

APPENDIX D – NRCS SOILS DATA





United States Department of Agriculture

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 Rensselaer 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 (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2_053951).

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

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

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

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Soil Map

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

Custom Soil Resource Report Soil Map



MAP LEGEND)	MAP INFORMATION		
Area of Interest (AOI)		Spoil Area	The soil surveys that comprise your AOI were mapped at			
	Area of Interest (AOI)	۵	Stony Spot	1:15,800.		
Soils	Soil Map Unit Polygons	0	Very Stony Spot	Warning: Soil Map may not be valid at this scale.		
~	Soil Map Unit Lines	\$	Wet Spot	Enlargement of more beyond the scale of morning can equipe		
	Soil Map Unit Points	\triangle	Other	Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soi		
_	Point Features	, • * ·	Special Line Features	line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed		
്യ	Blowout	Water Fea	atures	scale.		
×	Borrow Pit	\sim	Streams and Canals			
*	Clay Spot	Transpor		Please rely on the bar scale on each map sheet for map		
õ	Closed Depression	+++	Rails	measurements.		
×	Gravel Pit	~	Interstate Highways	Source of Map: Natural Resources Conservation Service		
°°	Gravelly Spot	~	US Routes	Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)		
	Landfill	\sim	Major Roads			
0	Lava Flow	Local Roads Background		Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts		
A.				distance and area. A projection that preserves area, such as the		
عله	Marsh or swamp	and the second	Aerial Photography	Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.		
R	Mine or Quarry					
0	Miscellaneous Water			This product is generated from the USDA-NRCS certified data as		
0	Perennial Water			of the version date(s) listed below.		
\vee	Rock Outcrop			Soil Survey Area: Rensselaer County, New York		
+	Saline Spot			Survey Area Data: Version 17, Jun 11, 2020		
°*°	Sandy Spot			Soil map units are labeled (as space allows) for map scales		
-	Severely Eroded Spot			1:50,000 or larger.		
\diamond	Sinkhole			Date(s) aerial images were photographed: Mar 18, 2016—Oct		
∌	Slide or Slip			16, 2017		
ß	Sodic Spot			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 Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CbA	Castile gravelly silt loam, 0 to 5 percent slopes	4.0	7.2%
FIA	Fluvaquents-Udifluvents complex, 0 to 3 percent slopes	0.4	0.7%
НоВ	Hoosic gravelly sandy loam, 3 to 8 percent slopes	11.9	21.4%
HoC	Hoosic gravelly sandy loam, rolling	7.6	13.5%
HoE	Hoosic gravelly sandy loam, steep		8.2%
Pg	Pits, gravel	27.5	49.1%
Totals for Area of Interest		55.9	100.0%

Map Unit Legend

Map Unit Descriptions

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

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

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

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

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

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

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

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

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

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

Rensselaer County, New York

CbA—Castile gravelly silt loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9v1m Elevation: 100 to 970 feet Mean annual precipitation: 36 to 44 inches Mean annual air temperature: 45 to 48 degrees F Frost-free period: 115 to 195 days Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Castile

Setting

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

Typical profile

H1 - 0 to 10 inches: gravelly silt loam
H2 - 10 to 32 inches: very gravelly sandy loam
H3 - 32 to 60 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
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 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: A/D Ecological site: F144AY027MA - Moist Sandy Outwash Hydric soil rating: No

Minor Components

Fredon

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

Chenango

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

Hoosic

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

FIA—Fluvaquents-Udifluvents complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9v1t Elevation: 0 to 3,000 feet Mean annual precipitation: 36 to 44 inches Mean annual air temperature: 45 to 48 degrees F Frost-free period: 115 to 195 days Farmland classification: Not prime farmland

Map Unit Composition

Fluvaquents and similar soils: 45 percent *Udifluvents and similar soils:* 35 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Fluvaquents

Setting

Landform: Flood plains Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Dip Down-slope shape: Concave Across-slope shape: Concave Parent material: Alluvium with highly variable texture

Typical profile

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

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: FrequentNone
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 5 percent
Available water capacity: Moderate (about 6.6 inches)

Interpretive groups

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

Description of Udifluvents

Setting

Landform: Flood plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Talf Down-slope shape: Concave Across-slope shape: Convex Parent material: Alluvium with a wide range of texture

Typical profile

H1 - 0 to 9 inches: gravelly fine sandy loam *H2 - 9 to 60 inches:* gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 19.98 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 5w Hydrologic Soil Group: A Hydric soil rating: No

Minor Components

Teel

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

Saprists

Percent of map unit: 5 percent Landform: Marshes, swamps Hydric soil rating: Yes

Limerick

Percent of map unit: 5 percent Landform: Flood plains Hydric soil rating: Yes

Fredon

Percent of map unit: 3 percent Hydric soil rating: No

Unnamed soils, moderately deep

Percent of map unit: 2 percent Hydric soil rating: Unranked

HoB—Hoosic gravelly sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9v23 Elevation: 100 to 1,100 feet Mean annual precipitation: 36 to 44 inches Mean annual air temperature: 45 to 48 degrees F Frost-free period: 115 to 195 days Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Hoosic

Setting

Landform: Deltas, outwash plains, terraces Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 9 inches: gravelly sandy loam
H2 - 9 to 23 inches: very gravelly sandy loam
H3 - 23 to 60 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3s Hydrologic Soil Group: A *Ecological site:* F144AY022MA - Dry Outwash *Hydric soil rating:* No

Minor Components

Chenango

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

Castile

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

Fredon

Percent of map unit: 3 percent Hydric soil rating: No

Unnamed soils, sandy surface

Percent of map unit: 2 percent Hydric soil rating: No

HoC—Hoosic gravelly sandy loam, rolling

Map Unit Setting

National map unit symbol: 9v24 Elevation: 100 to 1,100 feet Mean annual precipitation: 36 to 44 inches Mean annual air temperature: 45 to 48 degrees F Frost-free period: 115 to 195 days Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Hoosic

Setting

Landform: Outwash plains, terraces, deltas Landform position (two-dimensional): Shoulder Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 9 inches: gravelly sandy loam

- H2 9 to 23 inches: very gravelly sandy loam
- H3 23 to 60 inches: very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: A Ecological site: F144AY022MA - Dry Outwash Hydric soil rating: No

Minor Components

Riverhead

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

Windsor

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

Unnamed soils, silty surface

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

HoE—Hoosic gravelly sandy loam, steep

Map Unit Setting

National map unit symbol: 9v26 Elevation: 100 to 1,100 feet Mean annual precipitation: 36 to 44 inches Mean annual air temperature: 45 to 48 degrees F Frost-free period: 115 to 195 days Farmland classification: Not prime farmland

Map Unit Composition

Hoosic and similar soils: 75 percent Minor components: 25 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting

Landform: Outwash plains, terraces, deltas

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Riser Down-slope shape: Convex Across-slope shape: Convex Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 9 inches: gravelly sandy loam *H2 - 9 to 23 inches:* very gravelly sandy loam *H3 - 23 to 60 inches:* very gravelly sand

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: A Ecological site: F144AY022MA - Dry Outwash Hydric soil rating: No

Minor Components

Riverhead

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

Hoosic, very steep

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

Unnamed soils, sandy surface

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

Windsor

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

Hoosic, severely eroded

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

Pg—Pits, gravel

Map Unit Setting

National map unit symbol: 9v2r Mean annual precipitation: 36 to 44 inches Mean annual air temperature: 45 to 48 degrees F Frost-free period: 115 to 195 days Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Pits, Gravel

Interpretive groups

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

Minor Components

Udorthents, loamy and clayey

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

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

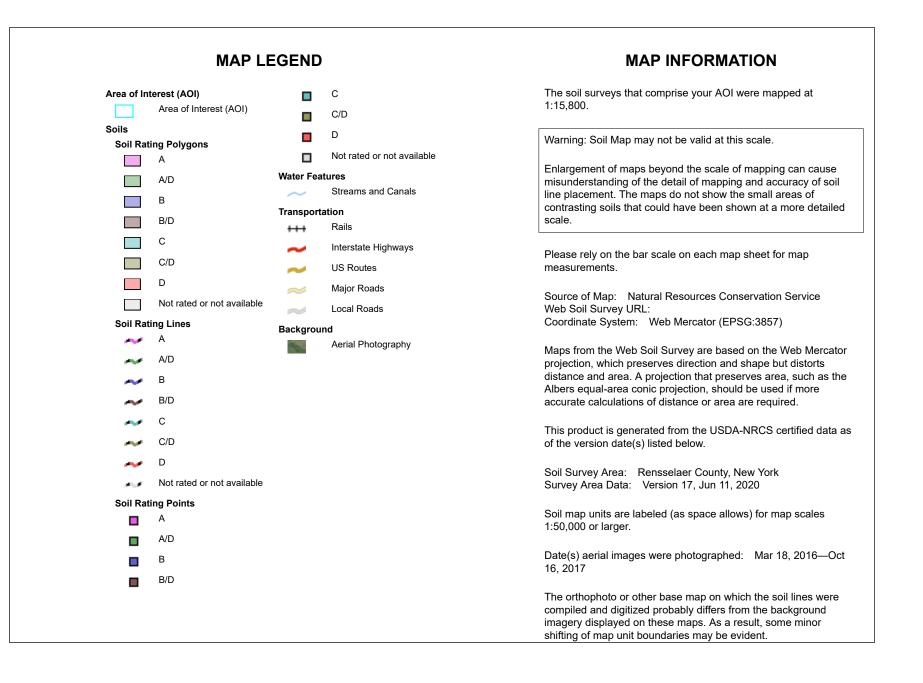
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.





Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI			
СЬА	Castile gravelly silt loam, 0 to 5 percent slopes	A/D	4.0	7.2%			
FIA	Fluvaquents-Udifluvents complex, 0 to 3 percent slopes	A/D	0.4	0.7%			
НоВ	Hoosic gravelly sandy loam, 3 to 8 percent slopes	A	11.9	21.4%			
HoC	Hoosic gravelly sandy loam, rolling	A	7.6	13.5%			
НоЕ	Hoosic gravelly sandy loam, steep	A	4.6	8.2%			
Pg	Pits, gravel		27.5	49.1%			
Totals for Area of Inter	est	55.9	100.0%				

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher