

3.0 EXISTING SETTING, POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

3.1 Soils and Geology

3.1.1 Existing Conditions

Subsurface

The Depot Hill Farm site is located on the eastern wall of the Harlem Valley in Dutchess County, New York. Harlem Valley is a north – south trending glacial valley adjacent to the Taconic Mountains. The valley is a U-shaped, under fit valley, meaning that the valley once conducted outflows of glacial meltwater that greatly exceed the flow in Amenia/Cascade Brook, which currently occupies the valley near the site. The term “under fit” refers to the modern brook’s small size relative to the width of the valley. The massive volume of water contributed from the receding glaciers as the last ice age drew to a close also deposited large quantities of fluvial deposits such as silt, sand and gravel in many of the surrounding valleys.

Similar sediments, also derived from flow along the margins of the glaciers, resulted in kame deposits such as kames, eskers, kame terraces and kame deltas. In the Ten Mile Creek valley in the vicinity of Amenia, these deposits appear to be kame terraces given the geomorphologic features noted along Old Route 22. Old Route 22 appears to follow one of the higher terraces on the east side of the kame deposit. These deposits are thickest in the valley bottom and thin along the bedrock ridges that form the valley walls. The Depot Hill Farm site appears to be situated just east of the kame terraces with the easternmost edge of the kame deposits possibly reaching the perimeter of the site. Overburden at the site appears to be a varying thickness of glacial till according to the *Surficial Geologic Map of New York – Lower Hudson Sheet* (Cadwell et al. 1986). The till was observed in plowed farm fields at the site and is referenced in various drilling logs related to the site. Further to the east, approaching Rattlesnake Ridge, the bedrock is covered with a thinner layer of rock debris and till with bedrock outcrops present in some locations.

The *Geologic Map of New York- Lower Hudson Sheet* (Fisher et al. 1970) and the existing site specific well logs indicate the bedrock in the vicinity of the site is lower Ordovician Stockbridge Marble. Much of the bedrock of the Harlem Valley consists of this highly folded, fractured and metamorphosed component of the Wappinger Group. This metamorphosed carbonate formation supports the valley floor and underlies much of the Depot Hill Farm site, while staurolite and almandine metamorphic facies of the phyllite, schist and meta-greywacke middle Ordovician Walloomsac Formation (Trenton Group) form the high ridges to the west and east of the site, respectively. Depth to bedrock is greater than 8 feet in the proposed development areas, based upon deep tests conducted on site. Refer to Appendix H for a map of deep test locations.

Surface

Information regarding soils found at the Depot Hill Farm site was obtained from the 2002 *Dutchess County Soil Survey* published by the USDA, and the *Natural Resources Inventory Map Protected Lands and Farm Soils, Town of Amenia Comprehensive Plan* January 2007. According to the Soil Survey, soils found have some limitations to residential development, particularly concerns regarding development of houses with basement, but restrictions are not prohibitive where appropriate design and construction practices, such as foundation drains, coarse fill and erosion control, are provided.

There are 12 soils found on site. The following section provides a description for each of these soil types including soil description, properties, erosive potential, and suitability for agriculture, forestry, recreation, and residential development. Refer to Figure 13 for a map of the soil units on the project site, as well as Appendix H for the soil survey. The specific soils found on site include the following:

Charlton-Chatfield complex, steep, rocky (CrE)

This soil unit is identified in the central-east portion of the property. The soil location mapped is comprised of very deep, well drained Charlton soil, as well as well drained to excessively drained Chatfield soils that formed in glacial till deposits. Slopes of these soils range from 15% to more than 25% with complex topography. This soil is hydrologic class D.

Surface runoff associated with this soil is very rapid and the hazard for erosion is very severe. Permeability of this soil is moderate to moderately rapid. This soil unit is ideal for supporting woodlands; however, it is unsuited for cultivated crops and pasture because of steep slopes. Use of this soil unit as a site for local roads, streets and trails is limited primarily by steep slopes.

Chatfield-Hollis complex, hilly, very rocky (CtD)

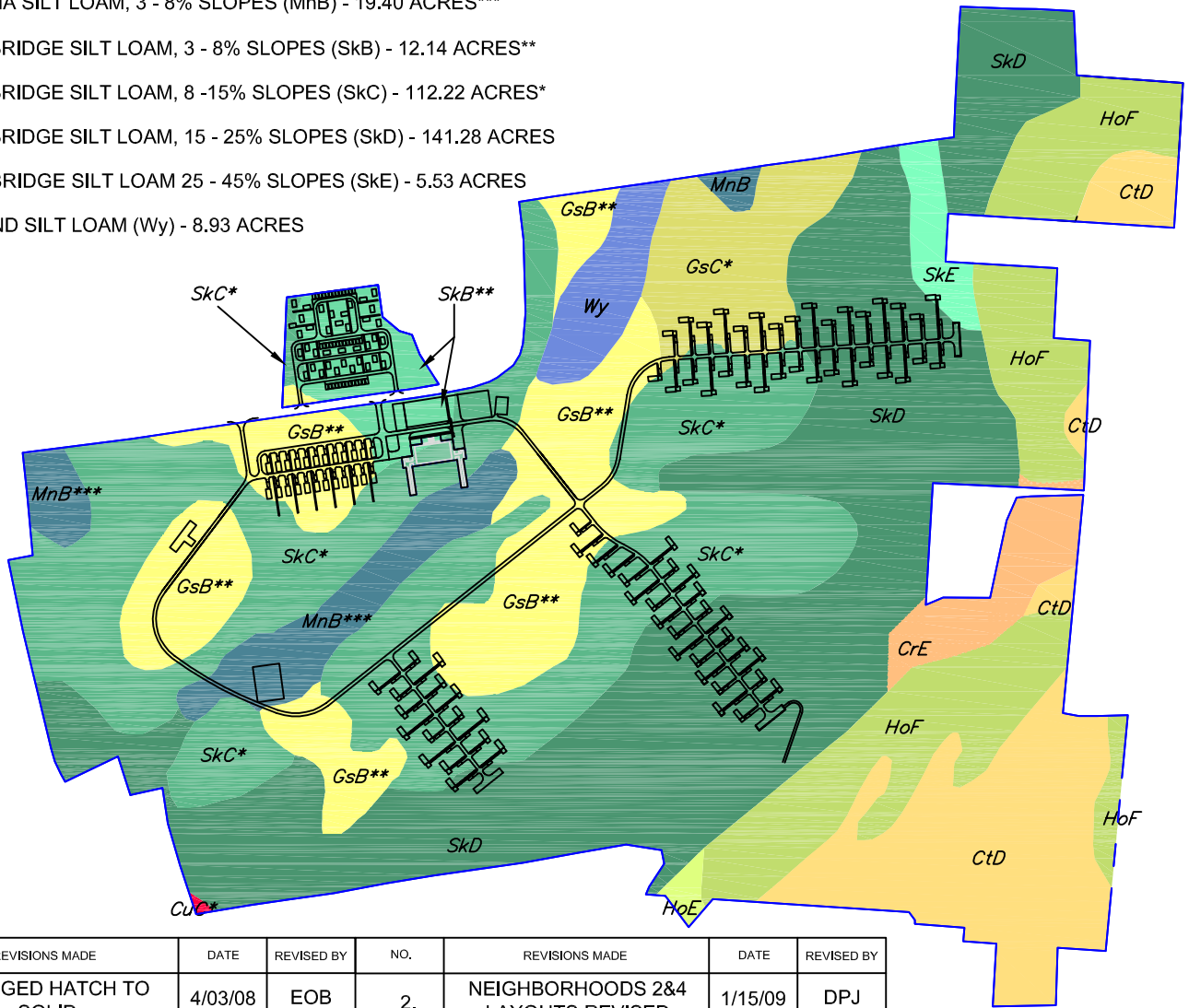
This soil unit is identified in the southeastern corner of the property. The soil location is comprised of moderately deep, well drained to excessively drained Chatfield soils and shallow, well drained to excessively drained Hollis Soils that formed in glacial till deposits. Slopes of these soils generally range from 15% to 25%. This soil is hydrologic class D.

Surface runoff associated with this soil is rapid and the hazard for erosion is severe. Permeability of this soil is moderate to moderately rapid. Most areas comprised of this soil unit are typically used for pasture or woodland; additional areas are used for residential development. However, this soil unit is unsuited to cultivate crops because of the depth to bedrock limitations and the rock outcrop over portions of the unit. Depths to bedrock and rock outcroppings over portions of the soil unit are the main limitations for dwellings with basements. Shallow depth to bedrock measurements in areas of Hollis soils, rock outcroppings over portions of the soil unit and steep slopes are the main limitations for use of this for local roads and streets. Slope is the main limitation for trails.

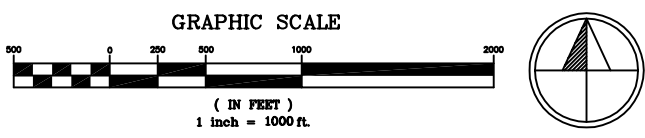
LEGEND

- CHARLTON-CHATFIELD COMPLEX, STEEP (CrE) - 3.35 ACRES
- CHATFIELD-HOLLIS COMPLEX, HILLY (CtD) - 45.00 ACRES
- COPAKE GRAVELLY SILT LOAM, ROLLING (CuC) - 0.17 ACRES*
- GEORGIA SILT LOAM, 3 - 8% SLOPES (GsB) - 60.26 ACRES**
- GEORGIA SILT LOAM, 8 -15% SLOPES (GsC) - 19.62 ACRES*
- HOLLIS-CHATFIELD ROCK OUTCROP COMPLEX, STEEP (HoE) - 1.31 ACRES
- HOLLIS-CHATFIELD ROCK OUTCROP COMPLEX, VERY STEEP (HoF) - 52.25 ACRES
- MASSENA SILT LOAM, 3 - 8% SLOPES (MnB) - 19.40 ACRES***
- STOCKBRIDGE SILT LOAM, 3 - 8% SLOPES (SkB) - 12.14 ACRES**
- STOCKBRIDGE SILT LOAM, 8 -15% SLOPES (SkC) - 112.22 ACRES*
- STOCKBRIDGE SILT LOAM, 15 - 25% SLOPES (SkD) - 141.28 ACRES
- STOCKBRIDGE SILT LOAM 25 - 45% SLOPES (SkE) - 5.53 ACRES
- WAYLAND SILT LOAM (Wy) - 8.93 ACRES

* Farmland of statewide importance
 ** All areas are prime farmland
 *** Prime farmland if drained



NO.	REVISIONS MADE	DATE	REVISED BY	NO.	REVISIONS MADE	DATE	REVISED BY
1.	CHANGED HATCH TO SOLID	4/03/08	EOB	2.	NEIGHBORHOODS 2&4 LAYOUTS REVISED	1/15/09	DPJ



NOTES:
 1. THIS SOIL MAP IS BASED ON SOIL DATA PROVIDED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE (NCRS) WEB-SOIL SURVEY.

DEPOT HILL FARM
 TOWN OF AMENIA DUTCHESS COUNTY

CRAWFORD & ASSOCIATES
 ENGINEERING, P.C.
 551 Warren Street, Hudson New York 12534

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SOILS MAP	DATE 10/12/07	DRAWN BY: EOB	H:\WORK\2773.0\DRAWINGS\FIGS\SOILS.DWG
	SCALE 1:1000	DESIGNED BY: EOB	
		CHECKED BY: BKN	C&A JOB# 2773.0
		APPROVED BY: BKN	DRAWING: FIGURE 13

Georgia Silt Loam, 3 to 8 percent slopes (GsB)

This soil unit is identified in several areas in the western portion of the parcel and at the northern extents. The soil location is comprised of very deep, gently sloping and moderately well drained soils that formed in glacial till deposits. This soil is hydrologic class C.

Surface runoff associated with this soil is medium and the hazard for erosion is slight. Permeability of this soil is moderate in the surface layer and subsoil, but slow in the substratum. This soil is well suited for and is typically used for cultivated crops or pasture; it meets the criteria for prime farmland. The seasonal high water table is the main limitation if this soil unit is used for dwellings with basements. Frost occurrences are the main limitation if this unit is used as a site for local roads and streets. The seasonal high water table is the main limitation for camping and picnic areas. Deep tests completed in this soil unit did not encounter groundwater at depths to 8 feet. On-site infiltration testing indicated infiltration rates up to 6 inches per hour.

Georgia Silt Loam, 8 to 15 percent slopes (GsC)

This soil unit is identified in the northern end of the property. The soil location is comprised of very deep, sloping, and moderately well drained soils that formed in glacial till deposits. This soil is hydrologic class C. On-site infiltration tests indicated infiltration rates of ½ inch per hour.

Surface runoff associated with this soil is rapid and the hazard for erosion is moderate. Permeability of this soil is moderate in the surface layer and subsoil, slow in the substratum. Most areas where this soil unit is found are typically used for cultivated crops or pasture, additional areas with this soil are used for woodlands or residential development. The soil unit is identified as a soil of state significance for agricultural purposes. It is also moderately suited for cultivated crops and well suited to pasture. Frost occurrences associated with this soil are the main limitation for this soil's use associated with local roads and streets. This soil unit's seasonal high water table is the main limitation for dwellings with basements, camping or picnic areas.

Hollis-Chatfield –Rock outcrop complex, steep (HoE)

This soil unit is identified in the southern-central area of the property. The soil location consists of shallow, well drained to excessively drained Hollis soils, as well as moderately deep, well drained to excessively drained, Chatfield soils; this soil area also includes rock outcroppings. This soil is hydrologic class D.

Surface runoff associated with this soil is very rapid and the hazard for erosion is very severe. Permeability of this soil is moderate and moderately rapid. This soil is typically used for woodlands; it is unsuited for cultivated crops and pasture because of steep slopes, shallow depth to bedrock and frequent rock outcroppings. Steep slopes,, shallow depth to bedrock and frequent rock outcroppings are the main limitations if this unit is used for dwellings with basements, local roads and streets. Slope is the main limitation for trails.

Hollis-Chatfield-Rock outcrop complex, very steep (HoF)

This soil unit is identified in the southern and eastern areas of the property. The soil location consists of shallow, well drained to somewhat excessively drained Hollis soils, as well as moderately deep, well drained to excessively drained Chatfield soils; this soil area also includes rock outcropping. This soil is hydrologic class D.

Surface runoff associated with this soil is very rapid and the hazard for erosion is very severe. Permeability of this soil is moderate and moderately rapid. Most areas of this soil unit are typically used for used woodlands; however, it is unsuited to cultivated crops and pasture because of steep slopes, shallow depth to bedrock and frequent rock outcroppings. Steep sloping, shallow depth to bedrock and frequent rock outcroppings are the main limitations if this soil unit is used for dwellings with basements, local roads or streets. Very steep sloping is the main limitation for trails.

Massena silt loam, 3 to 8 percent slopes (MnB)

This soil unit is identified in the western portion of the property. The soil location consists of very deep, gently sloping, and somewhat poorly drained soils that formed in glacial till deposits. This soil is hydrologic class C.

Surface runoff associated with this soil is medium and the hazard for erosion is moderate. Permeability of this soil is moderate in the surface layer, moderately slow and slow in the subsoil and substratum. Most areas of this soil unit are typically used for cultivated cropland, farmland, woodland, or brush land. Where drained, this soil meets the criteria for prime farmland; additional areas are better used for pasture or residential development. This soil is moderately suited to cultivated crops, but where drained the soil is well suited to cultivated crops. The soil is moderately suited to pasture, but well suited where well drained. This soil's seasonal high water table is the main limitation if used for dwellings with basements. The soil's seasonal high water table plus frost occurrences are the main limitations of this soil unit for local road and street use. The seasonal high water table is the main limitation if this soil unit if used for camping, picnic areas, playgrounds, or trails.

Stockbridge silt loam, 3 to 8 percent slopes (SkB)

This soil unit is identified in the northwestern portion of the property. This soil location consists of very deep, gently sloping and well drained Stockbridge soils that formed in glacial till deposits. This soil is hydrologic class C. On-site infiltration tests indicate infiltration rates up to 5.7 inches per hour.

Surface runoff associated with this soil is medium and the hazard for erosion is slight. Permeability of this soil is moderate in the surface layer and subsoil, slow and moderately slow in the substratum. Most areas of this soil unit are typically used for cropland, pastureland, or woodland. This soil unit meets criteria for prime farmland. Additional areas with this soil are used for residential development. This unit is well suited for cultivated crops, pasture, and hay.

This unit has few limitations for dwellings with basements. Frost occurrences are the main limitation if this unit is used for local roads and streets. This soil has few limitations for trails.

Stockbridge silt loam, 8 to 15 percent slopes (SkC)

This soil unit is identified in the center of the property. This soil location consists of very deep, sloping, and well drained Stockbridge soils that formed in glacial till deposits. This soil is hydrologic class C. On-site infiltration tests indicate infiltration rates up to 11 inches per hour.

Surface runoff associated with this soil is rapid and the hazard for erosion is moderate. Permeability of the soil is moderate in the surface layer and subsoil, slow to moderately slow in the substratum. Most areas of this soil unit are used for cropland, pastureland, or woodland; additional areas are used for residential development. This soil unit is moderately suited to cultivated crops, and is well suited for pasture. Sloping is the main limitation of this soil unit if used for dwellings with basements. Sloping and frost occurrences are the main limitations of this unit if used for local roads and streets. This soil unit has few limitations for trails.

Stockbridge silt loam, 15 to 25 percent slopes (SkD)

This soil unit is identified at the western edge of the property. This soil location consists of very deep, moderately steep, and well drained Stockbridge soils that formed in glacial till deposits. This soil is hydrologic class C.

Surface runoff associated with this soil is rapid and the hazard of erosion is severe. Permeability is moderate in the surface layer and subsoil, slow to moderately slow in the substratum. Most areas with this soil are used for pastureland or woodland. Additional areas with this soil are used for cropland or residential development. This soil is poorly suited to cultivated crops and moderately suited to pasture. Sloping is the main limitation in utilizing this soil for dwellings with basements. Slope is the main limitation of this soil unit if used for local roads, streets or trails.

Stockbridge silt loam, 25 to 45 percent slopes (SkE)

This soil unit is identified in the northwest corner of the property. This soil location consists of very deep, steep and well drained Stockbridge soils that formed in glacial till deposits. This soil is hydrologic class C.

Surface runoff associated with this soil is very rapid and the hazard for erosion is very severe. Permeability of this soil is moderate in the surface layer and subsoil, slow or moderately slow in the substratum. Most areas of this soil unit are used for woodland. This soil is unsuited for cultivated crops and pasture because of steep slope. Steep slope is also the main limitation if this soil unit is used for local roads, streets or trails.

Wayland Silt Loam (Wy)

This soil unit is identified at the northern end of the property. This soil mapping location consists of very deep, nearly level, and poorly drained and very poorly drained Wayland soils that formed in alluvium deposits. This soil unit makes of the area of NYSDEC wetland AM-10. This soil is hydrologic classes C and D.

Surface runoff associated with this soil is slow, and the hazard for erosion is slight. Permeability of this soil is moderately slow or moderate in the surface layer, and slow in the subsoil and substratum. Most areas consisting of this soil are used for woodland or water tolerant bushes and grasses. This soil unit is unsuited to cultivate crops and pasture because of flooding and prolonged seasonal high water table. Flooding and ponding are the main limitations of this soil unit if used for dwellings with basements, local roads or streets. However, this soil has good potential for wetland wildlife habitat.

Site Topography and Prominent Features

A topographic survey of the 2-foot contour intervals was completed for the subject site by the Chazen Companies in June 2006. Refer to Figure 6 in section two for the survey of existing conditions. From the topographic survey, an analysis of the slope characteristics of the site was completed. The results of the slope analysis were provided to the Amenia Planning Board in November 2006 with the initial application for the project. Based on this analysis, approximately 52.45 acres of the site has slopes equal to or greater than 30% which are located on the eastern ridge of the property. 22.92 acres of the site has slopes between 25% and 30%. Slopes of 16% to 25% are located on the eastern third and south and west extent of the site, and total 117.96 acres. The balance of the site, 294.21 acres, has slopes of 0% to 15%. Current agricultural activity has been concentrated in areas with slopes less than 30%. The remainder of the site is woodlands or wetlands. Refer to Figure 14 for the slope analysis map.

The subject site has no rock outcrops in the agricultural areas. There are no prominent topographic features on site excepting the eastern ridge line. There are no Critical Environmental Areas in the Town of Amenia.

Summary of Phase I Environmental Site Assessments and Status of Remediation

Prior to purchase of each of the two parcels that comprise the subject site, a Phase I Environmental Site Assessment (PIESA) Report was prepared in conformance with ASTM 1527-00. The PIESA for Keane Stud and the Syms Farm were completed in November 2005 and April 2006, respectively. The main objective of the environmental site assessment was to identify recognized environmental conditions such as evidence of past or present releases of hazardous substances or petroleum products into the ground, groundwater, surface water or structures on the subject property. The environmental site assessment was performed in conformance with the scope and limitations of ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, E 1527-00 and Phase II

Environmental Site Assessment Process ASTM Standard E 1903-97 for the Keane Stud Farm located on Depot Hill Road, Town of Amenia, New York.

The site reconnaissance included investigation of the interior of all on site buildings, with the exception of one hay storage barn. The basements of all structures were inspected, as well as the wellheads, the monitoring wells, the exposed portion of the 10,000 gallon water storage tank, and a majority of the fields on site. While there were no underground fuel storage tanks found on the subject site, there were five aboveground fuel storage tanks found. There was a 275-gallon tank in the basement of each of the residences and in the basement of the office building. The tanks were in fair to good condition, with some surface rusting and pitting. There was no staining associated with any of these tanks. In addition, there was an aboveground gasoline storage tank (approximately 550 gallons) in the hay barn. There was a minimal amount of hazardous substance stored on the subject site. It consisted of paint cans, cleaning supplies, and petroleum products associated with farm use. All containers were labeled and stored properly. There was no PCB containing electrical or hydraulic equipment found on the subject site.

In addition, there were approximately four 55-gallon drums and approximately 16 empty 20-gallon drums found on the site. Some were labeled. There were no unidentified substance containers found on the property with the exception of the unlabeled drums. There was a pool of what appeared to be water located in the basement of a residence. There was no odor associated with the pool of liquid nor was there a sheen on the liquid. No other pits, ponds, or pools of liquid were found on the site. Also, there were no odors detected on the subject site. There was some staining of the pavement in the maintenance shed on-site, the largest spot observed was 16 inches by 4 inches. The vegetation on the site did not appear to be stressed. A small amount of solid waste was observed on the site, including old tires, rusted fencing, plastics, glass, metal debris and various other refuse. None of the waste constitutes a recognized environmental condition.

Based on available information, the environmental site assessment revealed recognized environmental conditions in connection with the Keane Stud Farm property. These recognized environmental conditions are associated with the gasoline petroleum spill discovered on the site in 2000. This spill, designated by New York State Department of Environmental Conservation (NYSDEC) as Spill #0002274, has not yet been closed to NYSDEC Standards. This petroleum spill had an impact on both soil and groundwater on the site. All contaminated soils were removed from the site and properly disposed of. Remedial activities have been completed by the Chazen Companies under direction of the former owner of Keane Stud. Remediation of the site groundwater by an air stripper unit was completed through December 2008 under the guidance of the NYSDEC. In January 2009 the NYDEC indicated groundwater remediation requires no further action at this time. Numerous monitoring wells have been drilled on the property as a part of the remediation effort. The extent of the contamination has been defined to the south, west and north. The former owner of the adjacent parcel (Syms) previously alleged that the spill had impacted their property to the east; however, according to the consultant responsible for remediation efforts, no plume map is available, nor has the NYSDEC requested a plume map.

Included with the open spill number #0002274 referenced above is a spill located in the basement of the two-family cottage on the site. This spill was caused by a leaky fitting on an above ground fuel tank. The spill number has been incorporated into the 2000 spill number. Contaminated soil from the cottage basement was removed from the site and disposed of by the Chazen Companies. All contaminated soil has been removed from the subject site by the former owner and under the direction of the NYSDEC, therefore, proposed site grading activities will not disturb contaminated soil as none exists on the site. Parking areas, not structures, are proposed in the spill area. No additional soil remediation activities are proposed to be carried out by the Applicant because the former owner of Keane Stud has had all soils remediated.

3.1.2 Potential Impacts

Subsurface

Impacts to the subsurface will be limited to possible extraction of groundwater from the bedrock aquifer. The project will not require any blasting.

Surface

A preliminary grading plan, based on 10-foot contours, has been created for the project Master Plan. Refer to Figures 9.B, 9.C, 9.D and 9.E in Section 2.3.1 for each of the neighborhoods and the equestrian complex. Impacts to slopes are generally limited to slopes less than 25%. Impacts to slopes greater than 30% are limited to noncontiguous areas of less than 5,000 square feet and therefore are not subject to steep-slope restrictions as laid-out in the Town of Amenia Zoning Law. Section 121-36 D states that "For purposes of determining the location of steep slope areas, only contiguous slopes containing at least 5,000 square feet of steep slopes, as defined above, shall be considered." Table 3-1 summarizes slope impacts for each neighborhood.

**Table 3-1
Slopes Impacts to Each Neighborhood
(Based on Grading Limits)**

Neighborhood 1	ACRES
0-15	12.19
16-25	4.04
25-30	0.24
30+	0.05
Neighborhood 2	ACRES
0-15	7.70
16-25	5.62

25-30	0.03
30+	0.01
Neighborhood 3	ACRES
0-15	6.66
16-25	0.69
25-30	0.03
30+	0.00
Neighborhood 4	ACRES
0-15	9.07
16-25	0.14
25-30	0.00
30+	0.00

The project landscape architects have worked to minimize grading to the greatest extent and work with the existing topography. If the site grading plan developed during the design phase of the project results in impacts to regulated steep slope areas per Section 121-36 of the code, the Applicant will seek approval from the Planning Board for the disturbance consistent with the regulatory requirements. Based on the grading plan, cuts and fills in most neighborhoods are approximately 4 feet. The majority of cutting occurs in Neighborhood 2 to maintain road grades, and no major cutting or filling occurs in Neighborhood 4 due to existing flat grades. Cuts are proposed primarily for the roadways to accommodate road grades of 15% or less. The Town of Amenia Code suggests Town roads have slopes of 10% or less; however roads at Depot Hill Farm will be privately owned and maintained, and achieving a grade of 10% or less results in excessive cutting and filling. The Applicant will be requesting a waiver on maximum road grade. Based on a preliminary analysis, maintaining 10% maximum grade on the roads for Neighborhoods 1 and 2 will require more than 5,000 cubic yards of cutting and 5,000 cubic yards of filling for each roadway plus additional grading of over 40,000 cubic yards to tie back into the existing topography and to accommodate the cul-de-sac, and will also require a road embankment cut at the turnarounds that would be more than 25 feet high. This large amount of earth work would completely remove the hedgerows and result in significant potential for erosion and soil loss. See Appendix G, Drawing C-13 and C-14 for the impact of the extensive grading that is required to maintain 10% grades.

Neighborhood -1

The proposed road profile for Neighborhood 1 has a 740-foot section with a maximum grade of 15%, between Station 19+50 and Station 26+90. This accounts for 27.5% of the length of the proposed 2,690-foot road. To maintain a 10% road grade, a large increase in earth-work results in a deep cut of approximately 35 feet at the top of the cul-de-sac. It is not possible to grade back with a 3:1 (33%) slope east of the cul-de-sac, because the natural grade is 2:1 (50%) or steeper. A 50-foot high retaining wall with a 1:1 (100%) slope would be required to tie back in to the existing grade. Designing the neighborhood 1 road with the maximum grade of 15% results in 103,093 s.f. less land disturbance and 50,524 cubic yards less excavation than the code guideline of 10%. See Table 3-2 below and drawing C-13, appendix G, for summary and impacts from grading.

**Table 3-2 Estimated Grading Volume
Neighborhood 1 with 10 % road and 15% road**

NEIGHBORHOOD - 1				
	Station	Length (LF)	Area (SF)	Net Volume
15% Slope	19+50 - 26+90	740	57,715	273 CY Cut
10% Slope	14+65 - 26+90	1,225	160,808	50,797 CY Cut

The roadway in this neighborhood is straight and may result in excessive speed. Currently, the proposed layout included streets with a width of 18-feet which can mitigate potential speeding. During the design phase of the project, the Applicant will review additional options for speed control which may include textured pavement, modifications to the vertical curvature of the road and other commonly accepted control measures.

Neighborhood-2

The proposed road profile for Neighborhood 2 has a 1,080-foot section with a maximum grade of 13.7% between station 5+50 and station 16+30. This accounts for 66.3% of proposed 1,630'-foot long road. To maintain a 10% road grade, a large increase in earth work results in a cut approximately 30 feet deep at the top of the cul-de-sac, from existing grade down to the road. To tie back into the natural grade, there are significant horizontal grading impacts as well as removal of forested area south of the cul-de-sac. Designing the neighborhood 2 road with the maximum grade of 15% results in 149,161 s.f. less land disturbance and 122,627 cubic yards less excavation than the code guideline of 10%. See Table 3-3 below and drawing C-14, appendix G, for a summary and impacts from the grading.

**Table 3-3 Estimated Grading Volume
Neighborhood 2 with 10% road and 13.7% road**

NEIGHBORHOOD - 2				
	Station	Length (LF)	Area (SF)	Net Volume
13.7% Slope	5+50 - 16+30	1,080	187,268	1,168 CY Cut
10% Slope	2+80 - 16+30	1,225	336,429	123,795 CY Cut

The roadway in this neighborhood has both a straight and curved section which may result in excessive speed. Currently, the proposed layout included streets with a width of 18-feet which can mitigate potential speeding. During the design phase of the project, the Applicant will review additional options for speed control which may include textured pavement, modifications to the vertical curvature of the road and other commonly accepted control measures.

Loop Road

There are two sections on the existing loop road that exceed 10% grades. The section between Station 49+50 and Station 51+00 currently has an 11% grade, and the section between Station 26+00 and Station 27+50 has a grade of 10.8%. The road between Stations 26+00 and 27+50 is not being realigned, and will not require regrading. The road between Stations 45+50 and 51+00 will be realigned and graded to meet the 10% grade design when road design is finalized. As with the loop road the intersections are preliminary and will be designed to meet all regulations at the design phase of the project.

As currently proposed, fill around house sites will blend the houses into the existing topography and to match current grades. Grading is required at the equestrian center. An estimated 3,000 cubic yards of fill will be required around the equestrian complex to accommodate the proposed eastern stable wing. The equestrian center parking area is in the vicinity of the sill site however, no hazardous materials will be exposed through excavation activities because all contaminated soils have been previously removed in the spill remediation area. Grading activities will be strictly controlled in phases to disturb no more than five acres at any one time. To the extent possible, cuts and fills have been balanced on site. Stockpiles of cut material that may be used in subsequent phases of construction will be seeded and stabilized until needed. Where fill must be brought in from off site, during the Phase 1 construction activities, sources of local fill will be sought to reduce construction traffic. Phase 1 is the only phase requiring fill to be brought in to the site; future phases have cuts which provide necessary fills in the subsequent phases. Cut and fill estimates based on bulk grading are provided below:

Neighborhood 1: Cut = 510 cubic yards (CY), Fill = 238 CY, Net Excess = 272 CY

Neighborhood 2: Cut = 2,986 CY, Fill = 1,818 CY, Net Excess = 1,168 CY

Neighborhood 3: Cut = 155 CY, Fill = 1,081 CY, Net Deficit = 926 CY

Neighborhood 4: Cut = 379 CY, Fill = 254 CY, Net Excess = 125 CY

Equestrian Complex: Cut = 18,390 CY, Fill = 3,689 CY, Net Excess = 14,701 CY

Relocation of Barn 1: Cut = 0 CY, Fill = 15,860 CY, Net Deficit = 15,860 CY

Without proper management during the construction activities, soil erosion can occur. Soil erosion on site will be limited to the extent possible through the use of erosion control methods recommended by the NYSDEC. Methods are discussed in Section 3.3 of this DEIS. All soils will be stockpiled for reclamation. Surface soils will be stripped, stockpiled and seeded for stabilization. Sub-soils will be stockpiled separately for placement in fill areas. Stabilization activities will take place as soon as possible to minimize the loss of soils to erosion during construction, and in no case will exposed areas be left open for more than two weeks. The total volume of post-construction stormwater runoff will increase due to added impervious area; however, the increased runoff will be managed in decentralized stormwater infiltration systems or detention ponds, thus there will not be an increase in stormwater flows to stream channels,

decreasing erosion potential in the stream beds and sedimentation downstream. The details of Sediment and Erosion Control are discussed in Section 3.3.

Grading activities with cuts and fills are not proposed in proximity to any off-site private residences and therefore do not pose any potential impact to neighboring parcels. Grading activities will result in the loss of approximately 0.75 acres of wooded land at the east end of Neighborhood 1 and approximately 0.1 acres at the south end of Neighborhood 2 to accommodate the water storage tank. No other forested area will be removed because the remainder of the project development is proposed on active agricultural lands. A total of 48.54 acres designated as prime agricultural land will be removed from agricultural use and converted to roadways, water or sewer infrastructure, houses or native meadow. No hydric soils will be affected by site development activities. Table 3-4, below, summarizes the impacts to each soil type.

**Table 3- 4
Summary of Prime Agricultural Soils**

		On-Site	Developed
Farmland of Statewide Importance	CuC	0.17	0
	GsC	19.62	4.6
	SkC	112.22	21.52
Prime Farm Land	GsB	60.26	15.03
	SkB	12.14	7.09
Prime Farm Land if Drained	MnB	19.4	0.3
	Total	223.81	48.54

The proposed site development impacts approximately 72 acres total, including 69.37 acres of impacts associated with construction the neighborhoods and installation of their infrastructure and 2.64 acres of impacts associated with the equestrian center. However, if site development were occurring for a conventional subdivision, impacts would be more widespread across the site to accommodate additional roadways, grading activities at individual house sites and the installation of septic systems. Alternative land uses are discussed in detail in Chapter 5. Continued agricultural activities related to row crops, including tilling and planting, result in soil loss attributed to wind and water erosion. According to the 2003 USDA, Natural Resource Conservation Service Natural Resource Inventory, average soil loss in crop lands in the northeast is approximately 3.2 tons per acre per year. Assuming row crops would continue on the site, the anticipated annual soil loss for the approximately 100 acres of crop land on the site is estimated to be 320 tons.

3.1.3 Proposed Mitigation Measures

Impacts to site soils are mitigated by limiting the area of site development to less than 15% of the site, 72 acres, by limiting grading and construction activities to area where slopes are between 0% and 25% (more than 95% of grading activities will occur on slopes less than 15%) and by subphasing the construction in increments of 5 acres or less. A Stormwater Pollution Prevention Plan (SWPPP), designed in accordance with the New York State Stormwater Design Manual, and a SPDES General Permit for Construction Activity will be in place during all construction. The preliminary SWPPP is discussed in Section 3.3. Cuts and fills on site are managed to minimize their extent and are balanced where possible; excess fills will be stockpiled on site for use in subsequent phases. Stockpiles of soil will be seeded to stabilize soils. All soil on site will be used for reclamation purposes, and subsoil and topsoil will be separated during the grading process to facilitate reclamation.

Phase 1 is the only phase requiring fill be brought to the site as future phase cuts provide for future phase fills. Fill for the initial phase of the project is anticipated to be available from cuts; however, if imported fill is required or if onsite soils do not meet structural requirements, the Allen Sand and Gravel site, adjacent to the subject site on the west side of CR 81, provides a suitable source of structural fill material. Use of this material requires a haul distance of less than 1 mile and significantly minimizes the impacts associated with fill material transported from other locations. Impacts that are avoided by using a local source of fill material include reduction of fuel consumption for heavy trucks and reduction of construction traffic on the local road network. It is anticipated that no more than 30 trips per day for fill placement will be required in the project's first phase to prepare the site for the equestrian complex. Transportation impacts associated with construction will be limited to eight to ten weeks for Phase 1, and are described in Section 3.8.

During construction activities, slopes will be stabilized using seed and mulch, or where disturbed slopes exceed 15%, erosion control mats and other best management practices as identified in the SWPPP will be utilized. (See Section 3.3.) Agricultural fields, which are currently in crops, will be planted with hay grasses and legumes, including timothy, alfalfa, clover and brome, to stabilize the soils.

Rock removal and blasting is avoided in the proposed project.

Impacts to woodland areas are avoided, except for 0.75 acres in Neighborhood 1 and 0.1 acres in Neighborhood 2. The existing hedgerow will be preserved, except for sections that are 18 feet to 26 feet in width that need to be removed to accommodate 26 driveways. New landscaping will be installed in a phased replanting effort in conjunction with each neighborhood development to provide vegetation screens. Where possible, all trees with a diameter greater than 18 inches will be preserved. Details of tree location and the potential conflicts of trees with site development will be evaluated in the detailed design phase. The hedgerow in Neighborhood 1 has fewer than 8 trees of substantial size and the hedgerow in Neighborhood 2 has approximately 12 trees of substantial size.

Soil loss related to agricultural activities will be mitigated through the conversion of row crops to hay fields to limit soil exposure. Additionally, active soil rebuilding efforts will be an ongoing part of the hay meadow management; soil rebuilding will include nitrogen fixation by legumes planted as fodder, and placement of composted stable materials on hay fields to add a stable source of nutrients and organic matter to the fields.