

APPENDIX D

Soils Report



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for Essex County, New York



Preface

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

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

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

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

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

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

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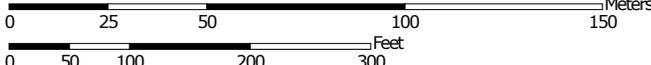
Soil Map

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

Custom Soil Resource Report Soil Map



Map Scale: 1:1,900 if printed on A landscape (11" x 8.5") sheet.



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

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

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 1:24,000.

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: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Essex County, New York
 Survey Area Data: Version 12, Sep 22, 2015

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

Date(s) aerial images were photographed: Aug 28, 2010—Oct 8, 2011

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

Map Unit Legend

Essex County, New York (NY031)			
Map Unit Symbol		Acres in AOI	Percent of AOI
AdB	Adams loamy sand, 3 to 8 percent slopes	1.9	18.1%
FuA	Fluvaquents-Udifulvents complex, frequently flooded, nearly level	4.6	42.8%
LvA	Lovewell very fine sandy loam, 0 to 3 percent slopes	3.9	36.5%
OwA	Ondawa sandy loam, 0 to 3 percent slopes	0.2	1.9%
PoA	Podunk very fine sandy loam, 0 to 3 percent slopes	0.1	0.7%
Totals for Area of Interest		10.6	100.0%

Map Unit Descriptions

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

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

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

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where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

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

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

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

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

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

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

Essex County, New York

AdB—Adams loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9s3c

Elevation: 510 to 3,030 feet

Mean annual precipitation: 34 to 50 inches

Mean annual air temperature: 37 to 45 degrees F

Frost-free period: 100 to 130 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Adams and similar soils: 85 percent

Minor components: 15 percent

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

Description of Adams

Setting

Landform: Deltas, kame terraces, outwash plains

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Sandy glaciolacustrine deposits derived from gneiss

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material

Oa - 2 to 4 inches: highly decomposed plant material

E - 4 to 5 inches: sand

Bhs - 5 to 8 inches: loamy sand

Bs - 8 to 14 inches: loamy sand

BC - 14 to 23 inches: sand

C - 23 to 72 inches: sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: A

Minor Components

Colton

Percent of map unit: 5 percent

Duxbury

Percent of map unit: 5 percent

Croghan

Percent of map unit: 4 percent

Unnamed

Percent of map unit: 1 percent

FuA—Fluvaquents-Udifluvents complex, frequently flooded, nearly level

Map Unit Setting

National map unit symbol: 1vjzq

Elevation: 100 to 2,020 feet

Mean annual precipitation: 26 to 50 inches

Mean annual air temperature: 37 to 48 degrees F

Frost-free period: 100 to 150 days

Farmland classification: Not prime farmland

Map Unit Composition

Fluvaquents, frequently flooded, and similar soils: 45 percent

Udifluvents, frequently flooded, and similar soils: 30 percent

Minor components: 25 percent

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

Description of Fluvaquents, Frequently Flooded

Setting

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Loamy alluvium derived from igneous and sedimentary rock

Typical profile

A1 - 0 to 5 inches: very fine sandy loam

AC1 - 5 to 9 inches: fine sandy loam

Ab2 - 9 to 21 inches: very fine sandy loam

Cg2 - 21 to 30 inches: very fine sandy loam

Cg3 - 30 to 42 inches: fine sandy loam

2Cg4 - 42 to 72 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

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Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.57 to 99.90 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.1 inches)

Interpretive groups

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

Description of Udifluvents, Frequently Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy alluvium derived from igneous and sedimentary rock

Typical profile

C - 0 to 4 inches: loamy fine sand
Ab - 4 to 6 inches: fine sandy loam
Cb - 6 to 10 inches: fine sandy loam
A'b - 10 to 12 inches: fine sandy loam
C'b - 12 to 24 inches: fine sandy loam
A''b - 24 to 28 inches: fine sandy loam
C''b - 28 to 34 inches: loamy fine sand
A'''b - 34 to 38 inches: fine sandy loam
C1 - 38 to 44 inches: fine sandy loam
C2 - 44 to 56 inches: fine sandy loam
C3 - 56 to 72 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.57 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A

Minor Components

Rippowam

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Convex

Rumney

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Concave

Pootatuck

Percent of map unit: 3 percent

Podunk

Percent of map unit: 3 percent

Cornish

Percent of map unit: 3 percent

Occum

Percent of map unit: 2 percent

Ondawa

Percent of map unit: 2 percent

Lovewell

Percent of map unit: 2 percent

LvA—Lovewell very fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1vjzt
Elevation: 510 to 2,020 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 100 to 130 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Lovewell

Setting

Landform: Flood plains

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Silty alluvium derived from gneiss

Typical profile

Ap - 0 to 11 inches: very fine sandy loam

Bw1 - 11 to 20 inches: very fine sandy loam

Bw2 - 20 to 30 inches: very fine sandy loam

Cg1 - 30 to 50 inches: very fine sandy loam

Cg2 - 50 to 56 inches: stratified fine sand

Cg3 - 56 to 75 inches: stratified fine sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)

Depth to water table: About 18 to 36 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Available water storage in profile: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B/D

Minor Components

Fluvaquents-udifluvents

Percent of map unit: 5 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip, rise

Down-slope shape: Concave

Across-slope shape: Concave

Cornish

Percent of map unit: 3 percent

Medomak

Percent of map unit: 2 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip

Down-slope shape: Concave

Across-slope shape: Concave

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Adams

Percent of map unit: 2 percent

Colton

Percent of map unit: 2 percent

Croghan

Percent of map unit: 1 percent

OwA—Ondawa sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1vjzy

Elevation: 510 to 2,020 feet

Mean annual precipitation: 34 to 50 inches

Mean annual air temperature: 37 to 45 degrees F

Frost-free period: 100 to 130 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Ondawa and similar soils: 85 percent

Minor components: 15 percent

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

Description of Ondawa

Setting

Landform: Flood plains

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy alluvium derived from gneiss

Typical profile

Ap - 0 to 9 inches: sandy loam

Bw1 - 9 to 21 inches: sandy loam

Bw2 - 21 to 34 inches: fine sandy loam

C - 34 to 72 inches: loamy fine sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Very low

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)*

Depth to water table: More than 80 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Available water storage in profile: Low (about 5.9 inches)

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Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: A

Minor Components

Podunk

Percent of map unit: 5 percent

Unnamed

Percent of map unit: 3 percent

Rumney

Percent of map unit: 3 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip

Down-slope shape: Convex

Across-slope shape: Concave

Champlain

Percent of map unit: 3 percent

Fluvaquents-udifluvents

Percent of map unit: 1 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip, rise

Down-slope shape: Concave

Across-slope shape: Concave

PoA—Podunk very fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: bq7b

Elevation: 510 to 2,020 feet

Mean annual precipitation: 34 to 50 inches

Mean annual air temperature: 37 to 45 degrees F

Frost-free period: 100 to 130 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Podunk and similar soils: 85 percent

Minor components: 15 percent

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

Description of Podunk

Setting

Landform: Flood plains

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Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy alluvium derived from gneiss

Typical profile

Ap - 0 to 7 inches: very fine sandy loam
Bw1 - 7 to 11 inches: very fine sandy loam
Bw2 - 11 to 18 inches: fine sandy loam
C - 18 to 31 inches: loamy fine sand
Ab - 31 to 34 inches: very fine sandy loam
C'1 - 34 to 39 inches: very fine sandy loam
C'2 - 39 to 45 inches: fine sandy loam
C'3 - 45 to 53 inches: sand
C'4 - 53 to 72 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups

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

Minor Components

Ondawa

Percent of map unit: 5 percent

Mooers

Percent of map unit: 3 percent

Lovewell

Percent of map unit: 3 percent

Rumney

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Concave

Fluvaquents-udifluvents

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, rise

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Down-slope shape: Concave
Across-slope shape: Concave