



Transcontinental Gas Pipe Line Company, LLC

**Requirement M - Erosion and Sediment Control
Plan Drawings and Narrative
(as provided in the ESCP Application)**

**Regional Energy Access Expansion Project –
Regional Energy Lateral**

April 2021
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(Revised March 2022)

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SECTION 2.1.1
NARRATIVE

1. Project Description

Transcontinental Gas Pipe Line Company, LLC (Transco), indirectly owned by the Williams Companies, Inc. (Williams) is seeking authorization from the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act and Part 157 of the Commission's regulations to construct, own, operate, and maintain the proposed Project facilities associated with the Regional Energy Access Expansion Project (Project). The Project is an expansion of Transco's existing natural gas transmission system that will enable Transco to provide an incremental 829,400 dekatherms per day (Dth/d) of year-round firm transportation capacity from the Marcellus Shale production area in northeastern Pennsylvania to multiple delivery points along Transco's Leidy Line in PA and Mainline in PA, NJ, and MD.

The Regional Energy Lateral (REL) is proposed as part of the overall Regional Energy Access Expansion Project (Project). The Regional Energy Lateral component of the Project will consist of approximately 22.2 miles of 30-inch diameter pipeline, partially co-located with existing Transco Leidy Line-A, in Buck, Bear Creek, Plains, Jenkins, Kingston and Dallas Townships, and Laflin, Wyoming, and West Wyoming Boroughs, Luzerne County, Pennsylvania. The Regional Energy Lateral begins at existing Compressor Station 515 in Buck Township and continues westward to its terminus at Transco's existing Hildebrandt Tie-in/MLV-515RA40 in Dallas Township. A separate E&SC/SR Plan Narrative is provided for Compressor Station 515.

This E&SC and SR Plan has been developed for Regional Energy Lateral which includes: (1) MLV-515RA20, (2) MLV-515RA30, (3) Carverton Tie-in, (4) Lower Demunds REL Tie-in, and (5) Hildebrandt Tie-in/MLV-515RA40. Additionally, three channels have been added to the SR Plan to restabilize and redirect existing streams, S4a-T5/S4-T5 and S5-T5/S6-T5, in Laflin, PA. Located along the pipeline route are two proposed contractor yards, CY-LU-001 and CY-LU-002. The E&SC and SR Plan shall be designed and implemented to be consistent with the Post Construction Stormwater Management (PCSM) Plan under 25 Pa. Code § 102.8 (relating to PCSM requirements). Transco will use and implement the practices, measures and details outlined herein to control soil erosion and off-site sedimentation. The work and disturbed areas are located within Transco property, existing easements or legally obtained workspace. The limit of disturbance (LOD) for the Regional Energy Lateral Pipeline will be approximately 405 acres, which includes portions of Compressor Station 515. Subject to FERC's certification of the Project and receipt of the necessary permits and authorizations, Transco anticipates construction of the Project to start in second quarter 2023 to meet a proposed in-service date in fourth quarter 2024.

1.1 MLV-515RA20

The MLV-515RA20 is proposed along the REL Pipeline in Bear Creek Township, Luzerne County at Milepost 7.54. It is proposed as a means to isolate gas flows along sections of a pipeline. Pig launchers/receivers and communication equipment may be located at the MLV facility. The facility will include a 104 foot long gravel access road, 55 ft x 90 ft gravel pad, various diversion and PCSM conveyance channels, and an infiltration berm and soil amendment area.

1.2 MLV-515RA30

The MLV515-RA30 is proposed along the REL Pipeline in Wyoming Borough, Luzerne County at Milepost 14.84. It is proposed as a means to isolate gas flows along sections of a pipeline. Pig launchers/receivers and communication equipment may be located at the MLV facility. The facility will include a 140 foot long gravel access road, 62 ft x 96 ft gravel pad, and an infiltration berm.

1.3 Carverton Tie-in

The Carverton Tie-in is a receipt tie-in proposed in West Wyoming Borough, Luzerne County at Milepost 16.8. Proposed is the installation of new tie-in piping into the proposed REL Pipeline, valves, and aboveground tie-in piping for an annubar meter. The facility will include a 55 ft x 90 ft gravel pad, and an infiltration berm PCSM BMP.

1.4 Lower Demunds REL Tie-in

The Lower Demunds REL Tie-in is a receipt tie-in proposed in Dallas Township, Luzerne County near the terminus of the Regional Energy Lateral at Milepost 22.1. Proposed is the installation of approximately 400 feet of new 20-inch-diameter tie-in piping and conduit from Transco's existing Leidy Line A tie-in site to the new proposed REL Pipeline tie-in site, valves, and new aboveground tie-in piping for an annubar meter. The facility will include a 74.5 ft x 84 ft gravel pad. Run-on to the pad area will be limited by an upgradient diversion channel, and stormwater management will be accomplished by infiltration within the pad area itself. The pad will be bermed around the exterior to retain stormwater for infiltration. An overflow spillway will be used to discharge excess flow to a level spreader. Runoff rates have been reduced by 40% of the pre-construction flow rates.

1.5 Hildebrandt Tie-in/MLV-515RA40

The Hildebrandt Tie-in/MLV-515RA40 is receipt tie-in proposed in Dallas Township, Luzerne County, at the terminus of the Regional Energy Lateral at Milepost 22.34. Proposed is

the installation of new aboveground tie-in piping, valves, and aboveground piping for an annubar meter, and install Hildebrandt Tie-in/MLV-515RA40 and associated pig trap. The facility will include an 80 ft x 140 ft gravel pad. With run-on to the pad area diverted by an upgradient channel, stormwater management will be accomplished by infiltration within the pad area itself. The pad will be bermed around the exterior to retain stormwater for infiltration. An overflow spillway will be used to discharge excess flow to the diversion channel and subsequently to a level spreader. Runoff rates have been reduced by 40% of the pre-construction flow rates.

1.6 S5-T5/S6-T5 AND S4A-T5/S4-T5 Stream Stabilization

Two areas of existing stream channel and bank stabilization and reconstruction through the REL Pipeline right-of-way are proposed for the project. The eastern stream section is designated as S4a-T5/S4-T5 and is located between Mileposts 11.0 and 11.1. The second section is designated as S5-T5/S6-T5 and is located between Mileposts 11.2 and 11.3. A small section of channel is also required to connect stream S5-T5 to S6-T5. Work will include channel and bank stabilization, reconstruction where necessary, and new channel sections as needed to restore the streams and protect the REL Pipeline.

1.7 Contractor Yards

Along the REL Pipeline are two proposed contractor yards. CY-LU-001 is located at Milepost 15.3 and CY-LU-002 is located at Milepost 10.5. Both contractor yards are temporary in nature and no significant earth disturbance is proposed for either yard.

Contractor Yard CY-LU-001 has an approximate size of 1.2 acres. CY-LU-002 covers an approximate area of 11.4 acres.

E&S BMPs proposed for the contractor yards include rock construction entrances and compost filter socks. Upon completion of construction activities, both yards will be restored to original conditions. No PCSM BMPs are proposed for either yard.

2. Topographic Features of the Area

A Project Location Map for the Regional Energy Lateral Pipeline is included in Attachment 1. This map shows the topographical features of the general site vicinity and is based on the USGS 7.5 Minute topographical mapping of the AVOCA, Kingston, Pittston, Pleasant Valley Summit, and Wilkes-Barre East, Pennsylvania quadrangles.

3. Receiving Surface Waters

The following table (Table 1) list each watershed located Regional Energy Lateral Pipeline Project Area, its Chapter 93 Water Quality Standards, and Pennsylvania Fish and Boat Commission classifications. A Wetland and Watercourse Delineation Report is included in Attachment A of the ESCP permit application.

Table 1 – Receiving Waters			
Watershed Name	Designated Use	Existing Use	PFBC Classification
Stony Run	HQ-CWF, MF	-	Naturally Producing Wild Trout Stream
Shades Creek, Trib 04286 & Trib 04285 to Shades Creek	HQ-CWF, MF	-	Class A Wild Trout
Little Shades Creek & Trib to 04284 to Little Shades Creek	HQ-CWF, MF	-	Class A Wild Trout
Snider Run	HQ-CWF, MF	-	Naturally Producing Wild Trout Stream
Meadow Run	HQ-CWF, MF	-	Naturally Producing Wild Trout Stream
Bear Creek	HQ-CWF, MF	-	Naturally Producing Wild Trout Stream
Trib 046312 to Little Bear Creek	HQ-CWF, MF	-	Naturally Producing Wild Trout Stream
Mill Creek, Trib 63014 & 63015 to Mill Creek	CWF, MF	HQ-CWF, MF	Class A Wild Trout
Gardner Creek	CWF, MF	-	N/A
Susquehanna River	WWF, MF	-	N/A
Trib 64676 to Susquehanna River	CWF, MF	-	N/A
Abrahams Creek, Trib 28363 & Trib 28365 to Abrahams Creek	CWF, MF	-	Naturally Producing Wild Trout Stream, portions of Trib 28363 only (MP 15.8-17.7)
Trib 63020 to Toby Creek	CWF, MF	-	Naturally Producing Wild Trout Stream
Abrahams Creek	CWF, MF	-	N/A
Trib 63034 to Toby Creek	CWF, MF	-	Naturally Producing Wild Trout Stream
Abrahams Creek	CWF, MF	-	N/A
Trib 63036 to Toby Creek	CWF, MF	-	Naturally Producing Wild Trout Stream
Trib 28371 to Abrahams Creek	CWF, MF	-	N/A
Abrahams Creek	CWF, MF	-	N/A
Trout Brook, Trib 63040 to Trout Brook	CWF, MF	-	Naturally Producing Wild Trout Stream
Trib 63042 to Toby Creek	CWF, MF	-	Naturally Producing Wild Trout Stream

MF: Migratory Fishes, CWF: Cold Water Fishes, HQ-CWF: High Quality- Cold Water fishes

4. Types, Depth, Slope, Locations & Limitation of the Soils and Geologic Formations

The soil associations on site were identified by soil map units as mapped in the Web Soil Survey website (<https://websoilsurvey.sc.egov.usda.gov/>) by the United States Dept. of Agriculture (USDA), Natural Resources Conservation Service (NRCS). There are 60 soil mapping units located within the LOD, see Table 2 below:

Table 2 – Soils mapping units within the LOD	
Soil Mapping Unit	Soil Series
Ag	Alluvial land
ArB	Arnot-Rock outcrop complex, 0 to 8 percent slopes
ArD	Arnot-Rock outcrop complex, 8 to 25 percent slopes
ASF	Arnot-Rock outcrop complex, steep
At	Atherton silt loam, gray subsoil variant
Bf	Basher soils
BrC	Braceville gravelly loam, 8 to 15 percent slopes
CF	Cut and fill land
ChA	Chenango gravelly loam, 0 to 3 percent slopes
ChB	Chenango gravelly loam, 3 to 8 percent slopes
ChC	Chenango gravelly loam, 8 to 15 percent slopes
CIA	Chippewa silt loam, 0 to 3 percent slopes
CnB	Chippewa silt loam, 0 to 8 percent slopes, extremely stony
DdD	Dekalb channery sandy loam, 8 to 25 percent slopes, rubbly
DEF	Dekalb extremely stony sandy loam, steep
GP	Gravel pits
Ho	Holly silt loam
LaC	Lackawanna channery silt loam, 8 to 15 percent slopes
LaD	Lackawanna channery silt loam, 15 to 25 percent slopes
LcB	Lackawanna channery silt loam, 3 to 8 percent slopes, extremely stony
LcD	Lackawanna channery silt loam, 8 to 25 percent slopes, extremely stony
LEF	Lackawanna and Bath soils, steep, extremely stony
Ln	Linden soils
McB	Mardin channery silt loam, 3 to 8 percent slopes, very stony
McD	Mardin channery silt loam, 8 to 25 percent slopes, very stony
Mg	Mine dump
Mh	Mine dump, burned
Mm	Mine wash
MoB	Morris channery silt loam, 0 to 8 percent slopes
MsB	Morris channery silt loam, 0 to 8 percent slopes, extremely stony
Mu	Muck

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OIB	Oquaga and Lordstown channery silt loams, 3 to 8 percent slopes
OIC	Oquaga and Lordstown channery silt loams, 8 to 15 percent slopes
OID	Oquaga and Lordstown channery silt loams, 15 to 25 percent slopes
OpB	Oquaga and Lordstown extremely stony silt loams, 3 to 8 percent slopes
OpD	Oquaga and Lordstown extremely stony silt loams, 8 to 25 percent slopes
OXF	Oquaga and Lordstown extremely stony silt loams steep
Ps	Pope soils
Qu	Quarries and mines
RdA	Rexford loam, 0 to 3 percent slopes
RdB	Rexford loam, 3 to 8 percent slopes
Sm	Strip mine
VoB	Volusia channery silt loam, 0 to 8 percent slopes
VrB	Volusia channery silt loam, 0 to 8 percent slopes, extremely stony
VrC	Volusia channery silt loam, 8 to 15 percent slopes, extremely stony
W	Water
Wa	Wayland silt loam
WeB	Weikert and Klinesville channery silt loams, 3 to 8 percent slopes
WeD	Weikert and Klinesville channery silt loams, 15 to 25 percent slopes
WIB	Wellsboro channery silt loam, 3 to 8 percent slopes
WIC	Wellsboro channery silt loam, 8 to 15 percent slopes
WID	Wellsboro channery silt loam, 15 to 25 percent slopes
WmB	Wellsboro channery silt loam, 3 to 8 percent slopes, extremely stony
WmD	Wellsboro channery silt loam, 8 to 25 percent slopes, extremely stony
WrB	Wurtsboro channery loam, 3 to 8 percent slopes
WrC	Wurtsboro channery loam, 8 to 15 percent slopes
WtB	Wurtsboro extremely stony loam, 3 to 8 percent slopes
WtD	Wurtsboro extremely stony loam, 8 to 25 percent slopes
WyD	Wyoming gravelly loam, 15 to 25 percent slopes
WyF	Wyoming gravelly loam, 25 to 60 percent slopes

Detailed descriptions and mapping of soil mapping units are provided in the Attachment 2. Soil use limitations (outlined in Table 3) were reviewed in relation to the Regional Energy Lateral Pipeline and resolutions were identified in Section 4.1.

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Table 3 – Limitations of Pennsylvania Soils Pertaining to Earth Disturbance Projects (Erosion and Sediment Control Best Management Practice (BMP) Manual – Technical Guidance Number 363-3134-008/Page 401)

SOIL NAME	SOIL WITH SLOPE CLASS	CUTBANKS CAVE	CORROSIVE TO CONCRETE/STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/ SEASONAL HIGH WATER TABLE	HYDRIC/ HYDRIC INCLUSIONS	LOW STRENGTH / LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK - SWELL	POTENTIAL SINKHOLE	PONDING	WETNESS
Alluvial Land	Ag	X	C/S			X	X	X		X	X	X	X		X		X
Arnot	ArB, ArD, ASF	X	C	X	X				X	X		X	X				
Atherton	At	X	S				X	X	X	X	X	X	X			X	X
Basher	Bf	X	C/S			X	X	X	X	X	X	X	X				X
Braceville	BrC	X	C/S	X	X		X	X	X	X	X	X	X				X
Cut and Fill*	CF																
Chenango	ChA, ChB, ChC	X	C	X		X	X	X		X	X	X	X				
Chippewa	CIA, CnB	X	C/S	X	X		X	X	X	X	X		X	X		X	
DeKalb	DdD, DEF	X	C	X					X	X	X	X	X				
Gravel Pits*	GP																
Holly	Ho	X	C/S			X	X	X	X	X	X	X	X			X	X
Lackawanna	LaC, LaD, LcB, LcD, LEF	X	C	X			X	X	X			X	X				X
Linden	Ln	X	C			X	X	X	X	X	X		X				
Mardin	McB, McD	X	S	X	X		X	X	X	X	X		X				X
Mine Dump*	Mg																
Mine Dump, Burned*	Mh																
Mine Wash*	Mm																
Morris	MoB, MsB	X	C/S	X	X		X	X	X	X		X	X				X
Muck	Mu		X			X	X	X			X					X	X
Oguaga	OIB, OIC, OID, OpB, OpD, OXF	X	C	X	X			X		X			X				
Pope	Ps	X	C/S		X	X		X	X	X	X	X	X				
Quarries and Mines*	Qu																
Rexford	RdA, RdB	X	C/S	X		X	X	X	X	X	X	X	X				X
Strip Mine*	Sm																
Volusia	VoB, VrB, VrC	X	C/S	X	X		X	X	X	X	X	X	X				

Table 3 – Limitations of Pennsylvania Soils Pertaining to Earth Disturbance Projects (Erosion and Sediment Control Best Management Practice (BMP) Manual – Technical Guidance Number 363-3134-008/Page 401)

SOIL NAME	SOIL WITH SLOPE CLASS	CUTBANKS CAVE	CORROSIVE TO CONCRETE/STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/ SEASONAL HIGH WATER TABLE	HYDRIC/ HYDRIC INCLUSIONS	LOW STRENGTH / LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK - SWELL	POTENTIAL SINKHOLE	PONDING	WETNESS
Water	W																
Wayland	Wa	X	S		X	X	X	X	X	X	X	X	X			X	X
Weikhart	WeB, WeD	X	C/S	X				X	X	X	X	X	X				
Wellsboro	WIB, WIC, WID, WmB, WmD	X	C/S	X	X		X	X	X	X	X		X				X
Wurtsboro	WrB, WrC, WtB, WtD	X	C/S				X	X		X		X	X				
Wyoming	WyD, WyF	X	C	X				X		X		X					

*Soils have similar limitations to the dominant soil or soils in the area.

4.1 Resolution of Soil Limitations

Transco proposes the following resolutions to compensate for soil limitations summarized in Table 3 above:

1. To offset the caving of cutbanks, trenching operations will be conducted in accordance with the OSHA Technical Manual for Trenching.
2. Preventative coatings shall be used to prevent corrosion of concrete and/ or steel.
3. When bedrock is encountered it will be removed by mechanical methods or blasting. Blasting operations will conform with local, state, and federal regulations.
4. Precautions will be taken to prevent slope failure when working within low strength soils by flattening cut / fill slopes, not overloading, maintaining lateral support, and preventing saturation of soils. Low strength soils will not be used for roadway construction.
5. Excavation in soils prone to flooding, slow percolation, ponding, wetness, located in a seasonal high water table, or which are hydric, will likely encounter water.

- Compensation will involve dewatering with appropriate means such as pump water filter bags, sediment traps, etc.
6. Soils that have the potential to swell, shrink, or heave due to frost action may cause damage to roadways or pads. Where foundations are critical, compensation may require removal and replacement of soils with suitable material.
 7. In circumstances where soils appear to be a poor source of topsoil, drought or prone to wetness, soil testing will be performed to determine the appropriate applications of soil amendments to promote growth. Soils onsite that are fair sources of topsoil, will be identified, stripped and stockpiled for use during restoration.
 8. In order to minimize erosion of soils that are easily erodible, compensation may involve providing a protective lining, to apply seed, mulch, erosion control blankets (either in rolls or hydraulically applied), tracking slopes, upstream diversions, waterbars, etc to minimize soil erosion.

4.2 Geologic Formations

Transco utilized United States Geological Survey (USGS), Geologic Map of Pennsylvania - Map 1, dated 1980 (online), to evaluate geologic hazards on the Project. Transco retained Civil & Environmental Consultants, Inc. (CEC) of Pittsburgh, PA to perform a geohazard assessment, the following is provided from their 2020 report. The desktop analysis completed for the Project by CEC revealed that the Regional Energy Lateral Pipeline does not cross known, mapped, or inferred faults. No Karst formations were identified in the site vicinity. However, the analysis outlined that Regional Energy Lateral Pipeline lies within a zone of moderate to high landslide incidence and susceptibility. Also, portions of the Project area were previously mined.

Due to the moderate to high landslide incidence and susceptibility and mining in the Project area, a Geological Hazard Assessment and Mitigation Plan was completed by CEC and is submitted with this application (Attachment B). The Geological Hazard Assessment and Mitigation Plan identifies appropriate best management practices to avoid and mitigate for conditions encountered during construction.

5. Characterizations of Earth Disturbance Activities, Including Past, Present, and Proposed Land Uses

Transco will be installing various tie-in and mainline valve (MLV) facilities along the REL Pipeline as a means of controlling gas flows. Pig launchers/receivers, valves and other ancillary

equipment will be located at these facilities. The work and disturbed areas are located within Transco property, existing easements, or legally obtained temporary workspace.

Using data taken from Google Earth and Multi-Resolution Land Characteristics (MRLC) Consortium website (<https://www.mrlc.gov/viewer/>), it appears portions of the Regional Energy Lateral has been an existing and maintained gas pipeline or other right-of-way for the past 20 years and will continue to be an existing and maintained right-of-way once the Project is complete, with some new right-of-way being created in areas. Portions of the existing ROW's will be expanded upon as a result of the Project's construction. Based on the surrounding land characteristics, land use prior to ROW construction within the past 50 years likely would have been either forested land or meadow. Past, present, and proposed land uses for each site were as follows in Table 4.

Table 4 – Past, Present, and Proposed Land Uses			
Site	Past Land Use	Present Land Use	Proposed Land Use
MLV-515RA20	Woodland	Woodland	Mainline Valve Yard/ Pipeline Right-of-Way
MLV-515RA30	Urban Area	Urban Area	Mainline Valve Yard/ Pipeline Right-of-Way
Carverton Tie-in	Woodland	Woodland/Pipeline Right-of-way	Tie-In/Pipeline Right-of-Way
Lower Demunds REL Tie-in	Woodland	Pipeline Right-of-Way	Tie-In/Pipeline Right-of-Way
Hildebrandt Tie-in / MLV-515RA40	Woodland	Pipeline Right-of-Way	Tie-In/Pipeline Right-of-Way
Streams S4a-T5/S4-T5 & S5-T5/S6-T5	Woodland/ Surface Mines	Woodland	Pipeline Right-of-Way

Earth disturbance activities at each facility will include grading to create level gravel pad areas, installation of PCSM BMPs, and construction of gravel access roads. Disturbed areas within the temporary workspaces will be restored to the original contours.

The contractor will construct stormwater BMPs to mitigate the increase in volume and peak rates associated with construction. The proposed BMPs are designed to evaporate and/or infiltrate the net increase in volume between the pre- and post-development 2-year rain events. Refer to the Stormwater BMP Sizing Calculations in Attachment 3 for additional information.

6. Erosion and Sediment Control Best Management Practices

Various erosion and sediment control measures will be used during the construction of the

Regional Energy Lateral Pipeline. BMPs proposed to be used at the Site to control soil erosion and sediment pollution are listed below. Details of BMPs proposed for use at the Project location is included in the Erosion and Sedimentation Control Plan sheets. BMPs listed will be used at the Project location at the discretion of the environmental inspector, when found necessary to comply with 25 PA Code Chapter 102 and to adequately address potential erosion and sediment control issues.

Rock Construction Entrances

Rock construction entrances shall be installed whenever sediment tracking onto road surfaces is a potential or if required by the county conservation district or other agency. Soil erosion control measures shall be installed, if required and as needed. In special protection watersheds, either a 100' long rock construction entrance or a standard 50' rock construction entrance with a wash rack will be used at the construction entrance to wash construction vehicle wheels before they enter the public roadway. The wash rack will discharge to a 24" compost filter sock (min.). Rock construction entrance thickness shall be constantly maintained to the specified dimensions by adding rock. Sediment deposited on roadways shall be removed and returned to the construction site immediately.

Compost Filter Sock

Compost filter socks shall be placed downslope of disturbed areas to serve as a sediment barrier and filter. Filter socks shall be placed at existing level grade, parallel to contours, with both ends of the sock extended up slope at a 45-degree angle. In areas where it is not feasible to install compost filter sock parallel to contours, compost filter sock j-hooks will be utilized. Compost filter sock j-hooks will be installed in accordance with DEP's list of approved alternative E&S and PCSM BMPs. Socks can be used on both steep and rocky slopes. Socks can range in size from 12" to 32" diameter depending on the site conditions. The maximum permissible slope lengths above compost filter socks will be used to determine the sizes of compost filter.

Broad Based Dips

Broad-based dips may be used to direct runoff from access roads to well-vegetated areas. In HQ/EV watersheds, a sump with compost filter sock should be utilized at the discharge end of the broad-based dip.

Waterbars

Waterbars will be aligned along the pipeline ROW to direct runoff towards the downslope

side of the disturbed area and to avoid backflow into the ROW. Compost filter sock shall be installed along the edge of the limit of disturbance to slow run off. Compost filter sock hooks shall be installed at an upslope angle and shall discharge to a well-vegetated area. Upslope of the CFS, a sump shall be constructed to reduce velocity and provide a sheet flow condition to the CFS. Permanent waterbars within the ROW shall be left in place after permanent stabilization has been achieved.

Compost Filter Sock Waterbar Discharge / Waterbar Sump

An 18" Compost Filter Sock shall be installed at the edge of the LOD where waterbar cross the LOD. Upslope of the CFS a 24" x 24" sump shall be constructed to reduce velocity and provide a sheet flow condition to the CFS. The sump shall be filled and stabilized when the CFS is removed after site stabilization.

French Mattress

In some instances, waterbars are discharging to existing gravel access roads. To minimize the potential for waterbars to cause roadway erosion, a French mattress is proposed to allow discharges to seep under the roadways and discharge to stabilized areas below the road.

Diversion Channels / Mountable Berms

Diversion channels or mountable berms shall be used to divert runoff from disturbed areas and convey it to appropriate BMPs such as a sedimentation basin sediment trap or clean water crossing.

Trench Plug

These will be placed at the banks of waterbodies in order to maintain stable working conditions and keep sediment from entering the waterways. Earth filled sacks will be used to secure the plug. The spacing of these structures varies based on the site and the slope of the dig location, as indicated in the plan drawings.

Erosion Control Blankets

A suitable erosion control blanket or soil stabilizer shall be used wherever earth disturbance occurs within 50 feet of surface waters, or 100 feet if special protection water, especially if site conditions make use of conventional E&S BMPs difficult. Erosion control blankets should be used on finished slopes greater than 3:1.

Timber Mats

Timber mats can be used for temporary wetland crossings. The timber mats are placed

over the wetland to allow equipment to cross and then are removed.

Temporary Equipment Bridges

A temporary bridge equipment crossing will be built in order to cross streams along the pipeline installation. The bridge equipment crossing will utilize geotextile material, timber mats, and a timber or metal bridge with side rails may include instream supports (where necessary). Culvert Equipment crossings may be used in areas where equipment must cross stream channels. Culverts shall be placed in the stream channel sized appropriately to convey the flow within the channel and shall be placed at least one-half their diameter apart. Coarse aggregate may be used for fill surrounding the culverts. Upon completion, material placed in the stream channel shall be completely removed.

Flumed Crossing/ Dam and Pump Crossing

These may be used when work is to be completed in a waterway. A flumed crossing involves the placement of a flume pipe within the waterway and using diversion structures up and down gradient to divert flow through the flume pipe and out of the work area. A dam and pump crossing involves placing sandbag barriers on the upstream and downstream sides of the work space to prevent water from entering the maintenance area. A pump shall be placed to move water from the upstream side, around the workspace and back to the downstream side of the work area. Trench plugs may be used on the banks of the stream to keep water from leaving the bed and banks limit of the waterway.

Pumped Water Filter Bag

Filter bags shall be placed in well-vegetated grassy areas and discharge onto stable, erosion resistant areas, and staked if the slope is greater than 5 percent. In the event that this is not possible, a geotextile path will be provided. A compost filter sock shall be placed below the filter bag when placed within 50 of streams or wetlands located within a HQ/EV watershed.

Trench Dewatering

Trench dewatering may be required, depending on the site conditions during the excavation. Water shall be pumped out and discharged into a filter bag or a dewatering structure when deemed necessary.

Safety Fence

Safety fence shall be installed to protect sensitive environmental features as depicted on the plan drawings. The fencing shall remain in place during phases of construction.

Siltron Pollution Prevention Fence

Siltron Pollution Prevention Fence may be used throughout the project where environmental features make it necessary in lieu of Compost Filter Sock (CFS). The site-specific sediment barriers will be selected by the environmental inspector on a site-by-site basis. These barriers will be placed at existing level grade, with both ends of the barrier extending at least 8' upslope at a 45 degree angle. Sediment must be removed when accumulations reach ½ the above ground height of the fence. The size and type of fence will be selected based on slope lengths as determined in the maximum slope length for Multi-Layer Geotextile Filter Fence figures. The 16-inch filter fence is equivalent to an 18-inch compost filter sock, the 21-inch filter fence is equivalent to a 24-inch compost filter sock, and a 28-inch filter fence is equivalent to a 32-inch compost filter sock. Approved for use as an Alternative E&S and PCSM BMP by PA DEP on 8/22/18.

Rock Filter Outlet

Rock filter outlets may be used to address areas where concentrated flows intersect sediment barriers. They may also be used in instances where sediment barriers such as silt fence or compost filter socks have failed due to concentrated flow.

Inlet Protection/Rock Filter

Rock filters may be used to control runoff within constructed channels or at the inlet of stormwater piping to reduce erosion and collect sediment. The efficiency may be raised by anchoring a 6" layer of compost on the upgradient side.

Wetland Installation Procedures

During the course of pipeline maintenance and replacement within wetland areas, BMPs including slope breakers, equipment mats, sediment barriers, and trench plugs may be used to prevent altering the hydrology of the wetland and to prevent sediment from entering the wetland. Work within the wetland boundaries shall be limited to the extent possible. Upon completion of work the wetland area shall be restored to pre-construction grades and seeded with an appropriate wetland seed mixture.

Hydrostatic Dewatering Structure

A hydrostatic dewatering structure will be placed on a level, well vegetated site such that water will flow away from the structure and work areas. Flow rates through discharge and diverter pipes will be such that structures will not overflow. Contractor will properly remove and dispose

of the dewatering structure immediately upon completion of dewatering operations.

Bored Road Crossing/Trenched Road Crossing

These may be used where pipeline installation or maintenance under a bored road is necessary. Sediment barriers shall be used around the work area. Culverts will be placed where required to maintain water flow for stormwater ditches.

Structural Level Spreader

Structural level spreaders are used to collect concentrated runoff in a plunge pool and distribute flow uniformly across a weir to a vegetative surface, such that the velocity of the flow is reduced and the risk of erosion is minimized.

Perforated Pipe Level Spreader

Perforated pipe level spreaders are used to distribute stormwater runoff to established vegetative surfaces as sheet flow using perforated pipes. The perforated pipe is placed subsurface within a gravel bed.

Sediment Trap Outlet Basin

Sediment trap outlet basins are used to an alternative to riprap aprons and are used at clean water crossing outfalls. The basin will help dissipate flows velocities before entering vegetated areas and/or receiving streams.

Riprap Apron

Riprap aprons may be used at pipe or channel outfalls. The aprons will help dissipate flow velocity before entering vegetated areas and/or receiving stream(s).

Clean Water Crossings

Temporary diversion channels or mountable berms shall be used to divert runoff from undisturbed upslope areas and convey the runoff around areas of earth disturbance within the pipeline ROW corridor. From the diversion, the flow will outlet to a temporary pipe(s) crossing, which is installed across the right-of-way, and discharge to an outlet basin or structural level spreader. Clean water leaving the outlet basin will return to sheet flow downslope of the disturbed ROW.

Revegetation Plan and Procedures

The construction site should be stabilized as soon as possible after completion. Establishment of final cover must be initiated no later than 7 days after reaching final grade.

Temporary erosion and sedimentation control BMPs can be removed when the site meets final stabilization. Final stabilization means that soil-disturbing activities are completed, and that either a permanent vegetative cover with a density of 70% or greater has been established or that the surface has been stabilized by hard cover such as pavement or buildings. It should be noted that the 70% requirement refers to the total area vegetated and not just a percent of the site.

Surface Roughening

Surface roughening is the practice of providing a rough soil surface with horizontal depressions for the purpose of reducing runoff velocity, increasing infiltration, aiding the establishment of vegetation, and reducing erosion. Surface roughening should be applied to slopes 3H:1V or steeper unless a stable rock face is provided or it can be shown that there is not a potential for sediment pollution to surface waters. For roughened surfaces within 50 feet of a surface water, and where blanketing of seeded areas is proposed as the means to achieving permanent stabilization, spray-on type blankets are recommended.

Typical Topsoil Stockpile

The maximum topsoil stockpile height shall not exceed 35 feet. Stockpile slopes shall be no steeper than 2H:1V. Stockpiles shall be stabilized in accordance with temporary seeding specifications and mulch is to be maintained until the stockpile is stabilized. Stockpile location shown on the plans are illustrative and may vary in location as construction proceeds.

Typical Channel and Vegetation Restoration

The impacted riparian zone will be restored for a minimum of 15 feet landward of the top of bank. If the pre-impact riparian buffer of native herbaceous and shrub vegetation exceeds 15 feet beyond the top of bank, the area to be seeded should be as follows: 150 feet in High-Quality waters, 100 feet in other waters, or existing width of the riparian zone if it is less than the minimum requirements. Ernst Seed Mix 178 (Riparian Buffer Mix) or similar shall be applied on restored banks and riparian zones. In addition, where existing forested buffers are impacted these shall be replanted outside of the existing maintained ROW, as indicated in forest replanting plans for the Project outlined in the Chapter 105 permit.

7. Recycling and Disposal of Materials

The restoration of the pipeline right-of-way will require the removal of the temporary materials. The temporary materials include, but may not be limited to, stone surfaces and associated geotextiles. The contractors are required to dispose of the materials at suitable

disposal or recycling sites and in compliance with local, state and federal regulations.

Contractors are required to inventory and manage their construction site materials. The goal is to be aware of the materials on-site, ensure they are properly maintained, used, and disposed of, and to make sure the materials are not exposed to stormwater. The following materials or substances are expected to be present on-site during construction (Note: this list is not an all-inclusive list and the materials management plan can be modified to address additional materials used on-site):

- Acids
- Detergents
- Fertilizers (nitrogen/phosphorus)
- Hydroseeding mixtures
- Petroleum based products
- Sanitary wastes
- Soil stabilization additives
- Solder
- Solvents

These materials must be stored as appropriate and shall not contact storm or non-stormwater discharges. Contractor shall provide a weatherproof container to store chemicals or erodible substances that must be kept on the site. Contractor is responsible for reading, maintaining, and making employees and subcontractors aware of Safety Data Sheets (SDSs).

8. Thermal Impacts

Due to the overall nature of the Project, thermal impacts to surface waters are not anticipated. The pipeline installation activities will primarily take place within an existing cleared and maintained pipeline right-of-way. There will be no increase in stormwater discharge. The primary means to address thermal impacts on this Project is to limit the size and duration of exposed earth. Revegetation procedures and the Sequence of Construction outline disturbed areas being immediately revegetated.

Stormwater runoff associated with the installation of the MLVs and Tie-ins will be routed through the stormwater BMPs designed to retain and infiltrate the first surge of water from the site. The first surge of water will be the warmest water for the duration of the storm event and will quickly cool as the storm event progresses. The BMPs are designed to capture and infiltrate this warmest surge of stormwater. Based on routing calculations, stormwater is not discharged from the BMPs for the first 12 hours during a 100-year/24-hour storm event. The retention period is

longer for less intense storms. Therefore, as a result of these measures, no significant thermal impact to the receiving waters is anticipated.

9. Antidegradation Requirements

Transco is meeting the state antidegradation requirements contained in Chapters 93, 95, 102 and 105 through various measures provided in the Project design, such as proposed construction measures and requests for permit approvals for activities associated with the Project. Where the Project is located within Exceptional Value (EV) or High Quality (HQ) watersheds or impacts EV wetlands, as defined by Chapter 93 and Chapter 105, Transco will install required antidegradation best available combination of technologies (ABACT) best management practices (BMPs), protecting the designated and existing uses of the resources. BMPs outlined in the erosion and sediment control and site restoration plans will be installed, monitored and maintained until the Project meets the vegetative cover requirements required by the approved permits for earth disturbance and water obstruction and encroachment. During the Project's construction, any issues identified with the BMPs shall be repaired as described in the permits and plans.

Transco evaluated the feasibility of non-discharge alternatives that would be located outside of exceptional value (EV) or high-quality (HQ) watersheds. Hydraulic models were analyzed from an efficiency and effectiveness point of view to confirm and minimize the necessary pipeline lengths and diameters to meet the Project purpose and need. In order for the Project to meet the required purpose and need, siting the Regional Energy Lateral Pipeline outside of EV and HQ watersheds, is not feasible.

Therefore, Transco determined that there are no cost-effective and environmental sound viable non-discharge alternatives for the project. Transco has minimized project impacts to EV and HQ watersheds through the use of co-location with existing pipelines where practicable and protecting riparian buffers within the project workspace. Earth disturbance will be minimized to the extent practical and will be phased or sequenced to only disturbed portions that are necessary for the specific scope of work. Wherever possible, the LOD was decreased to avoid disturbing additional ground and will be kept to the minimum width and depth necessary to safely complete construction activities.

ABACT standards have been proposed for the Regional Energy Lateral because there are no viable non-discharge alternatives. The Erosion and Sediment Control Plan prepared for the Project outlines a more stringent design and E&S BMPs that meet ABACT standards.

Pipeline installation activities along the pipeline ROW and at the contractor yards/staging areas will not result in increase in discharge of stormwater to surface waters. The existing / designated use of the streams within the Project area are to be protected through E&S and post-construction stormwater management (PCSM) measures taken by Transco.

Absent controls, the MLV-515RA20, MLV-515RA30, Carverton Tie-in, Lower Demunds REL Tie-in, and Hildebrandt Tie-in/MLV-515RA40 sites will result in increased discharge of stormwater to surface waters which will be mitigated by the implementation of PCSM BMPs. Proposed PCSM BMPs are designed with stormwater volume reduction and water quality treatment maximized to the extent practicable within the site constraints to maintain and protect existing water quality and existing and designated uses.

No changes to the aquatic community or water chemistry within the streams or wetlands crossed or impacted by the Project are anticipated to occur. All streams crossed by the Project shall utilize clean water bypass BMPs during construction to allow continuous flow of all streams crossed, and these streams will be restored to pre-existing conditions once construction is complete. The wetland impacts associated with temporary disturbance will be restored and stabilized upon final restoration, with PSS and PFO impacted wetlands outside the proposed maintained corridor being replanted. The wetland, stream, and floodway impacts are considered isolated to their disturbance area and do not extend beyond the Projects LOD.

As part of the Project design, impacts to resources were avoided and minimized where possible and include the following measures: pipeline collocation, to the extent practical, within/adjacent to an existing ROW, restoration of disturbed areas to pre-existing conditions with the exception of above ground facilities, and limiting the extent and duration of earth disturbance. Transco has provided a nominal workspace of 75 feet in wetlands and floodways and 50 feet within the stream top-of-bank for the pipeline installation where possible. Where these nominal workspaces were exceeded, site specific justification has been provided in the Chapter 105 Joint Permit Application. During construction, excavated trenches will be kept to the minimum width and depth necessary to safely complete construction activities. Project access has been designed to utilize existing access roads as much as possible, thereby minimizing the need for new road construction.

Consultation with state and federal agencies regulating threatened and endangered (T&E) species has occurred and is ongoing. The agencies include the Pennsylvania Game

Commission, Pennsylvania Fish and Boat Commission, Department of Conservation of Natural Resources and the United States Fish and Wildlife Service. Transco is conducting a concurrent review of the PNDI coordination and will obtain necessary approvals prior to commencing construction of the Project.

During construction, Transco's Construction Spill Prevention and Response Procedures for Oil and Hazardous Materials (Spill Plan) outlined in Section 1-10 will be implemented to minimize the potential for spills and the effects of any spills that may occur. Details of how the site materials are managed, including the storage of equipment, hazardous materials, fuels, and lubricating oils and other construction items are identified in the Spill Plan. The plan defines the procedures for spill notification, emergency response, spill response, personal protective equipment, clean-up procedures and spill presentation practices. As part of the Project, hydrostatic discharge testing will be completed. Discharges associated with the testing will conform to permit conditions specific to the discharge, meeting the state antidegradation requirements.

The cumulative effect of the Project will not result in the impairment of the Commonwealth's EV and other wetland resources. A review of the Section 303(d) list of the Clean Water Act indicated that two surface waters, Gardner Creek and the Susquehanna River, crossed by the Project are classified as impaired waterbodies. The Susquehanna River is listed as impaired for fish consumption due to polychlorinated biphenyls and mercury, and impaired for aquatic life due to acid mine drainage. The Regional Energy Lateral would cross the Susquehanna River between MP 13.6 to MP 13.7. Gardner Creek, located at approximately MP 10.5 along the Regional Energy Lateral, is listed as impaired for aquatic life due to urban runoff/storm sewers, flow regime modification and acid mine drainage. The wetland impacts will involve temporary disturbance while the pipeline is being installed, and the wetlands will be restored in accordance with the Onsite Restoration Plan, as outlined in Attachment 2 – Wetland and Riparian Reforestation Plan of Section 1.7, and the approved Chapter 102 permit. Wetlands will be stabilized upon final restoration. The wetland impacts are isolated to their disturbance area and do not extend beyond the Projects LOD. Transco designed the Regional Energy Lateral to be collocated with the existing Transco Leidy Line System or adjacent to existing utility corridors where practicable. Construction BMPs, including erosion control devices and timber matting, to mitigate for soil compaction within the wetlands, will be utilized to minimize impacts throughout the Project.

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The impacted wetlands, their Chapter 105.17 Classification, Cowardin Code, Milepost, Palustrine Community Classification, and Hydrogeomorphic Classification are provided in Table 1. The Palustrine Community Classification identifies the wetland vegetation cover type impacted by the Project. The Hydrogeomorphic Classification identifies the hydrologic source for the impacted wetlands. Table 1 identifies the existing conditions of the impact wetlands, including both “EV” and “Other” wetlands.

Table 5 Wetland Resource Classification					
Milepost or Access Road	Wetland ID	Chapter 105.17 Classification¹	HGM Classification²	Cowardin Classification²	Palustrine Community Classification
CS515	W38-T2	Other	Depression temporary	PEM	Mixed Forb – Graminoid Wet Meadow
AR-LU-032	W5-T3	Other	Stratigraphic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
AR-LU-032	W6-T3	Other	Stratigraphic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
0.27	W22-T1	EV	Riverine Headwater Complex	PEM	Tussock Sedge Marsh
0.48	W79-T1	EV	Riverine Headwater Complex	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Hemlock – Mixed Hardwood Palustrine Forest
1.02	W41-T3	EV	Riverine floodplain complex	PSS	Alder – Dogwood Floodplain Thicket
AR-LU-030.1	W55-T1	EV	Topographic Slope – mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
AR-LU-030.1	W11-T4	EV	Riverine Upper Perennial	PEM	Mixed Forb – Graminoid Wet Meadow
1.23	W10-T4	EV	Riverine Upper Perennial	PEM, PSS, PFO	Mixed Forb – Graminoid Wet Meadow, Acidic Mixed Shrub – Sphagnum Wetland, Red Maple – Highbush Blueberry Palustrine Woodland
1.25	W10b-T4	Other	Riverine Upper Perennial	PEM	Mixed Forb – Graminoid Wet Meadow
1.26	W10a-T4	Other	Riverine Upper Perennial	PFO	Red Maple – Highbush Blueberry Palustrine Woodland
AR-LU-030.1	W54-T1	Other	Topographic slope - slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow

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1.37	W108-T2	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
1.40	W107-T2	Other	Topographic Slope - mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
1.42	W8-T4	Other	Topographic Slope - mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
1.43	W106-T2	Other	Topographic Slope – mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
1.45	W105-T2	Other	Topographic Slope - mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
1.54	W39-T3	EV	Riverine floodplain complex	PEM, PFO	Tussock Sedge Marsh, Hemlock – Mixed Hardwood Palustrine Forest
1.56	W104-T2	EV	Riverine floodplain complex	PEM	Mixed Forb – Graminoid Wet Meadow
1.57	W103-T2	EV	Riverine floodplain complex	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Hemlock – Mixed Hardwood Palustrine Forest
1.66	W38-T3	EV	Depression Temporary	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Hemlock – Mixed Hardwood Palustrine Forest
1.70	W5-T13	Other	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
1.86	W37-T3	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
2.04	W36-T3	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
2.13	W101-T2	Other	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
2.16	W3-T13	Other	Topographic Slope mineral soil	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Red Maple – Mixed Shrub Palustrine Woodland
2.27	W7a-T4	EV	Riverine upper perennial	PEM	Mixed Forb – Graminoid Wet Meadow
2.36	W4-T4	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow

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2.64	W99-T2	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
2.72	W1-T4	Other	Topographic Slope mineral soil	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Red Maple – Mixed Shrub Palustrine Woodland
2.87	W42-T1	EV	Depression Perennial	PEM, PSS, PFO	Woolgrass – Mannagrass Mixed shrub Marsh, Highbush Blueberry – Meadow-sweet Wetland, Red Maple – Highbush Blueberry Palustrine Woodland
3.5	W6-T11	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
3.54	W92-T2	Other	Stratigraphic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
3.62	W93-T2	Other	Stratigraphic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
3.74	W31-T3	EV	Topographic Slope mineral soil	PEM, PSS, PFO	Woolgrass – Mannagrass Mixed shrub Marsh, Highbush Blueberry – Meadow-sweet Wetland, Red Maple – Mixed shrub Palustrine Woodland
3.87	W47-T1	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
4.16	W14-T5	Other	Topographic Slope mineral soil	PSS	Circumneutral Mixed Shrub Wetland
4.21	W96-T2	EV	Topographic Slope mineral soil	PEM, PSS, PFO, POW	Mixed Forb – Graminoid Wet Meadow, Black Willow Floodplain Thicket, Red Spruce – Mixed Hardwood Palustrine Woodland, Sparsely Vegetated Vernal Pool Community
4.44	W15b-T5	EV	Riverine floodplain complex	PEM, PSS, PFO	Mixed Forb – Graminoid Wet Meadow, Highbush Blueberry – Meadow-sweet Wetland, Red Maple – Mixed shrub Palustrine Woodland

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Milepost or Access Road	Wetland ID	Chapter 105.17 Classification¹	HGM Classification²	Cowardin Classification²	Palustrine Community Classification
4.48	W48-T1	EV	Depression Seasonal	PEM, PSS	Mixed Forb – Graminoid Wet Meadow, Alder – Dogwood Floodplain Thicket
4.50	W49-T1	EV	Depressional Temporary	PEM, PSS, PFO	Mixed Forb – Graminoid Wet Meadow, Highbush Blueberry – Meadow-sweet Wetland, Red Maple – Mixed shrub Palustrine Woodland
4.70	W97-T2	EV	Depressional Temporary	PEM, PSS, PFO	Mixed Forb – Graminoid Wet Meadow, Highbush Blueberry – Sphagnum wetland, Red Maple – Highbush Blueberry Palustrine Woodland
AR-LU-029	W34-T3	Other	Depressional Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
4.90	W9-T5	EV	Topographic Slope mineral soil	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Red Maple – Highbush Blueberry Palustrine Woodland
4.96	W84-T2	EV	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
4.99	W4-T12	EV	Depression Temporary	PEM, PFO	Sparsely Vegetated Vernal Pool Community, Red Maple – Sedge Palustrine Woodland
5.19	W86-T2	Other	Depression Temporary	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Red Maple – Highbush Blueberry Palustrine Woodland
5.42	W12-T5	Other	Topographic Slope mineral soil	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Red Maple – Highbush Blueberry Palustrine Woodland
5.55	W87-T2	Other	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
5.63	W13-T5	EV	Riverine upper Perennial	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Red Maple – Mixed shrub Palustrine Woodland
5.89	W89-T2	EV	Riverine Floodplain Complex	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Red Maple

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					– Mixed shrub Palustrine Woodland
5.95	W90-T2	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
6.77	W132-T2	EV	Riverine Floodplain Complex	PSS	Alder – Dogwood Floodplain Thicket
6.80	W14-T13	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
6.82	W137-T2	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
7.18	W16-T13	EV	Riverine Floodplain Complex	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Red Maple – Mixed shrub Palustrine Woodland
7.50	W150-T2	EV	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
8.01	W17-T13	EV	Riverine Intermittent	PEM, PSS	Mixed Forb – Graminoid Wet Meadow, Circumneutral Mixed Shrub Wetland
8.05	W51-T3	Other	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
8.49	W53-T3	Other	Depression Temporary	PEM	Cat-tail Marsh
AR-LU-048	W176-T2	Other	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
9.35	W36b-T1	EV	Riverine Floodplain Complex	PFO	Red Maple – Mixed shrub Palustrine Woodland
9.37	W36-T1	EV	Riverine Floodplain Complex	PEM, PSS, PFO	Mixed Forb – Graminoid Wet Meadow, Alder – Dogwood Floodplain Thicket, Red Maple – Mixed shrub Palustrine Woodland
9.41	W163-T2	EV	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
9.47	W66-T2	EV	Depression Seasonal	PEM, PFO	Mixed Forb – Graminoid Wet Meadow, Red Maple – Mixed shrub Palustrine Woodland
9.87	W65-T2	Other	Depressional Seasonal	PEM	Mixed Forb – Graminoid Wet Meadow

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10.46	W37-T1	Other	Riverine Intermittent	PEM	Mixed Forb-Graminoid Wet Meadow
10.5	W71-T2	Other	Riverine Intermittent	PSS	Red Maple-Sedge Palustrine Woodland
10.62	W74-T2	Other	Depression Temporary	PEM	Mixed Forb-Graminoid Wet Meadow
10.63	W75-T2	Other	Depression Temporary	PEM	Mixed Forb-Graminoid Wet Meadow
10.87	W1-T10	Other	Riverine Ephemeral	PEM, PSS	Mixed Forb – Graminoid Wet Meadow, Circumneutral Mixed Shrub Wetland
10.94	W2-T10	Other	Riverine Intermittent	PEM, PFO	Mixed Forb-Graminoid Wet Meadow, Red Maple-Mixed Shrub Palustrine Woodland
10.99	W160-T2	Other	Depression Temporary	PFO	Red Maple-Highbush Blueberry Palustrine Woodland
11.25	W76-T2	Other	Depressional Temporary	PEM	Mixed Forb-Graminoid Wet Meadow
11.80	W46-T2	Other	Depression Temporary	PSS	Red Maple-Highbush Blueberry Palustrine Woodland
11.92	W23-T1	Other	Depression Seasonal	PEM	Mixed Forb-Graminoid Wet Meadow
12.99	W20-T3	Other	Depression Temporary	PEM, PFO	Mixed Forb-Graminoid Wet Meadow, Red Maple-Sedge Palustrine Woodland
13.86		Other	Depression Seasonal	PFO	Sugar Maple-Mixed Hardwood Floodplain Forest

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Table 5 Wetland Resource Classification					
Milepost or Access Road	Wetland ID	Chapter 105.17 Classification¹	HGM Classification²	Cowardin Classification²	Palustrine Community Classification
	W12-T1				
13.95	W61-T1	Other	Depression Temporary	PFO	Red Maple-Elm-Willow Floodplain Forest
14.00	W62-T1	Other	Depression Temporary	PFO	Red Maple-Elm-Willow Floodplain Forest
14.40	W5-T5	Other	Depression Temporary	PEM	Reed Canary Grass-Floodplain Grassland
14.80	W11-T3	Other	Depression Seasonal	PEM, PFO	Red Maple-Elm-Willow Floodplain Forest, Reed Canary Grass-Floodplain Grassland
15.02	W25-T2	Other	Depression Temporary	PEM	Mixed Forb-Graminoid Wet Meadow
15.27	W27-T2	Other	Depression Temporary	PEM	Sparsely Vegetated Vernal Pool Community
15.30	W26-T2	Other	Depression Seasonal	PEM	Sparsely Vegetated Vernal Pool Community
15.39	W30-T2	Other	Depression Temporary	PSS	Mixed Hardwood Floodplain Thicket
15.43	W31-T2	Other	Depression Seasonal	PEM	Common Reed Marsh
15.43	W32-T2	Other	Depression Temporary	PEM	Mixed Forb-Graminoid Wet Meadow
15.47	W14-T3	Other	Depression Temporary	PEM	Mixed Forb-Graminoid Wet Meadow
15.49	W33-T2	Other	Depression Temporary	PEM	Mixed Forb-Graminoid Wet Meadow
15.51	W15-T3	Other	Riverine Floodplain Complex	PEM, PSS, PFO	Mixed Forb-Graminoid Wet Meadow, Red Maple-Mixed Shrub Palustrine Woodland
16.34	W49-T2	Other	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
16.43	W48-T2	Other	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow

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Table 5 Wetland Resource Classification					
Milepost or Access Road	Wetland ID	Chapter 105.17 Classification¹	HGM Classification²	Cowardin Classification²	Palustrine Community Classification
16.92	W60-T2	Other	Topographic Slope mineral soil	PEM	Bluejoint – Reed Canary- grass Marsh
17.23	W54-T2	EV	Riverine Floodplain Complex	PEM	Mixed Forb – Graminoid Wet Meadow
17.28	W51-T2	EV	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
18.63	W6-T13	EV	Riverine Floodplain Complex	PEM, PFO	Skunk-cabbage – Golden Saxifrage Seep, Hemlock – Mixed Hardwood Palustrine Forest
19.72	W117-T2	Other	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
20.39	W59-T1	Other	Topographic Slope mineral soil	PEM, PSS	Mixed Forb – Graminoid Wet Meadow, Circumneutral Mixed Shrub Wetland
20.52	W60-T1	EV	Riverine Floodplain Complex	PEM, PSS, PFO	Tussock Sedge Marsh, Alder – Dogwood Floodplain Thicket, Red Maple - Mixed Shrub Palustrine Woodland
21.00	W15-T4	EV	Riverine Floodplain Complex	PSS, PFO	Alder – Dogwood floodplain Thicket, Red Maple – Sedge Palustrine Woodland
21.03	W83-T2	EV	Topographic Slope mineral soil	PEM, PSS, PFO	Mixed Forb – Graminoid Wet Meadow, Circumneutral Mixed Shrub Wetland, Red Maple – Mixed Shrub Palustrine Woodland
21.79	W82-T2	Other	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow
21.80	W131-T3	EV	Riverine Intermittent	PEM	Mixed Forb – Graminoid Wet Meadow
21.81	W44-T3	EV	Riverine Floodplain Complex	PSS	Black Willow Floodplain Thicket
22.05	W2-T12	Other	Topographic Slope mineral soil	PEM	Mixed Forb – Graminoid Wet Meadow
22.14	W81-T2	EV	Depression Temporary	PEM, PSS, PFO	Mixed Forb – Graminoid Wet Meadow, Highbush Blueberry – Meadow-

Table 5 Wetland Resource Classification					
Milepost or Access Road	Wetland ID	Chapter 105.17 Classification¹	HGM Classification²	Cowardin Classification²	Palustrine Community Classification
					sweet Wetland, Red Maple – Mixed Shrub Palustrine Woodland
22.20	W5-T11	EV	Depression Temporary	PEM	Mixed Forb – Graminoid Wet Meadow

9.1 Primary Wetland Impacts

To minimize adverse impacts at wetland crossings, Transco will implement its Plan and Procedures during the construction, post-construction restoration, and operation of the Project. Transco developed the Procedures to address temporary wetland effects associated with construction of the Project. The Procedures are intended to satisfy the wetland restoration requirements of applicable resource protection agencies with jurisdiction over areas affected by the Project.

Transco will use pipeline construction crossing methods based on site-specific conditions and resource sensitivity. These methods primarily consist of conventional dry open-cut with a few crossing locations associated with existing road infrastructure being conventional bore. Operation of construction equipment through wetlands will be limited to only what is necessary for each stage of construction (e.g., clearing, trenching, staging). Transco will minimize compaction of topsoil within unsaturated wetlands by stripping, segregating, and stockpiling topsoil separately from subsoil during construction. Topsoil segregation techniques will be used in unsaturated wetlands to preserve the seed bank and to facilitate successful restoration. Construction workspaces have been minimized to the extent practicable within these resources. Pipeline construction will use the conventional dry open-cut method at most locations. Construction equipment will use timber mats to prevent soil rutting for construction access through the wetlands. Matting and geotextile will be used for topsoil segregation within wetland resources. Trench plugs will be installed at the entrance and exit of the pipeline through the wetland to ensure that the wetland is not drained along the pipeline. In forested and scrub-shrub wetlands, Transco will minimize clearing to the extent practicable while maintaining safe construction conditions.

Pipe stringing and fabrication may occur within saturated and unsaturated wetlands adjacent to the trench or adjacent to the wetland. Soil structure and the presence of standing water commonly found in wetlands along with the large surface loads of construction equipment and materials to construct large diameter pipelines contribute to the need for additional workspace adjacent to wetland crossings. Hydric soils typically are lower in strength and become weaker when saturated. Handling weak material during the excavation/stockpile process further reduces the strength of the soil mass by disturbance/remolding/mixing, thus requiring a larger area to stockpile the soils. Additionally, buoyancy control (e.g., weights, concrete-coated pipe) may be necessary in wetland environments, which require the trench to be larger in both width and depth, resulting in additional stockpile material.

Upon completion of construction within wetlands, Transco will promptly restore wetlands to their original configurations and contours and stabilize disturbed adjacent upland areas. Wetland areas will be revegetated with Ernst FACW Meadow Mix (ERNMX-122), or an alternative wetland seed mix that contains similar species, where standing water is not present, to stabilize disturbed soils. PEM wetlands, dominated primarily by low-growing sedges, rushes, and other herbaceous vegetation, will revert to emergent vegetation following construction, resulting in no permanent change to wetland type. PSS and PFO wetlands affected during construction will be seeded with the wetland seed mix and also replanted with native trees and shrubs outside of the proposed maintained ROW. Following construction, Transco will monitor disturbed wetlands and adjacent uplands until restoration and long-term stabilization is documented.

Vegetation Impacts

Construction of the Project will result in temporary impacts to one hundred and eight PEM, PSS and PFO wetlands. Permanent functional conversion impacts (PFO/PSS to PEM) wetlands located within the proposed maintained pipeline ROW will occur to 39 wetlands, for a total of 1.57 acres. Temporary functional conversion impacts of wetlands located within the temporary workspace will occur to 48 wetlands, for a total of 3.50 acres. Forested riparian areas, PFO and PSS wetlands shall be restored with the exception of portions located within the proposed maintained ROW. Riparian areas and wetlands will be revegetated using approved seed mixes. Transco will replant existing forested riparian buffers, PFO and PSS wetlands impacted outside of the permanent maintained ROW. A 10-foot-wide herbaceous corridor will be maintained over

the center of the pipeline within the riparian buffer areas. Trees within 15 feet of the centerline or between existing pipelines will be removed to maintain the integrity of the pipelines. Wetlands outlined as temporary functional conversion impacted wetlands will be replanted onsite, as outlined in Attachment 2 – Wetland and Riparian Reforestation Plan of Section 1.7.

Hydrology Impacts

The characteristics of water quantity, stream flow, and sources, groundwater basal flows, drainage patterns, flushing characteristics, flow currents, natural recharge or source areas, stormwater and floodwater storage and control, and hydrodynamics are discussed below.

Water Quantity, Stream Flow and Sources

Transco will cross streams with flowing water present at the time of construction primarily using dry-ditch construction methodology. The dry-ditch construction method shall be completed with a clean water bypass that may include dam and pump or flume pipe. Each option passes water around the crossing location, minimizing construction impacts downstream. The pipeline is installed in the dry, with the trench excavation, pipe installation, and backfill completed at this time. To stabilize the banks, stream banks and riparian areas will be revegetated using approved seed mixes and/or erosion control blankets or matting.

Four wetlands (W131-T3, W44-T3, W83-T2, and W15-T4) will be conventionally bored due to being adjacent a to state highway at two separate locations. One conventional bore will include S49-T2, W15-T4 and W83-T2. The other conventional bore will include S52-T2, W131-T3 and W44-T3. Abrahams Creek (S14-T2) will be crossed via a conventional bore. In addition, watercourse (S1-T5 – Susquehanna River) will be crossed via Direct Pipe®. The trenchless construction methodology proposed would not result in effects to water quantity, stream flow and sources. Soil borings reports are included within Attachment B of the application, associated with the trenchless construction methodology.

Groundwater Basal Flows and Natural Recharge or Source Areas

No impacts to groundwater basal flows and natural recharge or source areas are anticipated as part of the Project. Impacts to groundwater basal flows and natural recharge or source areas will be avoided and minimized through the utilization of Transco's Plan and Procedures. Additionally, potential impacts will also be minimized through the use of the Spill Plan for Oil and Hazardous Materials (Spill Plan) if incidents occur.

The proposed Project will have minimal impacts during construction and post-construction to stormwater storage and control, with no long-term impacts anticipated. At Compressor Station 515, Transco will be expanding the existing facility, which will include additional impervious area. Transco will be installing four mainline valves (MLV) with appurtenant equipment, as a means to isolate gas flows along the Regional Energy Lateral. The mainline valve sites at each pipeline terminus (MLV515RA10 at Station 515 and MLV515RA40 at the Hildebrandt Tie-In) will also have pig traps (industry term for manifolds that launch or receive in-line inspection tools). The other two valve sites are proposed along the pipeline route (MLV515RA20 at Milepost 7.5 and MLV515RA30 at Milepost 14.8). Modifications at three existing pipeline interconnects are proposed to tie-in the proposed pipeline to the existing facilities. The Carverton Tie-In is located at Milepost 16.8. The Lower Demunds Tie-In is located at Milepost 22.3 and also includes a +/- 400-ft segment of 20-in pipeline to connect to the existing facility. The Hildebrandt Tie-In is located at the Regional Energy Lateral pipeline terminus and includes MLV515RA40. The MLV's, interconnects, and existing Compressor Station 515 will include the addition of impervious area. The additional impervious areas will be mitigated through a PADEP approved post-construction stormwater management (PCSM) design. Site restoration and the proposed stormwater management design shall limit the facilities from having adverse effects on groundwater basal flows and natural recharge or source areas.

Drainage Patterns, Flushing Characteristics and Flow Currents

The proposed Project will have minimal impacts during construction to drainage patterns, flushing characteristics and flow currents to wetlands and waterbodies during construction with no long-term impacts anticipated.

The proposed Project will generally take place within or adjacent to a previously disturbed pipeline and powerline ROWs. Stormwater controls, which will be installed during construction, have been designed to avoid impacts to natural drainage features. These controls will only have temporary impacts while installed and will be removed once the site is stabilized with vegetation. Minimal impacts to wetland resources are anticipated, as these functions are generally limited when compared to watercourses. Transco will restore pipeline facility workspaces to pre-construction contours with the exception of areas Transco has identified other restoration measures.

Transco proposes to restore wetlands impacted by ATV usage along the existing ROW between MP 3.8 and 5.9. Transco has expanded its workspace in these areas to restore these impacted areas while constructing the pipeline. The wetlands include: W31-T3, W96-T2, W49-T1, W97-T2, W9-T5, W86-T2, W12-T5, W87-T2, W13-T5, and W89-T2. One stream, S35-T2 will also be relocated within the ROW at this location through wetland W89-T2, as its current route follows ATV ruts on the existing ROW. The proposed stream realignment is within wetland W89-T2 and is located along the edge of the ROW prior to crossing perpendicular to the pipeline ROW. The realigned channel is designed to be restored to match the existing conditions upstream and downstream of the ROW.

Stormwater and Floodwater Storage and Control

The proposed Project will have minimal impacts during construction and post-construction to stormwater and floodwater storage and control, with no adverse long-term impacts anticipated. Aboveground facilities will be located outside of FEMA Floodplains, FEMA Floodways and 50-foot floodways. Transco will preserve the existing condition of the FEMA floodplains, 50-foot floodways, and wetlands, with the exception of those areas where pre-construction contours are not proposed for restoration.

The Projects proposed restoration shall limit the pipeline facilities from having adverse effects on flood-storage capacity or stormwater control. The proposed Project will have minimal impacts during construction and post-construction to stormwater storage and control, with no adverse long-term impacts anticipated. The MLV's, interconnects, and existing Compressor Station 515 will include the addition of impervious areas. The additional impervious areas will be mitigated through a PADEP approved PCSM. Site restoration and the proposed stormwater management design shall limit the facilities from having adverse effects on groundwater basal flows and natural recharge or source areas.

These changes will not alter the stormwater and flood storage or control of the area, as the areas will be properly restored and stabilized during restoration.

Hydrodynamics

Stream and wetland crossings will be restored to pre-existing conditions with the exception of those areas related to the stream stabilization and ATV impacts within wetlands. Natural streambed materials will be replaced in the streambed and the pre-existing stream alignment should be restored to pre-construction alignments, except in the areas where stream stabilization

is proposed. Erosion control blankets shall be placed on restored stream banks to the ordinary high-water mark and surrounding wetland areas. If streams have existing bank protection, these bank protection measures shall be restored.

9.2 Secondary Impacts

This section describes the potential secondary impacts to aquatic resources associated with the Project's wetland crossings, including aquatic habitats, water quantity and water quality.

Water Quantity

Potential secondary impacts on water quantity or wetland hydrology could result from changes in the existing drainage patterns and alteration in flow and water levels from construction. The Project does not involve any addition of structures or impervious surfaces in the wetlands, however areas with existing ATV impacts will be restored during Project restoration. Because the Project does not involve direct impacts to natural and current drainage patterns and wetlands will be restored to approximate original contours following construction, the Project will not result in adverse secondary impacts to existing drainage patterns. A Post-Construction Wetland and Watercourse Monitoring Plan will include monitoring for potential secondary impacts to hydrology.

Compaction of wetland soils and rutting within wetlands could temporarily impact wetland hydrology. These impacts will be minimized by using temporary equipment mats. The segregation of topsoil within the trench line of wetland crossings will also limit the potential for soil compaction. The replacement of topsoil to the original soil horizons and elevations will promote the return of native vegetation along with the return of natural groundwater direction and flow rates.

Water Quality

As noted above, secondary impacts related to the loss of water quality to adjacent wetland locations have the opportunity to occur during construction and restoration of the Project. Construction activities can disturb surface soils and cause subsequent sediment transport into adjacent wetlands. Sedimentation will be minimized by installing temporary sediment control measures between the upland construction areas and the wetlands, as described above. Permanent erosion controls, including slope breakers, trench breakers, and vegetative cover, will be used in adjacent upland areas to minimize long-term sedimentation into the wetlands. During construction, potential secondary impacts will be minimized by installing energy-dissipation

devices at the down-slope end of slope breakers to minimize erosion of soil off the ROW into wetlands. Trench plugs will be installed in upland slopes adjacent to wetlands to prevent trench erosion. Trench plugs also will be installed at the edges of the wetland and on either side of waterbody crossings to prevent subsurface drainage along the pipeline.

Habitat

General construction related impacts on wildlife species, as it relates to wetlands, will result from habitat disturbance and human activities. Secondary impacts on wildlife will include those associated with increased human activity. Construction of the Project is likely to result in the temporary displacement of, or stress on, animals in areas adjacent to construction and cause movement of some wildlife away from the Project area. Stress on wildlife could affect general health, reproduction, and viability of young animals, depending on the sensitivity of a particular species, season of the year, and other factors. Other temporary impacts on wildlife species as a result of the general habitat impact could include those from pipeline trenching activities and associated spoil piles, which could result in a short-term barrier to movement to some species.

During clearing and grading activities, more mobile wildlife species (e.g., larger mammals, birds, and reptiles) will be able to avoid the construction area, and many are expected to temporarily leave the area during construction and migrate to surrounding areas. Construction activity will generally be temporary and will occur in a given area for only a few weeks, in general. Habitat recovery will occur, aided by the use of the impact minimization and restoration measures thereby minimizing secondary impacts.

Transco does not anticipate the Project will reduce or degrade habitat for terrestrial, aquatic, or avian species significantly due to the design of the pipeline being primarily collocated, to the extent practical, within/adjacent to an existing pipeline and utility ROWs. In the areas where wetland restoration is proposed to repair impacts from ATV's, habitat improvement is anticipated as the current degraded conditions will be restored. While temporary impacts on food, cover, and water sources may occur, none of the species located within the Project area are specialized in such a way that construction of the Project will inhibit the overall fitness or reproductive output of the populations as a whole. Minimal changes to existing habitat types will occur due to this Project siting. Wildlife populations that utilize the Project area are not expected to be permanently adversely affected by the proposed Project.

10. Riparian Buffers

Pipeline installation will take place within an existing cleared and maintained pipeline ROW and forested areas. Due to the linear nature of the project, temporary impacts within riparian buffers are unavoidable. At locations where it was impossible to avoid riparian impacts due to safety issues, Transco will implement BMPs to minimize the impacts. After completing the construction activities, areas used for pipeline installation and as contractor yards/staging areas will be restored back to pre-existing contours and reseeded with a riparian seed mix in areas where slopes are less than 10%. The MLV-515RA20, MLV-515RA30, Carverton Tie-in, Lower Demunds REL Tie-in, and Hildebrandt Tie-in/MLV-515RA40 sites, where a permanent increase in impervious area is proposed, were examined for riparian buffers. Riparian buffers were identified at MLV-515REL20 and BMPs were designed to minimize the impacts to this area. Tree and shrub plantings will occur in forested riparian buffers outside of the maintained ROW as outlined in riparian reforestation plans outlined in the Chapter 105 permit.

Linear projects including pipelines are eligible for the Riparian Buffer Waiver under 25 PA Code §102.14(d)(2)(ii) if riparian buffers are undisturbed to the extent practicable. As such, a Riparian Buffer Waiver has been requested along with this ESCP application (Section 1-7).

11. Project Site Runoff

Changes in project site runoff are not anticipated for the Project except at the MLV-515RA20, MLV-515RA30, Carverton Tie-in, Lower Demunds REL Tie-in, and Hildebrandt Tie-in/MLV-515RA40 sites where increases in impervious areas are proposed. The Project site is primarily existing and maintained pipeline right-of-way in meadow condition with a forested fringe. The ROW will be restored to meadow condition upon the completion of construction. Proposed BMPs were sized based on the maximum tributary drainage area anticipated during construction. An analysis of pre- and post-development stormwater runoff was performed for the valve yard and tie-in sites. The installation of the valves and associated access road will increase the volume of stormwater runoff due to the increase in the type and size of the impervious area. The contractor will construct stormwater BMPs to mitigate the increase in volume and peak rates associated with construction. Refer to the Post-Construction Stormwater Management (PCSM) Plan for additional information (Section 3 of this ESCP Application). Changes in stormwater runoff between pre- and post-development conditions for 2-year rainfall event and changes in peak discharge rates for 1-, 2-, 10-, 25-, 50- and 100-yr storms are given in the tables below.

11.1 MLV-515RA20

Pre- and Post-Construction Stormwater Volume for 2-yr Rainfall event

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Pre-construction (cf)	Post-construction before BMPs (cf)	Post-construction after BMPs (cf)	Net (cf)
1,904	2,492	1,153	-751

Pre-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.57	0.84	1.70	2.39	3.04	3.85

Post-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.82	1.14	2.09	2.83	3.52	4.36

Post-Construction w/ BMPs Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.22	0.31	1.09	1.76	2.25	3.21

Difference between Pre-Construction and Post-Construction w/ BMPs

	1-year	2-year	10-year	25-year	50-year	100-year
NET Difference	-0.35	-0.53	-0.61	-0.63	-0.79	-0.64

11.2 MLV-515RA30

Pre- and Post-Construction Stormwater Volume for 2-yr Rainfall event

Pre-construction (cf)	Post-construction before BMPs (cf)	Post-construction after BMPs (cf)	Net (cf)
1,040	1,520	0	-1,040

Pre-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.28	0.46	1.01	1.47	1.93	2.48

Post-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.48	0.70	1.35	1.86	2.35	2.93

Post-Construction w/ BMPs Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.00	0.00	0.00	0.00	0.00	0.00

Difference between Pre-Construction and Post-Construction w/ BMPs

	1-year	2-year	10-year	25-year	50-year	100-year
NET Difference	-0.28	-0.46	-1.01	-1.47	-1.93	-2.48

11.3 Carverton Tie-in

Pre- and Post-Construction Stormwater Volume for 2-yr Rainfall event

Pre-construction (cf)	Post-construction before BMPs (cf)	Post-construction after BMPs (cf)	Net (cf)
1,164	1,801	0	-1,164

Pre-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year

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0.49	0.69	1.27	1.74	2.17	2.70
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Post-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.76	0.99	1.64	2.12	2.56	3.09

Post-Construction w/ BMPs Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.00	0.00	0.00	0.30	1.47	2.50

Difference between Pre-Construction and Post-Construction w/ BMPs

	1-year	2-year	10-year	25-year	50-year	100-year
NET Difference	-0.49	-0.69	-1.27	-1.44	-0.70	-0.20

11.4 Lower Demunds REL Tie-in

Pre- and Post-Construction Stormwater Volume for 2-yr Rainfall event

Pre-construction (cf)	Post-construction before BMPs (cf)	Post-construction after BMPs (cf)	Net (cf)
795	1,865	345	-450

Pre-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.15	0.21	0.40	0.56	0.71	0.89

Post-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.55	0.64	0.95	1.18	1.40	1.65

Post-Construction w/ BMPs Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.09	0.11	0.16	0.20	0.24	0.28

Difference between Pre-Construction and Post-Construction w/ BMPs

	1-year	2-year	10-year	25-year	50-year	100-year
NET Difference	-0.06	-0.10	-0.24	-0.36	-0.47	-0.61

11.5 Hildebrandt Tie-in/MLV-515RA40

Pre- and Post-Construction Stormwater Volume for 2-yr Rainfall event

Pre-construction (cf)	Post-construction before BMPs (cf)	Post-construction after BMPs (cf)	Net (cf)
1,443	3,014	404	-1,039

Pre-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.27	0.38	0.74	1.03	1.31	1.64

Post-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
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0.96	1.15	1.77	2.23	2.67	3.19
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Post-Construction w/ BMPs Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.13	0.18	0.33	0.44	0.55	0.73

Difference between Pre-Construction and Post-Construction w/ BMPs

	1-year	2-year	10-year	25-year	50-year	100-year
NET Difference	-0.14	-0.20	-0.41	-0.59	-0.76	-0.91

12. Offsite Discharge Analysis

The stormwater BMPs being constructed along the REL Pipeline are in areas that will discharge stormwater to offsite non-surface water. These areas have been analyzed to reduce the likelihood that these discharges will be erosive to adjacent property owners. The analysis has been performed in accordance with PADEP Document 3150-FS-DEP4124, "Off-Site Discharges of Stormwaters to Areas That Are Not Surface Waters". The full analysis is presented in Attachment 4 – Offsite Discharge Report. A summary of the findings is presented below.

12.1 MLV-515RA20

The MLV-515RA20 site utilizes an infiltration berm. The collected stormwater discharges through an outlet pipe and across a riprap apron toward the adjacent forested area located west of the Limits of Disturbance. The stormwater is discharged as sheet flow and travels along a vegetative flow path until it reaches a Bald Mountain Road culvert and then a delineated stream, S83-T2. Another point of discharge comes from PCSM Diversion Channel DC-D1, which discharges into a riprap apron. The stormwater then flows as sheet flow along a vegetative flow path until it reaches delineated stream, S76-T2. Calculations provided for the project site runoff show a reduction in the post-construction discharge rates and volumes. The area downstream of the infiltration berm and channel is over 90% vegetated. The discharge velocities at the ten (10) - 3" and when overtopping the berm are 1.83 feet per second (fps) and 0.34 fps respectively for the 100 year, 24-hour storm event. The discharge velocity at the apron DC-D1 discharges to is 1.54 fps. Since the outlet velocities are below 2.5 fps, downstream erosion will be minimal, if not negligible.

12.2 MLV-515RA30

The MLV-515RA30 site utilizes an infiltration berm. This infiltration berm does not discharge water during any storms, 1-yr through the 100-yr. If the berm were to discharge water it flows into the adjacent wetland and agricultural areas located southwest of the Limits of

Disturbance. The stormwater is discharged as sheet flow and travels along a vegetative flow path until it reaches an unnamed blue line stream, upstream of the Susquehanna River. Calculations provided for the project site runoff show a reduction in the post-construction discharge rates and volumes. The area downstream of the vegetative swale is over 90% vegetated. Calculations indicated that the discharge velocity over the berm is 0.0 fps for the 100-yr storm. Considering the calculations indicate the berm doesn't discharge and the downstream being well vegetated erosion at this site is very unlikely.

12.3 Carverton Tie-in

The Carverton Tie-in site utilizes an infiltration berm. This infiltration berm discharges water, and it flows into the adjacent forested area located east of the Limits of Disturbance. The stormwater is being discharged as sheet flow and travels along a vegetative flow path until it reaches an unnamed blue line stream. Calculations provided for the project site runoff show a reduction in the post-construction discharge rates and volumes. The area downstream of the infiltration berm is over 90% vegetated. Additionally, the velocity coming out of the outfall protection for the 100-year 24-hour was calculated and found to be 0.97 fps. Since the outlet velocity is below 2.5 fps, downstream erosion will be minimal, if not negligible.

12.4 Lower Demunds REL Tie-in and Hildebrandt Tie-in/MLV-515RA40

The Lower Demunds REL Tie-in and Hildebrandt Tie-in/MLV-515RA40 sites each utilize subsurface infiltration beds. These subsurface infiltration beds are located beneath each gravel pad where water accumulates and flows away from the pads.

At the Lower Demunds REL Tie-in, the pad will be bermed around the exterior to retain stormwater for infiltration. An overflow spillway will be used to discharge excess flow to a riprap apron on the east side of the pad. The stormwater is being discharged as sheet flow and travels along a vegetative flow path until it reaches a water collection pond. In the E&S and PCSM Narrative, site calculations are provided that show the Pre- and Post-Construction runoff flow rates and volume. These calculations show a reduction in the post-construction discharge rates and volumes. Calculations indicated that the discharge velocity at the outfall protection is 1.3 fps for the for the 25 year, 24-hour storm event. Since the outlet velocity is below 2.5 fps, downstream erosion will be minimal, if not negligible.

At Hildebrandt Tie-in/MLV-515RA40, the pad will be bermed around the exterior to retain stormwater for infiltration. An overflow spillway on the north side of the pad will be used to

discharge excess flow to the diversion channel. The water will then be directed northwest to a level spreader where it is discharged as sheet flow and travels along a vegetative flow path until it reaches an unnamed blueline stream. In the E&S and PCSM Narrative, site calculations are provided that show the Pre- and Post-Construction runoff flow rates and volume. These calculations show a reduction in the post-construction discharge rates and volumes. Calculations indicated that the discharge velocity at the proposed level spreader is 0.95 fps for the for the 25 year, 24-hour storm event. Since the outlet velocity is below 2.5 fps, downstream erosion will be minimal, if not negligible.

13. Site Restoration Plan

13.1 Previous Land Use

The Project site is primarily existing and maintained pipeline right-of-way in meadow condition with a forested fringe. Some areas are located adjacent to other utility right-of-ways or within undeveloped, primarily forested or agricultural areas.

Using data taken from Google Earth and Multi-Resolution Land Characteristics (MRLC) Consortium website (<https://www.mrlc.gov/viewer/>), it appears portions of the Regional Energy Lateral has been an existing and maintained gas pipeline or other right-of-way for the past 20 years and will continue to be an existing and maintained right-of-way once the Project is complete, with some new right-of-way being created in areas. Portions of the existing ROW's will be expanded upon as a result of the Project's construction. Based on the surrounding land characteristics, land use prior to ROW construction within the past 50 years likely would have been either forested land or meadow.

13.2 Disturbance Activities, Changes to Permanent Topographic Land Cover Along Pipeline Alignment

The Regional Energy Lateral component of the Project will consist of approximately 22.2 miles of 30-inch diameter pipeline, partially co-located with existing Transco Leidy Line-A, in Buck, Bear Creek, Plains, Jenkins, Kingston and Dallas Townships, and Laflin, Wyoming, and West Wyoming Boroughs, Luzerne County, Pennsylvania. The Regional Energy Lateral begins at existing Compressor Station 515 in Buck Township and continues westward to its terminus at Transco's existing Hildebrandt Tie-in/MLV-515RA40 in Dallas Township.

The work and disturbed areas are located within Transco property, existing easements, or legally obtained workspace where the past, present, and proposed land use is primarily an

existing pipeline ROW. Along the edges of the ROW land use is primarily forested. The proposed contractor yard and staging areas will be used temporarily and subsequently removed after the completion of the Project. Staging areas will be used for parking, equipment turn-arounds, and temporary storage of equipment. Transco will use a contractor yard for parking, contractor offices, and the storage of construction equipment and pipes. This contractor yard consists of an agricultural field. Disturbed areas within these temporary workspaces will be restored to the original contours. In addition to the E&S BMP measures listed in Section 6.0 Transco will use and implement the following practices, measures, and details to control soil erosion and off-site sedimentation during construction.

13.3 Restoration Measures

Pipeline components of the Project will take place within or adjacent to a previously disturbed pipeline ROW. Stormwater controls which will be installed during construction have been designed to avoid impacts to natural drainage features. These controls will only have temporary impacts while installed and will be removed once the site is stabilized with vegetation. Minimal impacts to wetland resources are anticipated, as these functions are generally limited when compared to watercourses. The Regional Energy Access Expansion workspaces will be restored by to pre-construction contours.

Cleanup operations will commence immediately following backfill operations. Final grading, topsoil replacement, and installation of permanent erosion control structures will be completed within 20 days after backfilling the trench (10 days in residential areas). Construction debris will be removed from construction work areas unless the landowner or land managing agency approves leaving materials onsite for beneficial reuse, stabilization, or habitat restoration. Rock in excess of four inches from at least the top 12 inches of soil in cultivated or rotated cropland, managed pastures, hayfields, and residential areas, as well as other areas will be removed at the landowner's request. Construction right-of-way will be graded to restore pre-construction contours and leave the soil in the proper condition for planting. Temporary sediment barriers will be removed and replaced by permanent erosion control measures or when revegetation is successful.

Wetland Restoration Procedures

The wetlands will be revegetated with annual ryegrass at 40 lbs / acre pure live seed and with the recommended wetland seed mix, unless standing water is present. Lime, fertilizer or mulch will not be used in wetland areas. In the event that final seeding and mulching is deferred

more than 20 days after the trench is backfilled, slopes adjacent to wetlands shall be blanketed for a minimum of 100 feet on each side of the crossing.

Specific procedures will be developed in coordination with the appropriate land management or state agency, where necessary, to prevent the invasion or spread of undesirable exotic vegetation (such as purple loose strife and phragmites). Disturbed areas will be re-vegetated.

Equipment mats will be removed upon completion of construction, as well as temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are successful.

Permanent Erosion Control Measures

Trench plugs are intended to slow the flow of subsurface water along the trench. Trench plugs may be constructed of materials such as sandbags or polyurethane foam. Do not use topsoil in trench breakers. At a minimum, install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland. Trench breakers will be installed in wetlands to prevent water from traveling along the trench and altering micro-watersheds within the wetlands.

Waterbars are intended to reduce runoff velocity, divert water and prevent sediment deposition into sensitive resources. Waterbars shall be constructed using spacing recommendations outlined below. In the absence of written recommendations, use the following spacing unless closer spacing is necessary to avoid excessive erosion on the construction right-of-way:

Slope (%)	Spacing (feet)
<5	250
5-15	150
>15-30	100
>30	50

Waterbars will be constructed to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the waterbar.

Soil Compaction Measures

Topsoil and subsoil will be tested for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Tests will be conducted on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Penetrometers or other appropriate devices will be used to conduct tests.

Severely compacted agricultural areas will be plowed with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling. Refer to the Transco Project-specific Agricultural Construction and Monitoring Plan. Appropriate soil compaction mitigation will be performed in severely compacted residential areas.

Revegetation Plan and Procedures

The construction site should be stabilized as soon as possible after completion. Establishment of final cover must be initiated no later than 7 days after reaching final grade. Temporary erosion and sedimentation control BMPs can be removed when the site meets final stabilization. Final stabilization means that soil-disturbing activities are completed, and that either a permanent vegetative cover with a density of 70% or greater has been established or that the surface has been stabilized by hard cover such as pavement or buildings. It should be noted that the 70% requirement refers to the total area vegetated and not just a percent of the site.

Surface Roughening

Surface roughening is the practice of providing a rough soil surface with horizontal depressions for the purpose of reducing runoff velocity, increasing infiltration, aiding the establishment of vegetation, and reducing erosion. Surface roughening should be applied to slopes 3H:1V or steeper unless a stable rock face is provided or it can be shown that there is not a potential for sediment pollution to surface waters. For roughened surfaces within 50 feet of a surface water, and where blanketing of seeded areas is proposed as the means to achieving permanent stabilization, spray-on type blankets are recommended.

Typical Channel and Vegetation Restoration

The impacted riparian zone will be restored for a minimum of 15 feet landward of the top of bank. If the pre-impact riparian buffer of native herbaceous and shrub vegetation exceeds 15 feet beyond the top of bank, the area to be seeded should be as follows: 150 feet or the existing width of the riparian zone if it is less than the minimum requirements. Ernst Seed Mix 178

(Riparian Buffer Mix) or similar shall be applied on restored banks and riparian zones. In addition, where existing forested buffers are impacted these shall be replanted outside of the existing maintained ROW, as indicated in forest replanting plans for the Project outlined in the riparian buffer waiver request.

13.4 Maintenance and Evaluation for Effectiveness

Follow-up inspections of disturbed areas will be conducted as necessary, to determine the success of revegetation and address landowner concerns. At a minimum, conduct inspections after the first and second growing seasons. Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation shall be considered successful when upon visual survey, crop growth and vigor are similar to adjacent undisturbed portions of the same field, unless the easement agreement specifies otherwise. Continue revegetation efforts until revegetation is successful.

PCSM BMPs should be properly maintained to ensure their effectiveness. Sheet flow conditions and infiltration must be sustained throughout the life of the BMP. BMPs should be inspected for clogging from sediment or debris, damage by foot or vehicular traffic, and flow channelization. Inspections should be made on a quarterly basis for the first two years following installation, and then twice per year thereafter. Inspections should also be made after every storm event greater than 1 inch during the establishment period.

Channel linings should be inspected for signs of erosion or dislodging, as applicable. Channels should be inspected for debris, overgrown vegetation, and other blockages. Vegetated areas will be inspected weekly and after runoff events until permanent vegetation is achieved. Once the vegetation is established, inspections of health, diversity, and density should be performed at least twice per year, during both the growing and non-growing season. Vegetative cover should be sustained at 85% and reestablished if damage greater than 50% is observed. Damaged BMPs will be repaired as soon as possible upon discovery. Repairs will be made to restore to BMPs to the original design condition.

Drainage and irrigation systems problems resulting from pipeline construction in agricultural areas will be monitored and corrected until restoration is successful. Restoration will be considered successful when the surface condition is similar to adjacent undisturbed lands, construction debris is removed, revegetation is successful, and proper drainage has been

restored.

Vegetated areas will be inspected weekly and after runoff events until permanent vegetation is achieved. Once the vegetation is established, inspections of health, diversity, and density should be performed at least twice per year, during both the growing and non-growing season. Vegetative cover should be sustained at 85% and reestablished if damage greater than 50% is observed. Damaged BMPs will be repaired as soon as possible upon discovery. Repairs will be made to restore damaged BMPs to the original design condition.

Maintenance activities on the vegetated swale should be done annually and within 48 hours after every major storm event (> 1-inch rainfall depth). Erosion problems, damage to vegetation, sediment and debris accumulation, uniformity of in cross-section and pools of standing water should be inspected.

Routine vegetation mowing or clearing over the full width of the permanent right-of-way in uplands will not be done more frequently than every three years. Transco will limit routine vegetation mowing or clearing within wetlands and adjacent to waterbodies. A 10-foot-wide herbaceous corridor will be maintained over the center of the pipeline within the wetland and riparian buffer areas. Trees and other woody vegetation will also be allowed to reestablish naturally within the construction ROWs that were cleared for construction of the pipeline. However, trees within 15 feet of the centerline and between existing pipelines will be removed to maintain the integrity of the pipeline. In no case will routine vegetation mowing or clearing occur during the migratory bird nesting season between April 15 and August 1 unless specifically approved in writing by the responsible land management agency or the U.S. Fish and Wildlife Service. Transco will not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency.

Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and permanent access roads as necessary.

Wetlands and waterbodies will be protected through use of waterbars, diversion channels, trench plugs, and erosion control blankets. Broad-based dips may be used to direct runoff from access roads to well-vegetated areas. In HQ/EV watersheds, sump with compost filter sock should be utilized at the discharge end of the waterbar. Diversion channels shall be used to divert runoff from disturbed areas and convey it to appropriate BMPs such as a sediment trap or clean

water crossing. These will be placed at the banks of waterbodies in order to maintain stable working conditions and keep sediment from entering the waterways. Earth filled sacks will be used to secure the plug. The spacing of these structures varies based on the site and the slope of the dig location, as indicated in the plan drawings. A suitable erosion control blanket or soil stabilizer shall be used wherever earth disturbance occurs in close proximity of surface waters especially if site conditions make use of conventional E&S BMPs difficult. Erosion control blankets should be used on finished slopes greater than 3:1.

Monitoring of the onsite wetland and riparian buffers replanting areas shall take place biannually for the first three years and annually for the remaining two years after planting to determine the success of the replanting areas. During the monitoring, the survival of trees and shrubs will be counted and documented. Any threats to the riparian buffers will be documented and remedial measures will be recommended. Photographs will be taken at representative crossings to document the success of the replanting areas. The monitoring reports will include, at a minimum, the following information:

- a) Dates of inspection and names of inspectors;
- b) Photographic Documentation;
- c) Hydrology indicators (wetlands);
- d) Vegetation data
 - a. percent coverage of native hydrophytic species (wetlands);
 - b. inventory of plant species; and,
 - c. stem count survival.
- e) Identification of any problems that need required remedial measures.

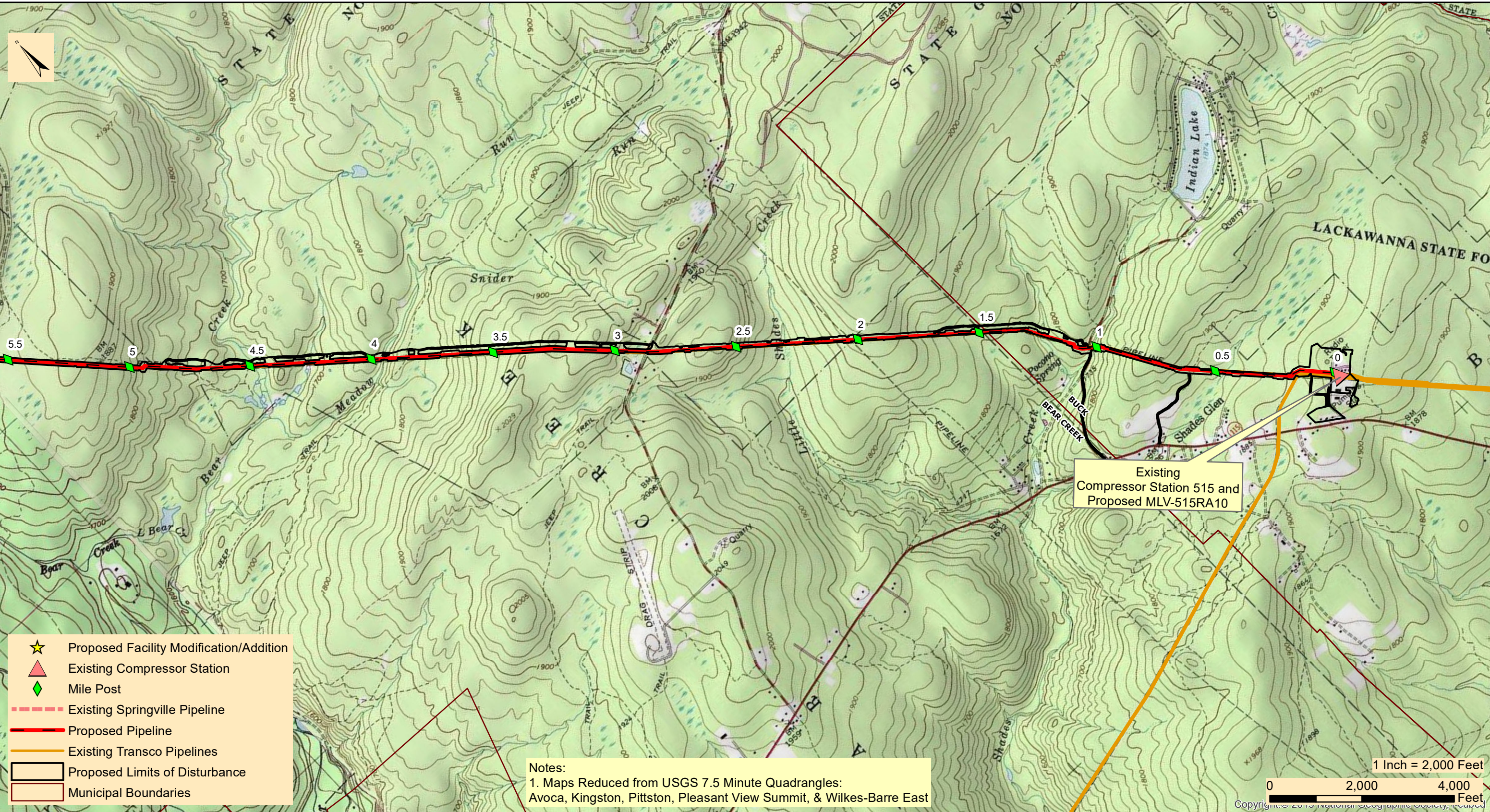
Contractor shall provide a weatherproof container to store chemicals or erodible substances that must be kept on the site. Contractor is responsible for reading, maintaining, and making employees and subcontractors aware of Safety Data Sheets (SDSs).

14. Erosion and Sediment Control Plan Shall be Prepared by a Person Trained and Experienced in Erosion Control Methods and Techniques

These plans and narrative were prepared by Patrick A. Wozinski, PE (BAI Group, LLC) of State College, PA in accordance with the Pennsylvania Department of Environmental Protection Erosion and Sediment Pollution Control Program Manual, March 2012. Plan preparer's resume is provided in Attachment C of the ESCP permit package.

ATTACHMENT 1
PROJECT LOCATION MAP

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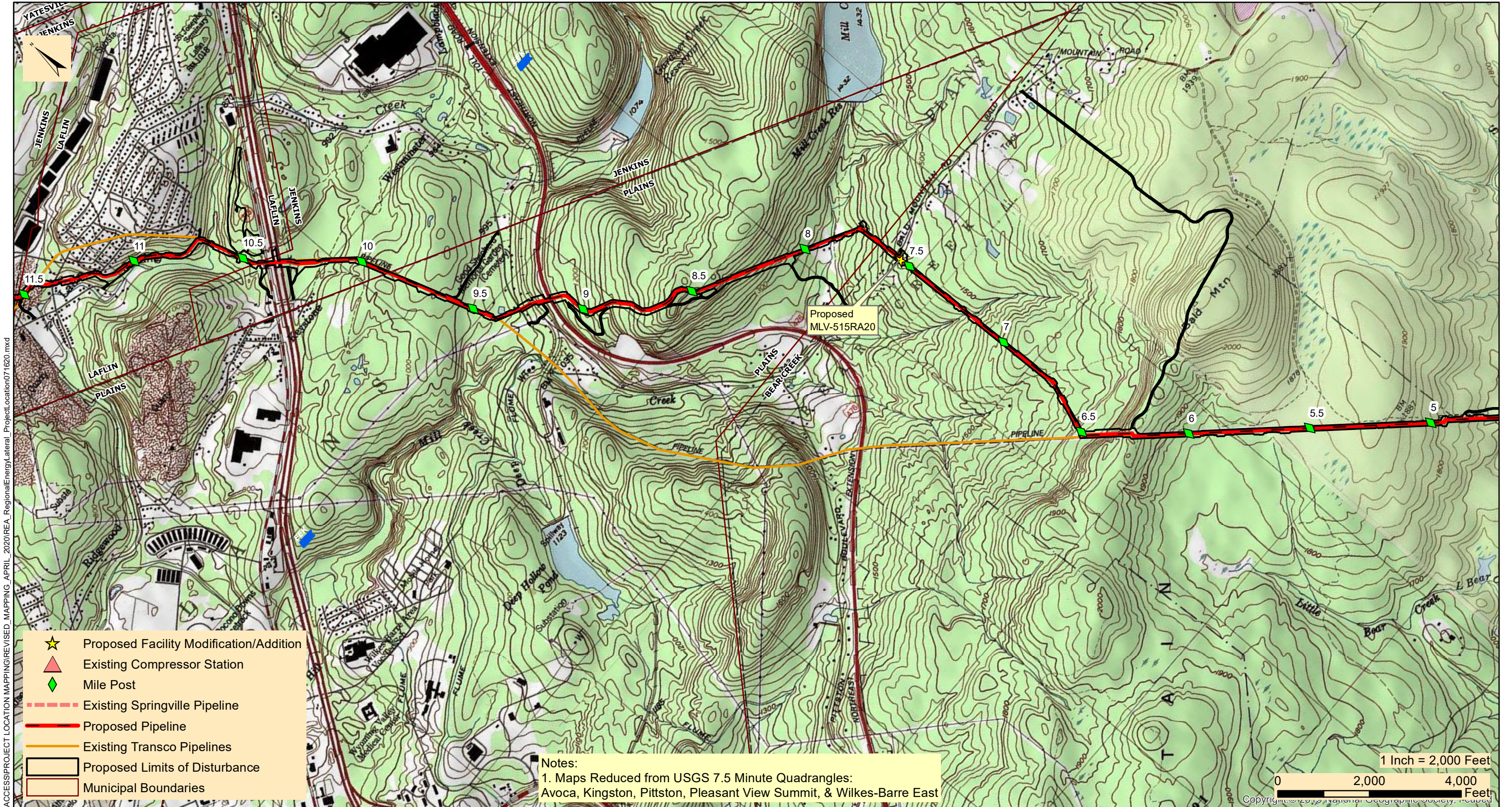
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
PROPOSED 30" REGIONAL ENERGY LATERAL
PROJECT LOCATION MAP

BUCK & BEAR CREEK TOWNSHIPS

LUZERNE COUNTY

PENNSYLVANIA

Date:	2/28/2022
Drawn By:	FTN
Figure Number:	REL-1



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- ★ Proposed Facility Modification/Addition
- ▲ Existing Compressor Station
- ◆ Mile Post
- Existing Springville Pipeline
- Proposed Pipeline
- Existing Transco Pipelines
- Proposed Limits of Disturbance
- Municipal Boundaries

Notes:
 1. Maps Reduced from USGS 7.5 Minute Quadrangles:
 Avoca, Kingston, Pittston, Pleasant View Summit, & Wilkes-Barre East

1 Inch = 2,000 Feet
 0 2,000 4,000 Feet
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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
PROPOSED 30" REGIONAL ENERGY LATERAL
PROJECT LOCATION MAP

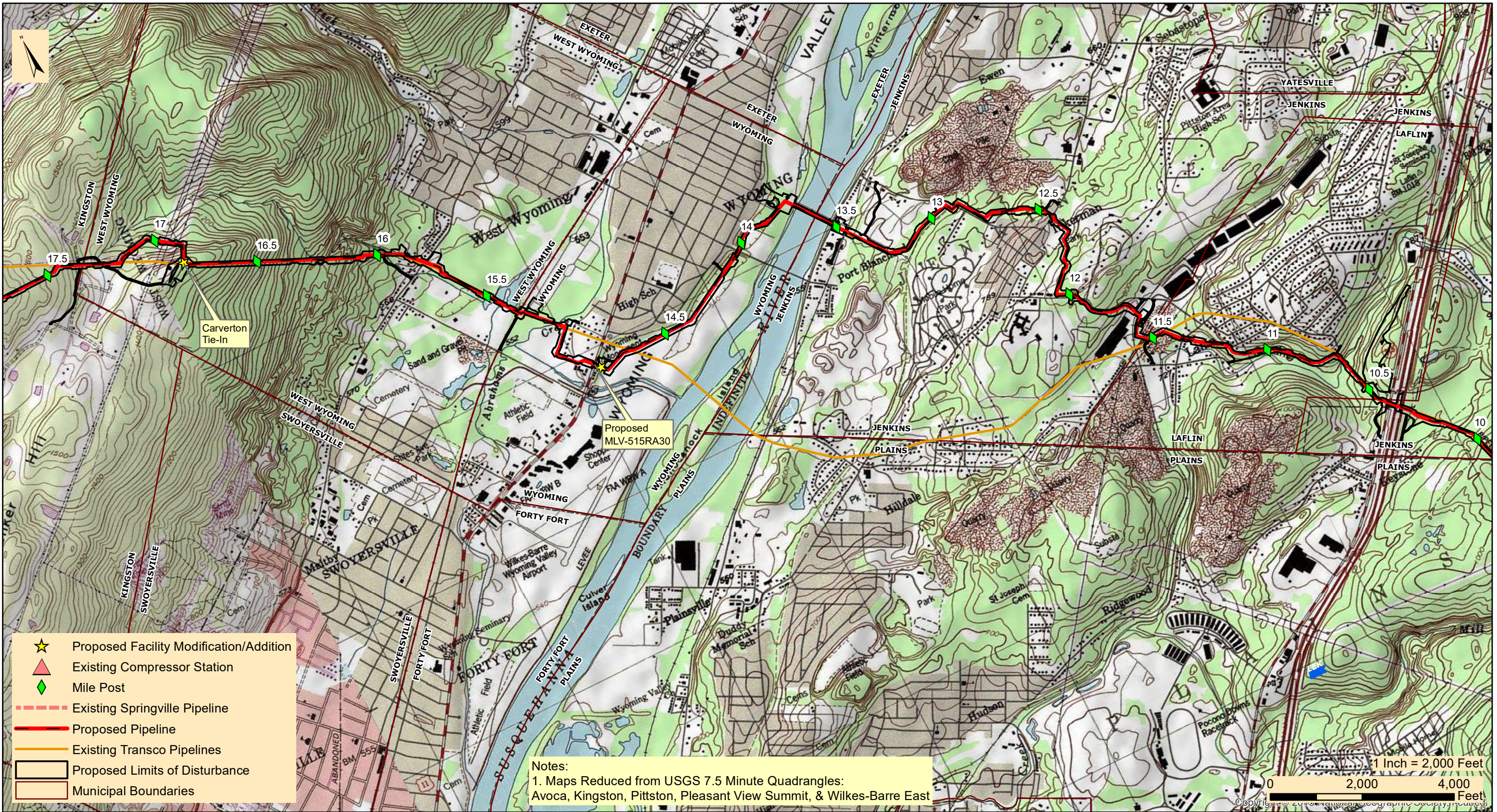
BEAR CREEK, JENKINS, PLAINS TWP, & LAFLIN BOROUGH

LUZERNE COUNTY

PENNSYLVANIA

Date: 2/28/2022
Drawn By: FTN
Figure Number: REL-2

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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
PROPOSED 30" REGIONAL ENERGY LATERAL
PROJECT LOCATION MAP

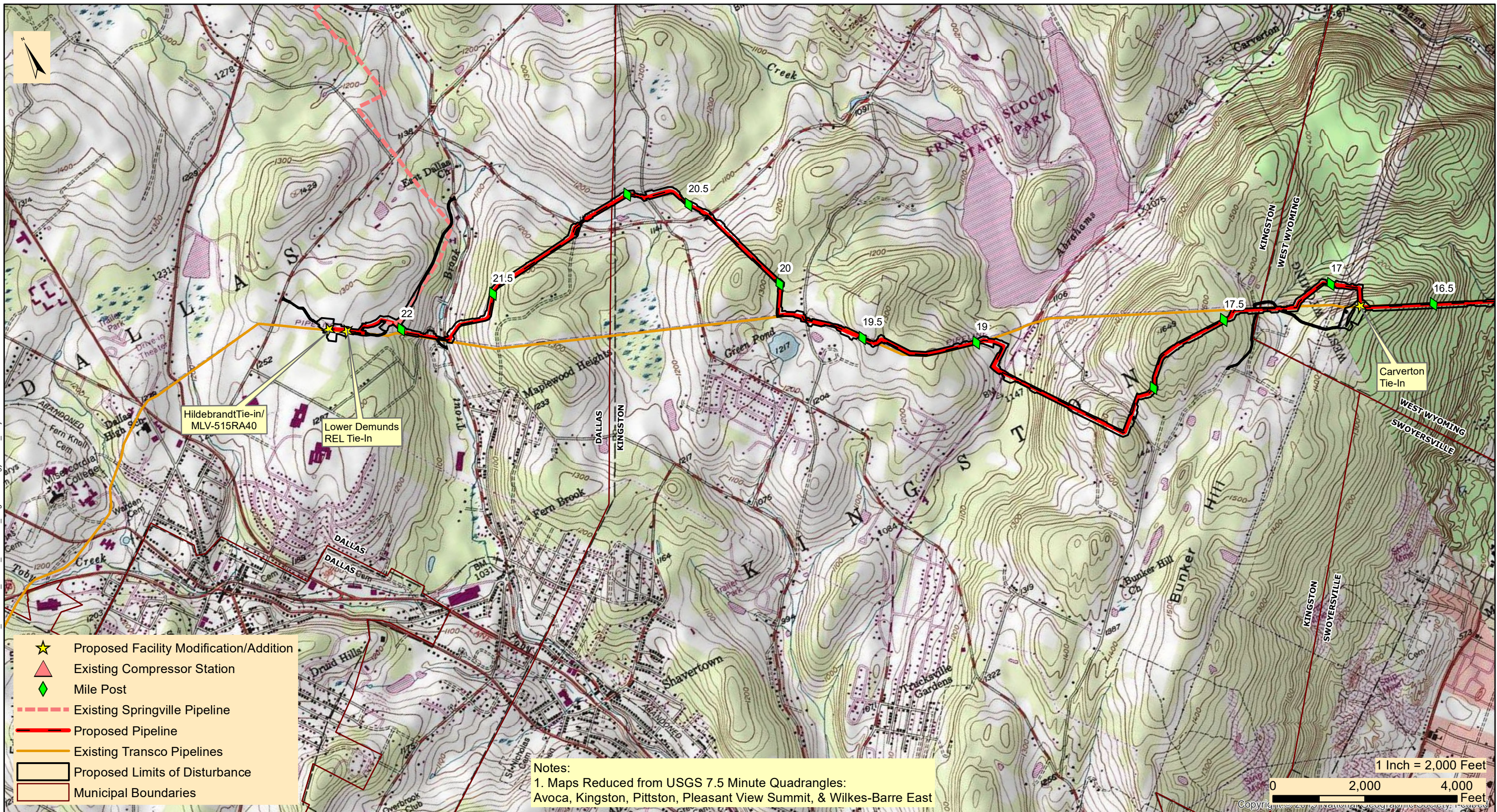
KINGSTON, JENKINS, WEST WYOMING, WYOMING, & LAFLIN

LUZERNE COUNTY

PENNSYLVANIA

Date:	2/28/2022
Drawn By:	FTN
Figure Number:	REL-3

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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
PROPOSED 30" REGIONAL ENERGY LATERAL
PROJECT LOCATION MAP

DALLAS, KINGSTON, & WEST WYOMING TOWNSHIP

LUZERNE COUNTY

PENNSYLVANIA

Date:	2/28/2022
Drawn By:	FTN
Figure Number:	REL-4

ATTACHMENT 2
SOILS MAP AND REPORT



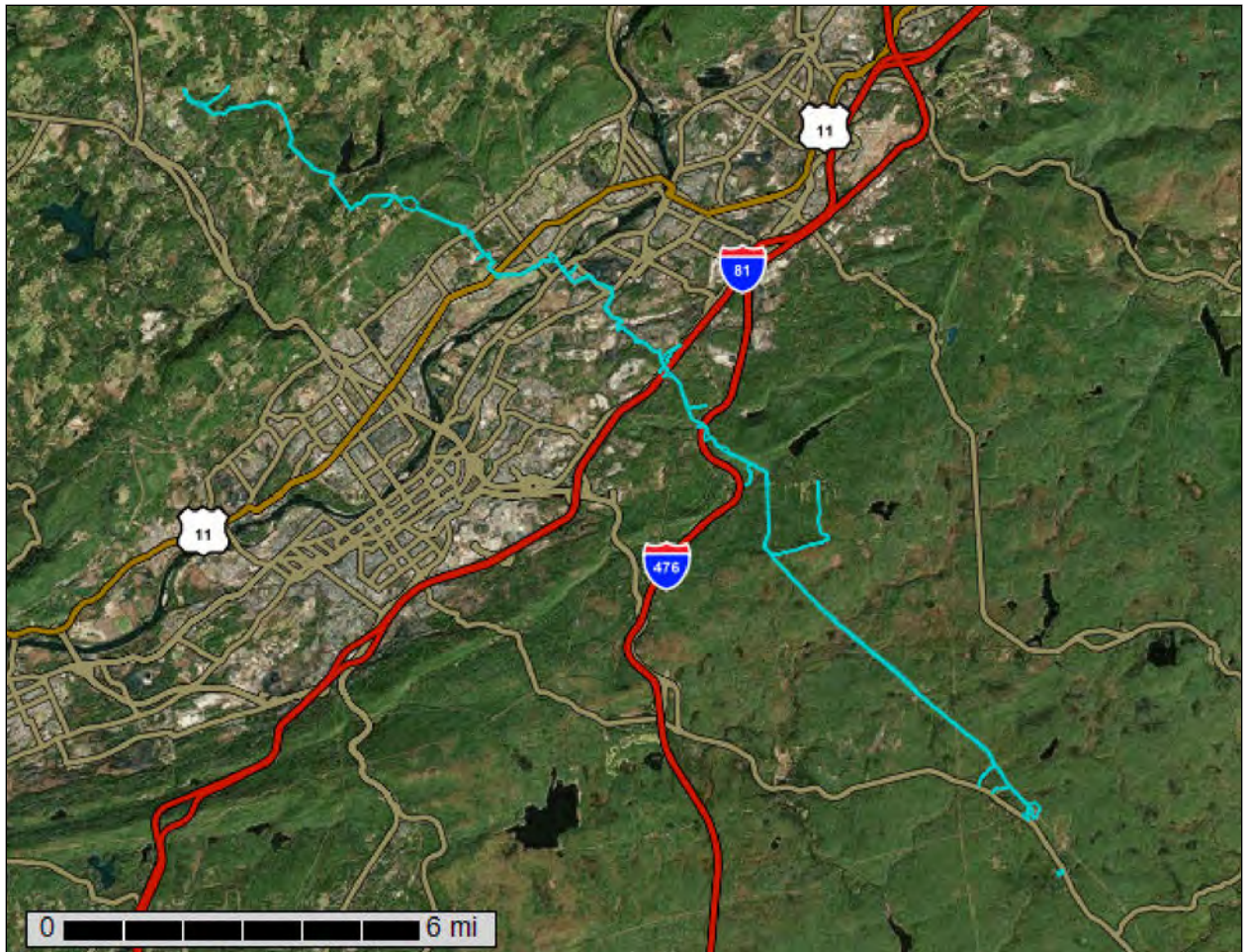
United States
Department of
Agriculture

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 **Luzerne County, Pennsylvania**



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 (<https://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.

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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

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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

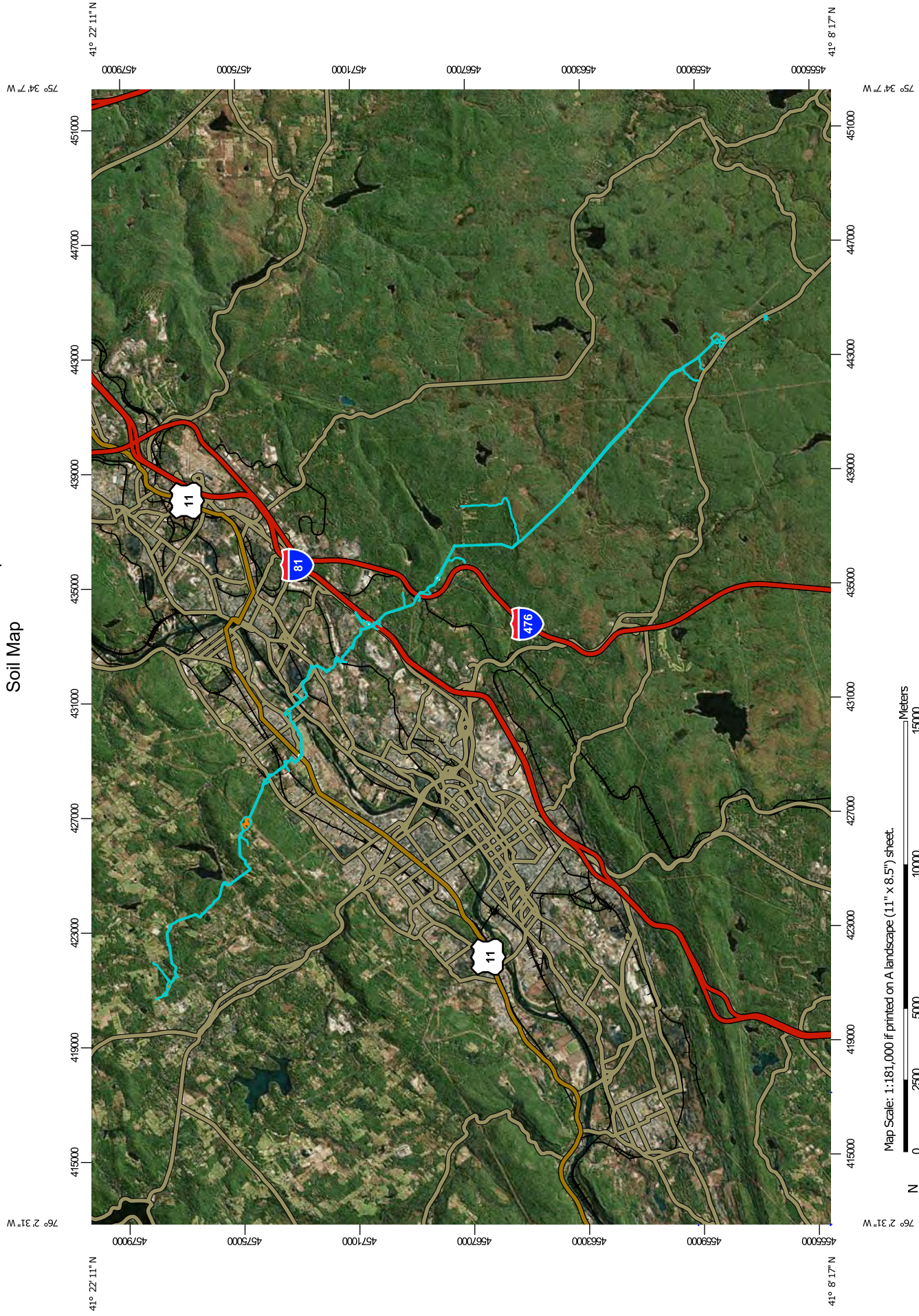
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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

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 Scale: 1:181,000 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)	 Area of Interest (AOI)	 Spoil Area
Soils	 Soil Map Unit Polygons	 Stony Spot
	 Soil Map Unit Lines	 Very Stony Spot
	 Soil Map Unit Points	 Wet Spot
Special Point Features	 Blowout	 Other
	 Borrow Pit	 Special Line Features
	 Clay Spot	Water Features
	 Closed Depression	 Streams and Canals
	 Gravel Pit	Transportation
	 Gravelly Spot	 Rails
	 Landfill	 Interstate Highways
	 Lava Flow	 US Routes
	 Marsh or swamp	 Major Roads
	 Mine or Quarry	 Local Roads
	 Miscellaneous Water	Background
	 Perennial Water	 Aerial Photography
	 Rock Outcrop	
	 Saline Spot	
	 Sandy Spot	
	 Severely Eroded Spot	
	 Sinkhole	
	 Slide or Slip	
	 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 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: Luzerne County, Pennsylvania
 Survey Area Data: Version 16, Aug 31, 2021

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

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

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

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ag	Alluvial land	1.3	0.3%
ArB	Arnot-Rock outcrop complex, 0 to 8 percent slopes	9.7	2.1%
ArD	Arnot-Rock outcrop complex, 8 to 25 percent slopes	19.7	4.3%
ASF	Arnot-Rock outcrop complex, steep	29.6	6.5%
At	Atherton silt loam, gray subsoil variant	0.0	0.0%
Bf	Basher soils	0.4	0.1%
BrC	Braceville gravelly loam, 8 to 15 percent slopes	2.9	0.6%
CF	Cut and fill land	2.0	0.4%
ChA	Chenango gravelly loam, 0 to 3 percent slopes	1.9	0.4%
ChB	Chenango gravelly loam, 3 to 8 percent slopes	8.5	1.9%
ChC	Chenango gravelly loam, 8 to 15 percent slopes	2.4	0.5%
CIA	Chippewa silt loam, 0 to 3 percent slopes	2.7	0.6%
CnB	Chippewa silt loam, 0 to 8 percent slopes, extremely stony	3.0	0.7%
DdD	Dekalb channery sandy loam, 8 to 25 percent slopes, rubbly	1.4	0.3%
DEF	Dekalb extremely stony sandy loam, steep	1.2	0.3%
GP	Gravel pits	4.6	1.0%
Ho	Holly silt loam	7.3	1.6%
LaC	Lackawanna channery silt loam, 8 to 15 percent slopes	1.5	0.3%
LaD	Lackawanna channery silt loam, 15 to 25 percent slopes	0.6	0.1%
LcB	Lackawanna channery silt loam, 3 to 8 percent slopes, extremely stony	4.5	1.0%
LcD	Lackawanna channery silt loam, 8 to 25 percent slopes, extremely stony	9.9	2.2%
LEF	Lackawanna and Bath soils, steep, extremely stony	6.3	1.4%
Ln	Linden soils	0.5	0.1%

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Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
McB	Mardin channery silt loam, 3 to 8 percent slopes, very stony	6.5	1.4%
McD	Mardin channery silt loam, 8 to 25 percent slopes, very stony	1.0	0.2%
Mg	Mine dump	6.9	1.5%
Mh	Mine dump, burned	1.2	0.3%
Mm	Mine wash	2.7	0.6%
MoB	Morris channery silt loam, 0 to 8 percent slopes	3.8	0.8%
MsB	Morris channery silt loam, 0 to 8 percent slopes, extremely stony	14.9	3.3%
Mu	Muck	0.9	0.2%
OIB	Oquaga and Lordstown channery silt loams, 3 to 8 percent slopes	4.8	1.0%
OIC	Oquaga and Lordstown channery silt loams, 8 to 15 percent slopes	12.0	2.6%
OID	Oquaga and Lordstown channery silt loams, 15 to 25 percent slopes	4.0	0.9%
OpB	Oquaga and Lordstown extremely stony silt loams, 3 to 8 percent slopes	16.3	3.6%
OpD	Oquaga and Lordstown extremely stony silt loams, 8 to 25 percent slopes	51.6	11.3%
OXF	Oquaga and Lordstown extremely stony silt loams steep	26.2	5.7%
Ps	Pope soils	25.0	5.5%
Qu	Quarries and mines	1.5	0.3%
RdA	Rexford loam, 0 to 3 percent slopes	0.3	0.1%
RdB	Rexford loam, 3 to 8 percent slopes	2.1	0.5%
Sm	Strip mine	20.9	4.6%
VoB	Volusia channery silt loam, 0 to 8 percent slopes	0.5	0.1%
VrB	Volusia channery silt loam, 0 to 8 percent slopes, extremely stony	7.8	1.7%
VrC	Volusia channery silt loam, 8 to 15 percent slopes, extremely stony	6.1	1.3%
W	Water	1.5	0.3%
Wa	Wayland silt loam	0.5	0.1%

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Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
WeB	Weikert and Klinesville channery silt loams, 3 to 8 percent slopes	0.6	0.1%
WeD	Weikert and Klinesville channery silt loams, 15 to 25 percent slopes	0.1	0.0%
WIB	Wellsboro channery silt loam, 3 to 8 percent slopes	9.0	2.0%
WIC	Wellsboro channery silt loam, 8 to 15 percent slopes	16.1	3.5%
WID	Wellsboro channery silt loam, 15 to 25 percent slopes	3.0	0.7%
WmB	Wellsboro channery silt loam, 3 to 8 percent slopes, extremely stony	60.8	13.3%
WmD	Wellsboro channery silt loam, 8 to 25 percent slopes, extremely stony	10.6	2.3%
WrB	Wurtsboro channery loam, 3 to 8 percent slopes	4.7	1.0%
WrC	Wurtsboro channery loam, 8 to 15 percent slopes	3.0	0.6%
WtB	Wurtsboro extremely stony loam, 3 to 8 percent slopes	1.6	0.4%
WtD	Wurtsboro extremely stony loam, 8 to 25 percent slopes	4.9	1.1%
WyD	Wyoming gravelly loam, 15 to 25 percent slopes	0.8	0.2%
WyF	Wyoming gravelly loam, 25 to 60 percent slopes	0.7	0.1%
Totals for Area of Interest		456.6	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.

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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

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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.

Luzerne County, Pennsylvania

Ag—Alluvial land

Map Unit Setting

National map unit symbol: 9yff
Elevation: 200 to 1,000 feet
Mean annual precipitation: 30 to 45 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 130 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Fluents, (alluvial land), and similar soils: 80 percent
Holly and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluents, (alluvial Land)

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 6 inches: gravelly sandy loam
H2 - 6 to 42 inches: sandy loam
H3 - 42 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 5 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: About 18 to 48 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Holly

Setting

Landform: Depressions on flood plains, backswamps
Landform position (two-dimensional): Toeslope

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Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 28 inches: silt loam
H3 - 28 to 43 inches: silt loam
H4 - 43 to 60 inches: stratified gravelly sand to silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: FrequentNone
Frequency of ponding: Occasional
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

ArB—Arnot-Rock outcrop complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wbmw
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

Arnot, extremely stony, and similar soils: 60 percent
Rock outcrop: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arnot, Extremely Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder

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Landform position (three-dimensional): Mountainflank, mountaintop, interfluve, nose slope, 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

A - 1 to 3 inches: very channery silt loam

Bw1 - 3 to 12 inches: very channery silt loam

Bw2 - 12 to 17 inches: very channery silt loam

2R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent

Surface area covered with cobbles, stones or boulders: 10.0 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: F140XY023NY - Shallow Till Uplands

Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: No

Minor Components

Lordstown, very stony

Percent of map unit: 10 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Mountainflank, nose slope, crest

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

ArD—Arnot-Rock outcrop complex, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2wbn0

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

Arnot, rubbly, and similar soils: 50 percent

Rock outcrop: 35 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arnot, Rubbly

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Mountainflank, mountaintop, nose slope, side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Linear

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

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: very channery silt loam

Bw1 - 3 to 12 inches: very channery silt loam

Bw2 - 12 to 17 inches: very channery silt loam

2R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 8 to 25 percent

Surface area covered with cobbles, stones or boulders: 15.0 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F140XY023NY - Shallow Till Uplands
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Oquaga, rubbly

Percent of map unit: 10 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, upper third of mountainflank, nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Wellsboro, extremely stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

ASF—Arnot-Rock outcrop complex, steep

Map Unit Setting

National map unit symbol: 2wbn4
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

Arnot, rubbly, and similar soils: 50 percent
Rock outcrop: 30 percent
Minor components: 20 percent

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Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arnot, Rubbly

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank, mountaintop, free face, nose slope, side slope, free face

Down-slope shape: Linear

Across-slope shape: Linear

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

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: very channery silt loam

Bw1 - 3 to 12 inches: very channery silt loam

Bw2 - 12 to 17 inches: very channery silt loam

2R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 25 to 70 percent

Surface area covered with cobbles, stones or boulders: 15.0 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: F140XY023NY - Shallow Till Uplands

Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: No

Minor Components

Cadosia, very stony

Percent of map unit: 10 percent

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Linear

Custom Soil Resource Report

Hydric soil rating: No

Oquaga, rubbly

Percent of map unit: 10 percent

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountaintop, upper third of mountainflank, nose slope, side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Linear

Hydric soil rating: No

At—Atherton silt loam, gray subsoil variant

Map Unit Setting

National map unit symbol: 9yfl

Elevation: 50 to 1,500 feet

Mean annual precipitation: 30 to 56 inches

Mean annual air temperature: 45 to 54 degrees F

Frost-free period: 120 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Atherton, gray subsoil variant, and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atherton, Gray Subsoil Variant

Setting

Landform: Outwash terraces

Parent material: Loamy glaciofluvial deposits

Typical profile

H1 - 0 to 6 inches: silt loam

H2 - 6 to 37 inches: silt loam

H3 - 37 to 60 inches: stratified gravelly sand to silty clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: Occasional

Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Minor Components

Braceville

Percent of map unit: 10 percent
Landform: Outwash terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Bf—Basher soils

Map Unit Setting

National map unit symbol: 9yfm
Elevation: 400 to 840 feet
Mean annual precipitation: 30 to 45 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 120 to 187 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Basher and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Basher

Setting

Landform: Flood plains
Parent material: Reddish alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 37 inches: loam
H3 - 37 to 53 inches: fine sandy loam
H4 - 53 to 62 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)

Depth to water table: About 12 to 36 inches

Frequency of flooding: NoneOccasional

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C

Ecological site: F140XY014NY - Low Floodplain

Hydric soil rating: No

Minor Components

Holly

Percent of map unit: 10 percent

Landform: Depressions on flood plains, backswamps

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: Yes

BrC—Braceville gravelly loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9yfw

Elevation: 160 to 1,970 feet

Mean annual precipitation: 34 to 56 inches

Mean annual air temperature: 40 to 54 degrees F

Frost-free period: 100 to 175 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Braceville and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Braceville

Setting

Landform: Outwash terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Coarse-loamy outwash

Custom Soil Resource Report

Typical profile

H1 - 0 to 3 inches: gravelly loam
H2 - 3 to 30 inches: gravelly silt loam
H3 - 30 to 55 inches: very gravelly loam
H4 - 55 to 60 inches: stratified sand and gravel

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 18 to 30 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F140XY020NY - Dense Outwash
Hydric soil rating: No

Minor Components

Rexford, poorly drained

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

CF—Cut and fill land

Map Unit Setting

National map unit symbol: 9yg0
Elevation: 490 to 2,260 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 46 to 56 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, cut and fill, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Cut And Fill

Setting

Down-slope shape: Linear
Across-slope shape: Linear

Properties and qualities

Slope: 0 to 70 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

ChA—Chenango gravelly loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9yg1
Elevation: 600 to 1,800 feet
Mean annual precipitation: 30 to 56 inches
Mean annual air temperature: 40 to 54 degrees F
Frost-free period: 100 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chenango and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango

Setting

Landform: Outwash terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Gravelly outwash

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 32 inches: gravelly fine sandy loam
H3 - 32 to 72 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: A

Ecological site: F140XY021NY - Dry Outwash

Hydric soil rating: No

Minor Components

Braceville

Percent of map unit: 5 percent

Landform: Outwash terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Convex, linear

Across-slope shape: Concave, linear

Hydric soil rating: No

Rexford, somewhat poorly drained

Percent of map unit: 5 percent

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

ChB—Chenango gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9yg2

Elevation: 600 to 1,800 feet

Mean annual precipitation: 30 to 56 inches

Mean annual air temperature: 40 to 54 degrees F

Frost-free period: 100 to 180 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Chenango and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango

Setting

Landform: Outwash terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Custom Soil Resource Report

Parent material: Gravelly outwash

Typical profile

H1 - 0 to 8 inches: gravelly loam

H2 - 8 to 32 inches: gravelly fine sandy loam

H3 - 32 to 72 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: A

Ecological site: F140XY021NY - Dry Outwash

Hydric soil rating: No

Minor Components

Braceville

Percent of map unit: 5 percent

Landform: Outwash terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Convex, linear

Across-slope shape: Concave, linear

Hydric soil rating: No

Rexford, somewhat poorly drained

Percent of map unit: 5 percent

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

ChC—Chenango gravelly loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9yg3

Elevation: 600 to 1,800 feet

Mean annual precipitation: 30 to 56 inches

Mean annual air temperature: 40 to 54 degrees F

Custom Soil Resource Report

Frost-free period: 100 to 180 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Chenango and similar soils: 93 percent

Minor components: 7 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango

Setting

Landform: Outwash terraces

Landform position (three-dimensional): Riser

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Gravelly outwash

Typical profile

H1 - 0 to 8 inches: gravelly loam

H2 - 8 to 32 inches: gravelly fine sandy loam

H3 - 32 to 72 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: A

Ecological site: F140XY021NY - Dry Outwash

Hydric soil rating: No

Minor Components

Braceville

Percent of map unit: 5 percent

Landform: Outwash terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Convex, linear

Across-slope shape: Concave, linear

Hydric soil rating: No

Rexford, somewhat poorly drained

Percent of map unit: 2 percent

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Custom Soil Resource Report

Hydric soil rating: No

CIA—Chippewa silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2v32k
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

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

Description of Chippewa

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till dominated by siltstone, sandstone, and shale fragments

Typical profile

Ap - 0 to 7 inches: silt loam
Eg - 7 to 15 inches: channery silt loam
Bxg - 15 to 45 inches: channery silt loam
C - 45 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 8 to 20 inches to fragipan
Drainage class: 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 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F140XY016NY - Mineral Wetlands

Custom Soil Resource Report

Hydric soil rating: Yes

Minor Components

Chippewa, very poorly drained

Percent of map unit: 10 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Volusia

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluvium, base slope, side slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

CnB—Chippewa silt loam, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2vcjf

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

Chippewa, extremely stony, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chippewa, Extremely 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: Loamy till dominated by siltstone, sandstone, and shale fragments

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 5 inches: silt loam

Eg - 5 to 15 inches: channery silt loam

Custom Soil Resource Report

Bxg - 15 to 45 inches: channery silt loam

C - 45 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 8 percent

Surface area covered with cobbles, stones or boulders: 7.0 percent

Depth to restrictive feature: 8 to 20 inches to fragipan

Drainage class: 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 0 to 6 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: F140XY016NY - Mineral Wetlands

Hydric soil rating: Yes

Minor Components

Volusia, extremely stony

Percent of map unit: 8 percent

Landform: Mountains, hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluve, base slope, side slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Chippewa, extremely stony, very poorly drained

Percent of map unit: 7 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

DdD—DeKalb channery sandy loam, 8 to 25 percent slopes, rubbly

Map Unit Setting

National map unit symbol: 2w6ng

Elevation: 570 to 2,000 feet

Mean annual precipitation: 37 to 50 inches

Mean annual air temperature: 50 to 56 degrees F

Frost-free period: 155 to 185 days

Custom Soil Resource Report

Farmland classification: Not prime farmland

Map Unit Composition

Dekalb and similar soils: 75 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dekalb

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Upper third of mountainflank

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Parent material: Residuum weathered from sandstone and shale

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material

A - 1 to 4 inches: channery sandy loam

E - 4 to 7 inches: channery sandy loam

B_w - 7 to 26 inches: very channery sandy loam

C - 26 to 34 inches: extremely channery sandy loam

R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 8 to 25 percent

Surface area covered with cobbles, stones or boulders: 30.0 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (K_{sat}): Moderately low to high
(0.06 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Clymer

Percent of map unit: 10 percent

Landform: Mountain slopes

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Upper third of mountainflank

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Hydric soil rating: No

Lehew

Percent of map unit: 10 percent

Custom Soil Resource Report

Landform: Mountain slopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Hazleton

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

DEF—DeKalb extremely stony sandy loam, steep

Map Unit Setting

National map unit symbol: 9yg7
Elevation: 1,000 to 2,800 feet
Mean annual precipitation: 36 to 60 inches
Mean annual air temperature: 46 to 59 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

DeKalb and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of DeKalb

Setting

Landform: Mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 6 inches: channery sandy loam
H2 - 6 to 21 inches: channery sandy loam
H3 - 21 to 32 inches: very channery sandy loam
R4 - 32 to 35 inches: unweathered bedrock

Properties and qualities

Slope: 25 to 80 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained

Custom Soil Resource Report

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Hydric soil rating: No

GP—Gravel pits

Map Unit Setting

National map unit symbol: 1jrv7

Mean annual precipitation: 36 to 46 inches

Mean annual air temperature: 46 to 56 degrees F

Frost-free period: 135 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Pits, shale: 51 percent

Pits, gravel: 49 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits, Shale

Typical profile

C - 0 to 1 inches: channers

R - 1 to 2 inches: bedrock

Properties and qualities

Slope: 0 to 40 percent

Depth to restrictive feature: 0 to 2 inches to paralithic bedrock

Drainage class: Excessively drained

Runoff class: Medium

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8e

Hydric soil rating: No

Description of Pits, Gravel

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8e

Hydric soil rating: No

Ho—Holly silt loam

Map Unit Setting

National map unit symbol: 9ygb
Elevation: 200 to 1,000 feet
Mean annual precipitation: 30 to 45 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 120 to 187 days
Farmland classification: Not prime farmland

Map Unit Composition

Holly and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holly

Setting

Landform: Depressions on flood plains, backswamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 28 inches: silt loam
H3 - 28 to 43 inches: silt loam
H4 - 43 to 60 inches: stratified gravelly sand to silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: FrequentNone
Frequency of ponding: Occasional
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Linden

Percent of map unit: 5 percent
Hydric soil rating: No

LaC—Lackawanna channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w095
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: Farmland of statewide importance

Map Unit Composition

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

Description of Lackawanna

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy till derived mainly from reddish sandstone, siltstone, and shale

Typical profile

Ap - 0 to 7 inches: channery silt loam
Bw1 - 7 to 17 inches: channery silt 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: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 17 to 36 inches to fragipan
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 supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Wellsboro

Percent of map unit: 10 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Oquaga

Percent of map unit: 3 percent
Landform: Hills, mountains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Upper third of mountainflank, nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Morris

Percent of map unit: 2 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

LaD—Lackawanna channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2w097
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

Lackawanna and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lackawanna

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Linear

Across-slope shape: Linear

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

Typical profile

Ap - 0 to 7 inches: channery silt loam

Bw1 - 7 to 17 inches: channery silt 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 25 percent

Surface area covered with cobbles, stones or boulders: 0.0 percent

Depth to restrictive feature: 17 to 36 inches to fragipan

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 supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Wellsboro

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Interfluvial, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Oquaga

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Upper third of mountain flank, nose slope, side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Linear

Hydric soil rating: No

LcB—Lackawanna channery silt loam, 3 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w09m
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

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

Description of Lackawanna, Extremely Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
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 silt loam
Bw1 - 3 to 17 inches: channery silt 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: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 7.0 percent
Depth to restrictive feature: 17 to 36 inches to fragipan
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 supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s

Custom Soil Resource Report

Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Wellsboro, extremely stony

Percent of map unit: 10 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Morris, extremely stony

Percent of map unit: 3 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Oquaga, extremely stony

Percent of map unit: 2 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, upper third of mountainflank, nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

LcD—Lackawanna channery silt loam, 8 to 25 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w09n
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

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

Description of Lackawanna, Extremely Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex

Across-slope shape: Convex

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 silt loam

Bw1 - 3 to 17 inches: channery silt 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: 8 to 25 percent

Surface area covered with cobbles, stones or boulders: 7.0 percent

Depth to restrictive feature: 17 to 36 inches to fragipan

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 supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Oquaga, rubbly

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountaintop, upper third of mountainflank, nose slope, side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Linear

Hydric soil rating: No

Morris, extremely stony

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluve, side slope, base slope

Down-slope shape: Concave

Across-slope shape: Linear

Custom Soil Resource Report

Hydric soil rating: No

Wellsboro, extremely stony

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Interfluvium, head slope, side slope

Down-slope shape: Concave, convex

Across-slope shape: Linear, convex

Hydric soil rating: No

LEF—Lackawanna and Bath soils, steep, extremely stony

Map Unit Setting

National map unit symbol: 2v31t

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

Lackawanna, extremely stony, and similar soils: 60 percent

Bath, extremely stony, and similar soils: 20 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lackawanna, Extremely Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluvium, side slope

Down-slope shape: Convex

Across-slope shape: Convex

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 silt loam

Bw1 - 3 to 17 inches: channery silt 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: 25 to 50 percent

Surface area covered with cobbles, stones or boulders: 7.0 percent

Depth to restrictive feature: 17 to 36 inches to fragipan

Drainage class: Well drained

Custom Soil Resource Report

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 supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: C

Hydric soil rating: No

Description of Bath, Extremely Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Linear

Across-slope shape: Linear

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

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: channery silt loam

Bw1 - 3 to 15 inches: channery silt loam

Bw2 - 15 to 25 inches: channery loam

E - 25 to 29 inches: channery loam

Bx - 29 to 52 inches: very channery silt loam

C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 25 to 45 percent

Surface area covered with cobbles, stones or boulders: 7.0 percent

Depth to restrictive feature: 26 to 38 inches to fragipan

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 24 to 36 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: C

Ecological site: F140XY030NY - Well Drained Dense Till

Hydric soil rating: No

Minor Components

Wellsboro, extremely stony

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Arnot, extremely stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountaintop, free face, mountainflank, nose slope, side slope, free face
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Oquaga, extremely stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Upper third of mountainflank, nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Lordstown, very stony

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, nose slope, side slope, free face
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ln—Linden soils

Map Unit Setting

National map unit symbol: 9ygv
Elevation: 200 to 1,000 feet
Mean annual precipitation: 30 to 45 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 120 to 187 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Linden and similar soils: 92 percent

Custom Soil Resource Report

Minor components: 8 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linden

Setting

Landform: Flood plains

Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 9 inches: silt loam

H2 - 9 to 45 inches: silt loam

H3 - 45 to 60 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: About 36 to 72 inches

Frequency of flooding: NoneOccasional

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Holly

Percent of map unit: 8 percent

Landform: Depressions on flood plains, backswamps

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: Yes

McB—Mardin channery silt loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2srj1

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

Custom Soil Resource Report

Farmland classification: Not prime farmland

Map Unit Composition

Mardin, very stony, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy till

Typical profile

A - 0 to 4 inches: channery silt loam

BE - 4 to 12 inches: channery silt loam

Bw1 - 12 to 16 inches: channery silt loam

Bw2 - 16 to 20 inches: channery silt loam

Bx1 - 20 to 36 inches: channery silt loam

Bx2 - 36 to 57 inches: channery silt loam

C - 57 to 72 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent

Surface area covered with cobbles, stones or boulders: 1.6 percent

Depth to restrictive feature: 14 to 26 inches to fragipan

Drainage class: Moderately 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 13 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 6 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Mountaintop, nose slope, crest

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Volusia, very stony

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Mountains, hills
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Side slope, interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chippewa, very stony

Percent of map unit: 4 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

McD—Mardin channery silt loam, 8 to 25 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2v2zx
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

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

Description of Mardin, Very Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, head slope, side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

A - 0 to 4 inches: channery silt loam
BE - 4 to 12 inches: channery silt loam
Bw1 - 12 to 16 inches: channery silt loam
Bw2 - 16 to 20 inches: channery silt loam
Bx1 - 20 to 36 inches: channery silt loam
Bx2 - 36 to 57 inches: channery silt loam
C - 57 to 72 inches: channery silt loam

Custom Soil Resource Report

Properties and qualities

Slope: 8 to 25 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately 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 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Lordstown, very stony

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Volusia, very stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath, very stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mg—Mine dump

Map Unit Setting

National map unit symbol: 9yh6
Mean annual precipitation: 34 to 51 inches
Mean annual air temperature: 40 to 50 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Dumps, mine (unstable fill): 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dumps, Mine (unstable Fill)

Setting

Parent material: Coal extraction mine spoil

Typical profile

H1 - 0 to 6 inches: very channery silt loam
H2 - 6 to 60 inches: very channery silt loam

Properties and qualities

Slope: 0 to 50 percent
Depth to restrictive feature: 20 to 60 inches to lithic bedrock
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 6.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydric soil rating: No

Mh—Mine dump, burned

Map Unit Setting

National map unit symbol: 9yh7
Elevation: 330 to 2,460 feet
Mean annual precipitation: 34 to 51 inches
Mean annual air temperature: 40 to 50 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Dumps, burned mine, and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dumps, Burned Mine

Setting

Parent material: Coal extraction mine spoil

Typical profile

H1 - 0 to 6 inches: very channery silt loam

H2 - 6 to 60 inches: very channery silt loam

Properties and qualities

Slope: 0 to 50 percent

Depth to restrictive feature: 20 to 60 inches to lithic bedrock

Runoff class: Medium

*Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 6.00 in/hr)*

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A

Hydric soil rating: No

Mm—Mine wash

Map Unit Setting

National map unit symbol: 9yh8

Elevation: 50 to 500 feet

Mean annual precipitation: 33 to 51 inches

Mean annual air temperature: 40 to 50 degrees F

Frost-free period: 100 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Dumps, mine wash: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dumps, Mine Wash

Setting

Parent material: Coal extraction mine spoil

Typical profile

H1 - 0 to 6 inches: channery sandy loam

Custom Soil Resource Report

H2 - 6 to 60 inches: very channery silt loam

Properties and qualities

Slope: 0 to 50 percent

Depth to restrictive feature: 24 to 60 inches to lithic bedrock

Runoff class: Medium

*Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 6.00 in/hr)*

Depth to water table: About 24 to 72 inches

Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydric soil rating: No

Minor Components

Aqepts

Percent of map unit: 5 percent

Landform: Depressions

Hydric soil rating: Yes

MoB—Morris channery silt loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2vclq

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: Farmland of statewide importance

Map Unit Composition

Morris and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Morris

Setting

Landform: Mountains, hills

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

Ap - 0 to 8 inches: channery silt loam

Bw - 8 to 12 inches: channery silt loam

Custom Soil Resource Report

Eg - 12 to 16 inches: channery silt loam
Bx - 16 to 60 inches: channery silt loam
C - 60 to 72 inches: channery loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
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 supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Norwich

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
Hydric soil rating: Yes

Wellsboro

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

MsB—Morris channery silt loam, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2vxct
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

Morris, extremely stony, and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Morris, Extremely Stony

Setting

Landform: Mountains, hills

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: channery silt loam

Bw - 5 to 12 inches: channery silt loam

Eg - 12 to 16 inches: channery silt loam

Bx - 16 to 60 inches: channery silt loam

C - 60 to 72 inches: channery loam

Properties and qualities

Slope: 0 to 8 percent

Surface area covered with cobbles, stones or boulders: 7.0 percent

Depth to restrictive feature: 10 to 22 inches to fragipan

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 supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Norwich, extremely 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

Hydric soil rating: Yes

Wellsboro, extremely stony

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Shoulder, backslope

Custom Soil Resource Report

Landform position (three-dimensional): Interfluve, head slope, side slope
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Mu—Muck

Map Unit Setting

National map unit symbol: 9yhf
Elevation: 590 to 2,000 feet
Mean annual precipitation: 34 to 51 inches
Mean annual air temperature: 40 to 50 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown, muck, and similar soils: 90 percent
Paupack, mucky peat (shallow), and similar soils: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown, Muck

Setting

Landform: Swamps
Parent material: Highly decomposed organic material

Typical profile

Oe - 0 to 6 inches: mucky peat
Oa - 6 to 72 inches: muck

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 6.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Description of Paupack, Mucky Peat (shallow)

Setting

Landform: Swamps

Parent material: Woody organic material over gravelly alluvium

Typical profile

Oe - 0 to 3 inches: mucky peat

Oa1 - 3 to 26 inches: muck

Oa2 - 26 to 36 inches: very stony muck

Cg - 36 to 70 inches: extremely stony sandy loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)

Depth to water table: About 0 to 6 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Available water supply, 0 to 60 inches: Very high (about 17.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: B/D

Ecological site: F140XY012PA - Organic Wetlands

Hydric soil rating: Yes

OIB—Oquaga and Lordstown channery silt loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9yhh

Elevation: 600 to 1,800 feet

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 52 degrees F

Frost-free period: 110 to 180 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Oquaga and similar soils: 65 percent

Lordstown and similar soils: 35 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oquaga

Setting

Landform: Hillslopes

Custom Soil Resource Report

Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Reddish ablation till derived from sandstone and siltstone

Typical profile

Ap - 0 to 7 inches: channery silt loam
Bw - 7 to 30 inches: very channery loam
R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Description of Lordstown

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Till derived from sedimentary rock

Typical profile

A - 0 to 7 inches: channery silt loam
Bw - 7 to 26 inches: channery silt loam
C - 26 to 30 inches: very channery loam
2R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

OIC—Oquaga and Lordstown channery silt loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9yhj
Elevation: 600 to 1,800 feet
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Oquaga and similar soils: 65 percent
Lordstown and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oquaga

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Reddish ablation till derived from sandstone and siltstone

Typical profile

Ap - 0 to 7 inches: channery silt loam
Bw - 7 to 30 inches: very channery loam
R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Description of Lordstown

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear

Typical profile

A - 0 to 7 inches: channery silt loam
Bw - 7 to 26 inches: channery silt loam
C - 26 to 30 inches: very channery loam
2R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

OID—Oquaga and Lordstown channery silt loams, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9yhk
Elevation: 600 to 1,800 feet
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Oquaga and similar soils: 65 percent

Lordstown and similar soils: 35 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oquaga

Setting

Landform: Hillslopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Reddish ablation till derived from sandstone and siltstone

Typical profile

Ap - 0 to 7 inches: channery silt loam

Bw - 7 to 30 inches: very channery loam

R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)*

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: F140XY027NY - Well Drained Till Uplands

Hydric soil rating: No

Description of Lordstown

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Typical profile

A - 0 to 7 inches: channery silt loam

Bw - 7 to 26 inches: channery silt loam

C - 26 to 30 inches: very channery loam

2R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Custom Soil Resource Report

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Hydric soil rating: No

OpB—Oquaga and Lordstown extremely stony silt loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9yh1

Elevation: 700 to 1,800 feet

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 52 degrees F

Frost-free period: 110 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Oquaga and similar soils: 65 percent

Lordstown and similar soils: 35 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oquaga

Setting

Landform: Hillslopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Reddish ablation till derived from sandstone and siltstone

Typical profile

A - 0 to 7 inches: channery silt loam

Bw - 7 to 30 inches: very channery silt loam

R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent

Surface area covered with cobbles, stones or boulders: 15.0 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Custom Soil Resource Report

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: C

Ecological site: F140XY027NY - Well Drained Till Uplands

Hydric soil rating: No

Description of Lordstown

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Typical profile

A - 0 to 7 inches: channery silt loam

Bw - 7 to 26 inches: channery silt loam

C - 26 to 30 inches: very channery loam

2R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: C

Hydric soil rating: No

OpD—Oquaga and Lordstown extremely stony silt loams, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9yhm
Elevation: 700 to 1,800 feet
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Oquaga and similar soils: 60 percent
Lordstown and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oquaga

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Reddish ablation till derived from sandstone and siltstone

Typical profile

A - 0 to 7 inches: channery silt loam
Bw - 7 to 30 inches: very channery silt loam
R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 25 percent
Surface area covered with cobbles, stones or boulders: 15.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Description of Lordstown

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Typical profile

A - 0 to 7 inches: channery silt loam

Bw - 7 to 26 inches: channery silt loam

C - 26 to 30 inches: very channery loam

2R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 25 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: C

Hydric soil rating: No

OXF—Oquaga and Lordstown extremely stony silt loams steep

Map Unit Setting

National map unit symbol: 9yhg

Elevation: 700 to 1,800 feet

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 52 degrees F

Frost-free period: 110 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Oquaga and similar soils: 60 percent

Lordstown and similar soils: 40 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oquaga

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Reddish ablation till derived from sandstone and siltstone

Typical profile

A - 0 to 7 inches: channery silt loam
Bw - 7 to 30 inches: very channery silt loam
R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 25 to 50 percent
Surface area covered with cobbles, stones or boulders: 15.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F140XY027NY - Well Drained Till Uplands
Hydric soil rating: No

Description of Lordstown

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear

Typical profile

A - 0 to 7 inches: channery silt loam
Bw - 7 to 26 inches: channery silt loam
C - 26 to 30 inches: very channery loam
2R - 30 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 25 to 50 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: C

Hydric soil rating: No

Ps—Pope soils

Map Unit Setting

National map unit symbol: 9yht

Elevation: 160 to 1,970 feet

Mean annual precipitation: 30 to 51 inches

Mean annual air temperature: 40 to 54 degrees F

Frost-free period: 100 to 187 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Pope and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pope

Setting

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Coarse-loamy alluvium derived from sandstone and siltstone

Typical profile

H1 - 0 to 10 inches: silt loam

H2 - 10 to 42 inches: fine sandy loam

H3 - 42 to 62 inches: sandy loam

Properties and qualities

Slope: 0 to 4 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Custom Soil Resource Report

Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: B

Ecological site: F140XY013PA - High Floodplain

Hydric soil rating: No

Minor Components

Holly

Percent of map unit: 5 percent

Landform: Depressions on flood plains, backswamps

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: Yes

Qu—Quarries and mines

Map Unit Setting

National map unit symbol: 9yhn

Mean annual precipitation: 34 to 51 inches

Mean annual air temperature: 40 to 50 degrees F

Frost-free period: 100 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Pits, (quarries): 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

RdA—Rexford loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9yhv

Elevation: 590 to 1,970 feet

Mean annual precipitation: 34 to 51 inches

Mean annual air temperature: 40 to 50 degrees F

Frost-free period: 100 to 160 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Rexford, somewhat poorly drained, and similar soils: 60 percent

Rexford, poorly drained, and similar soils: 40 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rexford, Somewhat Poorly Drained

Setting

Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy outwash derived from sandstone and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bw - 8 to 18 inches: silt loam
Bx - 18 to 40 inches: gravelly loam
2C - 40 to 63 inches: Error

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 to 24 inches to fragipan
Drainage class: Somewhat poorly drained
Runoff class: Very high
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 2 to 10 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY020NY - Dense Outwash
Hydric soil rating: No

Description of Rexford, Poorly Drained

Setting

Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy outwash derived from sandstone and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bw - 8 to 18 inches: silt loam
Bx - 18 to 40 inches: gravelly loam
2C - 40 to 63 inches: Error

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 to 24 inches to fragipan
Drainage class: Poorly drained
Runoff class: Negligible
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 inches
Frequency of flooding: None
Frequency of ponding: None

Custom Soil Resource Report

Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D

Ecological site: F140XY016NY - Mineral Wetlands

Hydric soil rating: Yes

RdB—Rexford loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9yhw

Elevation: 590 to 1,970 feet

Mean annual precipitation: 34 to 51 inches

Mean annual air temperature: 40 to 50 degrees F

Frost-free period: 100 to 160 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Rexford, poorly drained, and similar soils: 80 percent

Rexford, somewhat poorly drained, and similar soils: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rexford, Poorly Drained

Setting

Landform: Outwash terraces

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Coarse-loamy outwash derived from sandstone and shale

Typical profile

Ap - 0 to 8 inches: silt loam

Bw - 8 to 18 inches: loam

Bx - 18 to 40 inches: gravelly loam

2C - 40 to 63 inches: Error

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 15 to 24 inches to fragipan

Drainage class: Poorly drained

Runoff class: Negligible

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 8 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: Yes

Description of Rexford, Somewhat Poorly Drained

Setting

Landform: Outwash terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy outwash derived from sandstone and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bw - 8 to 18 inches: gravelly sandy loam
Bx - 18 to 40 inches: gravelly sandy loam
2C - 40 to 63 inches: Error

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 15 to 24 inches to fragipan
Drainage class: Somewhat poorly drained
Runoff class: Negligible
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 2 to 10 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY020NY - Dense Outwash
Hydric soil rating: No

Sm—Strip mine

Map Unit Setting

National map unit symbol: 9yh
Mean annual precipitation: 34 to 51 inches
Mean annual air temperature: 40 to 50 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits, strip mine: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits, Strip Mine

Setting

Parent material: Coal extraction mine spoil

Typical profile

H1 - 0 to 6 inches: very channery sandy loam

H2 - 6 to 60 inches: very channery silt loam

Properties and qualities

Slope: 0 to 50 percent

Depth to restrictive feature: 20 to 60 inches to lithic bedrock

Runoff class: Medium

*Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 6.00 in/hr)*

Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydric soil rating: No

VoB—Volusia channery silt loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2srff

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: Farmland of statewide importance

Map Unit Composition

Volusia and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluve, base slope, side slope

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Loamy till derived from interbedded sedimentary rock

Custom Soil Resource Report

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw - 9 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
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
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Chippewa

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
Hydric soil rating: Yes

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluvium, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

VrB—Volusia channery silt loam, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2srfw
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

Volusia, extremely stony, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia, Extremely Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

A - 0 to 4 inches: channery silt loam
Bw - 4 to 15 inches: channery silt loam
Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 7.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
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
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

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

Custom Soil Resource Report

Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Chippewa, extremely 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
Hydric soil rating: Yes

Mardin, extremely stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

VrC—Volusia channery silt loam, 8 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2srfy
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

Volusia, extremely stony, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia, Extremely Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

A - 0 to 4 inches: channery silt loam
Bw - 4 to 15 inches: channery silt loam

Custom Soil Resource Report

Eg - 15 to 17 inches: channery silt loam
Bx1 - 17 to 29 inches: channery loam
Bx2 - 29 to 54 inches: channery loam
C - 54 to 72 inches: channery silt loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 7.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
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
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F140XY024NY - Moist Dense Till
Hydric soil rating: No

Minor Components

Mardin, extremely stony

Percent of map unit: 6 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chippewa, extremely stony

Percent of map unit: 4 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

W—Water

Map Unit Setting

National map unit symbol: 9yj6
Mean annual precipitation: 34 to 51 inches
Mean annual air temperature: 40 to 50 degrees F

Custom Soil Resource Report

Frost-free period: 100 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Bodies of water 2 to: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Wa—Wayland silt loam

Map Unit Setting

National map unit symbol: 9yj7
Elevation: 200 to 1,500 feet
Mean annual precipitation: 30 to 56 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Wayland and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayland

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Recent alluvium

Typical profile

H1 - 0 to 3 inches: silt loam
H2 - 3 to 42 inches: silty clay loam
H3 - 42 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
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 inches
Frequency of flooding: FrequentNone
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

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

Hydric soil rating: Yes

Minor Components

Braceville

Percent of map unit: 5 percent

Hydric soil rating: No

WeB—Weikert and Klinesville channery silt loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9yj8

Elevation: 300 to 1,600 feet

Mean annual precipitation: 36 to 50 inches

Mean annual air temperature: 46 to 57 degrees F

Frost-free period: 120 to 200 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Weikert and similar soils: 60 percent

Klinesville and similar soils: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weikert

Setting

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from shale and siltstone

Typical profile

H1 - 0 to 8 inches: channery silt loam

H2 - 8 to 17 inches: very channery silt loam

H3 - 17 to 21 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Klinesville

Setting

Landform: Valleys, ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from siltstone

Typical profile

H1 - 0 to 2 inches: channery silt loam
H2 - 2 to 13 inches: channery silt loam
H3 - 13 to 15 inches: channery silt loam
R - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

WeD—Weikert and Klinesville channery silt loams, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9yjb
Elevation: 300 to 1,600 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Weikert and similar soils: 60 percent

Klinesville and similar soils: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weikert

Setting

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from shale and siltstone

Typical profile

H1 - 0 to 8 inches: channery silt loam

H2 - 8 to 17 inches: very channery silt loam

H3 - 17 to 21 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Hydric soil rating: No

Description of Klinesville

Setting

Landform: Valleys, ridges

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from siltstone

Typical profile

H1 - 0 to 2 inches: channery silt loam

H2 - 2 to 13 inches: channery silt loam

H3 - 13 to 15 inches: channery silt loam

R - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Custom Soil Resource Report

Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

WIB—Wellsboro channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2vck5
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: All areas are prime farmland

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: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till from reddish sandstone, siltstone, and shale

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bw - 8 to 22 inches: channery silt loam
Bx - 22 to 55 inches: channery loam
C - 55 to 72 inches: very channery loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 30 inches to fragipan
Drainage class: Moderately well drained

Custom Soil Resource Report

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 13 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Oquaga

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Upper third of mountainflank, nose slope, crest

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Morris

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluve, base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Lackawanna

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

WIC—Wellsboro channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2vck6

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

Custom Soil Resource Report

Farmland classification: Farmland of statewide importance

Map Unit Composition

Wellsboro and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellsboro

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Linear

Across-slope shape: Linear

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

Typical profile

Ap - 0 to 8 inches: channery silt loam

Bw - 8 to 22 inches: channery silt loam

Bx - 22 to 55 inches: channery loam

C - 55 to 72 inches: very channery loam

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 0.0 percent

Depth to restrictive feature: 14 to 30 inches to fragipan

Drainage class: Moderately 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 13 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Lackawanna

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Morris

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluve, base slope

Custom Soil Resource Report

Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

WID—Wellsboro channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2vck7
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

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: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till from reddish sandstone, siltstone, and shale

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bw - 8 to 22 inches: channery silt loam
Bx - 22 to 55 inches: channery loam
C - 55 to 72 inches: very channery loam

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 30 inches to fragipan
Drainage class: Moderately 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 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

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

Custom Soil Resource Report

Hydric soil rating: No

Minor Components

Morris

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Oquaga

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Upper third of mountainflank, nose slope, side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Linear

Hydric soil rating: No

Lackawanna

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

WmB—Wellsboro channery silt loam, 3 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2vckl

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

Wellsboro, extremely stony, and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellsboro, Extremely Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex

Across-slope shape: Convex

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

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: channery silt loam

Bw - 3 to 22 inches: channery silt loam

Bx - 22 to 55 inches: channery loam

C - 55 to 72 inches: very channery loam

Properties and qualities

Slope: 3 to 8 percent

Surface area covered with cobbles, stones or boulders: 7.0 percent

Depth to restrictive feature: 14 to 30 inches to fragipan

Drainage class: Moderately 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 13 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Oquaga, extremely stony

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountaintop, upper third of mountainflank, nose slope, side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Linear

Hydric soil rating: No

Morris, extremely stony

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluve, base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

WmD—Wellsboro channery silt loam, 8 to 25 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2vckp
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

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

Description of Wellsboro, Extremely Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, head slope, side slope
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Parent material: Loamy till from reddish sandstone, siltstone, and shale

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: channery silt loam
Bw - 3 to 22 inches: channery silt loam
Bx - 22 to 55 inches: channery loam
C - 55 to 72 inches: very channery loam

Properties and qualities

Slope: 8 to 25 percent
Surface area covered with cobbles, stones or boulders: 7.0 percent
Depth to restrictive feature: 14 to 30 inches to fragipan
Drainage class: Moderately 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 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Morris, extremely stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lackawanna, extremely stony

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Oquaga, extremely stony

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, upper third of mountainflank, nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

WrB—Wurtsboro channery loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9yjj
Elevation: 800 to 1,800 feet
Mean annual precipitation: 30 to 46 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 110 to 150 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Wurtsboro

Setting

Landform: Hills
Landform position (two-dimensional): Footslope

Custom Soil Resource Report

Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

H1 - 0 to 8 inches: channery loam
H2 - 8 to 21 inches: gravelly loam
H3 - 21 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 17 to 28 inches to fragipan
Drainage class: Moderately well drained
Runoff class: High
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 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Swartswood

Percent of map unit: 10 percent
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

WrC—Wurtsboro channery loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9yjk
Elevation: 800 to 1,800 feet
Mean annual precipitation: 30 to 46 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 110 to 150 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wurtsboro and similar soils: 87 percent

Minor components: 13 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wurtsboro

Setting

Landform: Hills

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Typical profile

H1 - 0 to 8 inches: channery loam

H2 - 8 to 21 inches: gravelly loam

H3 - 21 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 17 to 28 inches to fragipan

Drainage class: Moderately well drained

Runoff class: High

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 18 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Swartswood

Percent of map unit: 10 percent

Hydric soil rating: No

Chippewa

Percent of map unit: 3 percent

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

WtB—Wurtsboro extremely stony loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9yjm
Elevation: 590 to 1,970 feet
Mean annual precipitation: 30 to 51 inches
Mean annual air temperature: 40 to 55 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Wurtsboro

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

H1 - 0 to 8 inches: channery loam
H2 - 8 to 21 inches: gravelly loam
H3 - 21 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 17 to 28 inches to fragipan
Drainage class: Moderately well drained
Runoff class: High
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 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Swartwood

Percent of map unit: 10 percent
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

WtD—Wurtsboro extremely stony loam, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9yjn
Elevation: 330 to 2,460 feet
Mean annual precipitation: 30 to 70 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Wurtsboro

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

H1 - 0 to 8 inches: channery loam
H2 - 8 to 21 inches: gravelly loam
H3 - 21 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 25 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 17 to 28 inches to fragipan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Custom Soil Resource Report

Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Swartswood

Percent of map unit: 10 percent
Hydric soil rating: No

Chippewa

Percent of map unit: 3 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Volusia, rubbly

Percent of map unit: 2 percent
Landform: Hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

WyD—Wyoming gravelly loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9yjp
Elevation: 400 to 1,800 feet
Mean annual precipitation: 42 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 110 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Wyoming and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wyoming

Setting

Landform: Terraces

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Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Water sorted gravelly outwash derived from sandstone and siltstone and/or shale

Typical profile

H1 - 0 to 6 inches: gravelly loam

H2 - 6 to 22 inches: very gravelly sandy loam

H3 - 22 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Hydric soil rating: No

WyF—Wyoming gravelly loam, 25 to 60 percent slopes

Map Unit Setting

National map unit symbol: 9yjq

Elevation: 400 to 1,800 feet

Mean annual precipitation: 42 to 50 inches

Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 110 to 145 days

Farmland classification: Not prime farmland

Map Unit Composition

Wyoming and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wyoming

Setting

Landform: Terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Linear

Custom Soil Resource Report

Parent material: Water sorted gravelly outwash derived from sandstone and siltstone and/or shale

Typical profile

H1 - 0 to 6 inches: gravelly loam

H2 - 6 to 22 inches: very gravelly sandy loam

H3 - 22 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 25 to 45 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A

Hydric soil rating: No

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ATTACHMENT 3
E&SC AND SR PLAN BMP DESIGN
WORKSHEETS AND CALCULATIONS
(See ESCP Application)

ATTACHMENT 4
OFFSITE DISCHARGE REPORT
(See ESCP Application)