

3.6 Natural Resources

3.6.1 Existing Conditions

Geology, Soils and Topography

Geology

The study area (Kiryas Joel and proposed 507 acre annexation lands) is located within several geologic areas known as the Woodbury Creek, Skunnemunk, and Bellevale formations. These formations are predominately underlain by shales, sandstones, and conglomerates. The bedrock in this area is folded and faulted into a series of northeast-trending belts. Area topography is controlled by the outcropping of resistive bedrock zones that are oriented in a northeast/southwest direction due to tectonic compression from the southeast. The surficial topography of the project area is provided in Figure 3.6-1, Local Topography, and Figure 3.6-2, Area Topography, based on US Geological Survey (USGS) mapping.

The Surficial Geologic Map of New York State, edited by Cadwell, shows the study area covered by glacial till deposits. There are no Unique Geological Features mapped in the study area by the New York State Department of Environmental Conservation (NYSDEC) in its online Environmental Resource Mapper.

Topography

The study area is characterized by undulating topographic features which are typical for Orange County. The topography of the annexation land is reflective of the topography of the Village, as shown in Figures 3.6-1 and 3.6-2.

Elevations of the study area generally range from just under 1000 feet to approximately 600 feet in elevation above sea level. Generalized mapping in the Town of Monroe Master Plan Update illustrates the undulating nature of the local topography where slopes vary from nearly level areas in the southeastern portions of the study area to sloped areas that exceed 25% in scattered locations of the study area, being more predominant in the northwestern portions.

Soils

The soils in the study area were identified using the soil classifications of the US Department of Agriculture Soil Conservation Service (SCS) in its *Soil Survey of Orange County*. The study area encompasses an abundance of different soil types. The predominant soil types are the following: Alden, Arnot-Lordstown Mardin, and Swartwood. The characteristics of these soils series include mostly silty loam and

gravelly silt loam, with stony areas and some rock outcrops. These soils are shown in Figure 3.6-3, Area Soils Map.

The soils in the study area are very common in Orange County and have no unusual characteristics that significantly affect their use in modern construction.

The SCS identifies potential limitations for these soils related to excavations and development of roads and buildings due to their physical and chemical characteristics. Such limitations require planning consideration prior to development. The presence of these constraints does not mean the land cannot be developed nor are they a rating of construction potential. The ratings reflect the difficulty and relative costs of corrective measures that may be necessary for development (e.g. erosion controls, subsurface drains or other drainage improvements). Development limitations are considered *slight* where soil properties are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties are less favorable for the indicated use and special planning, design or maintenance may be needed to overcome or minimize the limitations; and *severe* if soil properties require special design and will necessitate increased costs to construct and possibly increased maintenance after construction. The limiting characteristics of these soils may be overcome by careful project planning, design and management, and implementation of engineering measures that are commonly used in modern construction.

The SCS identifies some of these soils as capable of being prime agricultural land, and similarly recognized in the Orange County Open Space Plan. Inspection of the existing land use pattern of the study area, including in recent aerial photography, shows that only two lots (one tax parcel) on Bakertown Road remains undeveloped and used for agriculture (part of Ace Farm).¹

Wildlife and Habitats

The Environmental Resource Mapper, an online resource of the NYSDEC, was used to determine if there is the existence of or potential for unique or unusual habitats, or likelihood of protected species, within the Village of Kiryas Joel and the proposed annexation area. See Figure 3.6-4, Environmental Sensitivity Map. The mapper identified the northwestern half of the study area as a buffer area within which there could be potential habitat for a NYS Protected species, the Allegheny Woodrat (*Neotoma magister*), which was last documented in 1949 at Bull Mine Mountain about a mile from the study area. The mapper also identified a buffer area on the far northwestern corner of the study area related to a significant natural community called the Pitch pine-oak-heath rocky summit which is located at the Schunemunk Mountain

¹ Part of designated Agricultural District ORAN001 per NYS Ag and Markets Law Art 25-AA §§303-4.

House. This habitat falls outside the study area, approximately 0.2 miles from the closest annexation parcel.

Additionally, there may be woodland trees in the study area that may provide habitat to the Indiana Bat or Northern Long-eared Bat during certain times of the year, necessitating seasonal limitations on the clearing of trees. Incidences of Timber Rattlesnake potential habitat have also been reported in the region.

Wetlands

A review of the National Wetland Inventory (NWI) and NYSDEC mapping resource materials was performed to determine the existence and distribution of mapped wetlands in the study area. No site specific wetland delineation was completed for this DGEIS. Federal and State mapped wetlands are included in the Orange County GIS database. One area within the Village is mapped as State-regulated wetlands (MO-11), located within the south to southeastern portion of the Village, and a number of small federally-mapped wetlands are scattered about the Village and annexation lands. These are shown in Figure 3.6-5. There is no State or locally regulated wetland area mapped in the lands proposed for annexation. The Town regulates wetlands on a site by site basis, requiring delineation of on-site and adjacent surface waters, wetlands and drainage patterns that could be affected by construction activity as part of its stormwater management regulation. Both State and Town also regulate a 100-foot wetland buffer area outside of the regulated wetlands.

Water Resources and Stormwater

Existing Drainage Conditions

The project area is generally split between two drainage basins. The drainage divide runs north-south slightly west of the existing Village boundary, effectively resulting in drainage from the western-most annexation properties flowing to the north to Satterly Creek, which is part of the Moodna Creek basin.

The remaining part of the study area is situated within the Ramapo River drainage basin. These lands including the entire Village drain to the southeast, through NYSDEC wetland MO-11 in the southeastern portion of the Village, and then south eventually to the Ramapo River.

A network of surface channels and watercourses that are tributary to the Ramapo River flows through Kiryas Joel, north to south, including named streams: Palm Brook, Forest

Brook, Coronet Brook and Highland Brook.² These streams also drain various portions of the annexation territory. Most of the westernmost territory and in the Moodna basin, however, is devoid of mapped streams. Coronet Lake is the largest waterbody and the only named waterbody in the study area, a man-made lake approximately 20 acres in size, and is located in the northeastern corner of the proposed annexation territory.

In general, stormwater from individual sites will follow the general topography. The eastern annexation lands currently drain to the existing stormwater system the Village has in place. The western annexation lands do not drain to the Village system but overland toward the west to Satterly Creek.

Existing Stormwater Quality

The majority of the study area is either developed with residences and other buildings or is vegetated, vacant land. These stabilizing conditions result in limited soil erosion by rainfall and limited amounts of suspended solids in the stormwater runoff from the study area. Where development and roads exist or land is wooded or otherwise vegetated, there typically is some dissolution and subsequent transport of dissolved nutrients (including nitrogen and phosphorous compounds and road salt) in runoff to the surface waters. In this case the NYSDEC wetland and various local streams are the receiving waters.

Groundwater Resources

Groundwater resources mapped in the Town of Monroe (shown in Orange County Water Authority information online) show sizable areas in and around Kiryas Joel with significant sand and gravel aquifers. Specific to the study area, an aquifer is mapped in much of central Kiryas Joel but none in the annexation territory.

More detailed information relating to groundwater resources utilized as a potable water source is provided in section 3.5.

3.6.2 Potential Impacts

The proposed annexation action would not involve any physical disturbance of the ground and thus, would not directly impact natural resources (including geology, soils, topography, wildlife and habitats, wetlands and water resources). Under the growth scenario described in the Project Description (without and with annexation), disturbance of the land would result from construction activities to much the same degree. Any future development would require a formal site plan or subdivision review process under which

² Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Rate Map (FIRM) for Orange County, New York. Map numbers 36071C0481E and 36071C0483E. August 3, 2009.

the immediate impacts of site specific activities on protected natural resources would be reviewed by the appropriate regulatory agencies prior to any development.

As the soils and geological characteristics of the study area are not unlike the Town and County in general, it is expected that conventional methods of construction would be employed to minimize potential impacts to these natural resources. Prime agricultural soils to the extent they are replaced by development, and the remaining farmland if that use is abandoned³, may be lost as a result of future construction.

Likewise, the habitats and wetlands that exist in the study area are common to the region, and, to the extent they would be affected by development activities under either development scenario (without or with annexation), it is expected that conventional methods of construction would be employed to minimize potential impacts to these resources to the extent practicable. The Pitch pine-oak-heath rocky summit habitat and location of the NYS Protected Allegheny Woodrat identified above exist outside of the project area and no impact to these resources would occur. Tree removal limited to certain months of the year (April through September) would protect potential impacts to Indiana bats or Northern Long-eared bats. Certain species protection measures would also be needed during construction in any area of concern for the Timber Rattlesnake, a New York State Threatened species.

The annexation lands are currently largely vacant or underdeveloped and provide an open space resource, although neither designated nor protected as such. In the future, whether or not the proposed annexation land becomes part of the Village of Kiryas Joel, it will likely be developed to accommodate the projected population growth. Under either future scenario much of the open space resource will be lost. Development could disturb virtually all of the land in some fashion, either resulting in temporary or permanent removal of vegetation, and will increase the impervious surface coverage thereby increasing the rate and volume of stormwater runoff in the future in the absence of appropriate stormwater controls. Changes to the existing drainage patterns at the site scale will also occur where the land is regraded for development. To offset these changes, any future development will need to include the design and implementation of appropriate stormwater management infrastructure to properly control stormwater runoff and provide water quality treatment.

For every site specific plan that would disturb more than an acre of land, a stormwater management design plan will be required to incorporate structures and methods designed to satisfy the requirements of the NYSDEC Stormwater Management Design

³ A change in use would eliminate its designation as an agricultural district, which affords the landowner incentives and protections designed to forestall the conversion of farmland to non-agricultural uses.

Manual with regard to sizing and performance criteria for site-specific stormwater management practices that properly treat stormwater runoff.

Site specific measures related to erosion and sedimentation control must be designed and implemented in accordance with the New York “Standards and Specifications for Erosion and Sediment Control.”⁴

In the future when land is developed, without or with annexation, an applicant for a site development project will need to submit a stormwater pollution protection plan (SWPPP) to the regulating municipality for review and approval at the time of detailed site plan review. The objective of the SWPPP is to control runoff of pollutants from the project area during and after construction activities by complying with the NY State Pollutant Discharge Elimination System (SPDES) Stormwater Permit for Construction Activities. As Kiryas Joel is an MS4, SWPPPs for development proposals will need to receive review and acceptance by the Village Engineer.

Cumulatively, loss of existing natural resources over portions of the annexation lands as they are developed for human use will result in incremental reductions in habitat potential for the indigenous species.

Ground Water Withdrawals

The water supply expansion program underway by the Village of Kiryas Joel which includes a connection to the New York City Catskill Aqueduct will reduce use and reliance on groundwater resources, independent of an annexation action. The program includes use of groundwater sources from multiple well sites as a backup (redundant) supply, which would be from different geologic formations and aquifers in the area. (Description of the water supply program is provided in section 3.5.) Some of these wells are currently permitted for use as part of the Village water supply system and some will require testing to establish their potential yields in relation to the available aquifer supply. Water withdrawal limits established by the NYSDEC well permits would protect existing wells that use the aquifer. The Village's water supply program is expected to avoid any cumulative effect on groundwater resources by reducing such withdrawals.

Surface Water Discharges

Currently, the Kiryas Joel WWTP and Harriman WWTP both discharge to the Ramapo River watershed under permits issued by NYSDEC. Under the 507-acre annexation, this will not change and both plants will continue to treat the wastewater from the study area (except where individual septic systems are employed). Their permit requirements are intended to avoid cumulative effects on the water quality of the Ramapo River. Following

⁴ New York State Department of Environmental Conservation, “New York Standards and Specifications for Erosion and Sediment Control.” August 2005.

the Village's planned connection to the Aqueduct, some surface water from the Ashoken Reservoir watershed will be transferred to the Ramapo watershed via these two WWTPs. Thus, the water resources of the Ramapo watershed will be augmented by the inter-basin transfer of water, increasing the surface flow volume without a corresponding withdrawal from the Ramapo Basin. (For further discussion of the discharges to the Ramapo watershed, refer to section 3.5.)

3.6.3 Mitigation Measures

As outlined in the preceding paragraphs, any site specific action will need to comply with the applicable State and local requirements created for the protection of natural resources. Individual site plan or subdivision plan reviews will need to address the various mitigation measures that would be appropriate at each site to protect its natural resources. Such measures would be taken without or with annexation.

Mitigation for impacts to geology, soils and topography (steep slopes) would include application of a number of measures that are specified in detail in the State's erosion control standards including planning and site management measures for impact minimization or avoidance, design and implementation of vegetative, biotechnical and structural controls, design of an erosion and sediment control plan, and development of a SWPPP in accordance with the State's Stormwater Management Design Manual.

Mitigation for impacts to wildlife and habitats, including wetlands, would also include measures for impact minimization or avoidance. Identified species of concern would require species-specific measures. Impacts to wetlands would necessitate reviews by jurisdictional agencies.

Mitigation for impacts to water resources would include design and implementation of measures that reduce impervious surfaces, capture and treat runoff from developed areas, and manage runoff to levels equal to or less than the existing conditions of water quality and runoff quantity, in strict accordance with the State's Design Manual.

Without annexation, development proposals for land in the annexation territory would typically be subject to review under the provisions of the Town of Monroe Code by the Town Planning Board, Conservation Commission, and Town Engineer and/or Building Inspector. With annexation, development proposals for land in the annexation territory would typically be subject to review under the provisions of the Village of Kiryas Joel Code by the Village Planning Board and Village Engineer and/or Building Inspector.

General areas of review related to the natural resources of any particular site in either municipal code include similar reviews and approvals, except the Town code includes a section regarding wetland protection. The same State and Federal regulations would apply in either annexation scenario.

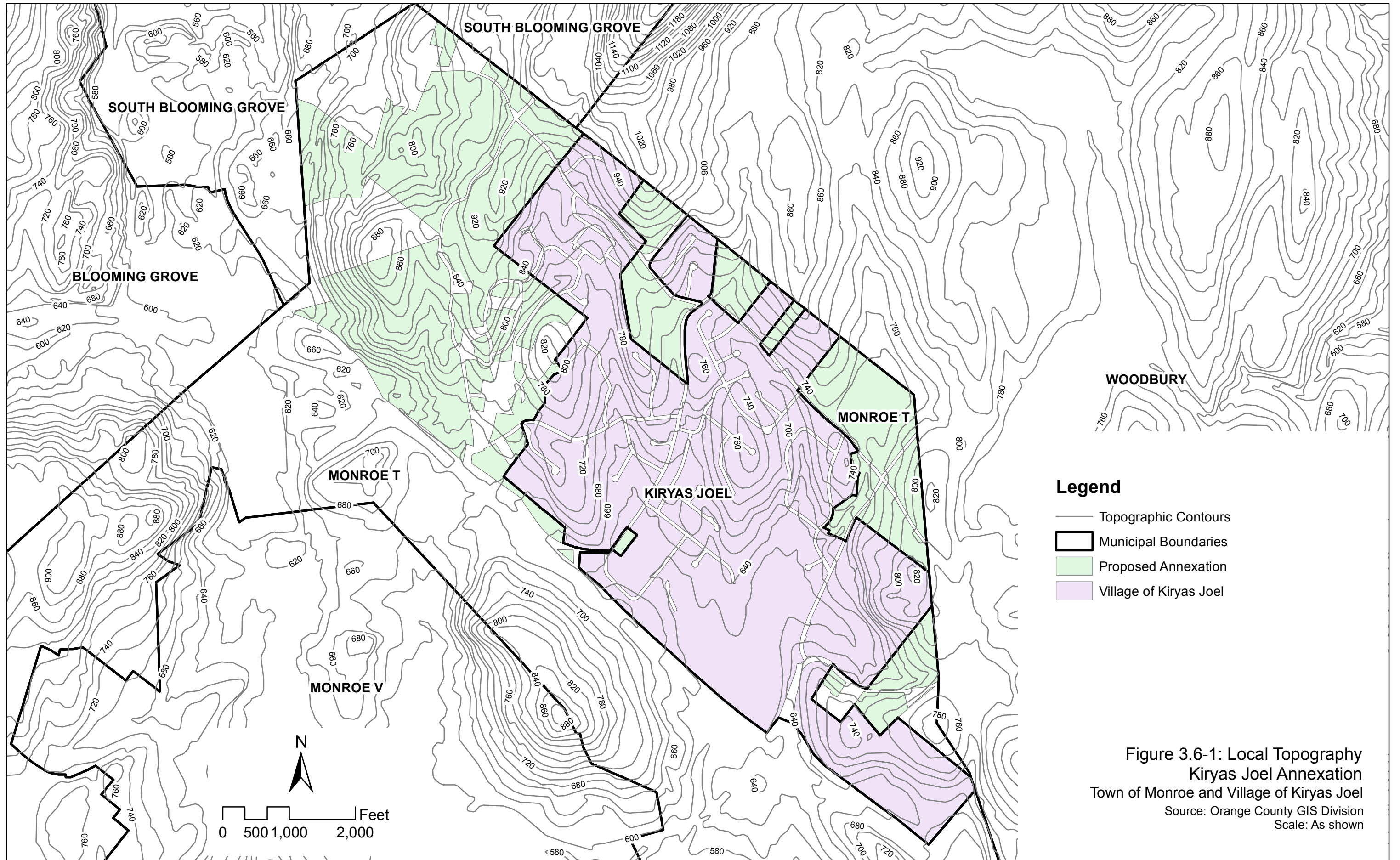
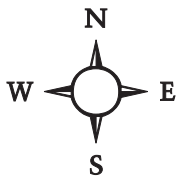
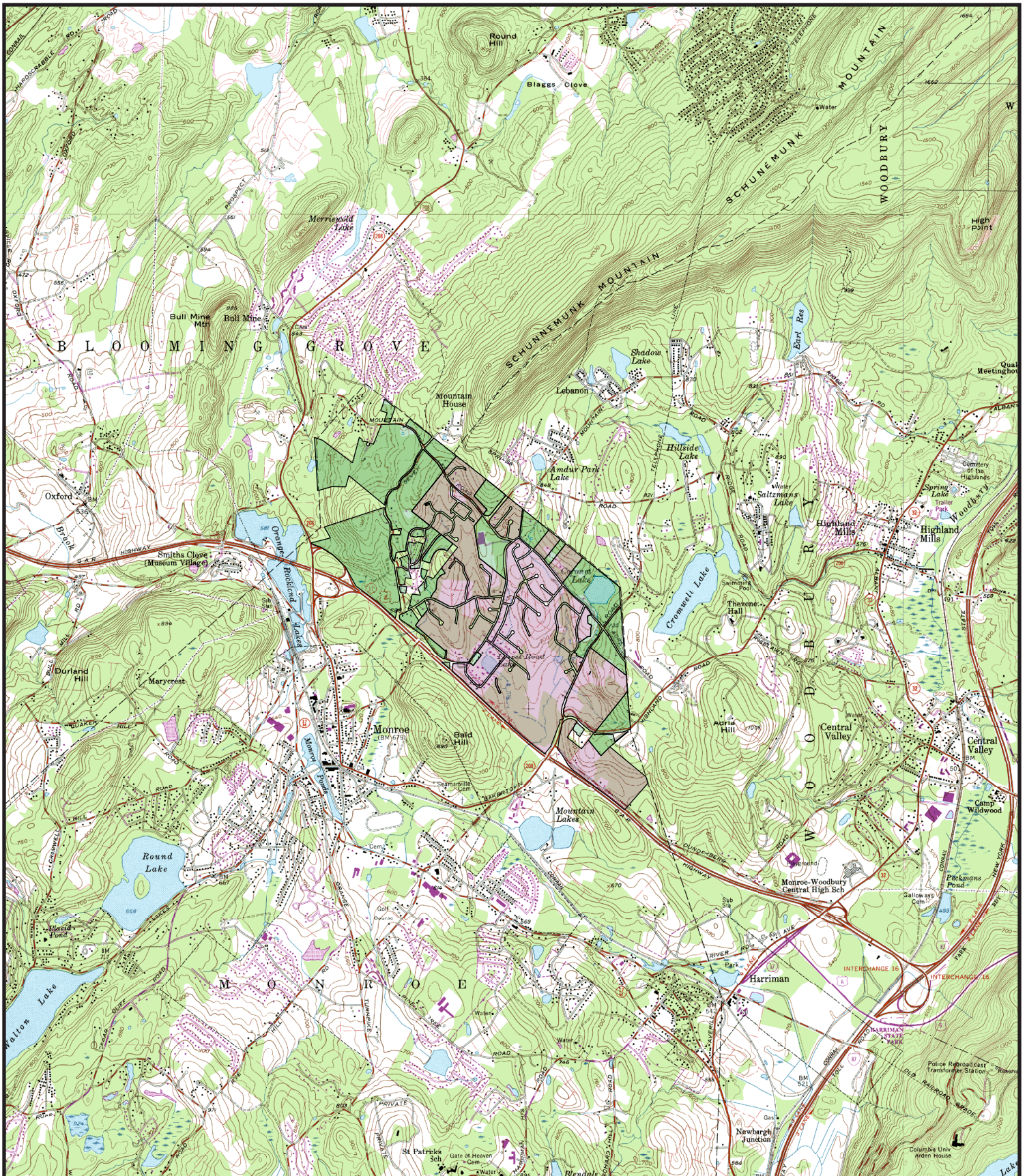


Figure 3.6-1: Local Topography
 Kiryas Joel Annexation
 Town of Monroe and Village of Kiryas Joel
 Source: Orange County GIS Division
 Scale: As shown



| Legend | |
|---|------------------------|
| | Village of Kiryas Joel |
| | Lands to be Annexed |

Figure 3.6-2: Area Topography
 Kiryas Joel Annexation
 Town of Monroe & Village of Kiryas Joel
 Orange County, NY
 Base: USGS 7.5-minute Topographic Map
 Scale: 1" = 4,000'

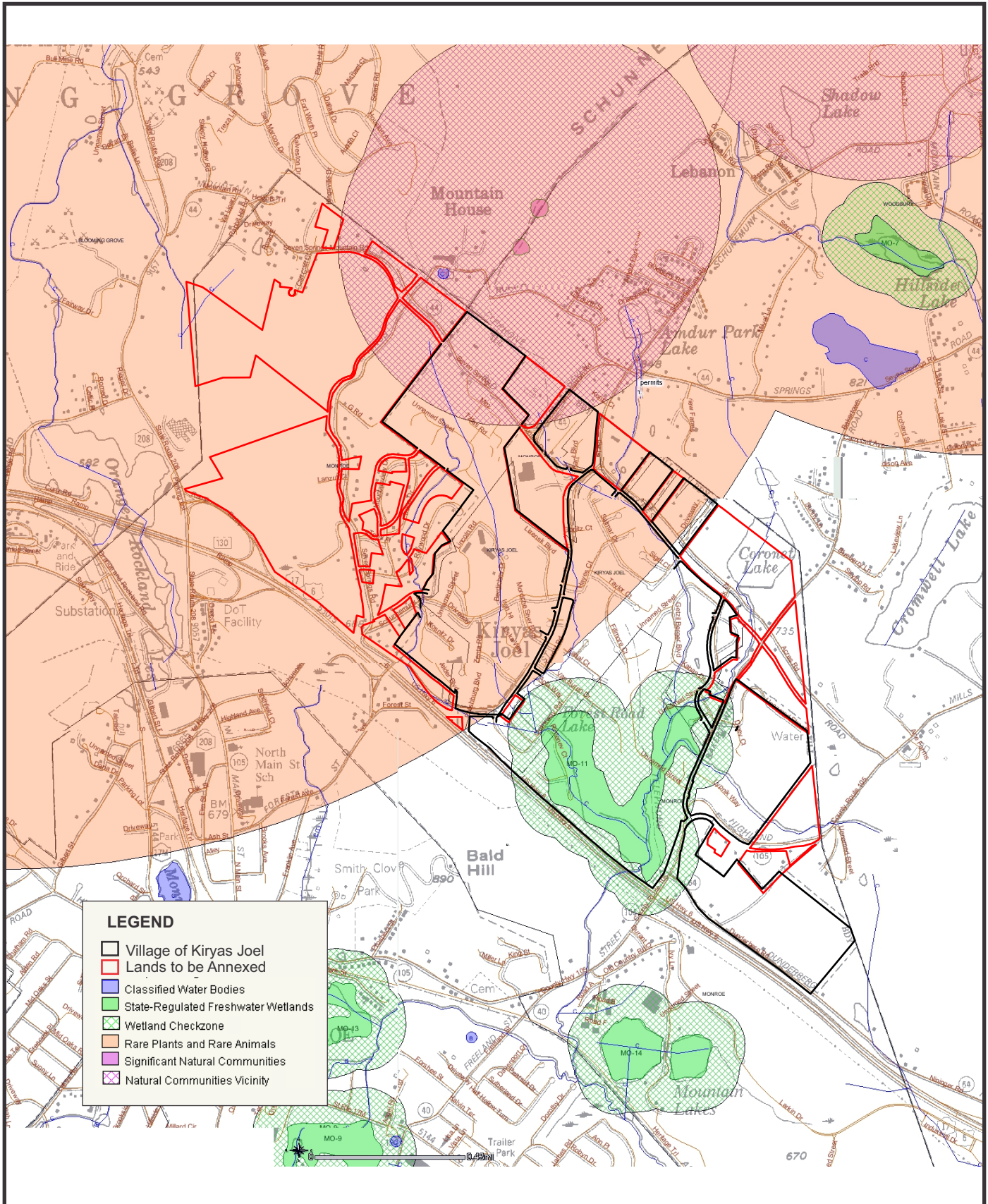
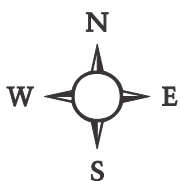


Figure 3.6-4: Environmental Sensitivity
 Kiryas Joel Annexation
 Town of Monroe and Village of Kiryas Joel
 Source: NYSDEC Environmental Mapper,
 Orange County GIS Division
 Approx. Scale: 1 inch = 2,000 feet



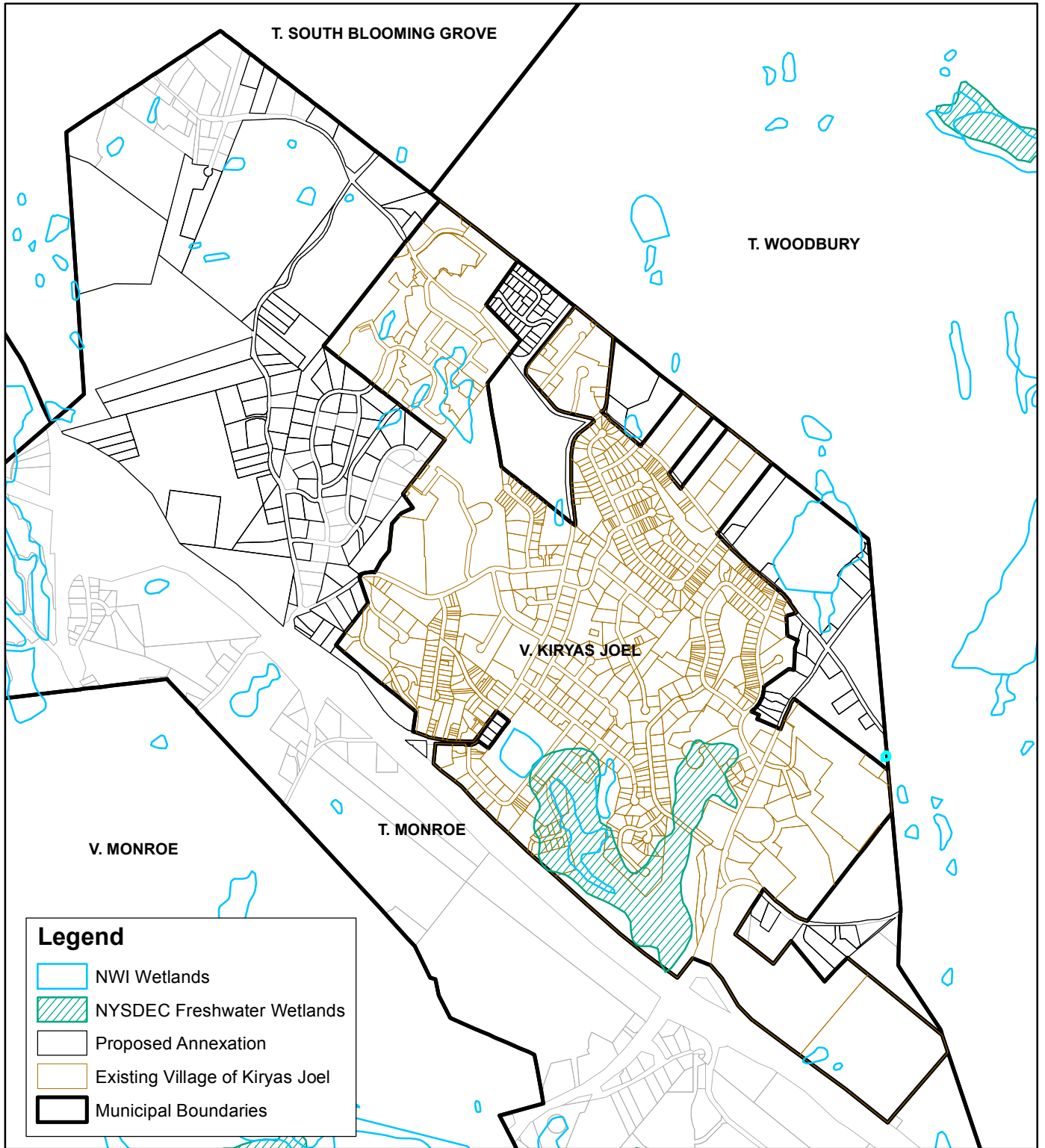


Figure 3.6-5: Freshwater Wetlands
Kiryas Joel Annexation
 Town of Monroe and Village of Kiryas Joel
 Source: Orange County GIS Division, 2014
 Scale: As shown

