Thompson Education Center
Well Development Phase

Town of Thompson
Sullivan County, New York

Stormwater Pollution Prevention Plan

Narrative

PIETRZAK & PFAU ENGINEERING & SURVEYING, PLLC
262 GREENWICH AVENUE
GOSHEN, NEW YORK 10924

P&P No. 13145.01
March 2016
June 2016
July 2016

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Appendices

I. Executive Summary

This report shall serve as the stormwater pollution prevention plan for the **well development phase** of the Thompson Education Center project **only**. The project is located on the east side of Wild Turnpike in the Town of Thompson, Sullivan County, New York. The property is identified as Section 26, Block 1, Lot 6 on the current Town of Thompson tax maps. The total site area is 568± acres.

The well development phase consists of the construction of three (3) test wells along with 6,500± linear feet of associated twelve (12) foot wide access roads. The proposed construction is anticipated to disturb approximately 1.8± acres of land. This construction is required to determine the quantity and quality of groundwater located at the project site. This report is not intended as a SWPPP for the overall site plan. A full SWPPP with permanent stormwater management practices shall be prepared and implemented for the construction on the Thompson Education Center project.

Prior to construction, all erosion control measures identified on the supporting plan sheets and within this report will be established. These measures will ensure erosion and sediment control for the proposed construction of access roads and construction operations. Once construction has been completed, all soil disturbance created during the construction process will be restored to original, pre-disturbance conditions.

The primary goal of this Stormwater Pollution Prevention Plan is to ensure that there are no adverse impacts to downstream areas. This is achieved by completing and maintaining full erosion control measures during the construction of the proposed project.

II. Receiving Waters Designation

The stormwater runoff from The Thompson Education Center project is tributary to South Brook, which is south of the project site. This brook is ultimately tributary to the Delaware River.

III. Soils Description

The soils located on the proposed project site, have been identified in accordance with the United States Department of Agriculture Natural Resources Conservation Service. The site consists of soils from all Hydrologic Soil Groups. The soils located on the site are Alden silt loam (Ad), Arnot-Oquaga complex (AoC, AoE), Chenango gravelly loam (ChB, ChD), Neversink loam (Ne), Neversink and Alden soils (Nf), Oquaga loam (OeB), Palms muck (Pa), Scriba and Morris loam (SeB), Swartswood gravelly loam (SrB, SrC), Swartswood and Lackawanna soils (SwE), Tunkhannock gravelly loam (TkB), Valois gravelly sandy loam (VaC), and Wellsboro soils (WeA, WeB, WeC, WIC). (See Appendix D for further information on these particular soils).

IV. Erosion and Sediment Control

Full erosion and sediment control measures will be incorporated into the project construction. These practices will be in accordance with the requirements set forth in the most recent revision of the New York State Department of Environmental Conservation publication entitled "New York State Standards and Specifications for Erosion and Sediment Control".

Erosion Control Measures:

The following erosion control measures will be incorporated to minimize erosion potential:

- Filter fabric silt fence:
  Silt fence shall be used to control erosion from sheet flow on slopes not to exceed two horizontal to one vertical unless specified otherwise. Concentrated flows shall not be directed toward silt fence and spacing shall vary from 50' to 100' depending on slope steepness.

- Permanent and temporary seeding mixtures:
  Permanent and temporary seeding, mulch, fertilizer, soil amendments, and slope stabilization will be used on seeded areas. Land that is stripped of vegetation will be left bare for the shortest time possible. Any area that will remain cleared, but not under construction for 14 days or longer, will be seeded with a temporary mixture. Topsoil shall be stockpiled, stabilized with temporary seeding, and saved for reuse on the site.

- Slope Stabilization:
  All slopes shall be stabilized to minimize erosion. Slopes shall be stabilized with temporary seeding mixtures and straw mulch. Slopes in excess of four horizontal to one vertical shall be stabilized with jute netting and hydro-seed. Existing vegetation, which is not to be removed, will also act as filter strips to protect down-slope areas. Runoff will be diverted from newly graded areas to prevent erosion until a permanent ground cover has been established.

- Dust Control:
  Measures for dust control during construction shall be implemented as needed (daily water sprays will be used during dry conditions and Calcium Chloride will be used only if necessary). In addition to water sprays, temporary plantings will aid in minimizing dust.

- Stabilized Construction Entrance:
  Town and County roads will be protected by installation of crushed stone blanket for cleaning construction vehicle wheels. Blankets shall be placed at any intersection of a construction road with a paved or publicly owned road.

Stabilized construction entrances shall be installed in the location and be of size and type specified.

Erosion Control Sequence

Prior to any site disturbance, the developer and contractors should thoroughly review and become familiar with the approved plan. The installation of erosion control measures should begin with the most downstream device, then working upstream.

All freshly disturbed areas that will remain disturbed for more than a period of fourteen (14) days shall be stabilized by temporary seeding as indicated on the temporary seeding schedule. Disturbed areas shall be minimal in size and shall not exceed the approved clearing and grading limits. The following measures shall be implemented as construction progresses:

- Prior to commencing construction activities, the limits of clearing and grading shall be marked. Filter fabric sedimentation barriers (silt fence) shall be placed along the downgrade perimeter of the site and any other areas where silt fence is indicated as to be installed "Prior to construction" on the approved plans. Installation is to begin at the downstream portions of the site then working upstream.

- Stabilized construction entrances shall be built in the areas shown on the approved plans and wherever a construction access road intersects any public thoroughfare. Stabilized entrances shall be built in accordance with the stabilized construction entrance detail.

- Upon completion of clearing and grubbing activities, topsoil shall be stripped and stockpiled from all areas to be disturbed. Stockpiled topsoil shall be stabilized by temporary seeding and surrounded with a perimeter silt fence (if required).

- Temporary erosion control devices shall be installed prior to commencing earth moving activities. This includes sedimentation traps (if required), type "B" diversion swales (if required) with check dams if applicable and silt fence in areas not designated to be graded. Installation shall begin at downstream portions of the site then working upstream.

- Immediately after completion of rough grading, remaining temporary erosion control shall be installed as specified on the approved plans. This includes any remaining silt fence and type "A" diversion swales (if required) (with check dams if applicable). Areas not requiring further earthwork shall be fine graded, topsoiled, and stabilized as early as possible.

- Upon completion of construction activities, all disturbed areas are to be restored to pre-construction conditions (as applicable), remaining areas shall be fine graded, topsoiled, and stabilized. Permanent vegetation and landscaping shall be established.

- Temporary erosion control devices shall be removed once upstream areas have been permanently stabilized. Removal of temporary erosion control devices shall begin with the most upstream portions of the site then working downstream.

- All newly seeded vegetative cover shall be maintained. Washouts or poorly growing areas shall be corrected as they occur.

Maintenance of Erosion Control Devices

The maintenance of erosion control devices will be the responsibility of the contractor. A critical part of an effective erosion control plan is a conscientious maintenance program. All erosion control devices will be cleaned and restored throughout construction to maintain their effectiveness. The Job Superintendent will monitor the condition of all devices and clean or replace them as conditions require. All erosion control devices shall be installed and maintained in accordance with the approved plan, manufacturer's recommendations, and as directed by Town representatives including the Town Engineer, Highway Superintendent, and Building Inspector.

Specific maintenance shall include:

- Maintaining seeded areas including reseeding weak areas, regrading wash outs and fertilizing.

- Maintaining mulched areas including replacement of disturbed mulched areas.

- All devices shall be inspected after each rain and repaired as needed.

- Sediment shall be removed from behind silt fence when bulges start to occur and fencing reset to original condition.

- Construction equipment shall not unnecessarily cross drainage swales. Crossing of drainage channels shall be by means of bridges, culverts or other approved methods.

- Culverts shall be maintained free of silt or debris.

- Daily water sprays will be used as needed or as directed by the Consulting Engineer or Town representatives. Water sprays will be used to prevent

pollution from dust until construction is completed and soil cover is established.

Removal of Erosion Control Devices:

No erosion control structures shall be removed until all work upstream has been completed, stabilized, and approved by the Consulting Engineer and Town Representatives.

The removal of erosion control devices should generally be as follows:

- After construction, the temporary erosion control structures are to be removed in reverse order with the most upstream structure removed first and thence proceeding downstream.
- All temporary construction culverts shall be removed and areas graded, topsoiled, and seeded (if required).
- Any washouts shall be re-topsoiled and seeded.
- All soil disturbance is to be restored to original, pre-disturbance conditions.

V. Access Road Construction

The site contractor shall limit site disturbance and cutting of brush and trees to the greatest extent practical. In areas where vegetation must be cut, tree stumps and root systems shall remain in place. Stone/gravel shall be installed, only where necessary, so that well drilling equipment can safely access the proposed well sites. The final location of the well access road shall be chosen to limit grading and tree cutting to the maximum extent practical. The following construction sequence shall be utilized for access to the proposed well sites.

1. Prior to the commencement of construction, the NYSDEC 100' adjacent area, shown on the well drilling plan, shall be clearly marked in the field to avoid unintended disturbance within the adjacent area. The adjacent area shall be clearly marked from the well # 1 location to the well #3 location.
2. Prior to access road construction, the final location of the access road shall be marked in the field at 200 foot increments and shall be chosen to limit site disturbances to the maximum extent practical.
3. A stabilized construction entrance shall be constructed as shown on the site plan where the construction road intersects a public thoroughfare. Stabilized entrances

shall be constructed in accordance with the stabilized entrance detail found on the site plan.

4. Where required, vegetation and trees shall be cut and transported offsite. Tree stumps and root systems shall remain in place.
5. Where required for safe access of well drilling equipment, site grading and/or stone base material shall be installed. Site grading and the use of stone/gravel shall be limited to the extent practical.
6. Once the proposed well site is accessed, temporary erosion control devices (silt fence) shall be installed. Silt fence shall be installed prior to well drilling and testing activities.

VI. Access Road Removal

After well development is complete, the site contractor shall remove all installed gravel. Disturbed areas shall be seeded with permanent seed mixtures and stabilized with straw mulch. Native trees shall be planted in disturbed areas to accelerate the return of disturbed areas to the original state. The following construction sequence shall be utilized for removal and stabilization of disturbed areas.

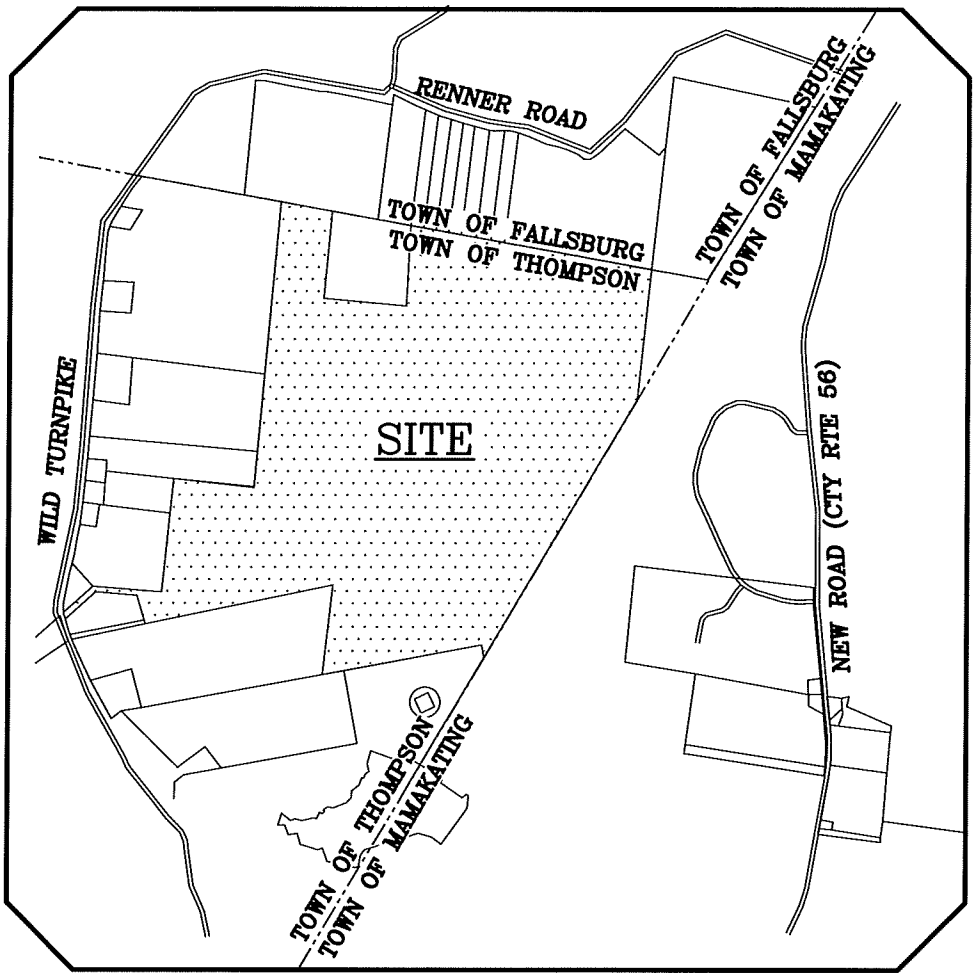
1. After well development is complete, disturbed areas surrounding the well site shall be fine graded and shall be stabilized with permanent seed mixtures and straw mulch.
2. Installed stone/gravel to facilitate access for well drilling equipment shall be removed and transported offsite.
3. Disturbed areas along the access driveway shall be fine graded and stabilized with permanent seed mixtures and straw mulch.
4. In areas where large trees were removed, native trees shall be planted and shall not be less than two and a half inches caliper measured six inches above the top of the ball. In areas where trees are to be replanted, they shall be installed fifty feet on center.
5. The construction entrance shall be removed and the disturbed area shall be fine graded and stabilized with permanent seed mixtures and straw mulch.

NR/tmp
13145.01 SWPPP
03-2016
Rev1 06-2016 (AT)
Rev2 07-2016 (AT)

APPENDIX

Appendix A

Location Map



LOCATION PLAN

SCALE: 1"=2500'

Appendix B

Draft Notice of Intent

0806372691

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR [ ] (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-15-002

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
THOMPSON EDUCATION CENTER LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
LI

Owner/Operator Contact Person First Name
SHERRY

Owner/Operator Mailing Address
2 CENTRE VIEW DRIVE

City
OYSTER BAY

State
NY

Zip
11771-

Phone (Owner/Operator)
212-845-9519

Fax (Owner/Operator)
516-802-2532

Email (Owner/Operator)
SHERRY@CHINACITYOFAMERICA.COM

FED TAX ID
46-5618297 (not required for individuals)

Project Site Information

Project/Site Name

THOMPSON EDUCATION CENTER Well Development Only

Street Address (NOT P.O. BOX)

WILD TURNPIKE

Side of Street

○ North ○ South ● East ○ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)

TOWN OF THOMPSON

State: NY

Zip: 12701-

County: SULLIVAN

DEC Region: 3

Name of Nearest Cross Street

EAST GLEN WILD ROAD

Distance to Nearest Cross Street (Feet): 4000

Project In Relation to Cross Street

○ North ○ South ● East ○ West

Tax Map Numbers
Section-Block-Parcel: 26-1-6

Tax Map Numbers:

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you must go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting): 537631

Y Coordinates (Northing): 4609853

2. What is the nature of this construction project?

● New Construction

○ Redevelopment with increase in impervious area

○ Redevelopment with no increase in impervious area

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- (●) FOREST
- ( ) PASTURE/OPEN LAND
- ( ) CULTIVATED LAND
- ( ) SINGLE FAMILY HOME
- ( ) SINGLE FAMILY SUBDIVISION
- ( ) TOWN HOME RESIDENTIAL
- ( ) MULTIFAMILY RESIDENTIAL
- ( ) INSTITUTIONAL/SCHOOL
- ( ) INDUSTRIAL
- ( ) COMMERCIAL
- ( ) ROAD/HIGHWAY
- ( ) RECREATIONAL/SPORTS FIELD
- ( ) BIKE PATH/TRAIL
- ( ) LINEAR UTILITY
- ( ) PARKING LOT
- ( ) OTHER

Post-Development Future Land Use

- ( ) SINGLE FAMILY HOME
- ( ) SINGLE FAMILY SUBDIVISION — Number of Lots
- ( ) TOWN HOME RESIDENTIAL
- ( ) MULTIFAMILY RESIDENTIAL
- ( ) INSTITUTIONAL/SCHOOL
- ( ) INDUSTRIAL
- ( ) COMMERCIAL
- ( ) MUNICIPAL
- ( ) ROAD/HIGHWAY
- ( ) RECREATIONAL/SPORTS FIELD
- ( ) BIKE PATH/TRAIL
- ( ) LINEAR UTILITY (water, sewer, gas, etc.)
- ( ) PARKING LOT
- (●) CLEARING/GRADING ONLY
- ( ) DEMOLITION, NO REDEVELOPMENT
- ( ) WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ( ) OTHER

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
568.0	2.4	0.0	0.0

5. Do you plan to disturb more than 5 acres of soil at any one time? ( ) Yes (●) No

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
1 %	10 %	37 %	52 %

7. Is this a phased project? ( ) Yes ( ) No

8. Enter the planned start and end dates of the disturbance activities.

Start Date 04/01/2016 – End Date 04/01/2017

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

SOUTH BROOK

9a. Type of waterbody identified in Question 9?

- O Wetland / State Jurisdiction On Site (Answer 9b)
- O Wetland / State Jurisdiction Off Site
- O Wetland / Federal Jurisdiction On Site (Answer 9b)
- O Wetland / Federal Jurisdiction Off Site
- O Stream / Creek On Site
- ● Stream / Creek Off Site
- O River On Site
- O River Off Site
- O Lake On Site
- O Lake Off Site
- O Other Type On Site
- O Other Type Off Site

9b. How was the wetland identified?

- O Regulatory Map
- O Delineated by Consultant
- O Delineated by Army Corps of Engineers
- O Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-15-002? O Yes ● No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002? O Yes ● No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? O Yes ● No
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? O Yes ● No
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? O Yes ● No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ Yes ● No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
If No, skip questions 23 and 27-39. ○ Yes ● No

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ○ Yes ○ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● Professional Engineer (P.E.)
- ○ Soil and Water Conservation District (SWCD)
- ○ Registered Landscape Architect (R.L.A)
- ○ Certified Professional in Erosion and Sediment Control (CPESC)
- ○ Owner/Operator
- ○ Other

SWPPP Preparer
PIETRZAK & PFAU ENGINEERING & SURVEYING

Contact Name (Last, Space, First)
PFAU, JOSEPH, J.

Mailing Address
262 GREENWICH AVENUE

City
GOSHEN

State NY Zip 10924-

Phone 845-294-0606

Fax 845-294-0610

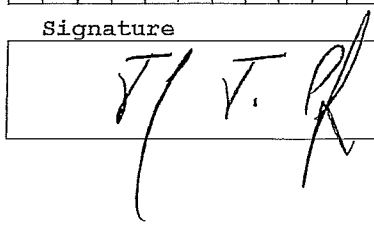
Email
pietrzakpfau@pietrzakpfau.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-15-002. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name JOSEPH MI J

Last Name PFAU

Signature 

Date 03/22/2016

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ● Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ○ Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- O Preservation of Undisturbed Areas
- O Preservation of Buffers
- O Reduction of Clearing and Grading
- O Locating Development in Less Sensitive Areas
- O Roadway Reduction
- O Sidewalk Reduction
- O Driveway Reduction
- O Cul-de-sac Reduction
- O Building Footprint Reduction
- O Parking Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- O All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- O Compacted areas were considered as impervious cover when calculating the WQv Required, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

[ ][ ][ ].[ ][ ][ ] acre-feet

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

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Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

RR Techniques (Area Reduction)	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
O Conservation of Natural Areas (RR-1)	___.___	and/or	___.___
O Sheetflow to Riparian Buffers/Filters Strips (RR-2)	___.___	and/or	___.___
O Tree Planting/Tree Pit (RR-3)	___.___	and/or	___.___
O Disconnection of Rooftop Runoff (RR-4)	___.___	and/or	___.___

RR Techniques (Volume Reduction)	
O Vegetated Swale (RR-5)	___.___
O Rain Garden (RR-6)	___.___
O Stormwater Planter (RR-7)	___.___
O Rain Barrel/Cistern (RR-8)	___.___
O Porous Pavement (RR-9)	___.___
O Green Roof (RR-10)	___.___

Standard SMPs with RRv Capacity	
O Infiltration Trench (I-1)	___.___
O Infiltration Basin (I-2)	___.___
O Dry Well (I-3)	___.___
O Underground Infiltration System (I-4)	___.___
O Bioretention (F-5)	___.___
O Dry Swale (O-1)	___.___

Standard SMPs	
O Micropool Extended Detention (P-1)	___.___
O Wet Pond (P-2)	___.___
O Wet Extended Detention (P-3)	___.___
O Multiple Pond System (P-4)	___.___
O Pocket Pond (P-5)	___.___
O Surface Sand Filter (F-1)	___.___
O Underground Sand Filter (F-2)	___.___
O Perimeter Sand Filter (F-3)	___.___
O Organic Filter (F-4)	___.___
O Shallow Wetland (W-1)	___.___
O Extended Detention Wetland (W-2)	___.___
O Pond/Wetland System (W-3)	___.___
O Pocket Wetland (W-4)	___.___
O Wet Swale (O-2)	___.___

Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area (acres)
○ Hydrodynamic	
○ Wet Vault	
○ Media Filter	
○ Other [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name [ ]

Manufacturer [ ]

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

[ ][ ][ ].[ ][ ][ ] acre-feet

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ Yes ○ No

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

[ ][ ][ ].[ ][ ][ ] acre-feet

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

○ Yes ○ No

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

[ ][ ][ ].[ ][ ][ ] acre-feet

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). [ ][ ][ ].[ ][ ][ ]

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? O Yes O No

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

[ ][ ][ ].[ ][ ][ ] acre-feet

CPv Provided

[ ][ ][ ].[ ][ ][ ] acre-feet

36a. The need to provide channel protection has been waived because:

O Site discharges directly to tidal waters or a fifth order or larger stream.

O Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

[ ][ ][ ].[ ][ ][ ] CFS

Post-development

[ ][ ][ ].[ ][ ][ ] CFS

Total Extreme Flood Control Criteria (Qf)

Pre-Development

[ ][ ][ ].[ ][ ][ ] CFS

Post-development

[ ][ ][ ].[ ][ ][ ] CFS

37a. The need to meet the Qp and Qf criteria has been waived because:

- O Site discharges directly to tidal waters or a fifth order or larger stream.
- O Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? O Yes O No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- O Air Pollution Control
- O Coastal Erosion
- O Hazardous Waste
- O Long Island Wells
- O Mined Land Reclamation
- O Solid Waste
- O Navigable Waters Protection / Article 15
- O Water Quality Certificate
- O Dam Safety
- O Water Supply
- O Freshwater Wetlands/Article 24
- O Tidal Wetlands
- O Wild, Scenic and Recreational Rivers
- O Stream Bed or Bank Protection / Article 15
- O Endangered or Threatened Species(Incidental Take Permit)
- O Individual SPDES
- O SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ]
- O Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? O Yes ● No
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? O Yes ● No
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? O Yes O No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

8741372697

Owner/Operator Certification

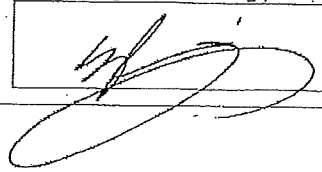
I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: SHERRY

MI:

Print Last Name: LI

Owner/Operator Signature:



Date: 03/22/2016

Appendix C

SWPPP Certifications

I. Owner/Operator Information:

PROJECT:	Thompson Education Center
LOCATION:	Town of Thompson Sullivan County, New York
RECORD OWNER:	Thompson Education Center, LLC
OWNER/APPLICANT ADDRESS:	Thompson Education Center, LLC 2 Centre View Dr. Upper Brookville NY 11771
PROJECT SITE ADDRESS:	Wild Turnpike Thompson, New York 12701

II. Certifications:

Contractor and Subcontractor Certification:

I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the Storm Water Pollution Prevention Plan (SWPPP) and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations.

Contractor responsible for project oversight:

Contractor	Print Name & Title
Signature	Date
Name of Trained Contractor	Address: Phone:

Subcontractor responsible for onsite construction and maintenance of erosion and sediment control practices and post-construction stormwater management practices included in the SWPPP:

Subcontractor	Print Name & Title
Signature	Date
Name of Trained Contractor	Address: Phone:

Additional Subcontractors and responsibility:

Subcontractor	Print Name & Title
Signature	Date
Name of Trained Contractor	Address: Phone:
Subcontractor	Print Name & Title
Signature	Date
Name of Trained Contractor	Address: Phone:

Appendix D

Soils Report

United States Department of Agriculture

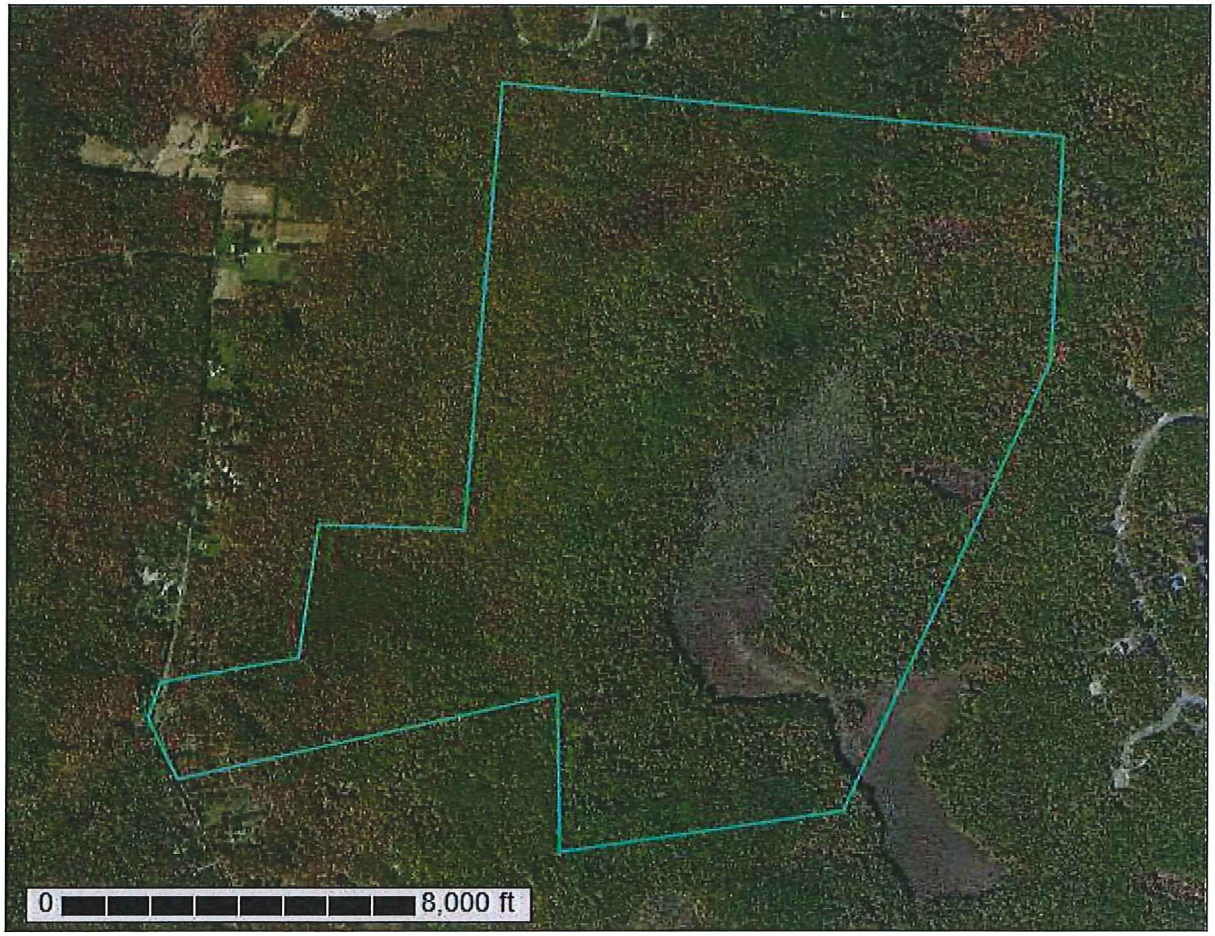
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Sullivan County, New York

Thompson Education Center



March 21, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

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

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: Sullivan County, New York
Survey Area Data: Version 14, Sep 24, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 20, 2011—Oct 10, 2011

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

Sullivan County, New York (NY105)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Ad	Alden silt loam	13.6	2.0%
AoC	Arnot-Oquaga complex, 0 to 15 percent slopes, very rocky	27.2	4.0%
AoE	Arnot-Oquaga complex, 15 to 35 percent slopes, very rocky	15.6	2.3%
ChB	Chenango gravelly loam, 3 to 8 percent slopes	4.4	0.7%
ChD	Chenango gravelly loam, 15 to 25 percent slopes	0.8	0.1%
Ne	Neversink loam	3.6	0.5%
Nf	Neversink and Alden soils, very stony	137.5	20.3%
OeB	Oquaga very channery silt loam, 3 to 8 percent slopes	17.8	2.6%
Pa	Palms muck	53.1	7.8%
SeB	Scriba and Morris loams, gently sloping, rubbly	8.8	1.3%
SrB	Swartswood gravelly loam, 3 to 8 percent slopes, stony	33.8	5.0%
SrC	Swartswood gravelly loam, 8 to 15 percent slopes, stony	26.0	3.8%
SwE	Swartswood and Lackawanna soils, steep, extremely stony	18.5	2.7%
TkB	Tunkhannock gravelly loam, 3 to 8 percent slopes	2.0	0.3%
VaC	Valois gravelly sandy loam, 8 to 15 percent slopes	11.3	1.7%
WeA	Wellsboro gravelly loam, 0 to 3 percent slopes	2.3	0.3%
WeB	Wellsboro gravelly loam, 3 to 8 percent slopes	60.6	8.9%
WeC	Wellsboro gravelly loam, 8 to 15 percent slopes	0.9	0.1%
WlC	Wellsboro and Wurtsboro soils, strongly sloping, extremely stony	240.0	35.4%
Totals for Area of Interest		**677.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly

indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Sullivan County, New York

Ad—Alden silt loam

Map Unit Setting

National map unit symbol: 9x0j
Elevation: 300 to 1,500 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Alden and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alden

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: A silty mantle of local deposition overlying loamy till

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 33 inches: silt loam
H3 - 33 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Minor Components

Morris

Percent of map unit: 5 percent

Palms

Percent of map unit: 5 percent

Landform: Marshes, swamps

Scriba

Percent of map unit: 5 percent

Neversink

Percent of map unit: 5 percent
Landform: Depressions

AoC—Arnot-Oquaga complex, 0 to 15 percent slopes, very rocky

Map Unit Setting

National map unit symbol: 9x0m
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Arnot and similar soils: 45 percent
Oquaga and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arnot

Setting

Landform: Benches, ridges, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from acid sandstone, siltstone, and shale

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
H1 - 1 to 3 inches: channery loam
H2 - 3 to 17 inches: very channery loam
H3 - 17 to 21 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D

Description of Oquaga

Setting

Landform: Benches, ridges, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till with lithology dominated by reddish sandstone, siltstone, and shale

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
H1 - 2 to 6 inches: very channery silt loam
H2 - 6 to 36 inches: very channery loam
H3 - 36 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C

Minor Components

Rock outcrop

Percent of map unit: 5 percent

Tuller

Percent of map unit: 4 percent

Cheshire

Percent of map unit: 2 percent

Lackawanna

Percent of map unit: 2 percent

Wellsboro

Percent of map unit: 2 percent

AoE—Arnot-Oquaga complex, 15 to 35 percent slopes, very rocky

Map Unit Setting

National map unit symbol: 9x0n
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Arnot and similar soils: 50 percent
Oquaga and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arnot

Setting

Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from acid sandstone, siltstone, and shale

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
H1 - 1 to 3 inches: channery loam
H2 - 3 to 17 inches: very channery loam
H3 - 17 to 21 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Description of Oquaga

Setting

Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till with lithology dominated by reddish sandstone, siltstone, and shale

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
H1 - 2 to 6 inches: very channery silt loam
H2 - 6 to 36 inches: very channery loam
H3 - 36 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C

Minor Components

Rock outcrop

Percent of map unit: 5 percent

Unnamed soils

Percent of map unit: 4 percent

Cheshire

Percent of map unit: 3 percent

Lackawanna

Percent of map unit: 3 percent

ChB—Chenango gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9x0y

Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chenango and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 31 inches: very gravelly loam
H3 - 31 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A

Minor Components

Pompton

Percent of map unit: 5 percent

Valois

Percent of map unit: 5 percent

Red hook

Percent of map unit: 3 percent

Otisville

Percent of map unit: 2 percent

ChD—Chenango gravelly loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9x10
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Chenango and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 31 inches: very gravelly loam
H3 - 31 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A

Minor Components

Otisville
Percent of map unit: 5 percent

Riverhead
Percent of map unit: 5 percent

Valois
Percent of map unit: 5 percent

Ne—Neversink loam

Map Unit Setting
National map unit symbol: 9x26
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Neversink and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Neversink

Setting
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Acid loamy till derived from sandstone, siltstone, and shale

Typical profile
Oi - 0 to 2 inches: slightly decomposed plant material
H1 - 2 to 7 inches: loam
H2 - 7 to 23 inches: gravelly loam
H3 - 23 to 60 inches: gravelly sandy loam

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D

Minor Components

Alden

Percent of map unit: 5 percent
Landform: Depressions

Scriba

Percent of map unit: 5 percent

Unnamed soils

Percent of map unit: 4 percent
Landform: Depressions

Wallington

Percent of map unit: 3 percent

Morris

Percent of map unit: 1 percent

Wellsboro

Percent of map unit: 1 percent

Wurtsboro

Percent of map unit: 1 percent

Nf—Neversink and Alden soils, very stony

Map Unit Setting

National map unit symbol: 9x27
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Neversink, very stony, and similar soils: 45 percent
Alden, very stony, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Neversink, Very Stony

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave

Across-slope shape: Concave
Parent material: Acid loamy till derived from sandstone, siltstone, and shale

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
H1 - 2 to 7 inches: loam
H2 - 7 to 23 inches: gravelly loam
H3 - 23 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C/D

Description of Alden, Very Stony

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: A silty mantle of local deposition overlying loamy till

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 33 inches: silt loam
H3 - 33 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 0 to 3 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C/D

Minor Components

Morris
Percent of map unit: 5 percent

Unnamed soils
Percent of map unit: 5 percent
Landform: Bogs

Scriba
Percent of map unit: 5 percent

OeB—Oquaga very channery silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9x2d
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Oquaga and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oquaga

Setting
Landform: Benches, ridges, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till with lithology dominated by reddish sandstone, siltstone, and shale

Typical profile
Oi - 0 to 2 inches: slightly decomposed plant material
H1 - 2 to 6 inches: very channery silt loam
H2 - 6 to 36 inches: very channery loam
H3 - 36 to 40 inches: unweathered bedrock

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Minor Components

Arnot

Percent of map unit: 5 percent

Cheshire

Percent of map unit: 3 percent

Lackawanna

Percent of map unit: 3 percent

Wellsboro

Percent of map unit: 3 percent

Tuller

Percent of map unit: 1 percent

Pa—Palms muck

Map Unit Setting

National map unit symbol: 9x2n
Elevation: 250 to 1,500 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Palms and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Palms

Setting

Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material over loamy glacial drift

Typical profile

H1 - 0 to 12 inches: muck
H2 - 12 to 22 inches: muck
H3 - 22 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 20 percent
Available water storage in profile: Very high (about 15.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D

Minor Components

Alden

Percent of map unit: 5 percent
Landform: Depressions

Carlisle

Percent of map unit: 5 percent
Landform: Marshes, swamps

Wayland

Percent of map unit: 3 percent
Landform: Flood plains

Neversink

Percent of map unit: 2 percent
Landform: Depressions

SeB—Scriba and Morris loams, gently sloping, rubbly

Map Unit Setting

National map unit symbol: 2vxdt
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Scriba, rubbly, and similar soils: 40 percent
Morris, rubbly, and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Morris, Rubbly

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till from reddish sandstone, siltstone, and shale

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: loam
Bw - 5 to 12 inches: gravelly loam
Eg - 12 to 16 inches: gravelly loam
Bx - 16 to 60 inches: gravelly loam
C - 60 to 72 inches: gravelly loam

Properties and qualities

Slope: 2 to 8 percent
Percent of area covered with surface fragments: 20.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Description of Scriba, Rubbly

Setting

Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till dominated by sandstone, with lesser amounts of limestone and shale

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
H1 - 2 to 8 inches: loam
H2 - 8 to 20 inches: channery loam

H3 - 20 to 60 inches: channery loam

Properties and qualities

Slope: 2 to 8 percent
Percent of area covered with surface fragments: 20.0 percent
Depth to restrictive feature: 12 to 20 inches to fragipan
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Minor Components

Wellsboro, rubbly

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope, head slope
Down-slope shape: Linear, concave
Across-slope shape: Linear

Neversink, very stony

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Wurtsboro, extremely stony

Percent of map unit: 5 percent
Landform: Hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex

Alden, very stony

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

SrB—Swartswood gravelly loam, 3 to 8 percent slopes, stony

Map Unit Setting

National map unit symbol: 9x39
Elevation: 1,000 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Swartswood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swartswood

Setting

Landform: Hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from quartzite, conglomerate, and sandstone

Typical profile

H1 - 0 to 1 inches: gravelly loam
H2 - 1 to 26 inches: gravelly loam
H3 - 26 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 22 to 30 inches to fragipan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 26 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D

Minor Components

Cheshire
Percent of map unit: 5 percent

Wurtsboro
Percent of map unit: 5 percent

Scriba
Percent of map unit: 2 percent

Valois
Percent of map unit: 1 percent

Wellsboro
Percent of map unit: 1 percent

Lackawanna
Percent of map unit: 1 percent

SrC—Swartswood gravelly loam, 8 to 15 percent slopes, stony

Map Unit Setting
National map unit symbol: 9x3b
Elevation: 1,000 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Swartswood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swartswood

Setting
Landform: Hills, till plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from quartzite, conglomerate, and sandstone

Typical profile
H1 - 0 to 1 inches: gravelly loam
H2 - 1 to 26 inches: gravelly loam
H3 - 26 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 22 to 30 inches to fragipan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 26 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D

Minor Components

Wurtsboro

Percent of map unit: 5 percent

Cheshire

Percent of map unit: 5 percent

Scriba

Percent of map unit: 2 percent

Valois

Percent of map unit: 1 percent

Lackawanna

Percent of map unit: 1 percent

Wellsboro

Percent of map unit: 1 percent

SwE—Swartswood and Lackawanna soils, steep, extremely stony

Map Unit Setting

National map unit symbol: 2w0bw
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Swartswood, extremely stony, and similar soils: 40 percent
Lackawanna, extremely stony, and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lackawanna, Extremely Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Parent material: Loamy till derived mainly from reddish sandstone, siltstone, and shale

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: channery loam
Bw1 - 3 to 17 inches: channery loam
Bw2 - 17 to 26 inches: channery loam
Bx - 26 to 60 inches: channery loam
C - 60 to 72 inches: very channery loam

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 17 to 36 inches to fragipan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 16 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C

Description of Swartswood, Extremely Stony

Setting

Landform: Hills, till plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from quartzite, conglomerate, and sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
H1 - 2 to 3 inches: gravelly loam
H2 - 3 to 28 inches: gravelly loam
H3 - 28 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 22 to 30 inches to fragipan

Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 26 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D

Minor Components

Wellsboro, extremely stony
Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear

Cadosia, extremely stony
Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear

Oquaga, extremely stony
Percent of map unit: 5 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Wurtsboro, extremely stony
Percent of map unit: 5 percent
Landform: Hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex

TkB—Tunkhannock gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9x3l
Elevation: 700 to 2,000 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tunkhannock and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tunkhannock

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from reddish sandstone, siltstone, and shale

Typical profile

H1 - 0 to 6 inches: gravelly loam
H2 - 6 to 38 inches: very gravelly very fine sandy loam
H3 - 38 to 60 inches: stratified very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A

Minor Components

Barbour
Percent of map unit: 5 percent

Unnamed soils
Percent of map unit: 5 percent

Suncook
Percent of map unit: 5 percent

VaC—Valois gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 9x3w
Elevation: 600 to 1,750 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Valois and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valois

Setting
Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile
Oe - 0 to 1 inches: moderately decomposed plant material
E - 1 to 4 inches: gravelly sandy loam
H2 - 4 to 26 inches: gravelly sandy loam
H3 - 26 to 37 inches: gravelly sandy loam
H4 - 37 to 60 inches: gravelly sandy loam

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Minor Components

Chenango

Percent of map unit: 5 percent

Riverhead

Percent of map unit: 5 percent

Wurtsboro

Percent of map unit: 3 percent

Unnamed soils

Percent of map unit: 3 percent

Swartswood

Percent of map unit: 2 percent

Lordstown

Percent of map unit: 2 percent

WeA—Wellsboro gravelly loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9x43
Elevation: 1,100 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wellsboro and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellsboro

Setting

Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex

Parent material: Loamy till derived mainly from reddish sandstone, siltstone, and shale

Typical profile

H1 - 0 to 7 inches: gravelly loam
H2 - 7 to 23 inches: gravelly loam
H3 - 23 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 12 to 30 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 10 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D

Minor Components

Morris

Percent of map unit: 4 percent

Lackawanna

Percent of map unit: 3 percent

Scriba

Percent of map unit: 2 percent

Swartswood

Percent of map unit: 2 percent

Wurtsboro

Percent of map unit: 2 percent

Unnamed soils

Percent of map unit: 2 percent

WeB—Wellsboro gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9x44
Elevation: 1,100 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wellsboro and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellsboro

Setting

Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from reddish sandstone, siltstone, and shale

Typical profile

H1 - 0 to 7 inches: gravelly loam
H2 - 7 to 23 inches: gravelly loam
H3 - 23 to 60 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 12 to 30 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 10 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D

Minor Components

Morris

Percent of map unit: 4 percent

Lackawanna

Percent of map unit: 3 percent

Swartswood

Percent of map unit: 2 percent

Wurtsboro

Percent of map unit: 2 percent

Scriba

Percent of map unit: 2 percent

Unnamed soils

Percent of map unit: 2 percent

WeC—Wellsboro gravelly loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9x45
Elevation: 1,100 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wellsboro and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellsboro

Setting

Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from reddish sandstone, siltstone, and shale

Typical profile

H1 - 0 to 7 inches: gravelly loam
H2 - 7 to 23 inches: gravelly loam
H3 - 23 to 60 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 12 to 30 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 10 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D

Minor Components

Lackawanna
Percent of map unit: 4 percent

Oquaga
Percent of map unit: 2 percent

Morris
Percent of map unit: 2 percent

Swartswood
Percent of map unit: 2 percent

Wurtsboro
Percent of map unit: 2 percent

Unnamed soils
Percent of map unit: 2 percent

Scriba
Percent of map unit: 1 percent

WIC—Wellsboro and Wurtsboro soils, strongly sloping, extremely stony

Map Unit Setting
National map unit symbol: 9x46
Elevation: 1,100 to 1,800 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition
Wurtsboro, extremely stony, and similar soils: 40 percent
Wellsboro, extremely stony, and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellsboro, Extremely Stony

Setting
Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from reddish sandstone, siltstone, and shale

Typical profile
H1 - 0 to 7 inches: gravelly loam

H2 - 7 to 23 inches: gravelly loam
H3 - 23 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 15 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 12 to 30 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 10 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Description of Wurtsboro, Extremely Stony

Setting

Landform: Hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from acid quartzite, conglomerate, and sandstone

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
H1 - 2 to 4 inches: loam
H2 - 4 to 28 inches: loam
H3 - 28 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 15 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 20 to 28 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 22 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D

Minor Components

Scriba

Percent of map unit: 5 percent

Swartswood
Percent of map unit: 5 percent

Lackawanna
Percent of map unit: 3 percent

Morris
Percent of map unit: 3 percent

Lordstown
Percent of map unit: 2 percent

Oquaga
Percent of map unit: 2 percent

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