Exhibit I

Soil Conditions

Umatilla-Morrow County Connect Project

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Application for Site Certificate

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ACRONYMS AND ABBREVIATIONS

ESCP	Erosion and Sediment Control Plan
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OAR	Oregon Administrative Rule
ODOE	Oregon Department of Energy
Project	Umatilla-Morrow County Connect Project
Project Order	First Amended Project Order, *In the Matter of the Application for Site Certificate for the Umatilla-Morrow County Connect Project* (April 04, 2024)
USDA	United States Department of Agriculture
WEG	Wind Erodibility Group

1.0 INTRODUCTION

Exhibit I provides information regarding soil conditions for the Umatilla-Morrow County Connect Project (Project) as required by Oregon Administrative Rule (OAR) 345-021-0010(1)(i). The information provided in Exhibit I demonstrates that Umatilla Electric Cooperative (UEC) can design, engineer, construct, and operate the Project to mitigate temporary and permanent soil degradation.

2.0 ANALYSIS

2.1 Analysis Area

As noted in Table 7 of the Project Order (Oregon Department of Energy [ODOE] 2024), the analysis area for Exhibit I includes the Project site boundary. The Project site boundary encompasses a typical 500-foot-wide corridor that includes the Applicant proposed transmission line alternative routes, new and improved access, and temporary work areas. Note that the Project site boundary has been widened in areas where Project features may extend outside of the right-of-way. The Project features are fully described in Exhibit B, and the Project site boundary for each Project feature is described in Exhibit C. The location of the Project features and the Project site boundary is provided in Exhibit C.

2.2 Methods

To complete the requirements of OAR 345-021-0010(1)(i), a detailed desktop study was completed to characterize the existing condition of surficial soils and land cover within the Project analysis area, and potential soil-related impacts that could result from the Project implementation. Reasonably foreseeable impacts to soils resulting from the Project implementation include conversion of existing land use, accelerated soil erosion, and soil contamination. The study primarily consisted of collecting, reviewing, and analyzing available soil survey data from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Findings of the desktop study contained herein will inform the scope of anticipated soil protection and reclamation measures required to mitigate impacts associated with construction and operation of the proposed Project.

2.3 Soil Types

> OAR 345-021-0010(1)(i): Information from reasonably available sources regarding soil conditions and uses in the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0022, including: (A) Identification and description of the major soil types in the analysis area.

The NRCS Soil Survey Geographic Database contains information on the upper five feet of soil across most of the United States developed from field investigations, laboratory testing, and desktop analysis. Based on available Soil Survey Geographic Database data for Umatilla and Morrow Counties, there are six unique soil types mapped within the Project site boundary

(USDA 2023a and 2023b). Soil units mapped across the Project analysis area are displayed in Figure I-1 at the end of this report. Soil unit descriptions and relevant properties within the Project site boundary are tabulated in Attachment I-1.

As shown in Figure I-1 and Attachment I-1, surficial soils are generally consistent across the Project and comprised primarily of terraced eolian sands over alluvium with varying levels of gravel and cobbles. Soils across the Project are almost entirely classified as excessively drained due to their granular composition, meaning the soils drain rapidly and are rarely saturated (USDA 2018). As noted in Exhibit H, slopes within the Project site boundary range from 0 to 20 percent gradient and are on average about six percent (USDA 2023a and 2023b).

2.4 Current Land Use

OAR 345-021-00010(1)(i)(B): Identification and description of current land uses in the analysis area, such as growing crops, that require or depend on productive soils.

The Project is located largely in undeveloped and unincorporated areas of eastern Morrow and western Umatilla Counties. Based on the Multi-Resolution Land Characteristics, 2021 National Land Cover Database for the conterminous United States, land cover within the Project site boundary is primarily classified as shrub and grasslands, with some cultivated crop lands and developed areas. Although some cultivated/agricultural areas are crossed along the western Project portion, no soils within the Project site boundary are classified as USDA Prime or Unique Farmland (USDA 2023a and 2023b). Developed lands across the analysis area consist primarily of paved and unpaved roadways, railroad tracks, utility infrastructure, remnant former Umatilla Army Depot structures, and several commercial facilities.

2.5 Soils Impact Assessment

OAR 345-021-00010(1)(i)(C): Identification and assessment of significant potential adverse impact to soils from construction, operation and retirement of the facility, including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.

Cooling towers and liquid effluent are not required or planned for the proposed transmission Project; therefore, no impacts are foreseeable due to salt deposition or land application of liquid effluent. Potential soil impacts across the Project site boundary are assessed below.

2.5.1 Soil Erosion

As discussed in Exhibit H, soil erosion is a naturally occurring process primarily tied to water runoff and wind forces. While all natural landscapes are subject to varying levels of water- and wind-related erosion, the processes can be accelerated by construction disturbance. Many properties contribute to a soil's erosion potential including particle size distribution, moisture content, density, and vegetation cover. In general, unvegetated areas of dry, fine-grained, and

loosely packed soils are at the highest risk for wind and water erosion. Ground slope and hydraulic conductivity are also tied closely to water erosion.

The USDA has developed multiple factors and criteria to characterize soil erosion potential for cultivated areas due to wind and water. As documented in the National Soil Survey Handbook (USDA 2019), wind erosion susceptibility is represented by the Wind Erodibility Group (WEG) and susceptibility to water erosion is represented by the K factor. WEG ranges from **1** (high wind erosion risk) to **8** (low wind erosion risk) based on soil composition, while K factors range from 0.02 (low water erosion risk) to 0.64 (high water erosion risk) based on soil composition as well as hydraulic conductivity.

In addition to WEG and K factor, NRCS soil survey data provide an "erosion hazard rating" intended to inform the design and implementation of new forest roads and trails. As defined in the USDA Soil Survey Manual, the erosion hazard rating is the possibility of erosion damage occurring as a result of site preparation and clearing (USDA 2018). The USDA erosion hazard rating system ranges from slight to very severe based on a wide range of factors including soil composition, slope, estimated K factor, and area climate. Soil erosion hazard rating, WEG, and K factors for soils within the Project site boundary are tabulated in Attachment I-1.

The NRCS soil survey data (USDA 2023a and 2023b) predict an average WEG of about **2** (moderately high wind erosion risk) for soils within the Project site boundary, with isolated areas of **1** (high risk) and **7** (low risk). The average K factor within the Project site boundary is about 0.23 (moderate water erosion risk), with isolated areas of 0.49 (high risk) associated with slopes up to about 20 percent. Overall, a moderate erosion hazard rating is assigned by the NRCS for all soil units within the Project site boundary, indicating some erosion is expected and erosion control measures will be required for Project access roads and temporary work areas.

While increased soil erosion is expected to some extent due to the Project implementation, disturbance would be isolated to access routes and structure work areas within the Project site boundary. Furthermore, erosion impacts are anticipated to be short-term and primarily associated with Project construction until post-construction remediation is completed. Increased soil erosion associated with Project operations and maintenance is expected to be minimal compared to during construction. Soil impacts associated with the Project retirement are not expected to exceed those associated with construction and would also be short-term until post-decommissioning reclamation has been completed.

2.5.2 Soil Contamination

Large quantities of hazardous chemicals are not anticipated to be necessary for Project construction, maintenance, or retirement. During construction and maintenance, small quantities of commonly used chemicals including fuel, lubricants, cleaning solutions, paint, and concrete curing compounds may be transported to and from the site on equipment in approved containers. No hazardous chemicals will be stored long-term along the Project right-of-way. Required hazardous materials would be managed in accordance with Oregon Department of Environmental Quality regulations and requirements of the Project's National Pollutant Discharge Elimination System (NPDES) Construction Stormwater 1200-C permit. Additional details on the proposed use and management of hazardous materials required for the Project are discussed in Exhibit G.

2.6 Soil Protection Measures

OAR 345-021-00010(1)(i)(D): A description of any measures the applicant proposes to avoid or mitigate adverse impact to soils.

On agricultural lands, permanent impacts to productive soils would be avoided to the extent possible by using existing access roads and locating structures to avoid crops. If avoidance is not possible, structures will be designed to minimize the footprint of structure foundations and required area of temporary and permanent disturbance. In addition, if existing access is not available, either a new access road would be constructed or overland (drive and crush) access would be utilized where practical to reduce potential impacts associated with soil compaction and loss of productive soils. Construction and maintenance would be coordinated with landowners and planned around the growing season if practical. Any disturbed soils would be restored to previous or better condition.

To the extent feasible, existing roads along the Project corridor will be used for construction and maintenance. Existing roads would not be widened but improved as required to mitigate existing soil erosion hazards and prevent sediment transport from wind or water. The extent of new access developments is expected to be minimal due to the number of existing access routes within the proposed site boundary.

Soil erosion impacts associated with proposed access routes and work areas will be minimized though the use of best management practices including, but not limited to preserving and restoring vegetation, dust control, silt fence and straw wattles, and surface armoring as necessary. Any grading required for structures and access roads would be restored to pre-construction condition in accordance with the Project revegetation and weed management plan (Exhibit P, Attachment P-3).

A site-specific Erosion Sediment Control Plan (ESCP) will be prepared with the NPDES 1200-C permit, which will be submitted to ODOE prior to construction based on the final Project design; a preliminary NPDES 1200-C permit has been submitted with this Application (see Exhibit E). Provisions of the 1200-C permit, including the ESCP, will also be applicable to hazardous substance management across the Project. In general, chemical storage and transfer will only occur in approved locations where the risk of releasing chemicals into a nearby water source is negligible. In the event of a chemical release, crews will be equipped with spill response materials including at minimum a shovel, adsorbent pads, and sealed waste receptacle.

2.7 Soil Monitoring

OAR 345-021-00010(1)(i)(E): The applicant's proposed monitoring program, if any, for adverse impact to soils during construction and operation.

Soil monitoring will take place during and following construction. In accordance with the approved Project NPDES 1200-C permit, monitoring of erosion, sediment, and stormwater pollution control measures will be conducted at regular intervals by a certified inspector. Following construction, all areas of temporary disturbance will be reseeded and monitored according to the Project revegetation plan (Exhibit P, Attachment P-3).

3.0 CONCLUSIONS

In accordance with the Structural Standard set forth by OAR 345-022-0020, Exhibit I includes the application information provided for in OAR 345-021-0010(1)(i). Based on the assessment of soil conditions within the Project analysis area contained herein, the risk of significant long-term impacts to soils due to the Project implementation is considered low. This exhibit demonstrates the applicant can design, construct, operate, and retire the proposed Project to reduce potential adverse impacts to soils.

4.0 COMPLIANCE CROSS-REFERENCES

Table I-1 identifies the location within the application for site certificate of the information responsive to the application submittal requirements OAR 345-021-0010(1)(i), the Structural Standard at OAR 345-022-0020, and the relevant Project Order provisions.

TABLE I-1 COMPLIANCE REQUIREMENTS AND RELEVANT CROSS-REFERENCES

REQUIREMENT	LOCATION
OAR 345-021-0010(1)(i) Exhibit I. Information from reasonably available sources regarding soil conditions and uses in the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0022, including:	
(A) Identification and description of the major soil types in the analysis area.	Exhibit I, Section 2.3; Figure I-1
(B) Identification and description of current land uses in the analysis area, such as growing crops, that require or depend on productive soils.	Exhibit I, Section 2.4
(C) Identification and assessment of significant potential adverse impact to soils from construction, operation and retirement of the facility, including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.	Exhibit I, Section 2.5
(D) A description of any measures the applicant proposes to avoid or mitigate adverse impact to soils.	Exhibit I, Section 2.6
(E) The applicant's proposed monitoring program, if any, for adverse impact to soils during construction and operation.	Exhibit I, Section 2.7

5.0 REFERENCES

Multi-Resolution Land Characteristics. 2021. National Land Cover Database for the conterminous U.S. Digital data available at https://www.mrlc.gov/data. Accessed June 2023.

Oregon Department of Energy (ODOE). 2024. Energy Facility Siting Council of the State of Oregon, Umatilla-Morrow County Connect Project Order.

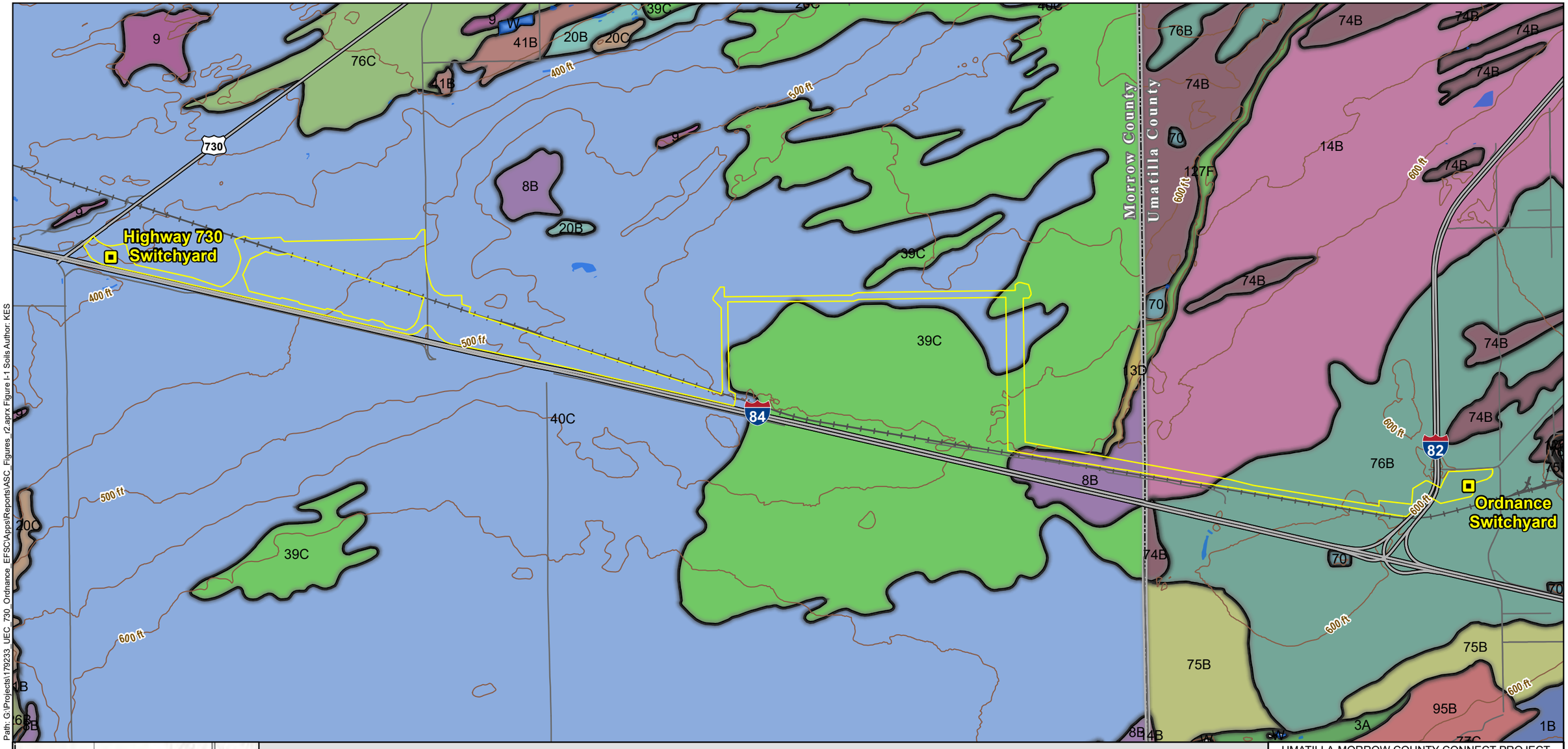
United States Department of Agriculture (USDA). 2023a. NRCS Web Soil Survey. Soil Survey of Morrow County, Oregon. Survey area symbol OR648. Available at https://websoilsurvey.nrcs.usda.gov/app/. Accessed April 2024.

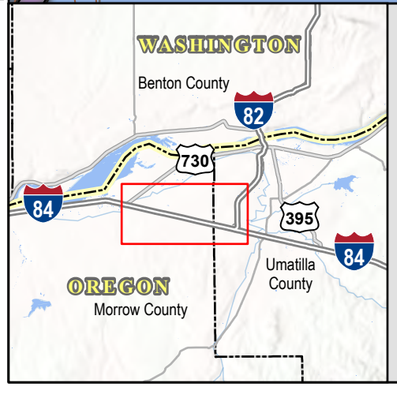
_____. 2023b. NRCS Web Soil Survey. Soil Survey of Umatilla County, Oregon. Survey area symbol OR667. Available at https://websoilsurvey.nrcs.usda.gov/app/. Accessed April 2024.

_____. 2019. NRCS Title 430 - National Soil Survey Handbook. Available at https://www.nrcs.usda.gov/resources/guides-and-instructions/national-soil-survey-handbook. Accessed May 2024.

_____. 2018. Soil Survey Manual, Soil Science Division Staff, Agriculture Handbook No. 18. Available at https://www.nrcs.usda.gov/sites/default/files/2022-09/The-Soil-Survey-Manual.pdf. Accessed May 2024.

FIGURE I-1 SOIL TYPES WITHIN THE PROJECT SITE BOUNDARY





Project Components
- Project Endpoint
- Project Site Boundary

Boundaries
- County

Contours
- 50 foot

Water Resources
- Waterbody

Soil Features
- Soil Unit*

* Soil type descriptions can be found in Exhibit I, Attachment I-1

UMATILLA-MORROW COUNTY CONNECT PROJECT
APPLICATION FOR SITE CERTIFICATE

Figure I-1
Soil Types

0 0.5 1 1.5 2
Miles

N

POWER ENGINEERS MEMBER OF WSP

UEC UMATILLA ELECTRIC COOPERATIVE

Date: 2/11/2025

Path: G:\Projects\179233_UEC_730_Ordnance_EFSC\Apps\Reports\ASC_Figures_r2.aprx Figure I-1 Soils Author: KES

ATTACHMENT I-1 SOIL UNITS WITHIN THE PROJECT SITE BOUNDARY

SOIL UNITS WITHIN THE PROJECT SITE BOUNDARY

MAP SOIL UNIT	SOIL UNIT NAME	LANDFORM	PARENT MATERIAL DESCRIPTION	DRAINAGE CLASS	MINIMUM SLOPE	MAXIMUM SLOPE	REPRESENTATIVE SLOPE	EROSION HAZARD OF ROADS AND TRAILS	WIND ERODIBILITY GROUP (WEG)	K FACTOR	PERCENT OF PROJECT SITE BOUNDARY AREA
14B	Burbank loamy fine sand	Strath terraces	Eolian sands over gravelly alluvium	Excessively drained	0 %	5 %	3 %	Moderate	2	0.17	2.4 %
76B	Quincy loamy fine sand, gravelly substratum	Strath terraces	Eolian sands over gravelly alluvium	Excessively drained	0 %	5 %	3 %	Moderate	2	0.28	11.1 %
40C	Quincy loamy fine sand	Strath terraces	Eolian sands	Excessively drained	2 %	12 %	7 %	Moderate	2	0.23	74.3 %
8B	Burbank loamy fine sand	Terraces	Eolian sands over very cobbly, sandy alluvium	Excessively drained	2 %	5 %	4 %	Moderate	2	0.17	4.0 %
13D	Gravden very gravelly loam	Hillslopes	Gravelly alluvium and colluvium	Well drained	5 %	20 %	13 %	Moderate	7	0.49	< 0.1 %
39C	Quincy fine sand	Strath terraces	Eolian sands	Excessively drained	2 %	12 %	7 %	Moderate	1	0.22	8.2 %

SOURCE: USDA 2023A & 2023B