

## Appendix B: Agency Coordination



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Pennsylvania Ecological Services Field Office  
110 Radnor Road Suite 101  
State College, PA 16801-7987  
Phone: (814) 234-4090 Fax: (814) 234-0748

In Reply Refer To:

January 23, 2024

Project Code: 2024-0039417

Project Name: Moscow Sewer Authority Church Street Sanitary Sewer Extension

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see [Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service \(fws.gov\)](#).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

## **OFFICIAL SPECIES LIST**

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Pennsylvania Ecological Services Field Office**

110 Radnor Road Suite 101

State College, PA 16801-7987

(814) 234-4090

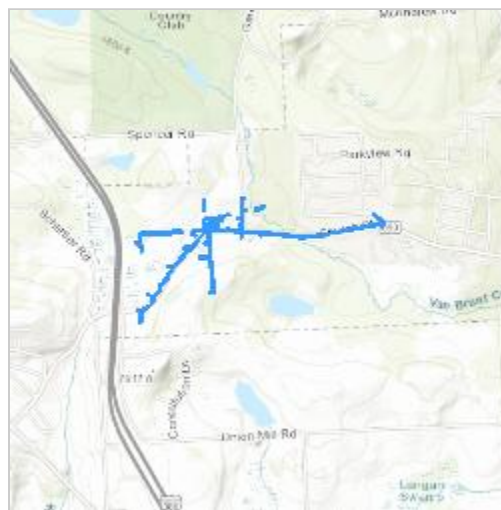
## PROJECT SUMMARY

**Project Code:** 2024-0039417  
**Project Name:** Moscow Sewer Authority Church Street Sanitary Sewer Extension  
**Project Type:** Wastewater Pipeline - New Constr - Below Ground  
**Project Description:** The purpose of the Moscow Sewer Authority Church Street Sanitary Sewer Extension is to extend the service area to supplant existing, malfunctioning on-lot sewage disposal systems. The proposed extension would service existing residents and commercial properties of Moscow Borough, totaling approximately 46.5 EDUs.

The proposed Moscow Sewer Authority Church Street Sanitary Sewer Extension would connect to the existing Moscow Borough Central Sanitary Sewer System at its current terminus, which is a sanitary sewer manhole near the Moscow Elementary School on Church Street (S. R. 690). The proposed sanitary sewer would run approximately 6,000 feet from the manhole connection west to the Moscow Borough line. The service area would include Church Street and Gardner Road where the sanitary sewer would also be extended, as well as main and lateral extensions to private properties.

### Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@41.34004335,-75.54423527493515,14z>



Counties: Lackawanna County, Pennsylvania

## ENDANGERED SPECIES ACT SPECIES

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

### MAMMALS

| NAME                                                                                                                                                                                                                             | STATUS                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Northern Long-eared Bat <i>Myotis septentrionalis</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a> | Endangered             |
| Tricolored Bat <i>Perimyotis subflavus</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a>          | Proposed<br>Endangered |

### INSECTS

| NAME                                                                                                                                                                                                                 | STATUS    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Monarch Butterfly <i>Danaus plexippus</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a> | Candidate |

### FLOWERING PLANTS

| NAME                                                                                                                                                                                                                                          | STATUS     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Northeastern Bulrush <i>Scirpus ancistrochaetus</i><br>Population:<br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/6715">https://ecos.fws.gov/ecp/species/6715</a> | Endangered |

## **CRITICAL HABITATS**

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

## **IPAC USER CONTACT INFORMATION**

Agency: Army Corps of Engineers  
Name: Grant Cunningham  
Address: 2 Hopkins Plaza  
Address Line 2: 10-E-27  
City: Baltimore  
State: MD  
Zip: 21218  
Email: grant.m.cunningham@usace.army.mil  
Phone: 4107905628



## 1. PROJECT INFORMATION

Project Name: **Moscow Sewer Authority Church Street Sanitary Sewer Extension**

Date of Review: **1/23/2024 12:42:36 PM**

Project Category: **Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Sewer line (new - construction in new location)**

Project Area: **6.83 acres**

County(s): **Lackawanna**

Township/Municipality(s): **MOSCOW**

ZIP Code:

Quadrangle Name(s): **MOSCOW**

Watersheds HUC 8: **Upper Susquehanna-Lackawanna**

Watersheds HUC 12: **Roaring Brook**

Decimal Degrees: **41.337068, -75.549151**

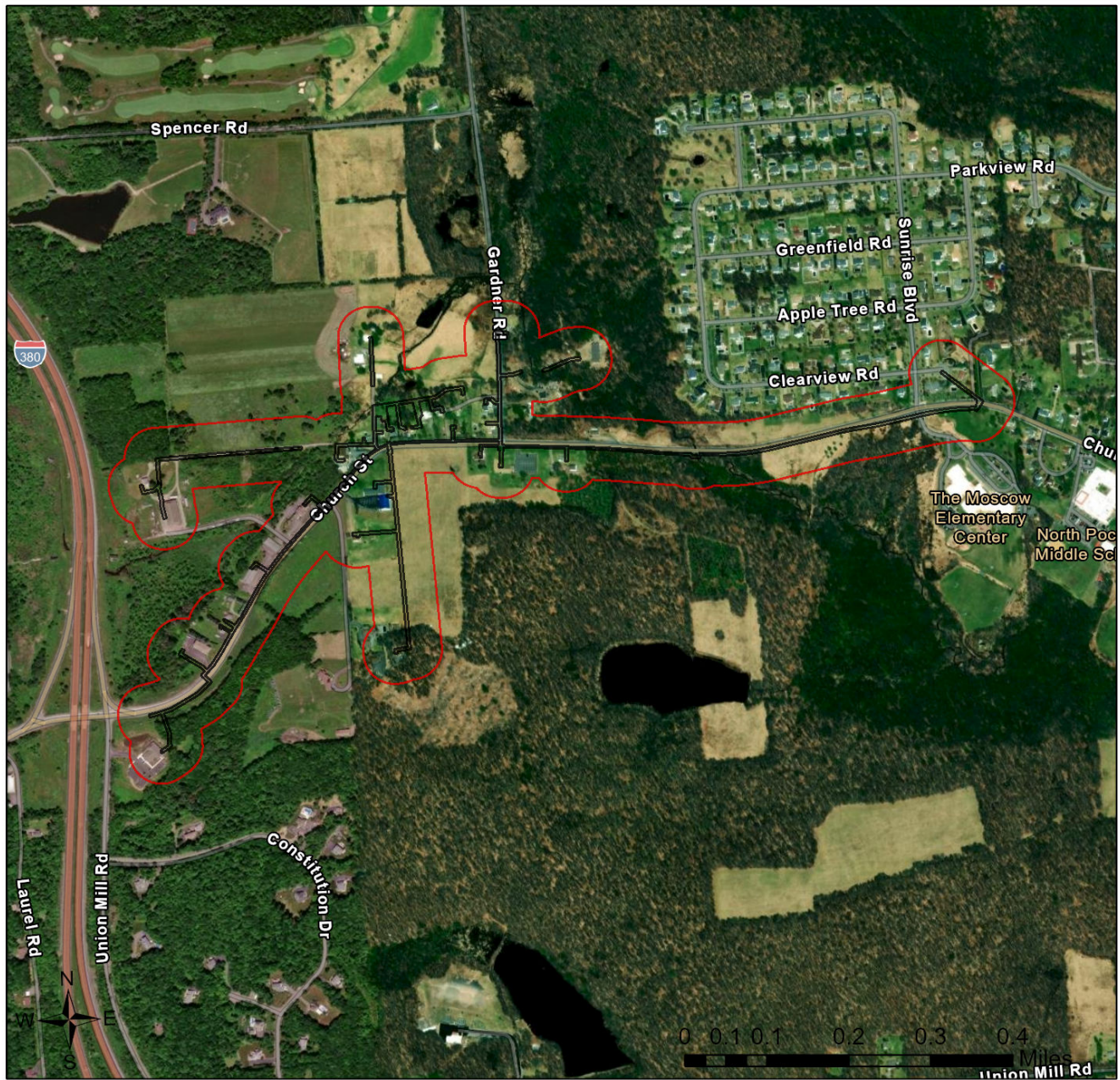
Degrees Minutes Seconds: **41° 20' 13.4449" N, 75° 32' 56.9444" W**



## 2. SEARCH RESULTS

| Agency                                              | Results                     | Response                                               |
|-----------------------------------------------------|-----------------------------|--------------------------------------------------------|
| PA Game Commission                                  | <b>Conservation Measure</b> | <b>No Further Review Required, See Agency Comments</b> |
| PA Department of Conservation and Natural Resources | No Known Impact             | No Further Review Required                             |
| PA Fish and Boat Commission                         | No Known Impact             | No Further Review Required                             |
| U.S. Fish and Wildlife Service                      | <b>Avoidance Measure</b>    | <b>See Agency Response</b>                             |

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

# Moscow Sewer Authority Church Street Sanitary Sewer Extension

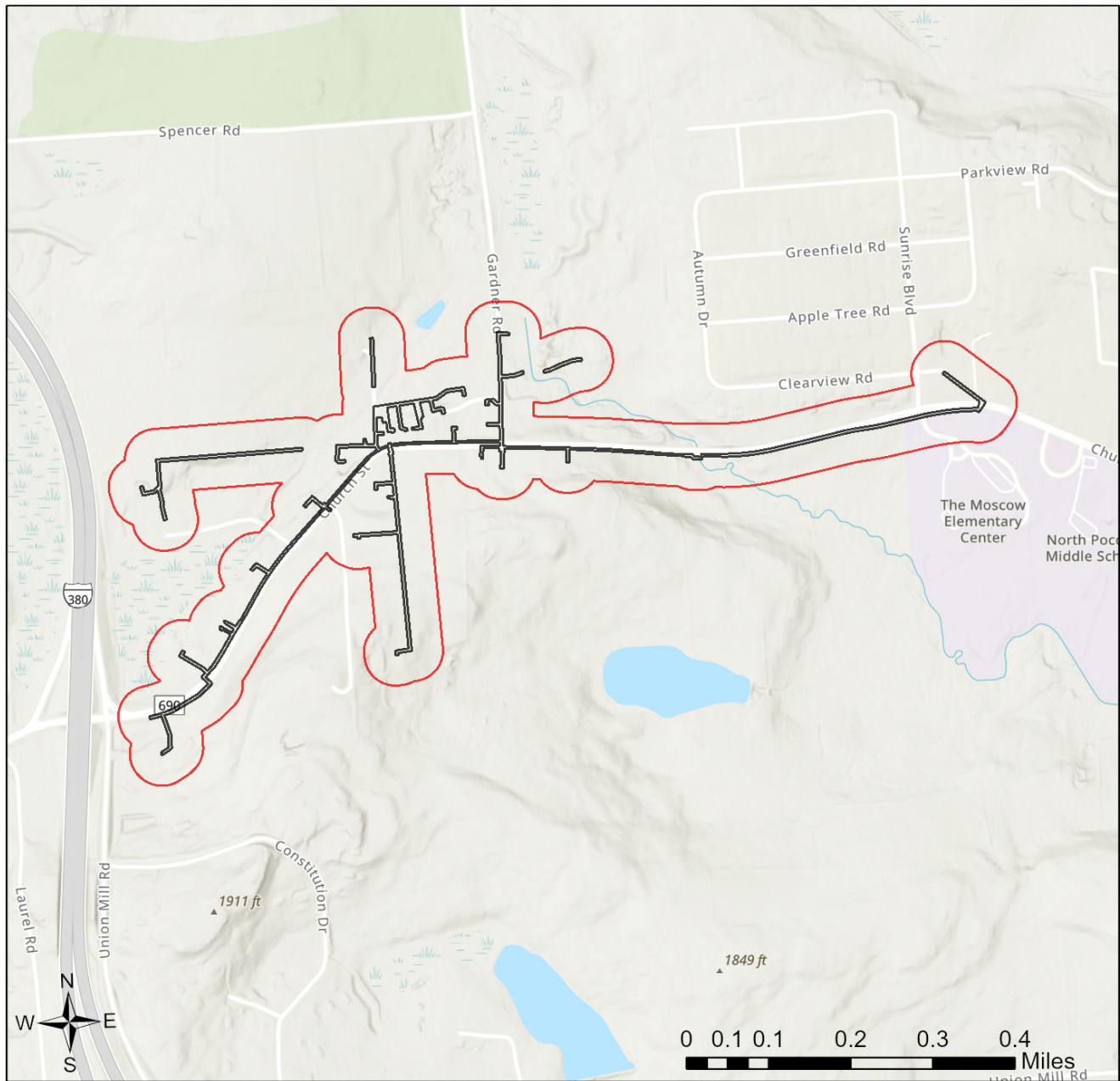




-  Buffered Project Boundary
-  Project Boundary



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

# Moscow Sewer Authority Church Street Sanitary Sewer Extension



-  Buffered Project Boundary
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## RESPONSE TO QUESTION(S) ASKED

**Q1:** Is tree removal, tree cutting or forest clearing necessary to implement all aspects of this project?

**Your answer is:** Yes

**Q2:** How many acres of woodland, forest, forested fencerows and trees will be cut, cleared, removed, disturbed or flooded (inundated) as a result of carrying out all aspects or phases of this project? [Round acreages UP to the nearest acre (e.g., 0.2 acres = 1 acre).]

**Your answer is:** 1 to 10 acres

### 3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

#### PA Game Commission

##### RESPONSE:

Conservation Measure: Potential impacts to state and federally listed species which are under the jurisdiction of both the Pennsylvania Game Commission (PGC) and the U.S. Fish and Wildlife Service may occur as a result of this project. As a result, the PGC defers comments on potential impacts to federally listed species to the U.S. Fish and Wildlife Service. No further coordination with the Pennsylvania Game Commission is required at this time.

#### PA Department of Conservation and Natural Resources

##### RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

#### PA Fish and Boat Commission

##### RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

#### U.S. Fish and Wildlife Service

##### RESPONSE:

Avoidance Measure: The proposed project is located in the vicinity of northern long-eared bat spring staging/fall swarming habitat. To ensure take is not reasonably certain to occur, do not conduct tree removal from May 15 to August 15. The U.S. Fish and Wildlife Service determined take is not reasonably certain to occur from tree removal if activities are avoided during the pup season (i.e., the range of time when females are close to giving birth (i.e., two weeks prior to birth) and have non-volant (i.e., unable to fly) young). For more information, see the Interim Voluntary Guidance for the Northern Long-Eared Bat: Forest Habitat Modification, available here:

<https://www.fws.gov/library/collections/interim-habitat-modification-guidance>.

As the project proponent or applicant, I certify that I will implement the above Avoidance Measure:

\_\_\_\_\_(Signature)

**SPECIAL NOTE: If you agree to implement the above Avoidance Measure and if applicable, any Information Requests, no further coordination with this agency regarding threatened and endangered species and/or special concern species and resources is required.** If you are not able to comply with the Avoidance Measures, you are required to coordinate with this agency - please send project information to this agency for review (see "What to Send" section).

## WHAT TO SEND TO JURISDICTIONAL AGENCIES

**If project information was requested by one or more of the agencies above**, upload\* or email the following information to the agency(s) (see AGENCY CONTACT INFORMATION). Instructions for uploading project materials can be found [here](#). This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies (but not USFWS).

\*If information was requested by USFWS, applicants must email, or mail, project information to [IR1\\_ESPenn@fws.gov](mailto:IR1_ESPenn@fws.gov) to initiate a review. USFWS will not accept uploaded project materials.

### Check-list of Minimum Materials to be submitted:

\_\_\_ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.

\_\_\_ A map with the project boundary and/or a basic site plan (particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)

**In addition to the materials listed above, USFWS REQUIRES the following**

\_\_\_ **SIGNED** copy of a Final Project Environmental Review Receipt

### The inclusion of the following information may expedite the review process.

\_\_\_ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)

\_\_\_ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

## 4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at <https://conservationexplorer.dcnr.pa.gov/content/resources>.

## 5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page ([www.naturalheritage.state.pa.us](http://www.naturalheritage.state.pa.us)). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

## 6. AGENCY CONTACT INFORMATION

### PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section  
400 Market Street, PO Box 8552  
Harrisburg, PA 17105-8552  
Email: [RA-HeritageReview@pa.gov](mailto:RA-HeritageReview@pa.gov)

### PA Fish and Boat Commission

Division of Environmental Services  
595 E. Rolling Ridge Dr., Bellefonte, PA 16823  
Email: [RA-FBPACENOTIFY@pa.gov](mailto:RA-FBPACENOTIFY@pa.gov)

### U.S. Fish and Wildlife Service

Pennsylvania Field Office  
Endangered Species Section  
110 Radnor Rd; Suite 101  
State College, PA 16801  
Email: [IR1\\_ESPenn@fws.gov](mailto:IR1_ESPenn@fws.gov)  
NO Faxes Please

### PA Game Commission

Bureau of Wildlife Management  
Division of Environmental Review  
2001 Elmerton Avenue, Harrisburg, PA 17110-9797  
Email: [RA-PGC\\_PNDI@pa.gov](mailto:RA-PGC_PNDI@pa.gov)  
NO Faxes Please

## 7. PROJECT CONTACT INFORMATION

Name: \_\_\_\_\_  
Company/Business Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Phone:(\_\_\_\_\_) \_\_\_\_\_ Fax:(\_\_\_\_\_) \_\_\_\_\_  
Email: \_\_\_\_\_

## 8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

\_\_\_\_\_  
applicant/project proponent signature

\_\_\_\_\_  
date



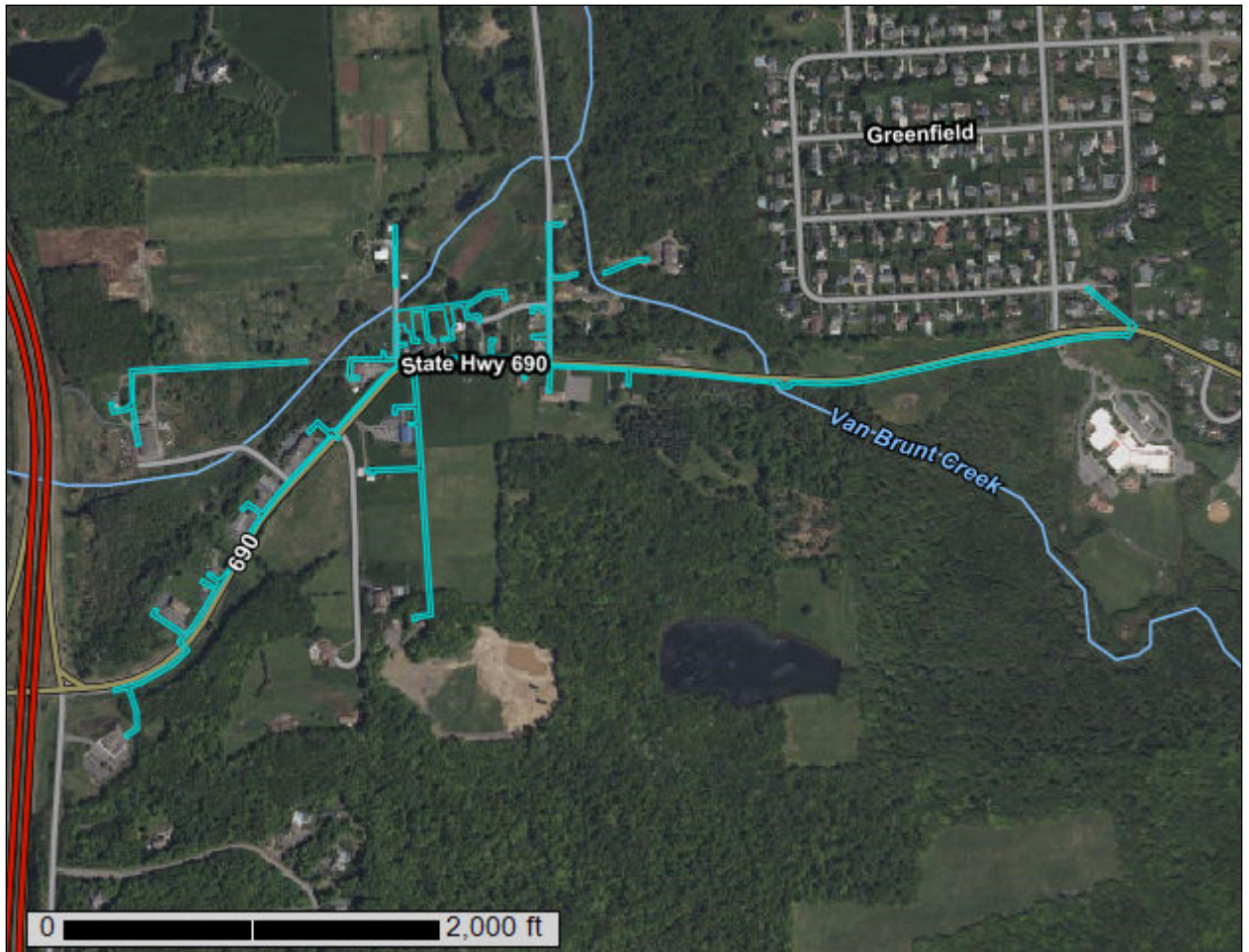
United States  
Department of  
Agriculture

**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 Lackawanna County, Pennsylvania



# Preface

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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](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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alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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# How Soil Surveys Are Made

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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

## Custom Soil Resource Report

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

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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: 1:9,110 if printed on A landscape (11" x 8.5") sheet.

0 100 200 400 600 Meters

0 400 800 1600 2400 Feet

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

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)




















**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

**Special Point Features**






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


**Water Features**

 Streams and Canals

**Transportation**

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

**Background**

 Aerial Photography

### MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Lackawanna County, Pennsylvania  
 Survey Area Data: Version 19, Sep 4, 2023

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

Date(s) aerial images were photographed: May 21, 2022—Jun 5, 2022

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 |
|------------------------------------|-------------------------------------------------------------------------|--------------|----------------|
| HO                                 | Holly silt loam, ponded                                                 | 0.3          | 4.7%           |
| LaB                                | Lackawanna channery loam, 3 to 8 percent slopes                         | 0.8          | 11.0%          |
| LaC                                | Lackawanna channery loam, 8 to 15 percent slopes                        | 0.7          | 11.0%          |
| MrB                                | Morris channery loam, 3 to 8 percent slopes                             | 0.2          | 3.4%           |
| MsB                                | Morris flaggy loam, 3 to 8 percent slopes                               | 0.2          | 2.5%           |
| MxB                                | Morris channery loam, 0 to 8 percent slopes, rubbly                     | 0.3          | 5.1%           |
| NxB                                | Norwich and Chippewa channery silt loams, 0 to 8 percent slopes, rubbly | 0.9          | 12.9%          |
| OcB                                | Oquaga channery loam, 3 to 8 percent slopes                             | 0.2          | 2.3%           |
| OcC                                | Oquaga channery loam, 8 to 15 percent slopes                            | 0.8          | 11.1%          |
| OcD                                | Oquaga channery loam, 15 to 25 percent slopes                           | 0.0          | 0.1%           |
| OxD                                | Oquaga channery loam, 8 to 25 percent slopes, rubbly                    | 0.4          | 5.7%           |
| OYE                                | Oquaga and Lordstown channery loams, 25 to 70 percent slopes, rubbly    | 0.5          | 7.4%           |
| Ph                                 | Philo silt loam                                                         | 0.3          | 4.1%           |
| WcB                                | Wellsboro channery loam, 3 to 8 percent slopes                          | 1.3          | 18.7%          |
| WgB                                | Wellsboro channery loam, 3 to 8 percent slopes, rubbly                  | 0.0          | 0.0%           |
| <b>Totals for Area of Interest</b> |                                                                         | <b>6.8</b>   | <b>100.0%</b>  |

## 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

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characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

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

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

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered

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practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

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

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

## Lackawanna County, Pennsylvania

### HO—Holly silt loam, ponded

#### Map Unit Setting

*National map unit symbol:* b1fk  
*Elevation:* 800 to 840 feet  
*Mean annual precipitation:* 30 to 40 inches  
*Mean annual air temperature:* 48 to 54 degrees F  
*Frost-free period:* 133 to 187 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Holly and similar soils:* 100 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

##### Typical profile

*H1 - 0 to 8 inches:* silt loam  
*H2 - 8 to 16 inches:* silt loam  
*H3 - 16 to 43 inches:* sandy 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:* 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:* Frequent  
*Frequency of ponding:* Occasional  
*Available water supply, 0 to 60 inches:* High (about 9.5 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* B/D  
*Ecological site:* F140XY015NY - Wet Low Floodplain  
*Hydric soil rating:* Yes

## **LaB—Lackawanna channery loam, 3 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2w0b1  
*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**

*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):* 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**

*Ap - 0 to 7 inches:* channery loam  
*Bw1 - 7 to 17 inches:* channery loam  
*Bw2 - 17 to 26 inches:* channery loam  
*Bx - 26 to 60 inches:* channery loam  
*C - 60 to 72 inches:* very channery loam

#### **Properties and qualities**

*Slope:* 3 to 8 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):* 2e  
*Hydrologic Soil Group:* C  
*Ecological site:* F140XY030NY - Well Drained Dense Till  
*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):* Interflue, side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### Morris

*Percent of map unit:* 3 percent  
*Landform:* Mountains, hills  
*Landform position (two-dimensional):* Footslope, summit  
*Landform position (three-dimensional):* Base slope, interflue  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### Oquaga

*Percent of map unit:* 2 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

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

### Map Unit Setting

*National map unit symbol:* 2w0b4  
*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:* Hills, mountains  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Interflue, side slope

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*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 loam

*Bw1 - 7 to 17 inches:* channery loam

*Bw2 - 17 to 26 inches:* channery loam

*Bx - 26 to 60 inches:* channery loam

*C - 60 to 72 inches:* very channery loam

### Properties and qualities

*Slope:* 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

*Ecological site:* F140XY030NY - Well Drained Dense Till

*Hydric soil rating:* No

### Minor Components

#### Wellsboro

*Percent of map unit:* 10 percent

*Landform:* Mountains, hills

*Landform position (two-dimensional):* Backslope, shoulder

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

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Oquaga

*Percent of map unit:* 3 percent

*Landform:* Hills, mountains

*Landform position (two-dimensional):* Backslope

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

*Down-slope shape:* 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

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*Across-slope shape:* Linear  
*Hydric soil rating:* No

### MrB—Morris channery loam, 3 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2vxd  
*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 loam  
*Bw - 8 to 12 inches:* channery loam  
*Eg - 12 to 16 inches:* channery loam  
*Bx - 16 to 60 inches:* channery loam  
*C - 60 to 72 inches:* 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:* 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



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*Ecological site:* F140XY024NY - Moist Dense Till  
*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):* Backslope, shoulder  
*Landform position (three-dimensional):* Interfluve, side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## MsB—Morris flaggy loam, 3 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 2vxdl  
*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:* flaggy loam  
*Bw - 8 to 12 inches:* channery loam

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

### Properties and qualities

*Slope:* 3 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  
*Ecological site:* F140XY024NY - Moist Dense Till  
*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):* Backslope, shoulder  
*Landform position (three-dimensional):* Interfluve, side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## MxB—Morris channery loam, 0 to 8 percent slopes, rubbly

### Map Unit Setting

*National map unit symbol:* 2vxdq  
*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

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*Farmland classification:* Not prime farmland

### Map Unit Composition

*Morris, rubbly, and similar soils:* 90 percent

*Minor components:* 10 percent

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

### Description of Morris, Rubbly

#### 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 loam

*Bw - 5 to 12 inches:* channery loam

*Eg - 12 to 16 inches:* channery loam

*Bx - 16 to 60 inches:* channery loam

*C - 60 to 72 inches:* channery loam

#### Properties and qualities

*Slope:* 0 to 8 percent

*Surface area covered with cobbles, stones or boulders:* 20.0 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

*Ecological site:* F140XY024NY - Moist Dense Till

*Hydric soil rating:* No

### Minor Components

#### Norwich, rubbly

*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, rubbly

*Percent of map unit:* 5 percent

## Custom Soil Resource Report

*Landform:* Mountains, hills  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Interfluve, side slope, head slope  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### **NxB—Norwich and Chippewa channery silt loams, 0 to 8 percent slopes, rubbly**

#### **Map Unit Setting**

*National map unit symbol:* 2vcjq  
*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**

*Norwich, rubbly, and similar soils:* 45 percent  
*Chippewa, rubbly, and similar soils:* 40 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Norwich, Rubbly**

##### **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 reddish sandstone, siltstone and shale fragments

##### **Typical profile**

*Oe - 0 to 1 inches:* moderately decomposed plant material  
*A - 1 to 5 inches:* channery silt loam  
*Eg - 5 to 10 inches:* channery silt loam  
*Bg - 10 to 16 inches:* channery silt loam  
*Bgx - 16 to 46 inches:* channery silt loam  
*C - 46 to 72 inches:* channery silt loam

##### **Properties and qualities**

*Slope:* 0 to 8 percent  
*Surface area covered with cobbles, stones or boulders:* 20.0 percent  
*Depth to restrictive feature:* 10 to 24 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)

## Custom Soil Resource Report

*Depth to water table:* About 0 to 6 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:* D  
*Ecological site:* F140XY016NY - Mineral Wetlands  
*Hydric soil rating:* Yes

### Description of Chippewa, Rubbly

#### 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:* channery silt loam  
*Eg - 5 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 8 percent  
*Surface area covered with cobbles, stones or boulders:* 20.0 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

#### Norwich, rubbly, very poorly drained

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

## Custom Soil Resource Report

*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

### **Chippewa, rubbly, very poorly drained**

*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

### **Morris, rubbly**

*Percent of map unit:* 3 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

### **Volusia, extremely stony**

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

## **OcB—Oquaga channery loam, 3 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2wzmf  
*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**

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

### **Description of Oquaga**

#### **Setting**

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

## Custom Soil Resource Report

*Landform position (three-dimensional):* Mountaintop, interfluve, crest, nose slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear, convex  
*Parent material:* Reddish loamy till derived from sandstone, siltstone, and shale

### Typical profile

*Ap - 0 to 7 inches:* channery loam  
*Bw1 - 7 to 15 inches:* very channery loam  
*Bw2 - 15 to 24 inches:* very channery loam  
*C - 24 to 30 inches:* extremely channery loam  
*2R - 30 to 40 inches:* bedrock

### Properties and qualities

*Slope:* 3 to 8 percent  
*Surface area covered with cobbles, stones or boulders:* 0.0 percent  
*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock  
*Drainage class:* Well 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 to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 3.3 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

### Minor Components

#### Arnot, very stony

*Percent of map unit:* 5 percent  
*Landform:* Hills, mountains  
*Landform position (two-dimensional):* Shoulder, summit  
*Landform position (three-dimensional):* Mountaintop, mountainflank, crest, interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Wellsboro

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

## OcC—Oquaga channery loam, 8 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* 2wznj  
*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

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

### Description of Oquaga

#### Setting

*Landform:* Hills, mountains  
*Landform position (two-dimensional):* Backslope, shoulder  
*Landform position (three-dimensional):* Mountainflank, nose slope, crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Reddish loamy till derived from sandstone, siltstone, and shale

#### Typical profile

*Ap - 0 to 7 inches:* channery loam  
*Bw1 - 7 to 15 inches:* very channery loam  
*Bw2 - 15 to 24 inches:* very channery loam  
*C - 24 to 30 inches:* extremely channery loam  
*2R - 30 to 40 inches:* bedrock

#### Properties and qualities

*Slope:* 8 to 15 percent  
*Surface area covered with cobbles, stones or boulders:* 0.0 percent  
*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock  
*Drainage class:* Well 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 to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 3.3 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



## Custom Soil Resource Report

*Hydric soil rating:* No

### Minor Components

#### **Arnot, very stony**

*Percent of map unit:* 5 percent

*Landform:* Hills, mountains

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

*Landform position (three-dimensional):* Mountainflank, mountaintop, interfluve, crest

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### **Wellsboro**

*Percent of map unit:* 5 percent

*Landform:* Mountains, hills

*Landform position (two-dimensional):* Backslope, shoulder

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

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### **Cadosia, very stony**

*Percent of map unit:* 5 percent

*Landform:* Ridges

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Hydric soil rating:* No

## OcD—Oquaga channery loam, 15 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* 2wznl

*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

*Oquaga and similar soils:* 85 percent

*Minor components:* 15 percent

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

### Description of Oquaga

#### Setting

*Landform:* Hills, mountains

## Custom Soil Resource Report

*Landform position (two-dimensional):* Backslope

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

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Reddish loamy till derived from sandstone, siltstone, and shale

### Typical profile

*Ap - 0 to 7 inches:* channery loam

*Bw1 - 7 to 15 inches:* very channery loam

*Bw2 - 15 to 24 inches:* very channery loam

*C - 24 to 30 inches:* extremely channery loam

*2R - 30 to 40 inches:* bedrock

### Properties and qualities

*Slope:* 15 to 25 percent

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

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

*Drainage class:* Well 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 to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Low (about 3.3 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

### Minor Components

#### **Arnot, very stony**

*Percent of map unit:* 5 percent

*Landform:* Mountains, hills

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Mountaintop, mountainflank, nose slope, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### **Cadosia, very stony**

*Percent of map unit:* 5 percent

*Landform:* Ridges

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### **Wellsboro**

*Percent of map unit:* 5 percent

*Landform:* Mountains, hills

## Custom Soil Resource Report

*Landform position (two-dimensional):* Backslope, shoulder  
*Landform position (three-dimensional):* Interfluve, side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### **OxD—Oquaga channery loam, 8 to 25 percent slopes, rubbly**

#### **Map Unit Setting**

*National map unit symbol:* 2wzwn  
*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**

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

#### **Description of Oquaga, Rubbly**

##### **Setting**

*Landform:* Mountains, hills  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Mountainflank, crest, nose slope, side slope  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Linear  
*Parent material:* Reddish loamy till derived from sandstone and shale

##### **Typical profile**

*Oe - 0 to 1 inches:* moderately decomposed plant material  
*A - 1 to 5 inches:* channery highly organic loam  
*Bw1 - 5 to 15 inches:* very channery loam  
*Bw2 - 15 to 24 inches:* very channery loam  
*C - 24 to 30 inches:* extremely channery loam  
*2R - 30 to 40 inches:* bedrock

##### **Properties and qualities**

*Slope:* 8 to 25 percent  
*Surface area covered with cobbles, stones or boulders:* 20.0 percent  
*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock  
*Drainage class:* Well 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

## Custom Soil Resource Report

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 3.3 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

### Minor Components

#### Wellsboro, extremely stony

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

#### Cadosia, extremely stony

*Percent of map unit:* 5 percent  
*Landform:* Ridges  
*Landform position (two-dimensional):* Backslope, footslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*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, shoulder  
*Landform position (three-dimensional):* Mountainflank, mountaintop, crest, nose slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Rock outcrop

*Percent of map unit:* 0 percent  
*Hydric soil rating:* No

### OYE—Oquaga and Lordstown channery loams, 25 to 70 percent slopes, rubbly

#### Map Unit Setting

*National map unit symbol:* 2ywl  
*Elevation:* 330 to 2,460 feet  
*Mean annual precipitation:* 31 to 70 inches

## Custom Soil Resource Report

*Mean annual air temperature:* 39 to 52 degrees F

*Frost-free period:* 105 to 180 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Oquaga, rubbly, and similar soils:* 55 percent

*Lordstown, rubbly, and similar soils:* 25 percent

*Minor components:* 20 percent

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

### Description of Oquaga, Rubbly

#### Setting

*Landform:* Hills, mountains

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

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

*Down-slope shape:* Convex

*Across-slope shape:* Linear, convex

*Parent material:* Reddish loamy till derived from sandstone and shale

#### Typical profile

*Oe - 0 to 1 inches:* moderately decomposed plant material

*A - 1 to 5 inches:* channery highly organic loam

*Bw1 - 5 to 15 inches:* very channery loam

*Bw2 - 15 to 24 inches:* very channery loam

*C - 24 to 30 inches:* extremely channery loam

*2R - 30 to 40 inches:* bedrock

#### Properties and qualities

*Slope:* 25 to 70 percent

*Surface area covered with cobbles, stones or boulders:* 20.0 percent

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

*Drainage class:* Well 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 to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Low (about 3.3 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, Rubbly

#### Setting

*Landform:* Mountains, hills

*Landform position (two-dimensional):* Backslope, summit, shoulder

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

*Down-slope shape:* Convex

*Across-slope shape:* Linear, convex

*Parent material:* Brownish loamy till derived from sandstone and siltstone

## Custom Soil Resource Report

### Typical profile

*Oe - 0 to 1 inches:* moderately decomposed plant material  
*A - 1 to 4 inches:* channery highly organic loam  
*Bw1 - 4 to 17 inches:* channery loam  
*Bw2 - 17 to 24 inches:* very channery loam  
*C - 24 to 30 inches:* extremely channery loam  
*2R - 30 to 40 inches:* bedrock

### Properties and qualities

*Slope:* 25 to 70 percent  
*Surface area covered with cobbles, stones or boulders:* 20.0 percent  
*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock  
*Drainage class:* Well 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:* Low (about 3.9 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

### Minor Components

#### Arnot, extremely stony

*Percent of map unit:* 10 percent  
*Landform:* Mountains, hills  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Mountainflank, mountaintop, side slope, nose slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Cadosia, rubbly

*Percent of map unit:* 10 percent  
*Landform:* Ridges  
*Landform position (two-dimensional):* Backslope, footslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Rock outcrop

*Percent of map unit:* 0 percent  
*Hydric soil rating:* No

## Ph—Philo silt loam

### Map Unit Setting

*National map unit symbol:* b1gv  
*Elevation:* 600 to 3,000 feet  
*Mean annual precipitation:* 30 to 55 inches  
*Mean annual air temperature:* 46 to 59 degrees F  
*Frost-free period:* 130 to 187 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

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

### Description of Philo

#### Setting

*Landform:* Flood plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Mountainbase  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Coarse-loamy alluvium derived from sandstone and siltstone

#### Typical profile

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

#### Properties and qualities

*Slope:* 0 to 3 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 36 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C  
*Ecological site:* F140XY011NY - Rich Organic Wetlands  
*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

**Pope**

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

**Pope, rarely flooded**

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

**WcB—Wellsboro channery loam, 3 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2vcl2  
*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 loam  
*Bw - 8 to 22 inches:* channery loam  
*Bx - 22 to 55 inches:* channery loam  
*C - 55 to 72 inches:* very channery loam



## Custom Soil Resource Report

### 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  
*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 3.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* D  
*Ecological site:* F140XY024NY - Moist Dense Till  
*Hydric soil rating:* No

### Minor Components

#### Morris

*Percent of map unit:* 5 percent  
*Landform:* Mountains, hills  
*Landform position (two-dimensional):* Summit, footslope  
*Landform position (three-dimensional):* Base slope, interfluve  
*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

#### Oquaga

*Percent of map unit:* 5 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

## **WgB—Wellsboro channery loam, 3 to 8 percent slopes, rubbly**

### **Map Unit Setting**

*National map unit symbol:* 2vclm  
*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, rubbly, and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Wellsboro, Rubbly**

#### **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 loam  
*Bw - 3 to 22 inches:* channery 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:* 20.0 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  
*Ecological site:* F140XY024NY - Moist Dense Till  
*Hydric soil rating:* No

**Minor Components**

**Lackawanna, rubbly**

*Percent of map unit:* 10 percent

*Landform:* Mountains, hills

*Landform position (two-dimensional):* Backslope, shoulder

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

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

**Morris, rubbly**

*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

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- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

## Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

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February 16, 2024

*Sent Via PA-SHARE*

RE: ER Project # 2016PR16902.003, MOSCOW SA CHURCH STREET SANITARY SEWER EXTENSION, Army Corps of Engineers, Moscow Borough, Lackawanna County

Dear Submitter,

Thank you for submitting information concerning the above referenced project. The Pennsylvania State Historic Preservation Office (PA SHPO) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

**Above Ground Resources**

*No Above Ground Concerns - Environmental Review - No Effect - Above Ground*

Based on the information received and available within our files, it is our opinion that the proposed project will have No Effect on above ground historic properties, including historic buildings, districts, structures, and/or objects, should they exist. Should the scope of the project change and/or should you be made aware of historic property concerns, you will need to reinitiate consultation with our office using PA-SHARE.

For questions concerning above ground resources, please contact John Gardosik at [jgardosik@pa.gov](mailto:jgardosik@pa.gov).

**Archaeological Resources**

*No Archaeological Concerns - Environmental Review - No Effect - Archaeological*

Based on the information received and available in our files, in our opinion, the proposed project should have No Effect on archaeological resources. Our analysis indicates that archaeological resources are potentially located in this project area. Should the scope of the project be amended to include additional ground-disturbing activity and/or should you be made aware of historic property concerns, you will need to reinitiate consultation with our office using PA-SHARE.

For questions concerning archaeological resources, please contact John Gardosik at [jgardosik@pa.gov](mailto:jgardosik@pa.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Emma Diehl". The signature is fluid and cursive, with a long horizontal stroke at the end.

Emma Diehl

Environmental Review Division Manager



**DEPARTMENT OF THE ARMY**  
**CORPS OF ENGINEERS, BALTIMORE DISTRICT**  
**2 HOPKINS PLAZA**  
**BALTIMORE, MD 21201**

Deborah Dotson, President  
Delaware Nation  
P.O. Box 825  
Anadarko, Oklahoma 73005

July 19, 2022

Dear Ms. Dotson:

The purpose of this letter is to consult with your office in accordance with Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations at 36 CFR Part 800, regarding a U.S. Army Corps of Engineers, Baltimore District (USACE) Section 219 authorization request to extend an existing sanitary sewer in Moscow Borough, Lackawanna County, Pennsylvania. The Moscow Sewer Authority is proposing to extend the Central Sanitary Sewer Line along Church Street (State Route 690), Gardner Road, Rear Church Street, and to neighboring residential areas (Enclosure 1). The proposed extension will consist of force mains and pressurized sewer laterals located along existing State and Borough Road rights-of-ways and new rights-of-ways established to connect private properties, ranging in size from 1-1/2" to 4" in diameter. The purpose of the sewer extension would be to service the existing residential and commercial residents of Moscow Borough.

The project's area of potential effect (APE) may be defined as the area of direct impacts and the areas within which the undertaking may directly or indirectly cause alterations to the character or use of historic properties, including visual effects. The proposed APE for this project is the area proposed for sewer line extension. A preliminary examination of the Pennsylvania Historical and Museum Commission (PHMC)'s cultural resource information system, PA-SHARE, indicated that no historic properties have been documented within the APE and much of the area has been disturbed by previous road construction and agricultural practices. Additionally, the PHMC recommended in a letter dated June 7, 2022, that the proposed project would have no effect on above-ground or archaeological resources.

Please let us know if you are interested in consulting on this project on a Government-to-Government basis, and the extent to which you wish to participate. We will provide a USACE representative at any consultation meetings, and we will fully consider any information you wish to provide.



Thank you for your assistance with this project. We ask that your office review the enclosed information and assist us in identifying and assessing the project's effects on historic properties. If you have any questions about the project, please contact Ethan A. Bean at (410) 962-2173 or [ethan.a.bean@usace.army.mil](mailto:ethan.a.bean@usace.army.mil).

Sincerely,



/ for

Daniel M. Bierly, P.E.  
Chief, Civil Project Development Branch  
Planning Division

Enclosure



**DEPARTMENT OF THE ARMY**  
**CORPS OF ENGINEERS, BALTIMORE DISTRICT**  
**2 HOPKINS PLAZA**  
**BALTIMORE, MD 21201**

Susan Bachor  
Deputy Director, THPO  
Delaware Tribe of Indians  
126 University Circle  
Stroud Hall, Room 437  
East Stroudsburg, Pennsylvania 18301

July 19, 2022

Dear Ms. Bachor:

The purpose of this letter is to consult with your office in accordance with Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations at 36 CFR Part 800, regarding a U.S. Army Corps of Engineers, Baltimore District (USACE) Section 219 authorization request to extend an existing sanitary sewer in Moscow Borough, Lackawanna County, Pennsylvania. The Moscow Sewer Authority is proposing to extend the Central Sanitary Sewer Line along Church Street (State Route 690), Gardner Road, Rear Church Street, and to neighboring residential areas (Enclosure 1). The proposed extension will consist of force mains and pressurized sewer laterals located along existing State and Borough Road rights-of-ways and new rights-of-ways established to connect private properties, ranging in size from 1-1/2" to 4" in diameter. The purpose of the sewer extension would be to service the existing residential and commercial residents of Moscow Borough.

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Please let us know if you are interested in consulting on this project on a Government-to-Government basis, and the extent to which you wish to participate. We will provide a USACE representative at any consultation meetings, and we will fully consider any information you wish to provide.

Thank you for your assistance with this project. We ask that your office review the enclosed information and assist us in identifying and assessing the project's effects on historic properties. If you have any questions about the project, please contact Ethan A. Bean at (410) 962-2173 or [ethan.a.bean@usace.army.mil](mailto:ethan.a.bean@usace.army.mil).

Sincerely,

A handwritten signature in black ink, appearing to read "D. Bierly", followed by a horizontal line extending to the right. The signature is positioned above the text "/ for".

Daniel M. Bierly, P.E.  
Chief, Civil Project Development Branch  
Planning Division

Enclosure



**DEPARTMENT OF THE ARMY**  
**CORPS OF ENGINEERS, BALTIMORE DISTRICT**  
**2 HOPKINS PLAZA**  
**BALTIMORE, MD 21201**

Chief Irving Powless  
Onondaga Nation  
3951 Route 11  
Nedrow, NY 13120

July 19, 2022

Dear Chief Powless:

The purpose of this letter is to consult with your office in accordance with Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations at 36 CFR Part 800, regarding a U.S. Army Corps of Engineers, Baltimore District (USACE) Section 219 authorization request to extend an existing sanitary sewer in Moscow Borough, Lackawanna County, Pennsylvania. The Moscow Sewer Authority is proposing to extend the Central Sanitary Sewer Line along Church Street (State Route 690), Gardner Road, Rear Church Street, and to neighboring residential areas (Enclosure 1). The proposed extension will consist of force mains and pressurized sewer laterals located along existing State and Borough Road rights-of-ways and new rights-of-ways established to connect private properties, ranging in size from 1-1/2" to 4" in diameter. The purpose of the sewer extension would be to service the existing residential and commercial residents of Moscow Borough.

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Please let us know if you are interested in consulting on this project on a Government-to-Government basis, and the extent to which you wish to participate. We will provide a USACE representative at any consultation meetings, and we will fully consider any information you wish to provide.

Thank you for your assistance with this project. We ask that your office review the enclosed information and assist us in identifying and assessing the project's effects on historic properties. If you have any questions about the project, please contact Ethan A. Bean at (410) 962-2173 or [ethan.a.bean@usace.army.mil](mailto:ethan.a.bean@usace.army.mil).

Sincerely,



/ for

Daniel M. Bierly, P.E.  
Chief, Civil Project Development Branch  
Planning Division

Enclosure



**DEPARTMENT OF THE ARMY**  
**CORPS OF ENGINEERS, BALTIMORE DISTRICT**  
**2 HOPKINS PLAZA**  
**BALTIMORE, MD 21201**

Chief William Fisher  
Seneca-Cayuga Tribe of Oklahoma  
P.O. Box 45322  
Grove, OK 74345

July 19, 2022

Dear Chief Fisher:

The purpose of this letter is to consult with your office in accordance with Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations at 36 CFR Part 800, regarding a U.S. Army Corps of Engineers, Baltimore District (USACE) Section 219 authorization request to extend an existing sanitary sewer in Moscow Borough, Lackawanna County, Pennsylvania. The Moscow Sewer Authority is proposing to extend the Central Sanitary Sewer Line along Church Street (State Route 690), Gardner Road, Rear Church Street, and to neighboring residential areas (Enclosure 1). The proposed extension will consist of force mains and pressurized sewer laterals located along existing State and Borough Road rights-of-ways and new rights-of-ways established to connect private properties, ranging in size from 1-1/2" to 4" in diameter. The purpose of the sewer extension would be to service the existing residential and commercial residents of Moscow Borough.

The project's area of potential effect (APE) may be defined as the area of direct impacts and the areas within which the undertaking may directly or indirectly cause alterations to the character or use of historic properties, including visual effects. The proposed APE for this project is the area proposed for sewer line extension. A preliminary examination of the Pennsylvania Historical and Museum Commission (PHMC)'s cultural resource information system, PA-SHARE, indicated that no historic properties have been documented within the APE and much of the area has been disturbed by previous road construction and agricultural practices. Additionally, the PHMC recommended in a letter dated June 7, 2022, that the proposed project would have no effect on above-ground or archaeological resources.

Please let us know if you are interested in consulting on this project on a Government-to-Government basis, and the extent to which you wish to participate. We will provide a USACE representative at any consultation meetings, and we will fully consider any information you wish to provide.

Thank you for your assistance with this project. We ask that your office review the enclosed information and assist us in identifying and assessing the project's effects on historic properties. If you have any questions about the project, please contact Ethan A. Bean at (410) 962-2173 or [ethan.a.bean@usace.army.mil](mailto:ethan.a.bean@usace.army.mil).

Sincerely,

A handwritten signature in black ink, appearing to read "Daniel M. Bierly", with a long horizontal flourish extending to the right.

/ for

Daniel M. Bierly, P.E.  
Chief, Civil Project Development Branch  
Planning Division

Enclosure



*Delaware Nation*

**Tribal Historic Preservation Department**

31064 State Highway 281

Anadarko, OK 73005

Phone (405)247-2448

July 21, 2022

To Whom It May Concern:

The Delaware Nation Historic Preservation Department received correspondence regarding the following referenced project(s).

**Project(s):** ACOE Baltimore District Extending Sanitary Sewer Moscow Borough,  
Lackawanna County PA

Our office is committed to protecting tribal heritage, culture, and religion with particular concern for archaeological sites potentially containing burials and associated funerary objects. The Lenape people occupied and/or interacted in the area indicated in your letter prior to European contact until their eventual removal to our present locations. **We accept your invitation to consult.** According to our files, the proposed project should have **no adverse effect on** any known cultural or religious sites of interest to the Delaware Nation, but there is always the potential for discovery of archaeological resources in this area. Should the scope of the project be amended to include any additional ground-disturbing activity, you will need to reinitiate consultation with our office. **Please continue with the project as planned** keeping in mind during construction should human remains and/or any Native American archaeological resources inadvertently be uncovered, all construction and ground disturbing activities should immediately be halted until the appropriate state agencies, as well as this office, are notified (within 24 hours), and a proper archaeological assessment can be made.

Please note that Delaware Nation, the Delaware Tribe of Indians, and the Stockbridge Munsee Community are the only Federally Recognized Delaware/Lenape entities in the United States and consultation for Lenape homelands must be made with only the designated staff of these three Nations (and/or other federally recognized tribal nations who may have overlapping areas of interest). We appreciate your cooperation in contacting the Delaware Nation Historic Preservation Office to conduct proper Section 106 consultation. Should you have any questions, feel free to contact our offices at 405-247-2448 ext. 1403.

*Katelyn Lucas*

Katelyn Lucas  
Historic Preservation Assistant  
Delaware Nation  
405-544-8115  
klucas@delawarenation-nsn.gov