-northeast and the population is associated with established ATV trails. The landscape is slightly rolling with forested vegetation growing on sandy soils adjacent to the ROW. The area is developed with homes to the west, north and east, and wetlands to the south. The dominant vegetation in the population area consists of black oak, white pine, cinquefoil, and wild strawberry. Lands adjacent to the ROW on both sides are forested. The mapped polygon for population GS72, as illustrated on the mapping included as Appendix C consisted of

approximately 40% cover of blue lupine (TCC 2006). GS72 represents a blue lupine population that was not previously mapped by Leopold or the NYSDEC.

Population GS73 - This population of blue lupine was surveyed along the Spier-Glens Falls 8 Transmission Line. This population is located at the intersection of Spier Falls and Potter Roads on the east side of Potter Road. Population GS73 is located on flat mowed land within twenty feet of the Potter Road. The adjacent properties are undeveloped with the exception of a few widely spaced homes. The dominant vegetation within the vicinity of population GS73 and consists of pitch pine (*Pinus rigida*), various unidentified grass species, common cinquefoil, and wild strawberry. The mapped polygon for population GS73, as illustrated on the mapping included as Appendix C consisted of approximately 8% cover of blue lupine (TCC 2006). GS73 represents a blue lupine population that was not previously mapped by Leopold or the NYSDEC.

Population GS74 - This population of blue lupine was surveyed along a portion of the Spier-Glens Falls 8 Transmission Line. This population is located on the west side of Potter Road at the intersection of Spier Falls and Potter Roads. It is located along Spier-Glens Falls transmission line oriented southwest-northeast. This population is located across the road from population GS73. The land is relatively flat with open sandy trails apparently utilized by ATVs. The dominant vegetation in the population area consists of pitch pine, black oak, quaking aspen, cinquefoil, and sweet fern. Large areas of exposed, unvegetated sand are located throughout this area. The mapped polygon for population GS74, as illustrated on the mapping included as Appendix C consisted of approximately 20% cover of blue lupine (TCC 2006). GS74 represents a blue lupine population that was not previously mapped by Leopold or the NYSDEC.

3.4 Saratoga Springs Quad

Population SS30 - This population of blue lupine was surveyed along a portion of the Saratoga-Ballston 10 Transmission/Gas Line. This population is located east of the Saratoga County Airport on the east side of Rowland Road. This population is located on the top of a small sandy hill surrounding a transmission pole and a gas line marker. It is bordered by Rowland Road to the west and forest to the east. The landscape is gently rolling and much of the ROW is exposed sand along established ATV trails. The dominant vegetation at this site consists of cinquefoil, red clover, hawkweed (*Hieracium sp.*), and various unidentified grasses. The mapped polygon for population SS30, as illustrated on the mapping included as Appendix C, consisted of approximately 10% cover of blue lupine (TCC 2006). SS30 represents a population previously surveyed by Leopold (Leopold 1995) and a portion of a population surveyed by the NYSDEC. This population, as shown on the mapping included as Appendix C, was merged with population SS78.

Population SS31 - This population of blue lupine was surveyed along a portion of the Saratoga-Ballston 10 Transmission/Gas Line. This population is located east of the Saratoga County Airport on the corner of Rowland and Deer Run Roads. This population exists in a private residential garden. Natural gas and transmission lines are located within this ROW. The dominant vegetation at the site consists of cinquefoil, wild strawberry, black oak and red clover. The mapped polygon for population SS31, as illustrated on the mapping included as Appendix C, consisted of approximately 5% cover of blue lupine (TCC 2006). SS31 represents a population previously surveyed by Leopold (Leopold 1995).

Population SS33 - This population of blue lupine was surveyed along a portion of the Saratoga-Ballston 10 Transmission/Gas Line. This population is located west of Falsetto Court. The transmission and gas lines are oriented north-south. This population was found at the boundary with residential backyards. The dominant vegetation within the mapped area consists of common cinquefoil, eastern white pine, little bluestem, yellow hawkweed, and bramble species. The mapped polygon for population SS33 as illustrated on the mapping included as Appendix C consisted of approximately 5% cover of blue lupine (TCC 2006). SS33 represents a population previously surveyed by Leopold (Leopold 1995).

Population SS34 - This population of blue lupine was surveyed along a portion of the Spier-Rotterdam Transmission Lines 1 and 2. This population is located on the north side of Route 50 between the road and a parking lot located to the north-east. The transmission line is oriented north-south crossing Route 50. The population is on the top of a hill that is covered in shrub and tree vegetation and marked with Unique Habitat signs. Storage sheds are located to the east of this site, and the surrounding area is commercially developed. The dominant vegetation within the population area consists of black oak, scrub oak, sweet fern, cinquefoil, and raspberry. The mapped polygon for population SS34, as illustrated on the mapping included as Appendix C. The mapped polygon for SS34 consisted of approximately 40% cover of blue lupine (TCC 2006). SS34 represents a population previously surveyed by Leopold (Leopold 1995).

Population SS35 - This population of blue lupine was surveyed along a portion of the Spier-Ballston 11; South Street Tap Transmission Line. This population is located north of Duplainville Road. A well established ATV trail follows this ROW. The land is flat and forested with wetlands located to the north. The dominant vegetation consists of common cinquefoil, wild strawberry, white pine, and black oak. The mapped polygon for population SS35, as illustrated on the mapping included as Appendix C, consisted of approximately 10% cover of blue lupine (TCC 2006). SS35 represents a population previously surveyed by Leopold (Leopold 1995) and a portion of a population previously surveyed by the NYSDEC.

Population SS36 - This population of blue lupine was surveyed along a portion of the Spier-Ballston 11; South Street Tap Transmission Line. This population is located north of Duplainville Road. It is approximately 1/8 mile east of population SS35 along the same ROW. It lies at the intersection of two transmission lines which contain well established ATV trails. The land is flat and forested and wetlands are located to the north. The dominant vegetation within the population area consists of wild strawberry, Canada goldenrod (*Solidago canadensis*), sweet fern, red clover (*Trifolium pratense*) and plantain (*Plantago sp.*). The mapped polygon for population SS36, as illustrated on the mapping included as Appendix C, consisted of approximately 20% cover of blue lupine (TCC 2006). SS35 represents a population previously surveyed by Leopold (Leopold 1995) and a portion of a population surveyed by the NYSDEC.

Population SS74 - This population of blue lupine was surveyed along a portion of the Saratoga-Ballston 10 Transmission/Gas Line. This population is located east of the Saratoga County Airport on the east side of Rowland Road about 1/8 mile north of population SS78. The transmission and gas lines are oriented north-south direction parallel to Rowland Road. This population was located at the intersection of two ATV trails along a well established sandy trail. The dominant vegetation within the mapped area consists of common cinquefoil, white pine, little bluestem, yellow hawkweed, and bramble species. The mapped polygon for population SS74, as illustrated on the mapping included as Appendix C consisted of approximately 2% cover of blue lupine (TCC 2006). SS74 represents a population that was not previously surveyed by Leopold or the NYSDEC.

Population SS78 - This population of blue lupine was surveyed along a portion of the Saratoga-Ballston 10 Transmission Line. This population is located east of the Saratoga County Airport on the east side of Rowland Road about 1/8 mile south of population SS30. The transmission and gas lines are oriented parallel to Rowland Road. This population was located at the intersection of two ATV trails along a well established sandy trail. The dominant vegetation within the mapped area consists of common cinquefoil, white pine, little bluestem, yellow hawkweed, and bramble species. The mapped polygon for population SS78, as illustrated on the mapping included as Appendix C, consisted of approximately 5% cover of blue lupine (TCC 2006). SS78 represents a portion of a population previously surveyed by the NYSDEC. This population, as shown on the mapping included as Appendix C, was merged with population SS30.

Population SS88 - This population of blue lupine was surveyed along a portion of the Brook Rd.-Ballston 11 Transmission Line between poles 808 and 809. This population is located north of the Saratoga County Airport and is bordered by Ediface Road to the north, Acland Road to the south, and Revolutionary Road to the west. The land is slightly rolling and the land adjacent to the ROW is developed

with suburban housing and roadways. A foot path is oriented just south of the population following the ROW. The dominant vegetation species within the mapped area consists of white pine, black oak, quaking aspen, raspberry, lowbush blueberry (*Vaccinium angustifolium*), and common cinquefoil. The mapped polygon for population SS88, as illustrated on the mapping included as Appendix C, consisted of approximately 30% cover of blue lupine (TCC 2006). SS88 represents a blue lupine population that was not previously mapped by Leopold or the NYSDEC.

3.5 Round Lake Quad

Population RL81 - This population of blue lupine was surveyed along a portion of the Ballston-Mechanicville 6 Transmission Line. This population is located south of Ushers Road between the I-87 and Route 9 approximately 100 feet south of the Delaware and Hudson Railroad. The topography is flat to rolling with adjacent lands on both sides of the ROW being forested. The majority of the blue lupine at this site lies to the southeast of the first transmission tower south of the rail road tracks. The dominant vegetation within the mapped area consists of cinquefoil, wild strawberry (*Fragaria vesca*), little bluestem, scrub oak, and quaking aspen (*Populus tremuloides*). The mapped polygon for population RL81, as illustrated on the mapping included as Appendix C, is a previously surveyed population which consisted of approximately 2% cover of blue lupine (TCC 2006). RL81 represents a population that was not previously surveyed by Leopold or the NYSDEC.

Population RL82 - This population of blue lupine was surveyed along a portion of the Ballston-Mechanicville 6 Transmission Line. This portion of this ROW is oriented northwest-southeast and exhibits rolling topography the majority of which is located within a residential subdivision. The undeveloped portion of this right of way consists mostly of herbaceous vegetation and sparse amounts of shrub cover. Dominant species include scrub oak, bramble species, sweet fern, and common cinquefoil. Population RL82 is located east of Southwood Drive and is continuous with a residential flower garden. The mapped polygon for population RL82, as illustrated on the mapping included as Appendix C, consisted of approximately 20% cover of blue lupine (TCC 2006). RL82 represents a population that was not previously surveyed by Leopold or the NYSDEC.

3.6 Schenectady Quad

Population SC85 - This population of blue lupine was surveyed along a portion of the Rotterdam-Curry Road 11/Rotterdam-Woodlawn 35/Lynn St.-Woodlawn 1 Transmission Lines located east of Fort Hunter Road and Hamburg Street. This portion of this ROW is oriented east-west and exhibits relatively flat topography. It is bordered to the north and south by undeveloped forested area and residentially developed property. The upland portions of this ROW consist mostly of herbaceous

vegetation with relatively small amounts of shrub cover. Dominant species include bramble species, common cinquefoil and little bluestem. An unvegetated trail is located within this ROW and population SC85 is located adjacent to this trail. The mapped polygon for population SC85, as illustrated on the mapping included as Appendix C, consisted of approximately 45% cover of blue lupine (TCC 2006). SC85 represents a population that was previously surveyed by the NYSDEC.

3.7 Niskayuna Quad

Populations NK25, NK83, and NK84 - These populations of blue lupine were surveyed along a portion of the Rotterdam-Bear Swamp E 205/Grooms Rd.-Johnson Rd. 13 Transmission Lines. This portion of this ROW is oriented east-west and exhibits rolling topography. It is bordered to the north and south by a residential subdivision. This ROW consists mostly of herbaceous vegetation and sparse amounts of shrub cover. Dominant species include staghorn sumac (*Rhus typhina*), bramble species, little bluestem, common cinquefoil, and bedstraw (*Galium* sp.). Population NK25 is located west of Boyack Road and populations NK83 and NK84 are located west of Southbury Road. The mapped polygons for populations NK25, NK83, NK84 as illustrated on the mapping included as Appendix C, consisted of approximately 10%, 100%, and 8% cover of blue lupine, respectively (TCC 2006). NK25 represents a population which was previously surveyed by Leopold, NK84 represents a population which was previously surveyed by NYSDEC, and NK83 represents a population that was not previously surveyed by Leopold or NYSDEC.

3.8 Troy North Quad

Populations TN01a and TN01b - These populations of blue lupine were surveyed along a portion of the Ballston-Mechanicville 6 Transmission Line which is located east of Upper New Town Road and west of the Old Champlain Canal. This portion of this ROW is oriented east-west and exhibits rolling topography and contains several wetland areas. It is bordered to the north and south by undeveloped forested upland areas. The upland portions of this ROW consist of herbaceous vegetation and varying amounts of shrub cover. Dominant species include bramble species and little bluestem. Some canopy cover is provided by several eastern white pines which are located to the north of the ROW. An unvegetated trail is located along this ROW which is located between populations TN01a and TN01b. Population TN01a is located on a steep southwest facing slope whereas population TN01b is located on a relatively flat area adjacent to the tree line. The mapped polygons for populations TN01a and TN01b, as illustrated on the mapping included as Appendix C, are portions of a population previously surveyed by Leopold (Leopold 1995) and were designated as TN01. Populations TN01a and TN01b consisted of approximately 30% and 70% cover of blue lupine within the mapped polygon, respectively (TCC 2006).

3.9 Voorheesville Quad

Population VR08 - This population of blue lupine was surveyed along a portion of the Rotterdam-Woodlawn 35 Transmission Line which is located south of Morris Road. This portion of this ROW is oriented east-west. The upland portions of this ROW consist mostly of herbaceous vegetation with relatively small amounts of shrub cover. Dominant species include bramble species and little bluestem. An unvegetated trail is located along this ROW adjacent to the surveyed blue lupine population. The mapped polygon for population VR08 as illustrated on the mapping included as Appendix C consisted of approximately 2% cover of blue lupine within the mapped polygon (TCC 2006). VR08 represents a population previously surveyed by Leopold (Leopold 1995).

3.10 Albany Quad

Population AB20 - This population of blue lupine was surveyed along a portion of the Karner-Patroon 5 Transmission Line which is located northwest of Interstate 87 and south east of Old Karner Road. This portion of this ROW is oriented northwest-southeast and exhibits rolling topography. It is bordered to the north by a railroad track. Dominant species include scrub oak (*Quercus ilicifolia*) and little bluestem. The mapped polygon for population AB20, as illustrated on the mapping included as Appendix C, is a population previously surveyed by Leopold (Leopold 1995) which consisted of approximately 5% cover of blue lupine within the mapped polygon (TCC 2006). Population AB20 is located atop a topographic rise.

Populations AB22 and AB23 - These populations of blue lupine were surveyed along a portion of the Patroon-Krumkill 3 / McKownville-Krumkill 8 Transmission Lines which are located north of Russell Road and south of Vaughn Road. This portion of this ROW is oriented north-south and exhibits rolling topography and contains several wetland areas. It is bordered to the east by undeveloped forested wetland and upland areas and to the west by North Bethlehem Town Park which consists of forested upland areas. The upland portions of this ROW consist mostly of herbaceous vegetation with relatively small amounts of shrub cover. Dominant species include black raspberry (*Rubus occidentalis*), other bramble species, little bluestem, and common cinquefoil. An unvegetated trail is located within this ROW. The mapped polygons for population AB22 and AB23, which are illustrated in Appendix C, were populations previously surveyed by Leopold (Leopold 1995) and the NYSDEC and both consisted of approximately 5% cover of blue lupine within each of the mapped polygons (TCC 2006). Population AB22 is located within the unvegetated trail on a south facing slope and Population AB23 is located adjacent to the western edge of the trail.

3.11 Delmar Quad

Population DM86 - This population of blue lupine was surveyed along a portion of the Reynolds Road-Fuera Bush 17 / New Scotland-Albany Steam 8 Transmission Lines, which are located east of I-87 and west of River Road. This portion of this ROW is oriented east-west and exhibits rolling topography and contains several wetland areas. It is bordered to the north and south by undeveloped forested and open herbaceous upland areas. The upland portions of this right of way consist mostly of herbaceous vegetation with relatively small amounts of shrub cover. Dominant species include bramble species and little bluestem. An un-vegetated trail is located along this right of way and a second trail traverses the ROW near the location of the surveyed blue lupine population. The mapped polygon for population DM86 as illustrated on the mapping included as Appendix C consisted of approximately 30% cover of blue lupine (TCC 2006). DM86 represents a population that was not previously surveyed by Leopold or NYSDEC. A population of blue lupine was observed outside the Project Area approximately 100 feet northeast of population DM86.

3.12 Total Area

The total amount of blue lupine surveyed by TCC and the NYSDEC within the Project Area totals approximately 33.02 acres. Table 3.12.1 "Total Area of Blue Lupine Surveyed within the Project Area" lists the size of each population surveyed within the Project Area and Table 3.12.2 "Total Area of Blue Lupine Surveyed Within non-ROW Parcels Owned by National Grid" lists the size of each population located within non-ROW parcels owned by National Grid. Table 3.12.3 "Blue Lupine Population Summary" summarizes statistical aspects of the surveyed lupine populations relative to parcel and/ROW ownership.

Table 3.12.1 Total Area of Blue Lupine Surveyed Within Project Area

Label	USGS 7.5' Quadrangle	County	Mapped by	Transmission Line	Ownership Status	Size (Acres)	Size (Square Feet)*
AB20	Albany	Albany	TCC	Karner-Patroun #5	Fee-Owned ROW	0.00666	290.1
AB21	Albany	Albany	NYSDEC	McKownville - Patroun #6	Easement Based ROW	0.094844	4131.396
AB22	Albany	Albany	TCC	Karner-Patroun #5	Fee-Owned ROW	0.005596	243.779
AB23	Albany	Albany	NYSDEC	McKownville - Krumkill 8	Fee-Owned ROW	0.258148	11244.91
DM86**	Delmar	Albany	TCC	Reynolds Road - Feura Bush #17	Fee-Owned ROW	0.120945	5268.381
GF101	Glens Falls	Saratoga	NYSDEC	Spier Falls - Mohican 7	Fee-Owned ROW	0.784705	34181.75
GF102	Glens Falls	Saratoga	NYSDEC	Spier Falls - Mohican 7	Fee-Owned ROW	0.18102	7885.228
GF103	Glens Falls	Saratoga	NYSDEC	Spier Falls - Mohican 7	Fee-Owned ROW	0.147732	6435.192
GF46a	Glens Falls	Saratoga	TCC	Mohican - Butler #18	Fee-Owned ROW	0.056338	2454.087
GF46b	Glens Falls	Saratoga	NYSDEC	Mohican - Butler #18	Fee-Owned ROW	0.142755	6218.417
GF47	Glens Falls	Saratoga	TCC	Ballston - Mechanicville 6	Fee-Owned ROW	0.046986	2046.724
GF48a	Glens Falls	Saratoga	TCC	Ballston - Mechanicville 6	Fee-Owned ROW	0.001249	54.41011
GF48b	Glens Falls	Saratoga	NYSDEC	Warrensburg - Queensbury 9	Fee-Owned ROW	0.164801	7178.749
GF49	Glens Falls	Saratoga	NYSDEC	Spier Falls - Butler 4	Fee-Owned ROW	0.023218	1011.379
GF50a	Glens Falls	Saratoga	NYSDEC	Spier Falls - Butler 4	Fee-Owned ROW	0.144535	6295.928
GF50b	Glens Falls	Saratoga	NYSDEC	Spier Falls - Butler 4	Fee-Owned ROW	0.043974	1915.528
GF51	Glens Falls	Saratoga	NYSDEC	Spier Falls - Butler 4	Fee-Owned ROW	0.808993	35239.74
GF52	Glens Falls	Warren	NYSDEC	Warrensburg-Queensbury 9	Fee-Owned ROW	0.05126	2232.886
GF53	Glens Falls	Warren	NYSDEC	Warrensburg - Queensbury 9	Fee-Owned ROW	0.225475	9821.71
GF54	Glens Falls	Warren	TCC	Spier - Mohican #7	Fee-Owned ROW	0.011973	521.5434
GF56a	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.00195	84.93957
GF56b	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.000191	8.306124
GF56c	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.00019	8.296319
GF56d	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.01803	785.3994
GF56e	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.001965	85.60771
GF56f	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.004568	198.9851
GF56g	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.001657	72.18811
GF56h	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.022827	994.3509
GF57a	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.038968	1697.465
GF57b	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.036999	1611.694
GF57c	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.06035	2628.836

Label	USGS 7.5' Quadrangle	County	Mapped by	Transmission Line	Ownership Status	Size (Acres)	Size (Square Feet)*
GF57d	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.174998	7622.902
GF57e	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.114962	5007.759
GF57f	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.000772	33.64751
GF57g	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.057119	2488.082
GF57h	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.023283	1014.225
GF57i	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.0000298	1.299378
GF57j	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.0000294	1.280236
GF57k	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.000772	33.6419
GF57l	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.0000292	1.273699
GF58a	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.092621	4034.582
GF58b	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.008399	365.8822
GF58c	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.125257	5456.206
GF58d	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.049134	2140.285
GF58e	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.025013	1089.578
GF58f	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.12598	5487.669
GF58g	Glens Falls	Warren	NYSDEC	Queensbury-Henry St 14	Fee-Owned ROW	0.0000294	1.280236
GF59 - GF62	Glens Falls	Warren	NYSDEC	S-Q #5 - Ogden Brook Tap	Easement Based ROW	0.5033	21923.75
GF59 - GF62	Glens Falls	Warren	NYSDEC	S-Q #5 - Ogden Brook Tap	Fee-Owned ROW	4.4353	193201.668
GF60b	Glens Falls	Warren	NYSDEC	S-Q #5 - Ogden Brook Tap	Easement Based ROW	0.000773	33.65264
GF60c	Glens Falls	Warren	NYSDEC	S-Q #5 - Ogden Brook Tap	Easement Based ROW	0.00309	134.6124
GF62a	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.015094	657.4908
GF62b	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.662296	28849.63
GF63a	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.004432	193.0691
GF63b	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.046066	2006.656
GF63c	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.185478	8079.4
GF63d	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.000773	33.67365
GF63e	Glens Falls	Warren	NYSDEC	S-Q #5 - Ogden Brook Tap	Fee-Owned ROW	0.056614	2466.087
GF64a	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.009207	401.0737
GF64b	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.028935	1260.415
GF65a	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.003089	134.541
GF65b	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.246514	10738.14
GF65c	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.320825	13975.13
GF66a	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.0000292	1.273699

Label	USGS 7.5' Quadrangle	County	Mapped by	Transmission Line	Ownership Status	Size (Acres)	Size (Square Feet)*
GF66b	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.0000297	1.292842
GF66c	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.073491	3201.254
GF66d	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.21113	9196.826
GF66e	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.233622	10176.58
GF67a	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.192374	8379.824
GF67b	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.0000296	1.289574
GF69	Glens Falls	Saratoga	TCC	Mohican - Butler #18	Fee-Owned ROW	0.027914	1215.954
GF75**	Glens Falls	Warren	TCC	Spier - Queensbury #17	Fee-Owned ROW	0.006197	269.9469
GF76**	Glens Falls	Warren	TCC	Spier - Queensbury #17	Fee-Owned ROW	0.029078	1266.657
GF87	Glens Falls	Warren	NYSDEC	Spier - Queensbury #17	Fee-Owned ROW	0.005051	220.0229
GS104	Gansevoort	Saratoga	NYSDEC	Spier-Glens Falls 8	Fee-Owned ROW	0.008647	376.6527
GS105	Gansevoort	Saratoga	NYSDEC	Spier-Glens Falls 8	Fee-Owned ROW	0.006409	279.1575
GS42a	Gansevoort	Saratoga	NYSDEC	Pipeline E31-5 (Battenkill - Cement Mt. 5)	Easement Based ROW	0.006701	291.8889
GS42b	Gansevoort	Saratoga	NYSDEC	Pipeline E31-5 (Battenkill - Cement Mt. 5)	Easement Based ROW	0.0000232	1.01097
GS42c	Gansevoort	Saratoga	NYSDEC	Pipeline E31-5 (Battenkill - Cement Mt. 5)	Easement Based ROW	0.065258	2842.653
GS72**	Gansevoort	Saratoga	TCC	Pipeline E12-9 (Spier-Glens Falls 8)	Easement-Based ROW	0.05199	2264.684
GS73**	Gansevoort	Saratoga	TCC	Spier - Mohican #7	Fee-Owned ROW	0.053605	2335.022
GS74**	Gansevoort	Saratoga	TCC	Spier - Mohican #7	Fee-Owned ROW	0.007955	346.5096
GS94	Gansevoort	Saratoga	NYSDEC	Pipeline E31-5 (Battenkill - Cement Mt. 5)	Easement Based ROW	0.001293	56.30224
GS95	Gansevoort	Saratoga	NYSDEC	Pipeline E31-5 (Battenkill - Cement Mt. 5)	Easement Based ROW	0.009998	435.5057
GS96	Gansevoort	Saratoga	NYSDEC	Pipeline E31-5 (Battenkill - Cement Mt. 5)	Easement Based ROW	0.058962	2568.383
GS97	Gansevoort	Saratoga	NYSDEC	Pipeline E31-5 (Battenkill - Cement Mt. 5)	Easement Based ROW	0.047937	2088.144
GS98	Gansevoort	Saratoga	NYSDEC	Pipeline E31-5 (Battenkill - Cement Mt. 5)	Easement Based ROW	0.001113	48.46079
NK25	Niskayuna	Saratoga	TCC	Rotterdam-Bear Swamp E205	Fee-Owned ROW	0.044926	1956.957
NK83**	Niskayuna	Saratoga	TCC	Grooms Rd. - Johnson Rd. 13, Firehouse Rd. Tap	Fee-Owned ROW	0.0000230	1.0000
NK84	Niskayuna	Saratoga	TCC/NYSDEC+	Grooms Rd. - Johnson Rd. 13, Firehouse Rd. Tap	Fee-Owned ROW	0.143862	6266.611
QS90	Quaker Springs	Saratoga	NYSDEC	Gas Pipeline E31-3 (Spier Falls - Rotterdam 1)	National Grid Franchise Rights	0.000773	33.67319
QS91	Quaker Springs	Saratoga	NYSDEC	Gas Pipeline E31-3 (Spier Falls - Rotterdam 1)	National Grid Franchise Rights	0.009575	417.0669
RL26	Round Lake	Saratoga	NYSDEC	Ballston - Mechanicville 6	Easement Based ROW	0.150024	6535.057
RL27	Round Lake	Saratoga	NYSDEC	Ballston - Mechanicville 6	Easement Based ROW	1.661575	72378.2
RL28	Round Lake	Saratoga	NYSDEC	Ballston - Mechanicville 6	Easement Based ROW	0.003091	134.6475
RL81**	Round Lake	Saratoga	TCC	Ballston - Mechanicville 6	Easement-Based ROW	0.008737	380.5875
RL82**	Round Lake	Saratoga	TCC	Ballston - Mechanicville 6	Easement-Based ROW	0.028207	1228.692

Label	USGS 7.5' Quadrangle	County	Mapped by	Transmission Line	Ownership Status	Size (Acres)	Size (Square Feet)*
SC05	Rotterdam Junction	Schenectady	NYSDEC	Rotterdam - Curry Road 11	No Data	0.203627	8869.994
SC06	Schenectady	Schenectady	NYSDEC	Rotterdam - Woodlawn #35	Fee-Owned ROW	0.233119	10154.68
SC07	Schenectady	Schenectady	NYSDEC	Rotterdam - Woodlawn #35	Fee-Owned ROW	0.000773	33.67972
SC85	Schenectady	Schenectady	TCC	Rotterdam - Curry Road #11	Fee-Owned ROW	0.177452	7729.81
SS29	Saratoga Springs	Saratoga	NYSDEC	Spier-Ballston 11	Fee-Owned ROW	0.469101	20434.03
SS30 & SS78	Saratoga Springs	Saratoga	TCC/NYSDEC+	PIPELINE E18-19	Easement Based ROW	0.404101	17602.64
SS31	Saratoga Springs	Saratoga	TCC	Spier-Ballston 11	Easement-Based ROW	0.001481	64.51751
SS33	Saratoga Springs	Saratoga	TCC	S-R #1 - Weibel Ave Tap	Easement-Based ROW	0.005442	237.0369
SS34	Saratoga Springs	Saratoga	TCC	Spier-Ballston 11	Easement-Based ROW	0.049896	2173.472
SS35 / SS36a	Saratoga Springs	Saratoga	TCC/NYSDEC+	Spier-Ballston 11; South St. Tap	Easement Based ROW	5.227359	227703.8
SS36ab	Saratoga Springs	Saratoga	NYSDEC	Spier-Ballston 11	Easement Based ROW	0.341811	14889.27
SS36b	Saratoga Springs	Saratoga	NYSDEC	Spier-Ballston 11	Easement Based ROW	3.036734	132280.1
SS37	Saratoga Springs	Saratoga	NYSDEC	Saratoga-Ballston 10 / Gen Foods Tap	Easement Based ROW	1.87126	81512.1
SS38	Saratoga Springs	Saratoga	NYSDEC	Spier-Ballston 11	Easement Based ROW	1.436173	62559.72
SS74**	Saratoga Springs	Saratoga	TCC	Spier-Ballston 11	Easement-Based ROW	0.009715	423.1898
SS88**	Saratoga Springs	Saratoga	TCC	Spier-Ballston 11	Fee-Owned ROW	0.016678	726.4804
SS89	Saratoga Springs	Saratoga	NYSDEC	Spier-Ballston 11	Fee-Owned ROW	0.003618	157.5878
SS93	Saratoga Springs	Saratoga	NYSDEC	Spier-Ballston 11	Easement Based ROW	0.139528	6077.831
TN10a	Troy North	Saratoga	TCC	Rotterdam-Bear Swamp E205	Easement-Based ROW	0.08805	3835.44
TN10b	Troy North	Saratoga	TCC	Rotterdam-Bear Swamp E205	Easement-Based ROW	0.026641	1160.478
VR08	Voorheesville	Albany	TCC	Woodlawn - State Campus #12	Fee-Owned ROW	0.008159	355.4144
VR09	Voorheesville	Albany	NYSDEC	W-SC #12 - Pinebush Tap	Fee-Owned ROW	0.053986	2351.632
VR12	Voorheesville	Albany	NYSDEC	R-W #35 - Pinebush Tap	Fee-Owned ROW	0.186616	8128.999
VR13	Voorheesville	Albany	NYSDEC	W-SC #12 - Pinebush Tap	Fee-Owned ROW	1.335526	58175.52
VE92**	Verona	Oneida	TCC	No data in National Grid Files	No data	0.27993	1219.3604
TOTALS						29.58	1,277,771.06

* These area calculations do not account for percent areal cover for blue lupine, but rather represent the size of each surveyed polygon.

** These populations were not previously surveyed or described by Dr. Leopold or the NYSDEC.

+ These populations were surveyed by both the NYSDEC and TCC. The representative polygons provided by TCC and NYSDEC were merged in these instances.

Table 3.12.2 Total Area of Blue Lupine Surveyed Within non-ROW Parcels Owned by National Grid

Label	County	Mapped by	USGS 7.5' Quadrangle	Transmission Line	Ownership Status	Size (Acres)	Size (Square Feet)*
GF102*	Saratoga	NYSDEC	Glens Falls	Spier Falls - Mohican 7	Fee-Owned	0.096709	4212.664
GF59 - GF62*	Warren	NYSDEC	Glens Falls	S-Q #5 - Ogden Brook Tap	Fee-Owned	3.257143	141881.1
GS104*	Saratoga	NYSDEC	Gansevoort	Spier-Glens Falls 8	Fee-Owned	0.010514	457.984
NGP - GF01	Warren	NYSDEC	Glens Falls	Spier - Queensbury 5, Ogden Brook Sub Tap	Fee-Owned	0.04524	1970.67
NGP - GF02	Warren	NYSDEC	Glens Falls	Spier - Queensbury 5, Ogden Brook Sub Tap	Fee-Owned	0.000192	8.351468
NGP - GF03	Warren	NYSDEC	Glens Falls	Spier - Queensbury 5, Ogden Brook Sub Tap	Fee-Owned	0.002485	108.2285
NGP - GF04	Warren	NYSDEC	Glens Falls	Spier - Queensbury 5, Ogden Brook Sub Tap	Fee-Owned	0.017364	756.3643
NGP - GF05	Warren	NYSDEC	Glens Falls	Spier - Queensbury 5, Ogden Brook Sub Tap	Fee-Owned	0.009618	418.97
TOTALS						3.44	149,814.3323

* Portions of these populations are located within ROWs.

Table 3.12.3 Blue Lupine Population Summary

Total number of blue lupine colonies surveyed by TCC not previously described by Leopold (Leopold 1995) and/or NYSDEC	12
Total size of blue lupine colonies surveyed by TCC not previously described by Leopold (Leopold 1995) and/or NYSDEC	0.36-acre
Total number of blue lupine colonies surveyed by TCC previously described by Leopold (Leopold 1995) and/or NYSDEC	18
Total size of blue lupine colonies surveyed by TCC previously described by Leopold (Leopold 1995) and/or NYSDEC	1.11 acres
Total number of blue lupine colonies surveyed by NYSDEC	99
Total size of blue lupine colonies surveyed by NYSDEC	31.3 acres
Total number of blue lupine colonies located within Project Area	129
Total size of blue lupine colonies located within Project Area	33.02 acres
Largest blue lupine colony located within Project Area	GF59-62 (8.25 acres**)
Average size of blue lupine colonies located within Project Area	0.26-acre
Median size of blue lupine colonies located within Project Area	0.04-acre
Total number of blue lupine colonies located on fee-owned ROWs and parcels	65
Total size of blue lupine colonies located on fee-owned ROWs and parcels	17.20 acres
Largest blue lupine colony on fee-owned ROWs and/or parcel	GF59-62 (7.75 acres**)
Average size of blue lupine colonies located on fee-owned ROW.	0.19-acre
Median size of blue lupine colonies located on fee-owned ROW	0.03-acre
Total number of blue lupine colonies located on easement-based (or other*) ROW.	34
Total size of blue lupine colonies located on easement-based (or other*) ROW.	15.82 acres
Largest blue lupine colony on easement-based (or other*) ROW	SS35/SS36a (5.23 acres)
Average size of blue lupine colonies located on easement based (or other) ROW.	0.86-acre
Median size of blue lupine colonies located on easement based (or other) ROW.	0.05-acre
Total size of blue lupine located within non-ROW parcels owned by National Grid	3.44 acres

* These populations designated as “other” include ROWs that are under franchise rights or were undetermined at the time of this survey.

** Includes portion of population within ROW and within non-ROW parcel owned by National Grid.

4.0 CONCLUSIONS

Several factors were observed potentially affecting the presence of wild blue lupine along the ROWs parcels. Lupine is a species commonly found in the early stages of plant succession as it is adapted to relatively dry and infertile soils². In the northeast, ROWs are often host to lupine populations as it is a species that thrives in open areas where periodic disturbance reduces species competition and decreases canopy cover³. In areas where lupine was surveyed in the presence of taller shrub and herbaceous species it appeared to be yielding to succession as the plants were over-shadowed. As similarly noted by Maxwell and Givnish (1994),⁴ the observations and data collected in this field survey suggest that wild blue lupine favors disturbed areas in tracts of un-vegetated sand and high light levels. Well-drained to excessively well-drained south-facing sandy slopes were noted to commonly host many of the plant in this investigation.

As discussed in the 1994 survey of ROWs conducted by Leopold and Smallidge (1995), there appears to be a significant correlation between the presence of sweet fern (*Comptonia peregrine*) and whorled loosestrife (*Lysimachia quadrifolia*) with the presence of blue lupine. Little bluestem also appeared to be positively associated with sightings of blue lupine in this study. Of the 31 populations surveyed by TCC which are described in this investigation, 63% were found to be interspersed with or in close proximity to little bluestem. Excessive herbivory does not appear to be a significant source of population decimation.

Based on the information provided by the NYSDEC regarding previously documented populations of lupine coupled with the results of the survey conducted by Dr. Donald Leopold (Leopold and Smallidge 1995) in 1994, 12 “new” blue lupine populations were surveyed by TCC that were not previously described in either of the aforementioned surveys. These populations include; GS72, GS73, GS74, SS74, GF75, GF76, SS88, RL81, RL82, NK83, DM86, and VE92. In some cases, the existence of previously documented wild blue lupine populations (Leopold and Smallidge 1995) could not be confirmed in this field investigation. Previously recorded populations AB24, GF55, GF68, and SS32 were not found during the time

² U.S. Fish and Wildlife Service: Karner Blue Butterfly Recovery Plan. Great lakes, Big Rivers Region (Region 3) Fort Snelling, Minnesota. September 2003. p.17-19

³ Carnes, Cathy. Mitchell, Kim. Wild Lupine and Karner Blue Butterflies. U.S. Fish and Wildlife Service; Endangered Species. 1996

⁴ Maxwell, J. and T. Givnish. 1996 Research on the Karner blue butterfly at Fort McCoy, Wisconsin: Progress report for the 1995 field season. Report submitted to the U.S. Fish and Wildlife Service and the U.S. Department of the Army.

of this field survey. Thorough investigations using the “zig-zag” method and repeated attempts with multiple observers yielded no evidence of these populations, even though these sites did exhibit soil conditions and indicator species commonly found with blue lupine populations were present. As such, the reason for the disappearance of these colonies is unknown.

A total of 129 wild blue lupine populations have been located within the Project Area. These populations comprise an estimated total 33.02 acres, 17.2 acres of which are located on National Grid-owned rights-of-way or other National Grid property. An estimated 15.82 acres of the total acreage of wild blue lupine populations are located on lands not owned by National Grid and where the Company operates and maintains its utility facilities under easements with other property owners. Such non-owned lands and limited rights to operate and maintain National Grid facilities thereon will be important considerations in developing a future Habitat Conservation Plan for wild blue lupine populations and associated, potential Karner blue butterfly habitats.

5.0 REFERENCES

Carnes, Cathy. Mitchell, Kim. Wild Lupine and Karner Blue Butterflies. U.S. Fish and Wildlife Service; Endangered Species. 1996

Leopold, D.J., Smallidge, P.J., Locations of blue lupine (*Lupinus perennis* L.) populations on Niagara Mohawk Power Corporation Rights-of-Way in the Hudson Valley Sand Belt 1995

Maxwell, J. and T. Givnish. 1996 Research on the Karner blue butterfly at Fort McCoy, Wisconsin: Progress report for the 1995 field season. Report submitted to the U.S. Fish and Wildlife Service and the U.S. Department of the Army.

New York State Department of Environmental Conservation Wetland Mapping, various quadrangles.

United States Department of Agriculture, Natural Resource Conservation Service. Various County Soil Surveys.

U.S. Fish and Wildlife Service: National Wetlands Inventory, various quadrangles.

U.S. Fish and Wildlife Service: Karner Blue Butterfly Recovery Plan. Great lakes, Big Rivers Region (Region 3) Fort Snelling, Minnesota. September 2003.

Appendix A:
Map of the Project Area

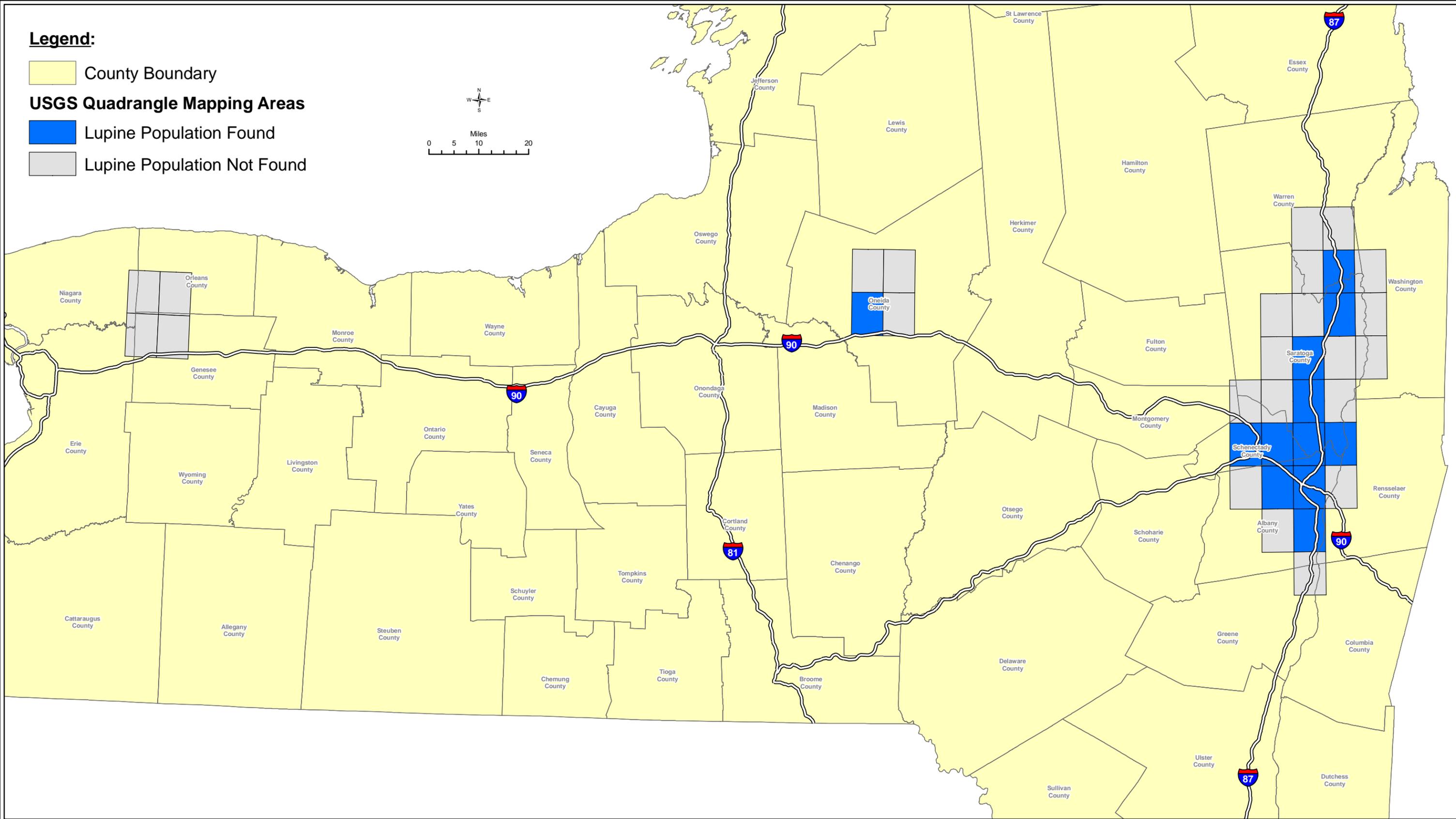
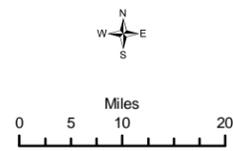
Legend:

 County Boundary

USGS Quadrangle Mapping Areas

 Lupine Population Found

 Lupine Population Not Found



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Blue Lupine Mapping / National Grid

Blue Lupine Survey Areas

New York State

Drawn:	CLC
Date:	01/07/2007
Scale:	1:1,125,000
Project:	90621.00
Figure:	

Appendix B:
Summary of Field Data Sheets

USGS Quad	Saratoga Springs								
Population Number ID	SS74	SS33	SS36	SS35	SS34	SS78	SS30	SS31	SS89
Estimated number of flower spikes:	15	12	1000	2000	300	600	300	22	75
Number of flowering stems per 1 square meter plot*:	6	12	54	27	26	21	23	15	24
Percent cover of lupine within mapped population:	2	5	20	10	40	5	10	5	30
Evidence of herbivory on lupine?	n	n	n	n	n	n	n	n	n
Karner blue butterflies present?	n	n	n	y	n	n	n	n	n
Frosted elfins present?	n	n	n	n	n	n	n	n	n
Total Percent Cover									
Tree cover	50	5	5	4		5	2	5	30
Shrub cover	5	20	1	2	15	1	3		10
Herbaceous cover	45	75	95	95	95	94	95	85	60
Percent Tree Cover									
<i>Pinus rigida</i> (Pitch Pine)		10			2				
<i>Pinus strobus</i> (White Pine)	40		2	2	2	1	1		45
<i>Pinus resinosa</i> (Red Pine)									
<i>Quercus velutina</i> (Black Oak)		5	2	2	10	1	1	5	30
<i>Populus</i> sp. (Poplar)			1	1	1				25
<i>Robinia pseudoacacia</i> (Black Locust)			1						
<i>Betula populifolia</i> (Gray Birch)			1						
<i>Prunus serotina</i> (Black Cherry)	2								
<i>Acer rubrum</i> (Red Maple)			1	1					
Percent Shrub Cover									
<i>Populus tremuloides</i> (Quaking Aspen)						1			
<i>Quercus ilicifolia</i> (Scrub Oak)	10	20			20				5
<i>Comptonia peregrina</i> (sweetfern)		5	5	1	20				5
<i>Vaccinium angustifolium</i> (Lowbush Blueberry)									15
<i>Prunus pumila</i> (Sand Cherry)									
<i>Rubus</i> sp. (bramble sp.)		5	1	1	15	2	2		30
<i>Vitis</i> sp. (Grape)									
<i>Lonicera</i> sp. (Honeysuckle sp.)									
<i>Rhus typhina</i> (Staghorn Sumac)									15
Percent Herbaceous Cover									
<i>Lotus corniculatus</i> (Birdsfoot Trefoil)									
<i>Stellaria</i> sp. (Chickweed)							5		
<i>Potentilla</i> sp. (Cinquefoil)		20	20	10	5	5		40	15
<i>Asclepias syriaca</i> (Common Milkweed)		5	1	1	1			2	5
<i>Pycnanthemum</i> sp. (Horsemint)									5
<i>Schizachyrium scoparium</i> (Little Bluestem)		10	2	1		2	1		
<i>Pteridium aquilinum</i> (Bracken Fern)									
<i>Dianthus deltoides</i> (maiden pink)						1			
<i>Rubus flagellaris</i> (northern dewberry)									20
<i>Leucanthemum vulgare</i> (oxeye daisy)									
<i>Trifolium pratense</i> (red clover)		2	4	1			5	5	
<i>Thalictrum thalictroides</i> (rue anemone)			0		1				
<i>Apocynum androsaemifolium</i> (spreading dogbane)		1			1				5
<i>Trifolium repens</i> (white sweet clover)									
<i>Lysimachia quadrifolia</i> (whorled loosestrife)		1			2				
<i>Fragaria vesca</i> (wild strawberry)	20		10	5	5			15	
<i>Hieracium</i> sp. (yellow hawkweed)	10	1	1	1		2	2		
<i>Arabis glabra</i> (tower mustard)				1					
<i>Solidago</i> sp. (Goldenrod)		5	5	1	1				5
<i>Sisyrinchium</i> sp. (blue-eyed grass)		2							
<i>Galium</i> sp. (bedstraw)									
<i>Verbascum thapsus</i> (common mullein)									
<i>Daucus carota</i> (Queen Anne's lace)									
<i>Equisetum</i> sp. (Horsetail)									
<i>Toxicodendron radicans</i> (Poison ivy)									
<i>Parthenocissus quinquefolia</i> (Virginia creeper)									
<i>Viola</i> sp. (Violet)									
Lichens sp.									
<i>Plantago major</i> (Common Plantain)			3	1					
<i>Maianthemum canadense</i> (Canada Mayflower)									
<i>Polygonatum</i> sp. (Solomon Seal)									
Various Grasses						5	82		
Open Ground								10	
<i>Vicia</i> sp. (Vetches)								3	
<i>Euphorbia esula</i> (Leafy spurge)		5							

USGS Quad	Troy North	Vorheesville	Round Lake	
Population Number ID	TN01a	VR08	RL81	RL82
Estimated number of flower spikes:	350	13	9	300
Number of flowering stems per 1 square meter plot*:	22	8	4	32
Percent cover of lupine within mapped population:	27	85	2	20
Evidence of herbivory on lupine?	n	n	n	n
Karner blue butterflies present?	n	n	n	n
Frosted elfins present?	n	n	n	n
Total Percent Cover				
Tree cover	0	2	15	5
Shrub cover	0		10	5
Herbaceous cover	100	65	75	90
Percent Tree Cover				
<i>Pinus rigida</i> (Pitch Pine)				
<i>Pinus strobus</i> (White Pine)			1	10
<i>Pinus resinosa</i> (Red Pine)				
<i>Quercus velutina</i> (Black Oak)				14
<i>Populus</i> sp. (Poplar)			1	
<i>Robinia pseudoacacia</i> (Black Locust)				
<i>Betula populifolia</i> (Gray Birch)			1	
<i>Prunus serotina</i> (Black Cherry)				
<i>Acer rubrum</i> (Red Maple)				
Percent Shrub Cover				
<i>Populus tremuloides</i> (Quaking Aspen)				
<i>Quercus ilicifolia</i> (Scrub Oak)			5	
<i>Comptonia peregrina</i> (sweetfern)				15
<i>Vaccinium angustifolium</i> (Lowbush Blueberry)				
<i>Prunus pumila</i> (Sand Cherry)				
<i>Rubus</i> sp. (bramble sp.)	30			20
<i>Vitis</i> sp. (Grape)				
<i>Lonicera</i> sp. (Honeysuckle sp.)				3
<i>Rhus typhina</i> (Staghorn Sumac)				
Percent Herbaceous Cover				
<i>Lotus corniculatus</i> (Birdsfoot Trefoil)				
<i>Stellaria</i> sp. (Chickweed)	5			
<i>Potentilla</i> sp. (Cinquefoil)			40	10
<i>Asclepias syriaca</i> (Common Milkweed)	3			
<i>Pycnanthemum</i> sp. (Horsemint)				
<i>Schizachyrium scoparium</i> (Little Bluestem)	50		10	
<i>Pteridium aquilinum</i> (Bracken Fern)			5	
<i>Dianthus deltoides</i> (maiden pink)				
<i>Rubus flagellaris</i> (northern dewberry)				
<i>Leucanthemum vulgare</i> (oxeye daisy)				
<i>Trifolium pratense</i> (red clover)	37			
<i>Thalictrum thalictroides</i> (rue anemone)				
<i>Apocynum androsaemifolium</i> (spreading dogbane)				
<i>Trifolium repens</i> (white sweet clover)				
<i>Lysimachia quadrifolia</i> (whorled loosestrife)				
<i>Fragaria vesca</i> (wild strawberry)			20	3
<i>Hieracium</i> sp. (yellow hawkweed)				
<i>Arabis glabra</i> (tower mustard)				
<i>Solidago</i> sp. (Goldenrod)	5			
<i>Sisyrinchium</i> sp. (blue-eyed grass)				
<i>Galium</i> sp. (bedstraw)	3			
<i>Verbascum thapsus</i> (common mullein)	1			
<i>Daucus carota</i> (Queen Anne's lace)				
<i>Equisetum</i> sp. (Horsetail)				
<i>Toxicodendron radicans</i> (Poison ivy)				
<i>Parthenocissus quinquefolia</i> (Virginia creeper)				
<i>Viola</i> sp. (Violet)				
Lichens sp.				
<i>Plantago major</i> (Common Plantain)				
<i>Maianthemum canadense</i> (Canada Mayflower)				
<i>Polygonatum</i> sp. (Solomon Seal)				
Various Grasses				
Open Ground				
<i>Vicia</i> sp. (Vetches)				
<i>Euphorbia esula</i> (Leafy spurge)				

Appendix C:
Maps Depicting Surveyed Blue Lupine
Populations

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