

Exhibit I

Soil Conditions

**Carty Generating Station
October 2026**

Prepared for



Portland General Electric Company

Prepared by



TETRA TECH

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Acronyms and Abbreviations

AC	alternating current
BMP	best management practices
BESS	battery energy storage system
Certificate Holder/PGE	Portland General Electric Company
Council	Oregon Energy Facility Siting Council
ESCP	Erosion and Sediment Control Plan
CGS/ Facility	Carty Generating Station
kV	kilovolt
MW	megawatt
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
RFA	Request for Amendment
SPCC	Spill Prevention, Control and Countermeasures
VSMP	Vegetation and Soil Management Plan

1.0 Introduction

The Portland General Electric Company (PGE or Certificate Holder) is submitting a Request for Amendment (RFA) 4 to the Site Certificate for the Carty Generating Station (CGS or Facility). The Facility is located approximately 13 miles southwest of Boardman, in Morrow County, Oregon. As currently approved, the Facility is capable of generating up to 450 megawatts (MW) from the natural gas-fueled combined-cycle unit (Unit 1).

In RFA 4, the Certificate Holder is proposing photovoltaic solar energy generation with approximately 200 MW alternating current (AC) of nominal and average generating capacity and BESS with the capability of storing up to 200 MW AC. The overall CGS additions proposed with RFA 4 (including the BESS) are referred to throughout this request as the Carty Solar Farm with proposed RFA 4 changes. The solar generation is proposed in two separate solar areas referred to as the Northern Solar Area, located north of the Carty Reservoir, and the Southern Solar Area, located south of the reservoir [see Figure 2 in RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station)].

This Exhibit I was prepared to meet the submittal requirements in Oregon Administrative Rules (OAR) 345-021-0010(1)(i). Analysis in this exhibit incorporates and/or relies on reference information, analysis, and findings found in the Application for Site Certificate, previous RFAs, and Oregon Department of Energy Final Orders to demonstrate that the Facility, as modified by RFA 4, continues to comply with applicable Site Certificate Conditions and the approval standard in OAR 345-022-0022.

2.0 Analysis Area

The analysis area for soil resources is the Amended Site Boundary (Figure I-1). The Amended Site Boundary is defined in detail in Section 4.1.1.2 of the RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station).

3.0 Identification and Description of Soil Types – OAR 345-021-0010(1)(i)(A)

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:

OAR 345-021-0010(1)(i)(A) Identification and description of the major soil types in the analysis area;

The Soil Survey Geographic Database for Morrow 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 10 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:

- **Sagehill fine sandy loam, 2–5% slopes** — These are deep to very deep, well-drained soils formed in lacustrine deposits with a mantle of loess or eolian deposits. The soil is a very fine sandy loam. Sagehill fine sandy loam soils are in valley landscapes and are greater than 7 feet thick. The hazard for erosion is moderate. The soil has high permeability and moderately low runoff.
- **Sagehill fine sandy loam, hummocky, 2–5% slopes** — These are deep to very deep, well-drained soils formed in lacustrine deposits with a mantle of loess or eolian deposits. The soil is a very fine sandy loam. Sagehill fine sandy loam soils are in valley landscapes and are greater than 7 feet thick. The hazard for erosion is moderate. The soil has high permeability and moderately low runoff.
- **Sagehill fine sandy loam, hummocky, 5–12% slopes** — These are deep to very deep, well-drained soils formed in lacustrine deposits with a mantle of loess or eolian deposits. The soil is a very fine sandy loam. Sagehill fine sandy loam soils are in valley landscapes and are greater than 7 feet thick. The hazard for erosion is severe. The soil has high permeability and moderately low runoff.
- **Taunton fine sandy loam, 2–5% slopes** — These soils are moderately deep to a duripan and formed in alluvium. The soil is a fine sandy loam. Taunton fine sandy loam soils are in plateau landscapes and are greater than 7 feet thick. The hazard for erosion is moderate. The soil has moderate permeability and moderately high runoff.

Sensitive soils are soils that have moderate to high erosion hazard from stormwater, moderate to high fugitive dust resistance, and low soil compaction resistance making them highly susceptible to impacts from construction and other disturbances (NRCS 2023). Of the major soil types identified within the analysis area, two soils are considered sensitive soils. These are:

- **Dune land** — These soils are formed in eolian sand. The soil is a fine sand. Dune land soils are in dune landscapes and are greater than 7 feet thick. The hazard for erosion, permeability and runoff for this soil is not rated. The soil is categorized as sensitive with it being unrated for erosion by stormwater, low fugitive dust resistance, and soil compaction resistance.
- **Sagehill fine sandy loam, 12–20% slopes** — These are deep to very deep, well-drained soils formed in lacustrine deposits with a mantle of loess or eolian deposits. The soil is a very fine sandy loam. Sagehill fine sandy loam soils are in valley landscapes and are greater than 7 feet thick. The hazard for erosion is severe. The soil has high permeability and

moderately low runoff. The soil is categorized as sensitive with it being moderately prone to wind erosion, having moderate fugitive dust resistance and medium soil compaction resistance.

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Table I-1. General Description of Mapped Soil Units in the Analysis Area

Soil Type ID	Soil Unit	Approximate Thickness	Formation Setting	Percent of Analysis Area	Permeability	Runoff	K-factor ¹	Hazard for Erosion	Wind Erosion Rating ¹	Sensitive Soils ²		
										Erosion Hazard (Stormwater)	Fugitive Dust Resistance	Soil Compaction Resistance
9	Dune land	>7 feet	Eolian sand	3.42%	Not rated	Not rated	(0.15-0.15)	Not rated	1	Not rated	Low resistance to dust propagation	Low
53A	Royal silt loam, 0 to 3 percent slopes	>7 feet	Alluvium and glaciofluvial deposits reworked by wind	2.32%	Very High	Low	(0.28-0.28)	Slight	2	Slight	Slight	High
54B	Sagehill fine sandy loam, 2 to 5 percent slopes	>7 feet	Sandy eolian deposits and loess over lacustrine deposits	37.59%	High	Moderately Low	(0.32-0.32)	Moderate	3	Slight	Slight	Medium
54D	Sagehill fine sandy loam, 12 to 20 percent slopes	>7 feet	Sandy eolian deposits and loess over lacustrine deposits	3.72%	High	Moderately Low	(0.32-0.32)	Severe	3	Moderate	Moderate	Medium
55B	Sagehill fine sandy loam, hummocky, 2 to 5 percent slopes	>7 feet	Sandy eolian deposits and loess over lacustrine deposits	17.41%	High	Moderately Low	(0.32-0.32)	Moderate	3	Slight	Slight	Medium
55C	Sagehill fine sandy loam, hummocky, 5 to 12 percent slopes	>7 feet	Sandy eolian deposits and loess over lacustrine deposits	8.63%	High	Moderately Low	(0.32-0.32)	Severe	3	Slight	Slight	Medium
58B	Taunton fine sandy loam, 2 to 5 percent slopes	>7 feet	Eolian sands over strongly cemented alluvium	21.45%	Moderate	Moderately High	(0.28-0.28)	Moderate	3	Slight	Slight	Medium
58C	Taunton fine sandy loam, 5 to 12 percent slopes	>7 feet	Eolian sands over strongly cemented alluvium	4.65%	Moderate	Moderately High	(0.28-0.28)	Severe	3	Slight	Slight	Medium
71E	Warden silt loam, 20 to 40 percent slopes	>7 feet	Loess over calcareous lacustrine deposits	0.07%	High	Moderately Low	(0.55-0.55)	Severe	3	Moderate	Moderate	High
78	Xeric Torriorthents, nearly level	>7 feet	Eolian sands and alluvium	0.73%	Very High	Low	(0.24-0.24)	Slight	3	Slight	Slight	Medium
<p>1. A wind erodibility group consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. Erosion factor K (Kw for the whole soil) indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation and the Revised Universal Soil Loss Equation to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on silt, sand, and organic matter percentage and on soil structure and saturated hydraulic conductivity. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.</p> <p>2. Sensitive soils are soils that have moderate to high erosion hazard from stormwater, moderate to high fugitive dust resistance, and low soil compaction resistance making them highly susceptible to impacts from construction and other disturbances (NRCS 2023). By this definition, Dune land and Sagehill fine sandy loam, 12 to 20 percent slopes are considered sensitive soils.</p>												

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4.0 Current Land Use within the Analysis Area – OAR 345-021-0010(1)(i)(B)

OAR 345-021-0010(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 analysis area is zoned Exclusive Farm Use (EFU) and General Industrial (MG) by Morrow County (see Exhibit K). The land zoned for EFU is owned by either the Certificate Holder or Threemile Canyon Farms. The EFU land owned by the Certificate Holder is vacant. The EFU land owned by Threemile Canyon Farms is predominantly vacant but does include some portions of several irrigated crop circles. The amended Facility will not disturb any areas used for irrigated crop circles or for other agricultural activities. The MG zoned land was the former location of the Boardman Coal Plant, which was in operation until 2020; demolition of the Boardman Coal Plant was completed at the end of 2023. See Exhibit K for definition and detailed analysis of land use within the analysis area.

5.0 Project Soil Impacts – OAR 345-021-0010(1)(i)(C)

OAR 345-021-0010(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;

5.1 Soil Impacts During Construction

Facility construction will require many activities that could adversely impact soils including:

- Clearing and grubbing vegetation around temporary construction areas, solar arrays, the collector lines, the battery energy storage system foundation, collector circuits, substation construction areas, and new access roads;
- Grading and excavation activities;
- Constructing new access roads;
- Operating and moving cranes;
- Using heavy equipment and hauling trucks to delivery aggregates, concrete, water, solar components, and construction supplies; and
- Fueling or maintaining construction equipment or vehicles.

The portions of the analysis area that will be graded are expected to result in a balanced cut-and-fill quantity of earthwork to maintain the existing conditions to the extent practicable for the protection of the equipment and facilities.

Acres of temporary and permanent disturbance by disturbance type are identified in Section 4.4.3 of the RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station). Impacts to soil, such as erosion, resulting from construction activities would be limited through the implementation of best management practices (BMPs), including but not limited to those identified in relevant Site Conditions in the Third Amended Site Certificate (Council 2022) as noted below. Measures that will be implemented include the following:

- Maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan (Condition 5.9; Council 2022);
- Implement BMPs to control any dust generated by construction activities, such as applying water to roads and disturbed soil areas (Condition 9.3, Council 2022);
- Conduct all construction work in compliance with an Erosion and Sediment Control Plan (ESCP; Attachment I-1) satisfactory to the Oregon Department of Environmental Quality (ODEQ) and as required under the National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge General Permit #1200-C. Include in the ESCP any procedures necessary to meet local erosion and sediment control requirements or stormwater management requirements (Condition 9.1, Council 2022); and
- Implementing appropriate site restoration practices following construction, including decompaction and revegetation, as described in the ESCP (Attachment I-1) and the Draft Vegetation and Soil Management Plan (VSMP; Attachment I-2; Condition 9.6, Council 2022).

5.1.1 Impacts During Construction to Sensitive Soils

Soil types identified as sensitive within the Amended Site Boundary are moderate to highly prone to erosion by stormwater, have high fugitive dust resistance, and low soil compaction resistance and will therefore likely be impacted in certain areas. Therefore, the implementation of erosion control practices is integral at all phases of construction. Refer to Attachment I-1 for the draft ESCP which outlines measures to specifically limit the impact during construction to sensitive soils.

5.2 Soil Impacts During Operation

Solar array operation would not impact soil erosion. Facility operations are not expected to cause any additional ground disturbances. Following Condition 9.5 in the Third Amended Site Certificate (Council 2022), the Certificate Holder will routinely inspect and maintain all Facility components and maintain or repair erosion and sediment control measures as needed. Vehicles will stay on constructed access roads to avoid unnecessary compaction and erosion (Condition 9.2; Council 2022), or spill risk (Conditions 8.8 and 8.9; Council 2022). The potential for soil contamination would be limited by implementing Condition 9.10 as described in Exhibit G, and by observing

appropriate safety measures during maintenance procedures (Council 2022). In addition, Condition 5.9 requires the Certificate Holder to develop and implement an operational SPCC Plan.

5.2.1 Impacts During Operation to Sensitive Soils

Soil types identified as sensitive within the Amended Site Boundary are moderate to highly prone to erosion by wind and water and will likely be impacted in certain areas. Therefore, the implementation of erosion control practices is integral during operation. The Carty Solar Farm with proposed RFA 4 changes is expected be graded in a manner to encourage stormwater to infiltrate the ground without the need for collection in stormwater swales or retention basins. During operation, PGE will monitor the area until soils are stabilized and evaluate whether construction-related impacts to soils are being adequately addressed by the mitigation procedures described in the draft Erosion and Sediment Control Plan (Site Certificate Conditions 9.4 and 9.5) and the Draft VSMP (Attachment I-2) (Site Certificate Conditions 9.6 and 9.7). Stormwater management infrastructure installed during construction will, as needed, be left in place to continue functioning during operation. Such features may include roadside ditches, infiltration swales, or retention basins. Refer to the Draft VSMP (Attachment I-2), which addresses topsoil management and describes a monitoring program (and remedial measures) for evaluating (and addressing impacts to) long-term soil stability.

5.3 Soil Impacts During Decommissioning

In the event of decommissioning, erosion hazards would be similar to construction. Measures like those used in construction and operation through required Site Certificate Conditions would be used to prevent and control erosion, mitigate soil compaction, prevent spills, and revegetate disturbed areas.

5.3.1 Impacts During Decommissioning to Sensitive Soils

Soil types identified as sensitive within the Amended Site Boundary are moderate to highly prone to erosion by wind and water and will likely be impacted in certain areas. Therefore, the implementation of erosion control practices is integral during decommissioning, which will be similar to the erosion control practices implemented during construction. Refer Attachment I-1 for the draft ESCP which outlines measures to specifically limit the impact to sensitive soils during construction.

6.0 Mitigation Measures – OAR 345-021-0010(1)(i)(D)

6.1 Minimization and Best Management Practices

OAR 345-021-0010(1)(i)(D) A description of any measures the applicant proposes to avoid or mitigate adverse impact to soils; and

As noted above, many Site Certificate Conditions require the use of minimizing measures and BMPs throughout the construction, operation, and decommissioning (if necessary) of the Facility. The graded portions of the analysis area are expected to create a balanced cut-and-fill quantity of earthwork to maintain the existing conditions and protect equipment and facilities. BMPs that may be implemented (depending on seasonal conditions, final siting, etc.) along with other measures identified in the ESCP include the following:

- **Stabilized Construction Entrances/Exits** – Stabilized construction entrances or exits will be installed where construction vehicles move from newly constructed roads or disturbed areas to paved roads. The stabilized construction entrances and exits will 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; and other measures may be used.
- **Preserving Existing Vegetation** – To the extent practicable, existing vegetation will be preserved. Where vegetation clearing is necessary, root systems would be conserved if possible.
- **Silt Fencing** – Silt fencing will be installed throughout the construction area as a perimeter control, material stockpile perimeter control, and on the contour downgradient of excavations.
- **Straw Wattles** – Straw wattles may be used to decrease the velocity of sheet flow stormwater to prevent erosion. Wattles will be used along the downgradient edge of access roads adjacent to slopes or sensitive areas.
- **Mulching** – Mulch may 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 will be washed out in dedicated areas near foundation construction locations or areas previously impacted by the Boardman Coal Plant. This will keep concrete washout water in a localized area.
- **Stockpile Management** – Soil from excavations will be temporarily stockpiled and used onsite. Soils will be stockpiled and reused to prevent productive topsoils from mixing with deeper subsoils. Silt fence will be installed around the stockpile material as a perimeter control. Mulch or plastic sheeting will be used to cover the stockpiled material, if needed. Stockpiles will be watered, if needed, to reduce erosion.

- **Revegetation** – The site will be revegetated with an approved seed mix after construction activities. When required, the seed will be applied with mulch or stabilization matting to protect the growing grass seed. Revegetation will occur as soon as is practicable following construction.
- **Pollutant Management** – During construction, source control measures will 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 will be fueled and maintained only in dedicated areas. Any spills would be cleaned up immediately.
- **Construction Timing** – Whenever possible, construction activities will be scheduled in the dry season when soils are less susceptible to compaction.

The above BMPs apply to the sensitive soils within the analysis area as well.

7.0 Monitoring Program – OAR 345-021-0010(1)(i)(E)

OAR 345-021-0010(1)(i)(E) The applicant's proposed monitoring program, if any, for adverse impact to soils during construction and operation.

As discussed in Section 5.1, Conditions 9.1 and 9.4 in the Third Amended Site Certificate require the Certificate Holder to implement a final ESCP including construction monitoring requirements as approved by ODEQ (Council 2022). In addition, Section 5.2 identified Condition 9.5 in the Third Amended Site Certificate, which requires the Certificate Holder to inspect and maintain all Facility components routinely, and, as necessary, maintain or repair erosion and sediment control measures (Council 2022).

8.0 Conclusion

During construction, the potential for soil erosion and contamination will be minimized by avoiding problematic areas to the extent practical and by adhering to the Site Certificate Conditions outlined above. Specific construction and site restoration practices will mitigate construction impacts on soil productivity. There will be no adverse impacts on productive farmland soils. Considering the existing Site Certificate Conditions, the Energy Facility Siting Council 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

- Council (Oregon Energy Facility Siting Council). 2022. Third Amended Site Certificate for the Carty Generating Station. Energy Facility Siting Council, Salem, Oregon. July 2022.
- NRCS (Natural Resources Conservation Service). 2023. Gridded Soil Survey Geographic (SSURGO) Database for Oregon. United States Department of Agriculture, Natural Resources Conservation Service. September 2023. <https://gdg.sc.egov.usda.gov/>.

Figures

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- Soil Type
- 53A, Royal silt loam, 0 to 3 percent slopes
 - 54B, Sagehill fine sandy loam, 2 to 5 percent slopes
 - 54D, Sagehill fine sandy loam, 12 to 20 percent slopes
 - 55B, Sagehill fine sandy loam, hummocky, 2 to 5 percent slopes
 - 55C, Sagehill fine sandy loam, hummocky, 5 to 12 percent slopes
 - 58B, Taunton fine sandy loam, 2 to 5 percent slopes
 - 58C, Taunton fine sandy loam, 5 to 12 percent slopes
 - 71E, Warden silt loam, 20 to 40 percent slopes
 - 78, Xeric Torriorthents, nearly level
 - 9, Dune land

Carty
Generating Station
Request for
Amendment 4

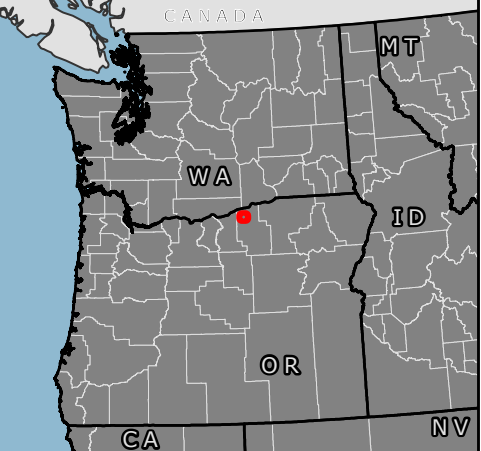
Figure I-1
NRCS Soil Map

MORROW COUNTY, OR

Amended Site Boundary

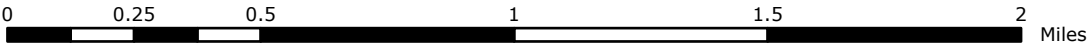


Reference Map



1:24,000

WGS 1984 UTM Zone 10N



NOT FOR CONSTRUCTION

Carty Generating Station Request for Amendment 4

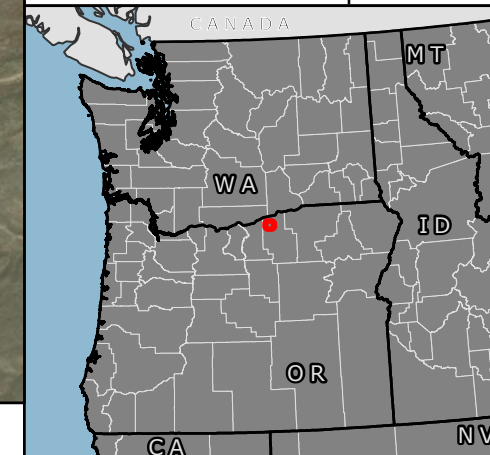
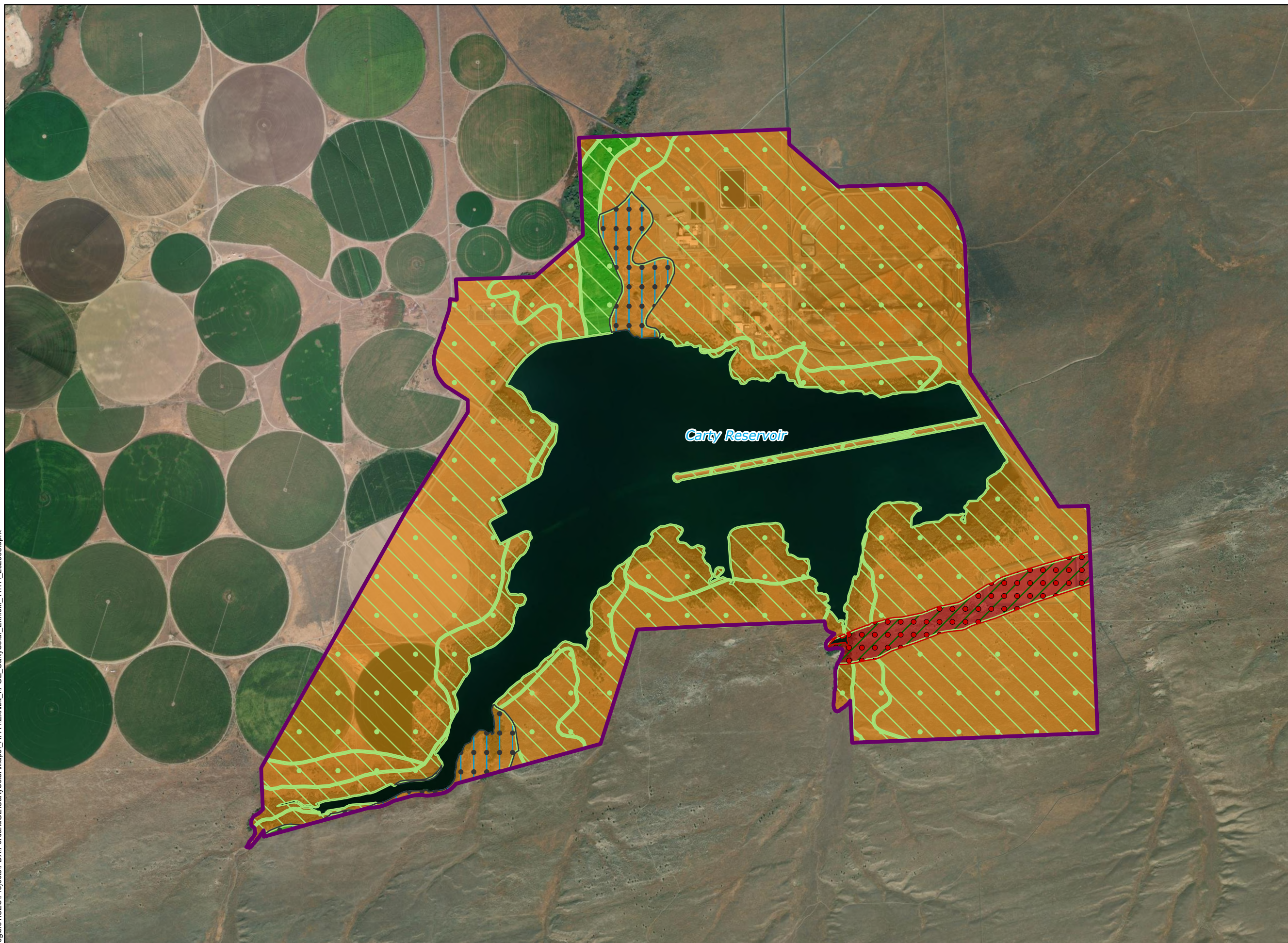
Figure I-2
Sensitive Soils

MORROW COUNTY, OR

-  Amended Site Boundary
- Soil Compaction Resistance
-  High
 -  Medium
 -  Low
- Fugitive Dust Resistance
-  Low resistance to dust propagation
 -  Slight
 -  Moderate
- Erosion Hazard (Stormwater)
-  Slight
 -  Moderate
 -  Not rated



Reference Map



1:24,000

WGS 1984 UTM Zone 10N

0 0.25 0.5 1 1.5 2 Miles

NOT FOR CONSTRUCTION

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Attachment I-1. Draft Erosion and Sediment Control Plan

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PORTLAND GENERAL ELECTRIC COMPANY CARTY SOLAR FARM EROSION AND SEDIMENT CONTROL PLAN (ESCP) DRAWINGS

STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES:

1. Hold a pre-construction meeting of project construction personnel that includes the inspector to discuss erosion and sediment control measures and construction limits. (Schedule A.8.c.i.(3))
2. All inspections must be made in accordance with DEQ's 1200-C permit requirements.
3. Inspection logs must be kept in accordance with DEQ's 1200-C permit requirements.
4. Retain a copy of the ESCP and all revisions on site and make it available on request to DEQ, Agent, or the local municipality. During inactive periods of greater than seven (7) consecutive calendar days, retain the ESCP at the construction site or at another location. (Schedule B.2.a)
5. All permit registrants must implement the ESCP. Failure to implement any of the control measures or practices described in the ESCP is a violation of the permit. (Schedule A.8.a)
6. The ESCP measures shown on this plan are minimum requirements for anticipated site conditions. During the construction period, upgrade these measures as needed to comply with all applicable local, state, and federal erosion and sediment control regulations. (Schedule A.8.c.i.(1)(c))
7. Submission of all ESCP revisions is not required. Submittal of the ESCP revisions is only under specific conditions. Submit all necessary revision to DEQ or Agent. (Schedule A.12.c.ii)
8. Phase clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion. (Schedule A.8.c.ii.(1)(d))
9. Identify, mark, and protect (by fencing off or other means) critical riparian areas and vegetation including important trees and associated rooting zones, and vegetation areas to be preserved. Identify vegetative buffer zones between the site and sensitive areas (e.g., wetlands), and other areas to be preserved, especially in perimeter areas. (Schedule A.8.c.i.(1) & (2))
10. Preserve existing vegetation when practical and re-vegetate open areas. Re-vegetate open areas when practicable before and after grading or construction. Identify the type of vegetative seed mix used. (Schedule A.7.b.iii(1) and A.7.b.iii(3))
11. Maintain and delineate any existing natural buffer within the 50-foot of water of the state. (Schedule A.7.B.1.LAND (2)(o)(b))
12. Erosion and sediment control measures including perimeter sediment control must be in place before vegetation is disturbed and must remain in place and be maintained, repaired, and promptly implemented following procedures established for the duration of construction, including protection for active storm drain inlets and catch basins and appropriate non-stormwater pollution controls. (Schedule A.7.d.i. and A.8.c)
13. Establish concrete truck and other concrete equipment washout areas before beginning concrete work. (Schedule A.8.c.i.(6))
14. Apply temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses and for all roadways including gravel roadways. (Schedule A.8.c.i.(2))
15. Establish material and waste storage areas, and other non-stormwater controls. (Schedule A.8.c.i.(7))
16. Prevent tracking of sediment onto public or private roads using BMPs such as: graveled (or paved) exits and parking areas, gravel all unpaved roads located onsite, or use an exit tire wash. These BMPs must be in place prior to land-disturbing activities. (Schedule A.7.d.ii.(1) and A.8.c.i.(4))
17. When trucking saturated soils from the site, either use water-tight trucks or drain loads on site. (Schedule A.7.d.ii.(3))
18. Use BMPs to prevent or minimize stormwater exposure to pollutants from spills, vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, leftover paints, solvents, and glues from construction operations. (Schedule A.7.e.i.(2))
19. Implement the following BMPs when applicable: written spill prevention and response procedures, employee training on spill prevention and proper disposal procedures, spill kits in all vehicles, regular maintenance schedule for vehicles and machinery, material delivery and storage controls, training and signage, and covered storage areas for waste and supplies. (Sch A.7.e.ii.)
20. Use water, soil-binding agent or other dust control technique as needed to avoid wind-blown soil. (Schedule A.7.b.i.)
21. The application rate of fertilizers used to reestablish vegetation must follow manufacturer's recommendations to minimize nutrient releases to surface waters. Exercise caution when using time-release fertilizers within any waterway riparian zone. (Schedule A.9.b.ii)
22. If a stormwater treatment system (for example, electro-coagulation, flocculation, filtration, etc.) for sediment or other pollutant removal is employed, submit an operation and maintenance plan (including system schematic, location of system, location of inlet, location of discharge, discharge dispersion device design, and a sampling plan and frequency) before operating the treatment system. Obtain plan approval before operating the treatment system. Operate and maintain the treatment system according to manufacturer's specifications. (Schedule A.9.d)
23. Temporally stabilize soils at the end of the shift before holidays and weekends, if needed. The registrant is responsible for ensuring that soils are stable during rain events at all times of the year. (Schedule A.7.b.i)
24. At the end of each workday soil stockpiles must be stabilized or covered, or other BMPs must be implemented to prevent discharges to surface waters or conveyance systems leading to surface waters. (Schedule A.7.e.ii.(2))
25. Construction activities must avoid or minimize excavation and creation of bare ground during wet weather. (Schedule A.7.a.i)
26. Sediment fence: remove trapped sediment before it reaches one third of the above ground fence height and before fence removal. (Schedule A.9.c.i)
27. Other sediment barriers (such as biobags): remove sediment before it reaches two inches depth above ground height, and before BMP removal. (Schedule A.9.c.ii)
28. Catch basins: clean before retention capacity has been reduced by fifty percent. Sediment basins and sediment traps: remove trapped sediments before design capacity has been reduced by fifty percent and at completion of project. (Schedule A.9.c.iii & iv)
29. Within 24 hours, significant sediment that has left the construction site as exposed areas become stabilized, unless doing so conflicts with local requirements. Properly dispose of the discharge within the same 24 hours. Any in-stream clean up of sediment shall be performed according to the Oregon Division of State Lands required timeframe. (Schedule A.9.b.i)
30. The intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments. (Schedule A.9.b.ii)
31. The entire site must be temporarily stabilized using vegetation or a heavy mulch layer, temporary seeding, or other method should all construction activities cease for 30 days or more. (Schedule A.7.f.i)
32. Provide temporary stabilization for that portion of the site where construction activities cease for 14 days or more with a covering of blown straw and A tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site. (Schedule A.7.f.ii)
33. Provide permanent erosion control measures on all exposed areas. Do not remove temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. However, do remove all temporary erosion control measures as exposed areas become stabilized, unless doing so conflicts with local requirements. Properly dispose of construction materials and waste, including sediment retained by temporary BMPs. (Schedule A.7.b.iii(2) and A.8.c.ii)

NARRATIVE DESCRIPTIONS

PROJECT LOCATION

APPROX. 19 MILES EAST OF ARLINGTON
MORROW COUNTY, OREGON
LATITUDE= 45°41'15" N LONGITUDE= 119°47'18" W

SITE SOIL CLASSIFICATION:

SEE SHEET ESC-1

EXISTING SITE CONDITIONS

- APPARENT STUBBLED FARM LAND
- PREVIOUSLY DEVELOPED

PROPERTY DESCRIPTION

LOCATED CENTRALLY BETWEEN THE CITIES OF ARLINGTON, IONE, AND BOARDMAN

RECEIVING WATER BODIES:

WATERBODIES IN THE PROJECT AREA INCLUDE CARTY RESERVOIR

NATURE OF CONSTRUCTION ACTIVITY AND ESTIMATED TIME TABLE

PGE TO CONSTRUCT AND OPERATE THE CARTY SOLAR PROJECT TO CONSIST OF:

- CONSTRUCTION OF A PHOTOVOLTAIC SOLAR ENERGY FACILITY WITH AN ESTIMATED NOMINAL AVERAGE GENERATING CAPACITY OF 185 MEGAWATTS OF ALTERNATING CURRENT
- PROJECT IS ESTIMATED TO BE BUILT OVER ONE PHASE IN APPROXIMATELY 24 MONTHS
- DEVELOPING ADDITIONAL COMPONENTS TO INCLUDE BATTERY ENERGY STORAGE SYSTEM, UNDERGROUND COLLECTION LINES, COLLECTOR SUBSTATION, OPERATIONS AND MAINTENANCE BUILDING, AND TEMPORARY CONSTRUCTION AREAS.

CLEARING/GRUBBING/ACCESS ROADS (DATES, FROM: TBD & TO: TBD)

INSTALLATION OF PANEL ARRAYS (DATES, FROM: TBD & TO: TBD)

TOTAL SITE AREA:

POTENTIAL MAX DISTURBED AREA:

APPROXIMATELY 903.6 ACRES

APPROXIMATELY 37.4 ACRES TEMPORARY DISTURBANCE (COLLECTOR LINES, CONSTRUCTION AND MANEUVERING AREAS, TEMPORARY CONSTRUCTION AREA)

APPROXIMATELY 866.2 ACRES PERMANENT DISTURBANCE (ARRAY AREA, BATTERY ENERGY STORAGE SYSTEM, COLLECTOR SUBSTATION, O&M BUILDING)

LOCAL AGENCY-SPECIFIC EROSION

CONTROL NOTES:

1. OWNER OR DESIGNATED PERSON SHALL BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF AL EROSION AND SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
2. PRIOR TO ANY LAND DISTURBING ACTIVITIES, THE BOUNDARIES OF THE CLEARING LIMITS, VEGETATED BUFFERS, AND ANY SENSITIVE AREAS SHOWN ON THIS PLAN SHALL BE CLEARLY DELINEATED IN THE FIELD. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE IS PERMITTED BEYOND THE CLEARING LIMITS. THE OWNER/PERMITTEE MUST MAINTAIN THE DELINEATION FOR THE DURATION OF THE PROJECT. NOTE: VEGETATED CORRIDORS TO BE DELINEATED WITH ORANGE CONSTRUCTION FENCE OR APPROVED EQUAL.
3. PRIOR TO ANY LAND DISTURBING ACTIVITIES, THE BMPs THAT MUST BE INSTALLED ARE A GRAVEL CONSTRUCTION ENTRANCE, PERIMETER SEDIMENT CONTROL, AND INLET PROTECTION. THESE BMPs MUST BE MAINTAINED FOR THE DURATION OF THE PROJECT.
4. IF VEGETATIVE SEED MIXES ARE SPECIFIED, SEEDING MUST TAKE PLACE BETWEEN OCTOBER 15 AND APRIL 30; THE TYPE AND PERCENTAGES OF SEED IN THE MIX MUST BE IDENTIFIED ON THE PLANS.
5. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE DISCHARGED OVER AN UNDISTURBED, PREFERABLY VEGETATED AREA, AND THROUGH A SEDIMENT CONTROL BMP I.E. (FILTER BAG).
6. THE ESC PLAN MUST E KEPT ON SITE. ALL MEASURES SHOWN ON THE PLAN MUST BE INSTALLED PROPERLY TO ENSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER A SURFACE SYSTEM, ROADWAY, OR OTHER PROPERTIES.
7. THE ESC MEASURES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD THESE MEASURES SHALL BE UPGRADED AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL EROSION CONTROL REGULATIONS CHANGES TO THE APPROVED ESC PLAN MUST BE SUBMITTED IN THE FORM OF AN ACTION PLAN TO DEQ PER THE 1200 C PERMIT.
8. IN AREAS SUBJECT TO WIND EROSION, APPROPRIATE BMPs MUST BE USED WHICH MAY INCLUDE THE APPLICATION OF FINE WATER SPRAYING, PLASTIC SHEETING, MULCHING OR OTHER APPROVED MEASURES.
9. ENSURE ALL SOILS ARE STABLE DURING ALL RAIN EVENTS THROUGHOUT THE YEAR.

SHEET INDEX

ESC-0	EROSION AND SEDIMENT CONTROL COVER SHEET
ESC-1	EROSION AND SEDIMENT CONTROL GENERAL NOTES & LEGEND
ESC-2	EROSION AND SEDIMENT CONTROL PLAN SHEET 1 OF 12
ESC-3	EROSION AND SEDIMENT CONTROL PLAN SHEET 2 OF 12
ESC-4	EROSION AND SEDIMENT CONTROL PLAN SHEET 3 OF 12
ESC-5	EROSION AND SEDIMENT CONTROL PLAN SHEET 4 OF 12
ESC-6	EROSION AND SEDIMENT CONTROL PLAN SHEET 5 OF 12
ESC-7	EROSION AND SEDIMENT CONTROL PLAN SHEET 6 OF 12
ESC-8	EROSION AND SEDIMENT CONTROL PLAN SHEET 7 OF 12
ESC-9	EROSION AND SEDIMENT CONTROL PLAN SHEET 8 OF 12
ESC-10	EROSION AND SEDIMENT CONTROL PLAN SHEET 9 OF 12
ESC-11	EROSION AND SEDIMENT CONTROL PLAN SHEET 10 OF 12
ESC-12	EROSION AND SEDIMENT CONTROL PLAN SHEET 11 OF 12
ESC-13	EROSION AND SEDIMENT CONTROL PLAN SHEET 12 OF 12
ESC-14	EROSION AND SEDIMENT CONTROL PLAN DETAILS
ESC-15	EROSION AND SEDIMENT CONTROL PLAN DETAILS
ESC-16	EROSION AND SEDIMENT CONTROL PLAN DETAILS
ESC-17	EROSION AND SEDIMENT CONTROL PLAN DETAILS

THE PERMITTEE IS REQUIRED TO MEET ALL THE CONDITIONS OF THE 1200C PERMIT. THIS ESCP AND GENERAL CONDITIONS HAVE BEEN DEVELOPED TO FACILITATE COMPLIANCE WITH THE 1200C PERMIT REQUIREMENTS. IN CASES OF DISCREPANCIES OR OMISSIONS, THE 1200C PERMIT REQUIREMENTS SUPERCEDE REQUIREMENTS OF THIS PLAN.

BMP MATRIX FOR CONSTRUCTION PHASES (TYP.)

REFER TO DEQ GUIDANCE MANUAL FOR A COMPREHENSIVE LIST OF AVAILABLE BMPs

BMPs	2025											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pipe Slope Drains												
Energy Dissipaters												
Temporary Diversion Dikes												
Check Dams	X	X	X	X	X	X	X	X	X	X	X	X
Temporary Seeding and Planting											X	X
Permanent Seeding and Planting												
MycoRhizaeSoilFertilizers												
Mulches (type)							X	X	X	X	X	
Construction Entrance				X								
Compost Blankets												
Compost Socks												
Compost Berms												
Soil Trackifiers											X	X
Sodding Vegetative Buffer Strips												
Sediments Fencing	X	X	X	X	X	X	X	X	X	X	X	X
Erosio Control Blankets & Mats												
Earth Slices Drainage Swales												
Rock Outlet Protection												
Sediments Trap												
Straw Wattles	X	X	X	X	X	X	X	X	X	X	X	X
Storm Drain Inlet Protection												
Temporary or Permanent Sedimentation Basins												
Unpaved Roads Graveled or other BMP on Road												
Breweasting												
Paving Operations Controls												
Concrete Truck Washout												

RATIONALE STATEMENT

A COMPREHENSIVE LIST OF AVAILABLE BEST MANAGEMENT PRACTICES (BMP) OPTIONS BASED ON DEQ'S GUIDANCE MANUAL HAS BEEN REVIEWED TO COMPLETE THIS EROSION AND SEDIMENT CONTROL PLAN. SOME OF THE ABOVE LISTED BMPs WERE NOT CHOSEN BECAUSE THEY WERE DETERMINED TO NOT EFFECTIVELY MANAGE EROSION PREVENTION AND SEDIMENT CONTROL FOR THIS PROJECT BASED ON SPECIFIC SITE CONDITIONS, INCLUDING SOIL CONDITIONS TOPOGRAPHIC CONSTRAINTS ACCESSIBILITY TO THE SITE, AND OTHER RELATED CONDITIONS, AS THE PROJECT PROGRESSES AND THERE IS A NEED TO REVISE THE ESC PLAN, AN ACTION PLAN WILL BE SUBMITTED.

INITIAL



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PORTLAND, OR 97201

(503) 221-8636

PROJECT LOCATION:

MORROW COUNTY, OREGON

CLIENT INFORMATION:

PORTLAND GENERAL ELECTRIC

121 SW SALMON ST, 3WTC0403

PORTLAND, OR 97204

Tt PROJECT No.:

194-1121-0007

CLIENT PROJECT No.:

PROJECT DESCRIPTION / NOTES:

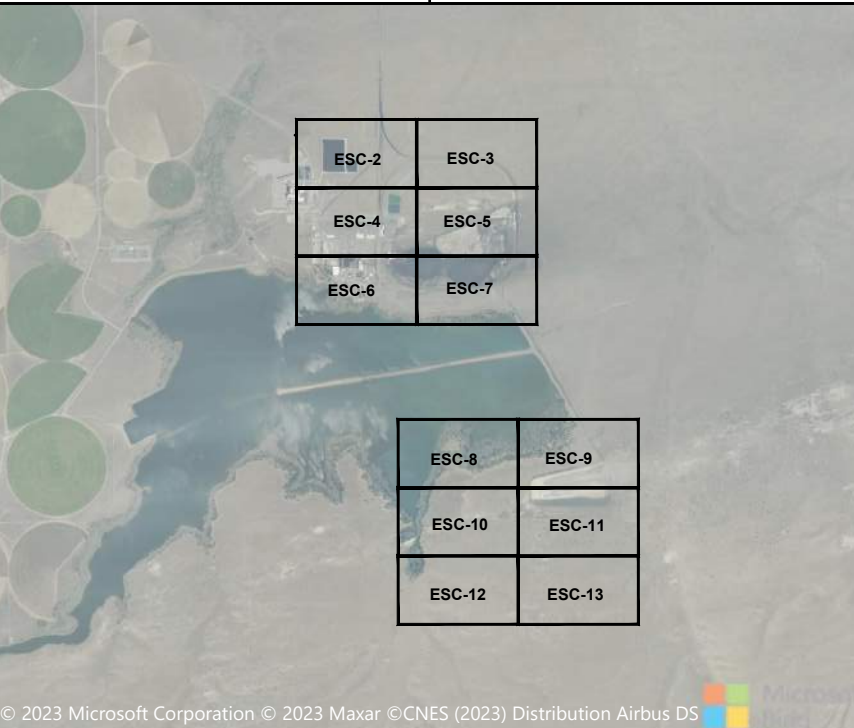
ISSUED:

A - 1/5/24 - ISSUED FOR DEQ REVIEW - CAN

B - 1/22/24 - ISSUED FOR DEQ REVIEW - CAH

C - 2/1/24 - ISSUED FOR DEQ REVIEW - CAN

VICINITY MAP



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E

D

C

B

A

1

2

3

4

5

6

LEGEND:

EXISTING ROAD

EXISTING RAILROAD

EXISTING FENCE

EXISTING MONITORING WELL

EXISTING OVERHEAD POWER

EXISTING GAS LINE

EXISTING WATER LINE

PROPOSED SOLAR ARRAY

PROPOSED INVERTER

PROPOSED ROAD

PROPOSED FENCELINE

PROPOSED INVERTER & PAD

PROPOSED SILT FENCE

DRAINAGE DIRECTION

GENERAL NOTES

1.

THE PREDOMINANT SOIL TYPE IN THIS AREA IS HIGHLY PRONE TO BOTH WIND AND WATER EROSION. THEREFORE, THE IMPLEMENTATION OF EROSION CONTROL PRACTICES MUST BE AN INTEGRAL PART OF ALL PHASES OF CONSTRUCTION.

2.

THE IMPLEMENTATION OF THESE EROSION CONTROL PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED, APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.

3.

PROPOSED EROSION AND SEDIMENT CONTROLS FOR THIS PLAN ARE BASED ON THE PRE-DEVELOPMENT CONDITION AND WILL NEED TO BE UPDATED AS GRADING CHANGES OR ADDITIONAL CONTROLS ARE NEEDED.

4.

THE EROSION CONTROL FACILITIES SHOWN ON THESE PLANS MUST BE CONSTRUCTED IN CONNECTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM OR ROADWAYS OUTSIDE OF PROJECT LIMITS, AND VIOLATE APPLICABLE WATER STANDARDS.

5.

THE EROSION CONTROL FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD THESE FACILITIES SHALL BE MAINTAINED AND UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.

6.

TEMPORARILY STABILIZE EXISTING BARE SOIL AREAS BY SPREADING STRAW MULCH AND PUNCHING IT INTO THE GROUND WITH A DISC. THE APPLICATION RATE FOR STRAW MULCH IS 2500 LBS/ACRE. IN THE FALL, WHEN SOIL MOISTURE IS ADEQUATE, SEED ALL IMPACTED AREAS WITH THE APPROPRIATE SEED MIX FROM THE APPROVED SITE REVEGETATION PLAN.

7.

DO NOT DISTURB GROUND OUTSIDE OF THE 30' LIMITS WITHIN CONSERVATION RESERVE PROGRAM (CRP) LAND.

8.

THE CONSTRUCTION MANAGER IS RESPONSIBLE FOR LOCATING ANY NECESSARY DISPOSAL SITES. TO CONTROL THE RELEASE OF SEDIMENT FROM THE SITES, SILT FENCE AND CHECK DAMS SHALL BE INSTALLED ON THE DOWN SLOPE SIDE OF ALL DISPOSAL AREAS. SEE DETAILS ON DRAWINGS ESC-15 & 17. IF ADDITIONAL SEDIMENT OR EROSION CONTROL MEASURES ARE DETERMINED TO BE NECESSARY TO CONTROL THE RELEASE OF SEDIMENT FROM THE DISPOSAL SITES, THE CONSTRUCTION MANAGER SHALL BE RESPONSIBLE FOR IMPLEMENTING THESE MEASURES.

KEYED NOTES

(1)

EXISTING COUNTY ROADS UTILIZED FOR PROJECT ACCESS TO BE RESTORED TO COUNTY STANDARDS AFTER CONSTRUCTION IS COMPLETE. FOR IMPACTED AREAS ADJACENT TO THE ROADWAY, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 6. MAINTAIN EXISTING DRAINAGE.

(2)

ACCESS ROADS TO PANEL ARRAY AREAS TO BE GRADED AND ROCKED APPROXIMATELY LEVEL WITH EXISTING GROUND SO RUNOFF FROM UPSLOPE SHEET FLOWS ACROSS ROAD. FOR IMPACTED AREAS ADJACENT TO THE ROADWAY, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 6.

(3)

INSTALL SILT FENCE ON THE DOWN SLOPE SIDE OF DISTURBED AREA. SEE DETAIL ON DRAWING ESC-17.

(4)

INSTALL SILT FENCE ON THE DOWN SLOPE SIDE OF STAGING AREA. SEE DETAIL ON DRAWING ESC-17.

(5)

EXISTING ROADS UTILIZED FOR PROJECT ACCESS TO BE REGRADED AND GRAVEL TO BE ADDED AS NEEDED. FOR IMPACTED AREAS ADJACENT TO THE ROADWAY, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 6. MAINTAIN EXISTING DRAINAGE.

(6)

INSTALL SILT FENCE BETWEEN REGRADED ROAD AND INTERMITTENT STREAM WHERE ROAD IS ADJACENT TO STREAM CHANNEL.

(7)

SERVICE AREAS ADJACENT TO THE PANEL ARRAY AREAS, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 6. INSTALL SILT FENCE ON DOWNSLOPE SIDE OF DISTURBED AREA.

SOIL CLASSIFICATIONS

9

DUNE LAND

54B

SAGEHILL FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES

54C

SAGEHILL FINE SANDY LOAM, 5 TO 12 PERCENT SLOPES

54D

SAGEHILL FINE SANDY LOAM, 12 TO 20 PERCENT SLOPES

55B

SAGEHILL FINE SANDY LOAM, HUMMOCKY, 2 TO 5 PERCENT SLOPES

55C

SAGEHILL FINE SANDY LOAM, HUMMOCKY, 5 TO 12 PERCENT SLOPES

58A

TAUNTON FINE SANDY LOAM, 0 TO 2 PERCENT SLOPES

58B

TAUNTON FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES

58C

TAUNTON FINE SANDY LOAM, 5 TO 12 PERCENT SLOPES

70B

WARDEN VERY FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES

70D

WARDEN VERY FINE SANDY LOAM, 12 TO 20 PERCENT SLOPES

71B

WARDEN SILT LOAM, 2 TO 5 PERCENT SLOPES

71C

WARDEN SILT LOAM, 5 TO 12 PERCENT SLOPES

71D

WARDEN SILT LOAM, 12 TO 20 PERCENT SLOPES

71E

WARDEN SILT LOAM, 20 TO 40 PERCENT SLOPES

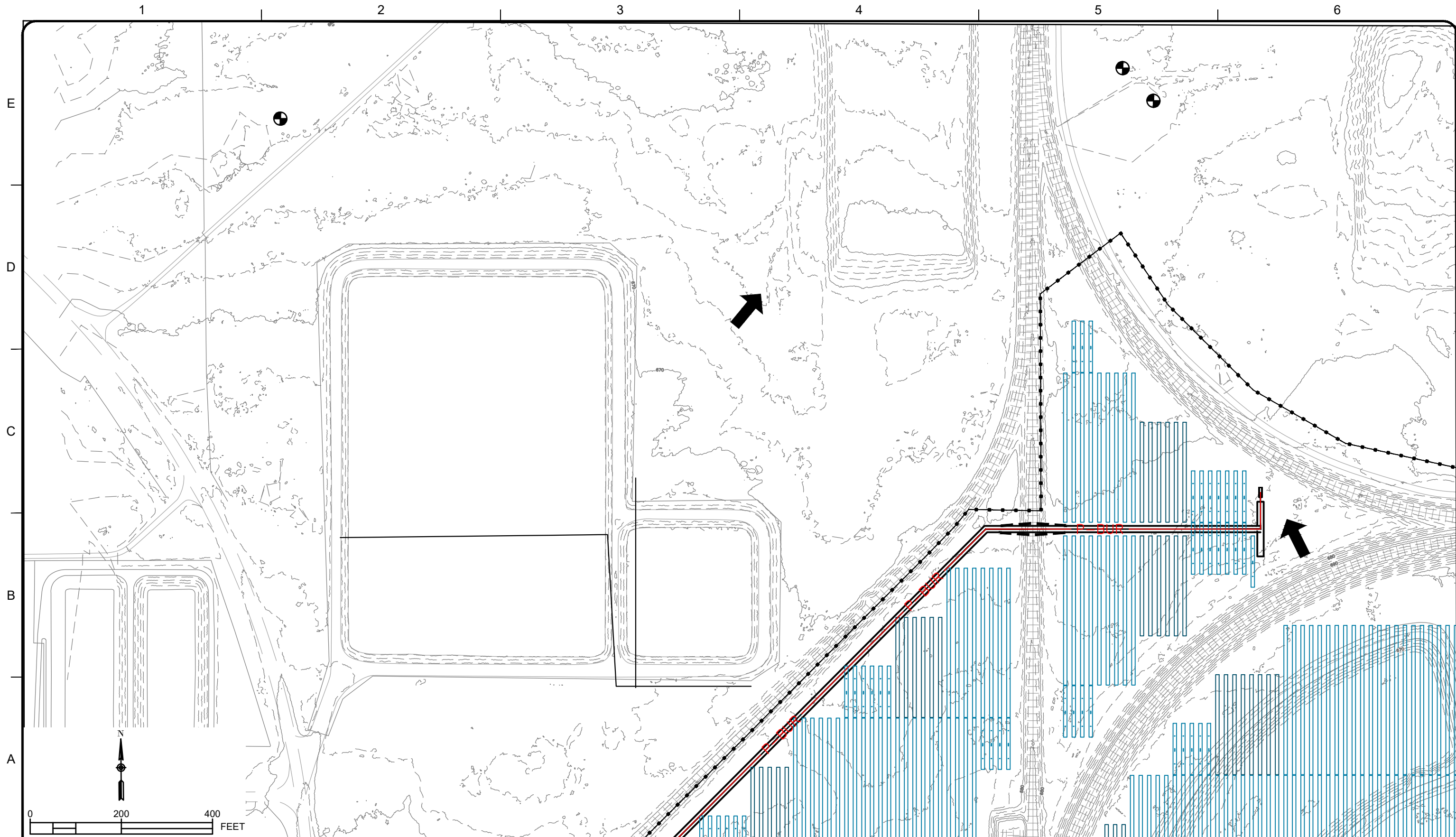
78

XERIC TORRIORTHENTS, NEARLY LEVEL

<div><div><div><div>Tt</div><div>TETRA TECH</div></div><div><div>www.tetratech.com</div><div>1750 S. HARBOR WAY, SUITE 400 PORTLAND, OR 97201 PHONE: (503) 221-8636</div></div></div></div>		MARK	DATE	DESCRIPTION	BY	PORTLAND GENERAL ELECTRIC	Project No.:	194-1121-0007	
		A	1/5/24	DRAFT ESC PERMIT PLANS	CAN		Designed By:	CAN	
		B	1/22/24	DRAFT ESC PERMIT PLANS	CAH		Drawn By:	CAN	
		C	2/1/24	DRAFT ESC PERMIT PLANS	CAN		Checked By:	JPP	
						EROSION AND SEDIMENT CONTROL PLAN GENERAL NOTES & LEGEND	ESC-1		

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Bar Measures 1 inch



LEGEND:			
	EXISTING ROAD		EXISTING GAS LINE
	EXISTING RAILROAD		EXISTING WATER LINE
	EXISTING FENCE		PROPOSED SOLAR ARRAY
	EXISTING MONITORING WELL		PROPOSED SILT FENCE
	EXISTING OVERHEAD POWER		PROPOSED INVERTER & PAD
	PROPOSED ROAD		DRAINAGE DIRECTION

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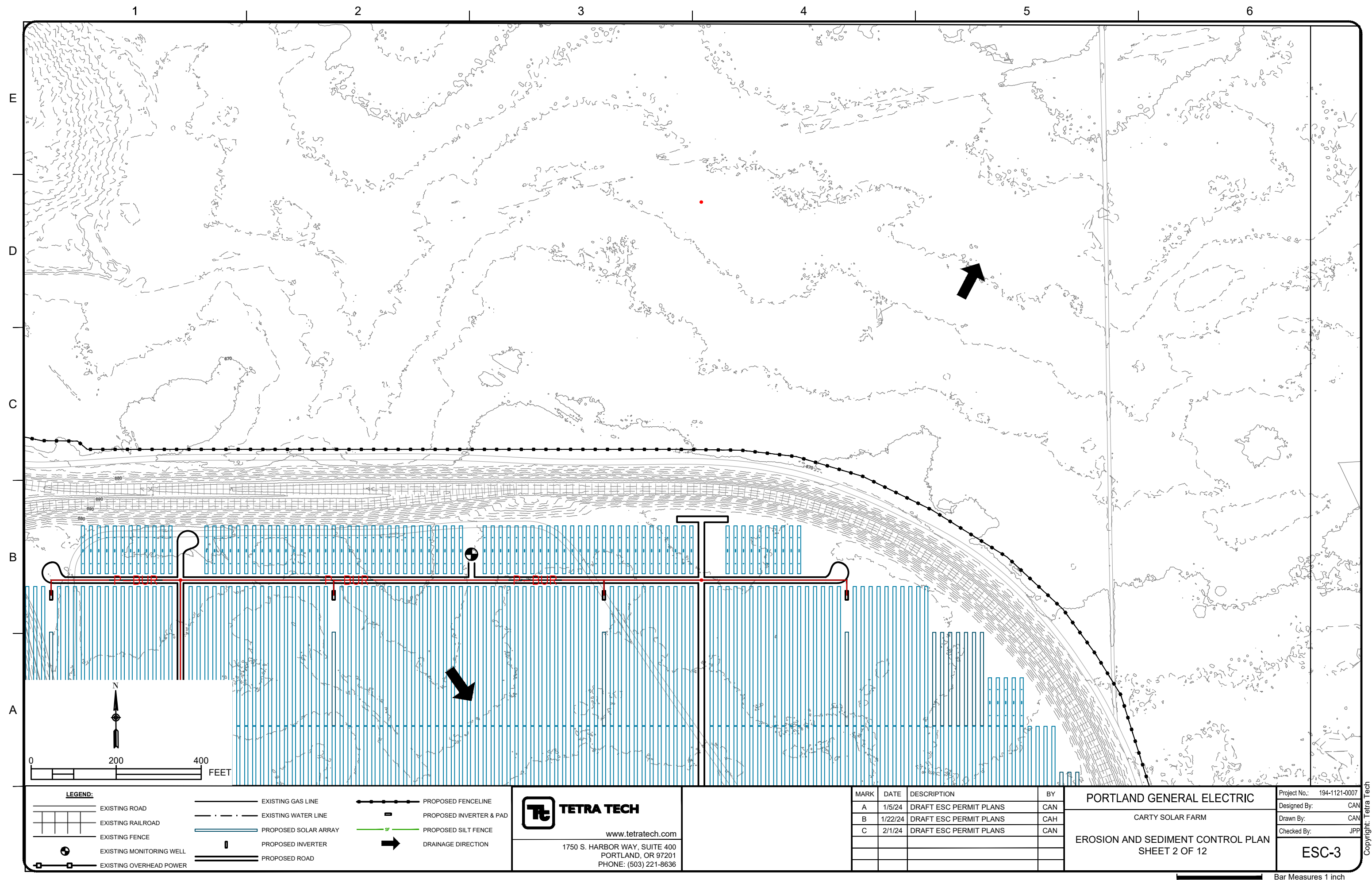
CARTY SOLAR FARM

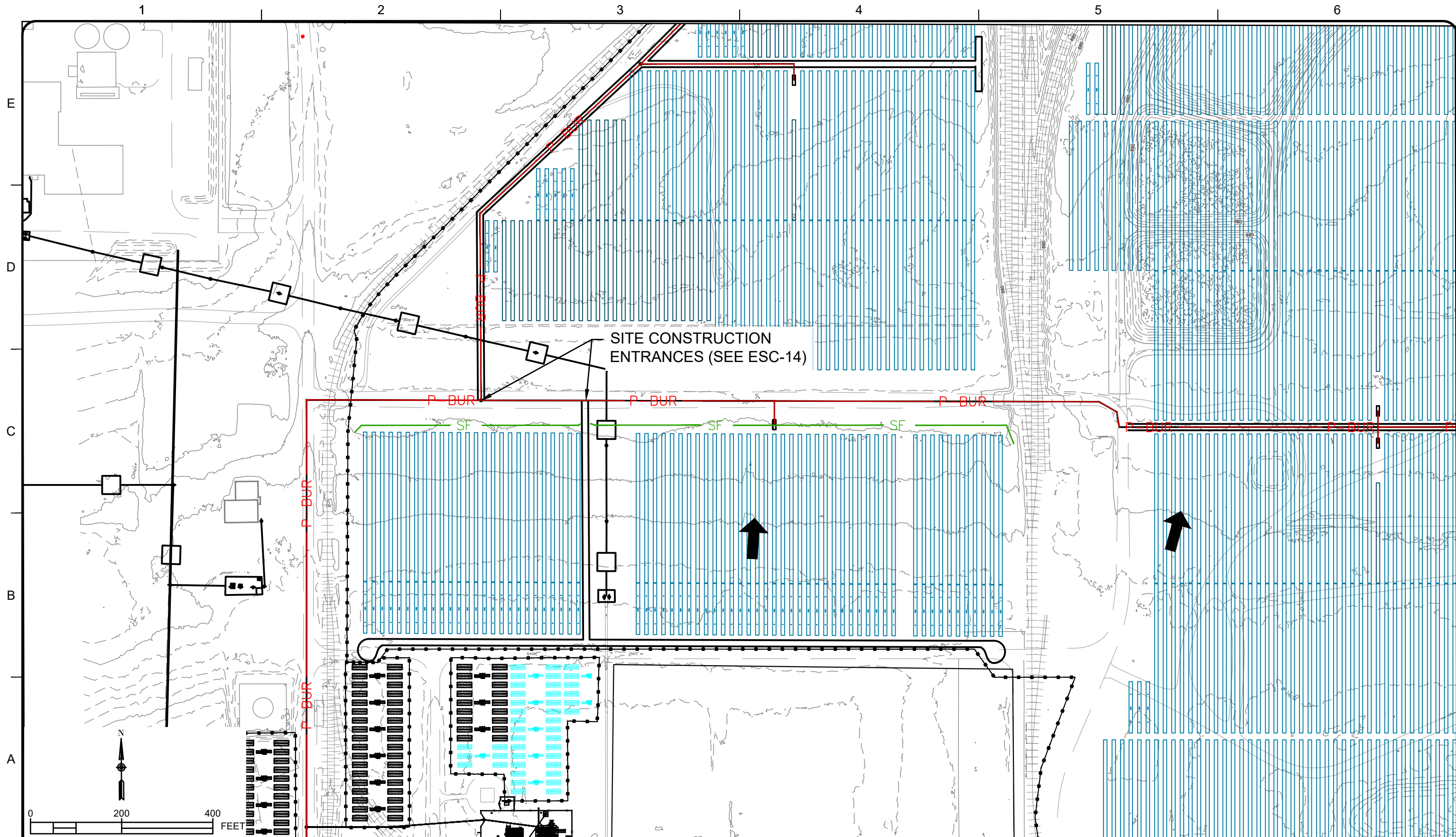
EROSION AND SEDIMENT CONTROL PLAN
SHEET 1 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-2	

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LEGEND:	
	EXISTING ROAD
	EXISTING RAILROAD
	EXISTING FENCE
	EXISTING MONITORING WELL
	EXISTING OVERHEAD POWER
	EXISTING GAS LINE
	EXISTING WATER LINE
	PROPOSED SOLAR ARRAY
	PROPOSED INVERTER
	PROPOSED ROAD
	PROPOSED FENCELINE
	PROPOSED INVERTER & PAD
	PROPOSED SILT FENCE
	DRAINAGE DIRECTION

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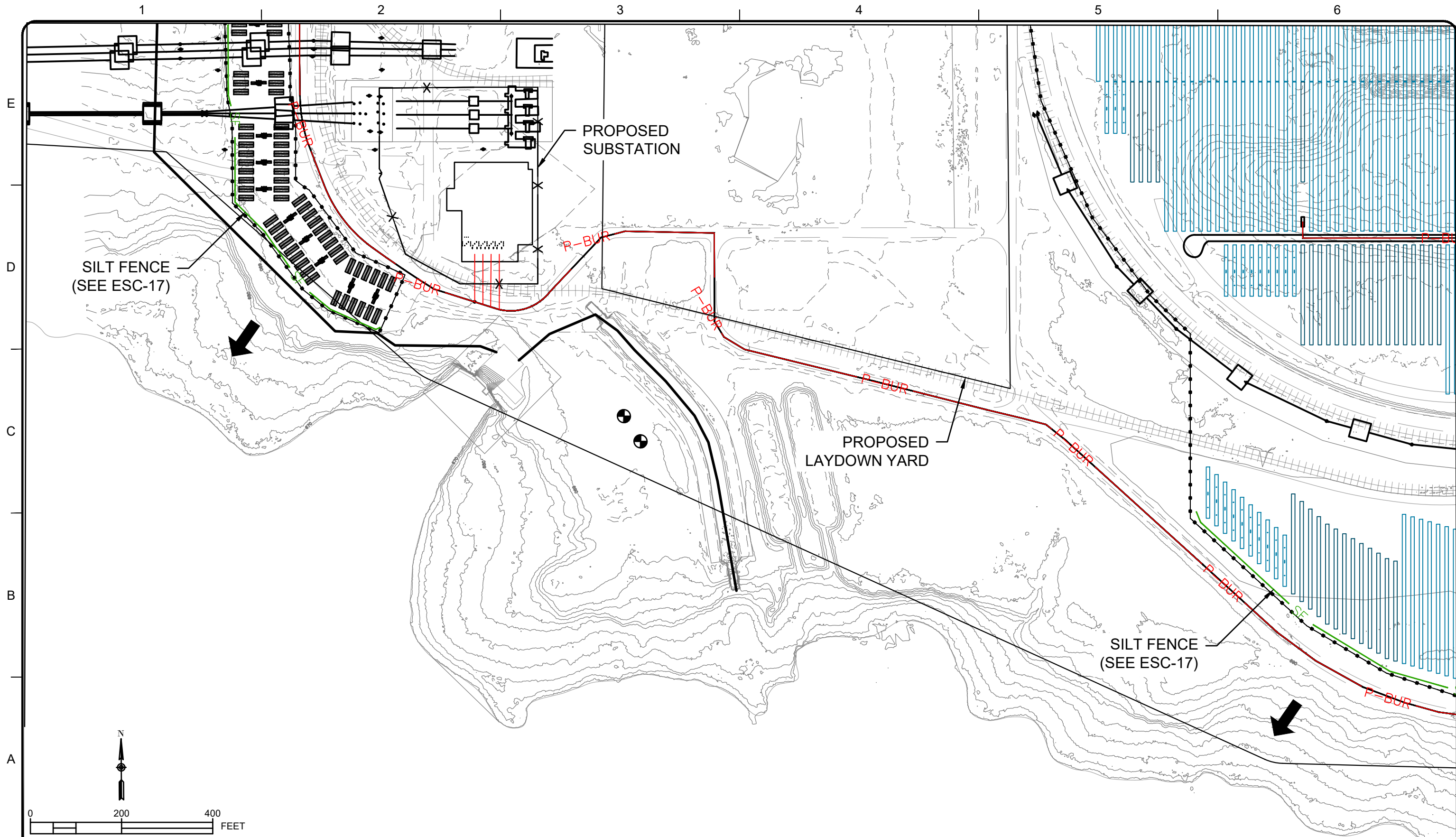
CARTY SOLAR FARM

EROSION AND SEDIMENT CONTROL PLAN
SHEET 3 OF 12

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ESC-4	

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LEGEND:			
	EXISTING ROAD		EXISTING GAS LINE
	EXISTING RAILROAD		EXISTING WATER LINE
	EXISTING FENCE		PROPOSED SOLAR ARRAY
	EXISTING MONITORING WELL		PROPOSED SILT FENCE
	EXISTING OVERHEAD POWER		PROPOSED INVERTER & PAD
	PROPOSED ROAD		DRAINAGE DIRECTION

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C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

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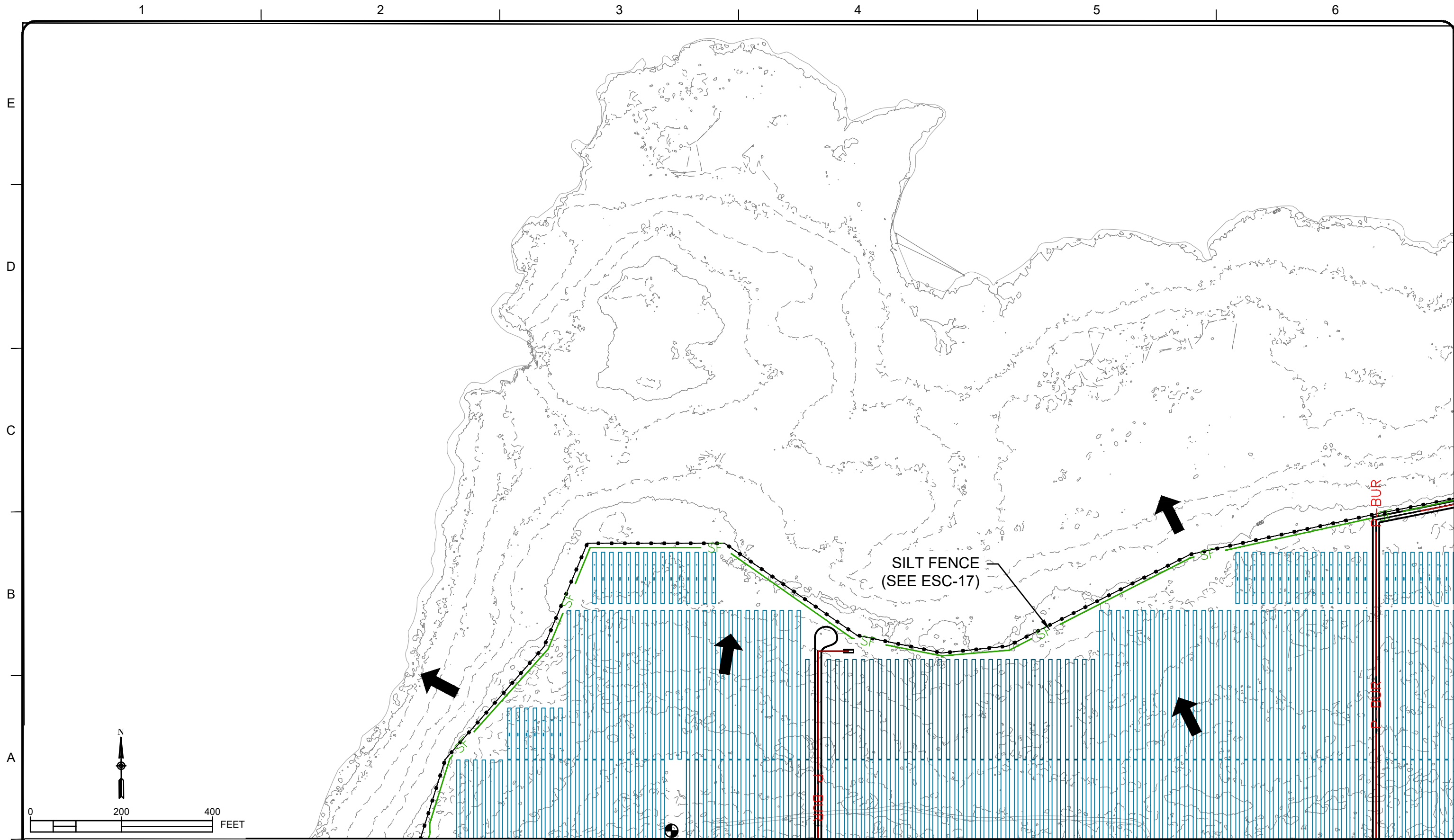
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EROSION AND SEDIMENT CONTROL PLAN
SHEET 5 OF 12

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ESC-6	

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	EXISTING RAILROAD
	EXISTING FENCE
	EXISTING MONITORING WELL
	EXISTING OVERHEAD POWER
	EXISTING GAS LINE
	EXISTING WATER LINE
	PROPOSED SOLAR ARRAY
	PROPOSED FENCELINE
	PROPOSED INVERTER & PAD
	PROPOSED SILT FENCE
	DRAINAGE DIRECTION
	PROPOSED INVERTER
	PROPOSED ROAD

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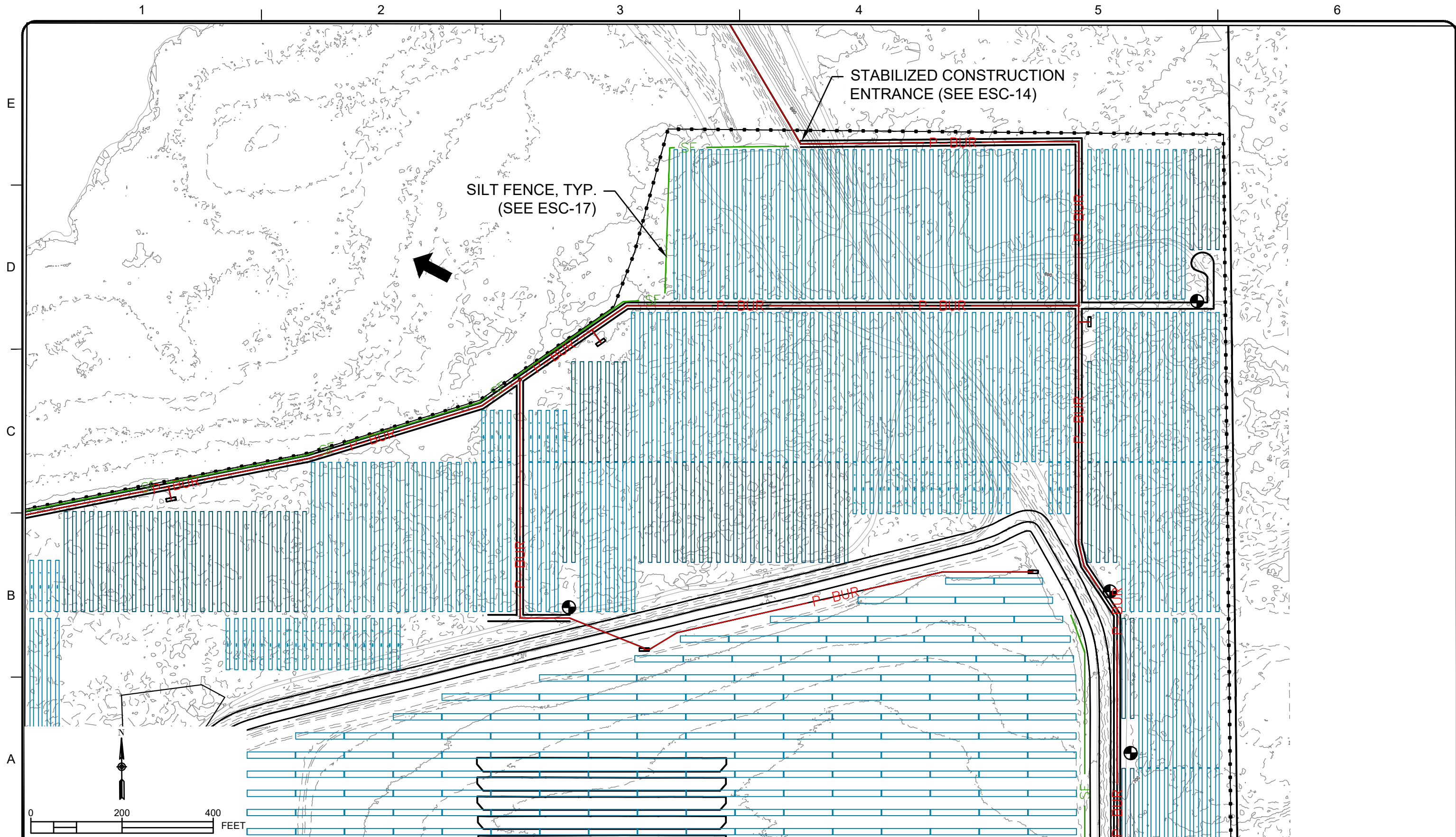
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EROSION AND SEDIMENT CONTROL PLAN
SHEET 7 OF 12

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ESC-8	

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LEGEND:	
	EXISTING ROAD
	EXISTING RAILROAD
	EXISTING FENCE
	EXISTING MONITORING WELL
	EXISTING OVERHEAD POWER
	EXISTING GAS LINE
	EXISTING WATER LINE
	PROPOSED SOLAR ARRAY
	PROPOSED INVERTER
	PROPOSED ROAD
	PROPOSED FENCELINE
	PROPOSED INVERTER & PAD
	PROPOSED SILT FENCE
	DRAINAGE DIRECTION

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C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

PORTLAND GENERAL ELECTRIC

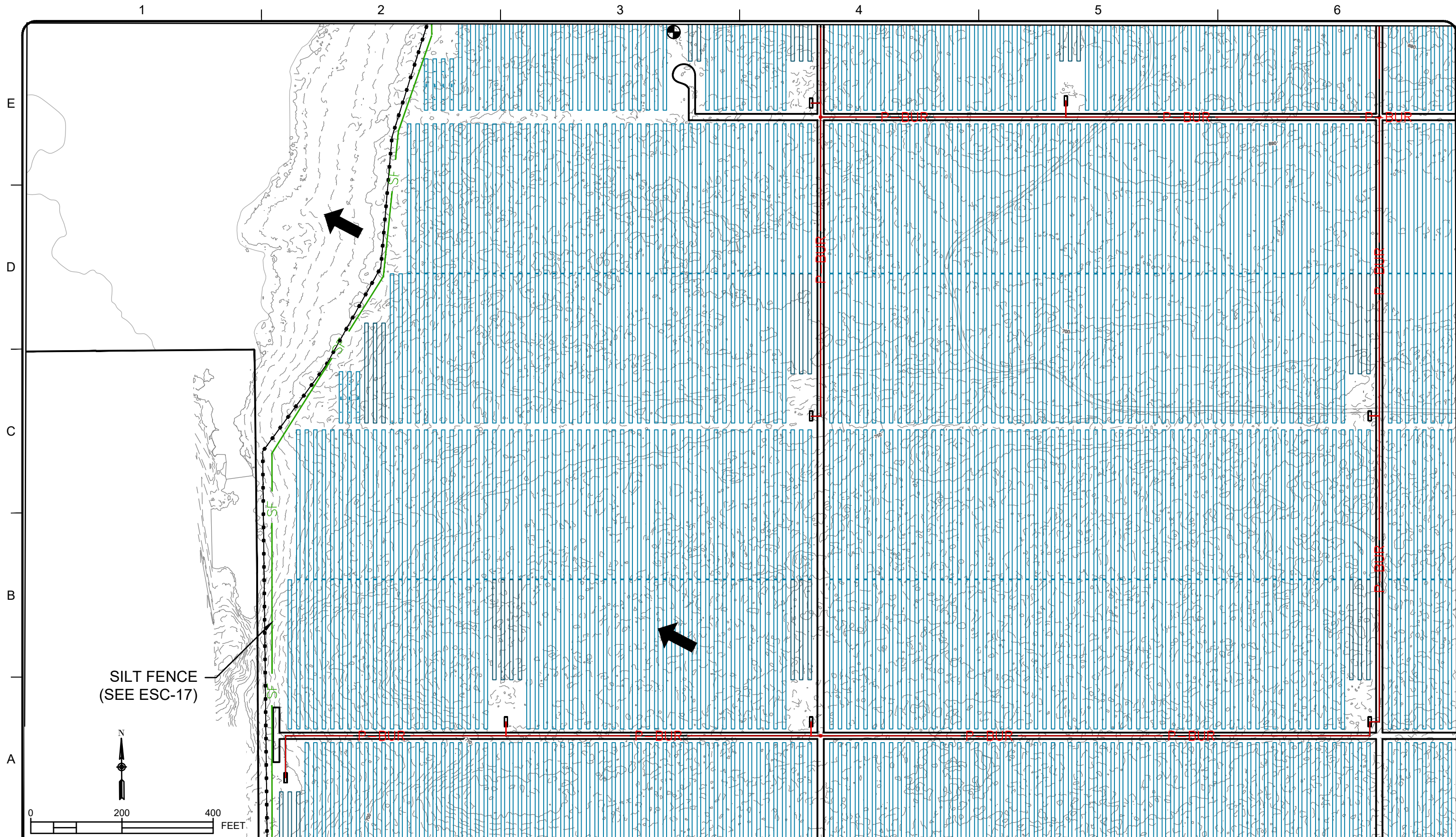
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EROSION AND SEDIMENT CONTROL PLAN
SHEET 8 OF 12

Project No.:	194-1121-0007
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SILT FENCE
(SEE ESC-17)

LEGEND:			
	EXISTING ROAD		EXISTING GAS LINE
	EXISTING RAILROAD		EXISTING WATER LINE
	EXISTING FENCE		PROPOSED SOLAR ARRAY
	EXISTING MONITORING WELL		PROPOSED INVERTER & PAD
	EXISTING OVERHEAD POWER		PROPOSED SILT FENCE
			DRAINAGE DIRECTION
			PROPOSED INVERTER
			PROPOSED ROAD

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PORTLAND GENERAL ELECTRIC

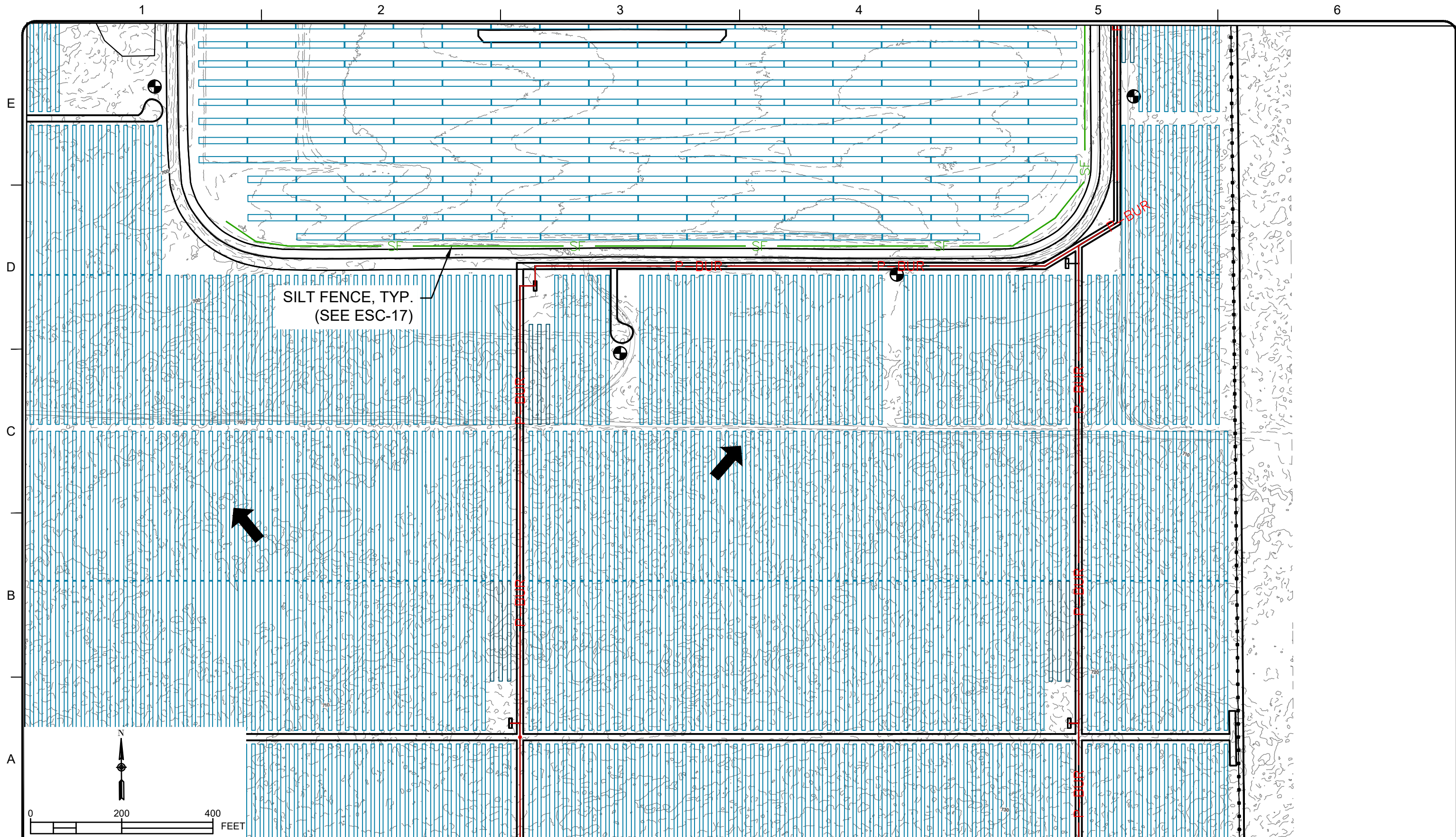
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EROSION AND SEDIMENT CONTROL PLAN
SHEET 9 OF 12

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Drawn By:	CAN
Checked By:	JPP
ESC-10	

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LEGEND:	
	EXISTING ROAD
	EXISTING RAILROAD
	EXISTING FENCE
	EXISTING MONITORING WELL
	EXISTING OVERHEAD POWER
	EXISTING GAS LINE
	EXISTING WATER LINE
	PROPOSED SOLAR ARRAY
	PROPOSED INVERTER
	PROPOSED ROAD
	PROPOSED FENCELINE
	PROPOSED INVERTER & PAD
	PROPOSED SILT FENCE
	DRAINAGE DIRECTION

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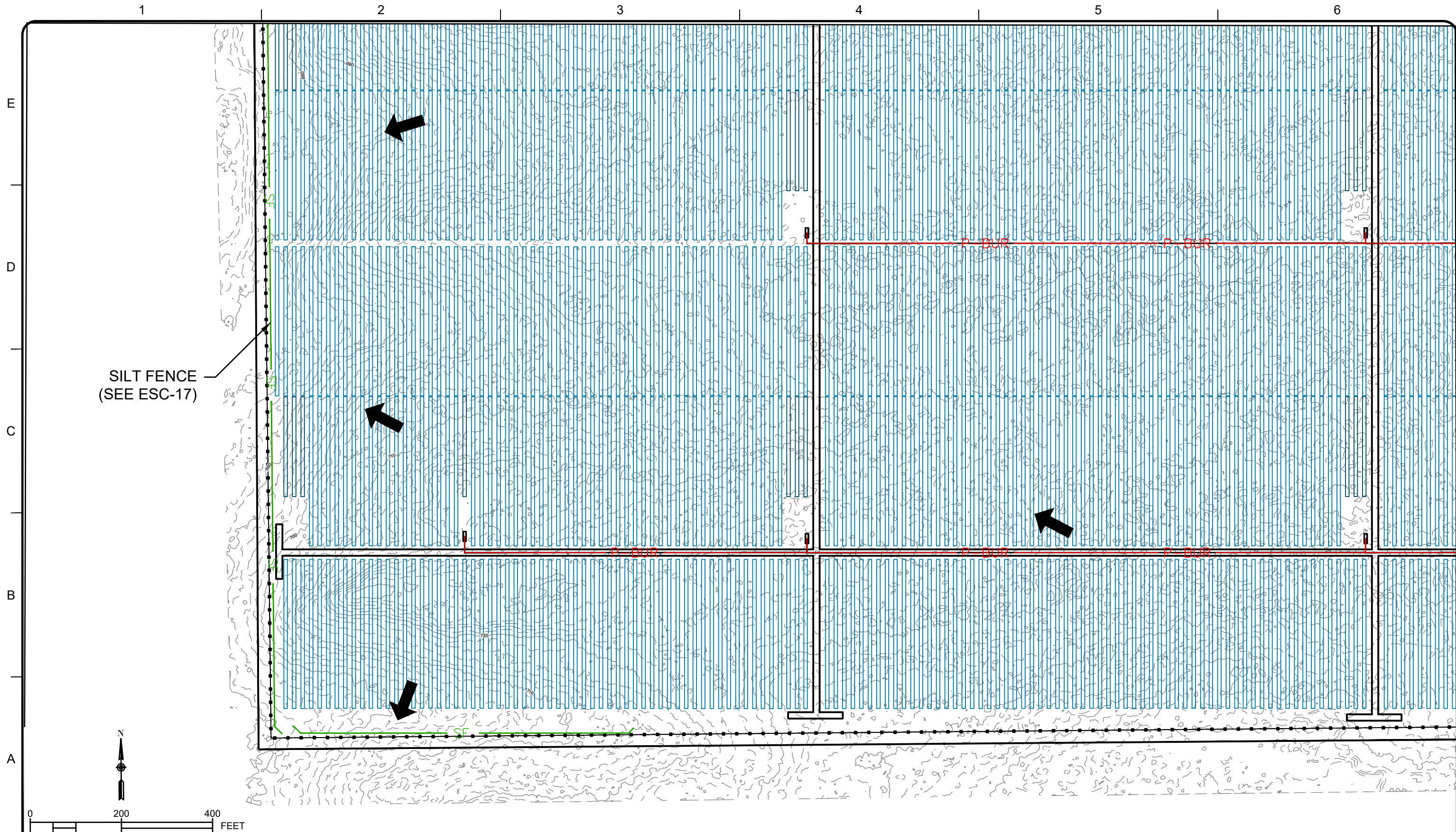
CARTY SOLAR FARM

EROSION AND SEDIMENT CONTROL PLAN
SHEET 10 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-11	

Bar Measures 1 inch

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LEGEND:			
	EXISTING ROAD		EXISTING GAS LINE
	EXISTING RAILROAD		EXISTING WATER LINE
	EXISTING FENCE		PROPOSED SOLAR ARRAY
	EXISTING MONITORING WELL		PROPOSED SILT FENCE
	EXISTING OVERHEAD POWER		PROPOSED FENCELINE
			PROPOSED INVERTER & PAD
			DRAINAGE DIRECTION
	PROPOSED INVERTER		
	PROPOSED ROAD		

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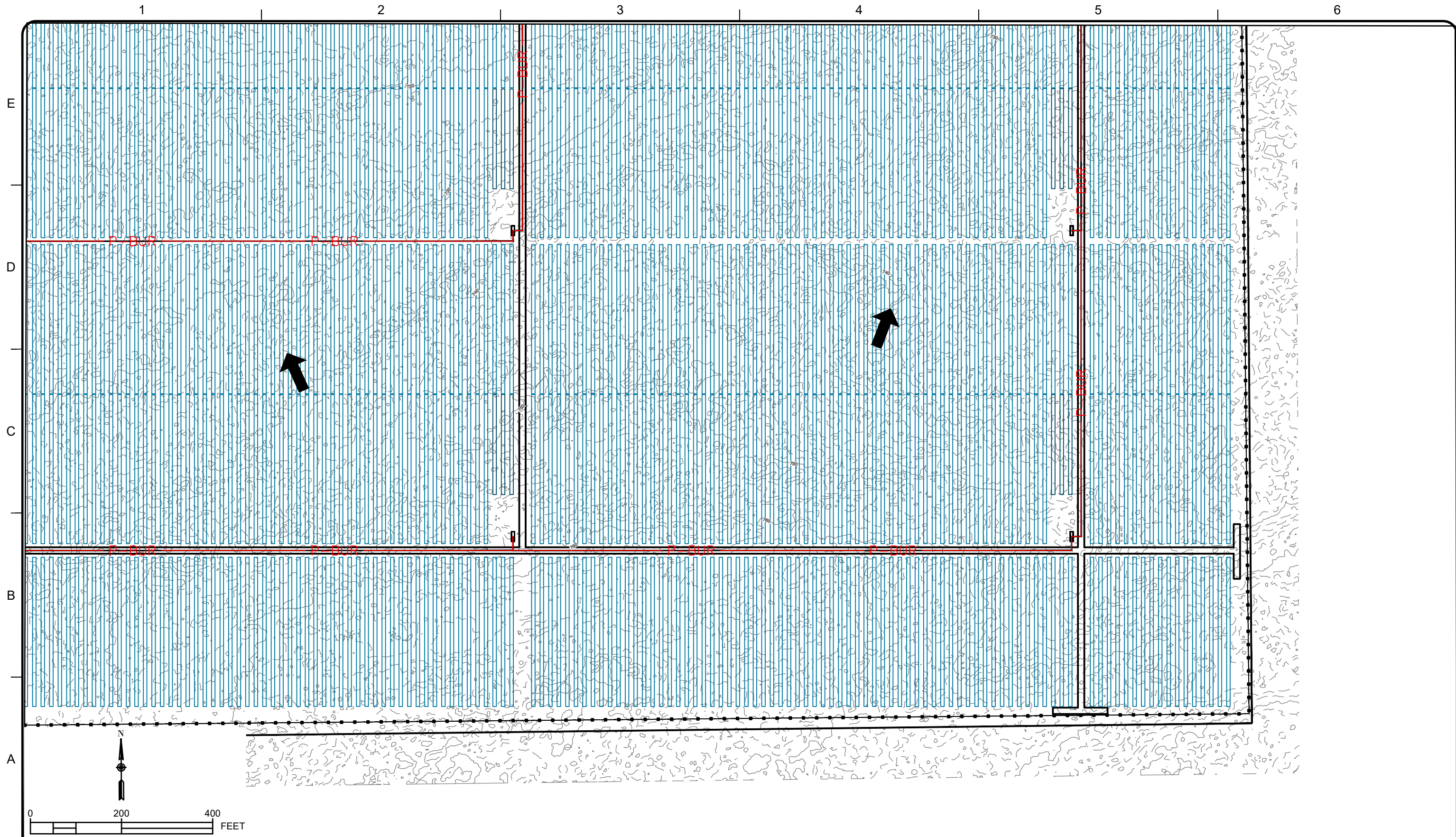
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EROSION AND SEDIMENT CONTROL PLAN
SHEET 11 OF 12

Project No.:	194-1121-0007
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Drawn By:	CAN
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ESC-12	

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LEGEND:			
	EXISTING ROAD		EXISTING GAS LINE
	EXISTING RAILROAD		EXISTING WATER LINE
	EXISTING FENCE		PROPOSED SOLAR ARRAY
	EXISTING MONITORING WELL		PROPOSED INVERTER
	EXISTING OVERHEAD POWER		PROPOSED SILT FENCE
			DRAINAGE DIRECTION
			PROPOSED INVERTER & PAD
			PROPOSED ROAD

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CARTY SOLAR FARM
EROSION AND SEDIMENT CONTROL PLAN
SHEET 12 OF 12

Project No.: 194-1121-0007
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ESC-13

Bar Measures 1 inch

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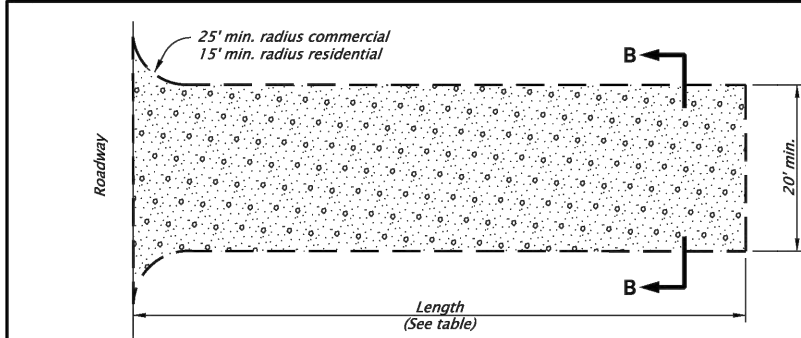
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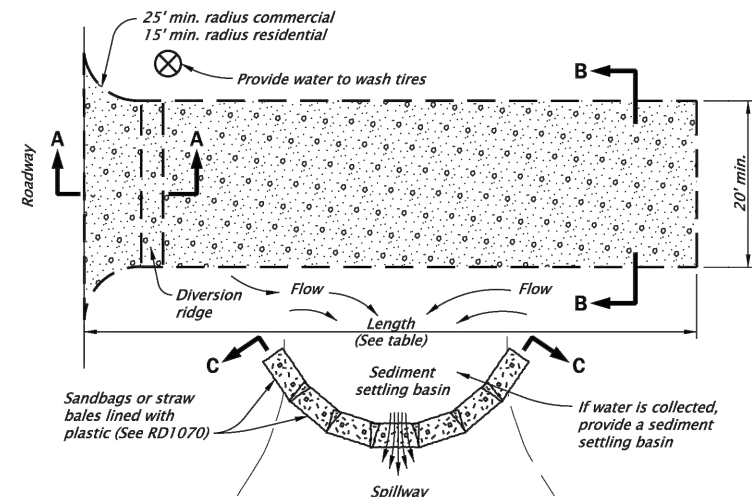
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rd1000.dgn 01-20-2021

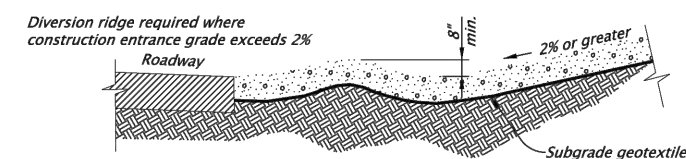
RD1000



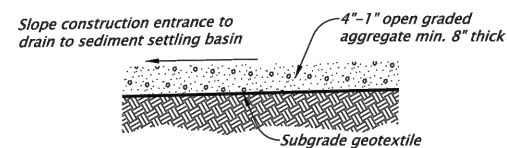
CONSTRUCTION ENTRANCE - TYPE 1
NOT TO SCALE



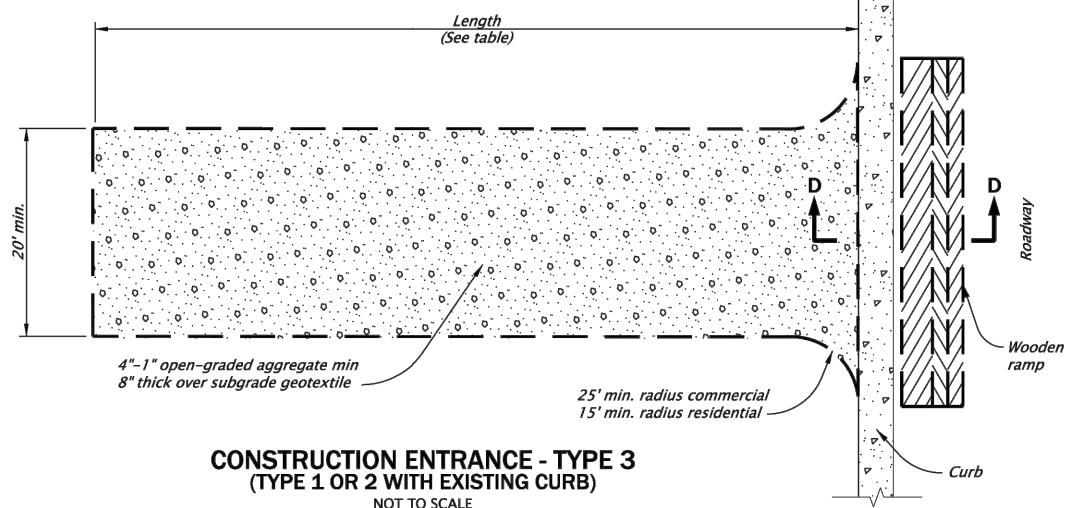
CONSTRUCTION ENTRANCE - TYPE 2
NOT TO SCALE



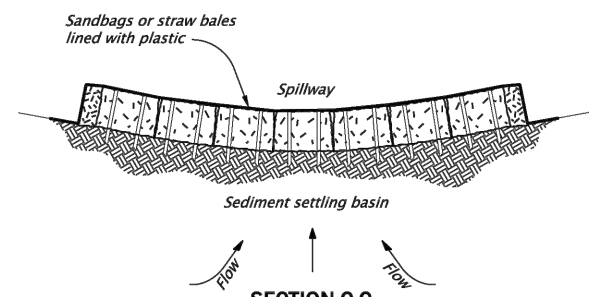
SECTION A-A
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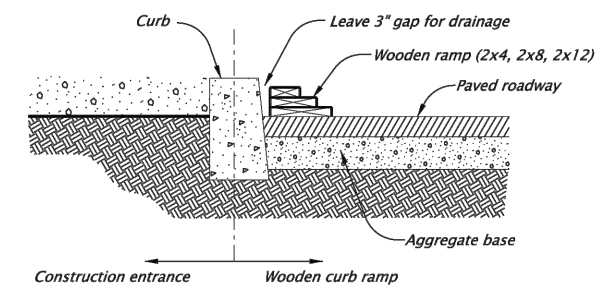
SECTION B-B
NOT TO SCALE



CONSTRUCTION ENTRANCE - TYPE 3
(TYPE 1 OR 2 WITH EXISTING CURB)
NOT TO SCALE



SECTION C-C
NOT TO SCALE



WOODEN CURB RAMP SECTION D-D
NOT TO SCALE

- NOTES:
1. The Type 1 entrance is a simple entrance without a diversion ridge or settling basin.
 2. The wooden ramp may be used on either Type 1 or Type 2 entrances in situations where there is curb and the curb is not removed for the construction entrance.

CONSTRUCTION ENTRANCE TABLE MINIMUM LENGTH	
Length (FT)	Area Of Exposed Soil (Acre)
20	0.25
50	0.25 < A < 1.0
100	A > 1.0

CALC. BOOK NO. <u>N/A</u>		SDR DATE <u>January, 2021</u>	
<i>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.</i>		NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
		OREGON STANDARD DRAWINGS	
		CONSTRUCTION ENTRANCES	
		2021	
DATE		REVISION DESCRIPTION	
Jan 2021		Removed Calc book numbers	

RD1000



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PORTLAND GENERAL ELECTRIC

CARTY SOLAR FARM

EROSION AND SEDIMENT CONTROL PLAN
DETAILS

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ESC-14

Bar Measures 1 inch

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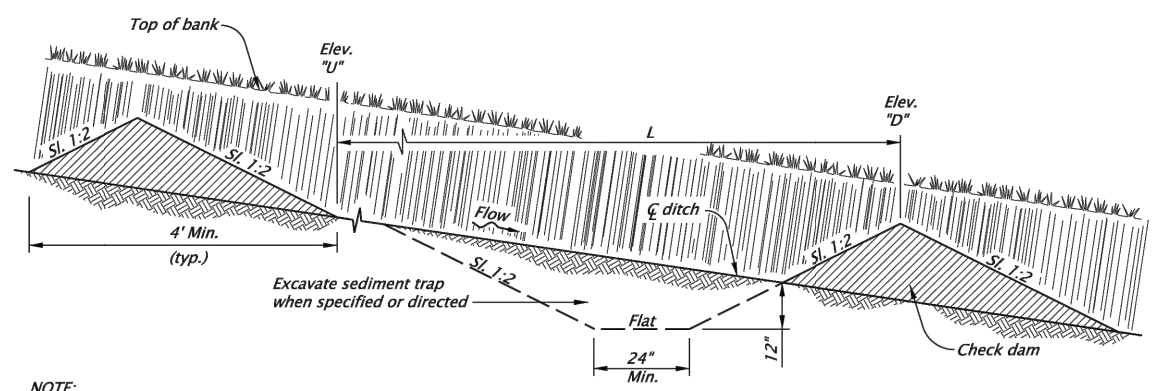
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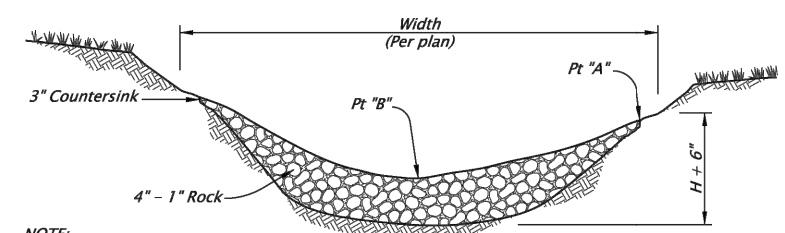
rd1005.dgn 07-01-2020

RD1005



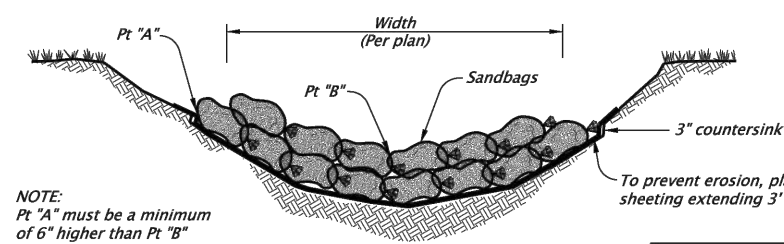
NOTE:
L = Spacing along swale or ditch so that
Elevation "U" equals Elevation "D".

TYPICAL PROFILE SECTION CHECK DAMS
(SHOWN WITH AGGREGATE)
NOT TO SCALE



NOTE:
Pt "A" must be a minimum
of 6" higher than Pt "B"

AGGREGATE CHECK DAM - TYPE 1
NOT TO SCALE



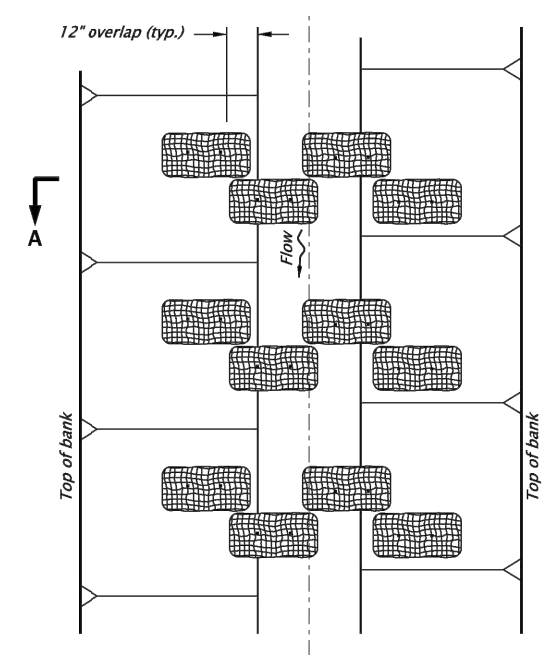
NOTE:
Pt "A" must be a minimum
of 6" higher than Pt "B"

SANDBAG CHECK DAM - TYPE 4
NOT TO SCALE

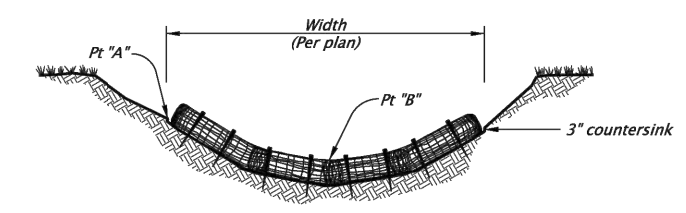
- NOTES:
1. Type 3 - stake biofilter bags with two 2"x2"x18" (minimum) wood stakes per bag. Drive stakes a minimum of 6" into the ground and flush with the top of the bags. Omit stakes if placed over paved surfaces. Overlap bags 12" minimum at each joint.
 2. Type 4 - Tightly abut or overlap ends of sandbags at each joint.
 3. Spacing between check dams for all check dam types shall comply with the typical profile section shown above.

MAXIMUM CHECK DAM SPACING "L"				
Ditch Grade	H=8"	H=12"	H=18"	H=24"
10%	**	**	15'	20'
9%	**	**	16'	22'
8%	**	**	18'	25'
7%	**	**	21'	28'
6%	**	16'	25'	33'
5%	**	20'	30'	40'
4%	16'	25'	37'	50'
3%	22'	33'	50'	66'
2%	33'	50'	75'	100'

** Not allowed H = Min. dam height



PLAN



SECTION A-A

BIOFILTER BAG CHECK DAM - TYPE 3
NOT TO SCALE

CALC. BOOK NO. 6407	SDR DATE July, 2020
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
OREGON STANDARD DRAWINGS	
CHECK DAMS TYPE 1, 3 AND 4	
2021	
DATE	REVISION DESCRIPTION

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CARTY SOLAR FARM
EROSION AND SEDIMENT CONTROL PLAN
DETAILS

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Checked By: JPP
ESC-15

Bar Measures 1 inch

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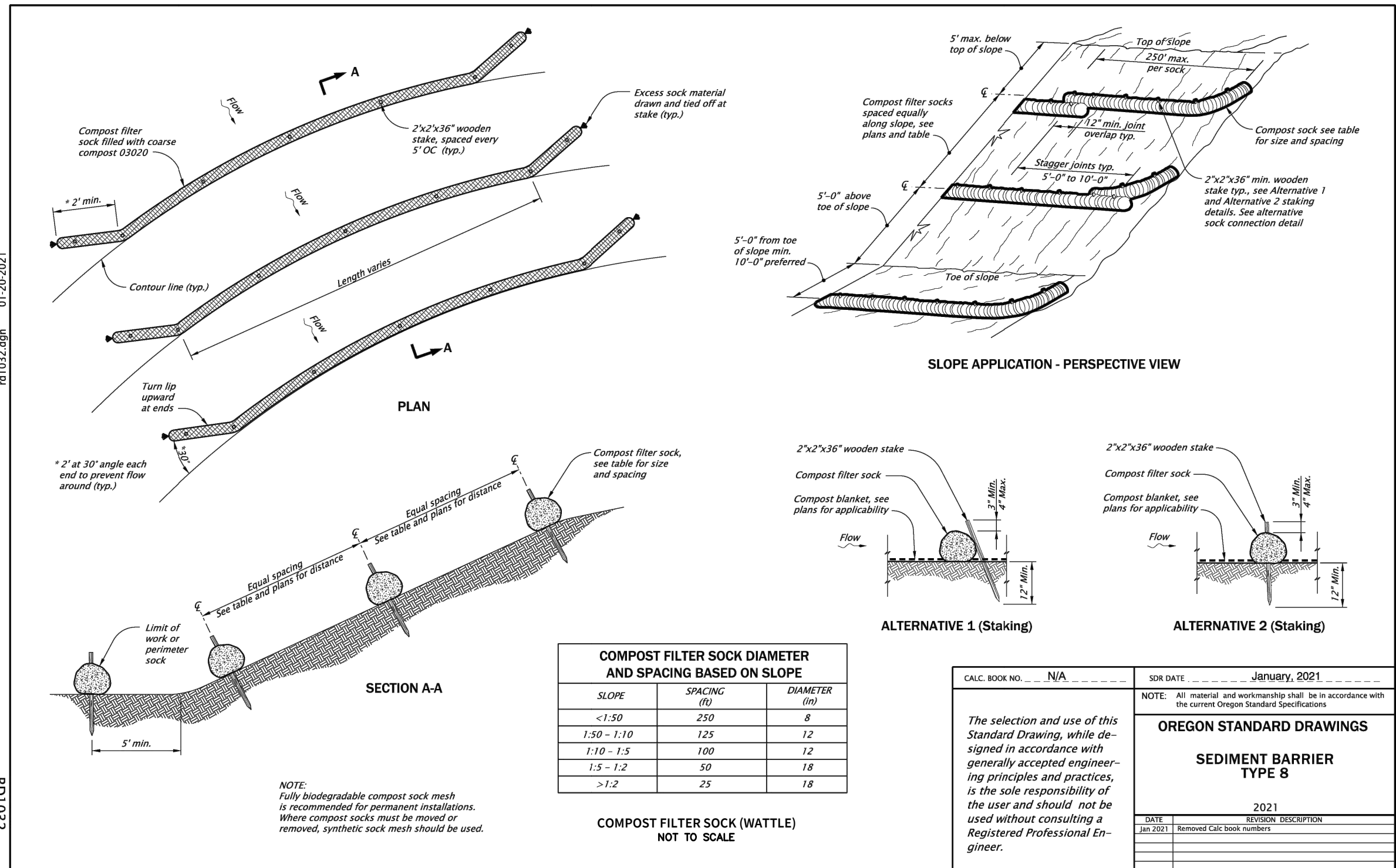
D

C

B

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RD1032



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PORTLAND GENERAL ELECTRIC

CARTY SOLAR FARM

**EROSION AND SEDIMENT CONTROL PLAN
DETAILS**

Project No.: 194-1121-0007

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Drawn By: CAN

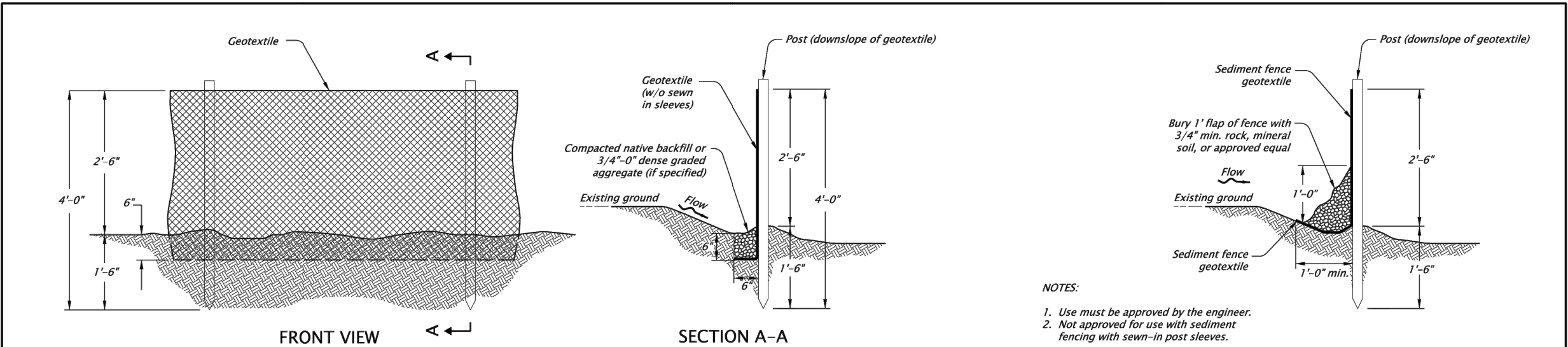
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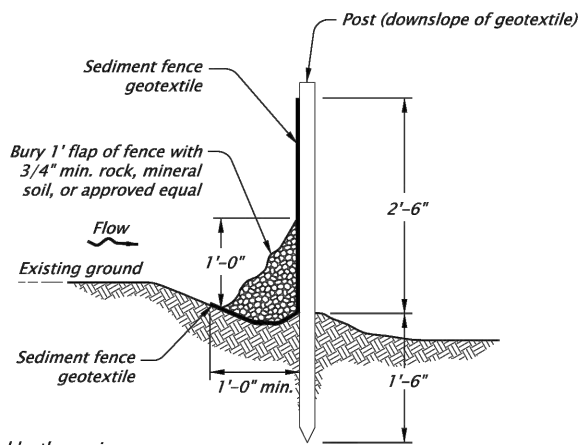
Bar Measures 1 inch

rd1040.dgn 11-08-2017

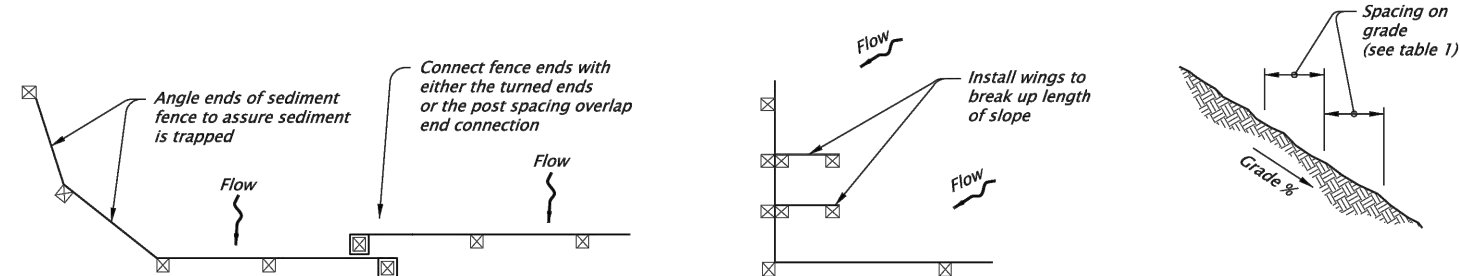
RD1040



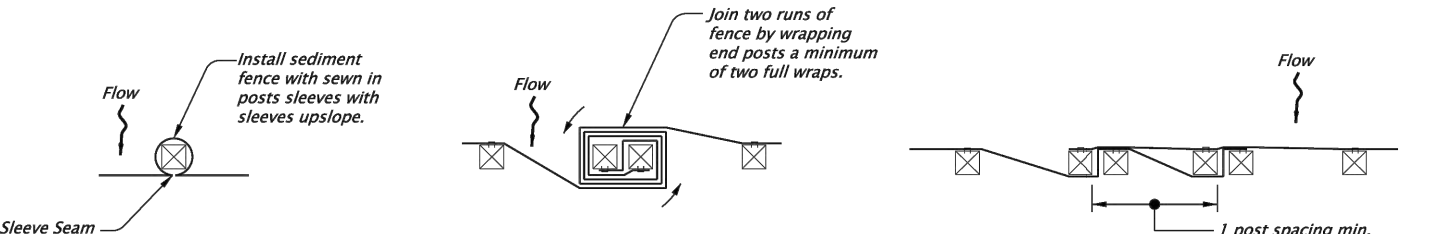
SEDIMENT FENCE AND GEOTEXTILE BURY DETAIL - TYPE 1



ALTERNATE SEDIMENT FENCE W/O TRENCHING - TYPE 2



PLAN VIEW TERMINATION AT CORNER OR PROPERTY LINE



GEOTEXTILE WITH POST SLEEVES TURNED ENDS CONNECTION POST SPACING OVERLAP CONNECTION
GEOTEXTILE END CONNECTIONS

- NOTES:
1. Use 2" X 2" wood fence posts.
 2. Posts to be installed on downhill side of sediment fence geotextile. Position posts to prevent separation from geotextile.
 3. Compact filter fabric trench backfill and soil on uphill side of fence.
 4. Locate fence no closer than three feet to the toe of a slope.
 5. Wing spacing shall comply with table 1.

TABLE 1
FENCE SPACING
FOR GENERAL APPLICATION

INSTALL PARALLEL ALONG
CONTOURS AS FOLLOWS

GRADE	MAXIMUM SPACING ON GRADE
Grade <10%	300'
10% ≤ Grade <15%	150'
15% ≤ Grade <20%	100'
20% ≤ Grade <30%	50'
30% ≤ Grade	25'

TABLE 2
POST SPACING

POST SPACING	POST SPACING
6'	Sediment Fence with Geotextile elongation less than 50%
4'	Sediment Fence with Geotextile elongation 50% or more

CALC. BOOK NO. 6403, 6404, 6405

BASELINE REPORT DATE November 2017

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

OREGON STANDARD DRAWINGS

SEDIMENT FENCE

2018

DATE	REVISION	DESCRIPTION

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RD1040

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PORTLAND GENERAL ELECTRIC

CARTY SOLAR FARM

**EROSION AND SEDIMENT CONTROL PLAN
DETAILS**

Project No.: 194-1121-0007

Designed By: CAN

Drawn By: CAN

Checked By: JPP

ESC-17

**Attachment I-2.
Draft Vegetation and
Soil Management Plan**

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Draft Vegetation and Soil Management Plan

**Carty Solar Farm
Carty Generating Station
Request for Amendment 4
October 2026**

Prepared for



Portland General Electric Company

Prepared by



Tetra Tech, Inc.

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Appendix B. Construction Plan
Appendix C. Fugitive Dust Control Plan
Appendix D: Environmental Monitoring Methods
Appendix E: Revegetation and Site Stabilization Methods
Appendix F: Weed Control Plan

List of Figures

(to be provided during plan finalization)

Figure B-1. Facility Disturbance Levels
Figure C-1. Dust Control Plan Flow Chart
Figure D-1. Soil Compaction Sample Locations

Acronyms and Abbreviations

CGS or Facility	Carty Generating Station
County	Morrow County
EFSC	Energy Facility Siting Council
EMC	Environmental Monitoring Contractor
EPC	Engineering, Procurement, and Construction Contractor
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
ODOE	Oregon Department of Energy
PGE or Certificate Holder	Portland General Electric Company
RC	Revegetation Contractor
RFA	Request for Amendment
VSMP	Vegetation and Soil Management Plan
WC	Weed Control Contractor

1.0 Introduction

This Vegetation and Soil Management Plan (VSMP or Plan) has been prepared by Portland General Electric Company (PGE or Certificate Holder) to serve as a primary source of commitments related to revegetation, soil management, dust control, stormwater management, and noxious weed control through the pre-construction, construction, and operations phases for the photovoltaic (PV) solar energy generation and battery energy storage system (BESS) associated with Request for Amendment (RFA) 4 of the Site Certificate for the Carty Generating Facility (CGS or Facility) in Morrow County, Oregon. In RFA 4, the Certificate Holder is proposing PV solar energy generation with approximately 200 MW alternating current (AC) of nominal and average generating capacity and BESS with the capability of storing up to 200 MW AC over a duration to be determined. The overall CGS additions proposed with RFA 4 (including the BESS) are referred to as the Carty Solar Farm. The solar generation is proposed in two separate solar areas referred to as the Northern Solar Area, located north of the Carty Reservoir, and the Southern Solar Area, located south of the reservoir [see Figure 2 in RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station)]. The BESS is proposed as part of the Northern Solar Area. Note, this VSMP does not apply to any disturbances associated with Unit 1 or facilities approved in the Second Amended site certificate.

For ease of implementation and compliance tracking, this document is structured to identify actionable items by phase and typical sequencing within each phase, with additional details provided as appendices and/or incorporated by reference.

This VSMP will be updated, as necessary, in coordination with the Oregon Department of Energy (ODOE) and applicable agencies prior to construction and operation to reflect the final layout of the Carty Solar Farm and additional details only available once an Engineering, Procurement, and Construction Contractor (EPC) has been identified.

1.1 Plan Finalization

Table 1 identifies information that must be incorporated into the VSMP for finalization prior to construction.

Table 1. Action Items for Plan Finalization

Action	Timeframe	Implemented By	Review/ Verification
Notify ODOE of identity of EMC, EPC, RC, and WC. Provide evidence that each contractor meets the minimum qualifications described in Appendix A.	Plan Finalization	Certificate Holder	ODOE
Update Appendix A, Table A-1 with name and contact information for each contractor.	Plan Finalization	Certificate Holder	ODOE
Update Section 6.0, Table 5 with operations long-term vegetation management details from Public Utility	Prior to Operations	EMC	ODOE

Action	Timeframe	Implemented By	Review/ Verification
Commission (PUC)-approved vegetation management plan, including monitoring for Wildfire Management Plan vegetation criteria.			
Update Appendix B, Table B-1 with temporary and permanent disturbance acres by habitat subtype.	Plan Finalization	EMC	ODOE
Update Appendix B with a Construction Plan and maps based on final design, expected disturbance levels, and sequencing of construction.	Plan Finalization	EMC	ODOE, ODA, ODFW, County
Incorporate all stormwater control and treatment best management practices (BMPs) required by the National Pollutant Discharge Elimination System (NPDES) 1200-C permit into this VSMP.	Plan Finalization	EPC	ODOE
Update Appendix C with construction dust control measures. Include contact information and procedures for Dust Control Hotline	Plan Finalization	EPC	ODOE
Update Appendix D with proposed baseline soil compaction sample locations.	Plan Finalization	Certificate Holder	ODOE
Update Appendix E with Final Revegetation methods, as needed, for both temporary and permanent disturbance areas in consultation with ODOE	Plan Finalization	EMC	ODOE
Update Appendix F with timing and treatment methods for each identified weed species of concern after consulting with the Morrow County Weed Department.	Plan Finalization	WC & EMC	ODOE and County
Update Appendix F with final noxious weed and vegetation monitoring methods.	Plan Finalization	EMC	ODOE
Notes: EMC = Environmental Monitoring Contractor; EPC = Engineering, Procurement, and Construction Contractor; ODOE = Oregon Department of Energy; WC = Weed Control Contractor; County = Morrow County			

2.0 Definitions

Definitions applicable to this VSMP are provided in Table 2.

Table 2. Definitions for the Carty Generating Station

Term	Definition
CGS; Facility	Carty Generating Station
Habitat Areas	Any undeveloped, non-agricultural areas, including but not limited to areas mapped as grassland, sagebrush shrub-steppe, or riparian habitat, prior to construction of the Carty Solar Farm.
Permanent Disturbance Area	Any area permanently occupied by the Carty Solar Farm, including all areas within the fence line of a solar array, BESS, or substation.

Term	Definition
Sensitive Soils	Soils that are highly susceptible to erosion from water, fugitive dust propagation, compaction, or other impacts.
Carty Solar Farm	Photovoltaic solar energy generation, BESS, and other components authorized in RFA 4.
Solar Micrositing Area	Maximum area where Carty Solar Farm may be built or cause temporary disturbance.
Temporary Disturbance Area	Any area that is disturbed during construction of the Carty Solar Farm but will not be permanently occupied during operations.
Weed Management Area	Disturbance area associated with the Carty Solar Farm and a 10-foot buffer.

3.0 Plan Goals and Management Objectives

This VSMP was developed to demonstrate compliance with the terms and conditions of the Site Certificate and other applicable state and local laws and regulations. Specifically, the actions described in this VSMP are intended to increase the probability of revegetation success, reduce erosion and fugitive dust, protect topsoil, prevent and address the establishment and spread of noxious weeds, minimize fire risk, and maintain beneficial vegetation at the site.

The Carty Solar Farm is proposed entirely on non-cultivated land owned by the Certificate Holder for CGS. The majority of the area proposed for the Carty Solar Farm was formerly used for PGE's Boardman Coal Plant. To ensure that the area can be restored adequately to a useful, non-hazardous condition following permanent cessation of construction or operation of the Carty Solar Farm, Permanent Disturbance Areas that are vegetated prior to construction, will be revegetated for the purposes of soil stabilization to reduce erosion, dust pollution, topsoil depletion, and the potential for invasion by noxious weeds and other invasive plants.

To minimize impacts in Temporary Disturbance Areas, soil disturbance and vegetation removal will be minimized and reasonable efforts will be made to restore vegetation and soils to their pre-disturbance condition. Best Management Practices (BMPs) will be implemented to minimize erosion and prevent the introduction or spread of noxious weeds and other invasive plants in both habitat areas and temporarily disturbed developed areas (e.g., existing roads).

4.0 Pre-construction Compliance

Table 3 outlines actions related to revegetation, soil management, dust control, stormwater management, and noxious weed control that must be completed before beginning construction.

Table 3. Pre-construction Compliance Checklist

Action	Timeframe	Implemented By	Review/ Verification
Provide Final VSMP to all participating parties.	At least 30 days prior to construction	Certificate Holder	ODOE
Hold a kick-off meeting with the EMC, EPC, County, and ODOE.	At least 14 days prior to construction.	Certificate Holder	ODOE
Collect baseline soil compaction measurements within all anticipated Level 3 and 4 Disturbance Areas described in Appendix B using the protocol described in Appendix D. Submit baseline soil compaction measurement results to ODOE.	Prior to construction	EMC	ODOE
Complete installation of stormwater, erosion, and sediment controls as required by the 1200-C permit.	Prior to and during construction	EPC	ODOE
Conduct on-site Environmental Training with contractors, construction personnel, and environmental inspector(s), inviting specialty contractors, Oregon Department of Agriculture (ODA), Oregon Department of Fish and Wildlife (ODFW), the County, and ODOE. The training must cover all aspects of this VSMP and other requirements applicable to construction, including but not limited to: <ul style="list-style-type: none"> • Roles and responsibilities • Implementation of avoidance buffers for sensitive resources (e.g., flagging) • Methods for identifying and preventing the spread of noxious and invasive weeds • BMPs for soil protection and erosion control under the 1200-C Permit. • Fire prevention practices during construction 	Prior to construction	Certificate Holder	ODOE
Provide records demonstrating that all contractor personnel have attended on-site Environmental Training described above.	Prior to construction	Certificate Holder	ODOE
Conduct additional pre-construction noxious weed surveys to identify noxious weeds present within the Carty Solar Farm at the time of construction to inform management.	Prior to construction	EMC	ODOE
Provide the Appendix F Weed Control Plan to the Morrow County Weed Department for review and concurrence with treatment guidelines.	Prior to construction	Certificate Holder	ODOE
Treat noxious weeds within the Weed Management Area in accordance with methods in Appendix F.	Prior to construction	WC	ODOE
Provide evidence that existing noxious weeds have been identified and treated in accordance with methods in Appendix F.	Prior to construction	Certificate Holder	ODOE

Action	Timeframe	Implemented By	Review/ Verification
Flag sensitive environmental resources (e.g., historic, cultural, and archaeological resources; active raptor nests; delineated wetlands and waterways) and noxious weed infestations to alert construction personnel of avoidance areas or management requirements.	Prior to construction	EMC	ODOE
Notes: County = Morrow County; EMC = Environmental Monitoring Contractor; EPC = Engineering, Procurement, and Construction Contractor; ODOE = Oregon Department of Energy; RC = Revegetation Contractor; WC = Weed Control Contractor			

5.0 Construction Compliance

Table 4 outlines actions needed for compliance during construction related to revegetation, soil management, dust control, stormwater management, and noxious weed control.

This list includes actions applicable throughout construction as well as actions required as construction nears completion and revegetation commences in preparation for entering the operations phase.

Table 4. Construction Compliance Checklist

Action	Timeframe	Responsible Party	Review/ Verification
During Construction Mobilization			
Provide information about target noxious weed species at the operations and maintenance buildings.	During construction	EPC	EMC & ODOE
Ensure a copy of this VSMP and a description of any additional fugitive dust control requirements are available on site.	During construction	EPC	EMC & ODOE
Prominently display Dust Control Hotline signs, providing direct access to the Certificate Holder Site Manager.	During construction	EPC	EMC & ODOE
During Ground-Disturbing Activities			
In Disturbance Level 3, 4, and 5 areas (described in Appendix B), stockpile excavated soils by soil horizon to replace in the same order and prevent mixing of topsoil and subsoils. Put conserved topsoil back in place prior to revegetation activities.	During construction	EPC	EMC & ODOE
Do not move topsoil and other soils from areas with noxious weeds to areas without noxious weeds; instead, return these soils to their previous location during reclamation activities to reduce the transport of weed seeds, roots, or rhizomes.	During construction	EPC	EMC & ODOE
Use appropriate erosion and sediment control practices, as required by the NPDES 1200-C permit.	During construction	EPC	EMC & ODOE
Limit vehicle access to designated routes, whether existing roads or newly constructed roads, and the outer limits of construction disturbances per the final design for the Carty Solar Farm; limit vehicle traffic in areas with noxious weeds.	During construction	EPC	EMC & ODOE
Require construction vehicles to pass through a wheel wash station at vehicle ingress/egress points each time they enter or exit the Carty Solar Farm.	During construction	EPC	EMC & ODOE
Clean vehicles and equipment associated with ground disturbance and movement of topsoil utilizing a mobile wash station after performing work in areas with noxious weeds and prior to performing work in areas without noxious weeds.	During construction	EPC	EMC & ODOE
Implement appropriate BMPs to control any dust generated by construction activities, such as applying water or stabilizers to roads and disturbed soil areas.	During construction	EPC	EMC & ODOE
Maintain records of U.S. Environmental Protection Agency (EPA) Method 22 (ODEQ 2019) monitoring.	During construction	EPC	EMC & ODOE

Action	Timeframe	Responsible Party	Review/ Verification
After grading is complete but prior to installation of Carty Solar Farm, apply temporary or permanent soil stabilization, as described in Appendix E.	During construction	RC	EMC & ODOE
Monitor the Weed Management Area for noxious weeds during and after construction and implement control measures as described in Appendix F.	During and following construction	EMC & Certificate Holder	ODOE
Conduct compliance monitoring to ensure that contractors are complying with noxious weed prevention measures in this VSMP. Facilitate coordination meetings with ODOE and Morrow County Weed Department, train all personnel to maintain tracking sheets, conduct routine check-in calls with the construction team. Maintain records and provide ODOE with copies of these records annually during construction. If the Certificate Holder contracts with the Morrow County Weed Department to perform weed control at the Carty Solar Farm, then monitoring records will include a statement that the county agency performed the work.	During construction	EMC	ODOE
If construction extends into the growing season prior to the commercial date of operations and formal post-construction weed monitoring, conduct informal but comprehensive weed surveys to inform adaptive management. Weed monitoring may be conducted as part of routine environmental monitoring to be completed at least monthly from April to October.	During construction	EMC	ODOE
Soil Stabilization and Reclamation			
Soil stabilization may include applying unseeded hydromulch or crimping in weed-free straw until seeding can occur.	During and following construction	Certificate Holder	EMC & ODOE
Meet with ODOE in coordination with ODFW and Morrow County Weed Department to review the actual extent and conditions of disturbed areas and confirm the revegetation methods to be implemented.	After each phase of construction is complete and before revegetation	Certificate Holder	ODOE
In areas with noxious weeds where soil was removed, return soils to their previous location during reclamation activities to reduce transport of weed seeds, roots, or rhizomes.	During reclamation	EPC	EMC & ODOE
Treat noxious weeds in the Weed Management Area using methods described in Appendix F and in consultation with the Morrow County Weed Department as necessary.	Before reclamation and revegetation	WC	EMC & ODOE
Decompact soil by mechanical scarification (tilling or ripping the soil) to an appropriate depth as described in Appendix E. Soil amendment, such as addition of organic matter (compost), may also be necessary to alleviate compaction.	Prior to revegetation	EPC	EMC & ODOE

Action	Timeframe	Responsible Party	Review/ Verification
Complete post-construction soil compaction testing in spring or late fall in accordance with Appendix D. Submit results to ODOE for review and approval.	After reclamation and before revegetation	EMC & Certificate Holder	ODOE
Perform soil preparation prior to seeding using methods described in Appendix E.	Before revegetation	EPC	EMC & ODOE
Prevent conditions favorable for noxious weed germination by revegetating as soon as practicable.	After reclamation	RC	ODOE
Revegetation of Permanent Disturbance Areas			
Following completion of construction phases, seed undeveloped permanent disturbance areas in accordance with methods described in Appendix E.	During revegetation	RC	EMC & ODOE
Revegetation of Non-Agricultural Temporary Disturbance Areas			
Reseed areas of temporary disturbance outside of agricultural lands, as described in Appendix E.	During revegetation, following each construction phase	RC	EMC & ODOE
If straw is needed and certified weed-free straw is unavailable, identify a local source of straw and obtain approval for its use by ODOE in consultation with the Morrow County Weed Department.	Before revegetation	RC or EPC	ODOE
Consult with ODOE, ODFW, ODA, Morrow County Weed Department, and/or the seed supplier to determine the optimal timing for seed application based on climatic conditions of the particular year when construction and revegetation efforts are implemented. Seeding from September to March is typically recommended.	Before revegetation	RC & EMC	ODOE
Stabilize seeded areas to facilitate establishment by applying seedless, certified weed-free hydromulch containing a tackifier or crimped weed-free straw.	During revegetation	RC or EPC	EMC & ODOE
Maintain records of revegetation efforts in all temporary and permanent disturbance areas and update ODOE monthly as revegetation work occurs.	Monthly during revegetation	EMC	ODOE
Notes: EMC = Environmental Monitoring Contractor; EPC = Engineering, Procurement, and Construction Contractor; ODOE = Oregon Department of Energy; RC = Revegetation Contractor; WC = Weed Control Contractor			

6.0 Operations Compliance

Table 5 summarizes actions needed for compliance during operations related to revegetation, stormwater management, and noxious weed control. This list includes actions applicable throughout operations as well as actions required only initially following construction, for example through the Notice of Termination (NOT) for Coverage under a NPDES Permit. Soil management and dust control measures are not included in Table 5 because they are addressed during prior phases.

Table 5. Operations Compliance Checklist

Action	Timeframe	Responsible Party	Review/ Verification
YEAR 1			
Conduct seasonal monitoring of Permanent Disturbance Areas to visually assess the following: a. Establishment of seeded species; b. Inspection of areas of bare soil for erosion; and c. Presence of noxious weeds.	Initiate within 60 days of the completion of revegetation and conduct once per season in the first year following construction	EMC	ODOE
Inspect and maintain stormwater measures as required in the 1200-C permit.	During operations, prior to achieving NOT for the NPDES	Certificate Holder & EMC	ODOE
Inspect and maintain any permanent stormwater management infrastructure. Inspect project facilities (e.g., roads) for erosion issues.	During operations, after achieving NOT for the NPDES	Certificate Holder	ODOE
YEARS 2 to 6			
Conduct annual monitoring of Permanent Disturbance Areas to assess whether vegetation meets success criteria (Appendices B and D).	Annually for 5 years in May or June, beginning the first year after revegetation	EMC	ODOE
Monitor revegetated Temporarily Disturbance Areas. To determine if revegetated temporarily disturbed areas are meeting success criteria, compare vegetation for monitoring and reference transects in each of the non-agricultural habitat subtypes that had more than 0.5 acres of temporary disturbance (Appendix D).	Annually for 5 years in May or June, beginning the first year after revegetation	EMC	ODOE
Determine and report on whether success criteria have been met or are trending towards being met (see Appendix E for report content and success criteria) for Temporary and Permanent Disturbance Areas. Final determination of whether the Certificate Holder is in compliance with revegetation obligations will be made by ODOE. Remedial actions and/or additional monitoring may be required in areas that have been determined by ODOE not to have met the success criteria.	Annually for 5 years in May or June, beginning the first year after revegetation and for the life of the Carty Solar Farm on a schedule to be determined in consultation with ODOE	EMC	ODOE
If a revegetated area is damaged by wildfire, develop a plan, subject to ODOE approval, to address the damaged area. Continue to monitor and report on revegetation progress during the remainder of the 5-year period. Report to ODOE within 72 hours of discovery.	During the first 5 years following revegetation if wildfire occurs.	EMC	ODOE
Summarize noxious weed monitoring results in annual reports that describe noxious weeds identified, treatments implemented, treatment efficacy, and recommendations for additional treatments. Submit reports to ODOE, ODA,	During first 5 years of operations	Certificate Holder & EMC	ODOE

Action	Timeframe	Responsible Party	Review/ Verification
ODFW, and the County annually. If the Certificate Holder contracts with the Morrow County Weed Department to perform weed control at the Carty Solar Farm, then no monitoring report needs to be provided except for a statement that the County agency performed the work.			
Implement the measures outlined in Appendix E to address vegetation management to reduce wildfire risk.	During operation	EMC	ODOE
Consult with ODOE, ODA, and the Morrow County Weed Department to design a long-term weed control plan as needed based on the success of control efforts.	After 5th year of annual monitoring	Certificate Holder	ODOE, ODA, County
Provide records demonstrating that all Facility personnel have been trained in noxious weed control.	Annually during operations	Certificate Holder	ODOE
Monitor noxious weeds as outlined in Appendix F within the Weed Management Area for the life of the Carty Solar Farm to assess weed growth and inform noxious weed control measures. Assess the success of noxious weed treatments and document any new noxious weed infestations observed.	During operations	Certificate Holder & EMC	ODOE
Control noxious weeds as described in the long-term weed control plan. Maintain ongoing communication the Morrow County Weed Department regarding noxious weeds at the Carty Solar Farm. Control noxious weeds reported by landowners on a case-by-case basis and prepare a summary of measures taken for that landowner.	During operations	Certificate Holder	ODOE
Consult with the Morrow County Weed Department on timing, method, and application rates for each identified weed species of concern to allow for the adaptive weed management given to change weed control effectiveness from noxious weed species tolerance to herbicide treatment over time. Report the results of the consultation to ODOE within 30 days. Any alternative control methods can be proposed by the Certificate Holder or its contractors, subject to approval by the Morrow County Weed Department.	Every fall season during operations	Certificate Holder	ODOE
Notes: EMC = Environmental Monitoring Contractor; NOT = Notice of Termination; NPDES = National Pollutant Discharge Elimination System; ODOE = Oregon Department of Energy; ODFW = Oregon Department of Fish and Wildlife			

7.0 Plan Amendment

This VSMP may be amended from time to time by agreement of the Certificate Holder and the Oregon Energy Facility Siting Council (EFSC). Such amendments may be made without amendment of the site certificate. EFSC authorizes ODOE to agree to amendments to this VSMP. ODOE shall notify EFSC of all VSMP amendments, and EFSC retains the authority to approve, reject, or modify any amendment agreed to by ODOE.

8.0 References

ODEQ (Oregon Department of Environmental Quality). 2019. OAR 340-208-0210 EPA Method 22.
<https://secure.sos.state.or.us/oard/viewAttachment.action?ruleVrsnRsn=256141>

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Appendix A. Roles and Qualifications

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Roles and Responsibilities

The Certificate Holder is the overall responsible party for construction and operation of the Carty Solar Farm and implementation of this VSMP. However, the Certificate Holder may use contractors to complete tasks associated with this VSMP. Responsible parties and their roles are described in Table A-1. Minimum qualifications for contractors are provided in Table A-2.

Table A-1. Roles and Responsibilities

Responsible Party	Name and Contact Information	Role
Certificate Holder	Portland General Electric Company	Responsible for compliance with all site condition requirements, hiring contractors that meet the minimum qualifications described in Appendix A, and ensuring that all contractors perform work in accordance with the requirements of this VSMP.
Engineering, Procurement, and Construction Contractor (EPC)	Name: Contact Person: Address: Phone Email	Responsible for implementing best management practices (BMPs) and other measures specified in the National Pollutant Discharge Elimination System (NPDES) 1200-C permit and this VSMP to minimize impacts during construction.
Revegetation Contractor (RC)	Name: Contact Person: Address: Phone Email	Responsible for performing revegetation actions during and immediately after construction, as described in this VSMP.
Weed Control Contractor (WC)	Name: Contact Person: Address: Phone Email	Responsible for performing weed control actions in the Weed Management Area, as described in this VSMP.
Environmental Monitoring Contractor (EMC)	Name: Contact Person: Address: Phone Email	Responsible for conducting environmental monitoring and documenting compliance with aspects of this VSMP during and following construction, including conducting revegetation, dust, soil, stormwater, and noxious weed monitoring.
Oregon Department of Energy	Oregon Department of Energy Compliance Specialist 550 Capitol St. NE Salem, OR 97301 Phone: Email:	Responsible for providing technical input on proposed BMPs and other measures to minimize impacts and for validating all compliance deliverables described in this VSMP. ODOE may utilize contractors to meet its responsibilities under this VSMP during some or all phases.

Responsible Party	Name and Contact Information	Role
Morrow County (County)	Morrow County Weed Department Corey Sweeney, Weed Program Manager P.O. Box 428, Lexington, OR 97839 (541) 989-9500 mcweed@morrowcountyor.gov	Responsible for providing input on weed control and other actions described in this VSMP and its implementation as needed. The County will also attend calls with ODOE and other agencies as needed.

Contractor Minimum Qualifications

Table A-2. Contractor Minimum Qualifications

Contractor	Role	Minimum Qualification
Engineering, Procurement, and Construction Contractor (EPC)	Responsible for implementing best management practices (BMPs) and other measures specified in the NPDES 1200-C permit and this VSMP to minimize impacts during construction, and for performing restoration and revegetation actions.	Minimum qualifications for the EPC include: <ul style="list-style-type: none"> • Experience implementing measures in the NPDES 1200-C permit; • Demonstration of sufficient resources and staffing for anticipated BMP installations and maintenance; and • Experience in coordination with agencies and private landowners.
Revegetation Contractor (RC)	Responsible for performing revegetation actions during and immediately after construction.	The Certificate Holder will ensure that the RC has the following minimum qualifications: <ul style="list-style-type: none"> • Experience in native plant, non-native and invasive plants, and noxious weed identification and management; • Experience in revegetating natural areas; • Experience with site preparation and applicable seeding methods; • Experience in documenting revegetation actions and providing progress reports; • Experience in coordination with agencies; and • No recent (within one year) violations on the contractor's record.
Weed Control Contractor (WC)	Responsible for performing weed control prior to, during, and after construction within the disturbance area and a 10-foot buffer (Weed Management Area).	The Certificate Holder will ensure that noxious weed management actions will be conducted by specialists with the following qualifications: <ul style="list-style-type: none"> • Experience in native plant, non-native and invasive plants, and noxious weed identification in the Columbia Plateau Ecoregion; • Experience in noxious weed mapping; • If chemical control is used, specialists must possess a Commercial or Public Pesticide Applicator License from the Oregon Department of Agriculture or possess an Immediately Supervised Pesticide Trainee License and be supervised by a licensed applicator; • Training in noxious weed management or Integrated Pest Management with an emphasis in noxious weeds; • Experience in coordination with agencies; and • No recent (within one year) violations on the contractor's record.

Contractor	Role	Minimum Qualification
Environmental Monitoring Contractor (EMC)	Responsible for conducting environmental monitoring and documenting compliance with aspects of this VSMP during and following construction, including conducting revegetation, dust, soil, stormwater, and noxious weed monitoring as described below.	<p>Minimum qualifications for the EMC include:</p> <ul style="list-style-type: none"> • Have an active certification recognized in the 1200-C permit (e.g., Certified Erosion and Sediment Control Lead); • Experience implementing and monitoring measures in the NPDES 1200-C permit; • Experience and knowledge of U.S. Environmental Protection Agency Method 22 (ODEQ 2019)¹ with respect to the general procedures for determining the presence of visible emissions; • Experience in native plant, non-native and invasive plants, and noxious weed identification and management; • Experience in noxious weed mapping; • Training in noxious weed management or Integrated Pest Management with an emphasis in noxious weeds; and • Experience in coordination with agencies. <p>The EMC will include a qualified botanist or revegetation specialist who will be responsible for monitoring and reporting on revegetation success.</p>
1. ODEQ. 2019. OAR 340-208-0210 EPA Method 22. https://secure.sos.state.or.us/oard/viewAttachment.action?ruleVrsnRsn=256141		

Appendix B. Construction Plan

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Disturbance Acreage

Acres of temporary and permanent disturbance to habitat types associated with Carty Solar Farm construction and operation are provided in Table B-1.

Table B-1. Acres of Temporary and Permanent Disturbance

[to be inserted at plan finalization]

Disturbance Levels

Revegetation and soil stabilization needs will be determined by a combination of topography, soil type, disturbance level, and existing vegetative cover.

Disturbance levels will primarily be determined by conditions such as slope, gradient, and existing vegetation. As much as is feasible, use of heavy machinery and soil disturbance should be conducted on dry soil. Disturbance of saturated soil has a much greater risk of compaction and requires more effort to revegetate and control weedy species. Disturbance levels are defined as follows and depicted in Figure B-1:

- *Level 1 – Mowing:* Mowing is used to conserve vegetative resources within a facility. Vegetation will be limited to a height of 10 to 12 inches and mowed to no less than 6 inches during construction. Mowing to no less than 6 inches protects perennial grass crowns and allows grasses to regenerate. Depending on facility objectives, vegetation can be allowed to reach a normal height or kept trimmed to a height between 6 inches and the plant's full height potential. Crushing of vegetation will be minimal and this disturbance level is designed to have a minimal impact on existing vegetation. This method is least likely to result in invasions of undesirable plant species.
- *Level 2 – Overland Drive and Crush:* Disturbance caused by accessing a facility without significantly modifying the landscape. Vegetation is crushed to the ground but no surface soil is removed so root structures are left intact. Even though vegetation may be damaged or destroyed, the surface soil and seed bank remain in place. Some crushed vegetation will likely sprout after disturbance ceases. These activities would result in minimal to moderate disturbance. This type of disturbance will result in a faster recovery time for vegetation compared to Levels 3 and 4. Soil seed banks remain largely in place, perennial vegetation can grow back, and minimal external efforts are necessary. This method is less likely to result in invasions of undesirable plant species compared to Levels 3 and 4.
- *Level 3 – Clear and Cut:* Disturbance caused by accessing the facility including having to remove all vegetation to improve or provide suitable access for equipment. All vegetation is removed, soils are compacted, and the root zone or soil A-horizon may be disturbed, but no subsurface soil is removed. Clear and cut activities would result in moderate disturbance. This type of disturbance will result in moderate recovery times for vegetation. This method has a moderate

risk for invasion of undesirable plant species. An example is imprinting to crush vegetation down into the soil or incidental grading and smoothing of surface soils.

- *Level 4 – Clear and Cut with Soil Removal:* Disturbance is caused by removing all vegetation in the impact zone, soils are compacted, and surface soil and subsoil are displaced. These activities result in heavy disturbance. This type of disturbance results in an extensive recovery time for vegetation and is most likely to lead to invasions of undesirable plant species, which can result in lengthy and expensive control efforts. Includes disc-and-roll construction and other traditional construction methods where soils are disturbed and no vegetation is left intact. This category includes all work requiring the segregation and replacement of topsoil.
- *Level 5 – Development Footprint:* Disturbance is caused by removing all vegetation and covering the area surface with gravel, concrete, or other vegetation-free surfaces, or where the intended function of a specific area necessitates it remain unvegetated. This disturbance level includes roads, graveled lots, fire breaks, utility pole pads, and the areas underlying any component installed on a foundation. This level does not include vegetated areas under solar arrays. This type of disturbance will result in a complete loss of vegetation and will be required to be monitored and kept free of noxious weeds and other vegetation for the life of the facility.

Maps showing expected disturbance levels in disturbance areas throughout the Facility in relation to existing vegetation type and areas with sensitive soils will be provided in Figure B-1 or attached to the final VSMP.

Appendix C. Fugitive Dust Control Plan

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To manage fugitive dust from construction, the Certificate Holder and its contractors will generally follow the Dust Control Plan Flow Chart (Figure C-1).

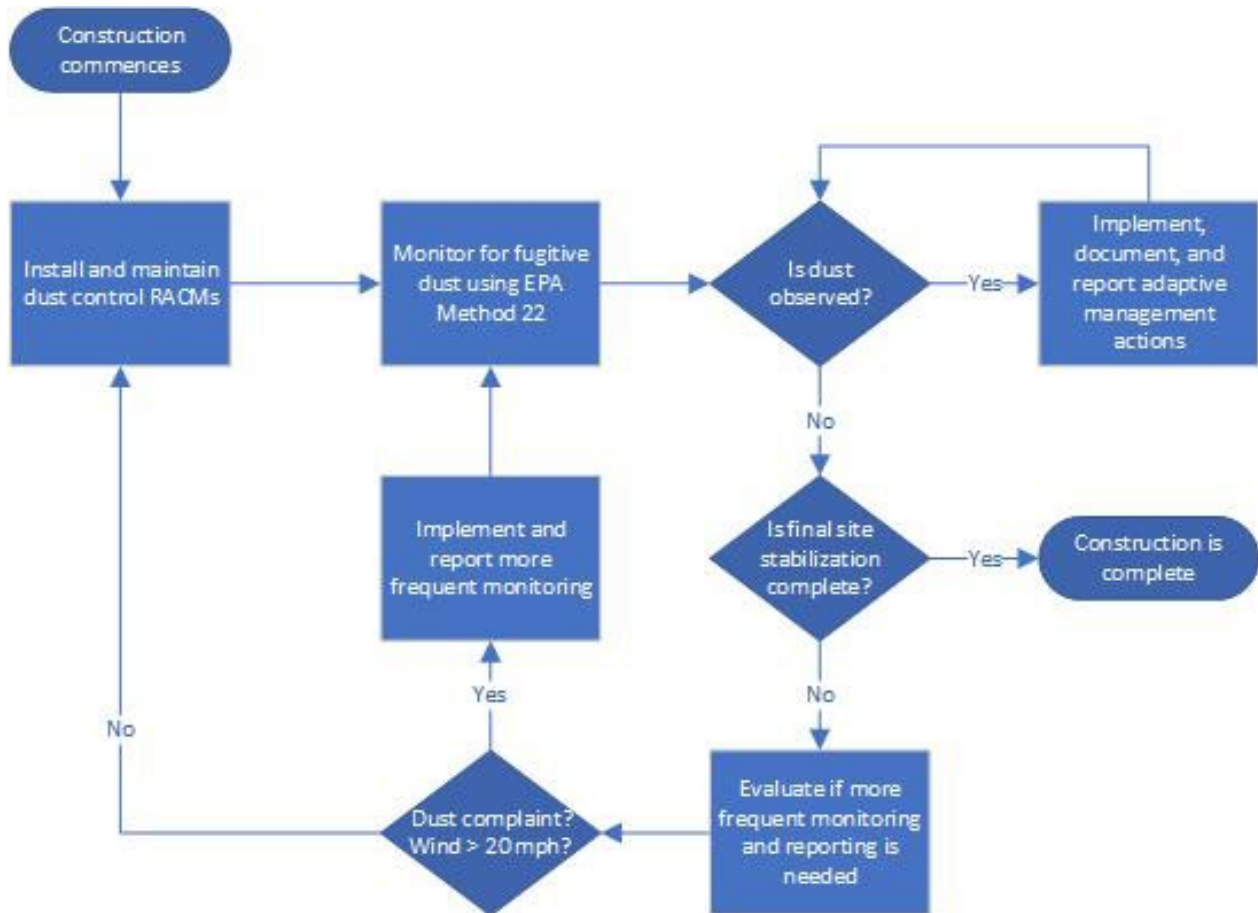


Figure C-1. Dust Control Plan Flow Chart

Fugitive Dust Monitoring and Reasonable Available Control Measures (RACMs)

The visual monitoring required by the 1200-C permit must occur at least once every 14 calendar days. However, because Oregon Administrative Rule (OAR) 340-208-0210 restricts visible fugitive emissions on a continuous standard to a maximum of **18 seconds in any 6-minute period**, and because fugitive dust emissions may provide an immediate public safety concern, this VSMP requires that fugitive dust be monitored and controlled on an ongoing basis (Table C-1).

Monitoring for fugitive dust emissions shall include:

- Use of U.S. Environmental Protection Agency (EPA) Method 22 (ODEQ 2019), as specified in OAR 340-208-0210, **at least once per day during the dry season, during peak construction activities.**

- The observation shall be performed during times of peak construction activity at the downwind facility boundary.
- Recording of observations in a fugitive dust inspection log that is kept on site and shall be kept digitally, described below.

Triggers for additional, more frequent monitoring will include:

- Observation of visible fugitive dust emissions by the Environmental Inspector, contractor(s), agency, or Certificate Holder staff,
- Wind speeds or gusts greater than 20 miles per hour, or
- Receipt of complaints or concerns through the Project Dust Control Hotline or other means.

Table C-1. Fugitive Dust Sources and Reasonable Available Control Measures (RACMs)

Construction Phase	RACM(s)	Supplemental RACM(s)
All Phases of Construction	Daily fugitive dust monitoring and record keeping.	Increase frequency of monitoring.
	Prominent display of Dust Control Hotline signs, providing direct access to the Environmental Inspector.	If established, proactive engagement with Community Action Council.
	Worker Environmental Awareness Program training for all construction employees.	Additional training and refreshers for employees.
	Maintain stockpile of best management practices (BMPs) on site, including sufficient palliatives for a single treatment of all access roads and sufficient palliatives, mulch, and/or hydromulch for a minimum of 25 percent of the total disturbed area, and machinery for application.	Increase stockpile of palliatives, mulch, and/or hydromulch and add additional BMPs.
	Documentation and reporting of adaptive management actions.	Development and submittal of revised Fugitive Dust Control Plan.
Facility Access	Install and maintain stabilized construction entrances at ingress/egress locations and restrict traffic to these locations.	Add additional construction entrance BMPs (e.g., wheel wash).
	Daily sweeping up of sediment from paved surfaces utilizing vacuum sweeper with high efficiency particulate air (HEPA) filtration.	Increase sweeper frequency.
	Access roads shall be graveled.	Road maintenance and gravel reapplication.
	Access roads would be stabilized with water or palliative sufficient to eliminate visible and sustained dust from vehicular travel and wind erosion. Reapply stabilization as necessary to maintain dust-free condition.	If water is unavailable or ineffective, or if water use is limited by any agency or regulation, access roads will be stabilized with longer-lasting palliatives.
	Restrict construction traffic to established and stabilized access routes.	Install fencing or barricades to prevent traffic outside of established routes.
	Limit traffic speeds to 15 miles per hour on stabilized unpaved roads within the facility as	Limit traffic speeds within the facility to 5 or 10 miles per hour.

Construction Phase	RACM(s)	Supplemental RACM(s)
	long as such speeds do not create significant visible dust emissions. Traffic speed signs shall be displayed prominently at all entrances and exits.	
	Minimize disturbance areas and soil exposure to the maximum extent feasible.	Limit work to a portion of the disturbed area until all disturbed areas receive temporary or final stabilization.
	When wind speeds or gusts exceed 15 miles per hour, minimize new disturbances to the extent possible and/or mobilize additional water trucks or palliatives to minimize fugitive dust from exposed surfaces.	Stop all ground disturbing activities and apply additional dust control measures until measures are effective or wind speeds slow and fugitive emissions stop.
	Separate and cover or otherwise stabilize topsoil to preserve it until it is replaced during revegetation.	Increase maintenance frequency for topsoil cover/stabilization. Combine methods, such as mulch plus tackifier.
	Stabilize exposed soils within the timeframes established in the 1200-C permit. Stabilize exposed soils in stages based on soil conditions and weather.	Stabilize exposed soils more frequently, even if additional work is anticipated within the timeframe established in the 1200-C permit. Reapply stabilization measures following any additional disturbances.
	Temporarily stabilize exposed surfaces to prohibit significant and sustained visible fugitive dust from wind erosion. Utilize BMPs such as mulch, hydromulch with or without seeds, tackifier, spreading stone or gravel, and trackwalking.	Combine stabilization methods, such as mulch plus tackifier, or trackwalking plus hydromulch. Increase frequency of maintenance of stabilization.
	Seed exposed surfaces during the appropriate season with approved temporary or permanent seed mixes.	Reapply seed to newly disturbed areas or areas with poor germination. Use temporary seeding even if additional work is anticipated before final stabilization. Use irrigation to enhance seeding success.
Removing and Hauling Sand, Soil, or Other Loose Materials	Gate seals should be tight on dump trucks. Soil load shall be kept below 6 inches of the freeboard of the truck. Drop heights shall be minimized when loaders dump soil into trucks. Gate seals will be checked and tight on dump trucks. All trucks on highways must be fully covered and secured.	Cover haul trucks with a tarp or other suitable cover.

Fugitive Dust Reporting

A dust inspection log shall be completed after each dust inspection. Log records shall be kept digitally and included in construction monitoring reports as described in Appendix D of this VSMP. This log shall include all information required in EPA Method 22. Photos and/or video taken during the observation period to document conditions shall be available digitally to the Oregon Department of Energy upon request. Any documented exceedance events shall include a detailed

explanation of RACMs implemented for corrective action and the results of subsequent monitoring demonstrating fugitive dust has returned to below exceedance thresholds.

Dust Control Hotline:

The EPC will establish a Dust Control Hotline to promptly respond to dust related concerns from the public, landowners, and regulatory agencies during construction activities. A Dust Control Hotline poster will be posted at site entrance/main gate listing “Dust Control Hotline” contact information and hours of work.

Hotline Administration

The Dust Control Hotline will be monitored by the EPC team.

Primary Contact:

Secondary Contact:

Hours of Operation

TBD

Complaint Intake Information

Callers are encouraged to provide the following information to assist in timely response:

- Location of the dust concern.
- Date and time the issue was observed.
- Description of the concern (e.g., traffic dust, construction activity, equipment I.D.: excavator, dozer, personnel vehicle, company name decals, etc.).
- Optional contact information for follow-up.

Response & Escalation

All complaints will be logged and reviewed by the EPC team. Upon receipt, site personnel will investigate the concern and implement appropriate dust control measures, which may include watering, traffic adjustments, or modification of construction activities. If required, issues will be escalated to project management and environmental staff to ensure compliance with applicable permits and plans.

Appendix D. Environmental Monitoring Methods

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The Environmental Monitoring Contractor (EMC) will be present during construction activities that involve ground disturbance, grading, weed treatments, vegetation removal, and high traffic volumes and is responsible for monitoring and recording construction activity to ensure compliance with this VSMP.

In addition, the EMC will:

- Assist contractor(s) for the direction of water trucks, civil activities, and road maintenance to reduce fugitive dust and erosion issues.
- Identify when reasonably available and best available control measures are not adequate, as designated in Appendix C.
- Maintain dust inspection and noxious weed logs and reporting designated in this VSMP.

Specific protocols and requirements for testing and monitoring to be performed prior to and during construction and revegetation efforts are described in the following sections.

Soil Compaction Testing

Sampling Protocol

The EMC will conduct pre- and post-construction field measurements of subsurface soil compaction in all anticipated Level 3 and 4 Disturbance Areas, and any areas consisting of soils with low Soil Compaction Resistance. If disturbance level maps are not available at the time of pre-construction sampling, Portland General Electric Company (the Certificate Holder) may choose to base sampling locations on the overall anticipated disturbance area (i.e., regardless of level of disturbance). Soil compaction sample locations will be evenly distributed across the disturbance area at a rate of 1 sample per 50 acres. Proposed soil sample locations were stratified by soil type to ensure a minimum of three sample locations in each soil type and a representative density of sample locations in major soil types. Additionally, sample locations were selected to avoid infrastructure such as inverters and roads where revegetation will not occur. Sampling locations will be identified in Figure D-1 as part of VSMP finalization.

Soil compaction measurements will be collected at all sampling locations prior to ground disturbing activities and again at the same locations post reclamation but prior to revegetation.

Test Methods

Soil Compaction Testing will be conducted using the following standard methods (NRCS 2020; Duiker 2025):

- The surveyor will measure soil resistance using a penetrometer.
- Resistance will be measured at 3-inch intervals to 12 inches or until the meter goes above 300 pounds per square inch (3, 6, 9, and 12 inches if soils allow).
- Measurements will be conducted in conditions favorable to soil testing (e.g., non-saturated or frozen soils).

Results

Testing results will be provided to the Oregon Department of Energy (ODOE) prior to construction and after reclamation but before revegetation.

Revegetation Monitoring

The Certificate Holder will monitor revegetated areas as described below. Revegetated areas will be monitored by a qualified investigator in May or June annually for 5 years, beginning the first year after seeding.

Baseline Vegetation Conditions

Prior to construction of the Carty Solar Farm, the EMC will conduct pre-construction habitat surveys for temporary disturbance areas. Data collected will include:

- Vascular plant species present;
- Percent cover of dominant vegetation including noxious weeds; and
- Percent cover of litter and bare soil.

Baseline data will be used to confirm that reference and revegetation transects are within the same habitat type and that success criteria are adequate and reasonable to achieve following construction.

Temporary Disturbance Areas

The Applicant will monitor temporary disturbance areas using methods described below to assess the following:

- Percent cover of native, desirable (non-native species included in the seed mix), and non-native species;
- Percent cover of bare soil, litter, moss, rock, and biotic crust;
- Species richness of native, desirable, and non-native species;
- Sagebrush density in habitat subtypes with sagebrush;
- Degree of erosion; and
- Qualitative assessment of overall vigor of vegetation in revegetated areas.

Reference and Revegetation Transects

Establish 50-meter reference and revegetation transects for each temporarily disturbed wildlife habitat subtype and category with more than 0.5 acres of temporary disturbance as described below. Establish one reference transect for every temporarily disturbed wildlife habitat subtype and category. Reference transects are intended to be representative of baseline conditions for the revegetation effort.

Establish revegetation transects randomly in every wildlife habitat subtype and category that will be temporarily disturbed by construction using existing habitat categorization mapping. Transect locations and/or lengths may need to be adjusted to account for linear features whose disturbance

footprint may be too narrow or too short to meaningfully place a transect. Determine the number of transects as follows:

- Less than 0.5 acres of temporary disturbance = 0 transects
- 0.6 to 5 acres of temporary disturbance = 1 transect
- 6 to 10 acres of temporary disturbance = 2 transects
- For each additional 10 acres of disturbance, one additional transect will be added (e.g., 11-20 acres of disturbance = 3 transects, 21-30 acres = 4 transects, etc.)

Temporary Disturbance Area Monitoring Methods

Vegetation will be measured quantitatively using the line-point intercept (LPI) method combined with a belt transect to document species richness and sagebrush density, where necessary (Elzinga et al. 1998; MacKinnon et al. 2011). The LPI method is described in detail in the *Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems, Volume I* (Herrick et al. 2021). The surveyor will drop a narrow pin perpendicular to the ground at 1-meter intervals along a 50-meter transect and record up to four plant species that intercept the pin in order of interception as well as the soil surface type (bare ground, litter, rock, moss, or biotic crust) where the pin touches the ground. Once all 50 points have been collected, the surveyor will walk back along the transect and record any species within 1 meter on either side of the transect that were not documented at a point. The surveyor will take a photo from the transect start point, looking down the length of the transect. For transects in sagebrush shrub-steppe habitat, the surveyor will record the number of sagebrush individuals by size class (i.e., less than 1 foot tall, between 1 and 2 feet tall, greater than 2 feet tall) occurring within 1 meter on either side of the 50-meter transect.

Following field surveys, foliar cover will be determined by multiplying the number of top layer hits (points for which a given species was the first species intercepted) for each species by two. Cover of bare ground will be determined by counting every point in which bare ground was recorded as a surface type and no plants were intercepted and multiply this number by two. Species richness will be determined by counting all the unique species that were recorded at a point or along the belt transect.

Permanent Disturbance Areas

Following implementation of revegetation efforts, the Certificate Holder will monitor revegetated permanent disturbance areas as described below. Revegetated areas will be monitored by a qualified investigator annually for 5 years, beginning the first year after seeding. If success criteria are met in the first 5 years, then long-term vegetation monitoring to document and manage vegetation to reduce wildfire risk will be determined in consultation with ODOE.

The Certificate Holder will monitor Permanent Disturbance Areas to assess the following:

- Dominant species composition;
- Qualitative visual assessment of cover of native, desirable (non-native species included in the seed mix), and non-native forbs and grasses;
- Percent cover of bare soil;

- Degree of erosion;
- Presence of noxious weeds; and
- Qualitative assessment of overall vigor of vegetation within revegetated areas.

The EMC will monitor revegetated Permanent Disturbance Areas with a meander survey beginning within 60 days of the completion of initial revegetation. During the meander survey, the EMC will walk in revegetated Permanent Disturbance Areas and document the assessment items listed above using photos and spatial data collection. Areas of erosion and significant patches of bare soil will be mapped and photographed. The EMC will record dominant species, qualitative assessment of overall percent cover of forbs and grasses, and general notes about plant vigor.

Monitoring will be conducted at least once per season during the first year following construction. After the first complete year of monitoring, the Certificate Holder will consult with ODOE to determine if the monitoring cycle can be reduced based on revegetation progress. After 5 years of monitoring, the Certificate Holder will design a long-term monitoring plan in consultation with ODOE.

Revegetation Monitoring Reports

Revegetation monitoring reports will be prepared and submitted to ODOE annually for 5 years following revegetation. The first monitoring report will include a detailed description and timeline of revegetation methods that were implemented including species included in seed mixes, seeding rate (pounds/acre), and locations of seed applications and dates revegetation work was performed. Annual monitoring reports will include:

- a. Geographic information system (GIS) maps of revegetated areas and disturbance levels;
- b. Monitoring methods;
- c. Local climatic data (i.e., precipitation, temperature) for the monitoring month and year and percent deviation from the historical average;
- d. Results of monitoring efforts;
- e. Photos of transects and representative overview photos of revegetated areas;
- f. Assessment of whether revegetated areas are trending toward meeting success criteria;
- g. Assessment of factors impacting the ability of revegetated areas to trend towards meeting the success criteria; and
- h. Recommendations for remedial actions, if any. If applicable, provide recommendations for reseeding, weed control, or other remedial measures for areas (either permanently or temporarily disturbed) that are not showing progress toward meeting success criteria. Include adaptive management measures taken in the next monitoring report.

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Appendix E. Revegetation and Soil Stabilization Methods

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Stormwater Control and Treatment Best Management Practices

All required stormwater control and treatment best management practices required in the NPDES 1200-C permit are incorporated in this VSMP by reference. Specifically, the Facility Erosion and Sediment Control Plan lists best management practices including, but not limited to:

- **Stabilized Construction Entrances/Exits** – Stabilized construction entrances or exits will be installed where construction vehicles move from newly constructed roads or disturbed areas to paved roads. The stabilized construction entrances and exits will be inspected and maintained for the life of construction.
- **Dust Abatement Measures** – Conduct appropriate dust abatement measures such as restricting vehicle speeds; watering active areas, stockpiles, and roadways; track-out control at site exits; and other measures.
- **Preserving Existing Vegetation** – To the extent practicable, existing vegetation will be preserved. Where vegetation clearing is necessary, root systems will be conserved if possible.
- **Perimeter Controls** – Perimeter controls such as silt fencing will be installed throughout the construction area, material stockpiles, and on the contour downgradient of excavations.
- **Straw Wattles** – Straw wattles may be used to decrease the velocity of sheet flow stormwater to prevent erosion. Wattles will be used along the downgradient edge of access roads adjacent to slopes or sensitive areas.
- **Mulching** – Mulch may 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 will be washed out in dedicated areas near foundation construction locations. This will contain concrete washout water to a localized area.
- **Stockpile Management** – Soil from excavations will be temporarily stockpiled and used onsite. Soils will be stockpiled and reused to prevent productive topsoil from mixing with deeper subsoils. Silt fence or straw wattles will be installed around the stockpile material as a perimeter control. Mulch or other stabilization products will be used to cover the stockpiled material, if needed. Stockpiles will be watered, if needed, to reduce erosion.
- **Revegetation** – The site will be revegetated with an approved seed mix after construction activities. When required, the seed will be applied with mulch or stabilization matting to protect the growing grass seed. Revegetation will occur as soon as practicable following construction.

- **Pollutant Management** – During construction, source control measures will be implemented to minimize the likelihood of chemicals polluting surface water or groundwater. Small quantities of fuels and oils may be kept onsite in a dedicated area during construction and operation. Construction vehicles will be fueled and maintained only in dedicated areas. Any spills will be cleaned up immediately.
- **Construction Timing** – Whenever possible, construction activities will be scheduled in the dry season when soils are less susceptible to compaction.

Soil Management

Soil Stabilization

- The Engineering, Procurement, and Construction Contractor (EPC) will use appropriate erosion and sediment control practices (i.e., seeded or unseeded hydromulch, tackifier, weed-free erosion control blankets, weed-free or locally sourced straw mulch) to maintain topsoil during construction in Temporary and Permanent Disturbance Areas.
- After grading is complete but prior to installation of Carty Solar Farm, apply temporary or permanent soil stabilization.
- If seeding is used for temporary soil stabilization, seed areas with less than 70 percent vegetative cover with a non-invasive, non-persistent cover crop such as winter wheat or sterile triticale.
- Select cover crop based on the time of year; for example, winter wheat or sterile triticale can be seeded from fall to early spring while peas should be seeded in spring. Tillage radish and sunflowers can be seeded in spring to reduce compaction but are not suitable options for soil stability.

Soil Reclamation

In areas where soil is removed during construction, the following measures will be taken where appropriate:

- During construction, excavated topsoil will be stockpiled separately from subsoil and replaced in proper order with topsoil on the surface to maintain soil productivity. Stockpiled soil will be put back in place prior to revegetation activities.
- Topsoil and other soils from noxious weed infested areas will not be moved outside infested areas and will be returned to their previous location during reclamation activities to eliminate the transport of weed seeds, roots, or rhizomes. Noxious weed occurrences will be flagged and monitored for compliance.

Site Preparation

- Ensure that soils from weed infested areas are treated with a pre- or post-emergent herbicide as needed prior to initiation of revegetation efforts, depending on site-specific conditions.

- Prior to final regrade and revegetation efforts, any weeds that have grown during periods of construction dormancy should be treated as described in Appendix F.
- Perform site preparation using methods described below. Consider site-specific factors including slope, soil type, size of area, and erosion potential when determining methods.
 - Soil Roughening: Also known as imprinting, tracking, or track walking, soil roughening is a temporary erosion control practice and seedbed preparation technique implemented when grading a slope (EPA 2021). This technique involves creating grooved soil surface with depressions running parallel to the hill contour to promote seed germination and provide moderate erosion control while vegetation is established. Tracking with heavy equipment may compact the soil and inhibit root penetration; this can be mitigated by using lighter-weight equipment and not tracking saturated soil. Soil roughening should be done prior to applying hydromulch, straw mulch, or installing erosion BMPs. Seed and mulch roughened areas as soon as possible to obtain optimum seed germination and growth (ODOT 2023).
 - Deep Tilling: Reduce soil compaction by fracturing restrictive soil layers in areas where compaction levels inhibit plant growth (NRCS 2022). Deep tillage is only suitable in areas outside of solar arrays and where solar infrastructure is not present (i.e., temporary roads) and should be conducted after construction and prior to revegetation when soil moisture is at 30-50 percent of field capacity.
 - Decompaction: Areas with intact vegetation (typically in areas with Level 1 or 2 disturbance) will not be decompacted to avoid additional soil disturbance and erosion risk. Where soil compaction testing in areas with Level 3 and 4 disturbance demonstrates that soils are compacted greater than 300 pounds per square inch (psi), then remediation activities may be completed in those areas prior to the construction contractor moving to a new location or offsite as described in Table E-1. Locations where baseline monitoring indicated that soils were compacted more than 300 psi prior to construction will only be decompacted as needed based on field assessment of likely vegetation success (see Table E-1).
 - Remediation activities may include mechanical scarification (e.g., tilling or ripping the soil) to an appropriate depth to reduce the potential effects of compaction, to maintain soil productivity, and reduce the potential for erosion on compacted soils. Dry soils should be decompacted using an agricultural disc, soil ripper, or similar equipment
- Prepare salvaged topsoil into a firm, fine-textured seedbed before seeding or planting (ODOT 2023). Loosen the top 1 to 2 inches of the soil surface by shallow tilling with a disc, followed by harrow or drag if necessary and where feasible with construction equipment. If soil is assessed as too soft by the Revegetation Contractor or the Environmental Monitoring Contractor (EMC), firm with a roller or cultipacker.

Table E-1. Decompaction Action by Disturbance Level

Disturbance Level	Baseline Soil Compaction under 300 psi	Baseline Soil Compaction over 300 psi
1 – Mowing	If intact, living vegetation present, then no action; confirm vegetation success in next growing season. If bare soil, revegetate as described in the following section	If intact, living vegetation present, then no action; confirm vegetation success in next growing season. If bare soil, decompact prior to revegetation
2 – Overland Drive and Crush	If intact, living vegetation present, then no action; confirm vegetation success in next growing season. If bare soil, revegetate as described in the following section	If intact, living vegetation present, then no action; confirm vegetation success in next growing season. If bare soil, decompact prior to revegetation
3 – Clear and Cut	Revegetate as described in the following section.	Decompact prior to revegetation
4 – Clear and Cut with Soil Removal	Revegetate as described in the following section.	Decompact prior to revegetation

Revegetation Methods

- The Certificate Holder will restore temporarily disturbed areas by re-establishing slope, surface stability, and drainage features, as needed, followed by soil preparation and seeding as described below.
- Revegetation will begin as soon as feasible after completion of each construction phase. Seeding and planting will be done in a timely manner and in the appropriate season to facilitate germination and establishment of seeded species.
- Following seeding, stabilize seeded areas to facilitate establishment by applying seedless, certified weed-free hydromulch containing a tackifier or crimped weed-free straw.
- Revegetation methods for each disturbance level were developed to tailor revegetation to specific conditions (Table E-2).

Table E-2. Revegetation Methods by Disturbance Level

Disturbance Level	Soil Reclamation	Site Preparation	Seeding
1 – Mowing	No soil disturbance. Retain existing vegetation to prevent erosion. If soil is bare and compacted, decompact prior to revegetation.	Weed control.	Seed if necessary to achieve success criteria.
2 – Overland Drive and Crush	No soil disturbance. Retain existing vegetation and implement erosion control practices. If soil is bare and compacted, decompact prior to revegetation.	Weed control.	Seed if necessary to achieve success criteria.
3 – Clear and Cut	Track or decompact soil as necessary. Implement erosion control practices.	Weed control. Seed cover crop if necessary to stabilize soil. Prepare firm, fine-textured seedbed prior to seeding.	Required
4 – Clear and Cut with Soil Removal	Stockpile topsoil separately from subsoil and stabilize during construction. Regrade and replace subsoil then topsoil prior to seeding. Track or decompact soil as necessary. Implement erosion control practices.	Weed control. Regrade and add soil amendments if necessary. Seed cover crop if necessary to stabilize soil. Prepare firm, fine-textured seedbed prior to seeding.	Required

Seed Mix and Shrub Planting

A low-growing seed mix was developed for revegetation of Temporary Disturbance Areas and Permanent Disturbance Areas (Table E-3). The Certificate Holder will make all attempts to procure the approved seed mix or obtain approval from ODOE prior to making substitutions if species are not available at the time of procurement.

Table E-3. Seed Mix for Revegetation of Disturbed Areas

Growth Habit	Common Name	Scientific Name	Pounds of pure live seed/acre ¹
Grasses			
	Squirreltail	<i>Elymus elymoides</i>	3.5
	Thurber's needlegrass	<i>Eriocoma thurberiana</i>	4.4
	Idaho fescue	<i>Festuca idahoensis</i>	2.1
	Sandberg bluegrass	<i>Poa secunda</i> ssp. <i>secunda</i>	2.1
Forbs (choose 3 or 4 depending on seed availability)			
	Common yarrow	<i>Achillea millefolium</i>	0.1
	Oregon sunshine	<i>Eriophyllum lanatum</i>	0.1
	Fleabane	<i>Erigeron filifolius</i> or <i>E. pumilus</i>	0.1
	Wooly plantain	<i>Plantago patagonica</i>	0.2
	Clover	<i>Trifolium macrocephalum</i>	0.1
Total			12
Note: The species and seeding rates included in this table are a recommendation. Substitutions can be made through consultation with ODOE.			
1. Pounds of pure live seed per acre listed for drill seeding and imprint seeding. Double drill seeding rate for broadcast seeding and multiply by 2.5 for hydroseeding.			

Seeding Methods

Four common seed application methods that may be used for revegetation include broadcast seeding, drill seeding, imprint seeding, and hydroseeding; each of these are discussed further below. Other seeding methods may be proposed for review and approval prior to revegetation efforts.

Broadcast Seeding

Broadcast seeding is the application of seed directly to the ground surface. This method may be chosen for areas with shallow and rocky soils, and the type of broadcast spreader would depend on the size of the area to be seeded and the terrain.

In this method, the seed mix would be broadcast at 24 pounds of pure live seed per acre, or twice the recommended rate for drill seeding. When feasible, due to the seasonality of when planting can occur, the entire area will be seeded after grading is complete but before placement of solar components, providing more flexibility in seed application. In those instances where seeding occurs prior to installation of components, follow-up seeding will occur in areas temporarily disturbed by installation and any areas that are deficient in vegetation from the first round of seeding.

Immediately following seed application, hydromulch or certified weed-free straw would be applied. Broadcast seeding will not be employed if winds exceed 5 miles per hour. If certified weed-free straw is unavailable, the Certificate Holder or EPC will identify a local source of straw. The local

source of the straw will be approved by the Morrow County Weed Department and the Oregon Department of Fish and Wildlife (ODFW) prior to purchase. This straw will either be crimped into the ground or applied with a tackifier.

Drill Seeding

Drill seeding can be used for large areas with deep soils and moderate to gentle terrain to accommodate mechanical equipment. This method provides the advantage of planting the seed at a uniform depth and may provide better soil to seed contact. Using a range seed drill, seeds will be sown at 12 pounds pure live seed per acre or according to application rates recommended by the seed supplier. Drill seeding will be difficult after solar components have been installed, so it will primarily be used if seeding occurs after grading is complete but before components are installed, or in areas that were temporarily disturbed during construction that do not have any permanent infrastructure (e.g., temporary access roads, laydown areas).

Imprint Seeding

Imprint seeding is a no-till drill seeding method used to restore grasslands in areas with low annual precipitation. Seeds will be sown at 12 pounds pure live seed per acre or according to application rates recommended by the seed supplier. The seeder consists of a heavy metal drum roller with V-shaped, angled teeth and a seed agitator box. The teeth create V-shaped troughs with a depth of 4-7 inches to collect rainwater. The rolling drum presses the seed into the soil, insuring good seed-to-soil contact. The troughs collect rainwater for seed germination and seedling growth. Imprint seeders can be used on steep slopes and do not require seed bed preparation before seeding. Seeding can occur on soils with light to moderate vegetative cover, with the vegetation acting as a mulch, preventing soil erosion until seedlings are established. Imprint seeders do not work well in areas with shrubs or heavy vegetation cover. Heavily compacted soils may need to be ripped or de-compacted before seeding. The seeding rate for this method should be the same as for broadcast seeding.

Hydroseeding

Hydroseeding is most applicable for areas where drill or broadcast seeding machinery cannot access; this usually includes steep slopes or narrow terrain but can be used in all terrains. Soil bed preparation is also crucial for growth success and frequently includes tracking perpendicular to the slope to create micro conditions for seed. Flat grading and compaction are not recommended. Seeding rates increase by 30 to 50 percent of broadcast seeding rates (i.e., 30 pounds pure live seed per acre) per consultation with the seed supplier and ODFW. Prior to hydroseeding, the tackifier will be reviewed and approved in consultation with the Oregon Department of Energy (ODOE). Fertilizer should not be used when hydroseeding wildlife habitat.

Revegetation Records

The EMC will maintain records of revegetation efforts in all temporary and permanent disturbance areas and update ODOE monthly as revegetation work occurs. Revegetation records will include:

- a. Date construction phase was completed;

- b. Acreage of each disturbance level;
- c. Description and photos of the affected area;
- d. Date revegetation was initiated;
- e. Description of the revegetation effort, including methods, timing, and seed mix used;
- f. Supporting figures representing the location, acres affected, and pre-disturbance condition of the revegetation area.

Success Criteria for Temporary Disturbance Areas

The Certificate Holder will make reasonable efforts to restore vegetation and soils in habitat areas to their pre-disturbance condition.

- a. **Native Shrubs:** Average density of sagebrush on revegetation transects in areas planted with sagebrush should be at least 50 percent of the reference transect within 5 years.
- b. **Native and Desirable Forbs:** Cover of native and desirable (i.e., non-native species included in the seed mix) forbs, averaged across revegetation transects by habitat subtype and category, will be at least 75 percent of reference transects for the corresponding habitat subtype within 5 years.
- c. **Native and Desirable Grasses:** Cover and richness of native and desirable (i.e., non-native species included in the seed mix) grass species, averaged across revegetation transects by habitat subtype and category, will be at least 85 percent of reference transects for the corresponding habitat subtype within 5 years.
- d. **Noxious Weeds:** Presence and cover of noxious weeds on revegetation transects is 75 percent or less than that of the reference transect for the corresponding habitat subtype.

Vegetation Management for Permanent Disturbance Areas

During operation of the Solar Components, vegetation under the solar panels will be managed to minimize fire risk and erosion by maintaining low growing vegetation.

Prohibition on Use of Domestic Sheep and Goats for Vegetation Management

The certificate holder may not keep or use domestic sheep, goats, or other livestock at the solar facility for vegetation control or other purposes without written approval from ODOE. Any request to use domestic sheep, goats, or other livestock at the solar facility must be accompanied by a description of practices and controls that will be implemented to prevent zoonotic disease transmission to wild sheep populations. ODOE may impose additional requirements to prevent zoonotic disease transmission based on consultation with ODFW.

Success Criteria for Permanent Disturbance Areas

The Certificate Holder will establish uniform (i.e., evenly distributed, without large bare areas) perennial, non-invasive vegetation that provides 70 percent or more cover on all exposed areas in compliance with the soil protection standard (Oregon Administrative Rule 345-022-0022);

National Pollutant Discharge Elimination System 1200-C permit requirements; and Morrow County requirements.

Integrated Vegetation Management

To support reclamation success and reduce wildfire risk throughout all phases (i.e., both construction and operations) of the Carty Solar Farm, vegetation management will be implemented consistent with the draft Construction Wildfire Mitigation Plan and anticipated Operations Wildfire Mitigation Plan. In the interim, while those plans are being finalized, this section establishes the minimum vegetation management and fire prevention requirements that will apply during construction and operation of the Carty Solar Farm. Vegetation will be managed in accordance with the applicable provisions of the 2025 Oregon Fire Code:

Oregon Fire Code, Section 1205.5.1 Provides:

“A clear brush free area of 10 feet shall be required around the perimeter of the ground-mounted photovoltaic arrays or as determined by the fire code official. A maintained vegetative surface or noncombustible base, approved by the fire code official, shall be installed and maintained under the photovoltaic arrays and associated electrical equipment installations.”.

These measures are intended to minimize ignition potential, maintain defensible space, support consistent vegetation control, and outline inspection practices that will contribute to long-term fire resiliency. At a minimum, the following criteria will be met:

a. Vegetation Height and Clearance

- Vegetation within and adjacent to the Carty Solar Farm will be maintained as follows:
 - Vegetation will be limited to a height of 10-12 inches, with a minimum clearance of 12 inches from electrical equipment. Vegetation near, at, or taller than the maximum height shall be removed or mowed.
- Vegetation exceeding the heights listed above will be mowed or removed in accordance with any Oregon Department of Forestry or County-issued fire restrictions.
- At no time shall vegetation come into contact with electrical infrastructure, inverters, or cable runs.
- Vegetation height will be maintained by mowing or other vegetation management techniques. Grazing by sheep or goats is prohibited without written approval from ODOE.
- A minimum 20-foot, clear, brush free area will be maintained around perimeter of fenced solar array areas (10-feet inside the fence and 10-feet outside the fence). Activities necessary to maintain the area as clear, brush free shall be based on consultation with the local fire code official; and
- Gravel or compacted soil surfaces will be maintained beneath and around all inverter skids, the collector substation, O&M building, and meteorological towers.

b. Fuel and Debris Management

- Vegetation and debris removed from the Facility will be disposed of off-site and will not be stored or burned on-site.

- The Certificate Holder and contractors will prevent accumulation of combustible materials or “burn piles.”
- Inspections will ensure that fence lines, service roads, and work areas remain clear of dry vegetation, woody debris, or stored materials that could create fuel continuity during fire season.
- All newly constructed or maintained service roads for the Carty Solar Farm will maintain a minimum 14-foot width of graveled, all-weather surface to facilitate emergency response access.

c. **Designated Noncombustible Areas**

- All-weather service roads will be compacted soil or gravel and maintained in good condition.
- A 20-foot non-vegetated perimeter buffer will be maintained around substations and Operations and Maintenance buildings.
- Parking and laydown areas will consist of compacted soil, gravel, or other non-combustible material to reduce ignition potential from vehicles and equipment.
- Areas immediately surrounding electrical equipment, transformers, and battery energy storage system (BESS) enclosures will remain vegetation-free and will be maintained as graveled or earthen surfaces.

d. **Standards and Continuous Improvement:** Vegetation management and fire prevention measures will be reviewed annually to ensure continued compliance with applicable codes and evolving best practices, including:

- North American Electric Reliability Corporation (NERC) FAC-003-0 – Vegetation Management Standard for Transmission Lines
- Oregon Fire Code and National Fire Protection Association (NFPA) Standards relevant to energy facilities
- OAR Chapter 477 and 629-043 – ODF Fire Prevention Standards
- OAR 860-024 – Public Utility Commission (PUC) Electrical Safety Standards
- American Clean Power (ACP) and Avian Power Line Interaction Committee (APLIC) industry best practices

The Certificate Holder will evaluate new technologies, standards, and operational lessons learned each year to incorporate applicable improvements into this VSMP or the future Operations Wildfire Mitigation Plan.

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Appendix F. Weed Control Plan

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Regulatory Framework

The Oregon Department of Agriculture (ODA) and Morrow County Weed Department maintain lists and classifications of noxious weeds. Although not all listed noxious weeds occur in the vicinity of the Carty Solar Farm, the Certificate Holder and its contractors should be aware of the entire list while monitoring and controlling weeds.

State of Oregon

In Oregon, a noxious weed is defined under Oregon Revised Statutes (ORS) 569.175 as “a terrestrial, aquatic, or marine plant designated by the State Weed Board under ORS 569.615 as among those representing the greatest public menace and as a top priority for action by weed control programs.” Noxious weeds have been declared by ORS 569.350 as a menace to public welfare, and control of these plants is the responsibility of private landowners and operators, as well as county, state, and federal governments.

The Oregon State Weed Board (OSWB) was created by ODA under ORS 569.600. OSWB provides recommendations for noxious weed control at the state level and is responsible for updating the State Noxious Weed List. The OSWB and the ODA classify noxious weeds in Oregon in accordance with the ODA Noxious Weed Classification System; there are three designations under the State’s system:

- **A-Listed Weed:** A weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states makes future occurrence in Oregon seem imminent.
 - **Recommended Action:** Focus on prevention of new infestations through vector control, certification programs, education, outreach and surveys. New and existing infestations are prioritized for eradication or intensive control when and where found. Regionally focused, species-specific Statewide Management Strategies for A-listed weeds may be developed as necessary.
- **B-Listed Weed:** A weed of economic importance that is regionally abundant but may have limited distribution in some counties.
 - **Recommended Action:** Limited to intensive control at the state, county, or regional level as determined on a site-specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.
- **T-Designated Weed:** A designated group of weed species selected from the B list as a focus for prevention and control by the Noxious Weed Control Program. T-designated noxious weeds are determined by the Oregon State Weed Board and management actions are prioritized and informed by species-specific T-List Statewide Management Strategies created and maintained by the ODA. Action against these weeds will receive priority in accordance with the recommendations of the Statewide Management Strategy.

Morrow County

The Morrow County noxious weed list defines weeds of significance with two classes:

- **A Class:** Noxious weeds. Any plant that is determined by the weed advisory board, and so declared by the County Board of Commissioners to be injurious to public health, crops, livestock, land or property under provisions of Oregon State Statute and thus mandated for control.
- **B Class:** Weeds of Economic Importance. Weeds of limited distribution in the county and subject to intensive control or eradication where feasible.

Noxious Weeds Identified at the Solar Components

Noxious weeds identified within the Solar Micrositing Area in April, May, and June of 2023 and July of 2026 are listed in Table F-1. Eleven listed noxious weeds were documented, including 10 ODA “B” designated noxious weed species and 10 Morrow County listed noxious weeds. Ten noxious weeds are state “B”-designated weeds with rush skeleton weed (*Chondrilla juncea*) and perennial pepperweed (*Lepidium latifolium*) designated as priority noxious weed species and five specifically targeted for biocontrol by ODA (ODA 2025). At the county level, three “A” list and seven “B” list noxious weed species were recorded in the Survey Area (Morrow County 2026).

Table F-1. Noxious Weeds Observed During Surveys

Scientific Name	Common Name	ODA Status ¹	Morrow County Status ¹	Frequency ²
<i>Bassia (Kochia) scoparia</i>	kochia	B	B	Common across the northern section of Survey Area. Occurring sparsely in gravel lots and along railroad tracks.
<i>Centaurea diffusa</i>	diffuse knapweed	B*	B	Several large populations in the northern and middle sections of the Survey Area. Often associated with roads.
<i>Centaurea solstitialis</i>	yellow starthistle	B*	A	Several large populations across the Survey Area with numerous small, isolated occurrences in the south. Occurrences range from less than 10 individuals to hundreds within the polygons.
<i>Chondrilla juncea</i>	rush skeletonweed	B (T)*	A	Scattered small populations, often occurring with 10 or less individuals.
<i>Cirsium arvense</i>	Canada thistle	B*	B	One dense population in a rocky swale below the connector road in the center of the Survey Area.

Scientific Name	Common Name	ODA Status ¹	Morrow County Status ¹	Frequency ²
<i>Lepidium latifolium</i>	perennial pepperweed	B (T)	B	Four clustered patches with 10-30 individuals each in the center of Survey Area east of the connector road.
<i>Onopordum acanthium</i>	Scotch thistle	B	A	One isolated occurrence with one individual near the southern border of the northern section.
<i>Rhaponticum (Acroptilon) repens</i>	Russian knapweed	B*	B	Two dense populations east of the center connector road.
<i>Secale cereale</i>	cereal rye	–	B	One isolated population in the center of the northern area. High density in the center of the polygon and becoming patchy along edges.
<i>Sphaerophysa salsula</i>	swainsonpea, Austrian peaweed	B	–	One location with approximately 15 individuals in the northern area at the start of the main access road.
<i>Taeniatherum caput-medusae</i>	medusahead rye	B	B	Sparse, isolated populations in the south and larger, spreading populations in the north.
<p>1. “–”: Not listed. “A” designated weeds: Weeds of known economic importance which occur in the state in small enough infestations to make eradication/containment possible; or which are not known to occur, but their presence in neighboring states makes future occurrence in Oregon seem imminent. “B” designated weeds: Weeds of economic importance which are regionally abundant, but which may have limited distribution in some counties. “T” designated weeds: A priority noxious weed designated by the Oregon State Weed Board as a target for which the ODA will develop and implement a statewide management plan. “T” designated noxious weeds are species selected from either the “A” or “B” list (ODA 2025). Species marked with a (*) are targeted for biocontrol.</p> <p>2. Noxious Weeds – “A” List – Any plant that is determined by the weed advisory board, and so declared by the County Board of Commissioners to be injurious to public health, crops, livestock, land or property under provisions of Oregon State Statute and thus mandated for control. Weeds of Economic Importance – “B” List – Weeds of limited distribution in the county and subject to intensive control or eradication where feasible (Morrow County 2026).</p> <p>3. Patch/observation sizes are as follows: small = less than 0.1 acre, medium = 0.1 to 1.0 acre, large = greater than 1 acre.</p>				

Management Objectives

Management objectives shall be based on the classification status of a species and frequency of observations (Tables F-1 and F-2). Classification status will be determined based on the highest status identified by the State or County Weed List unless recommended otherwise by the County. Management objectives for problematic species that are not on a state or county noxious weed list will be determined on a case-by-case basis based on need for control (e.g., fire control, etc.)

Table F-2. Management Objectives

Weed Classification	Years		
	0	1-6	6+
A, A(T) or B(T)	Begin control prior to construction; continue throughout construction	Intensive control with goal of eradication within first 5 years of operations. Prevent new infestations	Intensive control and eradication for life of facility. Prevent new infestations
B	Begin control prior to construction on a case-by-case basis and continue throughout construction.	Intensive control on a case-by-case basis with the goal to eradicate within first 5 years of operations. Prevent new infestations.	Monitor and manage to prevent new populations or spread of existing populations.
Invasive Annual Grasses ¹	Monitor and manage to minimize wildfire risk.	Monitor and manage to minimize wildfire risk.	Monitor and manage to minimize wildfire risk.
1. Applies to problematic invasive annual grasses that are not on a state or county noxious weed list.			

Weed Control Methods

Noxious weed control methods for the Weed Management Area (i.e., the disturbance area associated with the Carty Solar Farm plus a 10-foot buffer) described in this VSMP were developed utilizing information from the ODA Noxious Weed Control Program and the Morrow County Weed Department. Management of noxious weeds will be considered throughout all stages of construction and operation of the Carty Solar Farm and will include:

- **Prevention:** Implementing measures to prevent the spread of noxious weeds during construction, operation, and maintenance activities.
- **Treatment:** Treating noxious weed populations with their appropriate control methods, at appropriate time intervals.
- **Monitoring:** Assessing noxious weed changes within the Weed Management Area over time and ensuring that legacy as well as new weed populations are not increasing their distribution.

Portland General Electric Company's (the Certificate Holder) objective is to prevent the introduction of new noxious weed populations and spread of existing noxious weed populations. The methods described above in this VSMP and supplemented below will be implemented to minimize the spread of noxious weeds during construction activities. New noxious weeds detected within the Weed Management Area during post-construction revegetation will be considered a result of construction activities and will be controlled accordingly.

Biological Control

Biological control involves the use of prescribed insects, fungi, and livestock to control noxious weeds to achieve management objectives. Biological control methods are typically targeted to a specific species or plant to control its persistence. They are also used for maintenance in targeted areas for vegetation management control in height and density that includes mitigating fire risk and erosion. Biological control is environmentally friendly and should be the first consideration when applicable.

Mechanical Treatment

Mechanical treatment will be the preferred method of treatment for existing noxious weed populations where appropriate within the Weed Management Area. Mechanical control methods rely on removal of plants, seed heads, and/or cutting roots with a shovel or other hand tools or equipment that can be used to remove, mow, or disc noxious weed populations. Hand removal of plants is also included under this treatment method. Mechanical methods are useful for smaller, isolated populations of noxious weeds in areas of sensitive habitats. Additionally, hand removal of small infestations can minimize soil disturbance, allowing desirable species to remain and limiting conditions favorable for noxious weeds.

Some rhizomatous plants can spread by disking or tillage. For example, rush skeletonweed, which has been identified within the Solar Micrositing Area (Appendix D), can reproduce vegetatively from small segments of root, and disking or tilling can facilitate the spread of this species. As such, implementation of disking will be species-specific and avoided in areas where it will be counter-productive.

If disking is employed in areas that will be revegetated following construction, subsequent seeding will be conducted to re-establish desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of noxious weeds. Disking, tilling, or other mechanical treatments that disturb the soil surface within native habitats will also be avoided in favor of herbicide application, which is an effective means of reducing the size of noxious weed populations as well as preventing the establishment of new infestations.

Chemical Treatment

Chemical control can effectively remove noxious weeds through use of selective herbicides. The specific herbicide used, and the timing of application will be chosen based on the specific noxious weed being treated, as appropriate herbicides differ between species and types of plants (i.e., dicots versus monocots).

Herbicides will be applied to identified, treatable, noxious weed infestations. The Certificate Holder or their contractors will coordinate with the Morrow County Weed Department to determine which populations are treatable and will notify landowners of proposed herbicide use on their lands prior to application. If a noxious weed population is deemed to be untreatable (e.g., too widespread and established in an area to successfully control), the Certificate Holder will implement the applicable prevention measures discussed in this VSMP, subject to approval by the Oregon Department of Energy (ODOE) and the Morrow County Weed Department.

Apply only herbicides approved by the U.S. Environmental Protection Agency (EPA) and ODA; annually check the status of herbicide approval (e.g., confirming herbicides are approved for use by the EPA and ODA).

Herbicide application will be performed within the appropriate season to achieve desired results, as approved by ODOE and the Morrow County Weed Department. No weed treatment will occur without landowner permission.

Herbicide Application and Handling

Hand application methods (e.g., backpack spraying) may be used in roadless areas, areas of potential Washington ground squirrel (*Urocitellus washingtoni*) activity, or in rough terrain. Vehicle-mounted sprayers (e.g., handgun, boom, and injector) will be used mainly on Project roads and in open areas that are readily accessible by vehicle. Calibration checks of equipment will be conducted prior to spraying activities, as well as periodically throughout use, to ensure that appropriate application rates are achieved.

Herbicides will be transported with the following stipulations:

- Only the quantity needed for that day's work will be transported.
- Concentrate will be transported in approved containers only, and in a manner that will prevent spilling, stored separately from food, clothing, and safety equipment.
- Mixing will be done at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive species' habitat. No herbicides will be applied in these areas unless authorized by the appropriate regulatory agencies.
- All herbicide equipment and containers will be inspected daily for leaks.
- Herbicide use will be in accordance with all manufacturers' label recommendations and warnings.
- Apply herbicide under appropriate conditions (i.e., not when wind velocity exceeds 15 miles per hour for granular application or exceeds 10 miles per hour for liquid applications; snow or ice covers the foliage of target species; or adverse weather conditions are forecasted within the next few days).

Herbicide Spills and Cleanups

All appropriate precautions will be taken to avoid herbicide spills. In the event of a spill, cleanup will be immediate. Contractors will keep spill kits in their vehicles to allow for quick and effective response to spills. Items included in the spill kit will be:

- Protective clothing and gloves;
- Adsorptive clay, "kitty litter," or other commercial adsorbent;
- Plastic bags and a bucket;
- A shovel;
- A fiber brush and screw-in handle;
- A dustpan;
- Caution tape;
- Highway flares (use on existing hard-top roads only); and
- Detergent.

Response to an herbicide spill will vary with the size and location of the spill, but general procedures include:

- Stopping the leak;
- Containing the spilled material;
- Traffic control;
- Dressing the clean-up team in protective clothing;
- Cleaning up and removing the spilled herbicide, as well as the contaminated adsorptive material and soil; and
- Transporting spilled herbicide and contaminated material to an authorized disposal site.

Herbicide Spill Reporting

All herbicide contractors will have readily available copies of the appropriate material safety data sheets for the herbicides used at their disposal and will keep copies of the safety data sheets in the application vehicle. If an herbicide spill of any size occurs, the appropriate agency and spill coordinators will be notified promptly. In case of a spill into wetlands and waterbodies, the appropriate federal, state, and county agencies will be notified immediately. All herbicide spills equal to or greater than 200 pounds or 25 gallons of pesticide residue will be reported to the Oregon Emergency Response System in accordance with applicable laws and requirements (Oregon Administrative Rules 340-142-0050). The Certificate Holder or the Environmental Monitoring Contractor (EMC) will report all herbicide spills to ODOE by phone or email within 72 hours with follow-up reporting as appropriate.

Special Considerations

Special consideration will be provided to perennial, intermittent, and ephemeral streams/draws during treatment activities. No herbicide will be sprayed where the drift can enter standing water or saturated soil. It will be the herbicide applicators' responsibility to ensure that no herbicide or drift enters standing water, regardless of the season when the herbicide is applied. Similar considerations will be made when in proximity to agricultural fields.

Weed Monitoring and Reporting

Weed inspections will occur within the Weed Management Area through visual inspection of the site while driving or walking. During the construction phase, the EMC will conduct periodic monitoring of noxious weeds. Noxious weeds observed during construction will be treated with mechanical or chemical treatments or other best management practices, as applicable. If construction extends into the growing season prior to the commercial date of operations and formal post-construction weed monitoring, the EMC will conduct informal but comprehensive weed surveys to inform adaptive management. In addition, weed monitoring may be conducted by the EMC as part of routine construction environmental monitoring monthly from April to October.

The EMC will conduct seasonal (spring, summer, and fall) post-construction noxious weed monitoring within the Weed Management Area for two years starting the first growing season after

construction to map the extent of all noxious weed occurrences and identify areas for treatment (Table F-3). Results will be summarized in annual monitoring reports that describe treatments performed, treatment efficacy, recommendations to improve efficacy (if necessary), and any new noxious weed occurrences. Reports will be submitted to ODOE, ODFW, and the County annually. The Certificate Holder will be responsible for treating all noxious weeds observed within the Weed Management Area.

Table F-3. Noxious Weed Monitoring Schedule

Year	Frequency	Focus
During construction	Periodic	Conduct periodic monitoring of noxious weeds. Weed monitoring may be conducted by the Environmental Monitoring Contractor (EMC) as part of routine construction environmental monitoring monthly from April to October.
Years 1–2	Seasonal (spring, summer, fall)	Conduct site-wide noxious weed survey to identify areas for treatment. Work with Weed Management Contractor on a post-emergent chemical, mechanical, or other treatment plan. Document previous treatment effectiveness, as applicable.
Years 1–2	Annual	Submit annual noxious weed monitoring report to Oregon Department of Energy (ODOE), Oregon Department of Fish and Wildlife, and the Morrow County Weed Department.
Year 3	Once	Certificate Holder will consult with ODOE and the County Weed Department to determine if the monitoring cycle can be reduced for Years 3 through 5.
Years 3–5	To be determined	Monitor and control noxious weeds as determined by agency discussions.
Year 5	Once	Certificate Holder will consult with ODOE and the Morrow County Weed Department to design a long-term weed control plan.
Year 6+	To be determined	Monitor and control noxious weeds as determined in the long-term weed control plan.

Based on the success of control efforts after the second year of monitoring, the Certificate Holder will consult with ODOE and the Morrow County Weed Department to determine if the monitoring cycle can be reduced for Years 3 through 5. After 5 years of monitoring, the Certificate Holder will design a long-term weed control plan in consultation with ODOE and the Morrow County Weed Department. The Certificate Holder will maintain ongoing communication with the Morrow County Weed Department, and ODOE regarding noxious weeds within the Weed Management Area. The Certificate Holder will control reported noxious weeds on a case-by-case basis and prepare a summary of measures taken. During the operational period of the Carty Solar Farm, the Certificate Holder will control noxious weeds as described in the long-term weed control plan. The Certificate Holder will report the investigator’s findings and recommendations regarding weed control in the Carty Solar Farm’s annual report required by Oregon Administrative Rule 345-026-0080.

Treatment Plan

Table F-4, below, provides a treatment plan for noxious and invasive weeds (listed by ODA and Morrow County) in the Weed Management Area, including management objectives and treatment guidelines. This table will be updated in each year's annual monitoring report. Specific herbicide application rates will be determined in consultation with the Morrow County Weed Department and the Weed Control Contractor.

Table F-4. Treatment Plan for Noxious and Invasive Weeds

Scientific Name	Common Name	State/County Status	Frequency	Management Objective	Treatment Guidelines ¹
<i>Bassia (Kochia) scoparia</i>	kochia	B/B	Common across the northern section of Survey Area. Occurring sparsely in gravel lots and along railroad tracks.	Intensive control and eradication within first 5 years of operation. Prevent new populations.	Mechanical: Mow prior to flowering to prevent seed production. Hand pull small populations. Chemical: Apply post-emergent to seedlings and small plants. Biocontrol: None
<i>Centaurea diffusa</i>	diffuse knapweed	B*/B	Several large populations in the northern and middle sections of the Survey Area. Often associated with roads.	Monitor and manage to prevent new populations or spread of existing populations.	<u>Mechanical:</u> Manually remove entire plant, including taproot, prior to flowering. <u>Chemical:</u> Apply to actively growing plants in fall or spring from rosette to bolting stage. <u>Biocontrol:</u> Agents include several seed feeding flies and weevils and a root-boring beetle.
<i>Centaurea solstitialis</i>	yellow starthistle	B*/A	Several large populations across the Survey Area with numerous small, isolated occurrences in the south. Occurrences range from less than 10 individuals to hundreds within the polygons.	Begin control prior to construction and continue throughout construction. Intensive control, eradication within first 5 years of operation. Prevent new populations.	Mechanical: Manually remove entire plant, including taproot. Chemical: Post-emergent herbicide application to rapidly growing plants prior to flowering (rosette to bolting stage). Biocontrol: Agents include two seed weevils, a seed fly, and a rust.
<i>Chondrilla juncea</i>	rush skeletonweed	B (T)*/A(T)	Scattered small populations, often occurring with 10 or less individuals.	Intensive control, eradication within first 5 years of operation. Prevent new populations.	<u>Mechanical:</u> Regenerates from root fragments. Manually remove entire plant, including taproot, prior to flowering. Will require multiple efforts during the growing season for more than one year. <u>Chemical:</u> Apply to rosettes in the spring immediately before or during bolting.

Scientific Name	Common Name	State/County Status	Frequency	Management Objective	Treatment Guidelines ¹
					<u>Biocontrol</u> : Agents include a gall midge, gall mite, rust fungus, and root-mining moth
<i>Cirsium arvense</i>	Canada thistle	B*/B	One dense population in a rocky swale below the connector road in the center of the Survey Area.	Begin control prior to construction and continue throughout construction. Intensive control, eradication within first 5 years of operation.	<u>Mechanical</u> : Not recommended, rhizomatous. <u>Chemical</u> : Apply from rosette to bud stage to actively growing thistle in spring or in fall with select chemicals only. <u>Biocontrol</u> : Four approved agents; stem weevil, seed head weevil, crown weevil, and stem gall fly.
<i>Lepidium latifolium</i>	perennial pepperweed	B (T)/B	Four clustered patches with 10-30 individuals each in the center of Survey Area east of the connector road.	Intensive control and eradication within first 5 years of operation. Prevent new populations.	<u>Mechanical</u> : Not recommended, readily resprouts and mowing stimulates growth. Can mow to reduce thatch prior to herbicide application. <u>Chemical</u> : <u>Apply post-emergent from seedling to flowering stage. Most effective at flower bud and flowering stage.</u> <u>Biocontrol</u> : None
<i>Onopordum acanthium</i>	Scotch thistle	B/A	One isolated occurrence with one individual near the southern border of the northern section.	Intensive control, eradication within first 5 years of operation.	<u>Mechanical</u> : Pull prior to flowering, cut off root below soil surface. Tilling will control emerged plants but stimulate germination. Follow up tilling with herbicide application to treat seedlings. Sheep and goats will eat young plants and flower heads. <u>Chemical</u> : Treat from rosette to bolting stage in fall or spring. Most effective on small rosettes. <u>Biocontrol</u> : None
<i>Rhaponticum (Acroptilon) repens</i>	Russian knapweed	B*/B	Two dense populations east of the center connector road.	Begin control prior to construction and continue throughout construction. Intensive control, eradication within first 5 years of operation. Prevent new populations.	<u>Mechanical</u> : Regenerates from root fragments. Manually remove entire plant, including taproot, prior to flowering. <u>Chemical</u> : Apply to actively growing plants in fall or in spring from rosette to bolting stage. <u>Biocontrol</u> : Gall nematode available.

Scientific Name	Common Name	State/County Status	Frequency	Management Objective	Treatment Guidelines ¹
<i>Secale cereale</i>	cereal rye	Not listed/B	One isolated population in the center of the northern area. High density in the center of the polygon and becoming patchy along edges.	Monitor and manage to prevent new populations or spread of existing populations.	<u>Mechanical</u> : Repeated mowing in spring prior to seed set or tillage combined with herbicide application in fallow fields. Hand pull prior to seed set. <u>Chemical</u> : Treat prior to seed set. Herbicide more effective if applied one year after mowing to reduce thatch buildup. <u>Biocontrol</u> : None
<i>Sphaerophysa salsula</i>	swainsonpea, Austrian peaweed	B/-	One location with approximately 15 individuals in the northern area at the start of the main access road.	Intensive control and eradication within first 5 years of operation. Prevent new populations.	Mechanical : Manually remove entire plant, including taproot, prior to flowering; followed by frequent removal of root sprouts and seedlings. Mow late season prior to seed set. Chemical : Apply post-emergent in spring at budding stage or early bloom or during fall. <u>Biocontrol</u> : None
<i>Taeniatherum caput-medusae</i>	medusahead rye	B/B	Sparse, isolated populations in the south and larger, spreading populations in the north.	Intensive control and eradication within first 5 years of operation. Prevent new populations.	Mechanical : Mow late season prior to seed set. Chemical : Pre-emergent in fall or post-emergent in early spring. Biocontrol : None
Sources: Becerra-Alvarez 2025, DiTomaso et al. 2013, ODA 2025. 1. Preferred treatment method in bold.					

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Figures

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