3.0 ENVIRONMENTAL SETTING, POTENTIAL IMPACTS, AND MITIGATION

3.1 Geology, Soils and Topography

3.1.1 Existing Conditions

Geology

The Patrick Farm property lies within the Triassic Lowlands of the New England physiographic province. In southern New York, this province is defined by broad, gentle valleys with a pattern of ridges. The site is underlain by the Brunswick Formation, which extends throughout the central portion of Rockland County and eastward towards the Hudson River. The Brunswick Formation is part of the Newark Group and is characterized by sandstone, siltstone and mudstone.

Ridgelines in the majority of this physiographic province trend from the southwest corner of the county to the northeast corner. The basic patterns of hills and valleys reflect the structure and variation of the composition of the underlying rock. In general, the hills and drainage patterns of the landforms trend southwest to northeast. The local drainage patterns reflect this underlying pattern.

Topography

The property has very gently sloping to nearly level topography, except along the westerly section of the site, which slopes sharply down towards Route 202, as shown on Figure 3.1-1, Site Topography. Topography in the vicinity of the property is flat to gently sloping with steeper slopes to the northwest of the property as shown on Figure 3.1-2, Local Topography. The property is located in a valley bounded generally by Panther Mountain to the northwest of the site.

On-site slopes are shown on Figure 3.1-3, Existing Slope Conditions. The majority of the site, or approximately 175 acres, has gradual slopes of less than 15 percent, located primarily in the central and eastern portion of the property as well as the western portion of the property, west of Route 202. Slopes in excess of 15 percent comprise a small portion of the property (33 acres of a 207 acre site), and are located in areas along the western edge of the property.

The highest elevations on the Patrick Farm site are found along the southwesterly boundary at an approximate elevation of 575 feet. The lowest elevations on the site are located in the wetland area west of Route 202 at an approximate elevation of 400 feet. Table 3.1-1 summarizes the amount of slopes found on-site by slope range: 0-10 percent, 10-15 percent, 15-25 percent, 25-50 percent, and slopes greater than 50 percent.

The project site does not contain any prominent or unique geologic features. A local topographic hill top is located in the southwest portion of the site, with an elevation of approximately 575 feet.

Table 3.1-1 Existing Slopes	
Slope Category	***Approximate Acres Existing***
0% to 10%	148.0
10% to 15%	27.1
15% to 25%	20.0
25% to 50%	11.2
>50%	2.2
TOTAL	208.5
Source - Leonard Jackson Associates, Inc	

Soil Types

The soils on the Patrick Farm property have been identified using the soil classifications of the USDA Soil Conservation Service (SCS). Descriptions of soils are taken from the *Soil Survey of Rockland County* (SCS, October 1990). The property is underlain by five (5) soil types: Wethersfield gravelly silt loam, Alden silt loam, Watchaug fine sandy loam, Holyoke-Rock outcrop complex, and Yalesville sandy loam. The distribution of the soil types on the property is shown the soils map illustrated in Figure 3.1-4. The characteristics of each soil type are described below.

Wethersfield gravelly silt loam (WeB, WeC, & WeD)

This soil unit is very deep and well drained. It can be located on ridge tops, sides of slopes and at the foot of slopes. Slopes for this soil range from 3 to 8 percent (WeB), 8 to 15 percent (WeC), and 15 to 25 percent (WeD). Permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. Available water capacity is moderate and the depth to water table is 1.5 to 2.5 feet below the ground surface in February to April. The erosion hazard is slight is soil type WeB and moderate in soil types WeC and WeD. The surface runoff is medium is soil types WeB and WeC but rapid in WeD soils. Depth to bedrock is generally more then 60 inches below the ground surface. According to the Natural Resource Conservation Service (NRCS) this soil type is not considered a hydric soil.

This soil unit is the predominant soil type on site and is found throughout much of the central portion of the property as well within the northern and southern portions of the Property, as shown in Figure 3.1-4, Soils Map.

Alden silt loam (Ad)

This soil unit is deep and very poorly drained. Slopes are primarily level, less then 1 percent. Permeability is moderate in the surface layer, moderately slow in the subsoil, and slow or moderately slow in the substratum. Available water capacity is high and the depth to water table is 1 foot above the surface to 6 inches below the ground surface in November to June. The erosion hazard ranges from none to slight while the surface runoff is slow or ponded. Depth to bedrock can be found at more than 60 inches below the ground surface. According to the NRCS this soil type is considered a hydric soil.

This soil unit is mapped in the southern portion, a small area of the central portion and along the eastern boundary of the property as shown in Figure 3.1-4, Soils Map.

Watchaug fine sandy loam (Wc)

This soil unit is very deep and moderately well drained. Slopes range from 0 to 3 percent. Permeability is moderate in the surface layer and subsoil and moderate or moderately rapid in the substratum. Available water capacity is moderate and the depth to water table is 1.5 to 2.5 feet below the ground surface in November to April. The erosion hazard is slight while the surface runoff is slow. Depth to bedrock is generally more than 60 inches below the ground surface. According to the NRCS this soil type is not considered a hydric soil.

This soil unit is mapped in the northern portion of the property as shown in Figure 3.1-4, Soils Map.

Holyoke-Rock outcrop complex (HoD and HoF)

This soil unit is composed of shallow, well drained or somewhat excessively drained Holyoke soils and areas of exposed bedrock. Slopes range from 15 to 25 percent (HoD) and 25 to 50 percent (HoF). Permeability is moderate throughout the soil. Available water capacity is very low and the depth to water table is more then 6 feet below the ground surface. The erosion hazard is considered severe in soil type HoD and very severe in soil type HoF while the surface runoff is rapid is soil type HoD and very rapid in soil type HoF. Depth to bedrock can be found at 10 to 20 inches below the ground surface. According to the NRCS this soil type is not considered a hydric soil.

This soil unit is mapped along the northwestern portion of the property boundary, along US Route 202, as shown in Figure 3.1-4, Soils Map.

Yalesville sandy loam (YaC)

This soil unit is moderately deep and well drained. Slopes range from 8 to 15 percent. Permeability is moderate or moderately rapid in the surface layer and subsoil and moderately rapid in the substratum. Available water capacity is moderate and the depth to water table is more then 6 feet below the ground surface. The erosion hazard is considered moderate while the surface runoff is medium. Depth to bedrock can be found 20 to 40 inches below the ground surface. According to the NRCS this soil type is not considered a hydric soil.

This soil unit can be found along the southwestern boundary of the property as shown in Figure 3.1-4, Soils Map.

Soil characteristics are described in Table 3.1-2, below. The degree and kind of soil limitations that may affect typical building site development are also described in Table 3.1-2. This information has been compiled from data in the SCS *Soil Survey of Rockland County*.

Hydrologic soils are grouped in to A, B, C, D; Group A soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission. Group B soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep, moderately well drained or well drained soils that have moderately fine texture to

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

Table 3.1-2
Soil Characteristics

Soil Series	Hydrologic Group[1]	Permeability (in./hr.)	Erosion Factor K[2]
Wethersfield gravelly silt loam (WeB)	C	0.6-2.0 (0-22 in) <0.2 (22-60 in)	0.24-0.32
Wethersfield gravelly silt loam (WeC)	C	0.6-2.0 (0-22 in) <0.2 (22-60 in)	0.24-0.34
Wethersfield gravelly silt loam (WeD)	C	0.6-2.0 (0-22 in) <0.2 (22-60 in)	0.24-0.32
Alden silt loam (Ad)	D	0.6-2.0 (0-9 in) 0.2-0.6 (9-33 in) 0.06-0.6	0.28-0.37
Watchaug fine sandy loam (Wc)	B	.06-2.0 (0-21 in) 0.6-6.0 (21-62 in)	0.24-0.37
Holyoke-Rock outcrop complex (HoD)	C/D*	0.6-2.0 (0-16 in)	0.2-0.43
Holyoke-Rock outcrop complex (HoF)	C/D*	0.6-2.0 (0-16 in)	0.2-0.43
Yalesville sandy loam (YaC)	C	0.6-6.0 (0-27 in) 2.0-6.0 (27-30 in)	0.24-0.32

[1] Hydrologic groups are used to estimate runoff from precipitation; they range from high infiltration (A) to low infiltration (D).
[2] Erosion Factor K indicates susceptibility to sheet and rill erosion (expressed in tons/acre/year). K values range from 0.05 to 0.69.
*See Description of the map unit for composition and behavior characteristics of the ma p unit.
Source: Soil Survey of Rockland County, New York, USDA SCS, 2005.

The SCS *Soil Survey for Rockland County* identifies potential limitations for development of roads, buildings and lawns or landscaping, where such limitations may require planning consideration prior to development. The presence of these constraints does not mean the land is undevelopable. The ratings reflect the difficulty and relative costs of corrective measures that may be necessary (e.g. erosion controls, footing drains or other drainage improvements) for

development. The limiting characteristics of these soils require thoughtful project planning, design and management. Design recommendations to respond to these conditions have been addressed and are provided in Section 3.1.3, Mitigation Measures.

3.1.2 Potential Impacts

Geology

The presence of bedrock outcrops on the site indicates that rock removal would be required for project construction. While rock removal methods to be used on site have not been determined, it is assumed that blasting may be required to bring the property to grade. However, in areas where weathered bedrock is encountered and minimal cutting is needed mechanical means (i.e. ripping, chipping) would be employed in lieu of blasting. Site conditions would mandate which method of rock removal would be required for specific areas on the property.

For the purposes of this assessment, it is assumed that blasting would be required in certain areas as shown on Figure 3.1-5, Potential Blasting Locations. As depicted on Figure 3.1-5, rock removal is likely to be required within the western area primarily for road construction and limited residential development. It should be noted that the ridge line area along Route 202 in the southwest portion of the site has been designed to eliminate blasting along the ridge line in order to preserve the scenic value of the ridge line in this area.

Blasting would result in short-term and temporary noise impacts. Refer to Section 3.1-3, Mitigation Measures for measures that are proposed to reduce impacts to nearby residents and businesses. These mitigation measures include planning and operational measures in conjunction with the project development and construction.

Any blasting would be carried out in accordance with Town of Ramapo regulations and procedures developed for this project and a blasting contract developed with the Blasting Contractor. The procedures described below are based on State blasting law and the "Blasting and Explosive Control Law for the Town of Ramapo (Local Law No. 10-1992)" pertaining to the transportation of the blasting material and the noise regulations, respectively. The contractor's Blasting Plan would be based on site specific blasting requirements, and would be submitted to the Town for approval in advance of any site work activity.

Slopes

Soil erosion during construction is related in part to the amount of disturbance to steep slopes which would be susceptible to erosion. As described previously, only 13.4 acres or 6.4 percent of the entire site consists of slopes greater than 25 percent. Impacts to slopes on the property are presented in Figure 3.1-6, Slope Disturbance. Impacts to slopes would be minimal for the Patrick Farm development because of the relatively shallow slopes on the site and the limited areas of steep slopes to be disturbed.

Table 3.1-3 provides an estimate of the amount of disturbance by slope range.

Table 3.1-3
Slope Disturbance Analysis

Slope Category	*Approximate Acres Disturbed*
0% to 10%	80.7 acres
10% to 15%	18.3 acres
15% to 25%	10.8 acres
>25%	3.9 acres
TOTAL	113.7 acres

Source - Leonard Jackson, PC. 2008

Soil Impacts

Suitability of Soils Based on Rockland County Soil Survey

The SCS *Soil Survey of Rockland County* identifies these soils as possessing potential limitations for development of roads, buildings and excavations due to their 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 (e.g. erosion controls, footing drains or other drainage improvements) for development. The limiting characteristics of these soils may be overcome by careful project planning, design and management.

Alden soils have a prolonged period of wetness and water commonly at or above the surface are the major limitations. Local roads and streets are limited by the frost action, as well as the prolonged periods of water at or near the surface. According to the grading plan Alden soils are primarily not being disturbed except for small areas for road construction. Proper road base and roadway drainage construction will be required in these soils.

Holyoke-Rock outcrop complex hilly/very steep (HoD/HoF) soils have limitations associated with dwellings, and local roads and streets due to slope and depth to bedrock in the Holyoke soils, and the areas of exposed bedrock. Limited areas of Holyoke-Rock outcrop soils are present and proposed to be disturbed in the southeastern portion of the site. Proper grading, material removal and erosion control measures can overcome the limitations described above.

Watchaug fine sandy loam (Wc) soils have limitations associated with dwellings due to wetness. Utilizing subsurface drains around footings and foundations and sealing basements will reduce the potential impacts related to wetness. Grading and landscaping will divert runoff from around the residences further reducing potential wetness. Limitations for the internal roads and streets are mostly related to frost action. The installation of proper road subgrade and proper roadway drainage would reduce the potential for frost action.

Wethersfield gravelly sit loam (WeC/WeB/WeD) soils have limitations associated with dwellings and road construction due to wetness, frost action and slope. Utilizing subsurface drains around footings and foundations and sealing basements will reduce the potential impacts related to wetness for residences. The installation of proper road subgrade and roadway drainage would reduce the potential for wetness and frost action. Appropriate grading and slope stabilization will address limitations related to slope for both residences and roadways.

Yalesville sandy loam (YaC) soils have limitations associated with dwellings, and roadways due to depth to bedrock. Appropriate and careful methods of grading, rock removal and slope stabilization will address limitations related to shallow bedrock.

Grading Plan

The grading and recontouring of soils will be required for project construction. Areas of proposed grading and soil disturbance for the site are shown in the detailed Grading Plan provided with the Site Plan drawings. The total area of grading or site disturbance is estimated to be 113.7 acres of the site.

Soil Erosion during Construction

The potential for soil erosion will be greatest during the site work and grading phase, when existing vegetation is removed and soils are exposed. These construction-related impacts would be temporary and would be mitigated by a Soil Erosion and Sediment Control Plan (see mitigation section below). As final grades are achieved, disturbed areas will be stabilized, seeded and landscaped. As can be seen in Figure 3.1-7, disturbed areas on the site coincide generally with areas that have been previously disturbed during the agricultural activity which took place on site.

Cut and Fill

A preliminary estimate of the project earthwork has been completed by the project engineer. The grading would involve approximately 225,675 cubic yards (cy) of earth cut and 224,496 cy of fill. This results in approximately 1,179 cubic yards of excess material which will be utilized on-site. The excess material is primarily the result of cuts required for the construction of the internal roads, building pads and stormwater basins. Figure 3.1-7, Cut and Fill Analysis, shows those areas on site where the cut or fill will exceed a depth of two feet. Grading in those areas where the earth movement is less than two feet is considered to be a minor disturbance.

While the preliminary estimates indicate that there could be an excess of material over the entire site, measures to reduce the amount of cut and fill include a careful analysis of site grading to avoid, to the extent possible, the need for excavation or filling. Since grading is both time consuming and costly, cut and fill has been minimized to the extent practical. Final grades will be adjusted to achieve an earthwork balance for the project.

Based upon the description of soils provided in the Soil Survey, the majority of on-site soils would be suitable for on-site reuse. Specific uses of on-site soils such as under foundations or roadways would require either crushed rock or soil with suitable compaction properties. Other on-site soils would be suitable for berms, slopes, and areas of lawn and landscaping. Those soils with excessive moisture or poor permeability would not be used where proper soil drainage is necessary.

3.1.3 Mitigation Measures

Geology Impacts

Due to the known presence of rock outcrops and bedrock and the required grading, the project engineer anticipates that blasting would be required for the proposed development. Preliminary estimates of areas of rock removal are shown on Figure 3.1-5. Although it is anticipated that some bedrock near the site's surface can be removed by mechanical means (i.e. ripping, chipping), blasting would be required in some areas.

Blasting would be carried out in accordance with a final blasting contract with the Blasting Contractor. This plan would meet all New York State and Town of Ramapo requirements for blasting (Blasting and Explosive Control Law for the Town of Ramapo, Local Law No. 10-1992). New York State regulations require insurance and licensing for the contractor. The Town of Ramapo Blasting Law requires work to be completed under a New York State blaster's license and that a Blasting Permit be issued by the Town of Ramapo Building Department. Proof of valid liability and damage insurance is a prerequisite for obtaining a blasting permit.

The Town of Ramapo Blasting law requires the Permit holder to notify all property owners within 750 feet from the blasting site at least 48 hours prior to blasting. In addition, the permit holder is required to place signs at the nearest intersections to the site or site access within 600 feet, at least 24 hours prior to blasting.

Potential areas of concern associated with blasting activities are summarized below.

Flyrock

Flyrock is broken rock that is propelled through the air as a result of a blast. Flyrock is controlled by managing the size of blasts and the use of blasting mats; heavy woven metal mats that cover the blast site. The quantity of explosives would be limited to the amount necessary to fracture the rock without endangering persons or neighboring property. This approach would minimize the amount of flyrock generated by each blast and prevent the potential for off-site damage to occur.

Ground Vibration

Ground vibrations are caused by elastic waves emanating from a blast and are the most frequently cited cause (both real and imagined) of damage to structures. The most common type of damage associated with excessive ground vibration is lengthening of existing minor cracks in structure walls and foundations.

Although minor cosmetic damage is possible when blasting within legal limits, it is considered unusual. Blasting procedures do recognize that in rare cases, these limits would not protect all structures from threshold (cosmetic) damage due to the age, condition or construction of a structure.

Airblast

Airblast is an airborne shock wave resulting from the detonation of explosives and can be measured in pounds per square inch or decibels. The "loudness" of the airblast does not necessarily indicate the energy of the shock wave since the human ear can only hear frequencies in the range of about 16-20,000 Hz. Therefore, the blaster can create a blast that sounds loud, but has relatively low shock wave energy, or alternatively, a blast that is virtually inaudible but has a very high airblast.

Structural damage from airblast is very rare, and usually minor. A blast can sound very loud and rattle windows even if the blast is well below levels set in the protocol or regulations or levels that would cause structural damage. The blaster must not exceed airblast limits of 135 decibels at the property line. Typically, windows will not break under 140 decibels.

Noise

Typically, blasting results in very short term, loud noise impacts. Blasting may result in short term (seconds) noise in the range 76 to 108 within 200 feet of the blasting site and 68 to 100 within 500 feet of the blasting site. Blasting will only be done between the hours of 8:00 AM and 5:00 PM and will not be done on Saturdays, Sundays or holidays.

Soil Erosion and Sediment Control Plan

The development will require coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-08-001) as it proposes to disturb more than one (1) acre of land. Erosion and sedimentation will be controlled during the construction period by temporary devices in accordance with the Erosion Control Plan developed specifically for this project site as seen on drawing numbers 6,7 and 8 within the drawing set included at the back of this document. Typical details for erosion control devices are shown on drawing number 8, including within this same plan set.

The erosion control plan has been prepared by Leonard Jackson, P.C. and addresses erosion control and slope stabilization during all construction phases of the project. These plans were developed in accordance with the Erosion and Sediment Control Guidelines in the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-08-001). Construction will include limitations on the area of disturbance and devices to be used to help control soil erosion such as silt fencing, storm inlet protection and a stabilized construction entrance. A waiver for disturbance of more than five acres at one time will be requested from NYS DEC if necessary.

Erosion controls include silt fencing to surround all grading activities as well as the installation of curb inlet sediment traps for the proposed stormwater drains along the access roads. The plan proposes seven (7) construction entrances which would be stabilized and used for the duration of construction. Two stabilized entrances will prevent soil from being carried onto the adjacent and nearby roads. One (1) stabilized construction entrance is proposed on the western property boundary to access Route 202, a second is located along the eastern boundary to gain access to Route 306. In addition 5 minor construction entrances will be utilized to access the individual single family lots proposed along the southern boundary accessing Scenic Drive. Access to the community service worker apartments will be directly from NYS Route 306.

Eight (8) Construction Sections, shown on Figure 2-3, Construction Section Plan, are proposed for the erosion control plan. A Schedule of Public Improvements is included as Appendix V which lists which lists the public improvements to be constructed by Section.

Section 1 includes the construction of both stabilized construction entrances as well as the construction of a total of 202 multifamily units and the road needed to access these units. Of the 202 multifamily units to be constructed, Phase 1 includes construction of the 72 units of workforce condominium flats and construction of 24 community service worker rental apartments. Phase 1 also includes the construction of 17 single family residential lots, and the roads to access these units, located along the northern portion of the project site along US Route 202. In addition a temporary sediment basin located in proximity to the single family homes shall be constructed.

- Section 2: includes the construction of 142 multifamily units and the stormwater basins proposed within the central portion of the property near the existing pond.
- Section 3: includes the construction of 66 multifamily units within the southeastern portion of the property.
- Section 4: includes the construction of 21 single family residential lots along the eastern boundary of the property.
- Section 5: includes the construction of 17 single family residential lots, and the roads to access these units, located within the southeastern portion of the property.
- Section 6: includes the construction of 14 single family residential units, and the roads to access these units, within the southwestern portion of the property.
- Section 7: includes the construction of 13 single family residential units, and the roads to access these units, along the western boundary of the property.
- Section 8: includes the construction of 5 single family residential lots along Scenic Drive and the construction entrances associated with each lot.

The stabilized construction entrances, mentioned above, will be constructed using 1 to 4-inch stone, or reclaimed recycled concrete. The construction details for the construction entrance is provided with the Site Plan drawings. All surface water that is currently flowing or diverted to the construction entrance will be piped beneath the entrance. If the piping is impractical, a mountable berm with 5:1 slopes will be permitted. The entrance will be maintained in a condition to prevent tracking or flowing of sediment onto the public right of way. Any sediment that is spilled, dropped, washed or tracked onto the public right of way will be removed immediately. If washing is required it will be done in an area stabilized with stone, which drains to an approved sediment trapping device. Inspection and needed maintenance will be provided after each rain.

Silt fencing will also be placed around all proposed roads, along the northerly property line, and along but outside the 100-foot wetland buffer, during the initial phase of the erosion control process. Maintenance will be performed on the silt fence and fabric as needed and material will be removed when “bulges” develop in the silt fence.

Best Management Practices (BMPs)

The following best management practices are followed in the development of the erosion control plan:

- divert clean surface water before it reaches the construction area;
- control erosion at its source with temporary and permanent soil protection measures;
- capture sediment-laden runoff from areas of disturbance and filter the runoff prior to discharge; and,
- decelerate and distribute storm water runoff through natural vegetative buffers or structural means before discharge to off-site areas.

These objectives will be achieved by utilizing a collective approach to managing runoff, i.e. Best Management Practices (BMPs).

Divert clean runoff - Diversion of runoff from off-site or stabilized areas will be accomplished through surface swales and erosion control barriers in order to keep clean water clean.

Time grading and construction to minimize soil exposure - To the extent practical, the development will be phased to limit the area of disturbed soil at any particular time. One phase of construction, for example, will be temporarily stabilized until the preceding phase is substantially complete.

Retain existing vegetation wherever feasible - Silt fencing will be used to physically define the limits of work. Wooded and wetland areas not to be developed (regraded), will be retained in the existing condition until the developed areas are completed and stabilized. Buffers of existing vegetation also will be provided along the perimeter of the site and near existing wetland areas.

Stabilize disturbed areas as soon as possible - In areas where work will not occur for periods longer than 15 days unless construction will begin within 30 days, soil will be stabilized by seeding or mulching. Following completion of grading operations, level areas will be seeded and mulched. Sloped areas, such as fill slopes may be seeded or stabilized depending upon weather conditions at the time of carrying out the work.

Minimize the length and steepness of slopes - The steepness and length of slopes have been designed to minimize runoff velocities and to control concentrated flow. Where concentrated (swale) flow from exposed surfaces is expected to be greater than 3 feet per second, haybale or stone check dams will be installed in the swale. The check dams will be placed so that unchecked flow lengths will not be greater than 100 feet.

Maintain low runoff velocities - To protect disturbed areas from storm water runoff, haybale diversion berms and/or soil diversion berms and channels will be installed wherever runoff is likely to traverse newly exposed soil. Immediately following the clearing and stripping of topsoil, rough grading for the temporary and permanent swales and ponds will take place. The swales will direct runoff so that it can be checked or impounded.

Trap sediment on-site and prior to reaching critical areas such as wetlands - Silt fences, hay bale check dams, filter strips, ponds, sediment traps (in areas where no ponds are proposed), and catch basin filters will be used to either impound sediment-carrying runoff and or to filter the runoff as it flows through an area. Silt fencing, augmented by haybale barriers installed on the upgradient side of the silt fencing, will be used wherever land disturbance occurs within 100 feet of the on-site NYSDEC wetlands. A stabilized construction entrance will be installed at the both construction entrances to prevent construction vehicles from tracking soil onto public roads. All temporary erosion control devices will be installed prior to the commencement of construction. The permanent storm water management systems will be installed in conjunction with the residential construction.

Establish a thorough maintenance and repair program - Erosion control measures will be inspected frequently, particularly prior to and following storms, and repaired as needed to ensure that they function properly. In addition to inspections by Town of Ramapo officials, the applicant will be responsible for monitoring and maintaining the soil erosion and sediment controls at all times.

Assign responsibility for the maintenance program - The responsibility for the monitoring and maintenance of the Erosion Control Plan will be detailed in the Storm Water Pollution Prevention Plan and construction drawings.

With these controls in place, it is anticipated that there will be no significant impacts that result from site disturbances to soils and topography.

FRESHWATER WETLAND SUMMARY TABLE

WETLAND DESIGNATION	WETLAND AREA (ACRES)	JURISDICTION
1	12.10	NYSDEC (& ACOE)
2	8.46	NYSDEC (& ACOE)
3	0.287	ACOE
3A	0.079	ACOE
4	5.75	ACOE
5	0.127	ACOE

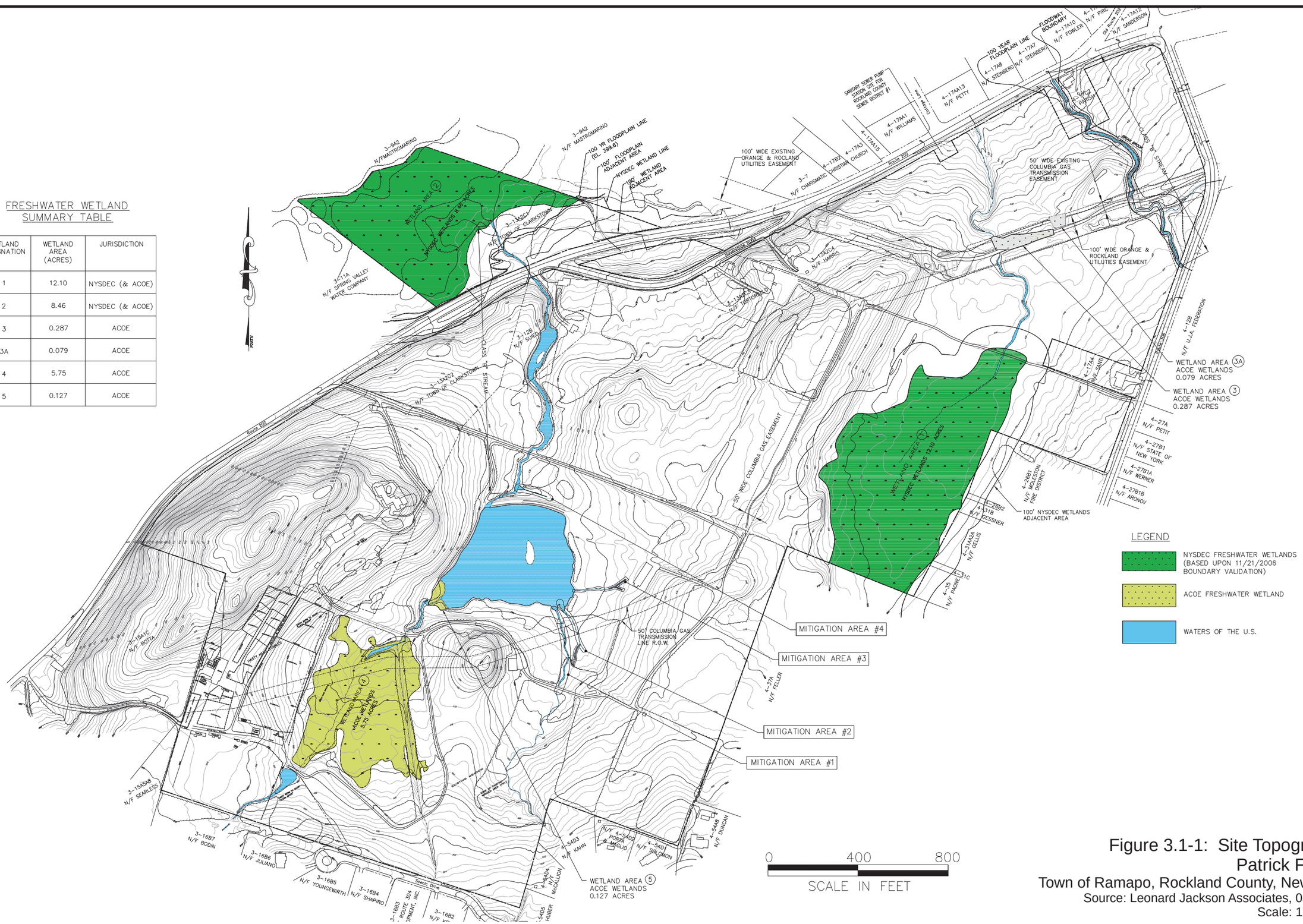


Figure 3.1-1: Site Topography
Patrick Farms
Town of Ramapo, Rockland County, New York
Source: Leonard Jackson Associates, 03/06/09
Scale: 1" = 400'

File 07119 3/17/09
JS/07119

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

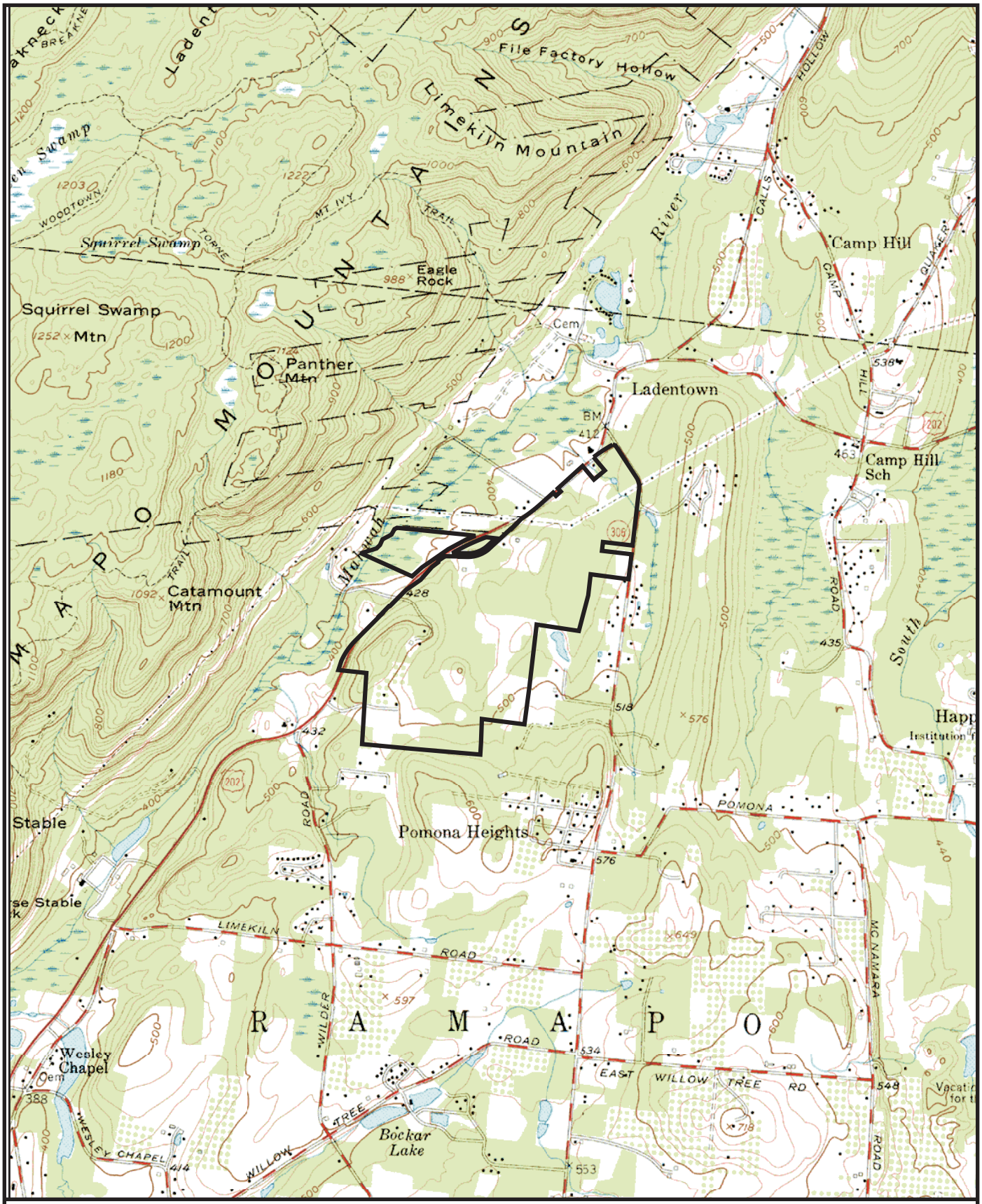
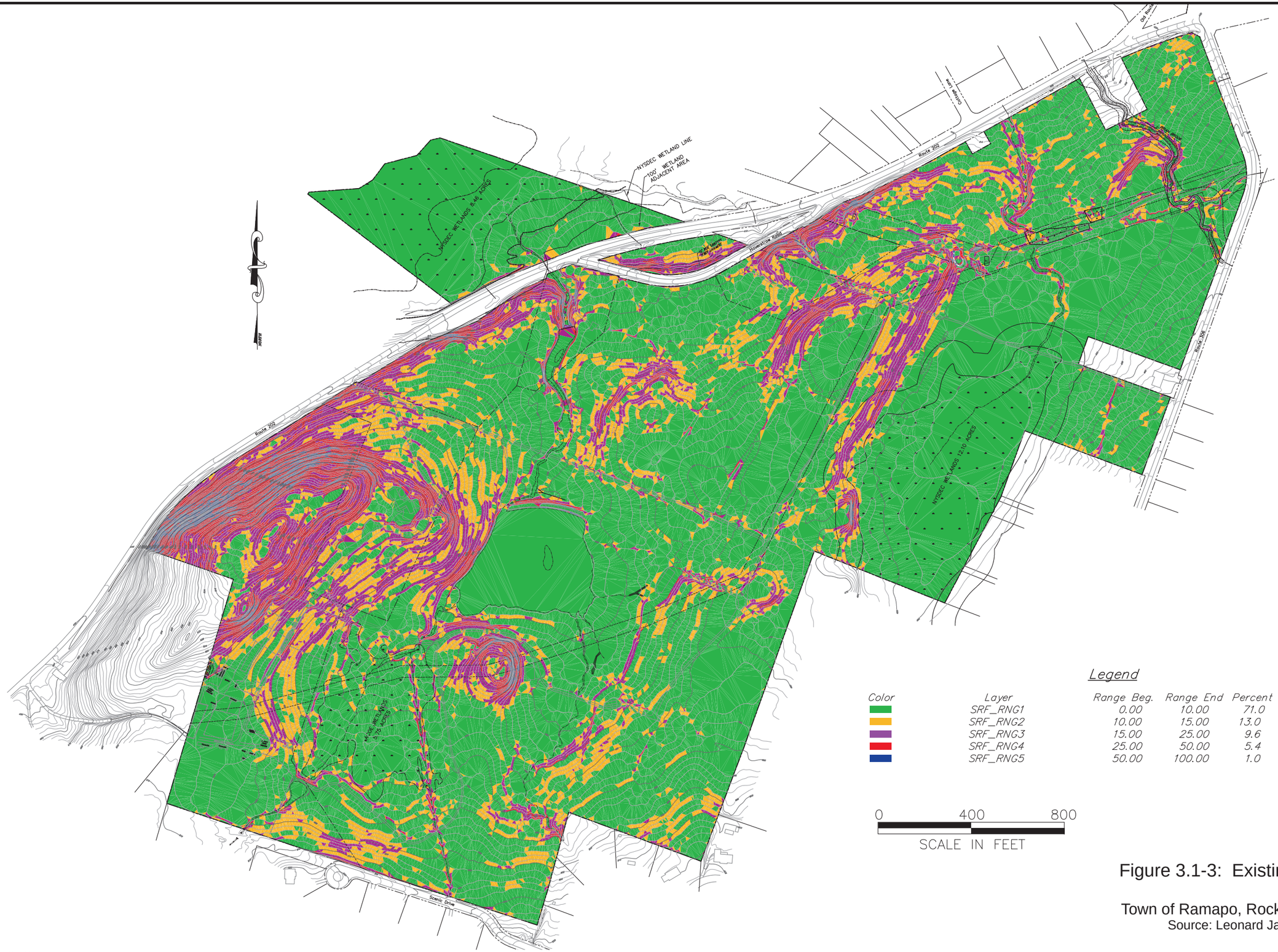


Figure 3.1-2: Local Topography
Patrick Farm
Town of Ramapo, Rockland County, New York
Base: USGS 7.5-Minute Topographic Map, Theills Quad
Scale: 1" = 2,000'

File 07119 12/21/07
JS:\07119

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418



Legend

Color	Layer	Range Beg.	Range End	Percent	Area (sq.ft.)
	SRF_RNG1	0.00	10.00	71.0	6,457,026.93
	SRF_RNG2	10.00	15.00	13.0	1,173,490.38
	SRF_RNG3	15.00	25.00	9.6	864,067.49
	SRF_RNG4	25.00	50.00	5.4	486,054.26
	SRF_RNG5	50.00	100.00	1.0	95,632.49

0 400 800

SCALE IN FEET

Figure 3.1-3: Existing Slope Conditions
Patrick Farms
Town of Ramapo, Rockland County, New York
Source: Leonard Jackson Associates, 03/06/09
Scale: 1" = 400'

File 07119 3/11/09
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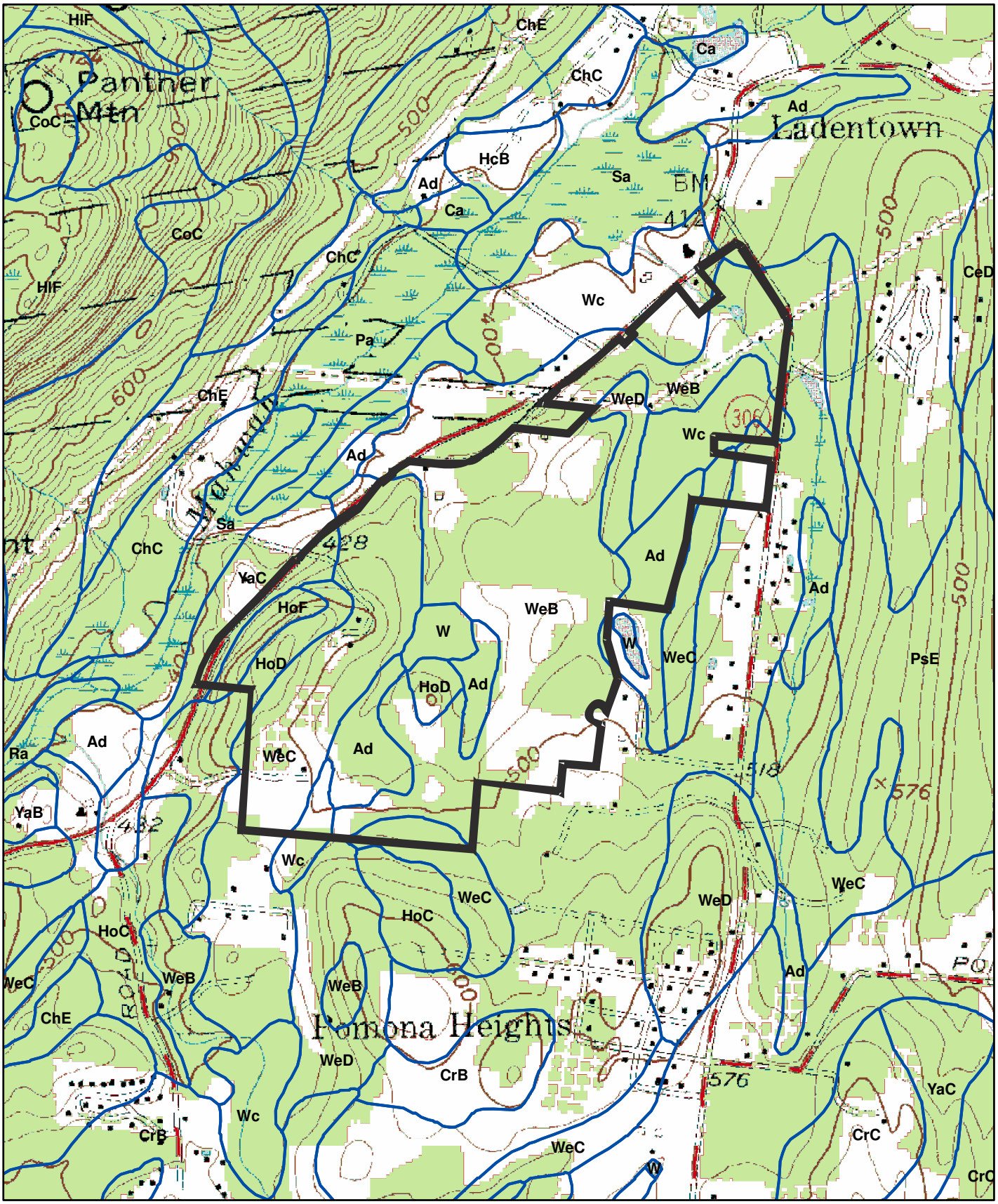

0 260 520 1,040 1,560 2,080 Feet

N
W E
S

Figure 3.1-3: Soils Map
Patrick Farms
Town of Ramapo, Rockland County, NY
Source: Natural Resources Conservation Service
Base Map: USGS 7.5-minute Topographic Map, Thiells Quad
Scale: 1" = 2,000'

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Figure 3.1-5: Potential Blasting Locations
Patrick Farms
Town of Ramapo, Rockland County, New York
Source: Leonard Jackson Associates, 03/16/09
Scale: 1" = 400'

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Figure 3.1-6: Slope Disturbance Map
Patrick Farms
Town of Ramapo, Rockland County, New York
Source: Leonard Jackson Associates, 03/16/09
Scale: 1" = 400'

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Figure 3.1-7: Cut and Fill Analysis Map
Patrick Farms
Town of Ramapo, Rockland County, New York
Source: Leonard Jackson Associates, 03/16/09
Scale: 1" = 400'

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