

# **Preliminary Application for Site Certificate for the Muddy Creek Energy Park**

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## **Exhibit C. Soil Protection**

**Submitted to the  
Oregon Energy Facility Siting Council**

**Prepared for  
Muddy Creek Energy Park, LLC**

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## Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AFO	Agrivoltaics Farm Operator
Applicant	Muddy Creek Energy Park, LLC
ASC	Application for Site Certificate
BESS	battery energy storage system
BMP	best management practices
EFSC	Oregon Energy Facility Siting Council
EFU	Exclusive Farm Use
ESCP	Erosion and Sediment Control Plan
Facility	Muddy Creek Energy Park
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
ORS	Oregon Revised Statutes
Project	Muddy Creek Energy Park
SPCC	Spill Prevention, Control, and Countermeasure
WEG	Wind Erodibility Group

## 1.0 Introduction

Muddy Creek Energy Park, LLC (Applicant) seeks to develop the Muddy Creek Energy Park (Facility), consisting of a 150-megawatt (MW) solar energy generation facility, a 150-MW battery energy storage system (BESS) project, and related or supporting facilities on approximately 1,590 acres of private land in Linn County, Oregon. This Application for Site Certificate (ASC) demonstrates that the proposed Facility would be designed, constructed, and operated consistent with the relevant Oregon Energy Facility Siting Council (EFSC) siting criteria and standards. In addition to meeting the minimum required EFSC criteria, the Applicant proposes to design, construct, and operate the Facility using agrivoltaics. Agrivoltaics co-locates the Facility with active farm operations to retain agricultural production and minimize agricultural impacts within the Facility Site Boundary.

The information contained herein supports the Facility's demonstration of compliance with the Soil Protection approval standard for Oregon Administrative Rules (OAR) 345-022-0022.

## 2.0 Materials Analysis – OAR 345-022-0022(2)(a)

*(2) To assist the Council in determining whether the standard outlined in (1) has been met, the Applicant must submit:*

*(a) A materials analysis, including:*

*(A) An inventory of substantial quantities of industrial materials flowing into and out of the proposed facility during construction and operation;*

*(B) The applicant's plans to manage hazardous substances during construction and operation, including measures to prevent and contain spills; and*

*(C) The applicant's plans to manage non-hazardous waste materials during construction and operation.*

The materials analysis for the Project can be found in Section 5.3 of the Background Information Exhibit.

## 3.0 Identification and Description of Soil Types – OAR 345-022-0022(2)(b)(A)

*(b) 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;*

In the First Amended Project Order for the Facility, the Oregon Department of Energy determined that the analysis area for soils includes the site boundary and extending:

- North - all area extending to Bond Butte Drive, and any EFU-zoned land east of the Bond Butte Drive (but not any further than Gap Road)
- South – all lands within EFU and extending 2 miles from the site boundary
- East – all lands within EFU and extending 2 miles from the site boundary
- West – Interstate 5

Approximately 17,819 acres are in this analysis area, which is inclusive of the Facility site boundary (Figure C-1).

The Soil Survey Geographic Database for Linn County in Oregon (NRCS 2023) was used to identify the near-surface soils in the analysis area. The survey describes the soils in the top 7 feet of subsurface and the area's land-use classifications. According to the Natural Resources Conservation Service (NRCS) (NRCS 2023), there are 44 major soil types (soil units) in the analysis area (Table I-1; Figure I-1).

The four soil units that make up 5 percent or more of the analysis area are as follows:

- **Bashaw silty clay:** These are very deep, poorly drained soils formed in clayey alluvium derived from mixed sources. The soil is a silty clay and makes up approximately 38 percent of the analysis area. Bashaw silty clay is typically in flood plains, depressions, and drainageways of terraces and fans, and are greater than 7 feet thick. The hazard for erosion is slight. The soil has low permeability and high runoff potential.
- **Dayton silt loam:** These are very deep, poorly drained soils formed in silty and clayey glaciolacustrine deposits. The soil is a silt loam and makes up approximately 14 percent of the analysis area. Dayton silt loam is typically in nearly level or somewhat concave, slightly depressed parts of broad valley terrace landscapes and are greater than 7 feet thick. The hazard for erosion is slight. The soil has low permeability and high runoff potential.
- **Dixonville-Philomath-Hazelair complex:** These are moderately deep, poorly drained soils formed in colluvium derived from basic igneous rock. The soil is a silty loam to silty clay and makes up approximately 6.5 percent of the analysis area. The Dixonville-Philomath-Hazelair complex is typically in the summit, shoulder, and toeslope areas of slopes and are approximately 2 feet thick. The hazard for erosion is moderate. The soil has low permeability and high runoff potential.
- **Philomath cobbly silty clay:** These are slightly deep, poorly drained soils formed in colluvium derived from basic igneous rock. The soil is a silty clay and makes up approximately 38 percent of the analysis area. Philomath silty clay is typically in the summit, shoulder, and backslope areas of slopes and are approximately 1.5 feet thick. The

hazard for erosion is slight to moderate. The soil has low permeability and high runoff potential.

### **3.1 Sensitive Soils**

Sensitive soils include soils that have a high susceptibility to impacts from activities associated with the construction and operation of the Facility. These impacts are usually caused by wind or water erosion, fugitive dust generation, and compaction exacerbated by temporary or permanent disturbances to these soils. The soil types within the analysis area are displayed by their ratings for erosion hazard (road, trail), fugitive dust resistance, and soil compaction resistance in Figure C-2. The main impacts of concern from the Project to soils within the analysis area are water erosion and compaction.

Climate data from the Eugene-Mahlon Sweet Field, Oregon station (NOAA 2026) indicates that the area within the vicinity of the Facility receives 43.92 inches of precipitation per year. The soils within the analysis area have a Hydrologic Soil Group rating, ranging from Group B having a moderately high infiltration rate (low runoff potential) to Group D having a very slow infiltration rate (high runoff potential) (Table C-1). The soils with a very slow infiltration rate (high runoff potential) do not absorb most of the precipitation falling on the soil, resulting in runoff. Therefore, it can be inferred that the available precipitation in the area, combined with hydrologic soil group rating, make some soils in the analysis area moderately sensitive to water erosion, especially during winter and spring months when most of the precipitation occurs.

Table C-1. General Description of Mapped Soil Units in Project Area

Soil Type ID	Soil Unit	Approximate Thickness	Formation Setting	Percent of Analysis Area	Hydrologic Soil Group <sup>1</sup>	Erosion Hazard (Road, Trail) <sup>2</sup>	Erosion Hazard (Off-Road, Off-Trail) <sup>3</sup>	Wind Erodibility Group <sup>4</sup>	Fugitive Dust Resistance <sup>5</sup>	Soil Compaction Resistance <sup>6</sup>
103C	Witham silty clay, 2 to 12 percent slopes	>200	Alluvium and colluvium derived from mixed sources	0.4	D	Moderate	Slight	4	High resistance	Low resistance
104E	Witzel very cobbly loam, 3 to 30 percent slopes	41	Colluvium derived from basic igneous rock	0.8	D	Slight	Slight	8	Moderate resistance	Low resistance
104G	Witzel very cobbly loam, 30 to 70 percent slopes	41	Colluvium derived from basic igneous rock	0.5	D	Very severe	Moderate	8	Moderate resistance	Low resistance
20C	Chehalem silt loam, 3 to 12 percent slopes	>200	Alluvium derived from sedimentary rock	0.3	D	Moderate	Moderate	6	Moderate resistance	Moderate resistance
2205A	Conser silty clay loam, 0 to 3 percent slopes	>200	Clayey alluvium	0.7	D	Slight	Slight	6	Moderate resistance	Low resistance
2212A	Awbrig silty clay loam, 0 to 2 percent slopes	>200	Silty alluvium over silty and clayey glaciolacustrine deposits	1.7	D	Slight	Slight	6	Moderate resistance	Low resistance
2224A	Courtney gravelly silty clay loam, 0 to 3 percent slopes	>200	Alluvium	1.1	D	Slight	Slight	7	Moderate resistance	Low resistance
22C	Chehulpum silt loam, 3 to 12 percent slopes	41	Colluvium derived from sedimentary rock	2.6	D	Moderate	Moderate	6	Moderate resistance	Moderate resistance
22E	Chehulpum silt loam, 12 to 35 percent slopes	41	Colluvium derived from sedimentary rock	0.1	D	Severe	Moderate	6	Moderate resistance	Moderate resistance
23	Clackamas gravelly silt loam	>200	Gravelly alluvium derived from mixed sources	0.1	C/D	Slight	Slight	7	Moderate resistance	Moderate resistance
26	Coburg silty clay loam	>200	Silty and clayey alluvium derived from mixed sources	3.3	C	Slight	Slight	6	Moderate resistance	Moderate resistance
27	Concord silt loam	>200	Silty and clayey alluvium derived from mixed sources	<0.1	C/D	Slight	Slight	6	Moderate resistance	Low resistance
33	Dayton silt loam	>200	Silty and clayey alluvium and lacustrine deposits	13.7	D	Slight	Slight	5	Moderate resistance	Low resistance
34C	Dixonville silty clay loam, 3 to 12 percent slopes	66	Colluvium derived from basic igneous rock	1.2	D	Moderate	Moderate	6	Moderate resistance	Moderate resistance
34E	Dixonville silty clay loam, 12 to 30 percent slopes	66	Colluvium derived from basic igneous rock	1.2	D	Severe	Moderate	6	Moderate resistance	Moderate resistance
34F	Dixonville silty clay loam, 30 to 50 percent slopes	66	Colluvium derived from basic igneous rock	0.5	D	Severe	Severe	6	Moderate resistance	Moderate resistance
35C	Dixonville-Philomath-Hazelair complex, 3 to 12 percent slopes	66	Colluvium derived from basic igneous rock	3.4	D	Moderate	Moderate	6	Moderate resistance	Low resistance
35E	Dixonville-Philomath-Hazelair complex, 12 to 35 percent slopes	66	Colluvium derived from basic igneous rock	6.5	D	Severe	Moderate	6	Moderate resistance	Low resistance

Soil Type ID	Soil Unit	Approximate Thickness	Formation Setting	Percent of Analysis Area	Hydrologic Soil Group <sup>1</sup>	Erosion Hazard (Road, Trail) <sup>2</sup>	Erosion Hazard (Off-Road, Off-Trail) <sup>3</sup>	Wind Erodibility Group <sup>4</sup>	Fugitive Dust Resistance <sup>5</sup>	Soil Compaction Resistance <sup>6</sup>
43B	Hazclair silty clay loam, 2 to 7 percent slopes	86	Stratified medium textured and moderately textured colluvium derived from mixed sources over older very clayey material over residuum weathered from sedimentary rock	1.5	D	Moderate	Slight	6	Moderate resistance	Low resistance
43D	Hazclair silty clay loam, 7 to 20 percent slopes	86	Stratified medium textured and moderately textured colluvium derived from mixed sources over older very clayey material over residuum weathered from sedimentary rock	0.2	D	Severe	Moderate	6	Moderate resistance	Low resistance
46	Holcomb silt loam	>200	Silty and clayey alluvium derived from mixed sources	4.0	D	Slight	Slight	6	Moderate resistance	Moderate resistance
63	Malabon silty clay loam	>200	Silty and clayey alluvium derived from mixed sources	1.0	C	Slight	Slight	6	Moderate resistance	Moderate resistance
65B	Marcola cobbly silty clay loam, 2 to 7 percent slopes	>200	Alluvium and colluvium derived from mixed sedimentary and volcanic rock	4.3	C	Slight	Slight	7	High resistance	Moderate resistance
66B	McAlpin silty clay loam, 3 to 6 percent slopes	>200	Fine textured alluvium from mixed sources	0.2	C	Moderate	Slight	6	Moderate resistance	Low resistance
72C	Nekia silty clay loam, 2 to 12 percent slopes	74	Colluvium derived from basic igneous and tuffaceous rock	0.3	C	Moderate	Slight	6	Moderate resistance	Low resistance
72D	Nekia silty clay loam, 12 to 20 percent slopes	74	Colluvium derived from basic igneous and tuffaceous rock	1.0	C	Moderate	Moderate	6	Moderate resistance	Low resistance
72E	Nekia silty clay loam, 20 to 30 percent slopes	74	Colluvium derived from basic igneous and tuffaceous rock	0.3	C	Moderate	Moderate	6	Moderate resistance	Low resistance
72F	Nekia silty clay loam, 30 to 50 percent slopes	74	Colluvium derived from basic igneous and tuffaceous rock	0.9	C	Severe	Moderate	6	Moderate resistance	Low resistance
75C	Panther silty clay loam, 2 to 12 percent slopes	122	Colluvium derived from sedimentary rock	1.7	D	Moderate	Moderate	6	Moderate resistance	Low resistance
77A	Pengra silt loam, 1 to 4 percent slopes	>200	Clayey alluvium derived from mixed sources	1.0	D	Slight	Slight	6	Moderate resistance	Moderate resistance
78C	Philomath silty clay, 3 to 12 percent slopes	48	Colluvium derived from basic igneous rock	0.3	D	Moderate	Moderate	4	High resistance	Low resistance
79C	Philomath cobbly silty clay, 3 to 12 percent slopes	48	Colluvium derived from basic igneous rock	0.8	D	Moderate	Slight	5	High resistance	Low resistance
79F	Philomath cobbly silty clay, 12 to 45 percent slopes	48	Colluvium derived from basic igneous rock	5.2	D	Moderate	Moderate	5	High resistance	Low resistance
8	Bashaw silty clay	>200	Clayey alluvium derived from mixed sources	38.0	D	Slight	Slight	4	High resistance	Low resistance
80	Pits	N/A	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A
84E	Ritner cobbly silty clay loam, 2 to 30 percent slopes	86	Cobbly colluvium derived from basic igneous rock	0.1	C	Moderate	Moderate	7	High resistance	Moderate resistance

Soil Type ID	Soil Unit	Approximate Thickness	Formation Setting	Percent of Analysis Area	Hydrologic Soil Group <sup>1</sup>	Erosion Hazard (Road, Trail) <sup>2</sup>	Erosion Hazard (Off-Road, Off-Trail) <sup>3</sup>	Wind Erodibility Group <sup>4</sup>	Fugitive Dust Resistance <sup>5</sup>	Soil Compaction Resistance <sup>6</sup>
84G	Ritner cobbly silty clay loam, 30 to 60 percent slopes	86	Cobbly colluvium derived from basic igneous rock	0.2	C	Severe	Moderate	7	High resistance	Moderate resistance
87	Salem gravelly silt loam	>200	Gravelly alluvium derived from mixed sources	0.1	B	Slight	Slight	6	Moderate resistance	Low resistance
95C	Steiwer silt loam, 3 to 12 percent slopes	81	Colluvium derived from sedimentary rock	0.4	C	Moderate	Moderate	6	Moderate resistance	Moderate resistance
95D	Steiwer silt loam, 12 to 20 percent slopes	81	Colluvium derived from sedimentary rock	0.1	C	Severe	Moderate	6	Moderate resistance	Moderate resistance
95F	Steiwer silt loam, 20 to 50 percent slopes	81	Colluvium derived from sedimentary rock	<0.1	C	Severe	Moderate	6	Moderate resistance	Moderate resistance
98	Waldo silty clay loam	>200	Silty and clayey alluvium derived from mixed sources	0.1	C/D	Slight	Slight	6	Moderate resistance	Low resistance
W	Water	N/A	N/A	<0.1	N/A	N/A	N/A	N/A	N/A	N/A

1. Hydrologic Soil Group: Groups are based on estimates of runoff potential and according to the rate of water infiltration, ranging from Group A having a high infiltration rate (very low runoff potential) to Group D having very slow infiltration rate (high runoff potential).
2. Erosion Hazard (Road, Trail): The rating indicates the hazard of soil loss from unsurfaced roads and trails.
3. Erosion Hazard (Off-Road, Off-Trail): The rating indicates the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface.
4. Wind Erodibility Group: A wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas, with group 1 being the most susceptible to wind erosion and group 8 being the least susceptible.
5. Fugitive Dust Resistance: The rating indicates the vulnerability of a soil with eroded soil particles to go into suspension during a windstorm. "Low" indicates that the soil has features that are very favorable for the formation of dust, while "High" indicates that the soil has features that are unfavorable for dust formation.
6. Soil Compaction Resistance: This rating indicates resistance of the soil to compaction. "Low" indicates that the soil has one or more features that favor the formation of a compacted layer, while "High" indicates that the soil has features that are very favorable to resisting compaction.

The susceptibility of a soil to erosion by wind is indicated by its Wind Erodibility Group (WEG) number, which ranges from 4 to 8 within the analysis area (see Table C-1). This implies that the erodibility by wind of the soil types within the site boundary varies widely, ranging from slight among the coarse-grained soil types to moderate among the silty soil types. Wind erosion can be further exacerbated by factors such as vegetative cover, soil moisture, grain size of unprotected soil surface, topography, and the frequency of soil disturbance. These factors contribute to making the soils within the analysis area moderately susceptible to wind erosion, especially during the drier summer months and among the finer soil types.

Another erosion-related metric to consider in the Facility design is the hazard of soil loss after disturbance activities that expose the soil surface when a trail or road occurs on it. The rating of soils within the analysis area range from slight among soils located on relatively flat terrain to very severe among soils having fine texture and/or located on steep slopes (Table C-1). This hazard ranges only from slight to moderate when there are no trails or roads placed on the same soil type (Table C-1). Therefore, the soil types that are expected to be sensitive to erosion by water and wind may require focused measures to prevent erosion during the construction and operation of the Facility, especially regarding the placement of trails and roads.

Resistance to fugitive dust generation within the analysis area is indicated as moderate among many soil types and can be attributed to soil structure and composition among many other factors (Table C-1). Resistance to compaction is indicated as low among many soil types in the analysis area. This can also be attributed to soil structure and high clay composition, among other factors (Table C-1). In the case of fugitive dust generation and soil compaction, low resistance is interpreted as the soil having a high susceptibility to these issues. Since the soils do not have a high susceptibility to dust generation, it is not a significant concern for soils within the analysis area. However, areas with high susceptibility to compaction would require focused preventative measures during the construction and operation of the Facility.

## **4.0 Current Land Use – OAR 345-022-0022(2)(b)(B)**

*(B) Identification and description of current land uses in the analysis area, such as growing crops, that require or depend on productive soils;*

The land within the analysis area is privately owned and is zoned primarily EFU, but small portions of land southwest of the proposed Facility are zoned Rural Residential (RR) and Agribusiness (AB). (Exhibit D). The entire Facility is located within the EFU zone and is private agricultural land used for cultivated crops and grass seed, hay, or pasture crops. The grass fields within the Facility Site Boundary are used for sheep grazing. Some small portions of land within the Facility Site Boundary are woody wetlands and developed land.

The soil types present within the Facility Site Boundary result in the entirety of this area to be designated as high-value farmland per ORS 195.300(10)(a) and ORS 215.710 and also consists

entirely of arable lands (see section 2.4.3 of Exhibit D for the High-Value Farmland and Arable Lands Analysis).

## 5.0 Project Soil Impacts – OAR 345-022-0022(2)(b)(C)

*(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;*

### 5.1 Soil Impacts During Construction

Construction of the battery energy storage system (BESS), solar array, and associated infrastructure would require a variety of activities that have the potential for adversely impacting soils. Activities that may result in potential adverse soil impacts include the following:

- Clearing and grubbing of vegetation in temporary construction areas, crane walks, the interconnection line, the BESS foundation, collector circuits, substation construction areas, and new access roads;
- Grading and excavation activities;
- Constructing new access roads;
- Hauling heavy equipment and other truck traffic for the delivery of aggregates, concrete, water, solar components, and construction supplies; and
- Fueling or maintaining construction equipment or vehicles.

Acres of temporary and permanent disturbance by disturbance type are identified in Section 3.2 of the Background Information Exhibit. Erosion and other impacts to soil, resulting from construction activities would be limited through the implementation of best management practices (BMPs) including but not limited to:

- Implementing site-specific BMPs and site restoration practices, including topsoil management and preservation, and soil decompaction during and post-construction;
- Existing perennial grass root systems (e.g., crop stubble) would be left intact and impacts to existing vegetation would be minimized to the extent practicable during construction;
- Limiting the amount of roads and their location within the solar array area to the extent practicable to minimize impacts to existing grass seed production and wetlands;
- Maintaining a Spill Prevention, Control, and Countermeasure (SPCC) Plan. Section 5.3 of the Background Information Exhibit details that no substantial quantities of lubricating oils, hydraulic fluid for construction equipment, or other hazardous materials would be maintained on-site during construction and operation, making the potential for soil contamination very limited; and

- Implementing the erosion and sediment control BMPs in the final Erosion and Sediment Control Plan (ESCP), as required by the National Pollutant Discharge Elimination System Construction Stormwater Discharge General permit 1200-C (see Attachment C-1 for the draft/example ESCP; the Certificate Holder would apply for the permit before construction via the Oregon Department of Environmental Quality's online Your DEQ Online platform and would update the ESCP according to the finalized layout<sup>1</sup> ).

## **5.2 Soil Impacts During Operation**

The Applicant is working with an Agrivoltaics Farm Operator (AFO) to manage the agrivoltaics system at the Facility during its operation. Agrivoltaics co-locates the Facility with active farm operations to retain agricultural production and minimize agricultural impacts within the Facility Site Boundary. The Applicant proposes to continue farming activities within the solar array area (agrivoltaics). Approximately 732 acres of the 873 acres within the limit of disturbance would continue in agricultural use post-construction. The remaining 141 acres within the Facility would contain the infrastructure required for photovoltaic operation. The soils between and around the solar array rows would be managed as they were prior to construction to support agricultural activities. Soil would be tilled and harrowed to prepare the soil for seeding. Tilling, harrowing, and seeding would occur in the summer and fall, when precipitation is lowest, to reduce the loss of topsoil and seeds. The AFO would notify the Facility Operator when tilling and harrowing occurs. Tilling and harrowing would occur when wind levels are low to reduce the amount of dust in between the solar arrays. See the Draft Agrivoltaics Plan for more information on the implementation of agrivoltaics and the proposed facility design adaptations associated with this land use (Attachment D-1 to Exhibit D).

Aside from agriculture-related activities during the operation of the facility, the impacts to soils would be minimal and occur only if/when maintenance is required on nearby solar infrastructure. The Facility Operator would assess if the arrays need maintenance actions after the soil has been prepared and seeded. Maintenance activities may include spraying or blowing dust off of the arrays. Any sediment control measures that would be implemented to aid in site restoration efforts would be maintained, repaired, and replaced as needed to maintain maximum effectiveness, in coordination with the AFO. The primary impact to soils expected from maintenance activities is from the vehicular movement associated with these activities. This impact will be limited as vehicular movement would be restricted to established access roads. Facility components such as inverters, transformers, and the battery energy storage system would be stored in completely contained, leak-proof modules on concrete pads to capture leaks that may occur. Operation and maintenance staff would conduct inspections of the inverters, transformers, and battery energy storage system according to the manufacturer's recommendations, which are assumed to be monthly inspections. In addition, an SPCC Plan would be developed for the operation of the Facility to manage, prevent, contain, and control potential releases, and provide provisions for quick and safe cleanup of hazardous materials (Background Information Exhibit). The potential for soil contamination would

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<sup>1</sup> <https://ordeq-edms-public.govonlinesaas.com/pub/login?web=1>

be limited by not maintaining substantial supplies of hazardous materials on site, and by observing appropriate safety measures during maintenance procedures.

### 5.3 Soil Impacts During Decommissioning

In the event of decommissioning, potential erosion hazards would be similar to those occurring during construction. Measures similar to those employed during construction and operation would be used during decommissioning to prevent and control erosion, to prevent spills, to rectify compaction, and to revegetate disturbed areas.

## 6.0 Mitigation Measures – OAR 345-022-0022(2)(b)(D)

*(D) A description of any measures the applicant proposes to avoid or mitigate adverse impact to soils; and*

As noted above, minimizing measures and BMPs throughout the construction, operation, and decommissioning (if necessary) of the Facility would be implemented. The implementation of agrivoltaics within the Facility Site Boundary implies that the soils between and around the solar arrays would be managed as they were prior to construction to support agricultural activities. BMPs that may be implemented (depending on seasonal conditions, final siting, etc.) along with other measures identified in the ESCP are described below.

- **Stabilized Construction Entrances/Exits** – Stabilized construction entrances or exits would be installed where construction vehicles move from newly constructed roads or disturbed areas to paved roads. The stabilized construction entrances and exits would be inspected and maintained for the life of the Facility.
- **Dust Abatement Measures** – Compact filling and appropriate dust abatement measures such as restricting vehicle speeds; watering active areas, stockpiles, and roadways; track-out control at site exits; tackifiers to reduce and avoid water use; and/or other measures may be used.
- **Preserving Existing Vegetation** – To the extent practicable, existing vegetation would be preserved. Where vegetation clearing is necessary, root systems would be conserved if possible.
- **Silt Fencing** – Silt and mesh fencing would be installed throughout the construction area as a perimeter control, material stockpile perimeter control, and on the contour downgradient of excavations. Mesh fencing would be used for perimeter control and silt fencing would be installed where appropriate (e.g., in proximity to waters and sensitive habitats).
- **Straw Wattles** – Straw wattles may be used to decrease the velocity of sheet flow stormwater to prevent erosion. Wattles would be used along the downgradient edge of access roads adjacent to steep slopes (i.e., greater than 15 percent) or sensitive areas.

- **Mulching** – Mulch would be used to stabilize areas of soil disturbance quickly and during reseeding.
- **Stabilization Matting** – Jute matting, straw matting, or turf reinforcement matting may be used with mulching to stabilize steep slopes exposed during access road installation.
- **Soil Binders and Tackifiers** – Soil binders and tackifiers may be used on exposed slopes to stabilize them until vegetation is established.
- **Concrete Washout Area** – Concrete chutes and trucks would be washed out in dedicated areas near foundation construction locations. This would keep concrete washout water in a localized area. Soil excavated for the concrete washout area would be used as backfill for the completed footing to ensure that the surface soils maintain infiltration capacity.
- **Stockpile Management** – Soil from excavations would be temporarily stockpiled and used onsite. Soils would be stockpiled and reused to prevent productive topsoils from mixing with deeper subsoils. Silt fence would be installed around the stockpile material as a perimeter control. Mulch or plastic sheeting would be used to cover the stockpiled material, if needed. Stockpiles would be watered, if needed, to reduce erosion.
- **Seeding and Revegetation** – The site would be revegetated with an approved seed mix after construction activities. In some areas, seeding may also occur prior to construction to serve as dust control and reduce water usage. When required, the seed would be applied with mulch or stabilization matting to protect the growing grass seed. Revegetation would occur as soon as is practicable following construction.
- **Check Dams and Sediment Traps** – Check dams and sediment traps would be used during the construction of low-impact ford crossings or culvert installations. The check dams and sediment traps would minimize downstream sedimentation during the construction of the stream crossings.
- **Sediment Basins** – Sediment basins would be used during construction for stormwater storage and passive treatment. Sediment basins are earthen embankments, but may be constructed above ground with straw bales, and may also be constructed of concrete movable barriers with a plastic liner to enable water retention. The basin would be situated outside of any water of the state including wetlands.
- **Pollutant Management** – During construction, source control measures would be implemented to minimize the likelihood of chemicals polluting surface water or groundwater. Chemical pollution could occur as a release of diesel fuel or lubricating oils or improper debris and waste handling. Small quantities of fuels and oils may be kept onsite in a dedicated area during construction and operation. Construction vehicles would be fueled and maintained only in dedicated areas. Any spills would be cleaned up immediately.
- **Construction Timing** – Whenever possible, construction activities would be scheduled in the dry season when soils are less susceptible to compaction. Similarly, soil disturbance would be postponed when soils are excessively wet (e.g., following a precipitation event).

The final design of the Facility is not complete. The discussion above is intended to represent a broad range of BMPs that may be implemented. The actual BMPs that may be used for construction and operation are identified in the Draft ESCP (Attachment C-1) and would be confirmed in the finalized ESCP during the pre-construction phase.

## 7.0 Monitoring Program – OAR 345-022-0022(2)(b)(E)

*(E) The applicant's proposed monitoring program, if any, for adverse impact to soils during construction and operation.*

Erosion and sediment control measures would be inspected and maintained regularly during construction as required by the ODEQ NPDES 1200-C permit. The Applicant would monitor the restoration success of temporarily disturbed areas according to the criteria in the Draft ESCP (Attachment C-1). Any sediment control measures that are implemented to aid in site restoration efforts would be inspected regularly and maintained, repaired, and replaced as needed to maintain maximum effectiveness.

## 8.0 Conclusions

During construction, the potential for soil erosion, contamination, and other impacts would be minimized through the implementation of best management practices and measures outlined above and by adhering to all applicable site certificate conditions. Specific construction and site restoration practices, including for agrivoltaics, would mitigate construction impacts on soil productivity and return most of the Facility footprint to agricultural production. There would be no adverse impacts on productive farmland soils except where permanent impacts are proposed, and EFSC may conclude that the design, construction, and operation of the proposed Facility is unlikely to have a significant, adverse impact on soils.

## 9.0 References

NRCS (Natural Resource Conservation Service). 2023. Web Soil Survey. Available online at:

<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed September 2023.

NOAA (National Oceanic and Atmospheric Administration). 2026. AgACIS for Linn County. Available online at: <https://agacis.rcc-acis.org/?fips=41043>

## 10.0 Approval Standards and Submittal Requirements

**Table C-2. Approval Standards and Submittal Requirements Matrix**

Requirement	Location
OAR 345-022-0022 Soil Protection	-
<b>Approval Standards</b>	
(1) To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are not likely to result in a significant adverse impact to soils including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.	
<b>Submittal Requirements</b>	
(2) To assist the Council in determining whether the standard outlined in (1) has been met, the Applicant must submit:	-
(a) A materials analysis, including:	Section 5.3 of the Background Information Exhibit
(A) An inventory of substantial quantities of industrial materials flowing into and out of the proposed facility during construction and operation;	Section 5.3 of the Background Information Exhibit
(B) The applicant's plans to manage hazardous substances during construction and operation, including measures to prevent and contain spills; and	Section 5.3 of the Background Information Exhibit
(C) The applicant's plans to manage non-hazardous waste materials during construction and operation.	Section 5.3 of the Background Information Exhibit
(b) 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;	Section 3.0
(B) Identification and description of current land uses in the analysis area, such as growing crops, that require or depend on productive soils;	Section 4.0
(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;	Section 5.0
(D) A description of any measures the applicant proposes to avoid or mitigate adverse impact to soils; and	Section 6.0
(E) The applicant's proposed monitoring program, if any, for adverse impact to soils during construction and operation.	Section 7.0
Verified requirements against version <a href="#">EFSC 4-2026, amend filed 04/23/2026, effective 04/23/2026</a> .	

# Figures

# Muddy Creek Energy Park

## Figure C-1 NRCS Soils Map Index Map

LINN COUNTY, OR

- Map Grid
- Facility Site Boundary
- Land Use Analysis Area
- City/Town
- County Boundary
- Interstate Highway
- State Highway



### Reference Map

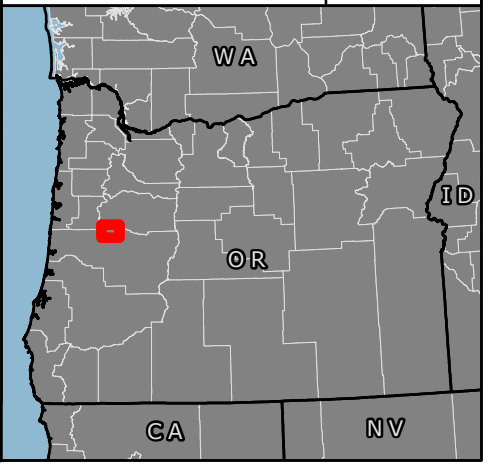


Figure C-1.1

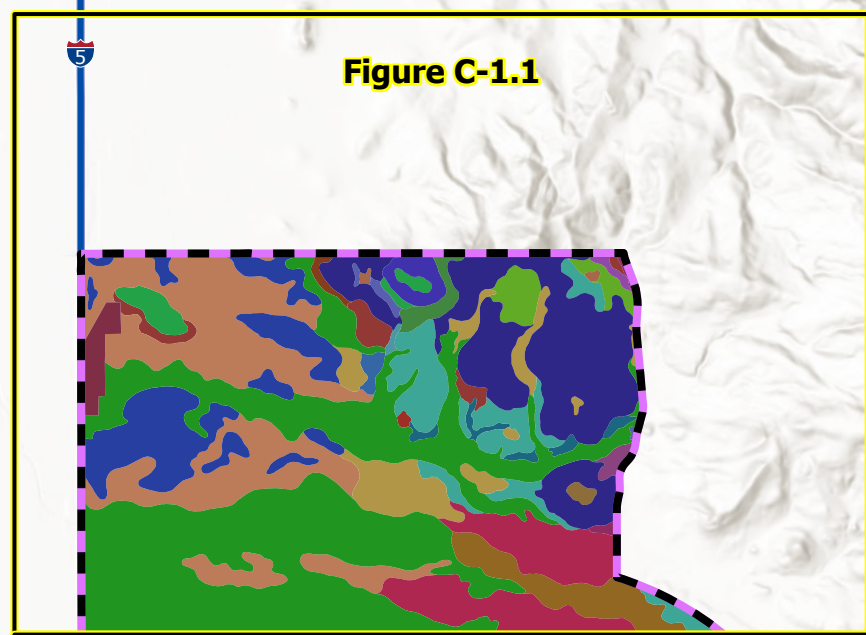


Figure C-1.2

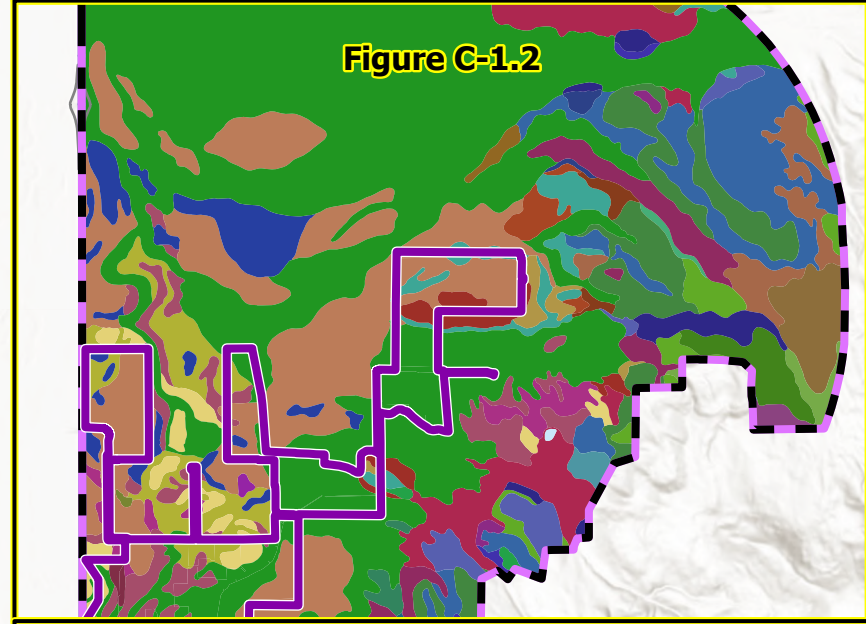
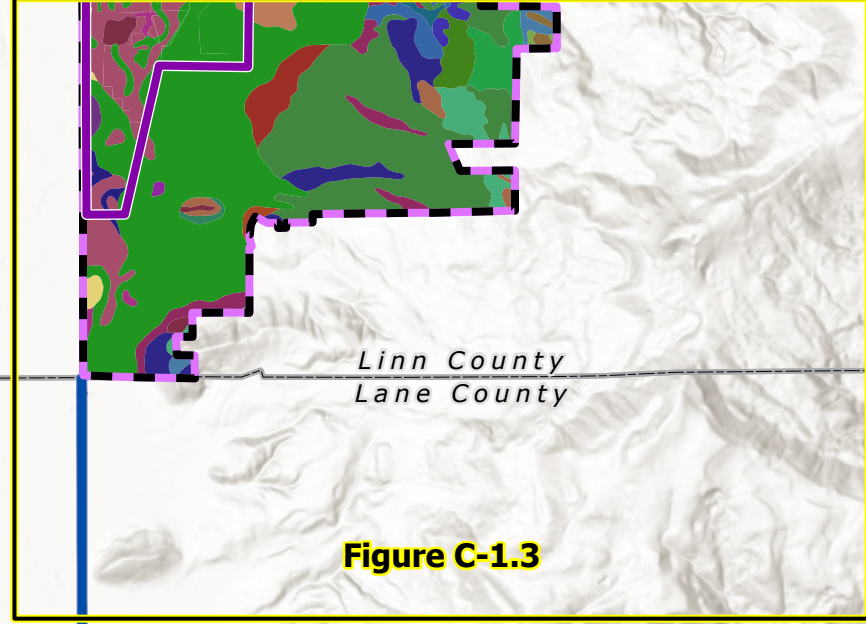


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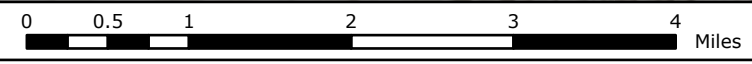


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



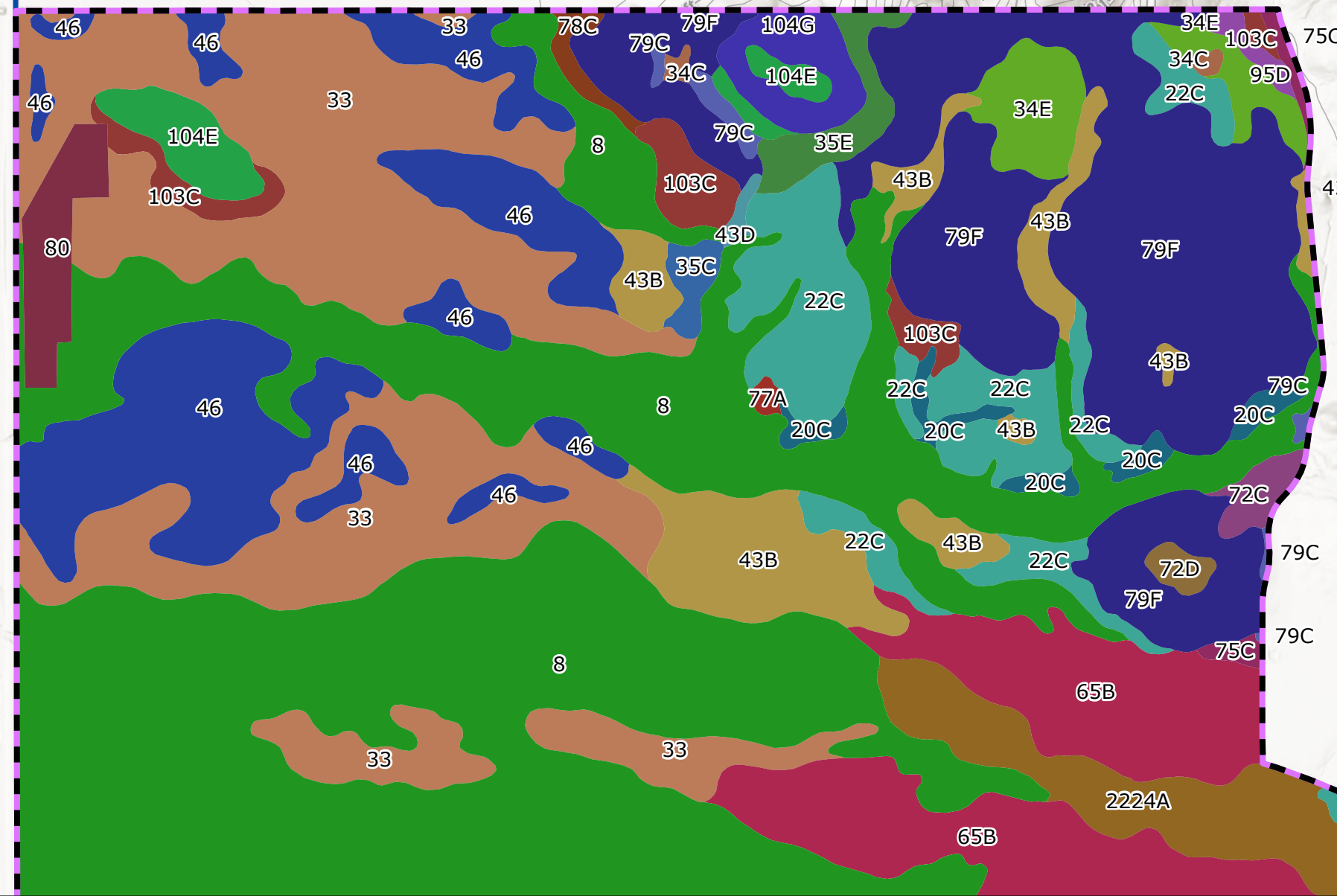
NOT FOR CONSTRUCTION

# Muddy Creek Energy Park

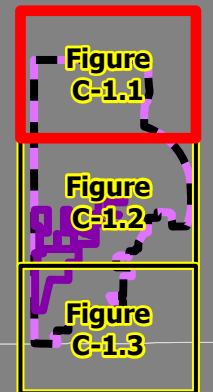
## Figure C-1.1 NRCS Soils Map Detail Map

LINN COUNTY, OR

-  Facility Site Boundary
-  Land Use Analysis Area
-  County Boundary
-  Interstate Highway



### Reference Map

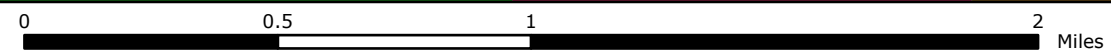


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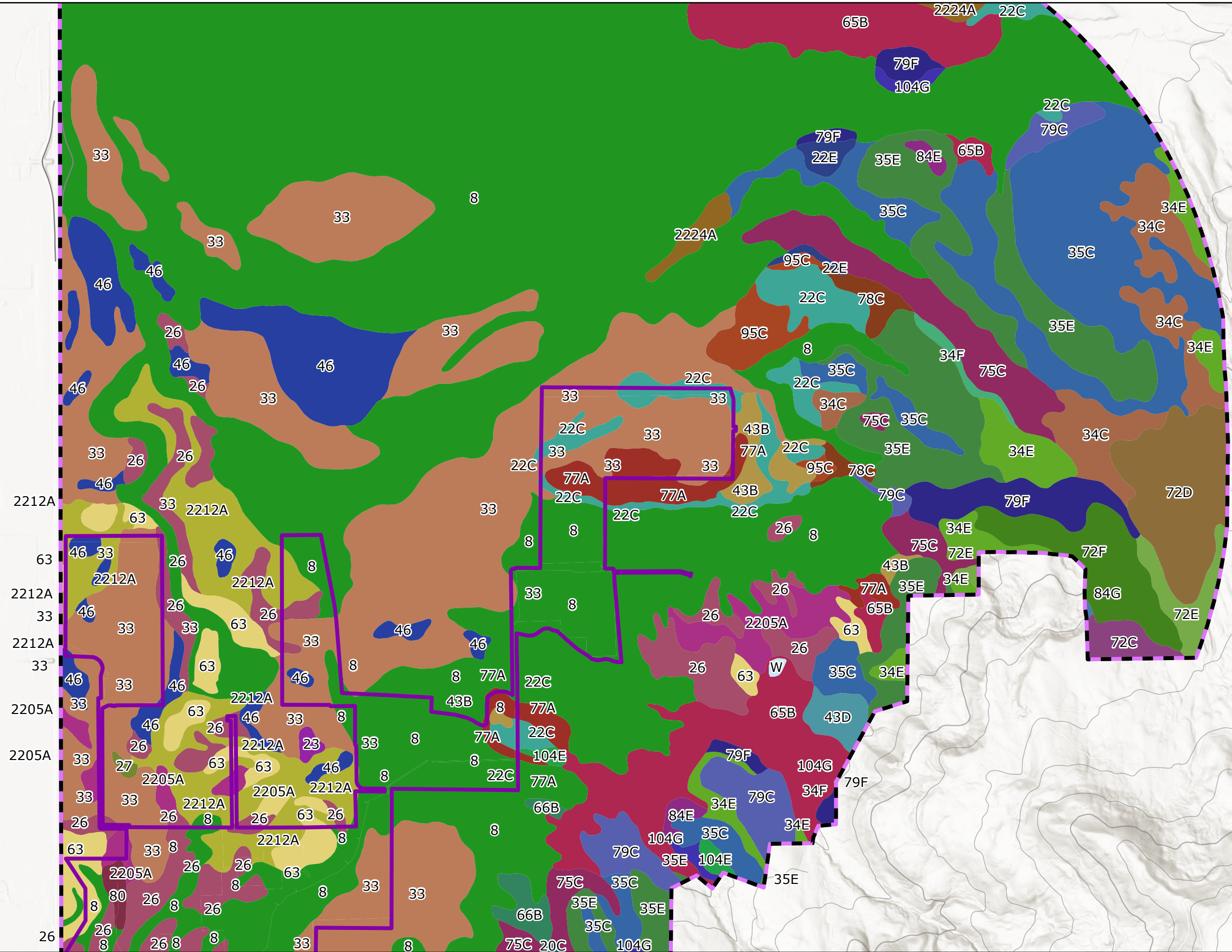
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# Muddy Creek Energy Park

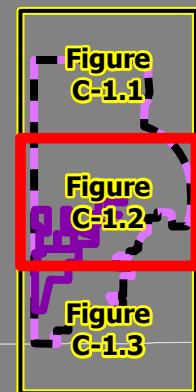
## Figure C-1.2 NRCS Soils Map Detail Map

LINN COUNTY, OR

-  Facility Site Boundary
-  Land Use Analysis Area
-  County Boundary
-  Interstate Highway



Reference Map



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# Muddy Creek Energy Park

## Figure C-1 NRCS Soils Map Legend

LINN COUNTY, OR

### NRCS Soils Mapunit Symbol, Mapunit Name

 103C, Witham silty clay, 2 to 12 percent slopes	 63, Malabon silty clay loam
 104E, Witzel very cobbly loam, 3 to 30 percent slopes	 65B, Marcola cobbly silty clay loam, 2 to 7 percent slopes
 104G, Witzel very cobbly loam, 30 to 70 percent slopes	 66B, McAlpin silty clay loam, 3 to 6 percent slopes
 20C, Chehalem silt loam, 3 to 12 percent slopes	 72C, Nekia silty clay loam, 2 to 12 percent slopes
 2205A, Conser silty clay loam, 0 to 3 percent slopes	 72D, Nekia silty clay loam, 12 to 20 percent slopes
 2212A, Awbrig silty clay loam, 0 to 2 percent slopes	 72E, Nekia silty clay loam, 20 to 30 percent slopes
 2224A, Courtney gravelly silty clay loam, 0 to 3 percent slopes	 72F, Nekia silty clay loam, 30 to 50 percent slopes
 22C, Chehulpum silt loam, 3 to 12 percent slopes	 75C, Panther silty clay loam, 2 to 12 percent slopes
 22E, Chehulpum silt loam, 12 to 35 percent slopes	 77A, Pengra silt loam, 1 to 4 percent slopes
 23, Clackamas gravelly silt loam	 78C, Philomath silty clay, 3 to 12 percent slopes
 26, Coburg silty clay loam	 79C, Philomath cobbly silty clay, 3 to 12 percent slopes
 27, Concord silt loam	 79F, Philomath cobbly silty clay, 12 to 45 percent slopes
 33, Dayton silt loam	 8, Bashaw silty clay
 34C, Dixonville silty clay loam, 3 to 12 percent slopes	 80, Pits
 34E, Dixonville silty clay loam, 12 to 30 percent slopes	 84E, Ritner cobbly silty clay loam, 2 to 30 percent slopes
 34F, Dixonville silty clay loam, 30 to 50 percent slopes	 84G, Ritner cobbly silty clay loam, 30 to 60 percent slopes
 35C, Dixonville-Philomath-Hazelair complex, 3 to 12 percent slopes	 87, Salem gravelly silt loam
 35E, Dixonville-Philomath-Hazelair complex, 12 to 35 percent slopes	 95C, Steiwer silt loam, 3 to 12 percent slopes
 43B, Hazelair silty clay loam, 2 to 7 percent slopes	 95D, Steiwer silt loam, 12 to 20 percent slopes
 43D, Hazelair silty clay loam, 7 to 20 percent slopes	 95F, Steiwer silt loam, 20 to 50 percent slopes
 46, Holcomb silt loam	 98, Waldo silty clay loam
	 W, Water



# **Attachment C-1. ESCP**

**[Pending]**