PARCELS LISTED WITH NYCDEP WITH PAST OR PRESENT SEPTIC SYSTEM FAILURES OR VIOLATIONS		
PARCEL #	ACREAGE	OWNER
5.13-1-23	1.71	JONES, ROBERT
5.13-1-37.2	1.26	STANLEY, ROBERT
5.13-2-47	1.12	NEAL, GERARD
5.13-2-53	4.08	FRIEARY, AVE
5.13-3-10	1.75	PRINZIVALLI, LINDA
5.13-3-7	1.59	PAWLOWSKI, RONALD

LEGEND

= NYS EFC SERVICE AREA

= REAL PROPERTY TAX MAP PROPERTY LINES

= PROPERTIES LISTED WITH NYCDEP PAST OR PRESENT SEPTIC FAILURES OR VIOLATIONS

NOTE:

1. PROPERTY BOUNDARIES SHOWN ARE NOT SURVEYED PROPERTY BOUNDARIES. THEY HAVE BEEN OBTAINED FROM THE ULSTER COUNTY REAL PROPERTY OFFICE TAX MAPS, AND THEREFORE ARE ONLY ACCURATE TO THE EXTENT OF THE ACCURACY OF THOSE MAPS.

MAPPING ACKNOWLEDGMENTS:

TAX PARCEL DATA PROVIDED BY ULSTER COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 10/12/2005.

MAPPING COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY EXPOSED 04/16/15 BY LAND AND MAPPING SERVICES. 300 NORTH SECOND STREET, CLEARFIELD, PA. 16830.

ROSA ROAD
NYS ROUTE 42
RUDY FRANK DRIVE
HIGH STREET EAST
RUTHENBECK ROAD
LINTON ROAD
SHANDAKEN ROAD
COUNTY ROUTE 47
NYS ROUTE 28
ESOPUS CREEK

5.13-1-37.2
5.13-1-23
5.13-2-47
5.13-2-53
5.13-3-10
5.13-3-7

Lamont Engineers
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FACILITY OPERATIONS
548 MAIN ST., COBLESKILL, NY 12043
(518) 234-4028
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Consultant

SHANDAKEN SEWER DISTRICT
COMMUNITY WASTEWATER
MANAGEMENT PROGRAM
ULSTER COUNTY NEW YORK STATE

Stamp

Issue/Rev.	Date	Remarks

Project Number	2014044
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	12/21/15
Scale	1"=200'
File Name	SEPTIC LIMITATIONS

Sheet Title

SEPTIC FAILURES MAP SHANDAKEN

Sheet No.

3.2.a.A

Exhibit 3.2.b.A

Soils Mapping and Soils Descriptions

Shandaken CWMP
Perc & Permeability of Various Soil Types

Soil Name and Map Symbol	Depth to Bedrock (ft)	Depth to Water Table (ft)	Depth (In)	Range of Permeability (µm/sec)		Range of Percolation* Rate (min./In)		Application Rate (gpd/sf)
ARF (Arnot-Oquaga-Rock outcrop complex, very steep)	0	--	**0-60**	**0.00**	**0.01**	**0**	**42330**	**Not suitable**
Ba (Barbour)	>5	3-6	0 to 6	4	14	106	30	0.2
			6 to 28	**14**	**42**	**30**	**10**	**0.6**
			28 to 60	42	141	10	3	0.9
Su (Suncook)	>5	3-6	0 to 3	42	141	10	3	0.9
			3 to 27	42	141	10	3	0.9
			27 to 36	**42**	**141**	**10**	**3**	**0.9**
			36 to 53	42	141	10	3	0.9
TkB,TkC (Tunkhannock)	>5	>6	0 to 7	14	42	30	10	0.6
			7 to 23	14	42	30	10	0.6
			23 to 30	**14**	**42**	**30**	**10**	**0.6**
			30 to 80	14	141	30	3	0.6
TuD (Tunkhannock gravelly loam, clayey substratum)	>5	2.5-3.5	0 to 7	14	42	30	10	0.6
			7 to 23	14	42	30	10	0.6
			23 to 30	**14**	**42**	**30**	**10**	**0.6**
			30 to 40	14	141	30	3	0.6
			40 to 80	0.01	0.4	42330	1058	Not suitable

*µm/sec $(hr/423.3min)^{-1}$ = min/inch

R:\2012002\Exce3\Shandaken\Perc Rates for Shandaken Soils

Table 10. Recommended Sewage Application Rates

Percolation Rate (min/inch)	Soil Type	Application Rate (gal/day/sq. ft.)
< 1	Gravel, Coarse Sand	Not suitable [a]
1-5	Coarse-Medium Sand	1.20
6-7		1.00
8-10	Fine Sand, Loamy Sand	0.90
11-15		0.80 .60
16-20		0.70
21-30	Sandy Loam, Loam	0.60
31-45		0.50
46-60	Loam, Porous Silt Loam	0.45 [b]
61-120	Silty Clay Loam, Clay Loam	0.20
> 120	Clay	Not Suitable

a) May be suitable if either a modified absorption system or enhanced treatment prior to discharge is utilized.

b) Careful site analysis is necessary to show that these soils will transmit the flow of wastewater. Extreme caution must be used to avoid damage to the site during construction or the system will fail. Surface discharge of the wastewater may be preferable in many cases.

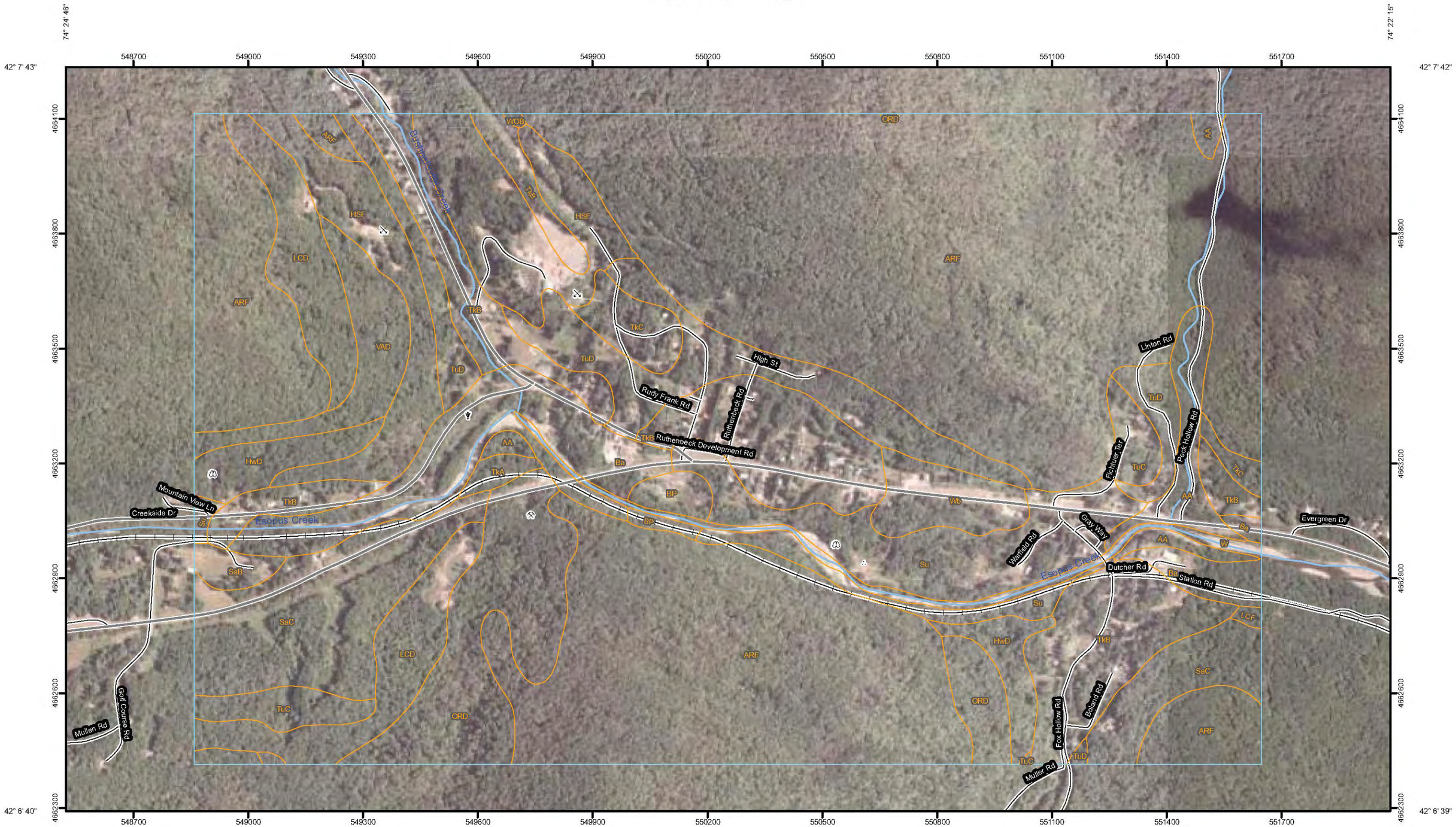
Conventional absorption systems preceded solely by septic tanks should not be used for rapidly permeable soils with percolation rates faster than 1 min/inch as treatment provided may not be sufficient to protect nearby water supplies from contamination by nitrates, detergents, or other chemicals. Information submitted by the engineer must demonstrate that a modified absorption system will provide the degree of treatment necessary for the target compound(s). Also, conventional absorption systems should be avoided if the percolation rate is slower than 60 min/inch, especially if other difficult factors are present such as steep slopes, depressions, or high groundwater or bedrock. Conventional absorption systems shall not be permitted if the percolation rate is slower than 120 min/inch.

If it can be reasonably expected that the site will be served by public sewers within five years, higher application rates may be allowed. This allowance will be judged on a case-by-case basis by the reviewing engineer.

ADVISORY FOR FAST SOILS IN SPECIFIC AQUIFER AREAS

The application rates given in Table 10 may not be sufficient to protect groundwater in soils with percolation rates faster than 10 min/inch which overlie aquifers designated by New York State as Primary Water Supply Aquifers and Principal Aquifers. In these areas, extra protection may be required to prevent degradation of groundwater quality. When the design population density exceeds 2 to 4 dwelling units/acre (6 to 11

Soil Map—Ulster County, New York
(Shandaken CWMP - Soils)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:9,560 if printed on B size (11" × 17") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ulster County, New York
Survey Area Data: Version 10, Dec 20, 2011

Date(s) aerial images were photographed: 8/13/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Ulster County, New York (NY111)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AA	Alluvial land	20.4	1.7%
ARF	Arnot-Oquaga-Rock outcrop complex, very steep	515.2	44.0%
Ba	Barbour loam	52.9	4.5%
BP	Borrow pit	6.7	0.6%
HSF	Hoosic soils, very steep	69.9	6.0%
HwD	Hudson and Schoharie soils, 15 to 25 percent slopes	21.0	1.8%
LCD	Lackawanna and Swartswood very bouldery soils, moderately steep	48.7	4.2%
LCF	Lackawanna and Swartswood very bouldery soils, very steep	0.8	0.1%
ORD	Oquaga-Arnot-Rock outcrop complex, moderately steep	58.9	5.0%
SaB	Schoharie silt loam, 3 to 8 percent slopes	4.8	0.4%
SaC	Schoharie silt loam, 8 to 15 percent slopes	68.4	5.8%
Su	Suncook loamy fine sand	55.4	4.7%
TkA	Tunkhannock gravelly loam, 0 to 3 percent slopes	3.1	0.3%
TkB	Tunkhannock gravelly loam, 3 to 8 percent slopes	110.8	9.5%
TkC	Tunkhannock gravelly loam, rolling	12.6	1.1%
TuC	Tunkhannock gravelly loam, clayey substratum, 8 to 15 percent slopes	16.0	1.4%
TuD	Tunkhannock gravelly loam, clayey substratum, 15 to 25 percent slopes	59.9	5.1%
VAD	Valois very bouldery soils, moderately steep	20.1	1.7%
W	Water	10.2	0.9%
Wb	Wayland silt loam	15.5	1.3%
WOB	Wellsboro and Wurtsboro extremely bouldery soils, gently sloping	0.4	0.0%
Totals for Area of Interest		**1,171.8**	**100.0%**

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Report—Physical Soil Properties

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
AA—Alluvial land														
Fluvaquents	0-5	0-30-50	50-56-80	0-14-27	1.10-1.50	1.40-141.00	0.06-0.18	0.0-2.9	0.0-5.0	.24	.32	5	8	0
	5-70	0-30-100	0-56-80	0-14-34	1.20-1.60	0.42-141.00	0.03-0.16	0.0-2.9	0.0-3.0	.28				
Udifluvents	0-4	24-43-52	28-40-50	7-17-27	1.10-1.50	1.40-141.00	0.03-0.15	0.0-2.9	0.0-3.0	.20	.24	5	8	0
	4-70	24-64-100	0-19-50	0-17-34	1.20-1.70	0.42-141.00	0.03-0.16	0.0-2.9	0.0-2.0					
ARF—Arnot-Oquaga-Rock outcrop complex, very steep														
Arnot	0-1	-60-	-30-	-10-	0.55-0.75	4.00-14.00	0.20-0.45	0.0-2.9	30.0-70.0			2	8	0
	1-4	0-30-50	50-56-80	0-14-27	1.10-1.40	4.00-14.00	0.10-0.15	0.0-2.9	3.0-6.0	.24	.32			
	4-18	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.08-0.12	0.0-2.9	0.0-2.0	.17				
	18-22	—	—	—	—	0.00-0.01	—	—	—					
Oquaga	0-3	-60-	-30-	-10-	0.55-0.75	4.00-14.00	0.20-0.45	—	30.0-70.0			3	8	0
	3-8	0-30-50	50-56-80	0-14-27	1.10-1.40	4.00-14.00	0.08-0.17	0.0-2.9	2.0-6.0	.24	.32			
	8-28	0-43-52	28-40-80	0-17-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-2.0	.20				
	28-35	0-43-52	28-40-80	0-17-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-1.0	.20				
	35-39	—	—	—	—	0.00-0.01	—	—	—					
Rock outcrop	0-60	—	—	—	—	0.00-0.01	—	—	—					

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
Ba—Barbour loam														
Barbour	0-6	32-45-52	28-43-50	7-12-17	1.15-1.40	4.00-14.00	0.16-0.21	0.0-2.9	1.0-5.0	.28	.28	3	8	0
	6-28	15-45-85	0-43-80	0-12-17	1.15-1.45	14.00-42.00	0.10-0.19	0.0-2.9	0.0-3.0	.32				
	28-60	44-97-100	0-2-49	0-2-17	1.25-1.55	42.00-141.00	0.02-0.07	0.0-2.9	0.0-1.0	.17				
BP—Borrow pit														
Borrow pit	—	—	—	—	—	—	—	—	—					
HSF—Hoosic soils, very steep														
Hoosic	0-8	44-67-85	0-23-49	0-10-15	1.10-1.40	14.00-141.00	0.05-0.12	0.0-2.9	2.0-6.0	.20	.28	4	8	0
	8-14	24-45-85	0-43-50	0-12-15	1.25-1.55	14.00-141.00	0.05-0.11	0.0-2.9	0.0-2.0	.17				
	14-30	44-79-91	0-17-49	0-5-15	1.45-1.65	141.00	0.01-0.05	0.0-2.9	0.0-1.0	.17				
	30-80	70-97-100	0-2-29	0-2-15	1.45-1.65	141.00	0.01-0.05	0.0-2.9	0.0-0.5	.17				

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
HwD—Hudson and Schoharie soils, 15 to 25 percent slopes														
Hudson	0-7	0-21- 50	50-55- 80	18-24- 27	1.00-1.25	1.40-14.00	0.16-0.21	3.0-5.9	3.0-6.0	.49	.49	3	8	0
	7-25	0-19- 20	40-44- 65	35-37- 60	1.15-1.40	0.42-1.40	0.13-0.17	3.0-5.9	0.0-2.0	.28				
	25-38	0- 5- 20	40-45- 65	35-50- 60	1.15-1.40	0.42-1.40	0.13-0.17	3.0-5.9	0.0-1.0	.28				
	38-60	0-19- 50	0-44- 80	18-37- 60	1.15-1.40	0.42-1.40	0.12-0.20	3.0-5.9	0.0-1.0	.28				
Schoharie	0-10	0-21- 50	50-55- 80	18-24- 27	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	3.0-6.0	.49	.49	3	8	0
	10-36	0- 5- 45	0-45- 65	35-50- 60	1.20-1.40	0.42-1.40	0.12-0.17	3.0-5.9	0.0-2.0	.28				
	36-50	0- 7- 45	0-49- 65	35-44- 60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28				
LCD—Lackawanna and Swartswood very bouldery soils, moderately steep														
Lackawanna	0-2	-60-	-30-	-10-	0.55-0.75	4.00-14.00	0.20-0.45	—	30.0-70.0			3	8	0
	2-5	15-32- 50	50-56- 80	0-12- 17	1.20-1.40	4.00-14.00	0.10-0.14	0.0-2.9	2.0-4.0	.24	.32			
	5-17	15-32- 52	28-56- 80	0-12- 17	1.40-1.60	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.20				
	17-49	15-45- 85	0-43- 80	0-12- 17	1.60-1.80	0.42-1.40	0.06-0.12	0.0-2.9	0.0-1.0	.20				
	49-80	15-45- 85	0-43- 80	0-12- 17	1.60-1.80	0.42-1.40	0.06-0.12	0.0-2.9	0.0-1.0	.20				
Swartswood	0-7	44-69- 85	0-22- 49	0-10- 17	1.20-1.40	4.00-14.00	0.08-0.12	0.0-2.9	2.0-4.0	.17	.24	3	8	0
	7-29	32-67- 85	0-23- 50	0-10- 17	1.20-1.50	4.00-14.00	0.08-0.12	0.0-2.9	0.0-2.0	.20				
	29-60	32-67- 85	0-23- 50	0-10- 17	1.40-1.80	0.42-4.00	0.00	0.0-2.9	0.0-1.0	.20				

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
LCF—Lackawanna and Swartswood very bouldery soils, very steep														
Lackawanna	0-2	-60-	-30-	-10-	0.55-0.75	4.00-14.00	0.20-0.45	—	30.0-70.0			3	8	0
	2-5	15-32-50	50-56-80	0-12-17	1.20-1.40	4.00-14.00	0.10-0.14	0.0-2.9	2.0-4.0	.24	.32			
	5-17	15-32-52	28-56-80	0-12-17	1.40-1.60	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.20				
	17-49	15-45-85	0-43-80	0-12-17	1.60-1.80	0.42-1.40	0.06-0.12	0.0-2.9	0.0-1.0	.20				
	49-80	15-45-85	0-43-80	0-12-17	1.60-1.80	0.42-1.40	0.06-0.12	0.0-2.9	0.0-1.0	.20				
Swartswood	0-7	44-69-85	0-22-49	0-10-17	1.20-1.40	4.00-14.00	0.08-0.12	0.0-2.9	2.0-4.0	.17	.24	3	8	0
	7-29	32-67-85	0-23-50	0-10-17	1.20-1.50	4.00-14.00	0.08-0.12	0.0-2.9	0.0-2.0	.20				
	29-60	32-67-85	0-23-50	0-10-17	1.40-1.80	0.42-4.00	0.00	0.0-2.9	0.0-1.0	.20				

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
ORD—Oquaga-Arnot-Rock outcrop complex, moderately steep														
Oquaga	0-3	-60-	-30-	-10-	0.55-0.75	4.00-14.00	0.20-0.45	—	30.0-70.0			3	8	0
	3-8	0-30-50	50-56-80	0-14-27	1.10-1.40	4.00-14.00	0.08-0.17	0.0-2.9	2.0-6.0	.24	.32			
	8-28	0-43-52	28-40-80	0-17-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-2.0	.20				
	28-35	0-43-52	28-40-80	0-17-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-1.0	.20				
	35-39	—	—	—	—	0.00-0.01	—	—	—					
Arnot	0-1	-60-	-30-	-10-	0.55-0.75	4.00-14.00	0.20-0.45	0.0-2.9	30.0-70.0			2	8	0
	1-4	0-30-50	50-56-80	0-14-27	1.10-1.40	4.00-14.00	0.10-0.15	0.0-2.9	3.0-6.0	.24	.32			
	4-18	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.08-0.12	0.0-2.9	0.0-2.0	.17				
	18-22	—	—	—	—	0.00-0.01	—	—	—					
Rock outcrop	0-60	—	—	—	—	0.00-0.01	—	—	—					
SaB—Schoharie silt loam, 3 to 8 percent slopes														
Schoharie	0-10	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	3.0-6.0	.49	.49	3	8	0
	10-36	0-5-45	0-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.17	3.0-5.9	0.0-2.0	.28				
	36-50	0-7-45	0-49-65	35-44-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28				

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
SaC—Schoharie silt loam, 8 to 15 percent slopes														
Schoharie	0-10	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	3.0-6.0	.49	.49	3	8	0
	10-36	0-5-45	0-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.17	3.0-5.9	0.0-2.0	.28				
	36-50	0-7-45	0-49-65	35-44-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28				
Su—Suncook loamy fine sand														
Suncook	0-3	70-79-91	0-16-29	0-5-15	1.10-1.30	42.00-141.00	0.07-0.12	0.0-2.9	2.0-5.0	.20	.20	5	8	0
	3-27	70-79-91	0-16-29	0-5-15	1.20-1.50	42.00-141.00	0.03-0.10	0.0-2.9	0.0-2.0	.17				
	27-36	70-86-100	0-11-29	0-4-15	1.20-1.50	42.00-141.00	0.03-0.10	0.0-2.9	0.0-1.0	.17				
	36-53	70-79-100	0-16-29	0-5-15	1.20-1.50	42.00-141.00	0.03-0.10	0.0-2.9	0.0-1.0	.17				
TkA—Tunkhannock gravelly loam, 0 to 3 percent slopes														
Tunkhannock	0-7	24-43-52	28-40-50	7-17-27	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.20	.28	4	8	0
	7-23	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17				
	23-30	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-1.0	.17				
	30-80	44-97-100	0-2-80	0-2-20	1.40-1.60	14.00-141.00	0.01-0.08	0.0-2.9	0.0-0.5	.17				

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
TkB—Tunkhannock gravelly loam, 3 to 8 percent slopes														
Tunkhannock	0-7	24-43-52	28-40-50	7-17-27	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.20	.28	4	8	0
	7-23	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17				
	23-30	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-1.0	.17				
	30-80	44-97-100	0-2-49	0-2-20	1.40-1.60	14.00-141.00	0.01-0.08	0.0-2.9	0.0-0.5	.17				
TkC—Tunkhannock gravelly loam, rolling														
Tunkhannock	0-7	24-43-52	28-40-50	7-17-27	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.20	.28	4	8	0
	7-23	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17				
	23-30	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-1.0	.17				
	30-80	44-97-100	0-2-49	0-2-20	1.40-1.60	14.00-141.00	0.01-0.08	0.0-2.9	0.0-0.5	.17				

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
TuC—Tunkhannock gravelly loam, clayey substratum, 8 to 15 percent slopes														
Tunkhannock, clayey substratum	0-7	24-43-52	28-40-50	7-17-27	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.20	.28	4	8	0
	7-23	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17				
	23-30	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-1.0	.17				
	30-40	44-97-100	0-2-49	0-2-20	1.40-1.60	14.00-141.00	0.01-0.08	0.0-2.9	0.0-1.0	.17				
	40-80	0-5-20	40-45-73	27-50-60	1.40-1.60	0.01-0.40	0.12-0.14	3.0-5.9	0.0-1.0	.28				
TuD—Tunkhannock gravelly loam, clayey substratum, 15 to 25 percent slopes														
Tunkhannock, clayey substratum	0-7	24-43-52	28-40-50	7-17-27	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.20	.28	4	8	0
	7-23	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17				
	23-30	0-43-85	0-40-80	0-17-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-1.0	.17				
	30-40	44-97-100	0-2-49	0-2-20	1.40-1.60	14.00-141.00	0.01-0.08	0.0-2.9	0.0-1.0	.17				
	40-80	0-5-20	40-45-73	27-50-60	1.40-1.60	0.01-0.40	0.12-0.14	3.0-5.9	0.0-1.0	.28				

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
VAD—Valois very bouldery soils, moderately steep														
Valois	0-2	-60-	-30-	-10-	0.55-0.75	4.00-14.00	0.20-0.45	—	30.0-70.0			4	8	0
	2-13	32-45- 52	28-43- 50	7-12- 17	1.10-1.40	4.00-14.00	0.08-0.16	0.0-2.9	2.0-6.0	.20	.28			
	13-42	15-45- 85	0-43- 80	0-12- 17	1.20-1.50	4.00-14.00	0.07-0.14	0.0-2.9	0.0-2.0	.24				
	42-67	32-67- 85	0-23- 50	0-10- 17	1.40-1.60	4.00-42.00	0.03-0.09	0.0-2.9	0.0-1.0	.24				
W—Water														
Water	—	—	—	—	—	—	—	—	—					
Wb—Wayland silt loam														
Wayland	0-5	0-11- 32	50-67- 80	18-22- 27	1.05-1.40	1.40-14.00	0.17-0.22	0.0-2.9	3.0-6.0	.43	.43	5	8	0
	5-24	0- 6- 14	50-62- 80	18-32- 35	1.10-1.60	0.42-1.40	0.16-0.20	0.0-2.9	0.0-3.0	.43				
	24-60	0-11- 82	0-67- 80	18-22- 27	1.25-1.55	0.42-1.40	0.08-0.19	0.0-2.9	0.0-2.0	.43				

Physical Soil Properties– Ulster County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
WOB—Wellsboro and Wurtsboro extremely bouldery soils, gently sloping														
Wellsboro	0-9	15-32-50	50-56-80	0-12-17	1.20-1.40	4.00-14.00	0.10-0.14	0.0-2.9	2.0-6.0	.28	.32	3	8	0
	9-16	15-32-52	28-56-80	0-12-17	1.30-1.50	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.28				
	16-21	15-45-85	0-43-80	0-12-17	1.30-1.60	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.28				
	21-60	15-45-85	0-43-80	0-12-17	1.30-1.60	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.28				
Wurtsboro	0-6	32-45-52	28-43-50	7-12-17	1.20-1.40	4.00-14.00	0.10-0.16	0.0-2.9	2.0-6.0	.20	.24	3	8	0
	6-19	32-67-85	0-23-50	0-10-17	1.40-1.60	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.28				
	19-56	32-69-85	0-22-50	0-10-17	1.60-1.80	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.28				

Data Source Information

Soil Survey Area: Ulster County, New York
Survey Area Data: Version 10, Dec 20, 2011

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash.

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
AA—Alluvial land												
Fluvaquents	0-5	*Gravelly silt loam	CL, GM, ML, SM	A-1, A-2, A-4	0	0-10	60-100	55-100	30-100	10-90	15-25	NP-15
	5-70	*Gravelly silt loam, Very gravelly sand, silty clay loam	CL, GC, ML, SC-SM	A-1, A-2, A-6, A-4	0	0-15	35-100	30-100	15-100	5-90	15-30	NP-20
Udifluvents	0-4	*Gravelly loam	CL, GM, ML, SC	A-1, A-2, A-4	0	0-10	60-80	55-75	30-75	10-65	15-25	NP-20
	4-70	*Gravelly sandy loam, Very gravelly sand, loam	GC, CL, SM, ML	A-1, A-2, A-4, A-6	0	0-15	35-100	30-100	15-100	5-90	15-30	NP-20

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
ARF—Arnot-Oquaga-Rock outcrop complex, very steep												
Arnot	0-1	*Moderately decomposed plant material	PT	A-8	0	0	100	100	—	—	—	NP
	1-4	*Channery silt loam	GM, ML, SM	A-2, A-4, A-5	0	5-10	60-85	55-80	45-80	30-70	35-45	1-9
	4-18	*Very channery silt loam, Very channery loam	GM	A-1, A-2, A-4	0	10-25	30-60	25-55	20-55	15-50	20-35	1-9
	18-22	*Unweathered bedrock	—	—	0	0	—	—	—	—	—	—
Oquaga	0-3	*Moderately decomposed plant material	PT	A-8	0	0	100	100	—	—	—	NP
	3-8	*Channery silt loam	GM, ML, SM	A-2, A-4, A-5	0	5-20	60-85	40-70	35-70	25-65	35-45	2-7
	8-28	*Very channery loam, Very channery silt loam, channery loam	GC-GM, GM, ML, SM	A-1, A-2, A-4	0	10-25	35-70	25-60	20-60	15-55	20-30	2-7
	28-35	*Very gravelly loam, Very channery silt loam	GC-GM, GM, ML, SM	A-1, A-2, A-4	0	10-25	35-70	25-60	20-60	15-55	20-30	2-7
	35-39	*Unweathered bedrock	—	—	0	0	—	—	—	—	—	—
Rock outcrop	0-60	*Unweathered bedrock	—	—	0	0	—	—	—	—	—	—

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
Ba—Barbour loam												
Barbour	0-6	*Loam	CL-ML, ML, SC-SM, SM	A-4, A-2	0	0	80-100	75-100	50-95	30-90	15-25	2-7
	6-28	*Gravelly loam, Silt loam, gravelly fine sandy loam	CL-ML, ML, SC-SM, SM	A-1, A-2, A-4	0	0	60-100	55-95	30-95	15-85	15-25	2-7
	28-60	*Very gravelly sand, Sandy loam, gravelly loamy fine sand, fine sandy loam	GM, GW, SM, SP	A-1, A-2, A-3, A-4	0	0-5	35-95	30-95	20-80	2-40	0-20	NP-3
BP—Borrow pit												
Borrow pit	—	—	—	—	—	—	—	—	—	—	—	—

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
HSF—Hoosic soils, very steep												
Hoosic	0-8	*Gravelly sandy loam	GM, ML, SM	A-1, A-2, A-4, A-5	0	5-10	55-80	50-70	30-70	15-60	30-45	2-10
	8-14	*Gravelly loam, Very gravelly fine sandy loam	GC-GM, GM, SM, SP-SM	A-1, A-2, A-4	0	5-10	40-75	35-65	20-60	10-45	20-30	2-8
	14-30	*Very gravelly loamy sand, Very gravelly sandy loam	GM, SM, GW, GP-GM	A-1	0	10-15	30-65	25-50	15-40	2-20	0-10	NP-1
	30-80	*Stratified extremely gravelly sand, Stratified very gravelly loamy sand, stratified extremely gravelly loamy sand	GM, SM, GW, GP-GM	A-1	0	10-15	30-65	25-50	15-40	2-20	0-10	NP

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
HwD—Hudson and Schoharie soils, 15 to 25 percent slopes												
Hudson	0-7	*Silt loam	CL, CL-ML, ML, OL	A-4, A-6, A-7	0	0	95-100	95-100	85-100	65-95	25-48	5-19
	7-25	*Silty clay loam, Silty clay	CH, CL	A-6, A-7	0	0	95-100	90-100	80-100	80-100	35-65	15-35
	25-38	*Silty clay, Silty clay loam	CH, CL	A-6, A-7	0	0	95-100	90-100	80-100	80-100	35-65	15-35
	38-60	*Stratified silty clay to silt loam, Silt loam, clay	CH, CL	A-6, A-7	0	0	95-100	90-100	80-100	60-100	35-65	15-35
Schoharie	0-10	*Silt loam	CL, ML	A-6, A-7	0	0	100	95-100	80-100	65-95	35-50	10-25
	10-36	*Silty clay, Clay, silty clay loam	CL	A-6	0	0	100	95-100	90-100	80-100	25-40	10-25
	36-50	*Stratified silty clay to silty clay loam, Clay, silty clay	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	20-35	6-20

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
LCD—Lackawanna and Swartswood very bouldery soils, moderately steep												
Lackawanna	0-2	*Moderately decomposed plant material	PT	A-8	0	0	100	100	—	—	—	—
	2-5	*Flaggy silt loam	CL, GM, ML, SM	A-2, A-4	0-5	0-20	65-92	50-75	40-70	30-60	15-35	1-14
	5-17	*Gravelly silt loam, Gravelly loam, flaggy silt loam	CL, GM, ML, SC	A-2, A-4, A-6	0	0-20	65-92	50-75	40-70	30-60	20-35	1-14
	17-49	*Gravelly loam, Channery silt loam, channery sandy loam	CL, GM, ML, SC-SM	A-2, A-4, A-6	0	0-20	65-85	50-70	30-70	15-55	15-35	1-12
	49-80	*Gravelly loam, Channery silt loam, channery sandy loam	CL, GM, ML, SC-SM	A-2, A-4, A-6	0	0-20	65-85	50-70	30-70	15-55	15-35	1-12
Swartswood	0-7	*Gravelly fine sandy loam	ML, SM	A-1, A-2, A-4	0-5	3-15	60-90	50-85	30-80	15-65	15-25	NP-6
	7-29	*Gravelly sandy loam, Channery loam, channery sandy loam	GM, ML, SM	A-4, A-1, A-2	0	0-25	60-90	50-90	30-85	15-65	15-25	NP-6
	29-60	*Very gravelly sandy loam, Very flaggy fine sandy loam, very channery loam	GM, GW-GM, ML, SM	A-1, A-2, A-4	0	5-25	50-80	35-80	20-70	10-60	15-20	NP-6

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
LCF—Lackawanna and Swartswood very bouldery soils, very steep												
Lackawanna	0-2	*Moderately decomposed plant material	PT	A-8	0	0	100	100	—	—	—	—
	2-5	*Flaggy silt loam	CL, GM, ML, SM	A-2, A-4	0-5	0-20	65-92	50-75	40-70	30-60	15-35	1-14
	5-17	*Gravelly silt loam, Gravelly loam, flaggy silt loam	CL, GM, ML, SC	A-2, A-4, A-6	0	0-20	65-92	50-75	40-70	30-60	20-35	1-14
	17-49	*Gravelly loam, Channery silt loam, channery sandy loam	CL, GM, ML, SC-SM	A-2, A-4, A-6	0	0-20	65-85	50-70	30-70	15-55	15-35	1-12
	49-80	*Gravelly loam, Channery silt loam, channery sandy loam	CL, GM, ML, SC-SM	A-2, A-4, A-6	0	0-20	65-85	50-70	30-70	15-55	15-35	1-12
Swartswood	0-7	*Gravelly fine sandy loam	ML, SM	A-1, A-2, A-4	0-5	3-15	60-90	50-85	30-80	15-65	15-25	NP-6
	7-29	*Gravelly sandy loam, Channery loam, channery sandy loam	GM, ML, SM	A-4, A-1, A-2	0	0-25	60-90	50-90	30-85	15-65	15-25	NP-6
	29-60	*Very gravelly sandy loam, Very flaggy fine sandy loam, very channery loam	ML, SM, GM, GW-GM	A-1, A-2, A-4	0	5-25	50-80	35-80	20-70	10-60	15-20	NP-6

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
ORD—Oquaga-Arnot-Rock outcrop complex, moderately steep												
Oquaga	0-3	*Moderately decomposed plant material	PT	A-8	0	0	100	100	—	—	—	NP
	3-8	*Channery silt loam	GM, ML, SM	A-2, A-4, A-5	0	5-20	50-85	40-70	35-70	25-65	35-45	2-7
	8-28	*Very channery loam, Very channery silt loam, channery loam	GC-GM, GM, ML, SM	A-1, A-2, A-4	0	10-25	35-70	25-60	20-60	15-55	20-30	2-7
	28-35	*Very gravelly loam, Very channery silt loam	GC-GM, GM, ML, SM	A-1, A-2, A-4	0	10-25	35-70	25-60	20-60	15-55	20-30	2-7
	35-39	*Unweathered bedrock	—	—	0	0	—	—	—	—	—	—
Arnot	0-1	*Moderately decomposed plant material	PT	A-8	0	0	100	100	—	—	—	NP
	1-4	*Channery silt loam	GM, ML, SM	A-2, A-4, A-5	0	5-10	60-85	55-80	45-80	30-70	35-45	1-9
	4-18	*Very channery silt loam, Very channery loam	GM	A-1, A-2, A-4	0	10-25	30-60	25-55	20-55	15-50	20-35	1-9
	18-22	*Unweathered bedrock	—	—	0	0	—	—	—	—	—	—
Rock outcrop	0-60	*Unweathered bedrock	—	—	0	0	—	—	—	—	—	—
SaB—Schoharie silt loam, 3 to 8 percent slopes												
Schoharie	0-10	*Silt loam	CL, ML	A-6, A-7	0	0	100	95-100	80-100	65-95	35-50	10-25
	10-36	*Silty clay, Clay, silty clay loam	CL	A-6	0	0	100	95-100	90-100	80-100	25-40	10-25
	36-50	*Stratified silty clay to silty clay loam, Clay, silty clay	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	20-35	6-20

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
SaC—Schoharie silt loam, 8 to 15 percent slopes												
Schoharie	0-10	*Silt loam	CL, ML	A-6, A-7	0	0	100	95-100	80-100	65-95	35-50	10-25
	10-36	*Silty clay, Clay, silty clay loam	CL	A-6	0	0	100	95-100	90-100	80-100	25-40	10-25
	36-50	*Stratified silty clay to silty clay loam, Clay, silty clay	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	20-35	6-20
Su—Suncook loamy fine sand												
Suncook	0-3	*Loamy fine sand	SM	A-2	0	0	95-100	85-100	45-85	15-35	0-10	NP
	3-27	*Loamy fine sand, Loamy sand	SM, SP	A-1, A-2, A-3	0	0	90-100	70-100	20-85	0-35	0-10	NP
	27-36	*Stratified loamy fine sand to fine sand, Loamy sand	SM, SP	A-1, A-2, A-3	0	0	90-100	70-100	20-85	0-35	0-10	NP
	36-53	*Loamy fine sand, Sand	SM, SP	A-1, A-2, A-3	0	0	90-100	70-100	20-85	0-35	0-10	NP

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
TkA—Tunkhannock gravelly loam, 0 to 3 percent slopes												
Tunkhannock	0-7	*Gravelly loam	GM, ML, SM	A-2, A-4	0	0-20	60-95	55-90	45-70	30-55	15-25	NP-3
	7-23	*Gravelly loam, Cobbly silt loam, very gravelly sandy loam	GM, SM, SP-SM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	23-30	*Very gravelly loam, Cobbly silt loam, very gravelly sandy loam	GM, SM, SP-SM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	30-80	*Error, Gravelly sandy loam, very gravelly loamy sand	GM, GP-GM, SP-SM, GW-GM	A-1, A-2, A-3	0	3-25	30-80	25-70	15-55	5-15	15-20	NP-2
TkB—Tunkhannock gravelly loam, 3 to 8 percent slopes												
Tunkhannock	0-7	*Gravelly loam	GM, ML, SM	A-2, A-4	0	0-20	60-95	55-90	45-70	30-55	15-25	NP-3
	7-23	*Gravelly loam, Cobbly silt loam, very gravelly sandy loam	GM, SM, SP-SM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	23-30	*Very gravelly loam, Cobbly silt loam, very gravelly sandy loam	GM, SM, SP-SM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	30-80	*Error, Gravelly sandy loam, very gravelly loamy sand	GM, GP-GM, SP-SM, GW-GM	A-1, A-2, A-3	0	5-35	30-80	25-70	15-55	5-15	15-20	NP-2

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
TkC—Tunkhannock gravelly loam, rolling												
Tunkhannock	0-7	*Gravelly loam	GM, ML, SM	A-2, A-4	0	0-20	60-95	55-90	45-70	30-55	15-25	NP-3
	7-23	*Gravelly loam, Cobbly silt loam, very gravelly sandy loam	GM, SM, SP-SM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	23-30	*Very gravelly loam, Cobbly silt loam, very gravelly sandy loam	GM, SM, SP-SM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	30-80	*Error, Gravelly sandy loam, very gravelly loamy sand	GM, GP-GM, SP-SM, GW-GM	A-1, A-2, A-3	0	5-35	30-80	25-70	15-55	5-15	15-20	NP-2

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
TuC—Tunkhannock gravelly loam, clayey substratum, 8 to 15 percent slopes												
Tunkhannock, clayey substratum	0-7	*Gravelly loam	GM, ML, SM	A-2, A-4	0	0-20	60-95	55-90	45-70	30-55	15-25	NP-3
	7-23	*Gravelly loam, Cobbly silt loam, very gravelly sandy loam	SM, SP-SM, GM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	23-30	*Very gravelly loam, Cobbly silt loam, very gravelly sandy loam	GM, SM, SP-SM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	30-40	*Error, Very gravelly loamy sand, gravelly sandy loam	GM, GP-GM, SP-SM, GW-GM	A-1, A-2, A-3	0	5-35	30-80	25-70	15-55	5-15	15-20	NP-2
	40-80	*Silty clay, Silty clay loam	CL, CL-ML	A-5, A-7, A-4, A-6	0	0	100	100	95-100	90-95	25-55	5-25

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
TuD—Tunkhannock gravelly loam, clayey substratum, 15 to 25 percent slopes												
Tunkhannock, clayey substratum	0-7	*Gravelly loam	GM, ML, SM	A-2, A-4	0	0-20	60-95	55-90	45-70	30-55	15-25	NP-3
	7-23	*Gravelly loam, Cobbly silt loam, very gravelly sandy loam	SM, SP-SM, GM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	23-30	*Very gravelly loam, Cobbly silt loam, very gravelly sandy loam	GM, SM, SP-SM	A-1, A-2, A-4	0	0-35	40-80	25-75	20-60	10-45	15-25	NP-3
	30-40	*Error, Very gravelly loamy sand, gravelly sandy loam	GM, GP-GM, SP-SM, GW-GM	A-1, A-2, A-3	0	5-35	30-80	25-70	15-55	5-15	15-20	NP-2
	40-80	*Silty clay, Silty clay loam	CL, CL-ML	A-5, A-7, A-4, A-6	0	0	100	100	95-100	90-95	25-55	5-25

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
VAD—Valois very bouldery soils, moderately steep												
Valois	0-2	*Moderately decomposed plant material	PT	A-8	0	0	100	100	—	—	—	NP
	2-13	*Gravelly loam	GC-GM, GM, ML, SM	A-1, A-2, A-4	0-5	0-10	55-80	50-75	35-75	20-70	20-40	1-12
	13-42	*Gravelly loam, Gravelly silt loam, gravelly sandy loam	GC-GM, GM, ML, SM	A-1, A-2, A-4	0-1	0-10	55-95	50-90	35-90	20-80	15-25	NP-5
	42-67	*Very gravelly sandy loam, Very gravelly loam, very gravelly fine sandy loam	GC-GM, GM, GW, GW-GM	A-1, A-2, A-4	0-1	0-15	20-60	15-55	10-50	4-40	15-25	NP-7
W—Water												
Water	—	—	—	—	—	—	—	—	—	—	—	—
Wb—Wayland silt loam												
Wayland	0-5	*Silt loam	ML, OL	A-5, A-7	0	0	100	95-100	90-100	70-95	40-50	5-15
	5-24	*Silty clay loam, Silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	95-100	90-100	70-95	25-45	5-15
	24-60	*Silt loam, Fine sandy loam	CL, CL-ML, GC, SC	A-2, A-4	0	0	65-100	55-100	50-95	25-90	16-25	5-10

Engineering Properties– Ulster County, New York												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
WOB—Wellsboro and Wurtsboro extremely bouldery soils, gently sloping												
Wellsboro	0-9	*Flaggy silt loam	CL-ML, ML, SM	A-2, A-4	0-5	5-25	70-100	65-100	60-95	30-90	15-35	NP-10
	9-16	*Flaggy silt loam, Channery silt loam, gravelly loam	CL-ML, GC-GM, ML, SM	A-2, A-4	0	0-15	70-100	60-100	55-95	30-70	15-30	NP-10
	16-21	*Gravelly loam, Channery sandy loam, gravelly silt loam	SC-SM, CL, GM, ML	A-2, A-4	0	0-20	55-90	45-90	35-80	25-60	15-30	NP-10
	21-60	*Gravelly loam, Channery sandy loam, gravelly silt loam	CL, GM, ML, SC-SM	A-2, A-4	0	0-20	55-90	45-90	35-80	25-60	15-30	NP-10
Wurtsboro	0-6	*Gravelly loam	GM, ML, SM	A-2, A-4	0-5	15-25	70-100	65-90	55-90	30-70	15-35	NP-6
	6-19	*Gravelly sandy loam, Fine sandy loam, channery loam	GM, SM	A-2, A-4	0	0-15	70-95	55-90	45-85	30-50	15-30	NP-6
	19-56	*Gravelly fine sandy loam, Very gravelly sandy loam, channery loam	GM, SM	A-1, A-2, A-4	0	0-20	50-95	35-90	30-80	20-50	15-25	NP-6

Data Source Information

Soil Survey Area: Ulster County, New York
Survey Area Data: Version 10, Dec 20, 2011

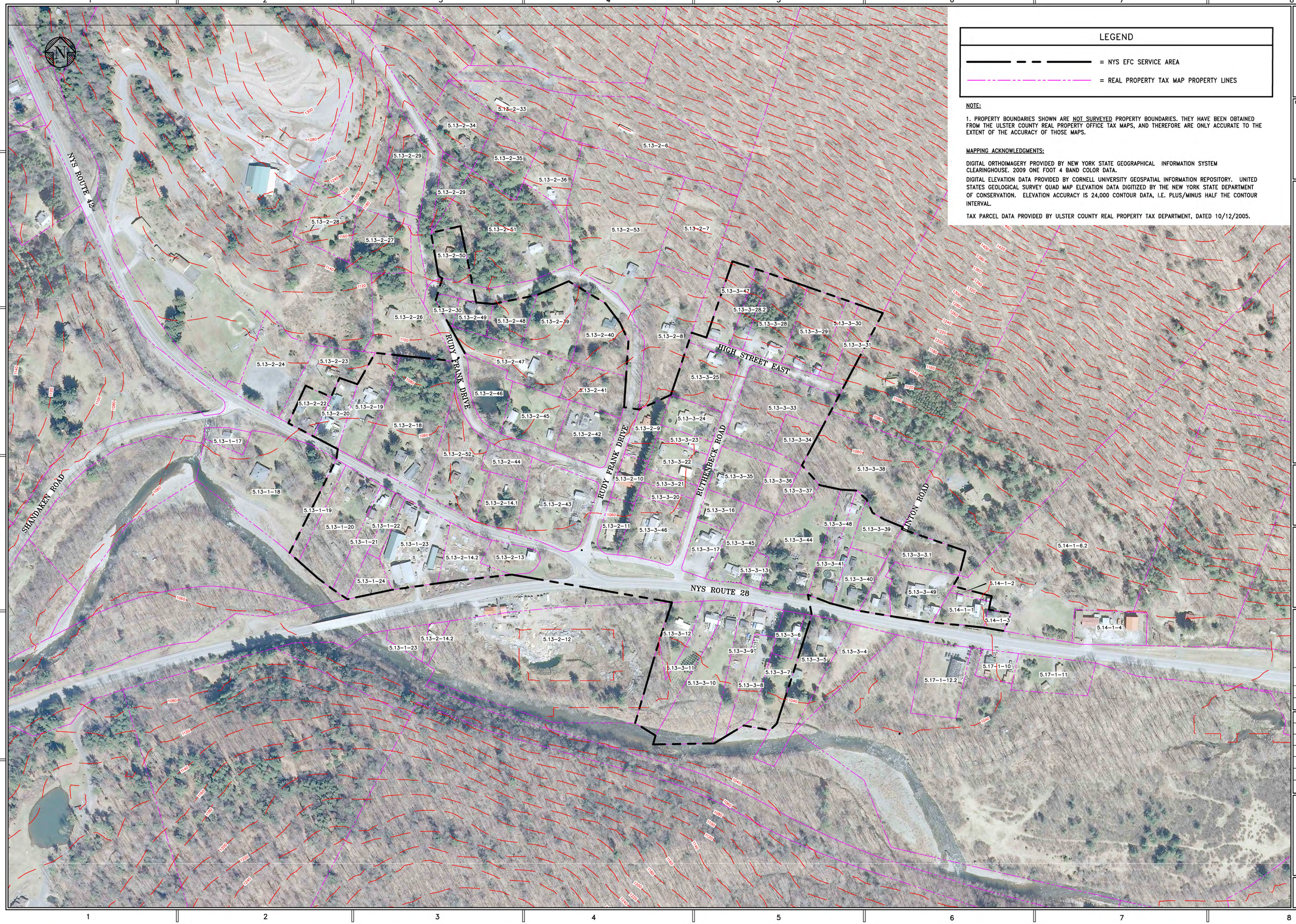
Exhibit 3.2.c.A

Property Use Windshield Survey

TAX NUMBER	ADDR_NAME	OWNR_NAME1	TYPE	DESCRIPTION
5.13-3-39	7366 Route 28	Todd, Ward	V	
5.13-3-40	7366 Route 28	Todd, Ward	RSF	
5.13-3-29	High	Mckim, Virginia	CA	+ Ricarda O'Conner Yoga Classes
5.13-3-30	High	Olmstead, John P	V	
5.13-3-31	High	Olmstead, John P	V	
5.13-3-47	High	Mulligan, James	RSF	
5.13-3-25	Mountain	Shaw, William	RSF	
5.13-3-35	Mountain	Johnson, Nancy	RSF	
5.13-3-20	Mt	Abrahamsen, Hazel	V	
5.13-3-21	Mt	Abrahamsen, Hazel	V	
5.13-2-52	Old Route 28	Jones, Robert	RSF	
5.13-3-10	Route 28	Prinzivalli, Linda	RSF	
5.13-3-11	Route 28	Arnold, Linda J	RSF	
5.13-3-12	Route 28	Sharon, LeighAnn and Stacy	RSF	
5.13-3-13	Route 28	Odato, Stacy	RSF	
5.13-3-17	Route 28	Shandaken Allaben Hose Co	M	Firehouse w/ food prep facility
5.13-3-3.100	Route 28	Walters, Gregory	RSF	+ WWTF Site?
5.13-3-41	Route 28	Todd, Ward D	RSF	
5.13-3-44	Route 28	Ruoff-Hilgers, Melissa	RSF	
5.13-3-45	Route 28	Blydenburgh, John C.	RSF	
5.13-3-48	Route 28	Sanchis, Frank Emile	RSF	
5.13-3-49	Route 28	Shandaken Methodist	IA	Church & House
5.13-3-6	Route 28	Yerry, Dennis	RSF	
5.13-3-8	Route 28	Rutulante, Donna	RSF	
5.13-3-9	Route 28	Sidney Ford	C	James Ford & Son Garage
5.14-1-1	Route 28	Xiques, Thomas	RSF	
5.14-1-2	Route 28	Xiques, Thomas	V	
5.14-1-3	Route 28	Pierce, Jean	RSF	
5.13-1-19	Route 42	Keaveny, Kevin and Margaret	RSF	
5.13-1-20	Route 42	no data	RSF	
5.13-1-21	Route 42	Storey, Bruce A	RSF	
5.13-1-22	Route 42	Stirbl, Aren	RSF	
5.13-1-23	Route 42	Jones, Robert L	RA	2 houses - 6 apts & 3 apts
5.13-1-24	Route 42	Montagno, Randolph V	V	
5.13-2-13	Route 42	Buzzeo, Daisy	RSF	
5.13-2-14.100	Route 42	Roberts, Gary	RSF	WWTF Site?
5.13-2-14.200	Route 42	Jones, Robert L Sr	V	Storage for Farmer Jones Baby Barns
5.13-2-18	Route 42	Sudan, Seema	CA	RSF & Post Office
5.13-2-19	Route 42	Storey, Chad A	RSF	
5.13-2-20	Route 42	Heick, Bonnie	RTF	
5.13-2-22	Route 42	Jones, Tracy A	RSF	
5.13-3-46	Route 42	Wulf, Sylvia L	C	Hotel - 10 rooms
5.13-2-10	Rudy Frank	Johnson, Sean F	V	Barn
5.13-2-11	Rudy Frank	Johnson, Nancy	RSF	
5.13-2-30	Rudy Frank	Johnson, Sean F	V	
5.13-2-39	Rudy Frank	Lockwood-Helm, Wendy	RSF	
5.13-2-40	Rudy Frank	Hevelone, Alvan and Ruth	RSF	
5.13-2-41	Rudy Frank	Hevelone, Alvan and Ruth	V	
5.13-2-42	Rudy Frank	NYSEG - Tax Dept	C	NYSEG Sub Station
5.13-2-43	Rudy Frank	Nazzaro, Frank A	RSF	
5.13-2-44	Rudy Frank	Jones, Robert	RSF	WWTF Site?
5.13-2-45	Rudy Frank	Vitarius, William Bruce	RSF	
5.13-2-46	Rudy Frank	Vitarius, William	V	Pond
5.13-2-47	Rudy Frank	Neal, Gerald A	RSF	
5.13-2-48	Rudy Frank	Hay, David	RSF	
5.13-2-49	Rudy Frank	Schuyler, Minew	RSF	
5.13-2-50	Rudy Frank	Bloodgood, Linda	RSF	
5.13-2-9	Rudy Frank	Berryann, Kenneth	RSF	
5.13-3-22	Ruthenbeck	Sutton, Jeffrey	V	Residential Garage

TAX NUMBER	ADDR_NAME	OWNR_NAME1	TYPE	DESCRIPTION
5.13-3-23	Ruthenbeck	Sutton, Jeffrey	RSF	
5.13-3-24	Ruthenbeck	Curtis, Robert	RSF	
5.13-3-28	Ruthenbeck	Christie, Art and Jen	RSF	
5.13-3-28.200	Ruthenbeck	Seescape, Properties	RTF	
5.13-3-33	Ruthenbeck	Vanblarcum, Barbara	RSF	
5.13-3-34	Ruthenbeck	Hilgers, Timothy	V	
5.13-3-36	Ruthenbeck	no data	V	WWTF Site?
5.13-3-37	Ruthenbeck	no data	V	WWTF Site?
5.13-3-16		Abrahamsen, Hazel	RSF	
5.13-3-7		Pawlowski, Ronald	RSF	

	TOTAL CALCULATIONS	
RSF	TOTAL Res. Single Family	43
RTF	TOTAL Res. Two Family	2
C	TOTAL Commercial Businesses	3
CA	TOTAL Commercial Apartments	2
M	TOTAL Municipal	1
V	TOTAL Vacant lots / lands	16
I	TOTAL Institutional	0
IA	TOTAL Institutional w/ Apartments	1
RA	TOTAL Residential Apartments	1
N/A	TOTAL NOT ASSESSED	0
	TOTAL # of items	69



LEGEND

= NYS EFC SERVICE AREA

= REAL PROPERTY TAX MAP PROPERTY LINES

NOTE:

1. PROPERTY BOUNDARIES SHOWN ARE NOT SURVEYED PROPERTY BOUNDARIES. THEY HAVE BEEN OBTAINED FROM THE ULSTER COUNTY REAL PROPERTY OFFICE TAX MAPS, AND THEREFORE ARE ONLY ACCURATE TO THE EXTENT OF THE ACCURACY OF THOSE MAPS.

MAPPING ACKNOWLEDGMENTS:

DIGITAL ORTHOIMAGERY PROVIDED BY NEW YORK STATE GEOGRAPHICAL INFORMATION SYSTEM CLEARINGHOUSE. 2009 ONE FOOT 4 BAND COLOR DATA.

DIGITAL ELEVATION DATA PROVIDED BY CORNELL UNIVERSITY GEOSPATIAL INFORMATION REPOSITORY. UNITED STATES GEOLOGICAL SURVEY QUAD MAP ELEVATION DATA DIGITIZED BY THE NEW YORK STATE DEPARTMENT OF CONSERVATION. ELEVATION ACCURACY IS 24,000 CONTOUR DATA, I.E. PLUS/MINUS HALF THE CONTOUR INTERVAL.

TAX PARCEL DATA PROVIDED BY ULSTER COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 10/12/2005.

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Consultant

SHANDAKEN SEWER DISTRICT
COMMUNITY WASTEWATER
MANAGEMENT PROGRAM
ULSTER COUNTY NEW YORK STATE

Stamp

Issue Rev.	Date	Remarks

Project Number	2012002
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	08/22/12
Scale	1"=150'
File Name	SEPTIC LIMITATIONS

Sheet Title

PROPERTY USE WINDSHIELD SURVEY MAP SHANDAKEN

Sheet No.

3.2.c.A

Exhibit 3.2.c.B

Summary of Responses to Questionnaire

Exhibit 3.2.c.B

Shandaken Sanitary Septic Survey – 17 of 71 returned (no addresses for 2 properties)

Circle, check or complete answers as appropriate

Type of property

[ ] Residential……(11)
[ ] Commercial/Institutional……...(1)
[ ] Mixed Residential and Commercial/Institutional. (3)
[ ] Vacant…….. (2)

How many bedrooms are in your residence or on your parcel?

[ ] Undeveloped ()
[ ] None……. ()
[ ] One……. (2)
[ ] Two……... (4)
[ ] Three …….. (5)
[ ] Four……... (2)
[ ] Five……... (1)
[ ] Six or more…(1)
[ ] No Answer… (1)

About how old is your septic system?

[ ] 1 - 8 years old ……. (2)
[ ] 9 - 16 years old…… (5)
[ ] 17 - 24 years old…….. (3)
[ ] 25 - 32 years old…….. ()
[ ] More than 32 years old. (6)
[ ] Unknown …… (1)
[ ] No Answer……. ()
[ ] Undeveloped…….. ()

Do you have a raised/engineered system?

YES () NO (13) DON'T KNOW (2) NO ANSWER () UNDEVELOPED ()

Has the septic system had any recent problems that you are aware of? Yes (5) No (9)

Odors (1)
Backing up of sewage into house (3)
Seasonal Problems Only ()
Saturated soils in yard ()
Slow draining plumbing ()
Surfacing of sewage on ground ()
Contaminated Well(s) ()
Other ()
Describe (1) Fills during floods

Has your system, or a part of it, ever failed?

YES (8) NO (7) DON'T KNOW () NO ANSWER () UNKNOWN () UNDEVELOPED ()

If YES, what type of maintenance did you do to get it working again?

[ ] Replaced septic tank..... (1)
[ ] Replaced drain lines..... (2)
[ ] Jetted drain lines..... (2) (1 - & pumped tank, 1- replaced dry well)
[ ] Replaced entire system..... (1)
[ ] Replaced/Repaired pump(s)-float(s)..... ()
[ ] Replaced/Repaired electrical or Alarm components.... ()
[ ] No Answer..... (8)
Removed sand from the system which fills during floods (1)

Was the maintenance done through the Catskill Watershed Corporation?

YES (4) NO (7) Partially (1) NO ANSWER/NOT APPLICABLE (3) FREQUENT PUMPING DONE BY CWC (1)

How often do you have your system pumped out?

[ ] Yearly.....(1)
[ ] Every other year.....(1)
[ ] Every third year..... (4)
[ ] Greater than every three years..... (3)
[ ] Never..... (5)
[ ] As Needed..... ()
[ ] Unknown..... (1)
[ ] N/A Undeveloped land..... ()
[ ] No Answer..... ()

Do you use a garbage disposal?

YES () NO (15) NO ANSWER () UNDEVELOPED ()

Do you use any commercially available septic system additives?

YES (2) NO (13) NO ANSWER () UNDEVELOPED ()

How is the drainage on your property?

[ ] Good (I rarely have water in my basement)..... (11)
[ ] OK (After a large rain or snowmelt, I may have some water)..... (4)
[ ] Poor (I have some water most the time)..... ()
[ ] Terrible (My sump pump runs 24 hours a day)..... (1)
[ ] No Answer..... ()

Has your drainage changed over the years?

[ ] It's gotten better..... (2)
[ ] It's gotten worse..... (3)
[ ] It hasn't changed..... (9)
[ ] No Answer..... (1)
[ ] Don't Know/Unsure..... ()

Is your residence tied into a share or public water supply system?

YES () NO (14) NOT APPLICABLE / NO ANSWER (1)

Do you have a water softener? YES (1) NO(14)

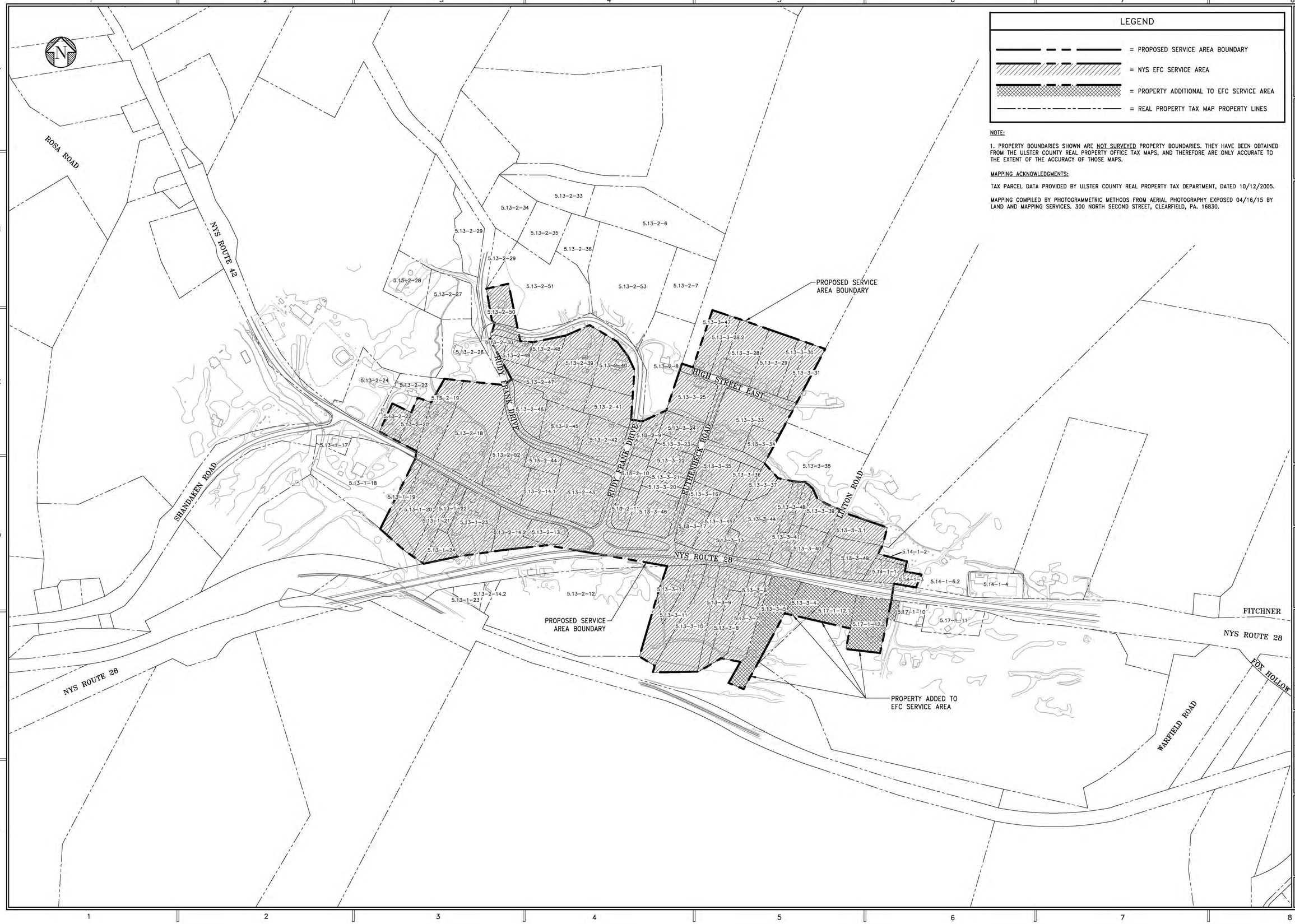
Please provide any other comments you may have:

COMMENTS

1. I am very careful with my septic and DO NOT want to "share" expenses or equipment with others OR have my property "dug up" for others convenience. NEVER. I WILL NEVER GRANT AN EASEMENT OR ALLOW ANY TRESPASS ON MY PROPERTY.
2. Dry well was added about 25 years ago. System currently requires frequent pump out. Pump out is done by CWC.
3. When the water in the creek and our ground elevation are the same our property and everyone around us floods.
4. Would this system have any impact on my well water? I am not in the water district.

Exhibit 4.A

Proposed Service Area Map and Table Summary of Parcels



LEGEND

= PROPOSED SERVICE AREA BOUNDARY

= NYS EFC SERVICE AREA

= PROPERTY ADDITIONAL TO EFC SERVICE AREA

= REAL PROPERTY TAX MAP PROPERTY LINES

NOTE:

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MAPPING ACKNOWLEDGMENTS:

TAX PARCEL DATA PROVIDED BY ULSTER COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 10/12/2005.

MAPPING COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY EXPOSED 04/16/15 BY LAND AND MAPPING SERVICES. 300 NORTH SECOND STREET, CLEARFIELD, PA. 16830.

Lamont Engineers
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SHANDAKEN SEWER DISTRICT
COMMUNITY WASTEWATER
MANAGEMENT PROGRAM
ULSTER COUNTY NEW YORK STATE

Stamp

Issue	Rev.	Date	Remarks

Project Number	2014044
Drawn By	MKS
Designed By	JRB/CJY
Checked By	HL
Date	12/21/15
Scale	1"=200'
File Name	SERVICE AREA

Sheet Title

PROPOSED SERVICE AREA MAP SHANDAKEN

Sheet No.

4.A

Town of Shandaken
Hamlet of Shandaken

Proposed Service Area
Parcel List

TAX NUMBER	ADDR_NAME	OWNR_NAME1	TYPE	DESCRIPTION
5.13-3-40	7366 Route 28	Todd, Ward	RSF	
5.13-3-39	7366 Route 28	Todd, Ward	V	
5.13-3-29	High	Mckim, Virginia	CA	+ Ricarda O'Conner Yoga Classes
5.13-3-47	High	Mulligan, James	RSF	
5.13-3-30	High	Olmstead, John P	V	
5.13-3-31	High	Olmstead, John P	V	
5.13-3-25	Mountain	Shaw, William	RSF	
5.13-3-35	Mountain	Johnson, Nancy	RSF	
5.13-3-20	Mt	Abrahamsen, Hazel	V	
5.13-3-21	Mt	Abrahamsen, Hazel	V	
5.13-2-52	Old Route 28	Jones, Robert	RSF	
5.13-3-10	Route 28	Prinzivalli, Linda	RSF	
5.13-3-11	Route 28	Arnold, Linda J	RSF	
5.13-3-13	Route 28	Odato, Stacy	RSF	
5.13-3-3.100	Route 28	Walters, Gregory	RSF	
5.13-3-41	Route 28	Todd, Ward D	RSF	
5.13-3-44	Route 28	Ruoff-Hilgers, Melissa	RSF	
5.13-3-45	Route 28	Blydenburgh, John C.	RSF	
5.13-3-48	Route 28	Sanchis, Frank Emile	RSF	
5.13-3-6	Route 28	Yerry, Dennis	RSF	
5.13-3-8	Route 28	Rutulante, Donna	RSF	
5.14-1-1	Route 28	Xiques, Thomas	RSF	
5.14-1-3	Route 28	Pierce, Jean	RSF	
5.13-3-12	Route 28	Sharon, LeighAnn and Stacy	RSF	
5.14-1-2	Route 28	Xiques, Thomas	V	
5.13-3-9	Route 28	Sidney Ford	C	James Ford & Son Garage
5.13-3-49	Route 28	Shandaken Methodist	IA	Church & House
5.13-3-17	Route 28	Shandaken Allaben Hose Co	M	Firehouse w/ food prep facility
5.13-1-19	Route 42	Keaveny, Kevin and Margaret	RSF	
5.13-1-21	Route 42	Storey, Bruce A	RSF	
5.13-1-22	Route 42	Stirbl, Aren	RSF	
5.13-1-24	Route 42	Montagno, Randolph V	V	
5.13-2-13	Route 42	Buzzeo, Daisy	RSF	
5.13-2-19	Route 42	Storey, Chad A	RSF	
5.13-2-20	Route 42	Heick, Bonnie	RTF	
5.13-2-22	Route 42	Jones, Tracy A	RSF	
5.13-2-18	Route 42	Sudan, Seema	CA	RSF & Post Office
5.13-2-14.100	Route 42	Roberts, Gary	RSF	
5.13-2-14.200	Route 42	Jones, Robert L Sr	V	Storage for Farmer Jones Baby Barns
5.13-3-46	Route 42	Wulf, Sylvia L	C	Hotel - 10 rooms
5.13-1-23	Route 42	Jones, Robert L	RA	2 houses - 6 apts & 3 apts
5.13-2-11	Rudy Frank	Johnson, Nancy	RSF	
5.13-2-39	Rudy Frank	Lockwood-Helm, Wendy	RSF	
5.13-2-40	Rudy Frank	Hevelone, Alvan and Ruth	RSF	
5.13-2-43	Rudy Frank	Nazzaro, Frank A	RSF	
5.13-2-45	Rudy Frank	Vitarius, William Bruce	RSF	
5.13-2-47	Rudy Frank	Neal, Gerald A	RSF	
5.13-2-48	Rudy Frank	Hay, David	RSF	
5.13-2-49	Rudy Frank	Schuyler, Minew	RSF	
5.13-2-50	Rudy Frank	Bloodgood, Linda	RSF	
5.13-2-9	Rudy Frank	Berryann, Kenneth	RSF	
5.13-2-44	Rudy Frank	Jones, Robert	RSF	
5.13-2-30	Rudy Frank	Johnson, Sean F	V	
5.13-2-41	Rudy Frank	Hevelone, Alvan and Ruth	V	
5.13-2-46	Rudy Frank	Vitarius, William	V	Pond
5.13-2-10	Rudy Frank	Johnson, Sean F	V	Barn
5.13-2-42	Rudy Frank	NYSEG - Tax Dept	C	NYSEG Sub Station
5.13-3-23	Ruthenbeck	Sutton, Jeffrey	RSF	
5.13-3-24	Ruthenbeck	Curtis, Robert	RSF	

Town of Shandaken
Hamlet of Shandaken

Proposed Service Area
Parcel List

TAX NUMBER	ADDR_NAME	OWNR_NAME1	TYPE	DESCRIPTION
5.13-3-33	Ruthenbeck	Vanblarcum, Barbara	RSF	
5.13-3-34	Ruthenbeck	Hilgers, Timothy	V	
5.13-3-22	Ruthenbeck	Sutton, Jeffrey	V	Residential Garage
5.13-3-28.200	Ruthenbeck	Seescape, Properties	RTF	
5.13-3-7		Pawlowski, Helen	RSF	
5.13-3-16		Abrahamsen, Hazel	RSF	
5.13-3-36	Ruthenbeck	no data	V	
5.13-3-37	Ruthenbeck	no data	V	
5.13-3-28	Ruthenbeck	Christie, Art and Jen	RSF	
5.13-1-20	Route 42	no data	RSF	
5.13-3-5	Route 28		RSF	Added to EFC Service Area
5.13-3-4	Route 28		V	Added to EFC Service Area - Site A
5.17-1-12.1	Route 28		V	Added to EFC Service Area - Site A
5.13-1-12.2	Route 28		C	Added to EFC Service Area - Tackle Shop

TOTAL UNITS	UNIT	UNIT DESIGNATION
44	RSF	TOTAL Res. Single Family
2	RTF	TOTAL Res. Two Family
4	C	TOTAL Commercial Businesses
2	CA	TOTAL Commercial Apartments
1	M	TOTAL Municipal
18	V	TOTAL Vacant lots / lands
0	I	TOTAL Institutional
1	IA	TOTAL Institutional w/ Apartments
1	RA	TOTAL Residential Apartments
0	N/A	TOTAL NOT ASSESSED
73		TOTAL UNITS

Exhibit 5.2.A

2010 U.S. Census Information New York State