

Exhibit G

Materials Analysis

**Carty Generating Station
February 2024**

Prepared for



Portland General Electric Company

Prepared by



TETRA TECH

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Acronyms and Abbreviations

ASC	Application for Site Certificate
BCP	Boardman Coal Plant
BESS	battery energy storage system
Certificate Holder / PGE	Portland General Electric Company
CGS / Facility	Carty Generating Station
Council	Oregon Energy Facility Siting Council
ESCP	Erosion and Sediment Control Plan
EPA	U.S. Environmental Protection Agency
gpd	gallons per day
Li-ion	lithium-ion
MW	megawatt
O&M	operations and maintenance
OAR	Oregon Administrative Rules
ODOE	Oregon Department of Energy
RCRA	Resource Conservation and Recovery Act
RFA	Request for Amendment
SPCC	Spill Prevention, Control, and Countermeasure

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 500 megawatts (MW) of electrical power. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and includes the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm) on 315 acres (0.49 sq. miles) located south of the Carty Reservoir.

In RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW alternating current (AC) of nominal and average generating capacity by expanding into areas formerly used for PGE's Boardman Coal Plant (BCP) and maximizing the buildable area southeast of Carty Reservoir, and adding a battery energy storage system (BESS) to the Facility. The Certificate Holder proposes the 185 MW of solar generation as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. Thus, the overall changes proposed with RFA 4 (including the BESS) are referred to throughout this request as the Amended 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)].

Exhibit G provides the information required by Oregon Administrative Rules (OAR) 345-021-0010(1)(g) in support of RFA 4. Analysis in this exhibit incorporates and/or relies on reference information, analysis, and findings found in the Application for Site Certificate (ASC), previous RFAs, and Oregon Department of Energy (ODOE) Final Orders to demonstrate that the Facility, as modified by RFA 4, continues to comply with applicable Site Certificate Conditions. OAR 345 Division 22 does not provide an approval standard specific to Exhibit G.

2.0 Materials Inventory – OAR 345-021-0010(1)(g)(A)

OAR 345-021-0010(1)(g) A materials analysis including:

OAR 345-021-0010(1)(g)(A) An inventory of substantial quantities of industrial materials flowing into and out of the proposed facility during construction and operation;

As described in Section 1.0 of the RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station), the layout proposed for the Amended Carty Solar Farm includes four main areas with infrastructure improvements: two separate solar areas; an area for BESS; and a proposed collector substation with overhead electrical connection between the proposed substation and existing transmission line dead-end structure remaining from the BCP.

The Certificate Holder is requesting to permit a range of technology in order to preserve permitting flexibility and will stipulate the precise details of photovoltaic solar energy generation and supporting facilities during final design and engineering prior to construction. Therefore, this exhibit analyzes the maximum number of materials anticipated with the Amended Carty Solar Farm to address the maximum impact.

In addition to the construction materials previously approved by the Oregon Energy Facility Siting Council (Council) in prior iterations of the Facility, this section describes the materials needed to support the Amended Carty Solar Farm including up to 185 MW of solar generation, an up to 156 MW AC BESS, and associated infrastructure. Note that the natural gas-fueled combined-cycle unit (Unit 1) is already operating at the Facility; thus, the materials associated with the constructed portions of the Facility are not repeated for the purposes of this analysis. In addition, the Certificate Holder proposes the Amended Carty Solar Farm as a complete reconfiguration and not as an addition to the 50-MW approved Carty Solar Farm. Therefore, the quantity of materials previously documented in RFA 1 for the approved Carty Solar Farm are not repeated and are replaced by the quantities provided in this exhibit.

2.1 Construction

The two solar areas proposed with the Amended Carty Solar Farm will be composed of photovoltaic solar modules composed of mono- or poly-crystalline cells supported on non-specular, galvanized steel racks. The modules are inert and will not introduce any hazardous materials to the Facility. Each tracker will be supported by steel posts. Other onsite equipment will include buried conduits, combiner boxes, inverters, and transformers. The solar inverters and transformer stations, as well as the associated proposed substation, will require concrete foundations made of steel reinforcing bars and concrete (gravel, sand, cement, and water), as well as additional collector line and access roads to connect to the proposed substation and existing electrical infrastructure. Note that for the construction of foundations, PGE will buy concrete directly from licensed suppliers (i.e., with a valid water use license) in the area; an on-site batch plant is not proposed as this time.

The BESS will use lithium-ion (Li-ion) batteries. Li-ion batteries are modular in that each unit contains multiple smaller battery pouch cells. The cells are the primary containment for the electrolyte materials. The module containing the cells is relatively small, generally about the size of a desktop computer processor, and serves as leak-proof secondary containment. The cells are contained within a module which is collected in a pack, and then wired into a string, and finally into the full modular unit. The quantities per modular unit could change based on the most current model procured for the Facility, but the general framework is typical for utility-scale Li-ion systems. Although module leaks are very unlikely because it would require failure of the sealed module, any material that might leak to the floor of the container will easily be contained. The BESS will be manufactured, assembled, and inspected off-site and will be shipped to the site as outdoor-rated prefabricated modules, which will be installed and electrically connected on-site. The BESS containers will also require concrete foundations made of steel reinforcing bars and concrete

(gravel, sand, cement, and water). Consequently, the primary raw materials needed for the Facility's construction are rock, gravel, sand, water, cement, and steel rebar.

Although some new materials will be required for the proposed BESS, the materials used to construct the BESS and associated infrastructure are typical materials used for the construction of these facilities and are materials that the Council has already approved for other energy facilities.

Table G-1 provides a list of industrial materials that will be used during Facility construction, based on current engineering estimates. The amount of water used for concrete is discussed in Exhibit O. Solid wastes generated and flowing out of the Facility during construction are outlined in Exhibit W.

Table G-1. Materials Inventory for Construction

Material	Quantity/Units	Ultimate Disposition
Solar modules	Maximum 390,879 modules	Throughout each solar module string
Steel solar module tracker posts	72,000 posts, 12,519 tons steel (347.7 pounds per post)	Throughout each solar module string
Solar modules per string	27 modules (27 modules per rack, max 14,477 strings)	Throughout each solar module string
Aggregate (rock and gravel)	39,130 tons total	See below by location
• Battery storage	3,224 tons (6.2 acres)	On-site graveled area
• Access roads	1,996 tons (9.9 miles new road)	On-site graveled area
• Substation	3,184 tons (3.2 acres)	On-site graveled area
• O&M Building	988 tons (0.9 acres)	On-site graveled area
• Temporary construction areas	6,934 tons (21.4 acres)	On-site graveled area
Concrete	4,198 cubic yards (yd ³) total	See below by location
• Battery storage	1,148 yd ³ (330 pads)	Foundation
• Inverters/Transformers	2,360 yd ³ (44 stations solar, 58 stations BESS)	Foundation
• Substation	502 yd ³ (3.2 acres)	Foundation
• O&M Building	242 yd ³ (0.5 acres)	Foundation
Battery components	15 cells per module, 3 modules per pack, 1 pack per string (total unit: 360 cells, 24 modules, 8 packs, 8 strings)	BESS
Batteries	330 containers	BESS
Combiner boxes	660 boxes	Aboveground throughout each solar module string
Substation generator step-up transformer	Up to 1 transformer	Within the substation footprint
Collector lines (34.5 kilovolt [kV])	25 miles (underground); 1.0 mile (aboveground)	Between solar array and substation, either buried underground or aboveground
Aboveground collector line (34.5-kV) support structures	Up to 30 structures that may be either single or double circuit wood monopole structures	Aboveground structures
Transmission line (500-kV)	300 feet	Interconnecting the collector substation to existing dead-end
Transmission line (500-kV) support structures	None; connection from the rigid bus to the existing dead-end structure	N/A
Inverter/Transformers	Solar: 44 inverters and transformers BESS: 58 inverters and 30 transformers	Aboveground throughout solar array

Material	Quantity/Units	Ultimate Disposition
Fencing	77,794 feet total (solar areas: 71,808 feet; collector substation: 1,472 feet; BESS: 4,514 feet)	Will remain around solar arrays, substation, and BESS

2.2 Operational

No substantial quantities of industrial materials will be brought into or removed from the Facility during the operation of the Amended Carty Solar Farm. The materials that will be brought into or removed during operations are those needed for maintenance or replacement of damaged equipment (e.g., solar array components, electrical equipment). Materials for operations will be delivered to the required location as needed.

Transformer oils will be present within the Amended Carty Solar Farm but will be fully contained within the electrical transformers. Fuel or oils needed for maintenance will be delivered by a licensed maintenance contractor on an as-needed basis, and no substantial quantities will be stored on-site.

During the Facility’s lifetime, major maintenance issues may require the replacement of solar modules or other associated components; however, due to the unpredictable nature of major maintenance problems, no estimate has been provided for the number of major components that may be needed. Minor maintenance may also require the replacement and removal of smaller components, which are not expected to constitute substantial amounts of industrial materials.

Batteries may require periodic replacement if a component is found to be faulty; otherwise, the batteries are not expected to be replaced during the life of the Amended Carty Solar Farm. Modules lose their effectiveness through repeated charge/discharge cycles. The BESS will require augmentation to compensate for degradation. Augmentation will add additional batteries to maintain a 156 MW output, but degraded batteries would not be removed from service. For this analysis it is assumed that batteries are only removed due to needed repair or replacement during operations, and replacement of batteries for degradation would only happen at decommissioning. Due to the unpredictable nature of needed repair or replacement, no estimate has been provided for the number of batteries that will flow into and out of the Facility.

Table G-2 lists the cumulative materials and amounts used for operations and maintenance of the Facility.

Table G-2. Materials Inventory for Operations

Material	Quantity/Units	Ultimate Disposition
Spare solar modules	2,000 modules	Stored at the proposed operations and maintenance (O&M) building.
Transformer oil	Substation generator step-up transformer: 35,000 gallons Solar array inverter step-up transformers: approximately 28,000 gallons (640 gallons per transformer) BESS inverter step-up transformers: approximately 21,000 gallons (640 gallons per transformer)	Within transformer boxes for cooling (No extra oil stored outside of transformers. Additional oil only required due to failure, provided on an as-needed basis.)

3.0 Hazardous Materials Handling and Management – OAR 345-021-0010(1)(g)(B)

OAR 345-021-0010(1)(g)(B) The applicant's plans to manage hazardous substances during construction and operation, including measures to prevent and contain spills; and

During the construction or operations phases of the Amended Carty Solar Farm, it may be necessary to use minor quantities of hazardous substances (materials requiring Material Safety Data Sheets). In compliance with Site Certificate Condition 9.10, all potentially hazardous substances will be handled in a manner that is protective of human health, protective of the environment, and that complies with all applicable local, state, and federal environmental laws and regulations.

Extremely hazardous substances in excess of threshold planning quantities, highly toxic substances, or explosive materials will not be necessary to support either the construction or the operations phase of the Amended Carty Solar Farm. Additionally, materials used during construction and operations will be selected so that they minimize the potential for producing “hazardous waste,” as defined by the Resource Conservation and Recovery Act (RCRA). Accidental releases of hazardous materials will be prevented or minimized through proper containment of these substances during use and transportation to the Facility as described in the Spill Prevention, Control, and Countermeasure Plan (SPCC) Plan, required by Site Certificate Condition 5.9.

3.1 Construction

During construction of the Amended Carty Solar Farm, small quantities of potentially hazardous materials may be used including cleaners, insecticides or herbicides, paint, solvents and spent vehicle and equipment fluids and components (e.g., used oil, used hydraulic fluids, spent fluids, oily rags, and spent lead-acid or nickel-cadmium batteries). Potentially hazardous substances will not

be permanently present within the construction areas in quantities that exceed Oregon State Fire Marshal Reportable Quantities.¹

Fuels will be the only hazardous material that may be stored in substantial quantities on-site during construction. The Certificate Holder anticipates that up to five 1,000-gallon diesel fuel tanks may be kept on-site for fueling of construction equipment, 5,000 gallons total. These will be stored in temporary aboveground tanks in the construction yard(s), within an area that provides for secondary containment. No gasoline tanks will be kept on-site during construction. It is anticipated that each diesel tank will be filled once per month. Secondary containment and refueling procedures for on-site fuel storage will follow the contractor's Hazardous Materials Management and Monitoring Plan (Condition 10.37). Secondary containment will be compliant with requirements in 40 CFR §112.7(c), which requires secondary containment for all above-ground, buried, and partially buried containers. It is anticipated that the majority of fuel containers will have self-contained secondary containment (e.g., double-walled containers) that provide capacity for the entire container plus precipitation, but in some cases smaller containers (e.g., drums) will be placed in a constructed secondary containment area that is impervious and is diked or otherwise contained to provide the required fuel and precipitation capacity.

Construction-based equipment will be regularly inspected to detect potential leaks or other issues that may require maintenance. Potentially hazardous substances related to the maintenance of the construction equipment will only be brought to the construction site by a maintenance technician on an as-needed basis, and any unused or waste substances will be removed during the same service call. Refueling will take place a substantial distance from waterways or wetlands to prevent water quality impacts in the event of an accidental release.

As required by Site Certificate Condition 6.3, the Certificate Holder will implement a Construction Waste Management Plan for the Amended Carty Solar Farm. The plan will include measures to segregate all hazardous and universal wastes such as used oil, oily rags, mercury-containing lights, and lead-acid and nickel-cadmium batteries for disposal by a licensed firm that specializes in their proper recycling/disposal.

Additionally, as required by Site Certificate Condition 10.37, a Hazardous Materials Management and Monitoring Plan will be implemented for the Amended Carty Solar Farm. This Plan shall contain the same information required for a SPCC Plan. The SPCC Plan will address spill prevention, and the Hazardous Materials Management and Monitoring Plan will address hazardous substances specifically. The Hazardous Materials Management and Monitoring Plan shall include operating procedures to prevent hazardous substances releases, control measures to contain hazardous substance releases, countermeasures to contain, cleanup, and mitigate hazardous substance releases, and procedures for required inspections and testing. The SPCC will outline preventative

¹ "Reportable quantity" refers to the amount of hazardous substance that has to be released into the environment before the U.S. Environmental Protection Agency requires notification of the release to the National Response Center pursuant to the Comprehensive Environmental Release, Compensation, and Liability Act, also known as Superfund. These numerical designations are listed under 49 Code of Federal Regulations 172.101 Appendix A, Table 1 and Table 2

measures and practices to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the release. Per Site Certificate Condition 10.38, if any inspection performed in accordance with the Hazardous Materials Management and Monitoring Plan identifies improper handling or storage of hazardous substances (as defined by ORS 465.200) or improper record keeping procedures, the Certificate Holder must correct such deficiencies promptly and must report the corrective actions.

In the unlikely event that an accidental spill occurs, the Certificate Holder will report the spill within 72 hours and any spilled or released substances will be cleaned up according to applicable regulations (Site Certificate Conditions 9.11 and 10.39). Consistent with Site Certificate Condition 9.11, spill kits with absorbent pads will be located on equipment, near storage areas, and in the administrative or maintenance areas of the Facility. Employees will be instructed about proper handling, storage and cleanup of hazardous materials. Any reportable spills will be immediately called in to the Oregon Emergency Management Division's Oregon Emergency Response System, per OAR Chapter 340 Division 142. See Exhibit CC for a listing of applicable regulations.

3.2 Operations

The Amended Carty Solar Farm will not include substantial quantities of fuels, lubricating oils, hydraulic fluid for construction equipment, or other hazardous materials maintained on-site during operations. Small quantities of a few hazardous materials may be utilized; such materials may include cleaners, insecticides or herbicides, paint, or solvents. The Amended Carty Solar Farm will not require a significant increase in use of these items, and none will be present in substantial reportable quantities. When not in use these will be stored in a secure location within the proposed O&M building. In compliance with Site Certificate Condition 10.22, an Operational Waste Management Plan will be implemented for management of both hazardous and non-hazardous waste during operations, which will include handling procedures for lithium-ion batteries.

The BESS may include hazardous substances within internal battery components; however, batteries are integrated to safely operate when used according to the recommendations of the manufacturer and when their integrity is maintained (not damaged and internal seal is intact). Li-ion batteries specifically present a flammability hazard and require cooling systems to prevent overheating. The BESS will have integrated safety systems that monitor battery performance to detect malfunctions and implement response measures. Batteries will be housed in leak-proof containers to prevent inadvertent releases of hazardous materials. O&M staff will conduct inspections of the battery cells for damage. Li-ion batteries may contain hazardous waste and will be handled and disposed of per the most up-to-date guidelines at the end of their life.

For the replacement of Li-ion batteries specifically, the Certificate Holder will follow the handling guidelines of 49 Code of Federal Regulations 173.185 (Department of Transportation Pipeline and Hazardous Material Administration) related to the shipment of Li-ion batteries. The regulations include requirements for prevention of a dangerous evolution of heat, prevention of short circuits, and prevention of damage to the terminals. They also require that no battery will come into contact with other batteries or conductive materials. A licensed third-party battery supplier will transport

batteries to and from the Facility in accordance with applicable regulations. Spent batteries will be disposed of at a facility permitted to handle them in compliance with applicable RCRA and Toxic Substances Control Act regulations administered by the U.S. Environmental Protection Agency (EPA) or Oregon Department of Environmental Quality. Adherence to the requirements and regulations (including personnel training, safe interim storage, and segregation from other potential waste streams) will minimize safety hazards related to transport, use, or disposal of batteries.

As required by Site Certificate Condition 9.10, gasoline that is intended for fueling vehicles cannot be stored on-site at the Facility during operations, and the Certificate Holder will continue to comply with this for operation of the Amended Carty Solar Farm.

Additionally, as identified in Site Certificate Conditions 5.9 and 10.37, an operational Hazardous Materials Management and Monitoring Plan and SPCC Plan will be implemented. In the unlikely event of an accidental hazardous materials release, any spill or release will be cleaned up and the contaminated soil or other materials disposed of and treated according to applicable regulations (per Site Certificate Conditions 9.11 and 10.39). Employees at the Facility will be trained to be aware of the potential hazards through the availability of Material Safety Data Sheets, and to handle such releases in accordance with applicable regulations. See Exhibit CC for a list of applicable regulations. Spill kits containing items such as absorbent pads will be located on equipment and in on-site temporary storage facilities to respond to accidental spills, if any were to occur. Employees handling hazardous materials will be instructed in the proper handling and storage of these materials, as well as where spill kits are located. The Certificate Holder will report spills or releases of hazardous materials during construction or operation as noted above to the Oregon Emergency Response System, per reporting requirements detailed in OAR Chapter 340 Division 142.

4.0 Non-Hazardous Waste Management – OAR 345-021-0010(1)(g)(C)

OAR 345-021-0010(1)(g)(C) The applicant's plans to manage non-hazardous waste materials during construction and operation.

The Certificate Holder will continue to fully comply with all applicable waste handling and disposal regulations on all lands associated with the Facility, during both construction and operation of the Amended Carty Solar Farm. Solid waste will be stored in a manner that does not constitute a fire, health, or safety hazard until such time as it can be hauled off for recycling or disposal, as appropriate. Exhibit W provides details on the types and amounts of waste, and procedures and systems for the handling and disposal of waste materials.

4.1 Construction

Construction of the Amended Carty Solar Farm will generate the same types of nonhazardous solid and liquid waste as the previously approved Carty Solar Farm, which the Certificate Holder will

manage according to the Construction Waste Management Plan (Site Certificate Condition 6.3). Waste construction materials generated from construction may include scrap steel, wood, concrete waste, excavated soil, and packaging material waste. When feasible, the waste generated during construction will be recycled. Steel scraps will be separated and recycled to the extent feasible. Wood from concrete forms will be reused when practicable and then recycled. Excess excavated material will be used to restore ground contours after construction, and to provide fill on-site or be transported off-site for disposal. Construction will not require the use of specialized structures, systems, or equipment for waste management or disposal. Standard construction waste bins will be kept on-site to keep construction debris until it is hauled off-site by a licensed waste hauler (see Exhibit U for waste service provider information). Further information regarding waste materials is included in Exhibit W.

The only material that has the potential to be disposed of on-site will be waste concrete generated during construction. Waste concrete will consist of concrete solids contained in the concrete chute washout water. Washdown methods will be determined by the contractor, and may occur at off-site contractor-owned batch plants, within each foundation excavation and/or a designated concrete washout area (per Site Certificate Condition 6.3). Any excess concrete may be incorporated into foundations, rather than disposed of.

Packaging waste (such as paper and cardboard) and refuse will be separated, accumulated in dumpsters, and periodically removed for recycling or disposal at the Finley Buttes Landfill or Columbia Ridge Landfill (see Exhibit U). In compliance with Site Certificate Condition 6.2, portable toilets will be provided for on-site sewage handling during construction and will be pumped and cleaned regularly by the construction contractor.

Construction stormwater will be generated at the location of the solar array and battery energy storage construction sites. Such stormwater will be covered under the Facility's National Pollutant Discharge Elimination System 1200-C construction permit and its associated Erosion and Sediment Control Plan (ESCP) consistent with Site Certificate Condition 9.1. The draft ESCP for the Amended Carty Solar Farm is included as Attachment I-1 to Exhibit I.

4.2 Operations

Waste generated by operation of the Amended Carty Solar Farm will be negligible. Operation of the Amended Carty Solar Farm will generate the same types of nonhazardous solid and liquid waste as previously approved for the Facility, which the Certificate Holder will manage according to the Operational Waste Management Plan (Site Certificate Condition 10.22). The Operational Waste Management Plan which will include handling procedures for lithium-ion batteries (addressed in Section 3.2 above).

Administrative activities related to Amended Carty Solar Farm will be conducted at the proposed O&M building. Office waste generated at the proposed O&M building will be disposed of at the Finley Butte Regional Landfill or Columbia Ridge Landfill. The building will include potable water and a sewer connection for toilets. The sanitary sewer will be collected and treated by the Facility's existing Carty septic system, as discussed in RFA 2. Once the number of additional employees is

determined, if the existing system capacity is not sufficient a septic system alteration permit would be obtained from the Umatilla County Public Health Department, which issues alteration permits for septic systems in Morrow County, to increase the capacity of the existing septic system.

Solar panels will be washed, but no chemicals will be mixed with the wash water and it will evaporate or will infiltrate into the ground near the point of use, consistent with Site Certificate Condition 10.28 (see Exhibit W). The solar panel wash water will be sourced from the Carty Reservoir under PGE's existing water right. No additional industrial wastewater streams will be generated by the Amended Carty Solar Farm.

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Exhibit H

Geologic and Soil Stability

**Carty Generating Station
February 2024**

Prepared for



Portland General Electric Company

Prepared by



TETRA TECH

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Attachment H-3. Probabilistic Seismic Hazard Deaggregation – 2,475-Year Return Time

Attachment H-4. Response Spectrum – Site Class D “Stiff Soil”

Acronyms and Abbreviations

AC	alternating current
ASC	Application for Site Certificate
BESS	battery energy storage system
BCP	Boardman Coal Plant
BMP	best management practice
bgs	below ground surface
Certificate Holder / PGE	Portland General Electric Company
CGS / Facility	Carty Generating Station
Council	Oregon Energy Facility Siting Council
DOGAMI	Department of Geology and Mineral Industries
ESCP	Erosion and Sediment Control Plan
FEMA	Federal Emergency Management Agency
IBC	International Building Code
kV	kilovolt
MW	megawatt
NRCS	Natural Resource Conservation Service
O&M	operations and maintenance
OAR	Oregon Administrative Rules
ODOE	Oregon Department of Energy
OSSC	Oregon Structural Specialty Code
RFA	Request for Amendment
USGS	U.S. Geological Survey

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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 500 megawatts (MW) of electrical power. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and includes the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm) on 315 acres (0.49 sq. miles) located south of the Carty Reservoir.

In RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW alternating current (AC) of nominal and average generating capacity by expanding into areas formerly used for PGE's Boardman Coal Plant (BCP) and maximizing the buildable area southeast of Carty Reservoir, and adding a battery energy storage system (BESS) to the Facility. The Certificate Holder proposes the 185 MW of solar generation as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. Thus, the overall changes proposed with RFA 4 (including the BESS) are referred to throughout this request as the Amended 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)].

Exhibit H provides the information required by Oregon Administrative Rules (OAR) 345-021-0010(1)(h) in support of RFA 4. Analysis in this exhibit incorporates and/or relies on reference information, analysis, and findings found in previous geotechnical investigations performed for the areas within the Amended Site Boundary. The analysis also incorporates and/or relies on information in the Application for Site Certificate (ASC), previous RFAs, and Oregon Department of Energy (ODOE) Final Orders to demonstrate that the Facility, as modified by RFA 4, continues to comply with applicable Site Certificate Conditions and applicable laws, standards, and rules, providing evidence to support findings by the Oregon Energy Facility Siting Council (Council) as required by OAR 345-022-0020.

2.0 Analysis Area

The analysis area for structural standards is the area within the Amended Site Boundary (Figure H-1). The analysis area for historical and potentially active faults and earthquakes includes a 50-mile buffer around the Amended Site Boundary (Figure H-2). 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 Geologic Report – OAR 345-021-0010(1)(h)(A)

OAR 345-021-0010(1)(h) Information from reasonably available sources regarding the geological and soil stability within the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0020, including:

OAR 345-021-0010(1)(h)(A) A geologic report meeting the Oregon State Board of Geologist Examiners geologic report guidelines. Current guidelines must be determined based on consultation with the Oregon Department of Geology and Mineral Industries, as described in paragraph (B) of this subsection;

The required geological report is provided through the information in this exhibit, which includes analysis and findings from previous geotechnical investigations performed for areas within the Amended Site Boundary. Current geologic report guidelines were determined based on consultation with the Oregon Department of Geology and Mineral Industries (DOGAMI) as described in Section 4.0 and Attachment H-1. Information previously provided for the Facility in previous geotechnical investigations, the ASC, and prior RFAs has been fully updated in this exhibit to provide current information and in conformance with updated requests from DOGAMI and ODOE. It is noted that in follow-up communication with DOGAMI (Jason McClaughry, DOGAMI, pers. comm., December 19, 2023; Attachment H-1), the request that additional earthquake epicenter information be provided was rescinded.

3.1 Previous Geotechnical Investigations

The following geotechnical investigations have been completed in the vicinity and within the Amended Site Boundary as shown on Figure H-3:

- Geotechnical Investigation Boardman Plant Poverty Ridge Site, Morrow County, Oregon - prepared by Shannon & Wilson, Inc., November 1975 (Shannon & Wilson 1975).
- Supplemental Report - Geotechnical Investigation Boardman Plant Poverty Ridge Site, Morrow County, Oregon - prepared by Shannon & Wilson, Inc., April 1976 (Shannon & Wilson 1976).
- Preliminary Geotechnical Investigation for the Proposed Carty Generating Station, Boardman, Oregon - prepared by Cornforth Consultants, November 11, 2009 (Cornforth 2009).
- Geotechnical Engineering Report, Carty Power Generation Facility, near Boardman, Oregon - prepared by Terracon Consultants, Inc., September 27, 2013 (Terracon 2013).
- Preliminary Geotechnical/Geological Investigations Carty Generating Station - Photovoltaic Solar Facility Project, Boardman, Oregon - prepared by Cornforth Consultants, May 27, 2016 (Cornforth 2016).

3.1.1 Shannon & Wilson 1975 and 1976

The Shannon & Wilson (1975) geotechnical investigation was conducted for the now-retired and demolished Boardman Coal Plant (BCP). The investigation included 34 borings with depths from 14 to 87 feet, laboratory tests, and general geologic research. The Shannon & Wilson (1976) supplemental geotechnical investigation was also conducted for the BCP. The investigation included 15 additional borings and four test pits.

3.1.2 Cornforth 2009

The Cornforth (2009) preliminary geotechnical investigation was conducted for the CGS natural gas-fired power plant to the north of the Carty Reservoir. The scope of work included a site reconnaissance, three borings, laboratory testing, and research relating to geologic/geotechnical issues.

3.1.3 Terracon 2013

The Terracon (2013) geotechnical investigation was for the CGS natural gas-fired power plant to the north of the Carty Reservoir. The study included test borings up to 57 feet in depth, test pit explorations up to 13 feet in depth, infiltration tests to 3 feet, electrical resistivity tests, and seismic shear wave exploration.

3.1.4 Cornforth 2016

The Cornforth (2016) geotechnical investigation was for the Carty Solar Farm installation to the south of the Carty Reservoir and included four borings/piezometer installations, electrical resistivity tests, soils laboratory testing, and general research into seismic and other conditions. Laboratory testing included moisture contents on all soil samples collected; Atterberg limits; grain-size analyses; consolidation tests; collapse potential tests; soil pH tests; sulfate and chloride content tests; and laboratory electrical resistivity tests.

3.2 Geologic Conditions

The topographic and geologic setting within the Amended Site Boundary is described in the following sections.

3.2.1 Topographic Setting

The Amended Site Boundary is in rural Morrow County, approximately 13 miles southwest of Boardman, Oregon, and approximately 9 miles south of the Columbia River. The topography is dominated by Poverty Ridge, Fourmile Canyon, Sixmile Canyon, and two other major drainages located south of the reservoir.

The Amended Site Boundary occupies slopes from 0 to 26 percent, with an average of 12.87 percent. Elevations within the Amended Site Boundary range from 588 to 769 feet above mean sea level.

3.2.2 Geologic Setting

The geologic setting of the Amended Site Boundary is located in the Columbia Plateau province (NPS 2023). The topography in the province is dominated by geologically young lava flows that have occurred within the last 17 million years. Over 170,000 cubic kilometers of basaltic lava, known as the Columbia River basalts, cover the western part of the province. In the area of the Amended Site Boundary, the native terrain is gently sloping downhill to the north toward the Columbia River. This sloping terrain is interrupted occasionally by geologic folds, one of which is Poverty Ridge.

Cataclysmic floods repeatedly swept through this area at the end of the last ice age, or about 13,000 to 15,000 years ago (Cornforth 2016). These floods are named the Missoula floods and were the result of glacial damming of water in western Montana. Figure H-1 (DOGAMI 2023a and USGS 2023a) provides a geologic map for the Amended Site Boundary. Surficial deposits are mapped as Quaternary eolian sand and ash, alluvium, and the Missoula Flood deposits. Most of the Amended Site Boundary is mapped within the Missoula Flood deposits. Areas of eolian sand and ash are mapped in the northwestern and southwestern portions; alluvial deposits are associated with Fourmile and Sixmile canyons. Underlying materials are indicated to be the Alkali Canyon Formation (part of the Dalles Formation) and the Columbia River Basalt bedrock including the Tertiary Wanapum Basalt.

The geologic descriptions below are summarized from the DOGAMI geologic maps and publications (DOGAMI 2023a), U.S. Geological Survey (USGS) publications (USGS 2023a), as well as previous geotechnical investigations (see Section 5.0) conducted within the Amended Site Boundary.

3.2.2.1 Surficial Geologic Units

The Missoula Flood deposits consist of silts, sands, and fine gravels deposited from repeated catastrophic flood events from outbursts of Glacial Lake Missoula during the end of the last glaciation period. These deposits consist of stripped surface sediments from Eastern Washington and were deposited widespread across the Columbia River basin to elevations as high as over 800 feet in the vicinity of the Amended Site Boundary. Although this deposit is described to have frequent caliche layers (where mean annual precipitation is less than 15 inches per year), geotechnical information did not indicate caliche cementation of this unit (Terracon 2013).

Eolian sand and ash deposits (also referred to as loess in geotechnical reports), are typically comprised of eolian (wind-deposited) silt and fine sand. The unit is described as up to 30 feet in thickness and is material derived from the underlying Missoula Flood deposits being re-worked and deposited once allowed to dry. The Terracon (2013) geotechnical report describes the loess deposits as made up of a semi-stable soil structure commonly referred to as a “honeycomb”

structure. This structure makes the soil susceptible to collapse under additional applied load and saturation as further described in Section 8.6. This unit can be broken into two units consisting of “younger loess,” typically 3 to 7 feet in thickness, and “older loess” ranging from 3 to 21 feet in thickness. The “older loess” is also described as semi-consolidated with strong calcium carbonate contents (referred to as caliche cementation in this exhibit).

Alluvial deposits generally consist of sand, gravel, and silts. The Dalles Formation is a sedimentary unit that includes a wide range of sedimentary materials. The Alkali Canyon Formation (of the Dalles Formation) consists of vitric tuff, silty clay, silt, and basalt gravel alluvial fan and braided stream deposits. Localized areas of the Alkali Canyon Formation include dense sand and gravel alluvial deposits, as well as lean to fat clay deposits.

Geotechnical boring log data from the Terracon (2013) geotechnical investigation is provided in Table H-1. The boring data indicate basalt bedrock was encountered from approximately 29 to 39 feet below ground surface (bgs).

Table H-1. Stratigraphic Ranges for Subsurface Materials

Stratum	Approximate Depth to Bottom of Stratum (feet)	Material Description	Consistency/Density
Stratum 1 – Loess	5 to 10	Silt, non-plastic to low plasticity, little to no cementation from calcification, damp	Medium stiff to stiff
Stratum 2 – Caliche	14 to 26	Silt, non-plastic to low plasticity, strongly cemented from calcification, damp	Very stiff to very hard
Stratum 3 – Missoula Flood Deposits	22 to 34	Silty sand to sandy silt, non-plastic, little to no cementation from calcification, moist	Dense to very dense
Stratum 3 – The Dalles Formation	29 to 39	Silty sand, sandy silt, and sandy fat clay with variable amounts of gravel, moist	Dense to very dense granular soils and very stiff to very hard fine-grained soils
Stratum 4 – Basalt	Borings terminated within this stratum, depth undetermined	Basalt to vesicular basalt, slightly weathered, mantled with zone of clay matrix and highly jointed basalt	Hard to very hard, very stiff to hard where weathered to soils
Source: Terracon 2013			

Borings performed for the Cornforth (2016) geotechnical investigation confirm the overburden profiles consist of loose to very dense sandy silt and silty sand, displaying varying degrees of caliche cementation. These borings also encountered preserved veins of caliche sedimentation and occasional basaltic rock fragments. Medium hard to hard basalt was encountered from 38 to 43 feet bgs.

Three borings associated with the Cornforth (2009) geotechnical investigation indicated that overburden materials consisted of two sedimentary units: wind-blown silt and fine sand (loess) and the Dalles Formation. The loess generally consisted of fine sandy silt with trace clay that had been cemented to varying degrees. These units ranged in thickness from approximately 9 to 40 feet in the borings. The Dalles Formation consists of slightly clayey, fine sandy silt with occasional gravel-sized basalt fragments encountered near the bottom of the deposit. A weathered rock horizon was encountered below the loess. The weathered basalt generally consisted of angular gravel-sized rock fragments in a matrix of slightly clayey, sandy silt that ranges in thickness from approximately 7 to 10 feet.

The Shannon & Wilson (1975) geotechnical investigation identified basalt bedrock ranges in thickness from 11 to 28 feet and extends from 23 to 72 feet below the existing ground surface.

Groundwater was not observed in the test borings or piezometers to the maximum depth explored of 57 feet bgs (Terracon 2013; Cornforth 2016; Cornforth 2009). In addition, Cornforth (2009) reported that perched groundwater was not indicated during the field investigation.

3.2.2.2 Bedrock Geologic Units

Basalt flows near and within the Amended Site Boundary are mapped as the Wanapum basalt formation of the Tertiary Columbia River Basalt Group (DOGAMI 2023a; USGS 2023a). The Wanapum Basalt Formation underlying bedrock is mapped within the majority of the Amended Site Boundary. The Wanapum Basalt formation consists of flows of gray to dark-gray, medium-grained, commonly plagioclase porphyritic basalt, and generally exhibits blocky to platy jointing. Geotechnical reports indicate the underlying bedrock consists of the Columbia River Basalt (Terracon 2013; Cornforth 2016; Cornforth 2009). The basalt generally consists of highly jointed, hard basalt with a matrix of lean to fat clay in the upper transition zone (less than 10 feet) and grades to less jointed rock with depth. Depths to bedrock are described in Section 5.1 based on geotechnical investigations within the Amended Site Boundary.

3.2.2.3 Soils

Soils were evaluated within the Amended Site Boundary excluding the area of the reservoir. Soils overlying the geologic bedrock units have thicknesses greater than 7 feet. The formation settings are predominantly sandy eolian deposits and loess, with lesser amounts of eolian sands over strongly cemented alluvium. Permeability of the soils within the Amended Site Boundary range from moderate to very high. Runoff potential ranges from low to moderately low. The hazard for erosion ranges predominantly (97 percent of the area) from moderate to severe. Wind erosion ratings range from 1 to 3. K factors range from 0.15 to 0.55 (NRCS 2023). K factor indicates the

susceptibility of a soil to erosion and is applied in the calculation of sheet and rill erosion vulnerability. The lower the K factor the less susceptible a soil is to detachment, and the more capable a soil is to water permeation.

According to the Cornforth (2016) geotechnical investigation, surficial soils in the vicinity of the Amended Site Boundary consist predominantly of up to 28 feet of light brown, cohesionless, wind-blown silt and fine sand (loess). The sand is loose and well drained and is dry at the surface and becomes slightly moist at about 6-inches. Sparsely vegetated and stabilized longitudinal sand dunes aligned parallel to the northeast prevailing wind direction were found to dominate the site topography during a field reconnaissance and stabilizing vegetation consists of desert grasses, sagebrush, and scattered trees. Where vegetation is bare the dune sand is subject to accelerated erosion and wind erosion has created numerous scouring depressions in the silt/sand deposits and minor sediment transport was observed. The dune morphology has a relative relief of 3 to 4 feet in height and 6 to 8 feet across on the average. Numerous cobble- to boulder-sized lithics (basalt, granite, and schist) were observed scattered across the site, and is a characteristic of the Missoula Floods. The reservoir pool of the Carty Reservoir was observed to be cutting into these deposits, causing erosion and bank instability in some areas.

A more detailed analysis of soils within the Amended Site Boundary can be found in Exhibit I.

4.0 Evidence of Consultation with DOGAMI – OAR 345-021-0010(1)(h)(B)

OAR 345-021-0010(1)(h)(B) A summary of consultation with the Oregon Department of Geology and Mineral Industries regarding the appropriate methodology and scope of the seismic hazards and geology and soil-related hazards assessments, and the appropriate site-specific geotechnical work that must be performed before submitting the application for the Department to determine that the application is complete;

A meeting with DOGAMI was held on December 8, 2023, as documented in Attachment H-1. Meeting attendees included the DOGAMI representative, the Certificate Holder and their geotechnical contractor, and the consultant for the Certificate Holder. An ODOE representative was invited to the meeting but was unable to attend. A brief presentation included an overview of the Amended Carty Solar Farm and geologic hazards studies' findings, as well as an overview of the planned pre-construction geotechnical studies. DOGAMI provided feedback regarding the findings and presentation. The DOGAMI representative stated that more updated earthquake information was available for inclusion in the exhibit and agreed to provide a link to the data following the meeting. However, DOGAMI later indicated that this data was not available for download at this time and therefore is not necessary to include in Exhibit H. DOGAMI also stated that the final geotechnical study plan should include specific field boring locations. DOGAMI was otherwise satisfied with the information and general conclusions presented.

5.0 Site-Specific Geotechnical Investigation – OAR 345-021-0010(1)(h)(C)

OAR 345-021-0010(1)(h)(C) A description and schedule of site-specific geotechnical work that will be performed before construction for inclusion in the site certificate as conditions;

A summary of relevant conclusions and recommendations from the previous geotechnical investigations performed for areas within the Amended Site Boundary is included below, followed by the Certificate Holder's plan for future site-specific geotechnical work to be performed prior to construction.

5.1 Previous Geotechnical Investigations

5.1.1 Shannon & Wilson 1975 and 1976

The Shannon & Wilson (1975) geotechnical investigation and Shannon & Wilson (1976) supplemental geotechnical investigation were conducted for the now-retired and demolished BCP. Most of the structures at the BCP were founded on deep foundations (drilled shafts), which penetrate into cemented soils and basalt bedrock. Surficial soils and unconsolidated deposits were found to have a relatively low moisture content averaging about 6 to 18 percent. Depths to basalt bedrock were found to be 7 to 50 feet below ground surface. The studies concluded that the project was feasible and included engineering recommendations for the design and construction of the BCP based on the geotechnical laboratory tests and boring results.

5.1.2 Cornforth 2009

The Cornforth (2009) preliminary geotechnical investigation was conducted for the CGS natural gas-fired power plant to the north of the Carty Reservoir. The scope of work included a site reconnaissance, three borings, laboratory testing, and research relating to geologic/geotechnical issues. The geotechnical investigation concluded the following:

“...siting the Carty Generating Station at the proposed location does not appear to pose significant geotechnical or geological design issues. The predominant foundation conditions include relatively dense cemented silt underlain by weathered rock, which in turn, is underlain by hard basalt. These conditions should provide adequate bearing strata for the project foundations, and the predominantly stiff overburden soils would not be expected to significantly amplify ground shaking from a seismic event. One notable feature occurred in a boring near the gas turbine area where a relatively loose layer of silt (loess) was encountered at the ground surface. Based on this finding, the key geotechnical issue for the Carty project appears to be the potential for collapse of the relatively loose, surficial layer of silt

that may occur in localized areas. This problem is simple to address in the design phase, and the approach would include: (i) extending foundations for buildings and appurtenant structures through the looser soil to stronger bearing layers, and/or (ii) excavating and replacing the looser soil with engineered fill that is moisture conditioned, and placed and compacted in lifts.”

5.1.3 Terracon 2013

The Terracon (2013) geotechnical investigation was for the CGS natural gas-fired power plant to the north of the Carty Reservoir. Conclusions of the investigation are oriented toward construction of a natural gas-fired power plant and include recommendations for addressing collapsible soils and highly erodible surficial soils, proper excavation, and foundation design.

5.1.4 Cornforth 2016

The Cornforth (2016) investigation was for the Carty Solar Farm installation to the south of the Carty Reservoir. The investigation concluded the following:

“...siting the solar facility at the proposed location does not appear to pose significant geotechnical or geological design issues. In general, the subsurface soil conditions across the site are similar with loose to medium dense, silty sand to sandy silt with weak caliche cementation throughout the layer in the upper 18 to 28 feet. All borings encountered slightly looser soils in approximately the upper five feet. These near surface soil units generally increase in relative density with increasing depth, with the soils in Boring B-1 becoming dense from 11 to 28 feet. Underlying these upper soil units are very dense silt and sand, medium stiff to very stiff clayey silt, dense to very dense basalt fragments, and medium hard to hard basalt. These general soil conditions should provide an adequate bearing stratum for the project foundations, and the relatively stiff to dense overburden soils would not be expected to significantly amplify ground shaking from a seismic event. Based on the finding from the preliminary borings and the geologic site reconnaissance, the key geotechnical and geologic issues for the solar facility project appear to be the potential for erosion of the looser surficial soils, and a somewhat low potential for collapse of the relatively loose, surficial wind-blown soils.”

In addition, the report stated that “there have been no problems associated with soil collapse, ground surface heave, settlement, landslide movement and no damages from minor seismic events that have occurred during the life span of the existing facility” (Cornforth 2016).

The Cornforth (2016) geotechnical investigation recommended the following:

- Drill additional borings at scattered locations across the site to further characterize the subsurface conditions, as well as collect information for foundation design. For planning

purposes, we would anticipate boring depths to again be on the order of 50 feet to achieve 10 to 30 feet penetration into denser overburden soils or to encounter a bedrock contact.

- Complete a laboratory testing program to provide additional data on the soils for design studies. The laboratory data would be used to estimate collapse and settlement potential for any loose, compressible soil layers and to develop foundation soil index and shear strength parameters for design recommendations.
- Conduct geotechnical engineering studies and develop geotechnical recommendations for final design of foundation support systems, site grading, ground surface treatments and access road surfaces.

5.2 Future Geotechnical Investigation

The Certificate Holder will conduct a site-specific geological and geotechnical investigation (tentatively planned for Q1 2024) before beginning construction and will provide draft and final reports to DOGAMI and ODOE consistent with Site Certificate Condition 5.4(ii) in the Third Amended Site Certificate (Council 2022). The proposed geotechnical scope is tentatively planned to include the following tasks:

1. Review publicly available existing soil and groundwater information in the immediate vicinity of the structures and facilities.
2. Complete a site reconnaissance to evaluate site conditions; assess site access; and stake the proposed exploration locations prior to starting the geotechnical exploration work.
3. Explore subsurface soil and groundwater conditions and soil properties by completing borings, test pits, electrical resistivity, post load test, and double infiltrometer tests at the frequency described below:

Solar Array Areas

- a. Twenty-one (21) borings, depth of 15 feet
- b. Twenty-five (25) test pit excavations, depth of 5 feet (dynamic cone penetrometer test, nuclear soil density testing, temperature test)
- c. Seventeen (17) electrical resistivity tests (maximum “a” spacing 100 feet)
- d. Thirty-six (36) post load tests
- e. Nine (9) double infiltrometer tests.

Proposed Collector Substation Area

- f. Eight (8) borings, depth 50 feet
- g. Two (2) test pit excavations, depth of 5 feet (dynamic cone penetrometer test, nuclear soil density testing, temperature test)
- h. Three (3) electrical resistivity tests (maximum “a” spacing 300 feet)

Draft and final geotechnical engineering reports for the Amended Carty Solar Farm will present the results of the above tasks and include geotechnical recommendations. The geotechnical report will be prepared under the supervision of an Oregon-registered professional engineer. The report will include the following:

- Vicinity and Geology Map;
- Site plan showing the approximate locations of the borings;
- Boring logs and laboratory testing results;
- Geologic characteristics of the site;
- A discussion of the subsurface soil, rock, and groundwater conditions;
- A description of seismic hazards including fault rupture and liquefaction;
- Seismic parameters based on American Society of Civil Engineers' (ASCE) 7-16 code including but not limited to site class for soils or rock and other mapped data.;
- Geotechnical design recommendations; and
- Geotechnical construction considerations.

6.0 Transmission Lines and Pipelines – OAR 345-021-0010(1)(h)(D)

OAR 345-021-0010(1)(h)(D) For all transmission lines, and for all pipelines that would carry explosive, flammable or hazardous materials, a description of locations along the proposed route where the applicant proposes to perform site specific geotechnical work, including but not limited to railroad crossings, major road crossings, river crossings, dead ends (for transmission lines), corners (for transmission lines), and portions of the proposed route where geologic reconnaissance and other site specific studies provide evidence of existing landslides, marginally stable slopes or potentially liquefiable soils that could be made unstable by the planned construction or experience impacts during the facility's operation;

The Amended Carty Solar Farm does not include pipelines carrying hazardous substances as described in OAR 345-021-0010(1)(h)(D).

The Amended Carty Solar Farm will interconnect with the existing transmission system remaining from the BCP via the proposed collector substation. The collector substation will be located in area formerly used for the BCP on the west side of the Northern Solar Area. The collector substation is proposed adjacent to an existing electrical transmission dead-end structure for a 500-kilovolt (kV) transmission line that used to serve the BCP. The existing dead-end structure and associated 500-kV transmission line were retained for reuse from the BCP. The new substation will connect to the existing dead-end structure via an aboveground electrical line extending approximately 300 feet between the proposed substation and existing dead-end structure. Electrical output from the

collector substation will be conveyed from the dead-end structure and 500-kV transmission line to the existing Grassland Switchyard. The 300-foot-long connection between the proposed collector substation and existing dead-end structure is a transmission line. The Certificate Holder proposes geotechnical work in this general area as described in Section 5.2 for the proposed collector substation.

7.0 Seismic Hazard Assessment – OAR 345-021-0010(1)(h)(E)

OAR 345-021-0010(1)(h)(E) An assessment of seismic hazards, in accordance with standard-of-practice methods and best practices, that addresses all issues relating to the consultation with the Oregon Department of Geology and Mineral Industries described in paragraph (B) of this subsection, and an explanation of how the applicant will design, engineer, construct, and operate the facility to avoid dangers to human safety and the environment from these seismic hazards. Furthermore, an explanation of how the applicant will design, engineer, construct and operate the facility to integrate disaster resilience design to ensure recovery of operations after major disasters. The applicant must include proposed design and engineering features, applicable construction codes, and any monitoring and emergency measures for seismic hazards, including tsunami safety measures if the site is located in the DOGAMI-defined tsunami evacuation zone; and

7.1 Methods

Available reference materials were reviewed, and a desktop seismic-hazard assessment was conducted. Topographic and geologic conditions and hazards within the Amended Site Boundary were evaluated using topographic and geologic maps, aerial photographs, existing geologic reports, and data from DOGAMI, the Oregon Water Resources Department, the U.S. Geological Survey (USGS), and the Natural Resource Conservation Service (NRCS).

A desktop seismic-hazard analysis characterized seismicity in the Amended Carty Solar Farm's vicinity to evaluate potential seismic impacts. This work was based on the potential regional and local seismic activity described in the existing scientific literature and on subsurface soil and groundwater conditions found in the desktop evaluations. The seismic-hazard analysis consisted of the following tasks:

1. Detailed review of USGS, National Geophysical Data Center, and DOGAMI literature and databases.
2. Identification of potential seismic events and characterization of those events in terms of a series of design events.
3. Evaluation of seismic hazards, including potential fault rupture, earthquake-induced landslides, liquefaction and lateral spread, settlement, and subsidence.
4. Review of previous geotechnical investigations conducted in the Amended Site Boundary and immediate vicinity.

5. Mitigation recommendations based on the characteristics of the subsurface soils and design earthquakes, including specific seismic events that might have a significant effect on the site, potential for seismic energy amplification at the site, and the site-specific acceleration response spectrum.

As described in Section 5.0 and in accordance with Site Certificate Condition 5.4.ii, a site-specific geotechnical investigation will be conducted by a qualified engineer using current code requirements and state-of-practice methods to inform the final design. It will be reported to DOGAMI and ODOE following the 2014 Oregon State Board of Geologist Examiners' Guideline for Preparing Engineering Geologic Reports.

7.2 Maximum Considered Earthquake Ground Motion under IBC 2021

Overall, the DOGAMI Oregon HazVu: Statewide Geohazards Viewer mapping tool (DOGAMI 2023b) indicates that the Cascadia earthquake hazard is moderate, and the general earthquake hazard in the Amended Site Boundary is also rated moderate. However, areas mapped as eolian sand and ash deposits and alluvial deposits are rated very strong. The USGS Seismic Hazard Mapping Model (USGS 2023a) developed ground motions using a probabilistic seismic hazard analysis that covered the Amended Carty Solar Farm site. Though these motions are not site-specific, they reasonably estimate the ground motions within the Amended Site Boundary. For new construction, the site should be designed for the maximum considered earthquake, according to the most recently updated International Building Code (IBC; ICC 2021) supplemented by the Oregon Structural Specialty Code (OSSC; State of Oregon 2022). The USGS earthquake hazard tool analysis was run for the Amended Site Boundary, and the design event (6.3 magnitude earthquake) has a 2 percent probability of exceedance in 50 years, or a 2,475-year return period. This event has a peak ground acceleration (PGA) of 0.2454 acceleration from gravity at the bedrock surface for the Amended Site Boundary. The values of PGA on rock are an average representation of the acceleration most likely to occur at the site for all seismic events (crustal, intraplate, or subduction).

Seismic design parameters were developed following IBC 2021. Using current information, the Amended Carty Solar Farm will be designed for Site Class D, according to IBC requirements (Table H-2). Table H-2 shows a range of site classes reflecting the various surficial geology mapped within the Amended Site Boundary. Site Class D represents the loess (eolian sand and ash) deposits that are rated very strong, and Site Class C represents the Missoula Flood deposits that consist of silts, sands, and fine gravels that are predominant. Previous geotechnical studies have used Site Class D for project designs.

Table H-2. Seismic Design Parameters – Maximum Considered Earthquake

Location	Site Class	Earthquake Magnitude	Peak Horizontal Ground Acceleration	Return Period
Amended Site Boundary	D	6.30	0.2454g	2,475 years
Amended Site Boundary	C	6.31	0.2066g	2,475 years
Amended Site Boundary	D	6.40	0.1069g	475 years
Amended Site Boundary	C	6.44	0.0836g	475 years
Source: USGS 2023c.				

7.2.1 Earthquake Sources

In northern Oregon, seismicity is generated when the Juan de Fuca Plate and the North American Plate converge at the Cascadia Subduction Zone. These plates converge at a rate of 1 to 2 inches per year, accumulating large amounts of stress that release abruptly in earthquake events. The four sources of earthquakes and seismic activity in this region are crustal, intraplate, volcanic, and the deep subduction zone (DOGAMI 2010).

Overall, earthquakes in Oregon are associated with active faults in four regional seismicity zones: the Cascade seismic zone, the Portland Hills zone (the Portland, Oregon, and Vancouver, Washington, metropolitan area), the south-central zone (Klamath Falls), and northeastern Oregon zone (Niewendorp and Newhouse 2003). Faults are considered active if there has been displacement in the last 10,000 years, and potentially active if there has been movement over the last Quaternary period (1.6 million years). Regionally, seismicity has been attributed to crustal deformation from the Cascadia Subduction Zone and volcanism. More than 6,000 earthquakes—most less than magnitude 3—have occurred in Oregon since 1981, with 75 percent of these recorded since March 1993 (Wong and Bott 1995). The 1936 Milton-Freewater earthquake, located approximately 60 miles northeast of the Amended Site Boundary, had a 6.4 magnitude and was felt over an area of approximately 106, 000 square miles.

Earthquakes are caused by movements along crustal faults, generally in the upper 10 to 15 miles of the earth's crust. In the vicinity of the Amended Site Boundary, earthquakes occur within the crust of the North American tectonic plate when built-up stresses near the surface are released through fault rupture.

There are no faults mapped within the Amended Site Boundary; however, a fault is mapped on the geologic map east of the boundary (USGS 2023a; Figure H-1). There is no indication that this fault is active within recent/Quaternary time. Several undifferentiated, Quaternary-age, and Class B faults are mapped within 25 miles of the Amended Site Boundary (Figure H-2). These faults are potentially active. The DOGAMI Oregon HazVu: Statewide Geohazards Viewer earthquake hazard layer (DOGAMI 2023b) and the USGS Geologic Hazards Science Center (USGS 2023b; Figure H-2) show that the nearest potentially active faults (undifferentiated and mid- to late Quaternary) are

about 10 miles north and 15 miles west/southwest of the Amended Site Boundary. Class B potentially active faults are located over 25 miles northeast and southwest of the Amended Site Boundary. Class B faults have geologic evidence that demonstrates the existence of a fault or suggests Quaternary deformation, but either (1) the fault might not extend deeply enough to be a potential source of significant earthquakes, or (2) the currently available geologic evidence is too strong to confidently assign the feature as a Class C (insufficient geologic evidence) but not strong enough to assign it to Class A (active fault) (USGS 2023b). The potentially active faults shown in Figure H-2, within 50 miles of the Amended Site Boundary, present the largest potential for seismic contribution to the Amended Carty Solar Farm.

The site-specific geotechnical investigation will assess the potential for regional faults to affect the Amended Carty Solar Farm, as described in Section 5.0. The investigation will include a description of any potentially active faults, their potential risk to the Amended Carty Solar Farm, and any additional mitigation measures the Certificate Holder will employ to design, construct, and operate the Amended Carty Solar Farm safely.

The 2013 Oregon Resilience Plan by the Oregon Seismic Safety Policy Advisory Commission (OSSPAC 2013) simulated the impact of a magnitude 9.0 Cascadia earthquake scenario. This plan places the Amended Site Boundary into the “very light” shaking category. This means that a magnitude 9.0 Cascadia scenario earthquake would produce a very light shaking event that would be felt outdoors, wake sleepers, disturb or spill liquids, upset small unstable objects, and potentially swing doors or move pictures (OSSPAC 2013).

Probabilistic seismic-hazard disaggregation at 475-year intervals is shown in Attachment H-2 and at 2,475-year intervals in Attachment H-3.

7.2.2 Recorded Earthquakes

Figure H-2 displays the location and approximate magnitude of all recorded earthquakes within approximately 50 miles of the Amended Site Boundary. The seismic events are grouped by magnitude and displayed with differently sized symbols based on the event’s strength.

Table H-3 summarizes the earthquakes greater than magnitude 3.0 recorded within 50 miles of the Amended Site Boundary. One earthquake greater than magnitude 4.0 was recorded 35 miles from the Amended Site Boundary. Earthquakes between magnitude 3 and 4 are generally equivalent to a Modified Mercalli Intensity III associated with shaking that is “noticeable indoors but may not be recognized as an earthquake” (USGS 2023d).

**Table H-3. Significant Historical Earthquakes within 50 Miles of the Facility
by Magnitude***

Year	Month	Day	Latitude	Longitude	Moment Magnitude	Miles from Amended Site Boundary
1993	12	16	45.195833	-120.089833	3	34.34
1986	1	16	46.251500	-119.618000	3	38.82
1970	11	29	46.225167	-120.115333	3	38.64
2022	8	13	46.130333	-120.500000	3.05	43.97
1998	2	3	45.813833	-120.192167	3.1	19.19
1997	10	13	46.114000	-120.376167	3.1	38.92
1997	3	23	45.246333	-120.049333	3.1	30.40
1997	3	23	45.195167	-120.050833	3.1	33.79
1995	11	2	46.150000	-119.564333	3.1	32.86
1995	8	29	46.208167	-119.905500	3.1	35.01
1989	3	27	45.815833	-120.261500	3.1	22.32
1987	9	8	45.191167	-120.072000	3.1	34.36
1985	3	20	45.963167	-119.904667	3.1	18.30
1977	3	11	45.899167	-119.665667	3.1	14.99
1975	6	15	46.234000	-119.113167	3.1	49.26
1971	1	4	46.230833	-119.363167	3.1	42.04
2000	8	17	45.312000	-120.041500	3.2	25.99
1997	4	17	45.188500	-120.082000	3.2	34.69
1982	11	23	45.997333	-119.288667	3.2	31.78
1981	6	14	45.961667	-120.507000	3.2	37.37
1978	2	20	45.896500	-119.650000	3.2	15.15
2004	2	28	46.036333	-119.020500	3.3	43.85
1997	11	18	46.137000	-120.461000	3.3	42.92
1984	3	23	45.996000	-119.292167	3.3	31.59
1975	6	28	46.105333	-119.703667	3.3	28.09
2000	1	30	45.183167	-120.102833	3.4	35.38
2017	10	12	46.155833	-120.540167	3.42	46.58
1999	8	31	45.186333	-120.090833	3.5	34.97
1988	9	29	45.849833	-120.259667	3.5	23.21
1975	7	1	45.628	-120.002	3.5	7.69
2000	2	1	45.19	-120.112667	3.6	35.1

Table H-3. Significant Historical Earthquakes within 50 Miles of the Facility by Magnitude*

Year	Month	Day	Latitude	Longitude	Moment Magnitude	Miles from Amended Site Boundary
1979	2	17	46.164167	-119.932667	3.6	32.19
1976	10	10	45.270333	-120.4995	3.6	41.59
1975	7	1	45.605333	-120.016167	3.6	8.93
2008	5	18	46.167667	-119.550167	3.7	34.24
1975	6	28	46.099	-119.706	3.8	27.64
1997	11	18	46.143167	-120.470833	3.9	43.55
1997	3	22	45.197333	-120.067167	3.9	33.88
1992	8	7	45.860333	-119.5895	3.9	14.73
1985	2	10	45.7045	-119.6345	3.9	7.22
2000	1	30	45.197167	-120.124833	4.1	34.86
*Magnitude of 3.0 or greater						
Source: USGS 2023d.						

The Ground Response Spectra Assessment (Attachment H-4) assessed the design response spectrum given in the 2021 IBC using the American Society of Civil Engineers' ASCE 7 Hazard Tool (ASCE 2023). Response spectra are provided for the maximum considered earthquake at the Amended Carty Solar Farm location. For the maximum considered earthquake, separate response spectra modified by the amplification factors for Site Class D are provided. Due to the presence of stiff soils at depths between 5 and 26 feet (Terracon 2013) in the Amended Site Boundary, the Amended Carty Solar Farm should be designed for the most conservative Site Class D.

7.2.3 Hazards Resulting from Seismic Events

Potential seismic hazards from a design seismic event for the Amended Carty Solar Farm include seismic shaking or ground motion, fault displacement, instability from landslides or subsurface movement, and adverse effects from groundwater or surface water. These risks are anticipated to be low, as discussed below. Since the Amended Carty Solar Farm is far from the Oregon coast, and not in a DOGAMI-defined tsunami evacuation zone (DOGAMI 2023c), tsunami inundation is not considered a hazard.

7.2.4 Seismic Shaking or Ground Motion

The Amended Carty Solar Farm will be designed to withstand the maximum risk-based design earthquake ground motions developed for the Facility site. The design seismic event has a 2,475-

year recurrence interval. The State of Oregon has adopted the IBC 2021 code for structural design. Specifically, this is Chapter 16, Section 1613 (Earthquake Loads) of the 2022 OSSC (State of Oregon 2022). Building codes are frequently updated; the IBC is updated every 3 years. The Certificate Holder will design, engineer, and construct the Amended Carty Solar Farm following the latest IBC, OSSC, and building codes adopted by the State of Oregon at the time of construction.

Based on soil data provided by the NRCS Web Soil Survey (Exhibit I), and geologic and geotechnical information, the surficial materials in the Amended Site Boundary range from Site Class C to Class D. As described above, Site Class D (stiff soil) is the most conservative class appropriate for the Amended Carty Solar Farm (Attachment H-4).

Based on site-specific analyses, the original equipment manufacturer will provide the structural engineer with site-specific foundation loads and requirements. The structural engineer then completes the foundation analyses based on the design site-specific parameters. The geotechnical studies and analyses provide site-specific parameters, including but not limited to moisture content and density, soil/bedrock bearing capacity, bedrock depth, settlement characteristics, structural backfill characteristics, soil improvement (if required), and dynamic soil/bedrock properties, including shear modulus and Poisson's Ratio of the subgrade. The foundation design engineer will use these parameters to design a suitable foundation and verify that the foundation/soil interaction meets or exceeds the original equipment manufacturer's site-specific, minimum requirements.

7.2.5 Fault Rupture

Fault displacement is unlikely because there are no active faults within the Amended Site Boundary. However, there is a non-active fault that trends northwest-southeast located east of the Amended Site Boundary. In addition, anticline and syncline areas are mapped within the Amended Site Boundary (DOGAMI 2023a; USGS 2023a). This fault should be reviewed during the site-specific geotechnical analysis. The nearest known active or potentially active faults are approximately 10 miles north and 15 miles west/southwest of the Amended Site Boundary as seen on Figure H-2. There is an unnamed inferred/concealed fault located about 1.5 miles northeast of the Amended Site Boundary (Figure H-1). Observation of the fault area during a field reconnaissance did not reveal any evidence of displacement of surficial deposits (Cornforth 2016).

7.2.6 Liquefaction

Liquefaction is when saturated and cohesionless soils are subjected to dynamic forces like intense or prolonged ground shaking and temporarily lose their strength and liquefy. There is no evidence of historic liquefaction or alluvial fan deposits within the Amended Site Boundary. The soils in the Amended Site Boundary are generally cohesive and unsaturated. Groundwater is indicated to be at least 57 feet below ground surface based on previous geotechnical investigations (Terracon 2013), with the exception of soils in the immediate area of the reservoir. Along with the relatively moderate seismic event potential, this indicates that soil liquefaction within the Amended Site Boundary where the Amended Carty Solar Farm will be located is unlikely. However, as discussed

above, areas along the reservoir and narrow areas along Sixmile Canyon and Fourmile Canyon within the Amended Site Boundary could have saturated alluvial deposits that would be susceptible to liquefaction. Using Oregon HazVu: Statewide Geohazards Viewer (DOGAMI 2023b), 100-year floodplains are mapped in these areas within the Amended Site Boundary or immediate vicinity as shown in Figure H-4. Amended Carty Solar Farm infrastructure will avoid building on natural drainages and canyons. Geotechnical studies (Terracon 2013) concluded that seismic liquefaction risks are very low because the soils are relatively dense and unsaturated.

7.2.7 Seismically Induced Landslides

While regional seismicity could potentially trigger landslides and mass wasting processes in the Amended Site Boundary, the risk is considered moderate for expected shaking in a Cascadia 9.0 magnitude event (DOGAMI 2023d). The landslide database does not show any historic landslides within the Amended Site Boundary or within the immediate vicinity (DOGAMI 2023b). Construction will avoid steep slopes that are most susceptible to landslides. The site-specific geotechnical investigation will review evidence of active faults and landslides, which will inform the final design and layout. More detailed discussion on the location and type of landslides is included in Section 8.1.

7.2.8 Subsidence

Subsidence is the sudden sinking or gradual downward settling of surface land, often caused by groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Geotechnical investigations (Cornfield 2016; Terracon 2013; Cornfield 2009) have shown that the soils that are present on most of the Amended Site Boundary are not saturated and groundwater is indicated to be at least 57 feet below ground surface. However, the Terracon (2013) geotechnical investigation indicates that soils can be saturated in the immediate vicinity of the reservoir. Amended Carty Solar Farm infrastructure will not be located along steep slopes. Subsidence due to a seismic event is highly unlikely in the Amended Site Boundary as the bedrock is relatively shallow and the overlying soils are unsaturated where the Amended Carty Solar Farm will be constructed.

Subsidence may also occur due to introduction of moisture into desiccated collapsible soils present in loess. Drainage changes produced by grading and site development can induce moisture changes in the subsurface that can cause collapse of loess that is at a very low natural moisture content. Collapsible soils are discussed in Section 8.6. Design of site drainage will prevent ponding or other concentration of surface water flows, especially near structures; development over existing drainage ways will be avoided, since rerouting of surface water could induce subsidence.

7.2.9 Seismic Hazard Mitigation

The State of Oregon uses the 2021 IBC, with current amendments by the OSSC. Pertinent design codes relating to geology, seismicity, and near-surface soil are found in OSSC Chapter 16, Section 1613 (State of Oregon 2022). Amended Carty Solar Farm infrastructure will be designed to meet or

exceed all current design code standards. Substation equipment will meet all requirements in the latest version of the Institute of Electrical and Electronics Engineers IEEE 693-2018 standard (which directs the design and qualification of equipment installed in substations and its ability to withstand a seismic event.). Although the region has only a moderate seismicity potential, the solar arrays are designed to resist seismic loads.

As discussed in Section 5.0, site-specific geotechnical exploration will provide data that will guide the Amended Carty Solar Farm infrastructure design to mitigate potential seismic-event hazards. The hazard of a surficial rupture along a fault is low, given the seismic history of the site displayed in geologic mapping. Because the Facility is in a sparsely populated area, there is minimal human safety and environmental risk. Mitigation for potential fault rupture is not needed. No structures will be built on steep slopes prone to instability, thus avoiding potential impacts. Disaster resilience design guidelines are further described in Section 9.0.

8.0 Non-Seismic Geological Hazards – OAR 345-021-0010(1) (h)(F)

OAR 345-021-0010(1)(h)(F) An assessment of geology and soil-related hazards which could, in the absence of a seismic event, adversely affect or be aggravated by the construction or operation of the facility, in accordance with standard-of-practice methods and best practices, that address all issues relating to the consultation with the Oregon Department of Geology and Mineral Industries described in paragraph (B) of this subsection. An explanation of how the applicant will design, engineer, construct and operate the facility to adequately avoid dangers to human safety and the environment presented by these hazards, as well as:

- (i) An explanation of how the applicant will design, engineer, construct and operate the facility to integrate disaster resilience design to ensure recovery of operations after major disasters; and*
- (ii) An assessment of future climate conditions for the expected life span of the proposed facility and the potential impacts of those conditions on the proposed facility.*

Non-seismic geologic hazards in the Columbia Plateau region include landslides, volcanic eruptions, collapsing soils, and erosion. The area within the Amended Site Boundary is primarily relatively flat and includes loess deposits and the existing reservoir, with the exception of several canyon drainages. The Amended Carty Solar Farm will be constructed within a flat-lying portion of the Amended Site Boundary. It will avoid steep slopes and drainages that could experience landslides and soil creep. A discussion of potential non-seismic geologic hazards is presented below.

8.1 Landslides

In 2021, DOGAMI released an update to the Oregon Statewide Landslide Database (SLIDO-4.4; DOGAMI 2023d). SLIDO is a statewide database of known landslides compiled from published maps. The database includes landslides, debris flows, alluvial fans, and colluvium or talus. The primary sources of this historical landslide information are published geologic reports and geologic hazard studies by the USGS and DOGAMI. The SLIDO-4.4 landslide database was used to overlay landslide areas or landslide-related features on Figure H-4; there are no mapped landslides within the Amended Site Boundary. An area of moderate to high landslide susceptibility is mapped along Fourmile Canyon north of the reservoir; and discontinuous areas of moderate landslide susceptibility are mapped south of the reservoir—primarily along drainages—within the Amended Site Boundary. Most of the Amended Site Boundary is located in low landslide susceptibility areas. Site construction will follow appropriate IBC regulations for construction and avoid steep slopes.

Slopes within the vicinity of the Amended Site Boundary range from approximately zero to 26 percent, with an average slope of 12.87 percent. If slope stability issues are identified in the final design geotechnical investigations, the structures will either be relocated during the micrositing process, or remedial measures will be implemented to improve slope stability.

8.2 Volcanic Activity

Volcanic activity in the Cascade Range is driven by the subduction of the Juan de Fuca Plate beneath the North American Plate. The closest volcano to the Amended Site Boundary is Mount Hood (85 miles west/southwest). Most of the potential volcanic hazard impacts would occur within a 50-mile radius of the erupting volcano. Depending on the prevailing wind direction at the time of the eruption and the source of the eruption, ash fallout in the region surrounding the Amended Carty Solar Farm may occur. Because of the distance to the nearest volcanoes, the Amended Carty Solar Farm's impacts from volcanic activity would be indirect and likely limited to ash fallout. In addition, the Amended Carty Solar Farm is not located near any streams that would be subject to pyroclastic flows from a volcanic eruption from these close volcanoes. It is unlikely that there would be any adverse effects from volcanic activity on the construction or operation of the Amended Carty Solar Farm.

8.3 Erosion

Erosion can occur when soils are increasingly exposed to wind or water. Wind erosion is influenced by wind intensity, vegetative cover, soil texture, soil moisture, the grain size of the unprotected soil surface, topography, and the frequency of soil disturbance. Wind erosion hazard is generally high to very high. Control measures will be implemented to mitigate wind erosion potential as identified in Exhibit I. Water erosion is primarily a function of soil type, vegetative cover, precipitation, and slope inclination. If left unmitigated, erosion from rainfall would be a hazard during construction. The runoff potential and water erosion hazard for site soils is generally moderately low. Slopes in the Amended Site Boundary have an average slope of 12.87 percent; it is noted that slopes greater

than 15 percent have a greater erosion risk. The hazard for erosion across the Amended Site Boundary ranges from slight to severe. In Exhibit V, Table V-3 shows the area received a total average annual precipitation of 8.6 inches per year at Boardman weather station (10 miles northeast of the Amended Site Boundary), from 1991-2020 (NOAA 2023). The erosion potential and available precipitation make site soils sensitive to water erosion during winter and spring, particularly on steep slopes. A draft Erosion and Sediment Control Plan (ESCP) has been developed to reduce the potential for soil erosion (see Attachment I-1 to Exhibit I). The ESCP includes structural and nonstructural best management practices (BMPs). Structural BMPs include the installation of silt fences or other physical controls to divert flows from exposed soils or otherwise limit runoff and pollutants from exposed areas. Nonstructural BMPs include the implementation of materials handling procedures, disposal requirements, and spill prevention methods.

The Certificate Holder will apply for a National Pollutant Discharge Elimination System stormwater construction permit through the Your DEQ Online platform. In addition, Exhibit I contains a comprehensive list of mitigation measures to avoid wind and water erosion and soil impacts.

8.4 Flooding

Federal Emergency Management Agency (FEMA) National Flood Hazard data (FEMA 2023) were compared to the temporary and permanent disturbance areas in the Amended Site Boundary to evaluate flood hazards. Figure H-4 provides a map of FEMA flood plains (FEMA 2023). The reservoir and major canyons/drainages are all mapped within the 100-year floodplain. Additional DOGAMI floodplain mapping was not available (DOGAMI 2023b). All permanent Amended Carty Solar Farm structures will avoid floodplains.

Seasonal thunderstorms can result in concentrated stormwater runoff and localized flooding. The Amended Carty Solar Farm will be designed and engineered to comply with zoning ordinances and building codes that establish flood protection standards for all construction to avoid dangers to the infrastructure, as well as human safety and the environment, including criteria to ensure that the foundation will withstand flood forces. The engineered access roads and drainages will direct stormwater runoff away from structures and into drainage ditches and culverts as required in the ESCP. Therefore, the risks and potential impacts to the Amended Carty Solar Farm, human safety, and the environment from flood hazards are expected to be low.

8.5 Shrinking and Swelling Soils

Clayey soils are the most susceptible to shrinking and swelling. These soils were not found in the Facility soil data (see Exhibit I). Previous geotechnical reports did not identify shrinking and swelling soils as a concern within the Amended Site Boundary (Terracon 2013; Cornforth 2016). The shrink-swell potential of the soils will be evaluated during the site-specific geotechnical investigations and laboratory testing and analysis during the final Amended Carty Solar Farm design phase. If shrinking or swelling soils are present at foundation locations or along road alignments, soil improvement will be necessary. Soil improvement can include reworking and compacting onsite soils, over-excavating soils with shrink-swell potential and replacing with

compacted structural fill, constructing impermeable barriers to prevent saturation, or mixing soils to reduce the potential for shrinking and swelling.

8.6 Collapsing Soils

The Terracon (2013) geotechnical investigation found that according to the Collapse Potential classification (ASTM D5333), the near-surface soils in the vicinity of the Amended Site Boundary exhibit moderate risk collapsible soils and the deeper soils exhibit negligible to slight risk collapsible soils. The collapse of the “honeycomb” structure is typically instigated by wetting and loading or overstressing from the loading without wetting. The geotechnical report recommended mitigation of the collapse risk by removing and replacing these less cemented moderate risk soil materials (loess) and keeping the excess bearing pressures low to reduce the risk of overstressing the underlying cemented soils (caliche). The removed loess soils can be re-used as engineered fill (provided they are properly moisture conditioned and compacted as engineered fill). These soils were generally encountered to depths of 5 to 10 feet in the explorations; however, the depths can vary across the site and greater depths greater might be encountered. In these instances, additional removal will be necessary. The deeper caliche appears to consist of a moderately strong to strongly cemented material that likely has been somewhat pre-consolidated in the past (Terracon 2013). Based on the laboratory tests, these materials have on the order of 4 to 8 percent higher densities than the loess soils, indicating probable previous hydro-collapse (consolidation due to previous wetting). Therefore, since this material has considerable shear strength from the cementation and overburden, these soils have negligible to slight risk of collapse settlements.

Terracon (2013) concluded that the problem of potential soil structure collapse was simple to address in the design phase, with considerations given to: (i) extending foundations support for the solar panel support system and other appurtenant structures through the looser soil to stronger bearing layers at a slightly lower depth, and/or (ii) excavating and replacing the looser soil with engineered fill that is moisture conditioned, and placed and compacted in lifts.

Soil properties will be evaluated by laboratory testing and analysis. Subsurface soil conditions, such as loess or collapsing soils, will be identified during the site-specific geotechnical investigation and will inform the final design of the Amended Carty Solar Farm. If collapsible soils are found, collapse potential will be mitigated by construction techniques (over-excavating and replacing with structural fill, wetting, and compacting) during subgrade preparation.

9.0 Disaster Resilience

Pertinent design codes related to geology, seismicity, and near-surface soils are contained in OSSC Chapter 16, Section 1613 (Earthquake Loads) (State of Oregon 2022). The Amended Carty Solar Farm will be designed to meet or exceed the minimum standards required by these design codes. The Certificate Holder acknowledges that DOGAMI encourages, but does not require, design and build for disaster resilience and future climate conditions using science, data, and community wisdom to protect against and adapt to risks. With this in mind, the Certificate Holder has extensive

experience building energy facilities and designing projects to withstand non-seismic geologic hazards from a structural perspective.

The Amended Carty Solar Farm will be designed, engineered, and constructed to meet all current standards to adequately avoid potential dangers to human safety presented by seismic hazards. A qualified engineer will assess and review the seismic, geologic, and soil hazards associated with the Amended Carty Solar Farm infrastructure construction. Construction requirements will be modified, as needed, based on the site-specific characterization of seismic, geologic, and soil hazards. Substation structures will be designed under the current version of the OSSC. Substation, transmission line, and collector line equipment will be specified by the latest version of the Institute of Electrical and Electronics Engineers (IEEE) standard (currently IEEE 693-2018). The Amended Carty Solar Farm infrastructure will be in sparsely populated areas; therefore, the risks to human safety and the environment due to seismic hazards will be minimal.

The Amended Carty Solar Farm infrastructure will be designed, engineered, and constructed to meet or exceed all current standards. The Certificate Holder proposes to design, engineer, and construct the Amended Carty Solar Farm to avoid dangers to human safety-related and non-seismic hazards in many ways, including conducting site-specific geotechnical evaluations (see Section 5.0). Typical mitigation measures for non-seismic hazards include avoiding potential hazards, conducting subsurface investigations to characterize the soils to adequately plan and design appropriate mitigation measures, creating detailed geologic hazard maps to aid in laying out facilities, providing warnings in the event of hazards, and purchasing insurance to cover the Amended Carty Solar Farm in the event of hazards. Should Facility elements like access roads be damaged, they will be assessed and repairs made quickly to ensure recovery of operations after a major storm event.

10.0 Climate Change

The University of Washington conducted a study to assess climate vulnerability and adaptation in the Columbia River Plateau, where the Amended Carty Solar Farm is located (Michalak et al. 2014). The study involved downscaling five climate models (CCM3, CGM3.1, GISS-ER, MIROC3.2, and Hadley). Climate projections were downscaled to approximately a 1-kilometer resolution for over 40 different direct (mean annual temperature/precipitation) and derived (number of growing-degree days, actual and potential evapotranspiration) climate variables (Michalak et al. 2014). The downscaling of the climate models for this area led to future projections of greater annual average and summer temperatures, and more severe storm events and wildfires, among other changes. These specific changes are expected to increase stress on power lines in the region.

Reinforcing the local electric grid with solar power and battery energy storage increases energy grid resilience in this part of Oregon. This reinforcement will be direct, by upgrading a system that is anticipated to experience higher loads under rising temperatures and related increases in power demand for summer cooling. It is also indirect by supporting the delivery of power generated through various sources, minimizing the potential reduction in hydropower's role under future

conditions. All aspects of this Facility support resiliency in the face of future climate change. The Amended Carty Solar Farm will be designed to withstand extreme events as explained above in Section 9.0.

11.0 Conclusions

The risk of seismic hazards to human safety at the Facility is low. The Certificate Holder reviewed regional geologic information and performed a site-specific desktop analysis of potential seismic, geologic, and soils hazards. In addition, several previous geotechnical investigations have been conducted within areas of the Amended Site Boundary that confirm low seismic risk. A site-specific geotechnical investigation will be conducted, allowing the Certificate Holder to design, engineer, and construct the Amended Carty Solar Farm to the most current standards at the time of construction (Condition 6.6, Council 2022). The site-specific geotechnical investigation and Amended Carty Solar Farm design will comply with the following conditions from the Third Amended Site Certificate: Conditions 5.4, 6.7, 6.8, 6.10, 6.11 (Council 2022). This exhibit reflects input from DOGAMI and demonstrates that the Certificate Holder can design, engineer, and construct the Amended Carty Solar Farm to avoid dangers to human safety. The following supporting evidence is provided, with the remaining evidence to be provided before construction:

- The risk of seismic hazards to human safety at the Facility is considered low. The Certificate Holder has adequately characterized the seismic hazard risk of the site under OAR 345-022-0020(1)(a) and considered seismic events and amplification for the Facility's site-specific subsurface profile. Amended Carty Solar Farm components include solar modules, transformers, generators, site access roads, a battery energy storage system, and one onsite substation with equipment. The proposed O&M building will be staffed; however, the probability of a large seismic event occurring while the O&M building is occupied is much lower than for a typical building or facility. This very low probability results in minimal risk to human safety. During preconstruction geotechnical investigations, any potentially active faults in the vicinity will be surveyed.
- The Certificate Holder has demonstrated that the Amended Carty Solar Farm can be designed, engineered, and constructed to avoid dangers to human safety and the environment in case of a design seismic event by adhering to the most recently updated IBC requirements, following OAR 345-022-0020(1)(b). These standards require that for the design seismic event, the factors of safety used in the Amended Carty Solar Farm design exceed specific values. For example, in the case of slope design, a factor of safety of at least 1.1 is usually required during seismic stability evaluation. This safety factor is introduced to account for uncertainties in the design process and ensure that performance is acceptable. If slope stability safety factors are not met, the Amended Carty Solar Farm components will either be relocated during the micrositing process or remedial measures to improve slope stability will be implemented. For slope stability, the remedial measures could include the use of ground improvement methods (such as retaining structures) to limit the movement

to acceptable levels. Given the relatively low level of risk for the Amended Carty Solar Farm, adherence to the IBC requirements will ensure that appropriate protection measures for human safety are taken.

- The Certificate Holder has provided appropriate site-specific information and demonstrated (per OAR 345-022-0020(1)(c)) that the construction and operation of the Amended Carty Solar Farm, in the absence of a seismic event, will not adversely affect or aggravate the geological or soil conditions of the Facility site or vicinity. The risks posed by non-seismic geologic hazards are generally considered low because the Amended Carty Solar Farm can be designed to minimize or avoid the hazards of landslides and soil erosion. Landslide and slope stability issues will be identified during the final design and mitigated. Erosion hazard resulting from soil and wind action will be minimized by implementing an erosion control plan. The Certificate Holder will notify ODOE in the event that site investigations or trenching reveal conditions in the foundation rock different from what was evaluated, or if shear zones, artesian aquifers, deformations, or clastic dikes are found in the vicinity of the site.
- The Certificate Holder has demonstrated that the Amended Carty Solar Farm can be designed, engineered, and constructed to avoid human safety and environment impacts from geological and soil hazards, per OAR 345-022-0020(1)(d). Accordingly, given the relatively small risks these hazards pose to human safety, standard methods of practice (including implementation of the current IBC) will be adequate for the design and construction of the Amended Carty Solar Farm. Site-specific studies will be conducted, additional geotechnical work will be completed once the final locations of the structures are selected, and adequate measures will be implemented to control erosion.
- Finally, the Certificate Holder has assessed future climate conditions for the expected life span of the Amended Carty Solar Farm, and the potential impacts of those conditions on the Amended Carty Solar Farm.

Therefore, for the reasons outlined in this exhibit, the construction and operation of the proposed Amended Carty Solar Farm will comply with the structural standards as outlined in OAR 345-022-0020, as well as the standard in OAR 345-021-0010(1)(h).

12.0 References

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- Terracon (Terracon Consultants, Inc.). 2013. Geotechnical Engineering Report, Carty Power Generation Facility, near Boardman, Oregon. Prepared by Terracon Consultants, Inc., September 27, 2013.
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






Figures

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Carty Generating Station Request for Amendment 4

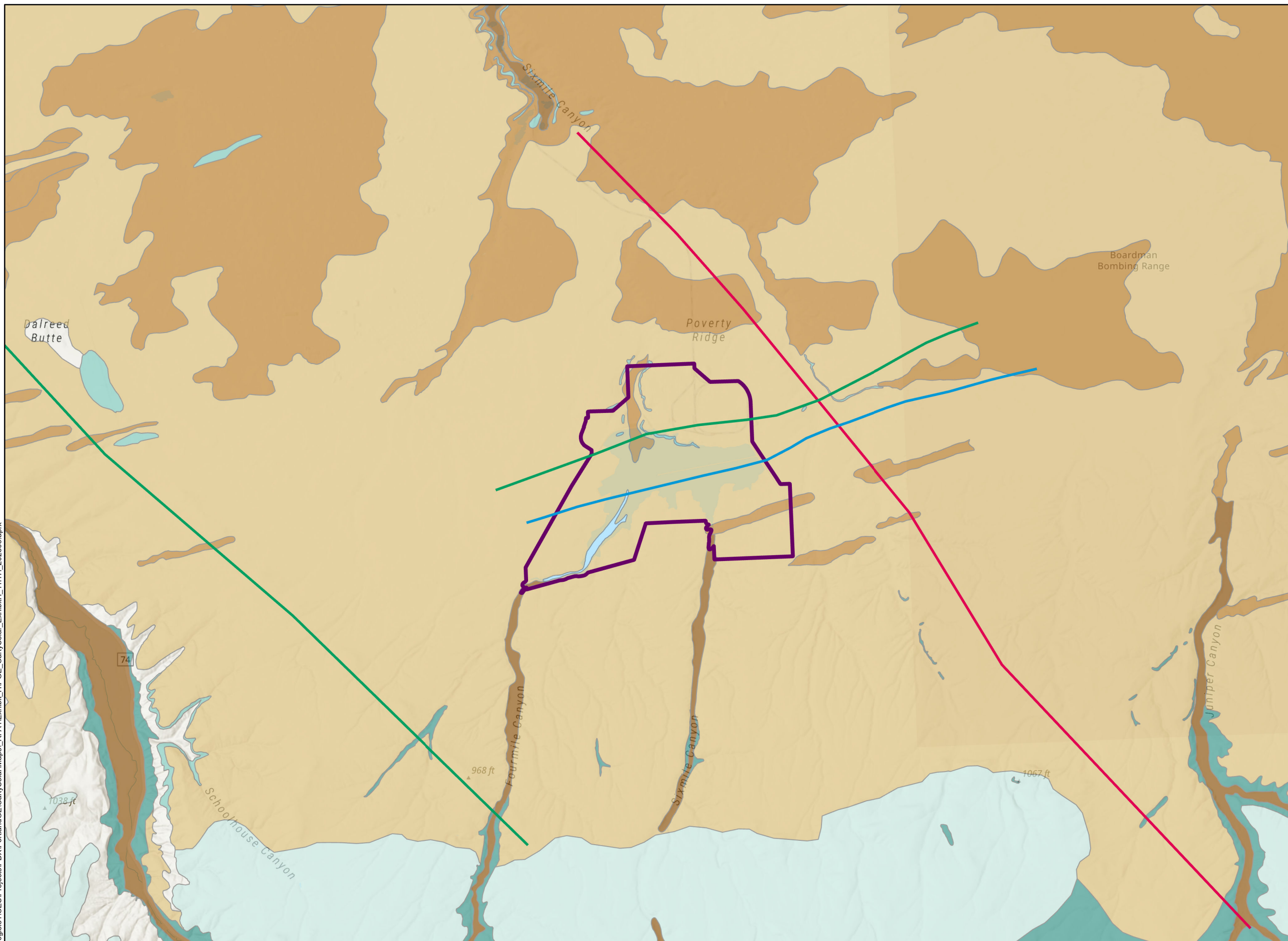
Figure H-1 Geologic Map

MORROW COUNTY, OR

-  Amended Site Boundary
- DOGAMI Surface Geology
-  Qal - Quaternary Alluvium
-  Qe - Quaternary Eolian sand and ash
-  Qmf - Quaternary Missoula Flood deposits
-  Tac - Tertiary Miocene/Pliocene Alkali Canyon Formation
-  Tem - Tertiary Miocene Elephant Mountain member
-  Tf - Tertiary Miocene Undifferentiated Frenchman Springs flows
- DOGAMI Folds
-  Anticline (1st or 2nd option)
-  Syncline
-  Faults



Reference Map

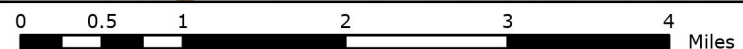


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WGS 1984 UTM Zone 10N













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Carty Generating Station Request for Amendment 4

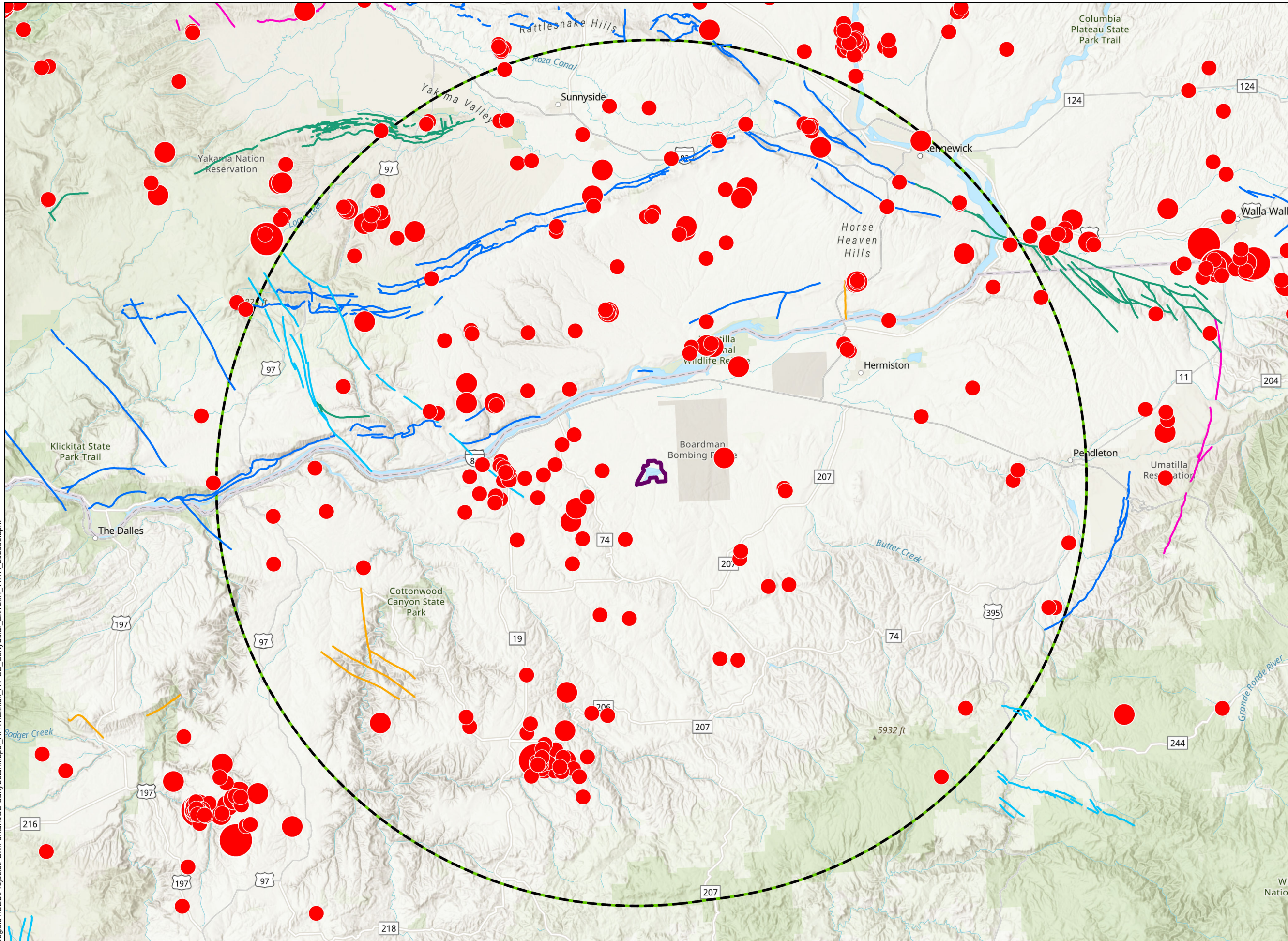
Figure H-2 Historical Seismicity and Potentially Active Faults

MORROW COUNTY, OR

-  Amended Site Boundary
-  Analysis Area (50-mile Buffer)
- USGS Earthquakes
- Magnitude
 -  2.5 - 3.0
 -  3.1 - 4.0
 -  4.1 - 6.0
- USGS Faults
- Age
 -  class B
 -  late Quaternary
 -  latest Quaternary
 -  middle and late Quaternary
 -  undifferentiated Quaternary



Reference Map




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**Carty
Generating Station
Request for
Amendment 4**

**Figure H-3
Approximate Locations
of Previous Geotechnical
Investigations**

MORROW COUNTY, OR

 Amended Site Boundary



Reference Map



Cornforth Consultants. 2009. Preliminary Geotechnical Investigation. Proposed Carty Generating Station. Boardman, OR.

Terracon Consultants, Inc. 2013. Geotechnical Engineering Report. Carty Power Generation Facility. Near Boardman, OR (Revision 1).

Shannon and Wilson. 1975. Geotechnical Investigation Boardman Plant Poverty Ridge Site, Morrow County, OR

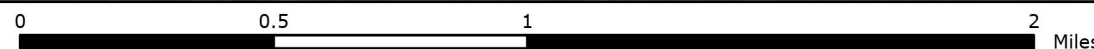
Shannon and Wilson. 1976. Supplemental Report - Geotechnical Investigation Boardman Plant Poverty Ridge Site, Morrow County, OR

Carty Reservoir

Cornforth Consultants. 2016. Preliminary Geotechnical/Geological Investigations. Carty Generating Station - Photovoltaic Solar Facility Project. Boardman, OR.

1:24,000

WGS 1984 UTM Zone 10N












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Carty Generating Station Request for Amendment 4

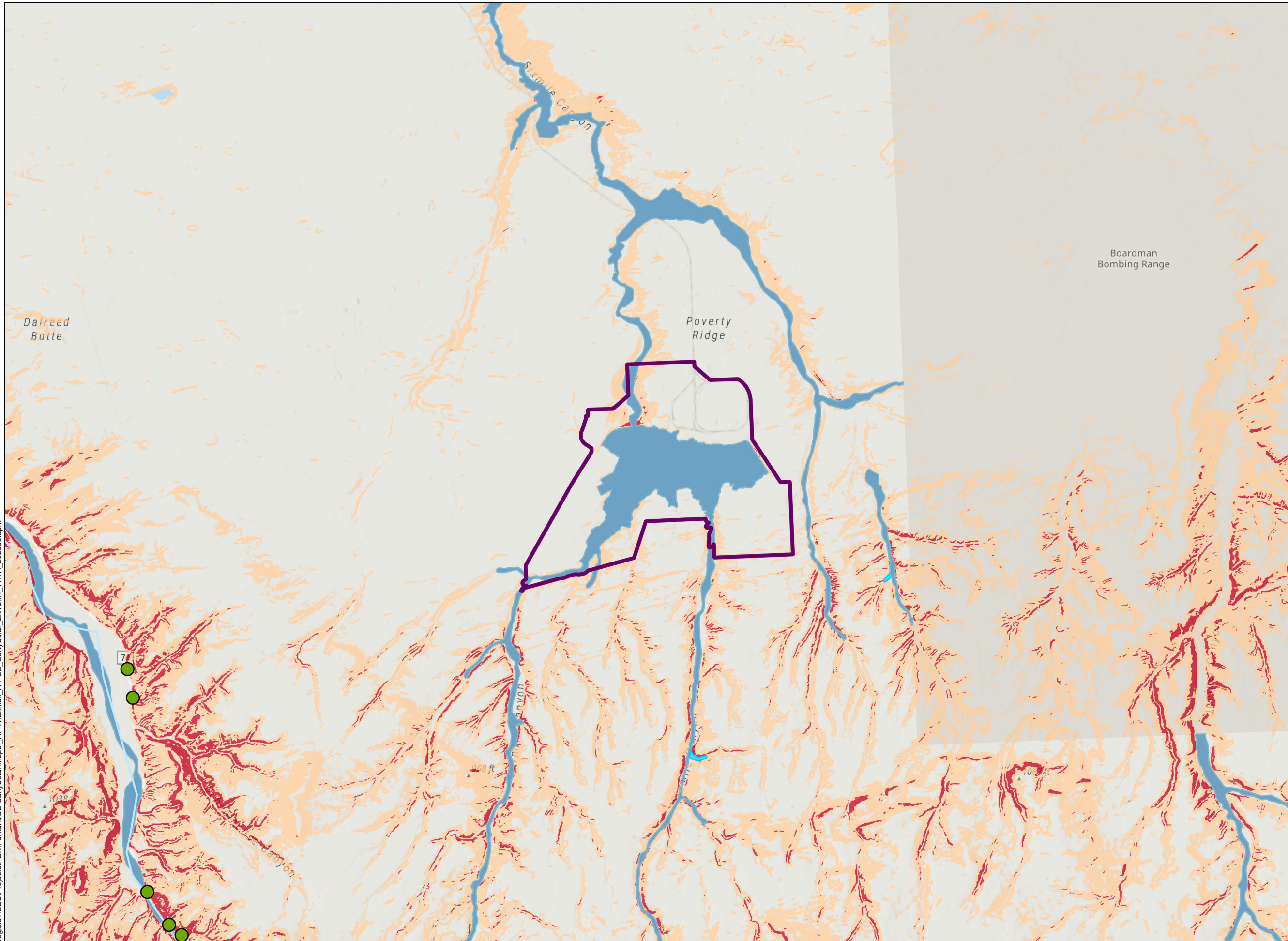
Figure H-4 Special Flood Hazards and Landslide Hazards

MORROW COUNTY, OR

-  Amended Site Boundary
-  County Boundary
-  River/Stream
-  Historic Landslides
- SLIDO Landslide Susceptibility
 -  Low
 -  Moderate
 -  High
- FEMA Special Flood Hazard Areas
 -  A, 1% Annual Chance Flood Hazard
 -  X, 0.2% Annual Chance Flood Hazard



Reference Map

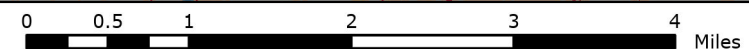


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WGS 1984 UTM Zone 10N



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**Attachment H-1.
Record of Correspondence with DOGAMI**

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Memorandum

Date: December 13, 2023
Project: Request for Amendment 4 to the Site Certificate for the Carty Generating Station
Subject: DOGAMI Consultation for Request for Amendment 4 to the Site Certificate within the Oregon Energy Facility Siting Council Process (Exhibit H)

Conference Call Meeting with Oregon Department of Geology and Mineral Industries (DOGAMI), December 8, 2023, at 12 pm PST

A virtual meeting was held to discuss seismicity, geology, and soils for the forthcoming Request for Amendment 4 (RFA 4) to the Site Certificate for the Carty Generating Station (CGS). The Certificate Holder is the Portland General Electric Company (PGE). RFA 4 involves increasing the output from photovoltaic solar energy generation and the addition of a battery energy storage system (Project) to the approved CGS. The main purpose for the meeting was to consult with DOGAMI and get that agency's input for inclusion in Exhibit H for RFA 4. Attendees included the following: Jason McClaughry (DOGAMI), Lenna Cope (PGE), Mike Abel (PGE), Brian Boehm (Black & Veatch), Brian Christensen (Black & Veatch), Paul Seilo (Tetra Tech), and Rachel Miller (Tetra Tech).

The following Project information was presented (via a PowerPoint presentation) from the draft Exhibit H for RFA 4:

- Lenna (PGE) and Paul (Tetra Tech) provided a Project overview including a map of the overall Project features and vicinity.
- Rachel (Tetra Tech) discussed the resources and methods used for the geology and geologic hazards analyses to be included in RFA 4.
- Rachel also discussed the geologic hazards studies and results to be included in RFA 4, including maps of the geology of the area, a map of seismic information including earthquakes and faults, and a map of landslide and floodplains hazards.
- Lenna and attendees from Black & Veatch provided an overview of the planned geotechnical work that would be performed during the pre-construction phase of the improvements proposed with RFA 4. The geotechnical work would focus on seismic, geologic, and soils hazards identified during the research conducted for Exhibit H as well as additional geotechnical desktop research.

The following feedback was received from DOGAMI:

- Jason (DOGAMI) indicated that earthquake data that might be more up to date than what is available from the USGS should be reviewed and included on the earthquake map. This would be DOGAMI data. He indicated that he would provide a link to the data (**Action Item**).
- Jason stated that the information, in general, looked good for what is required for Exhibit H. He made some recommendations on how to more easily distinguish between geologic features shown on one of the maps (i.e., use colors that are less similar).
- Jason asked how much of the planned geotechnical work that would be performed during the pre-construction phase would be desktop versus field work. Black & Veatch explained that it will be a mix of both and gave Jason examples of each.
- Jason also requested that the planned field locations for borings should be specific and connected to specific coordinates on the ground. Black & Veatch indicated the boring locations would be specified prior to the field work and each would be tied to specific recommended coordinates.

From: [MCCLAUGHRY Jason * DGMI](#)
To: [Miller, Rachel](#)
Cc: [Seilo, Paul](#); [Short, Kristy](#)
Subject: RE: DOGAMI earthquake epicenter data
Date: Tuesday, December 19, 2023 3:14:11 PM

CAUTION: This email originated from an external sender. Verify the source before opening links or attachments.

Hi Rachel:

Thanks for the email. We have been discussing this internally and trying to come to a best decision as our earthquake epicenters are not directly available as GIS files through HazVu. Our data is composited from a number of available sources (both recording stations, published literature, and gray literature) and also may not be necessarily completely up to date as of 2023. It also is not easily shareable. So, I think we have concluded that using the USGS referenced epicenters you showed is acceptable for your purpose. They generally characterize the hazard and are an accessible published resource. Ideally one might compile all available data from the regional recording stations but this could be a large task outside the scope of what you are doing. I hope this helps and please let us know if we can be of further assistance.

A majority of DOGAMI's historic earthquake data come from this paper. Wong, I.G., and Bott, J.D.J, 1995, A look back at Oregon's earthquake history, 1841-1994: Oregon Department of Geology and Mineral Industries, Oregon Geology, Vol. 57, no. 6, p. 125-139.

Best Regards,
Jason

Jason D. McClaughry, R.G.

Geological Survey and Services Program Manager

Oregon Department of Geology and Mineral Industries

Baker City | 1995 3rd Street, Suite 130 | Baker City, Oregon 97814

Portland | 800 NE Oregon Street, Suite 965 | Portland, Oregon 97232

Cell: (541) 519-3419

jason.mcclaughry@dogami.oregon.gov | www.oregon.gov/dogami

Unless otherwise indicated, all information in this correspondence is classified as Level 1, "Published" according to State of Oregon statute and administrative policy.

From: Miller, Rachel <rachel.miller@tetrattech.com>

Sent: Tuesday, December 19, 2023 1:05 PM

To: MCCLAUGHRY Jason * DGMI <Jason.MCCLAUGHRY@dogami.oregon.gov>

Cc: Seilo, Paul <PAUL.SEILO@tetrattech.com>; Short, Kristy <KRISTY.SHORT@tetrattech.com>

Subject: DOGAMI earthquake epicenter data

Importance: High

Hi Jason,

I know you must be busy. We need to wrap up an application to submit to ODOE ASAP. Can you

provide the link to download the specialized DOGAMI earthquake epicenter information ASAP?

FYI – we can view the information on HazVu, but all the links to download the data send our GIS staff back to the NEIC site for the USGS which is the source of the earthquake data we already have.

I will try to call later today.

Thanks,

Rachel Miller | Senior Geologist/Hydrogeologist P.G.

Mobile: 720-771-3452

rachel.miller@tetrattech.com

Tetra Tech, Inc. | Sciences

390 Union Boulevard, Suite 400 | Lakewood, CO 80228 | www.tetrattech.com

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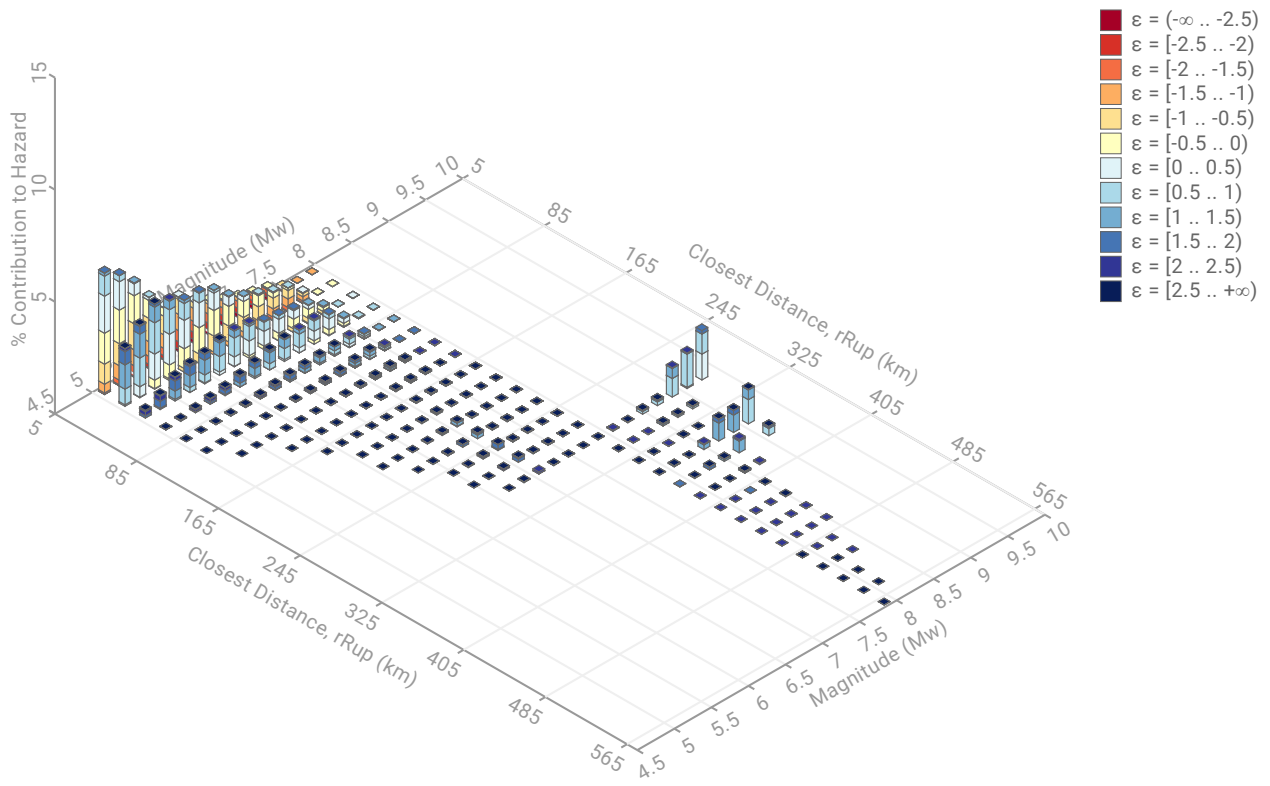
Think Green - Not every email needs to be printed.

**Attachment H-2.
Probabilistic Seismic Hazard
Disaggregation – 475-Year Return Time**

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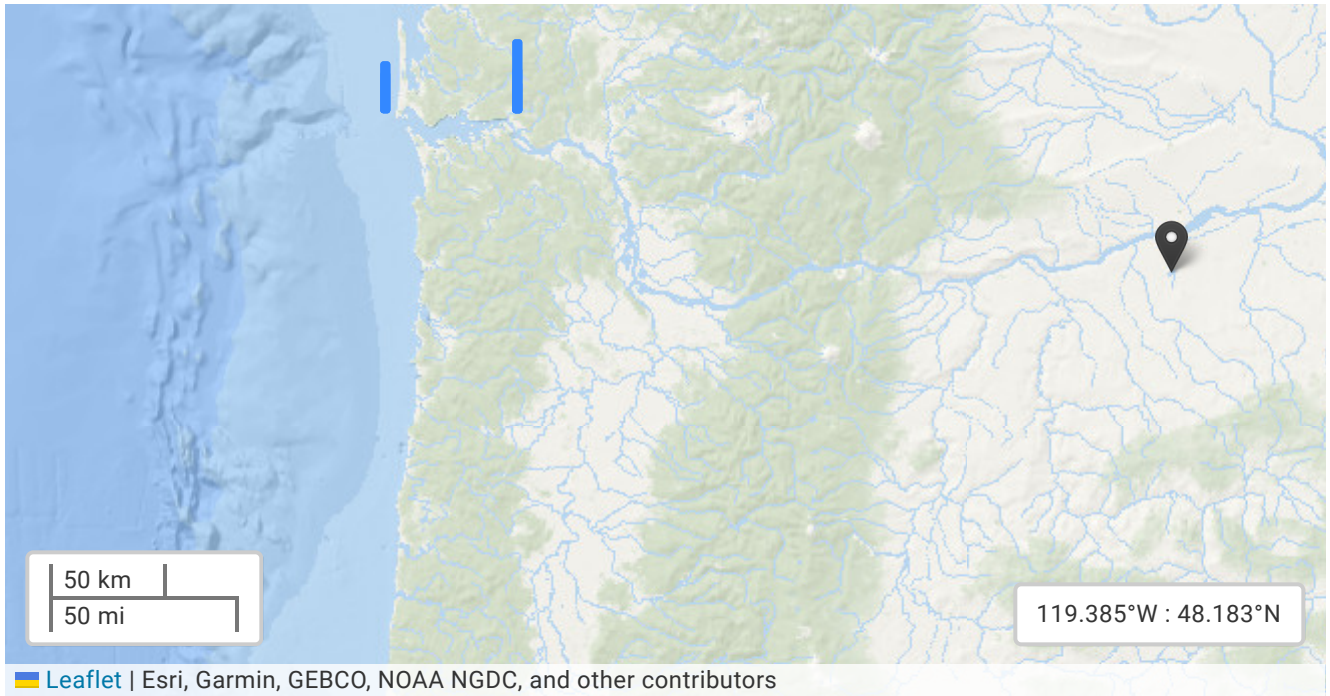
Disaggregation Report

Disaggregation



Geographical Disaggregation





Parameter Summary

Model: NSHM Conterminous U.S. 2018

Latitude: 45.684272°

Longitude: -119.815934°

Site Class: C (Vs30 530)

Intensity Measure Type: PGA

Return Period: 475 (10% in 50)

Component: Total

Disaggregation Summary

Disaggregation targets

Return period : 475 yrs

Exceedance rate : 2.105e-3 yr⁻¹

PGA ground motion : 8.355e-2 g

Totals

Binned : 100 %

Residual : 0 %

Trace : 0.92 %

Mode (largest m-r bin)

m : 5.1

r : 12.15 km

ε₀ : -0.07 σ

Contribution : 5.41 %

Discretization

r : min = 0.0, max = 1000.0, Δ = 20.0 km

m : min = 4.4, max = 9.4, Δ = 0.2

ε : min = -3.0, max = 3.0, Δ = 0.5 σ

Recovered targets

Return period : 472.85211 yrs

Exceedance rate : 2.115e-3 yr⁻¹

Mean (over all sources)

m : 6.44

r : 70.9 km

ε₀ : 0.17 σ

Mode (largest m-r-ε₀ bin)

m : 5.1

r : 14.23 km

ε₀ : 0.25 σ

Contribution : 1.65 %

Epsilon keys

ε0 : [-∞ .. -2.5)

ε1 : [-2.5 .. -2.0)

ε2 : [-2.0 .. -1.5)

ε3 : [-1.5 .. -1.0)

ε4 : [-1.0 .. -0.5)

ε5 : [-0.5 .. 0.0)

ε6 : [0.0 .. 0.5)

ε7 : [0.5 .. 1.0)

ε8 : [1.0 .. 1.5)

ε9 : [1.5 .. 2.0)

ε10 : [2.0 .. 2.5)

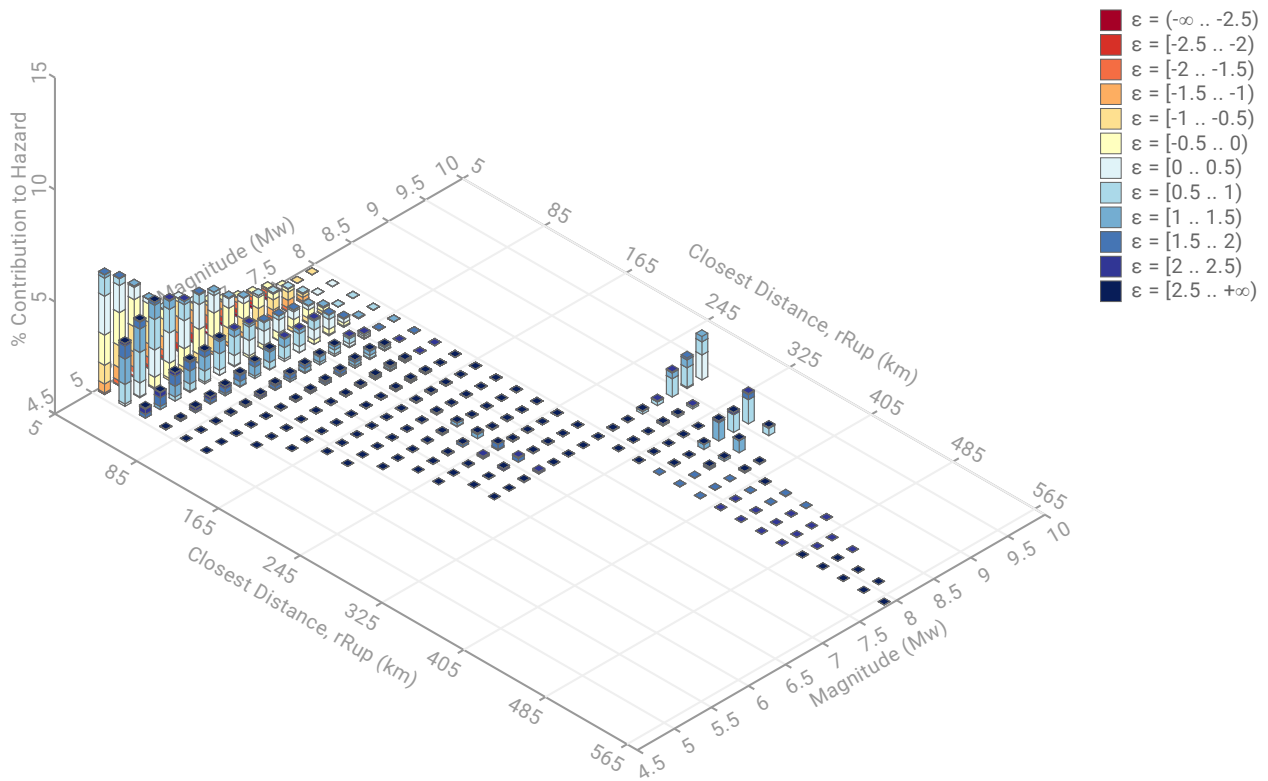
ε11 : [2.5 .. +∞]

Disaggregation Contributions

Source Set	Source	Type	r	m	ϵ_0	lon	lat	az	%
	Compressional - WA,OR (fixed) (opt)	Grid							26.67
	Compressional - No Puget (fixed) (opt)	Grid							26.67
	Compressional - No Puget (adaptive) (opt)	Grid							15.45
	Compressional - WA,OR (adaptive) (opt)	Grid							15.4
	Cascadia (full, bottom)	Interface							4.9
	Cascadia (full, bottom)		289.03	9.12	0.64	123.413°W	46.300°N	285.13	4.9
	Cascadia (full, middle)	Interface							3.32
	Cascadia (full, middle)		342.18	8.93	1.09	124.137°W	46.300°N	283.14	3.32
	WA Intraslab	Slab							1.49

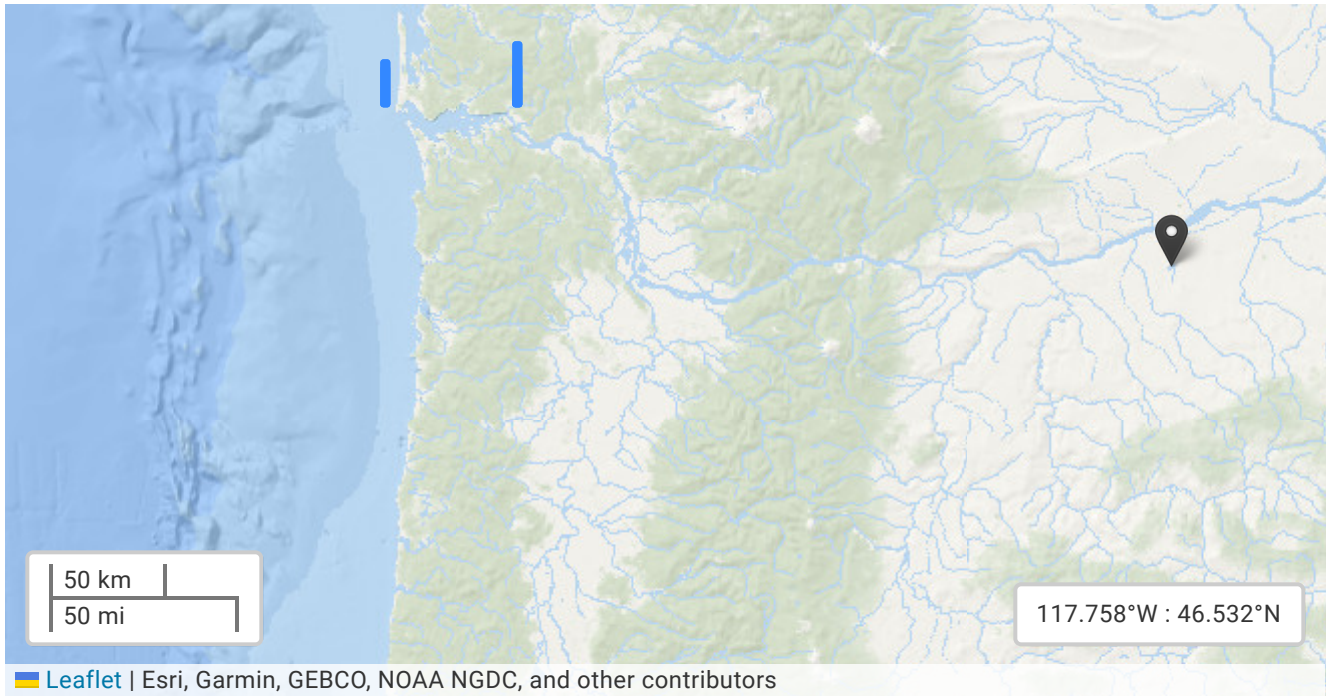
Disaggregation Report

Disaggregation



Geographical Disaggregation





Parameter Summary

Model: NSHM Conterminous U.S. 2018

Latitude: 45.684272°

Longitude: -119.815934°

Site Class: D (Vs30 260)

Intensity Measure Type: PGA

Return Period: 475 (10% in 50)

Component: Total

Disaggregation Summary

Disaggregation targets

Return period : 475 yrs

Exceedance rate : 2.105e-3 yr⁻¹

PGA ground motion : 1.069e-1 g

Totals

Binned : 100 %

Residual : 0 %

Trace : 1 %

Mode (largest m-r bin)

m : 5.1

r : 12.22 km

ε₀ : -0.07 σ

Contribution : 5.34 %

Discretization

r : min = 0.0, max = 1000.0, Δ = 20.0 km

m : min = 4.4, max = 9.4, Δ = 0.2

ε : min = -3.0, max = 3.0, Δ = 0.5 σ

Recovered targets

Return period : 470.1083 yrs

Exceedance rate : 2.127e-3 yr⁻¹

Mean (over all sources)

m : 6.4

r : 68.72 km

ε₀ : 0.2 σ

Mode (largest m-r-ε₀ bin)

m : 5.1

r : 14.29 km

ε₀ : 0.24 σ

Contribution : 1.73 %

Epsilon keys

ε0 : [-∞ .. -2.5)

ε1 : [-2.5 .. -2.0)

ε2 : [-2.0 .. -1.5)

ε3 : [-1.5 .. -1.0)

ε4 : [-1.0 .. -0.5)

ε5 : [-0.5 .. 0.0)

ε6 : [0.0 .. 0.5)

ε7 : [0.5 .. 1.0)

ε8 : [1.0 .. 1.5)

ε9 : [1.5 .. 2.0)

ε10 : [2.0 .. 2.5)

ε11 : [2.5 .. +∞]

Disaggregation Contributions

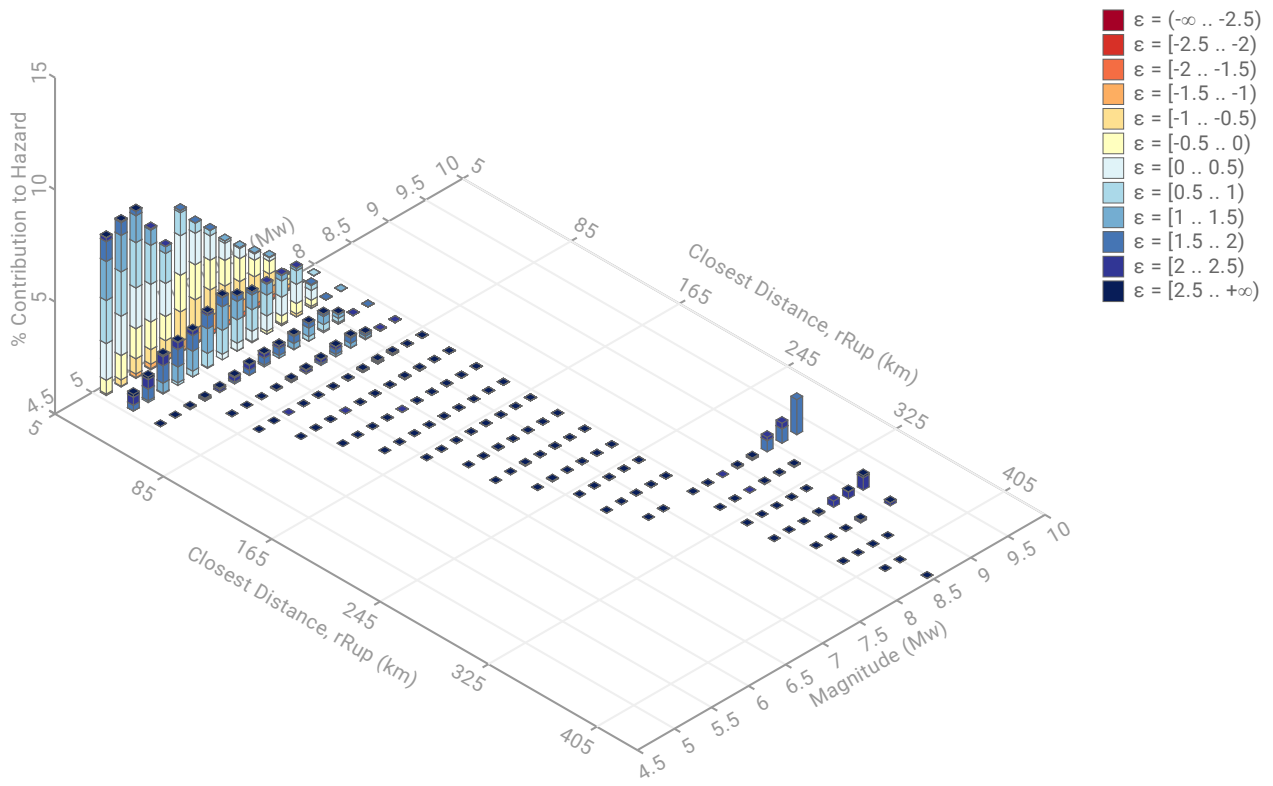
Source Set	Source	Type	r	m	ϵ_0	lon	lat	az	%
	Compressional - WA,OR (fixed) (opt)	Grid							26.99
	Compressional - No Puget (fixed) (opt)	Grid							26.98
	Compressional - No Puget (adaptive) (opt)	Grid							15.68
	Compressional - WA,OR (adaptive) (opt)	Grid							15.63
	Cascadia (full, bottom)	Interface							4.26
	Cascadia (full, bottom)		289.03	9.12	0.74	123.413°W	46.300°N	285.13	4.26
	Cascadia (full, middle)	Interface							2.98
	Cascadia (full, middle)		342.18	8.92	1.08	124.137°W	46.300°N	283.14	2.98
	WA Intraslab	Slab							1.54

**Attachment H-3.
Probabilistic Seismic Hazard
Disaggregation – 2,475-Year Return Time**

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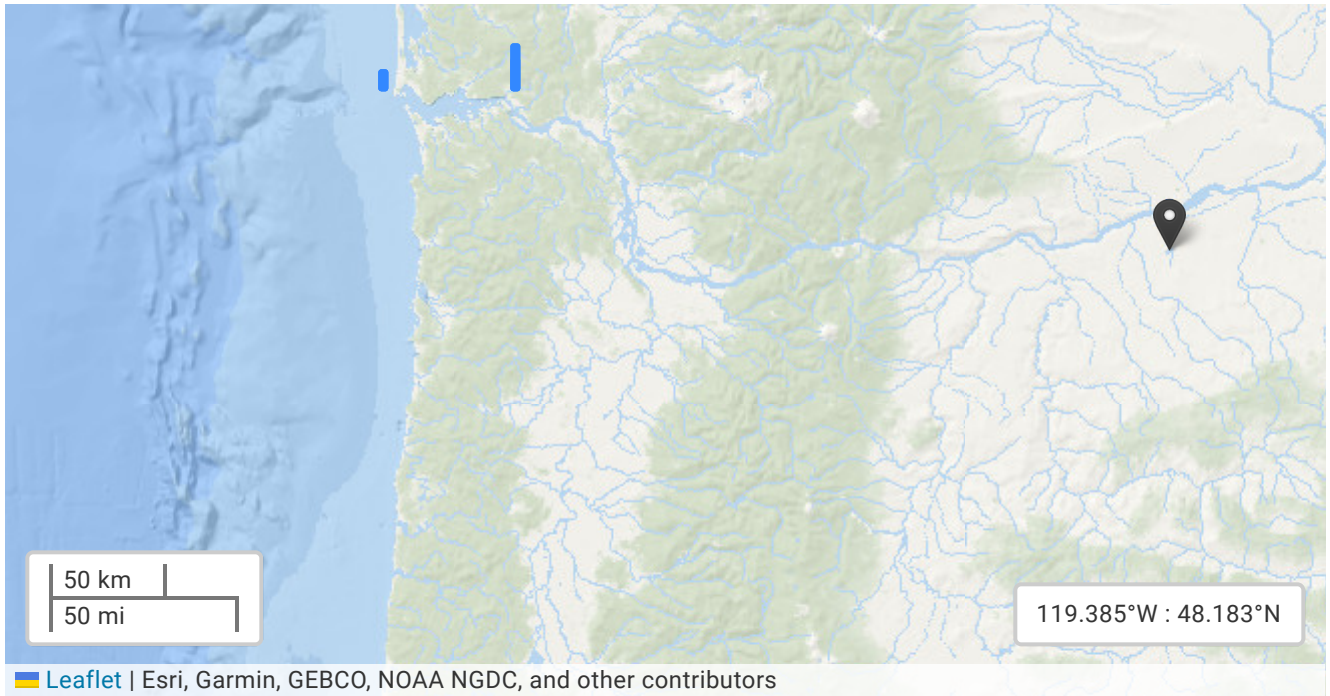
Disaggregation Report

Disaggregation



Geographical Disaggregation





Parameter Summary

Model: NSHM Conterminous U.S. 2018

Latitude: 45.684272°

Longitude: -119.815934°

Site Class: C (Vs30 530)

Intensity Measure Type: PGA

Return Period: 2475 (2% in 50)

Component: Total

Disaggregation Summary

Disaggregation targets

Return period : 2475 yrs

Exceedance rate : 4.040e-4 yr⁻¹

PGA ground motion : 2.066e-1 g

Totals

Binned : 100 %

Residual : 0 %

Trace : 0.49 %

Mode (largest m-r bin)

m : 5.5

r : 11.42 km

ε₀ : 0.37 σ

Contribution : 7.46 %

Discretization

r : min = 0.0, max = 1000.0, Δ = 20.0 km

m : min = 4.4, max = 9.4, Δ = 0.2

ε : min = -3.0, max = 3.0, Δ = 0.5 σ

Recovered targets

Return period : 2469.649 yrs

Exceedance rate : 4.049e-4 yr⁻¹

Mean (over all sources)

m : 6.31

r : 34.18 km

ε₀ : 0.53 σ

Mode (largest m-r-ε₀ bin)

m : 5.5

r : 13.3 km

ε₀ : 0.74 σ

Contribution : 2.02 %

Epsilon keys

ε0 : [-∞ .. -2.5)

ε1 : [-2.5 .. -2.0)

ε2 : [-2.0 .. -1.5)

ε3 : [-1.5 .. -1.0)

ε4 : [-1.0 .. -0.5)

ε5 : [-0.5 .. 0.0)

ε6 : [0.0 .. 0.5)

ε7 : [0.5 .. 1.0)

ε8 : [1.0 .. 1.5)

ε9 : [1.5 .. 2.0)

ε10 : [2.0 .. 2.5)

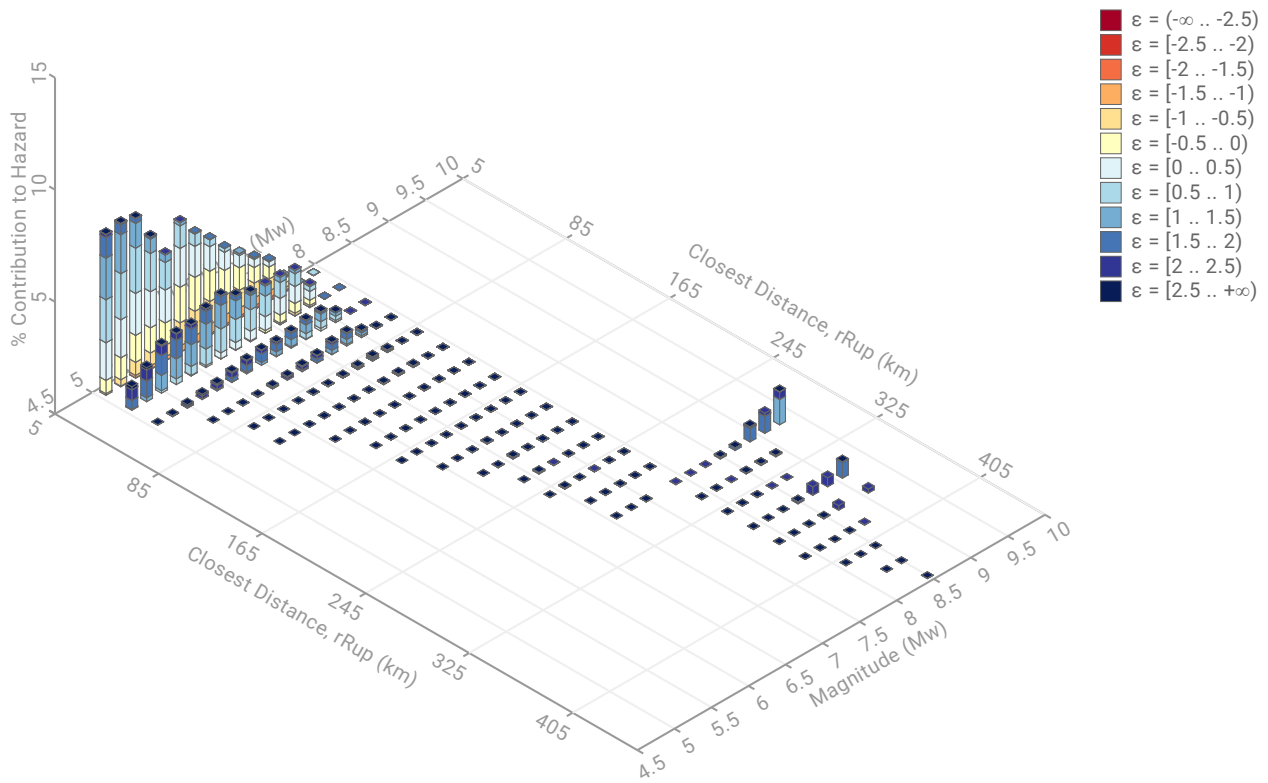
ε11 : [2.5 .. +∞]

Disaggregation Contributions

Source Set	Source	Type	r	m	ϵ_0	lon	lat	az	%
Compressional - WA,OR (fixed) (opt)		Grid							30.23
	PointSourceFinite: -119.816, 45.779		10.98	5.87	0.13	119.816°W	45.779°N	0.00	1.23
	PointSourceFinite: -119.816, 45.752		8.84	5.77	-0.12	119.816°W	45.752°N	0.00	1.18
	PointSourceFinite: -119.816, 45.797		12.45	5.93	0.26	119.816°W	45.797°N	0.00	1.17
	PointSourceFinite: -119.816, 45.770		10.27	5.82	0.03	119.816°W	45.770°N	0.00	1.15
	PointSourceFinite: -119.816, 45.761		9.55	5.79	-0.05	119.816°W	45.761°N	0.00	1.15
	PointSourceFinite: -119.816, 45.734		7.49	5.71	-0.29	119.816°W	45.734°N	0.00	1.11
	PointSourceFinite: -119.816, 45.788		11.71	5.90	0.20	119.816°W	45.788°N	0.00	1.11
	PointSourceFinite: -119.816, 45.815		13.93	6.00	0.37	119.816°W	45.815°N	0.00	1.06
	PointSourceFinite: -119.816, 45.806		13.19	5.97	0.31	119.816°W	45.806°N	0.00	1.04
	PointSourceFinite: -119.816, 45.743		8.15	5.74	-0.20	119.816°W	45.743°N	0.00	1.03
Compressional - No Puget (fixed) (opt)		Grid							30.23
	PointSourceFinite: -119.816, 45.779		10.98	5.87	0.13	119.816°W	45.779°N	0.00	1.23
	PointSourceFinite: -119.816, 45.752		8.84	5.77	-0.12	119.816°W	45.752°N	0.00	1.18
	PointSourceFinite: -119.816, 45.797		12.45	5.93	0.26	119.816°W	45.797°N	0.00	1.17
	PointSourceFinite: -119.816, 45.770		10.27	5.82	0.03	119.816°W	45.770°N	0.00	1.15
	PointSourceFinite: -119.816, 45.761		9.55	5.79	-0.05	119.816°W	45.761°N	0.00	1.15
	PointSourceFinite: -119.816, 45.734		7.49	5.71	-0.29	119.816°W	45.734°N	0.00	1.11
	PointSourceFinite: -119.816, 45.788		11.71	5.90	0.20	119.816°W	45.788°N	0.00	1.11
	PointSourceFinite: -119.816, 45.815		13.93	6.00	0.37	119.816°W	45.815°N	0.00	1.06
	PointSourceFinite: -119.816, 45.806		13.19	5.97	0.31	119.816°W	45.806°N	0.00	1.04
	PointSourceFinite: -119.816, 45.743		8.15	5.74	-0.20	119.816°W	45.743°N	0.00	1.03
Compressional - No Puget (adaptive) (opt)		Grid							16.73
Compressional - WA,OR (adaptive) (opt)		Grid							16.68
Cascadia (full, bottom)		Interface							2.99
	Cascadia (full, bottom)		289.03	9.15	1.75	123.413°W	46.300°N	285.13	2.99
Cascadia (full, middle)		Interface							1.16
	Cascadia (full, middle)		342.18	8.96	2.17	124.137°W	46.300°N	283.14	1.16

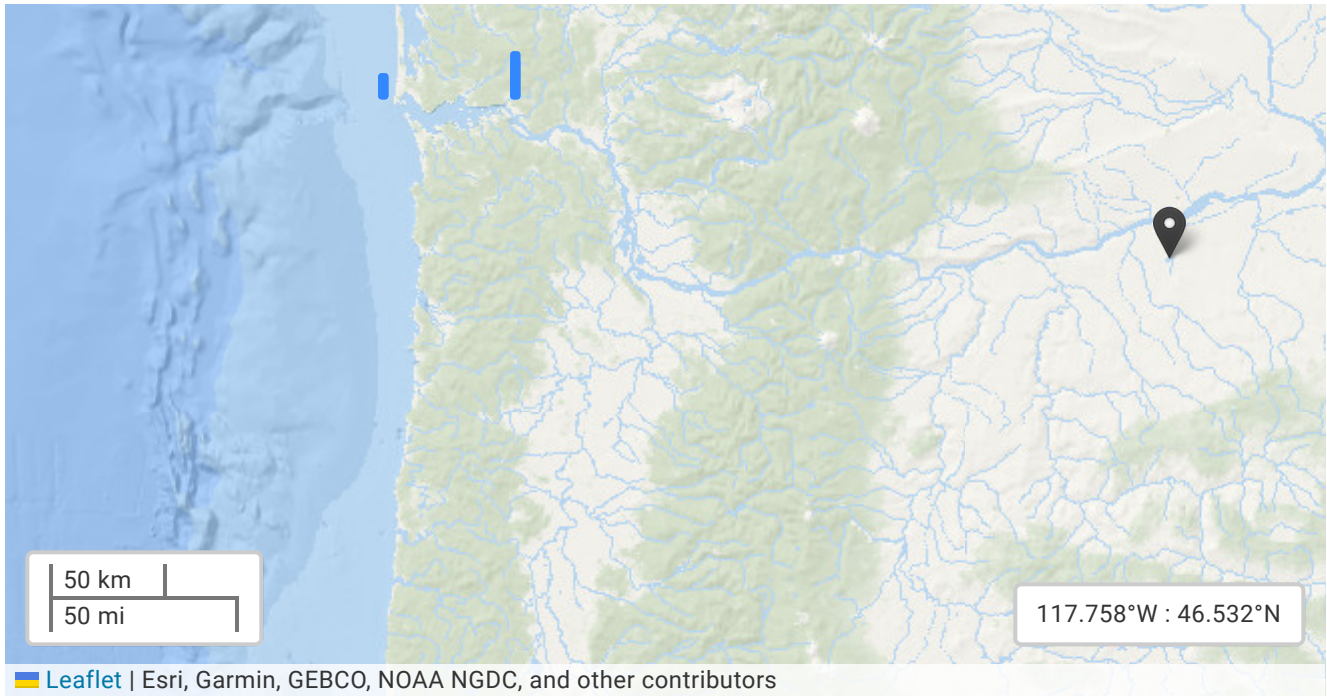
Disaggregation Report

Disaggregation



Geographical Disaggregation





Parameter Summary

Model: NSHM Conterminous U.S. 2018

Latitude: 45.684272°

Longitude: -119.815934°

Site Class: D (Vs30 260)

Intensity Measure Type: PGA

Return Period: 2475 (2% in 50)

Component: Total

Disaggregation Summary

Disaggregation targets

Return period : 2475 yrs

Exceedance rate : 4.040e-4 yr⁻¹

PGA ground motion : 2.454e-1 g

Totals

Binned : 100 %

Residual : 0 %

Trace : 0.51 %

Mode (largest m-r bin)

m : 5.3

r : 11.1 km

ε₀ : 0.62 σ

Contribution : 7.28 %

Discretization

r : min = 0.0, max = 1000.0, Δ = 20.0 km

m : min = 4.4, max = 9.4, Δ = 0.2

ε : min = -3.0, max = 3.0, Δ = 0.5 σ

Recovered targets

Return period : 2431.9142 yrs

Exceedance rate : 4.112e-4 yr⁻¹

Mean (over all sources)

m : 6.3

r : 37.43 km

ε₀ : 0.63 σ

Mode (largest m-r-ε₀ bin)

m : 5.3

r : 11.4 km

ε₀ : 0.75 σ

Contribution : 2.06 %

Epsilon keys

ε0 : [-∞ .. -2.5)

ε1 : [-2.5 .. -2.0)

ε2 : [-2.0 .. -1.5)

ε3 : [-1.5 .. -1.0)

ε4 : [-1.0 .. -0.5)

ε5 : [-0.5 .. 0.0)

ε6 : [0.0 .. 0.5)

ε7 : [0.5 .. 1.0)

ε8 : [1.0 .. 1.5)

ε9 : [1.5 .. 2.0)

ε10 : [2.0 .. 2.5)

ε11 : [2.5 .. +∞]

Disaggregation Contributions

Source Set	Source	Type	r	m	ϵ_0	lon	lat	az	%
Compressional - WA,OR (fixed) (opt)		Grid							29.93
	PointSourceFinite: -119.816, 45.779		11.01	5.84	0.21	119.816°W	45.779°N	0.00	1.16
	PointSourceFinite: -119.816, 45.797		12.51	5.90	0.33	119.816°W	45.797°N	0.00	1.11
	PointSourceFinite: -119.816, 45.752		8.85	5.75	-0.05	119.816°W	45.752°N	0.00	1.1
	PointSourceFinite: -119.816, 45.770		10.29	5.81	0.09	119.816°W	45.770°N	0.00	1.08
	PointSourceFinite: -119.816, 45.761		9.56	5.78	0.02	119.816°W	45.761°N	0.00	1.08
	PointSourceFinite: -119.816, 45.788		11.75	5.87	0.27	119.816°W	45.788°N	0.00	1.05
	PointSourceFinite: -119.816, 45.815		14.03	5.96	0.44	119.816°W	45.815°N	0.00	1.03
	PointSourceFinite: -119.816, 45.734		7.49	5.71	-0.20	119.816°W	45.734°N	0.00	1.02
Compressional - No Puget (fixed) (opt)		Grid							29.93
	PointSourceFinite: -119.816, 45.779		11.01	5.84	0.21	119.816°W	45.779°N	0.00	1.16
	PointSourceFinite: -119.816, 45.797		12.51	5.90	0.33	119.816°W	45.797°N	0.00	1.11
	PointSourceFinite: -119.816, 45.752		8.85	5.75	-0.05	119.816°W	45.752°N	0.00	1.1
	PointSourceFinite: -119.816, 45.770		10.29	5.81	0.09	119.816°W	45.770°N	0.00	1.08
	PointSourceFinite: -119.816, 45.761		9.56	5.78	0.02	119.816°W	45.761°N	0.00	1.08
	PointSourceFinite: -119.816, 45.788		11.75	5.87	0.27	119.816°W	45.788°N	0.00	1.05
	PointSourceFinite: -119.816, 45.815		14.03	5.96	0.44	119.816°W	45.815°N	0.00	1.03
	PointSourceFinite: -119.816, 45.734		7.49	5.71	-0.20	119.816°W	45.734°N	0.00	1.02
Compressional - No Puget (adaptive) (opt)		Grid							16.62
Compressional - WA,OR (adaptive) (opt)		Grid							16.57
Cascadia (full, bottom)		Interface							2.93
	Cascadia (full, bottom)		289.03	9.14	1.69	123.413°W	46.300°N	285.13	2.93
Cascadia (full, middle)		Interface							1.44
	Cascadia (full, middle)		342.18	8.94	2.05	124.137°W	46.300°N	283.14	1.44

**Attachment H-4.
Response Spectrum – Site Class D “Stiff
Soil”**

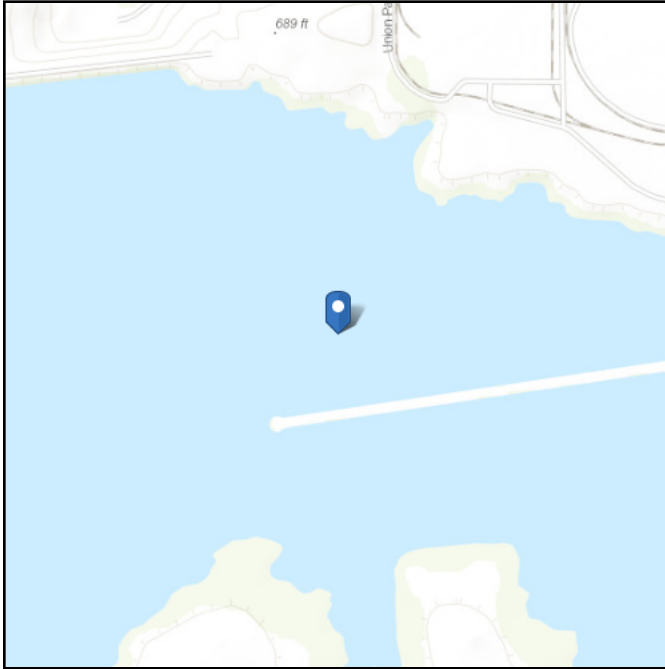
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ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-22
Risk Category: I
Soil Class: D - Stiff Soil

Latitude: 45.686752
Longitude: -119.812256
Elevation: 670.1699919408459 ft
(NAVD 88)

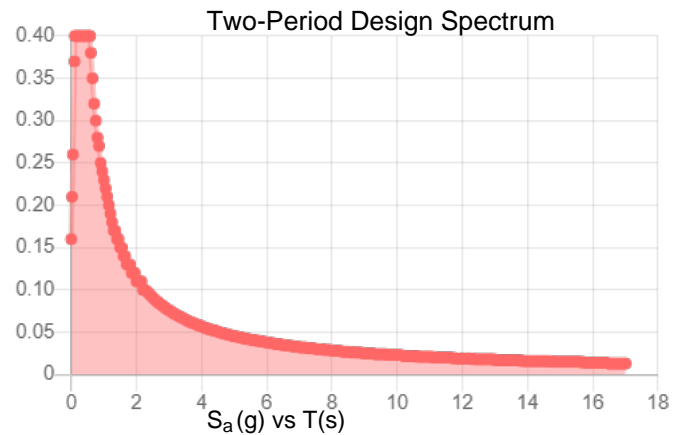
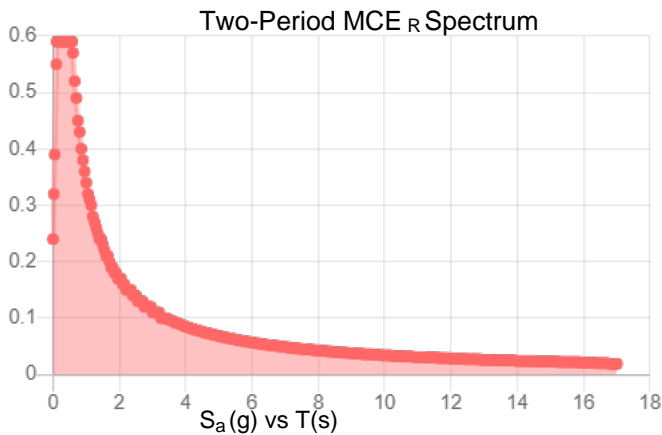
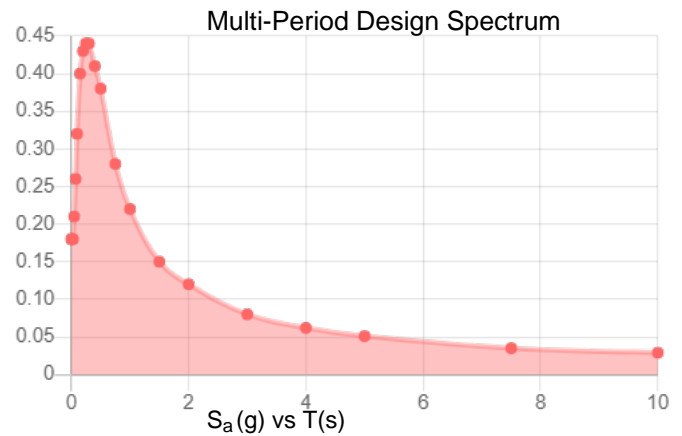
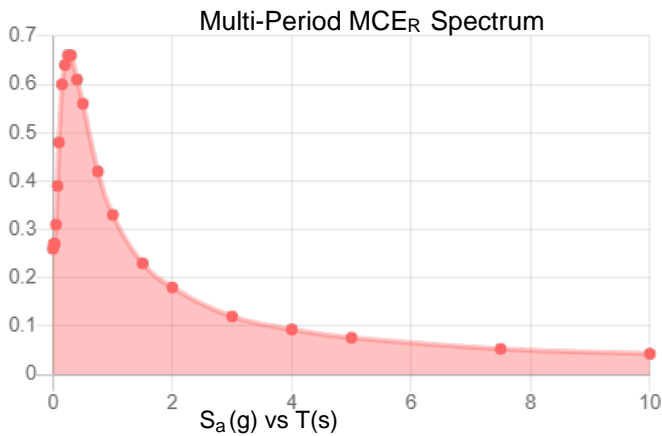


Site Soil Class:

Results:

PGA _M :	0.25	T _L :	16
S _{MS} :	0.59	S _s :	0.43
S _{M1} :	0.34	S ₁ :	0.13
S _{DS} :	0.4	V _{S30} :	260
S _{D1} :	0.23		

Seismic Design Category: D



MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.



Data Accessed: Wed Aug 30 2023

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

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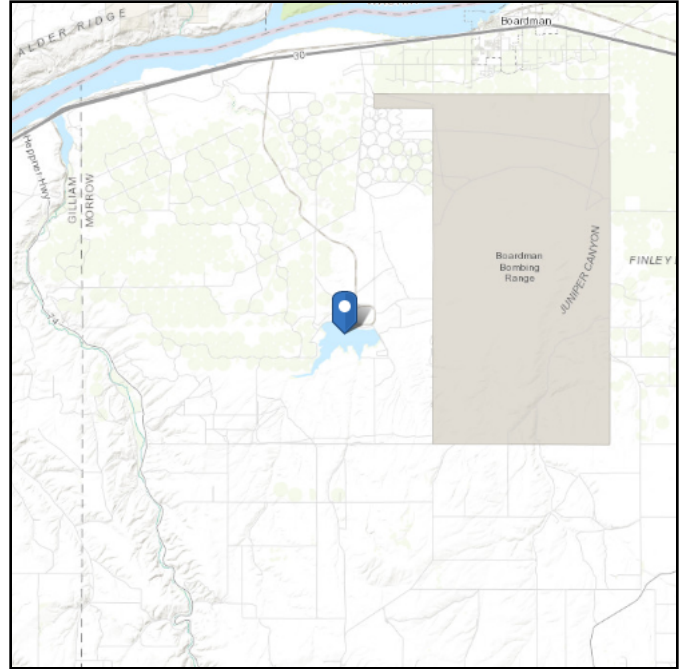
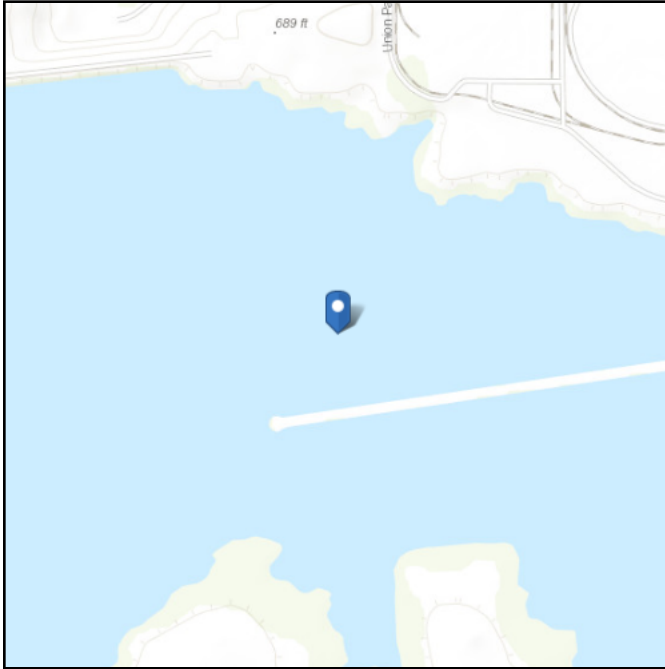
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ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-22
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 45.686752
Longitude: -119.812256
Elevation: 670.1699919408459 ft
(NAVD 88)

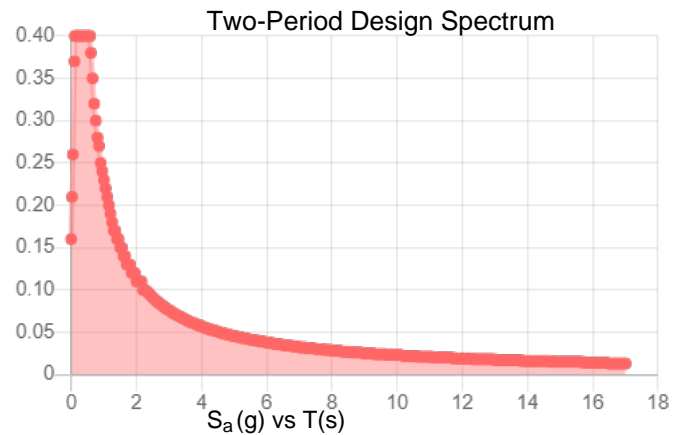
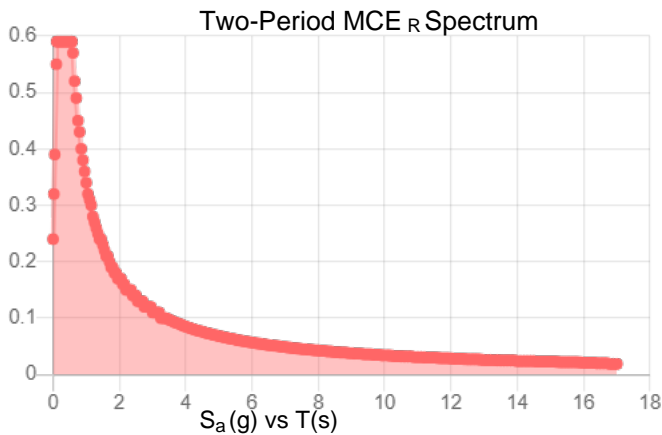
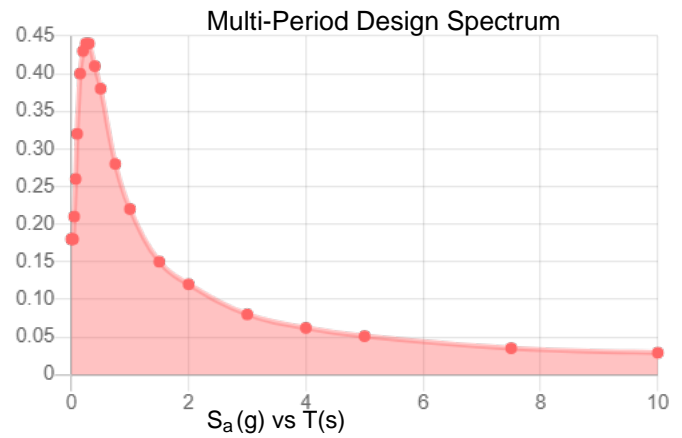
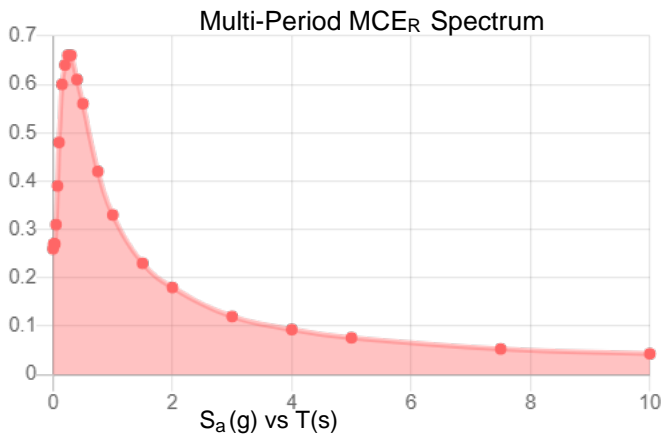


Site Soil Class:

Results:

PGA _M :	0.25	T _L :	16
S _{MS} :	0.59	S _s :	0.43
S _{M1} :	0.34	S ₁ :	0.13
S _{DS} :	0.4	V _{S30} :	260
S _{D1} :	0.23		

Seismic Design Category: D



MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.



Data Accessed: Wed Aug 30 2023

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

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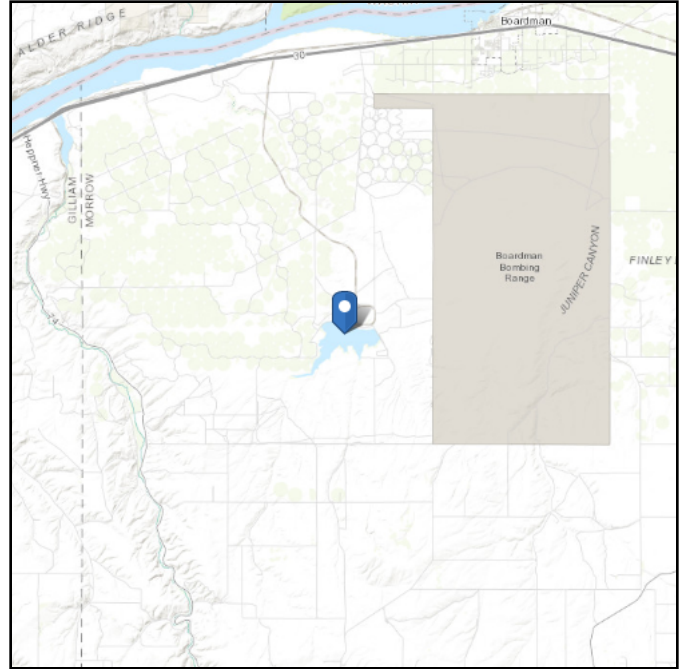
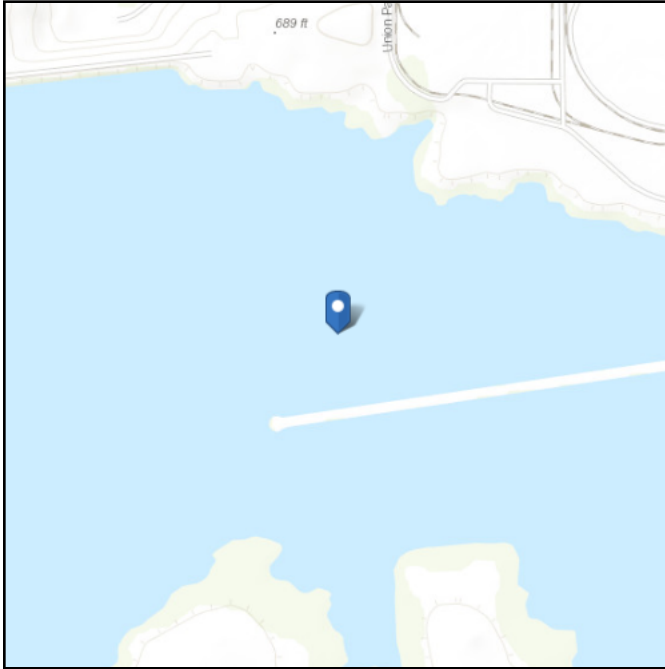
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ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-22
Risk Category: III
Soil Class: D - Stiff Soil

Latitude: 45.686752
Longitude: -119.812256
Elevation: 670.1699919408459 ft
(NAVD 88)

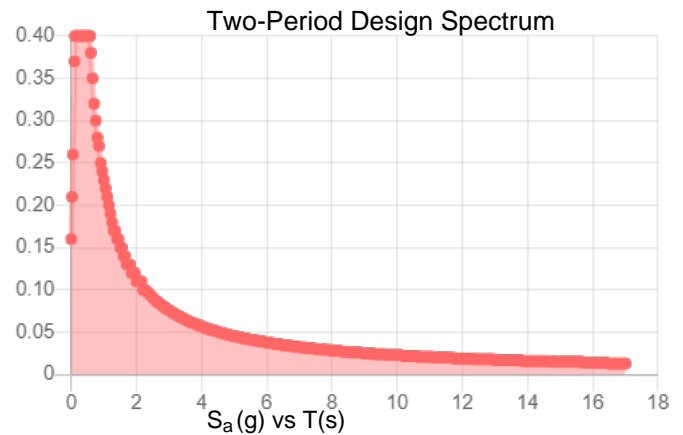
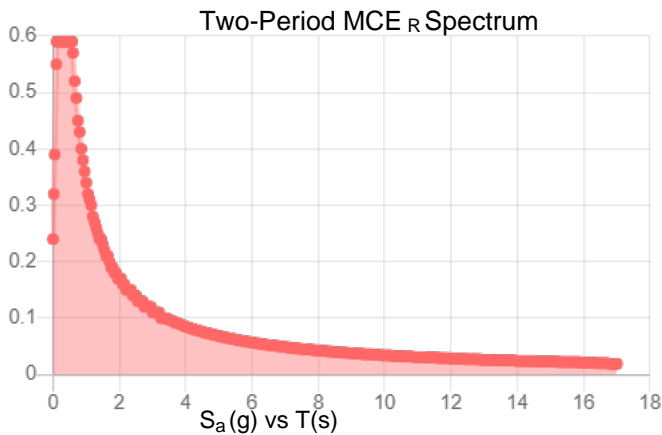
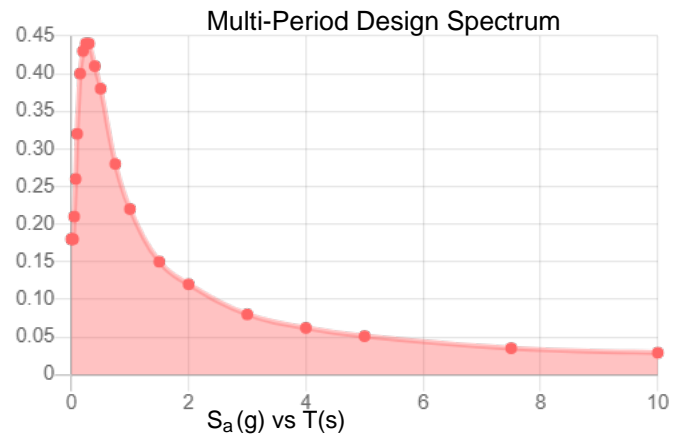
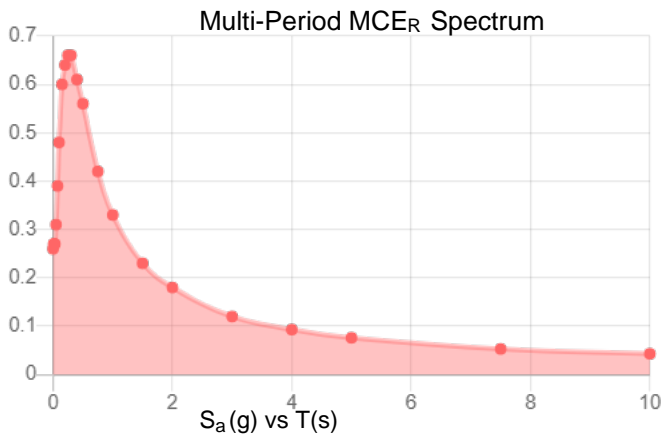


Site Soil Class:

Results:

PGA _M :	0.25	T _L :	16
S _{MS} :	0.59	S _s :	0.43
S _{M1} :	0.34	S ₁ :	0.13
S _{DS} :	0.4	V _{S30} :	260
S _{D1} :	0.23		

Seismic Design Category: D



MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.



Data Accessed: Wed Aug 30 2023

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

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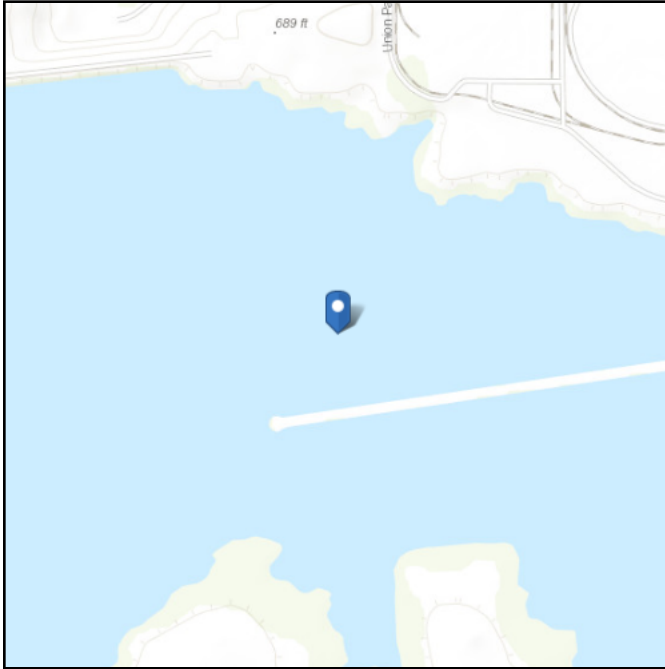
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ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-22
Risk Category: IV
Soil Class: D - Stiff Soil

Latitude: 45.686752
Longitude: -119.812256
Elevation: 670.1699919408459 ft
(NAVD 88)

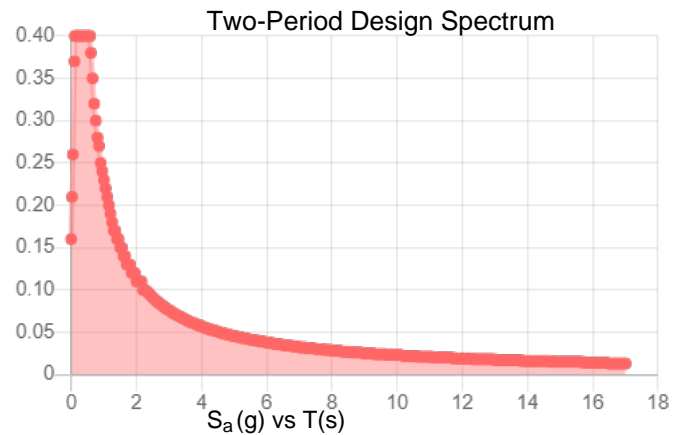
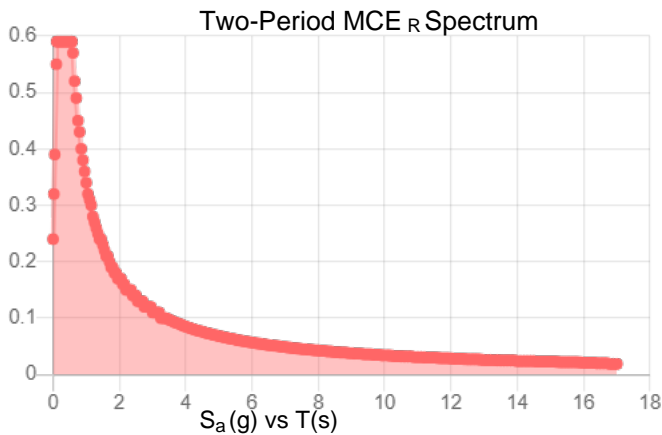
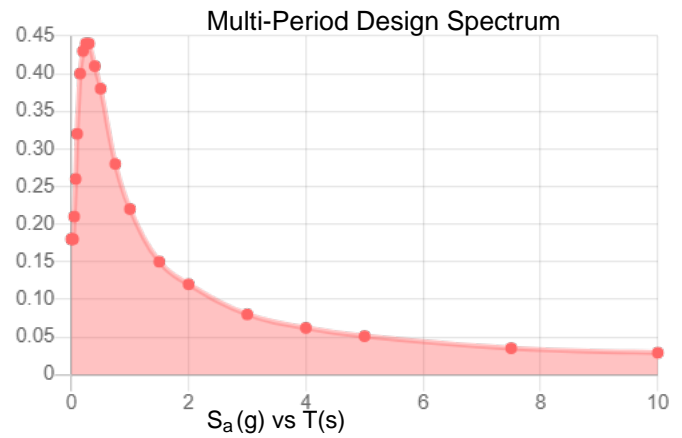
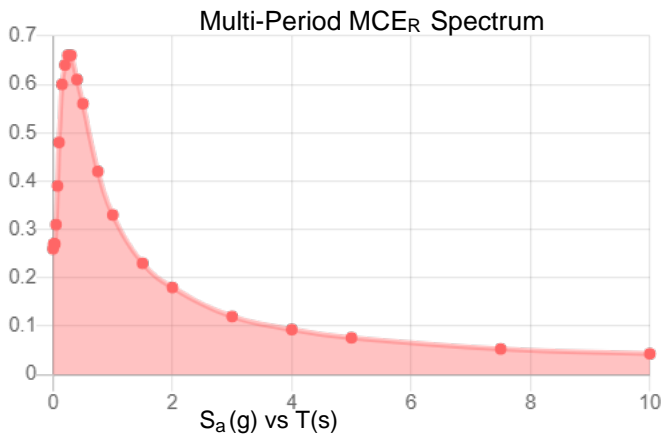


Site Soil Class:

Results:

PGA _M :	0.25	T _L :	16
S _{MS} :	0.59	S _s :	0.43
S _{M1} :	0.34	S ₁ :	0.13
S _{DS} :	0.4	V _{S30} :	260
S _{D1} :	0.23		

Seismic Design Category: D



MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.



Data Accessed: Wed Aug 30 2023

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

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Exhibit I

Soil Conditions

Carty Generating Station
February 2024

Prepared for



Portland General Electric Company

Prepared by



TETRA TECH

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Attachment I-1. Draft Erosion and Sediment Control Plan

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

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 500 megawatts (MW) of electrical power. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and includes the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm) on 315 acres (0.49 sq. miles) located south of the Carty Reservoir.

In RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW alternating current (AC) of nominal and average generating capacity by expanding into areas formerly used for PGE's Boardman Coal Plant and maximizing the buildable area southeast of Carty Reservoir, and adding a battery energy storage system (BESS) to the Facility. The Certificate Holder proposes the 185 MW of solar generation as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. Thus, the overall changes proposed with RFA 4 (including the BESS) are referred to throughout this request as the Amended 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)].

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

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 (K_w 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.

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.

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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 Revegetation and Noxious Weed Control Plan (Exhibit P, Attachment P-3) (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 Amended Carty Solar Farm is expected to 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 Amended Revegetation and Noxious Weed Control Plan (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 Amended Revegetation and Noxious Weed Control Plan (Exhibit P, Attachment P-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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Carty Generating Station Request for Amendment 4

Figure I-1 NRCS Soil Map

MORROW COUNTY, OR











 Amended Site Boundary

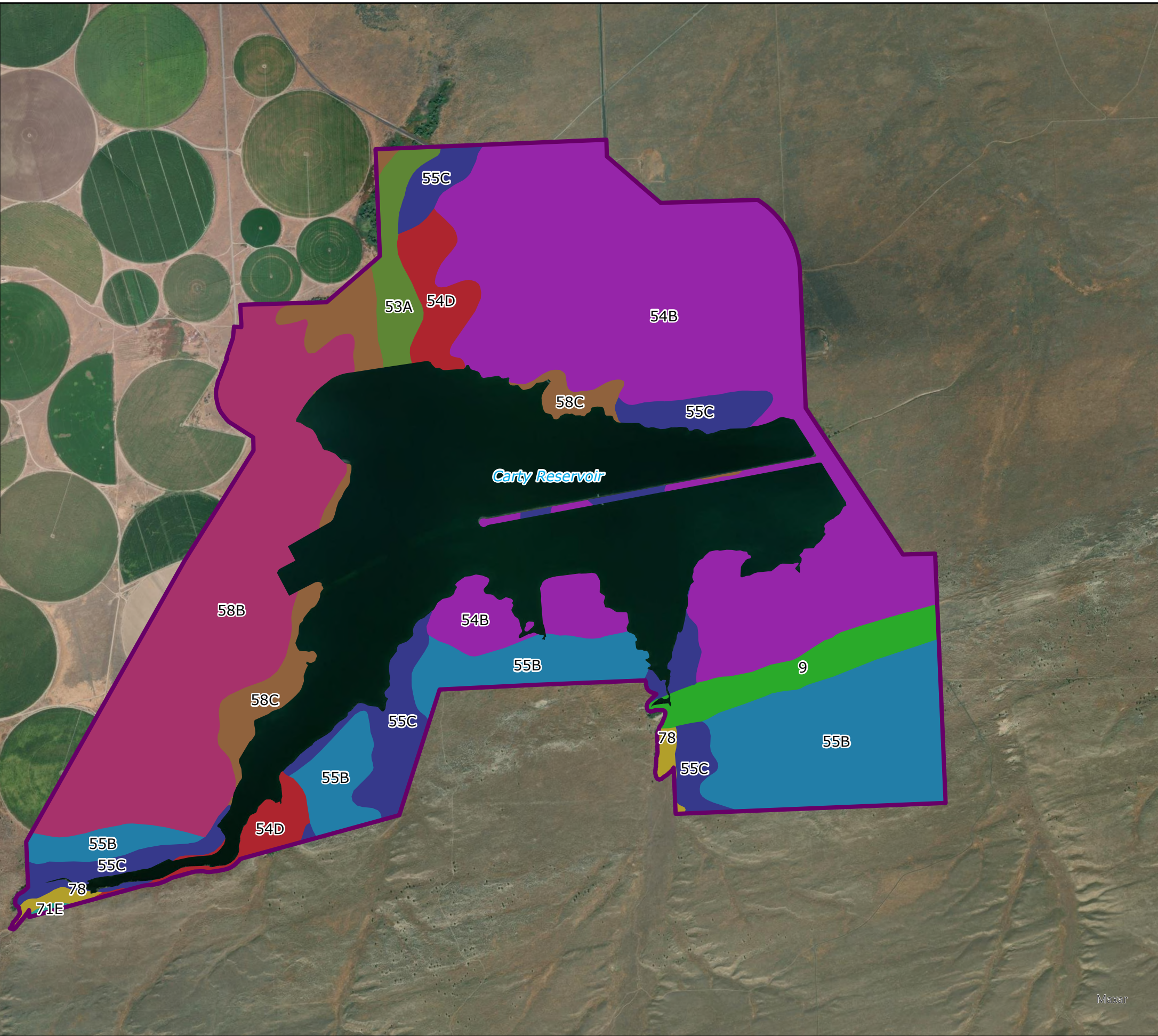


Reference Map



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

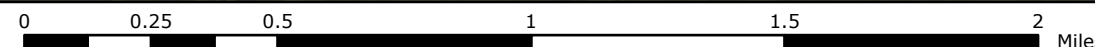


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







NOT FOR CONSTRUCTION

Carty Generating Station Request for Amendment 4

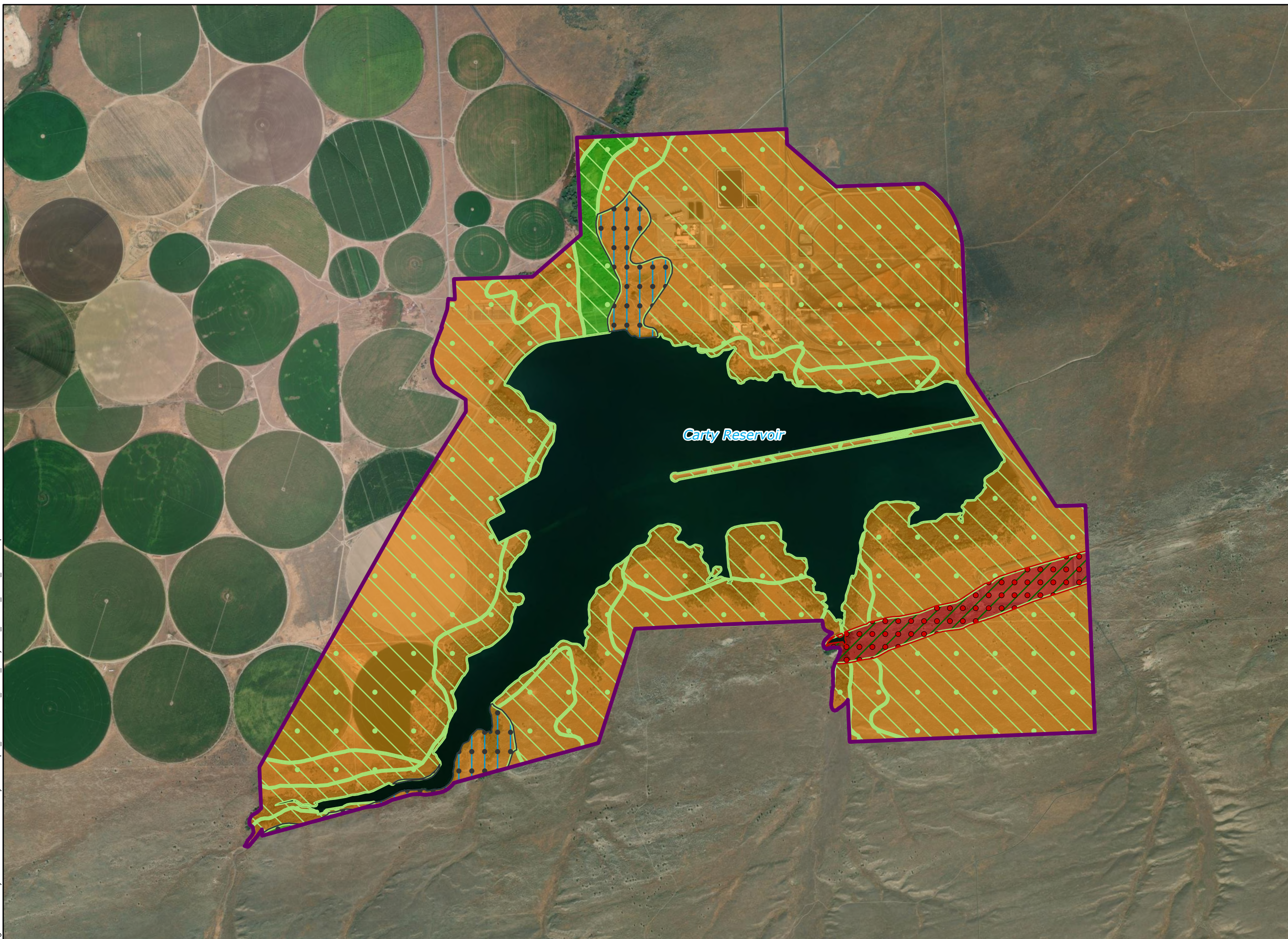
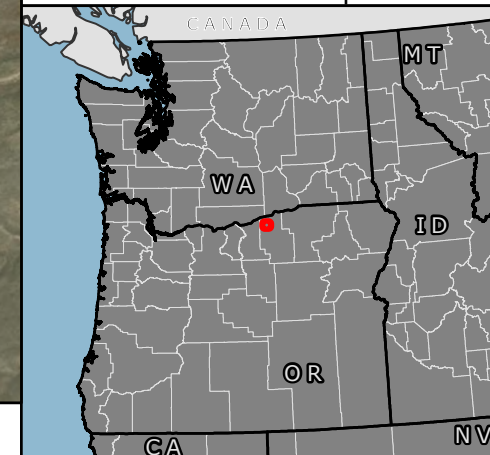
Figure I-2 Sensitive Soils

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

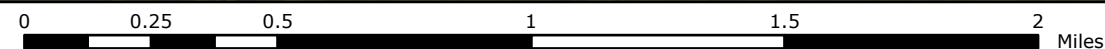


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NOT FOR CONSTRUCTION

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

1750 S. HARBOR WAY, STE. 400
PORTLAND, OR 97201
(503) 221-8636



www.tetratech.com

STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES:

- 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))
- All inspections must be made in accordance with DEQ 1200-C permit requirements.
- Inspection logs must be kept in accordance with DEQ's 1200-C permit requirements.
- 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)
- 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)
- 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))
- 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)
- Phase clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion. (Schedule A.8.c.i.(1)(d))
- Identify, mark, and protect (by fencing off or other means) critical riparian areas and vegetation including important trees and associated rootling 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))
- 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))
- Maintain and delineate any existing natural buffer within the 50-foot of water of the state. (Schedule A.7.B.I.AND (2)(a)(b))
- 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)
- Establish concrete truck and other concrete equipment washout areas before beginning concrete work. (Schedule A.8.c.i.(6))
- 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))
- Establish material and waste storage areas, and other non-stormwater controls. (Schedule A.8.c.i.(7))
- Prevent tracking of sediment onto public or private roads using BMPs such as: gravelled (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))
- When trucking saturated soils from the site, either use water-tight trucks or drain loads on site. (Schedule A.7.d.ii.(3))
- 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))
- 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.)
- Use water, soil-binding agent or other dust control technique as needed to avoid wind-blown soil. (Schedule A.7.b.i)
- 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)
- 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)
- Temporarily 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.a)
- 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))
- Construction activities must avoid or minimize excavation and creation of bare ground during wet weather. (Schedule A.7.a.i)
- 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)
- Other sediment barriers (such as bio-bags): remove sediment before it reaches two inches depth above ground height, and before BMP removal. (Schedule A.9.c.ii)
- 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)
- Within 24 hours, significant sediment that has left the construction site, must be remediated. Investigate the cause of the sediment release and implement steps to prevent a recurrence 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)
- 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)
- 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)
- 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)
- 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 AND 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: APPROXIMATELY 903.6 ACRES
POTENTIAL MAX DISTURBED AREA: 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:

- OWNER OR DESIGNATED PERSON SHALL BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
- 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.
- 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.
- 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.
- ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE DISCHARGED OVER AN UNDISTURBED, PREFERABLY VEGETATED AREA, AND THROUGH A SEDIMENT CONTROL BMP (E. FILTER BAG).
- THE ESC PLAN MUST BE 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.
- 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.
- 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.
- ENSURE ALL SOILS ARE STABLE DURING ALL RAIN EVENTS THROUGHOUT THE YEAR.

SHEET INDEX

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ESC-11	EROSION AND SEDIMENT CONTROL PLAN SHEET 10 OF 12
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ESC-15	EROSION AND SEDIMENT CONTROL PLAN DETAILS
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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												
Mycorrhizas/Biofertilizers												
Mulches (type)						X	X	X	X	X	X	
Construction Entrance				X								
Compost Blankets												
Compost Socks												
Compost Berm												
Soil Trackers											X	X
Soil Stabilizers												
Soil Trackers												
Soil Stabilizers												
Sediments Fencing	X	X	X	X	X	X	X	X	X	X	X	X
Erosion Control Blankets & Mats												
Earth Lines/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 Gravelled or other BMP on Road												
Drainage												
Flowing 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

DEVELOPER
DEVELOPER/COMPANY: PORTLAND GENERAL ELECTRIC COMPANY
CONTACT: LENNA COPE
ADDRESS: 121 SW SALMON STREET, 3WTC0403 PORTLAND, OR 97204
PHONE: (503) 464-2634
EMAIL: LENNA.COPE@PGN.COM

PLANNING/ENGINEERING/ SURVEYING FIRM

COMPANY: TETRA TECH
CONTACT: PAUL SEILO
ADDRESS: 1750 S. HARBOR WAY, STE. 400 PORTLAND, OR 97201
PHONE: (503) 221-8636
EMAIL: PAUL.SEILO@TETRATECH.COM

PERMITTEE'S SITE INSPECTOR

INSPECTOR: TBD
COMPANY/AGENCY: TBD
PHONE: TBD
EMAIL: TBD
DESCRIPTION OF EXPERIENCE: TBD

INSPECTION FREQUENCY: TBD

SITE CONDITION	MINIMUM FREQUENCY
1. ACTIVE PERIOD	DAILY WHEN STORMWATER RUNOFF, INCLUDING RUNOFF FROM SNOWMELT, IS OCCURRING.
2. PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY.	ONCE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES ARE IN WORKING ORDER. ANY NECESSARY MAINTENANCE AND REPAIR MUST BE MADE PRIOR TO LEAVING THE SITE.
3. INACTIVE PERIODS GREATER THAN FOURTEEN CONSECUTIVE CALENDAR DAYS.	ONCE EVERY TWO WEEKS.
4. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER.	IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION.

- HOLD A PRE-CON MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE EC INSPECTOR.
- ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS.
- INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS.
- REVISIONS TO THE APPROVED ESC PLAN MUST BE SUBMITTED TO DEQ OR AGENT IN ACCORDANCE WITH CURRENT 1200-C PERMIT

PROJECT LOCATION:
MORROW COUNTY, OREGON

CLIENT INFORMATION:
PORTLAND GENERAL ELECTRIC
121 SW SALMON ST, 3WTC0403
PORTLAND, OR 97204

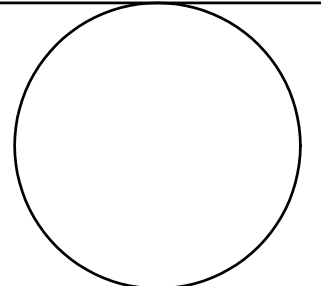
Tt PROJECT No.:
194-1121-0007

CLIENT PROJECT No.:

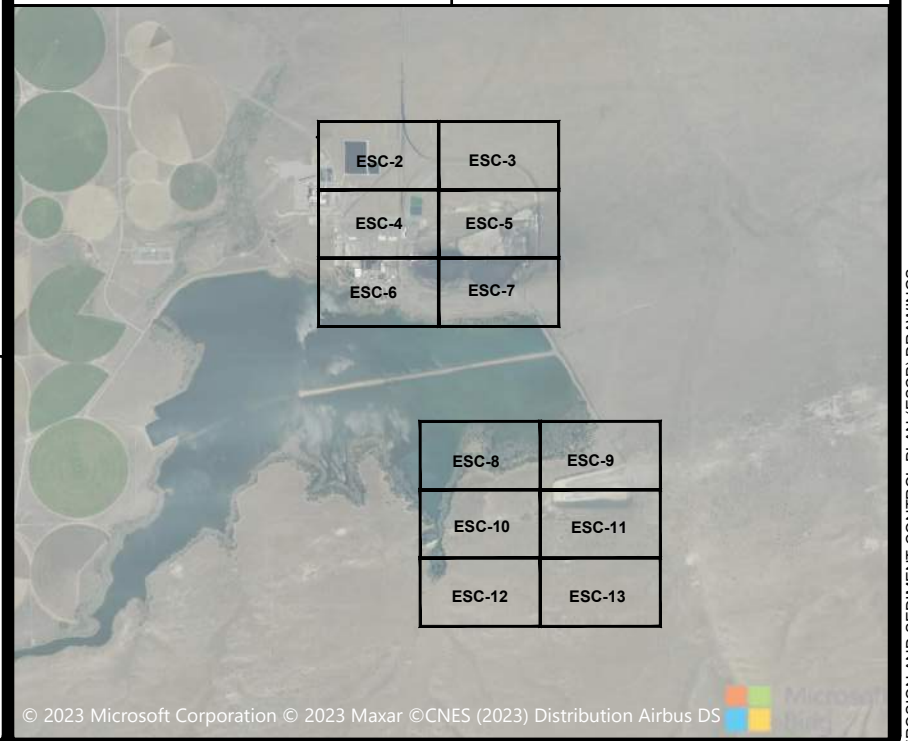
PROJECT DESCRIPTION / NOTES:

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



DRAFT

1

2

3

4

5

6

E

D

C

B

A

LEGEND:

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

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

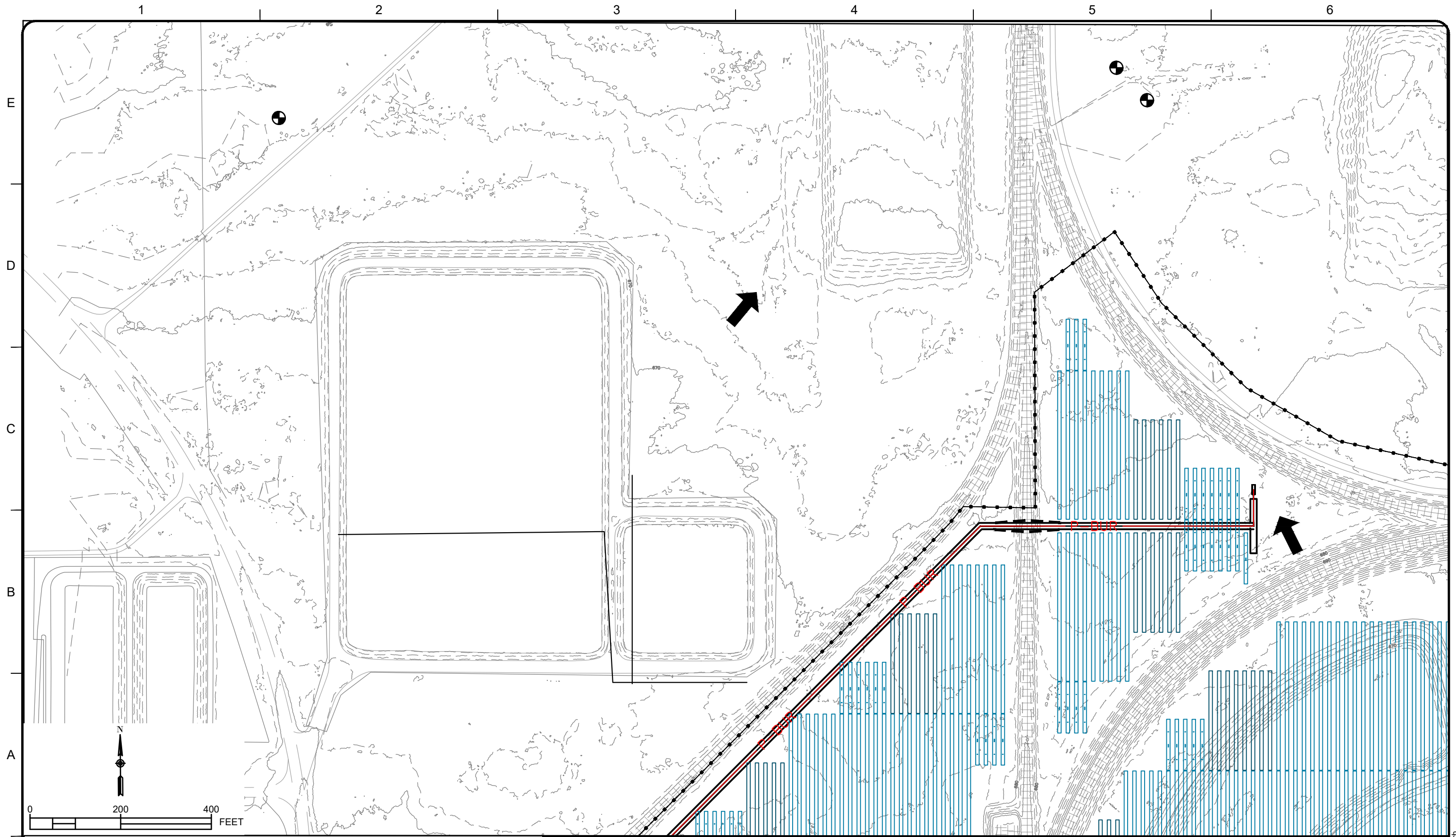


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B	1/22/24	DRAFT ESC PERMIT PLANS	CAH
C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

PORTLAND GENERAL ELECTRIC
CARTY SOLAR FARM
EROSION AND SEDIMENT CONTROL PLAN
GENERAL NOTES & LEGEND

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-1	



LEGEND:

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

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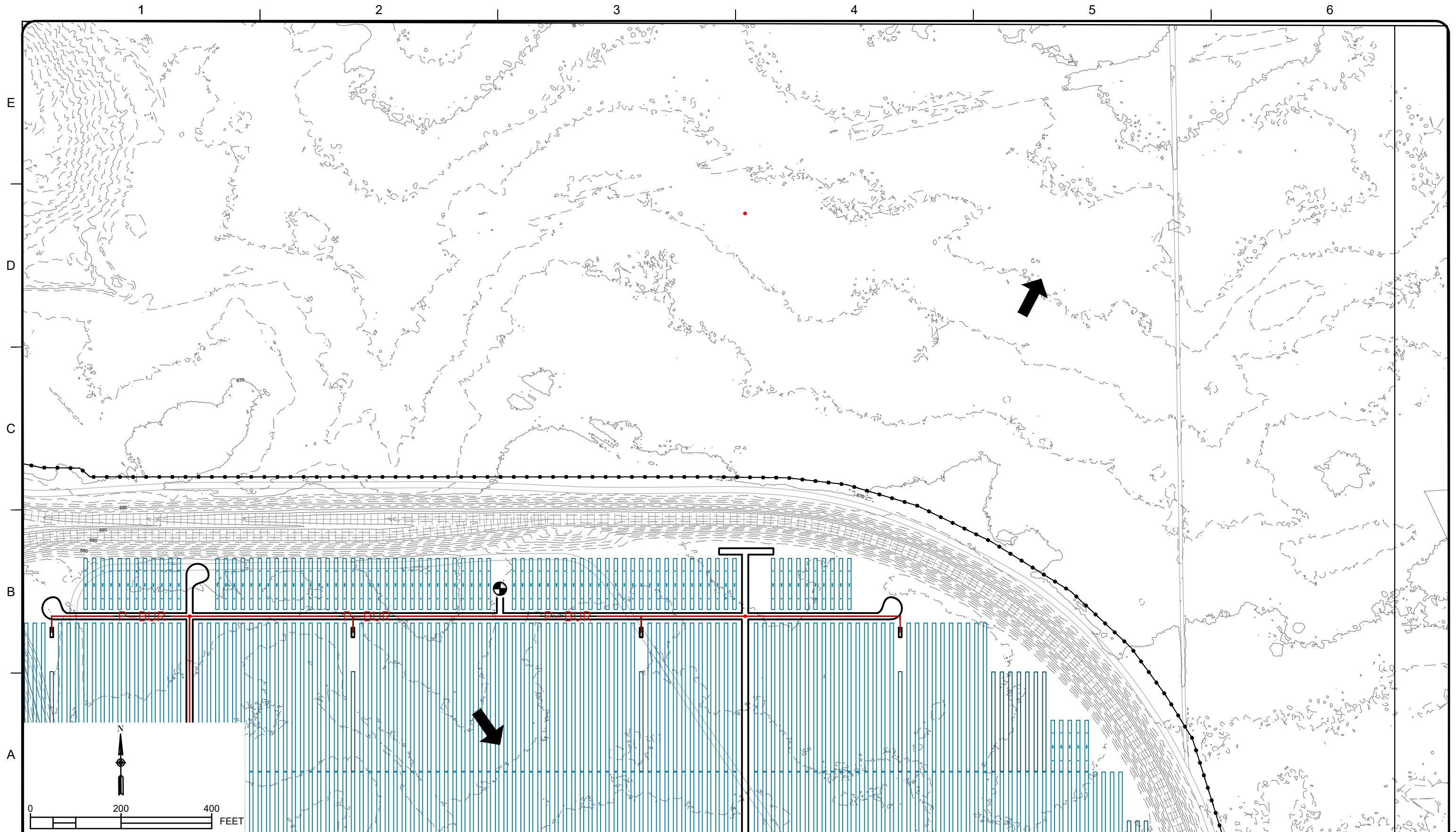
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C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

PORTLAND GENERAL ELECTRIC
 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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Bar Measures 1 inch



LEGEND:

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

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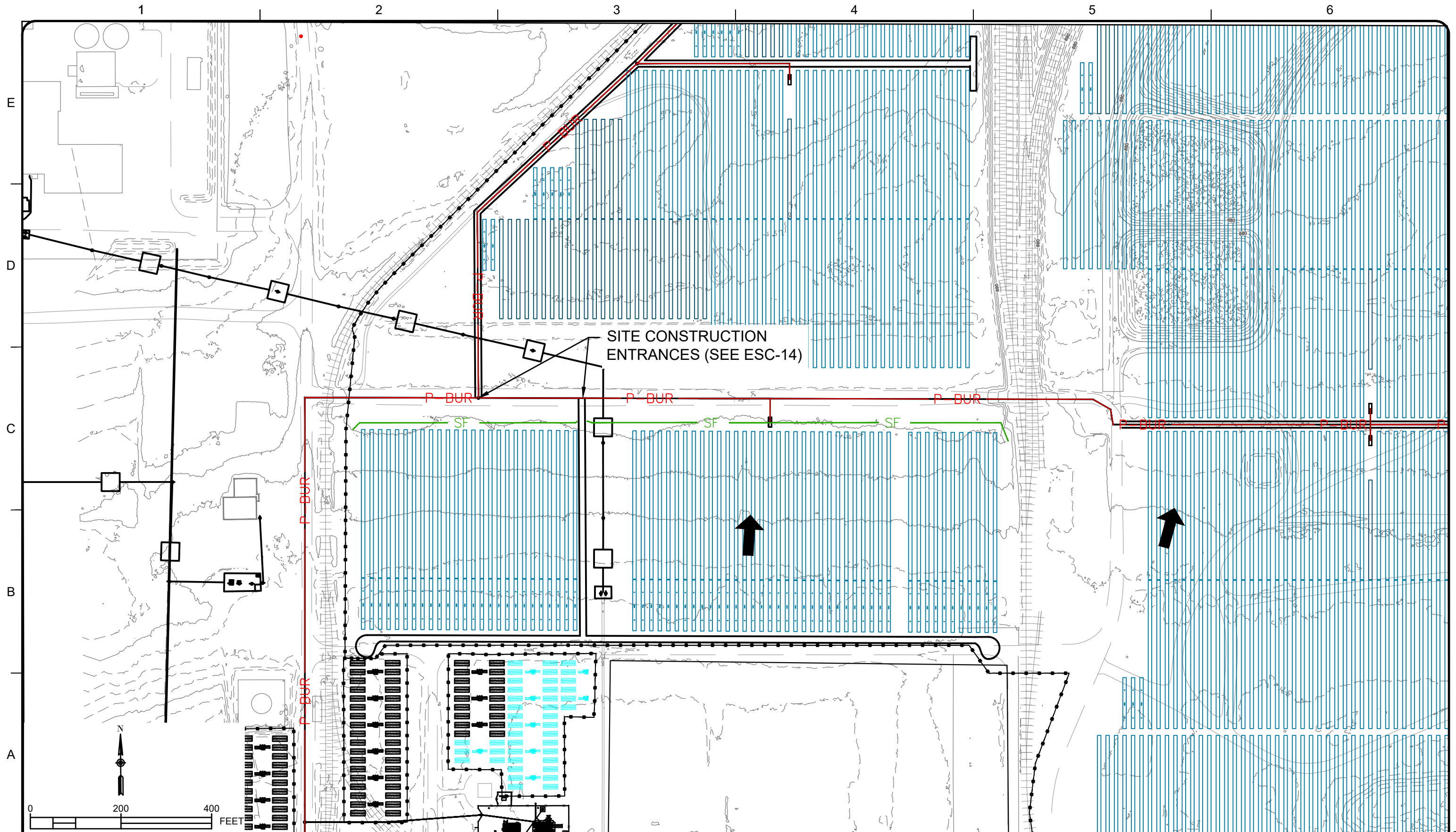
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C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

PORTLAND GENERAL ELECTRIC
 CARTY SOLAR FARM
 EROSION AND SEDIMENT CONTROL PLAN
 SHEET 2 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-3	

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SITE CONSTRUCTION
ENTRANCES (SEE ESC-14)

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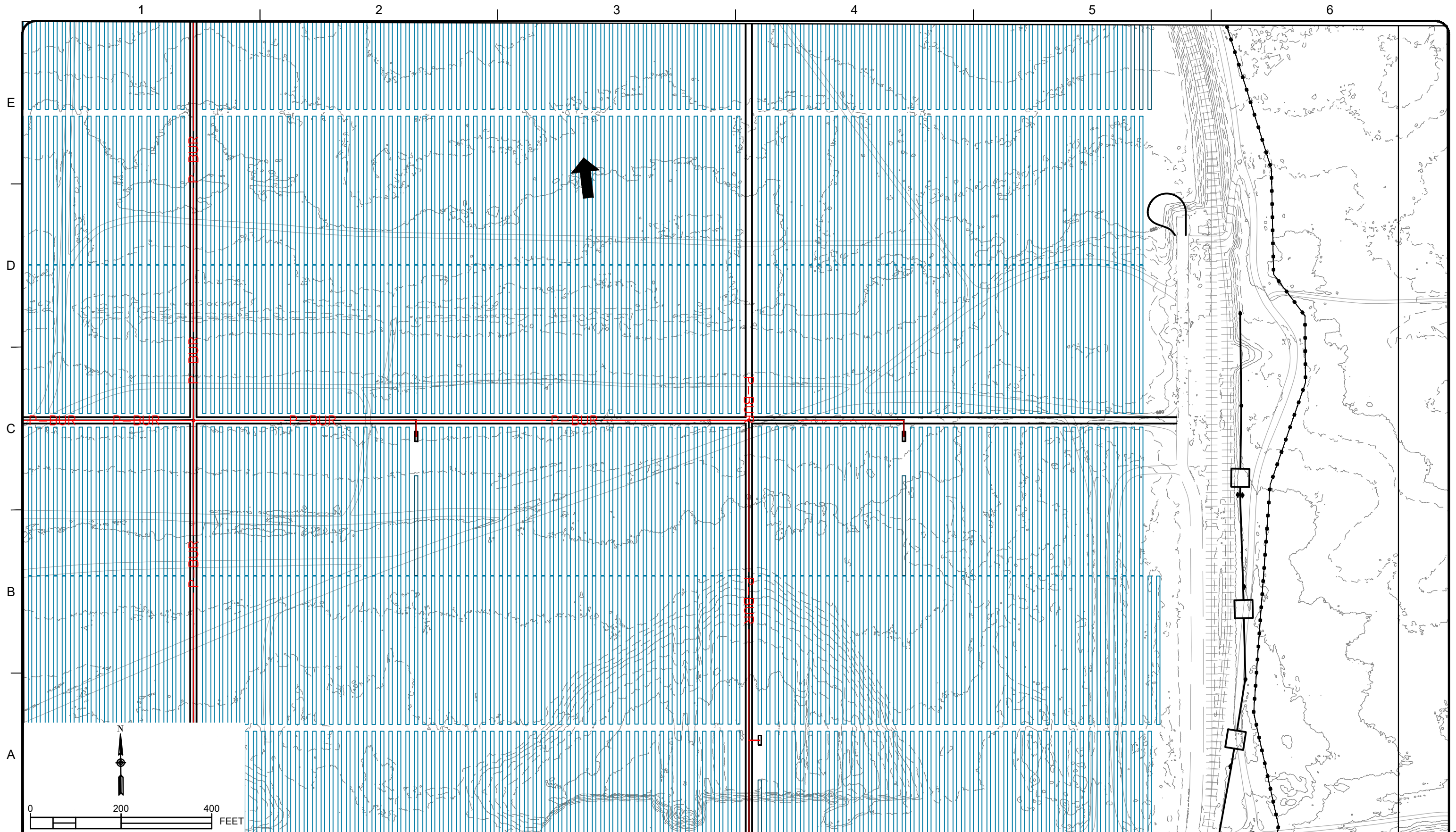
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	EXISTING RAILROAD		PROPOSED SOLAR ARRAY		PROPOSED INVERTER & PAD		PROPOSED SILT FENCE
	EXISTING FENCE		PROPOSED INVERTER		DRAINAGE DIRECTION		
	EXISTING MONITORING WELL		PROPOSED ROAD				
	EXISTING OVERHEAD POWER						

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PORTLAND GENERAL ELECTRIC
CARTY SOLAR FARM
EROSION AND SEDIMENT CONTROL PLAN
SHEET 3 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-4	



LEGEND:

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

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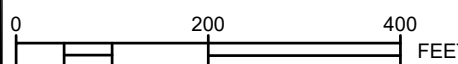
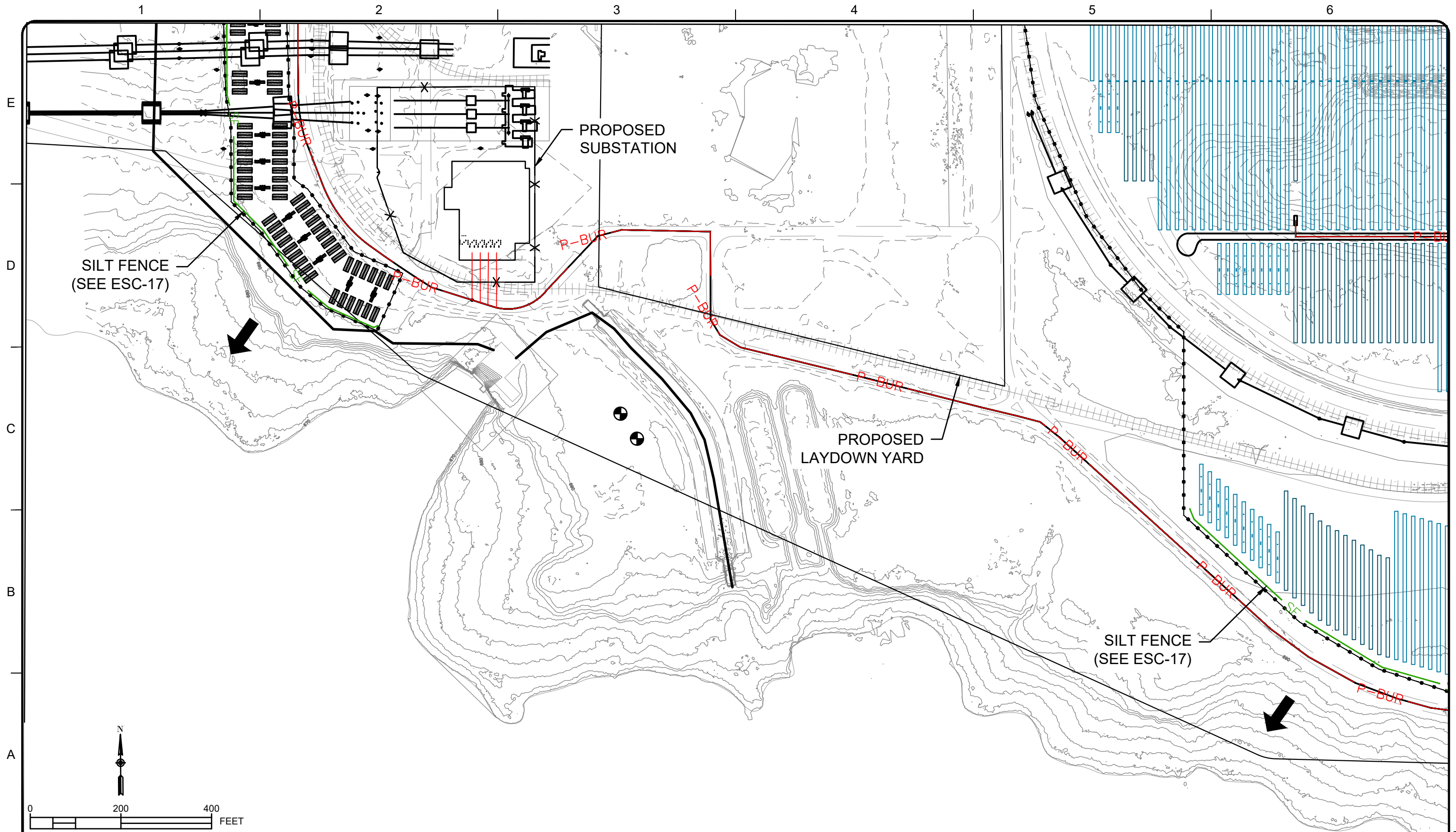
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PORTLAND GENERAL ELECTRIC
 CARTY SOLAR FARM
 EROSION AND SEDIMENT CONTROL PLAN
 SHEET 4 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-5	

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Bar Measures 1 inch



LEGEND:

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

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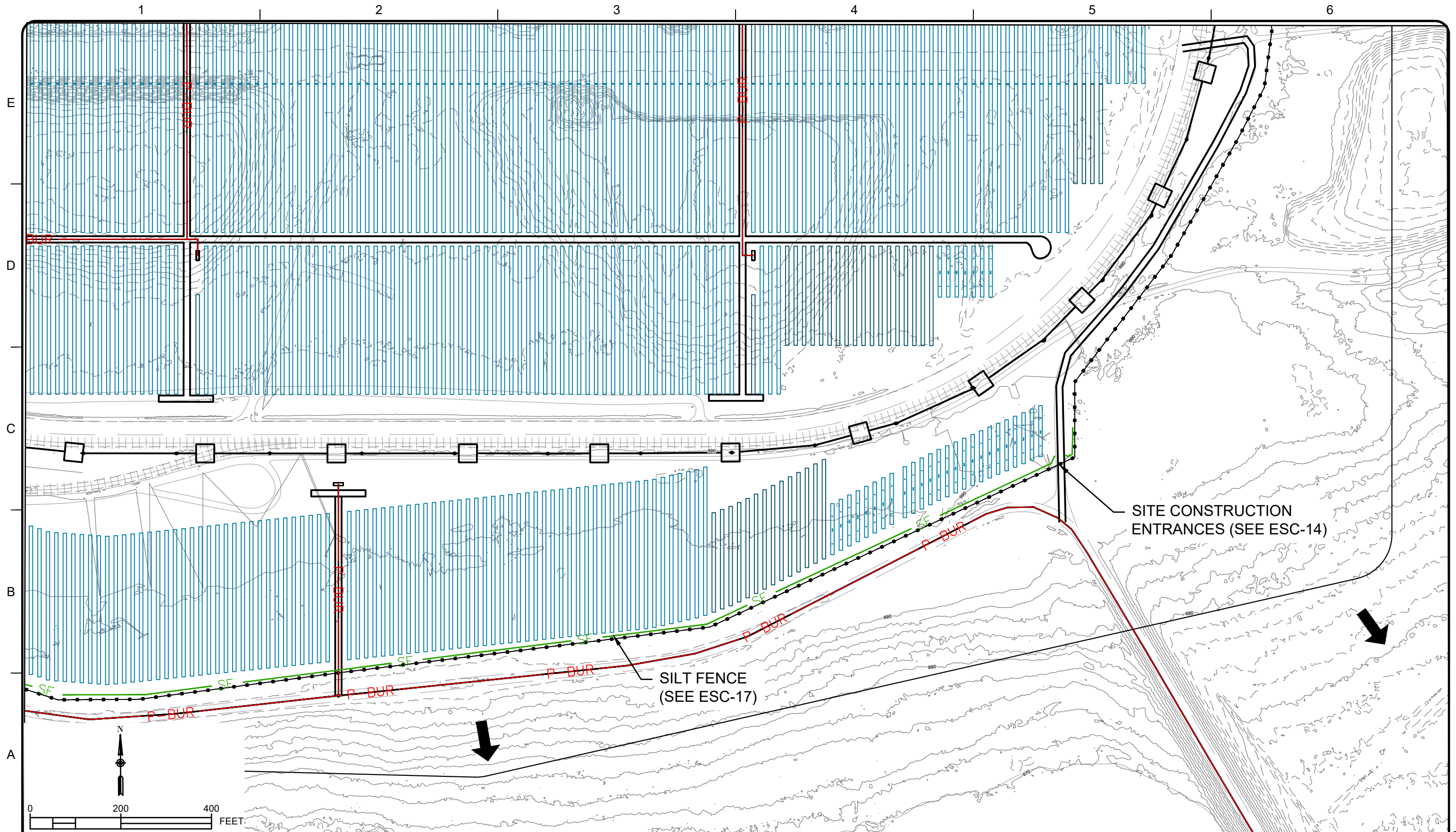
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C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

PORTLAND GENERAL ELECTRIC
 CARTY SOLAR FARM
 EROSION AND SEDIMENT CONTROL PLAN
 SHEET 5 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-6	

Bar Measures 1 inch

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SITE CONSTRUCTION ENTRANCES (SEE ESC-14)

SILT FENCE (SEE ESC-17)

LEGEND:

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

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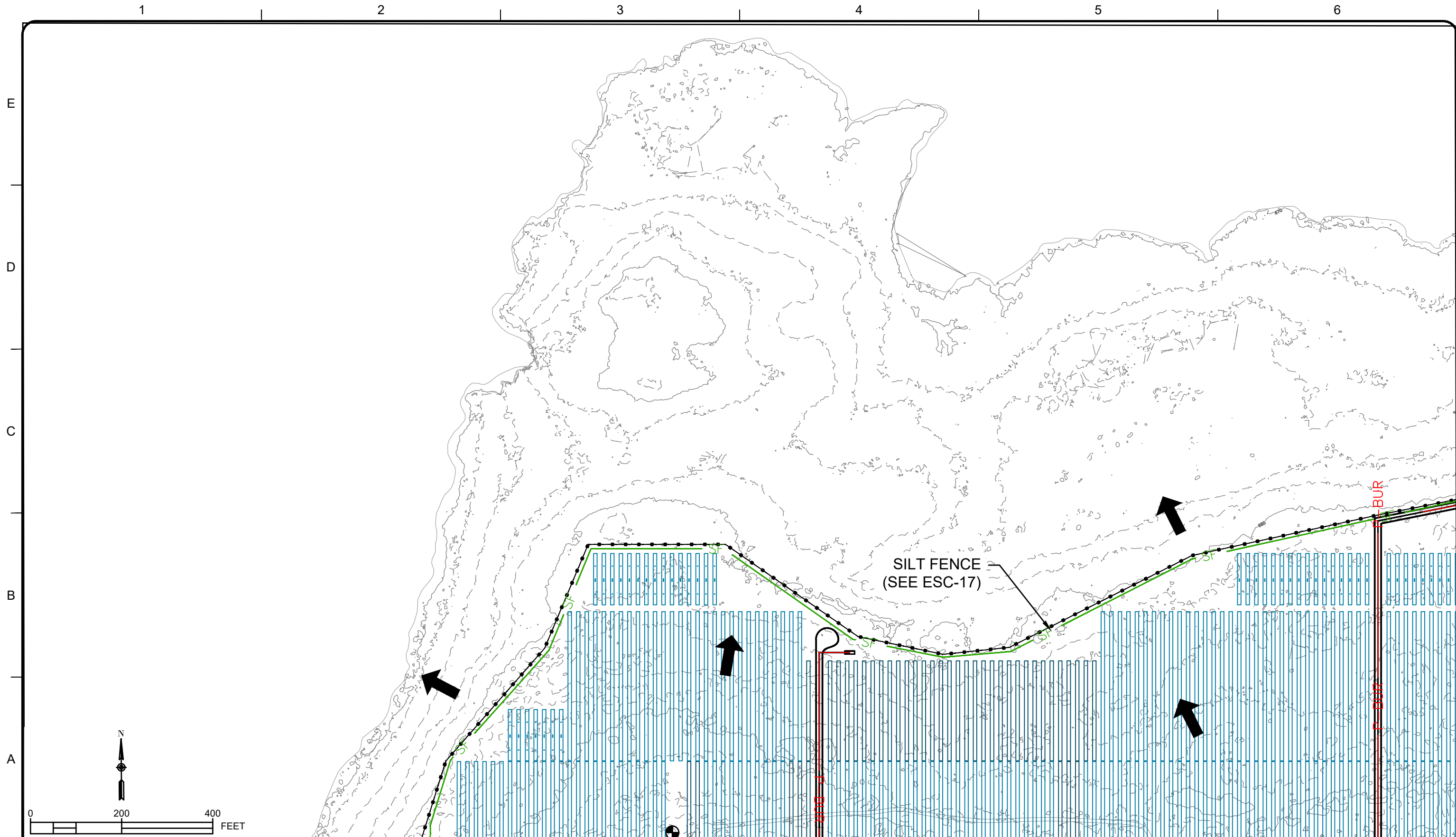
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PORTLAND GENERAL ELECTRIC
 CARTY SOLAR FARM
 EROSION AND SEDIMENT CONTROL PLAN
 SHEET 6 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-7	

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LEGEND:

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

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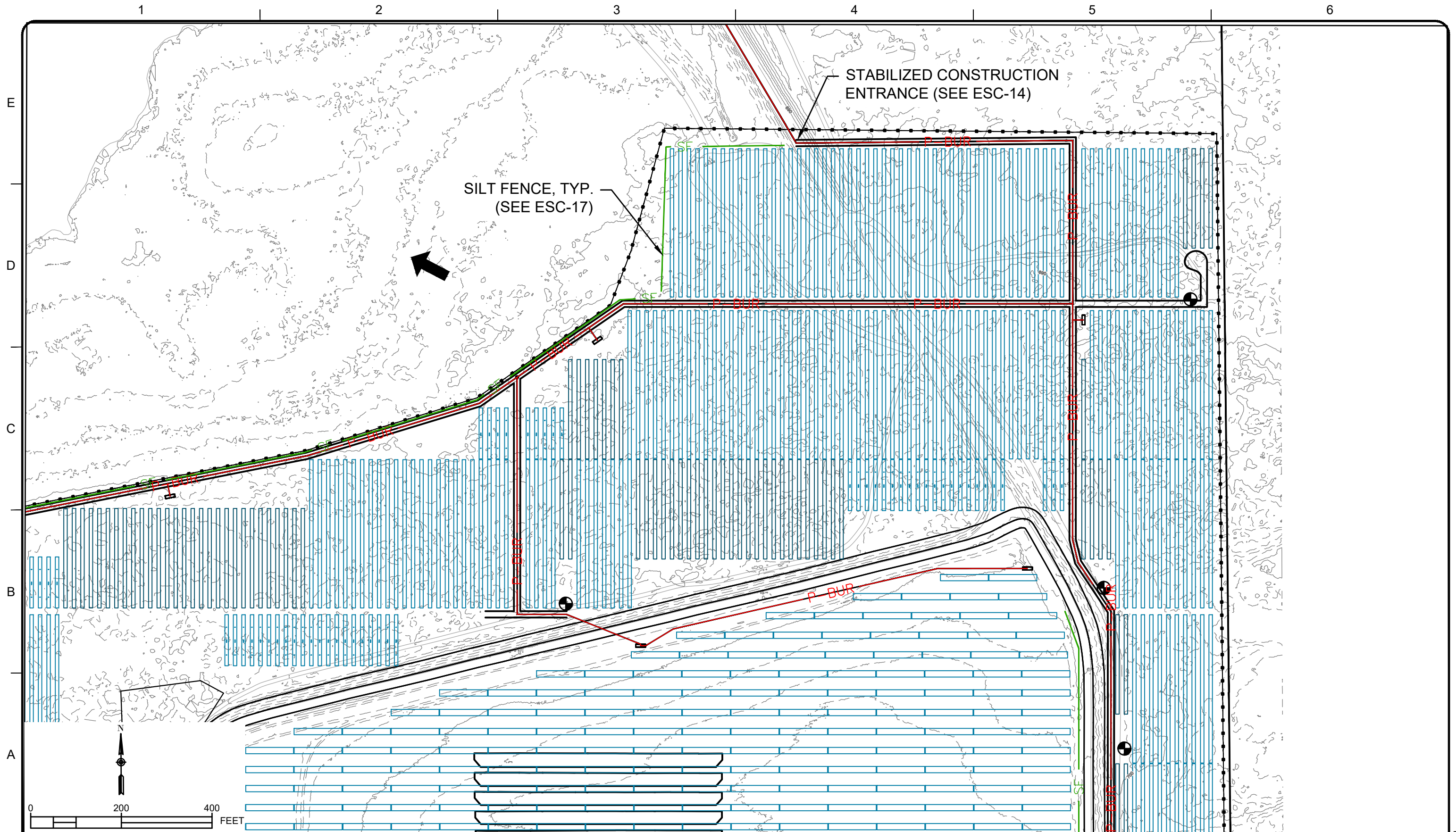
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C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

PORTLAND GENERAL ELECTRIC
 CARTY SOLAR FARM
 EROSION AND SEDIMENT CONTROL PLAN
 SHEET 7 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-8	

Bar Measures 1 inch

Copyright: Tetra Tech



LEGEND:

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

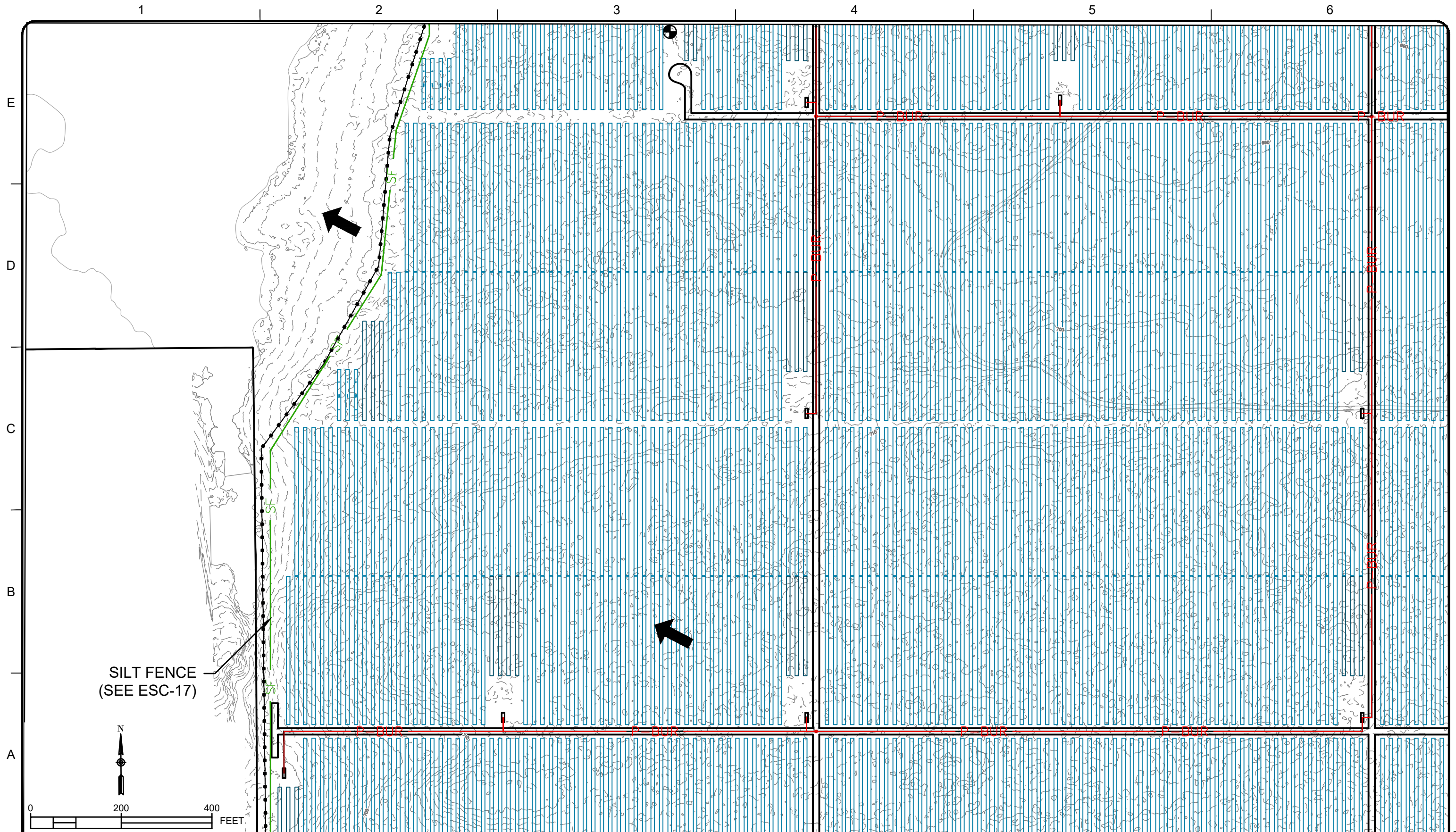
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C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

PORTLAND GENERAL ELECTRIC
 CARTY SOLAR FARM
 EROSION AND SEDIMENT CONTROL PLAN
 SHEET 8 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-9	

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SILT FENCE
(SEE ESC-17)

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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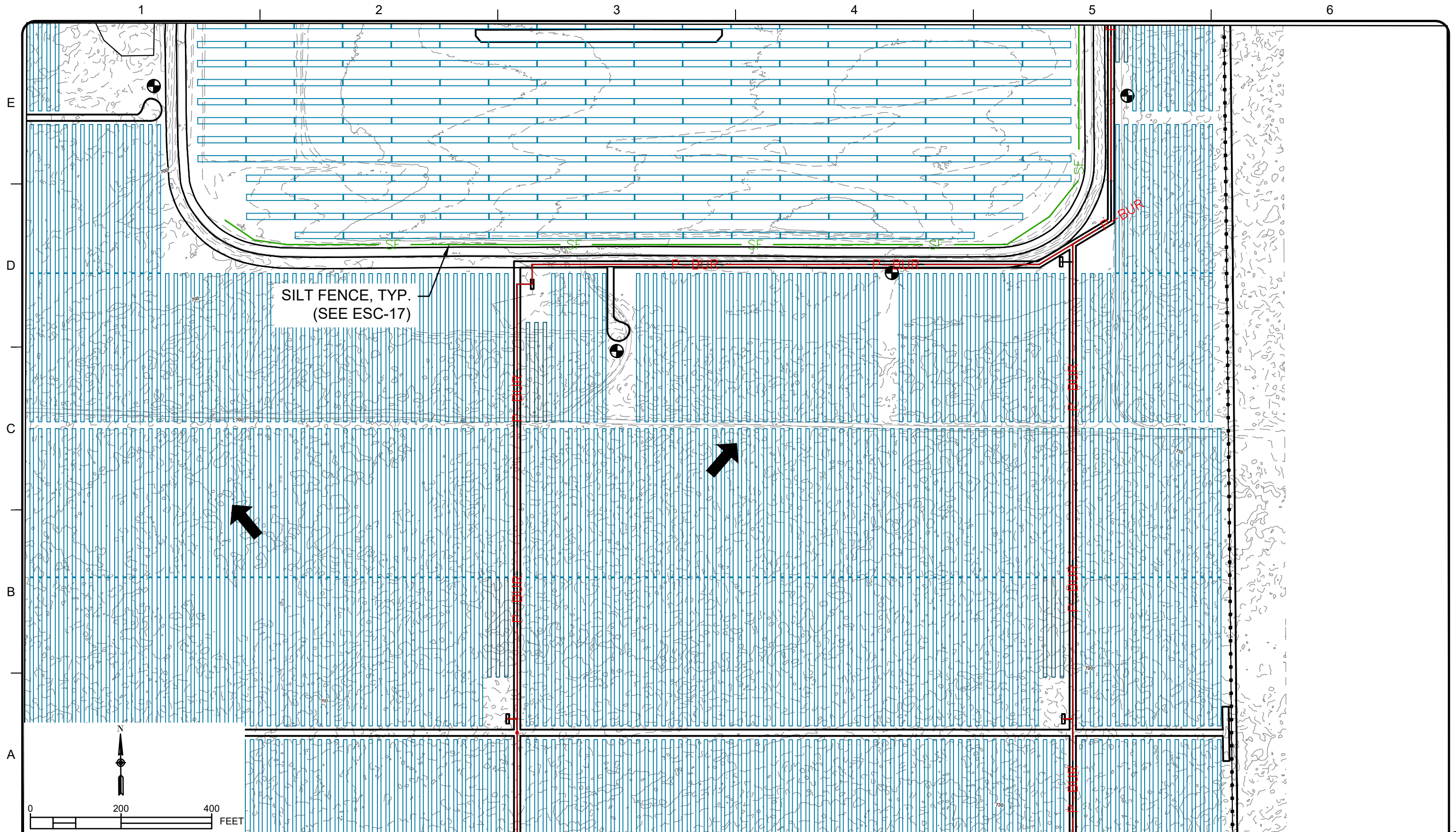
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CARTY SOLAR FARM
EROSION AND SEDIMENT CONTROL PLAN
SHEET 9 OF 12

Project No.:	194-1121-0007
Designed By:	CAN
Drawn By:	CAN
Checked By:	JPP
ESC-10	

Bar Measures 1 inch

Copyright: Tetra Tech



SILT FENCE, TYP.
(SEE ESC-17)

LEGEND:

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

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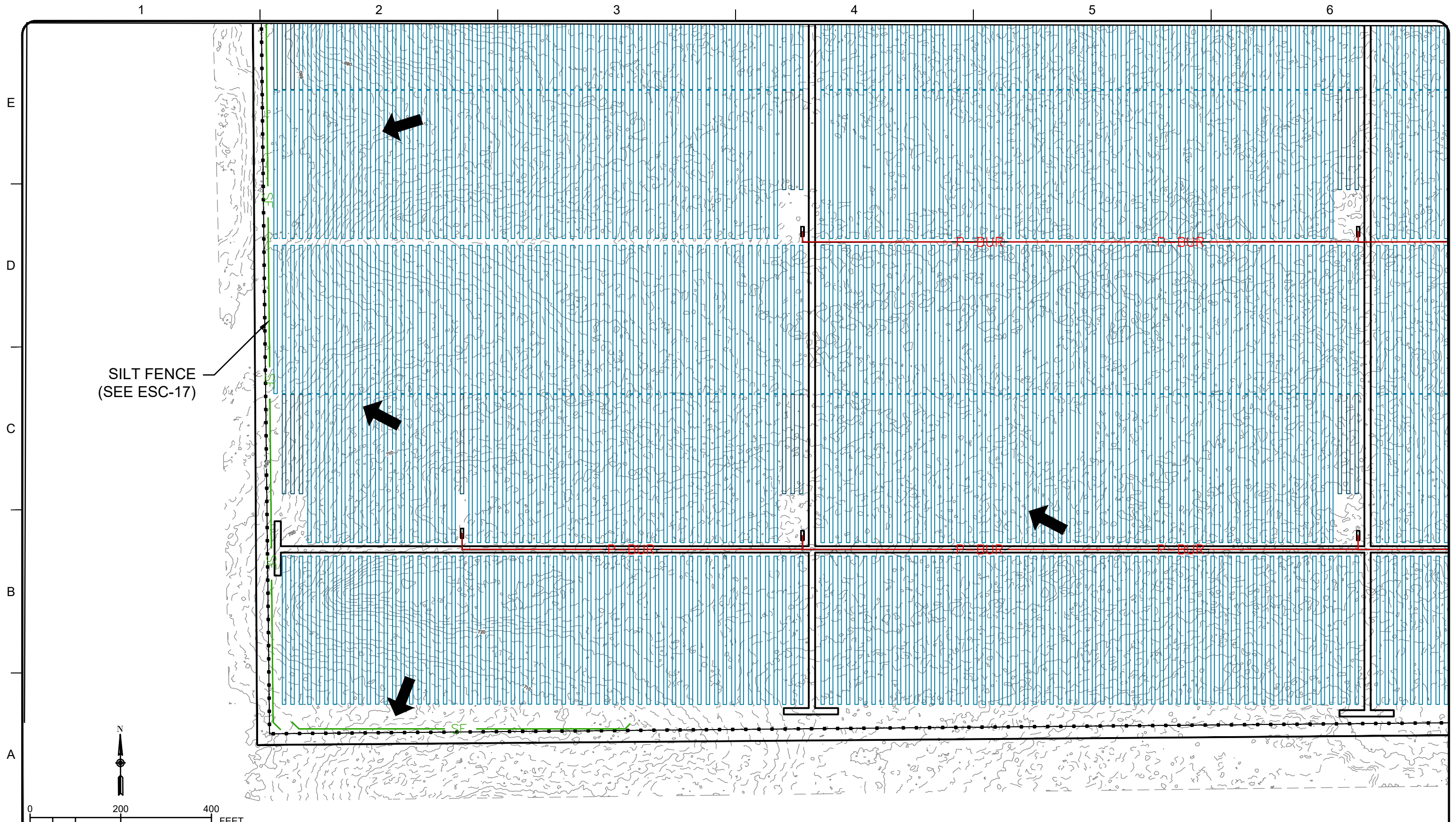
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CARTY SOLAR FARM
EROSION AND SEDIMENT CONTROL PLAN
SHEET 10 OF 12

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

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Bar Measures 1 inch



SILT FENCE
(SEE ESC-17)

LEGEND:

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

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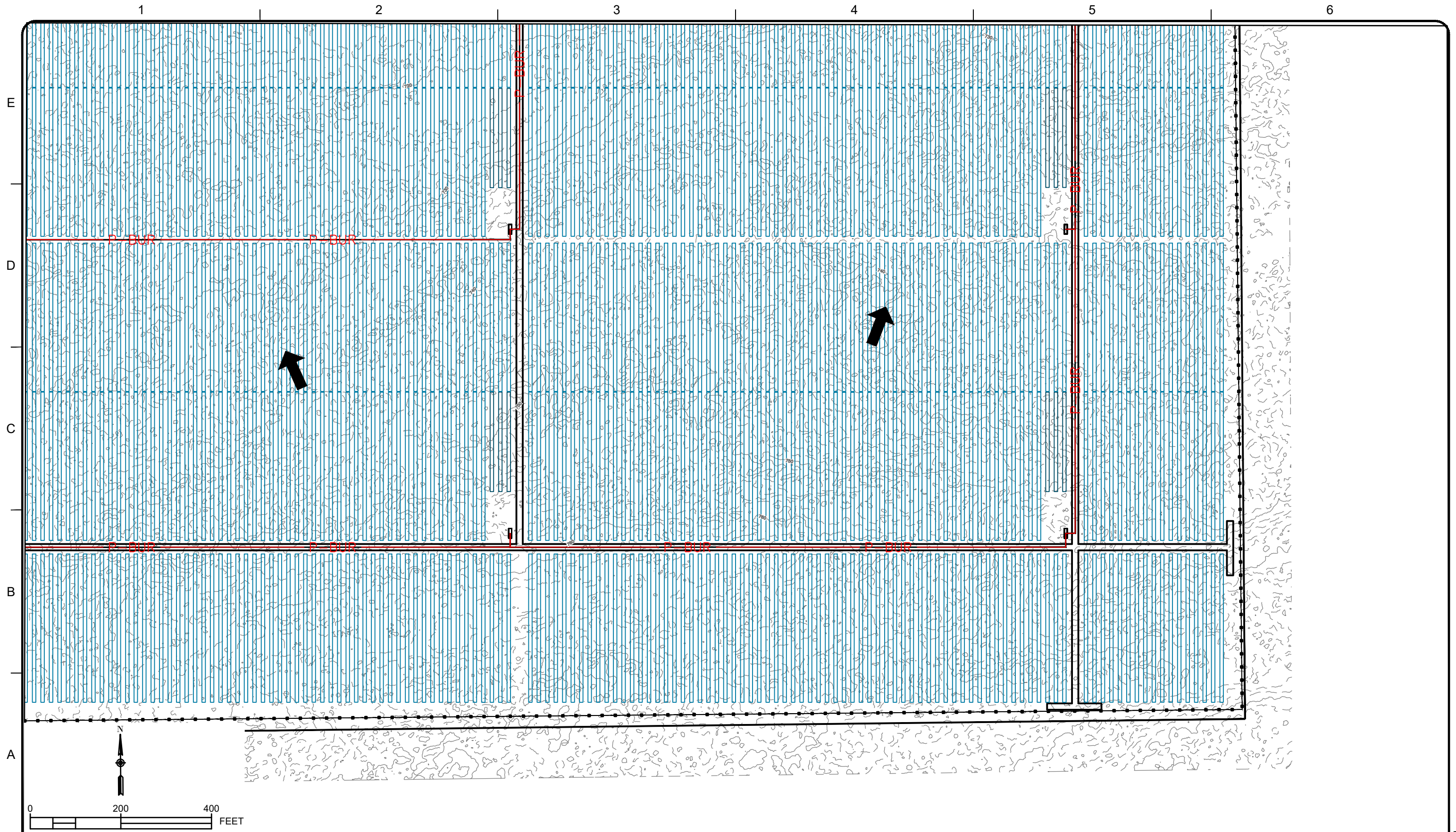
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CARTY SOLAR FARM
EROSION AND SEDIMENT CONTROL PLAN
SHEET 11 OF 12

Project No.:	194-1121-0007
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ESC-12	

Bar Measures 1 inch

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LEGEND:

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

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PORTLAND GENERAL ELECTRIC
 CARTY SOLAR FARM
 EROSION AND SEDIMENT CONTROL PLAN
 SHEET 12 OF 12

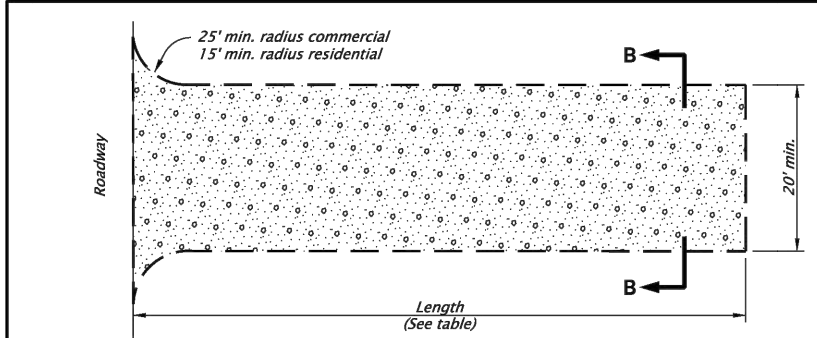
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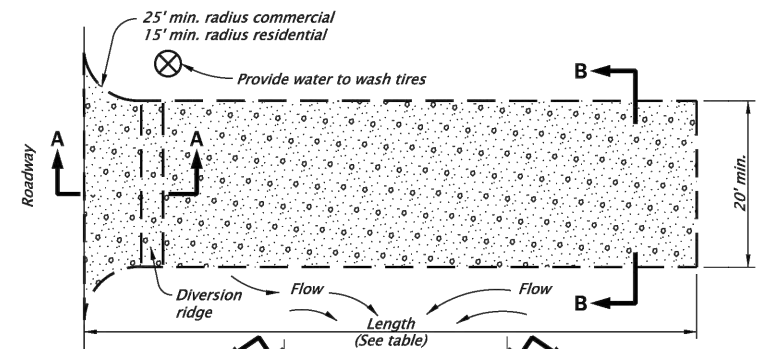
Bar Measures 1 inch

rd1000.dgn 01-20-2021

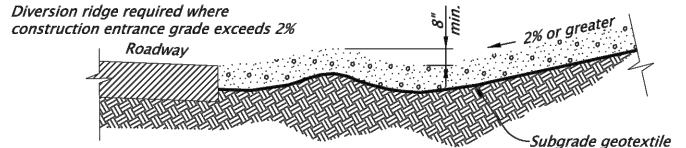
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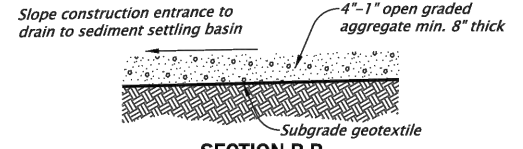
CONSTRUCTION ENTRANCE - TYPE 1
NOT TO SCALE



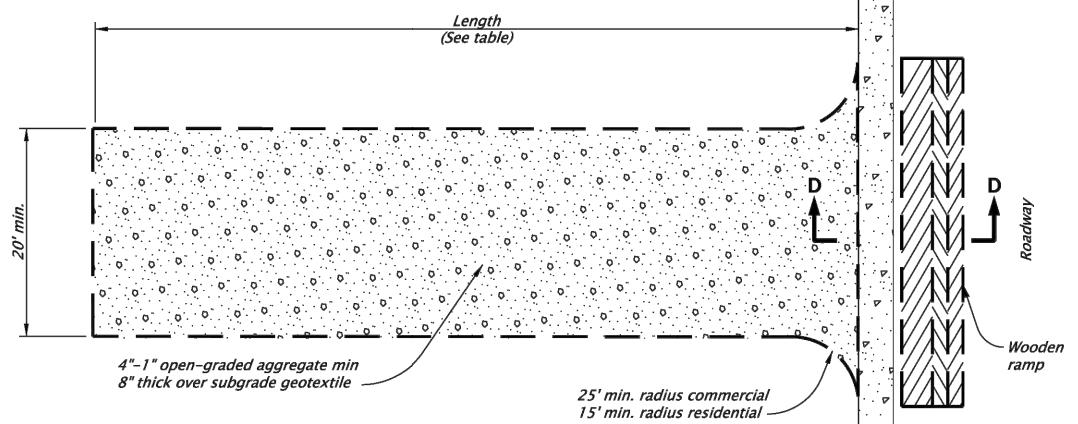
CONSTRUCTION ENTRANCE - TYPE 2
NOT TO SCALE



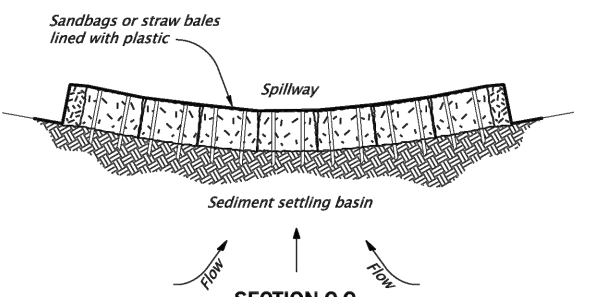
SECTION A-A
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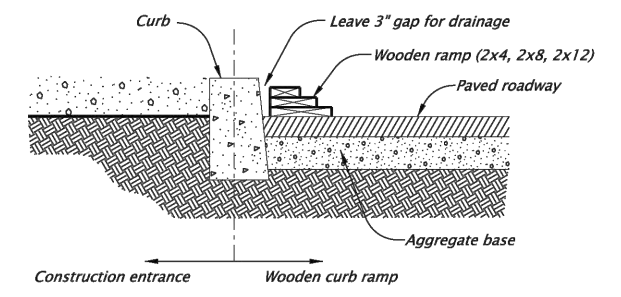
SECTION B-B
NOT TO SCALE



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:**
- The Type 1 entrance is a simple entrance without a diversion ridge or settling basin.
 - 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. N/A	SDR DATE January, 2021
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

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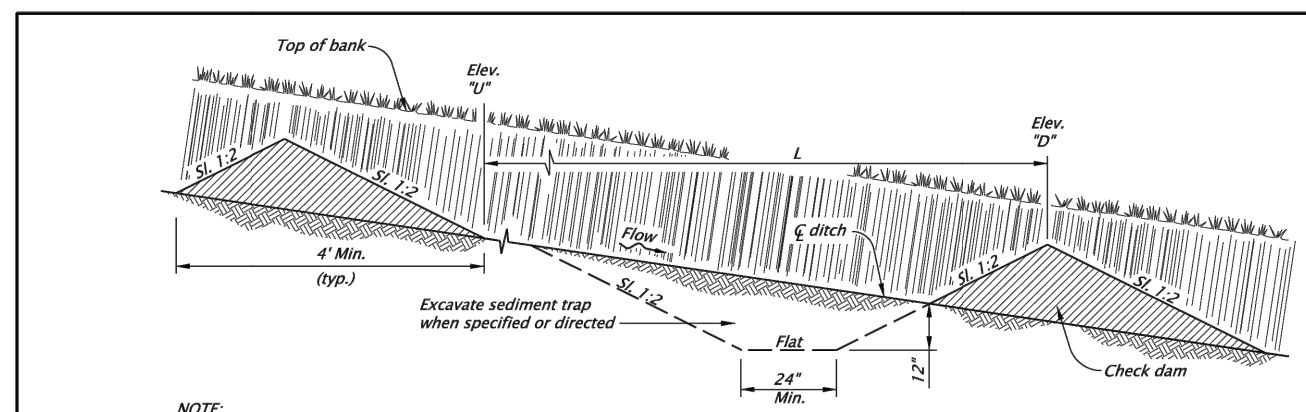
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C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

PORTLAND GENERAL ELECTRIC
CARTY SOLAR FARM
**EROSION AND SEDIMENT CONTROL PLAN
DETAILS**

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ESC-14	

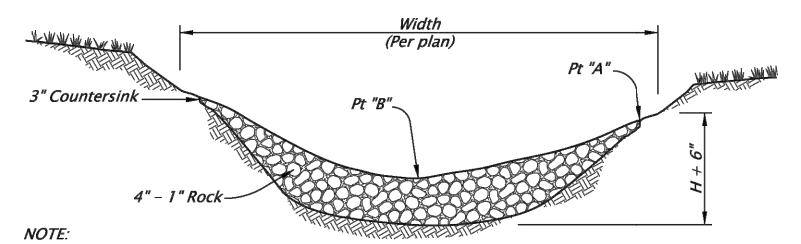
rd1005.dgn 07-01-2020

RD1005



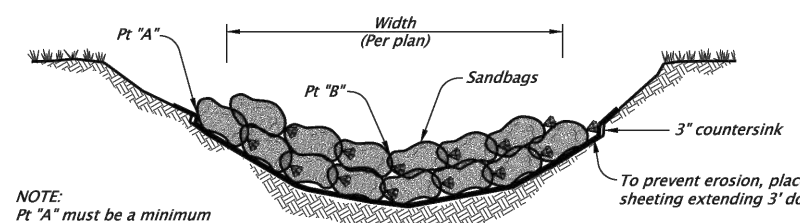
NOTE:
L = Spacing along swale or ditch so that Elevation "U" equals Elevation "D".

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



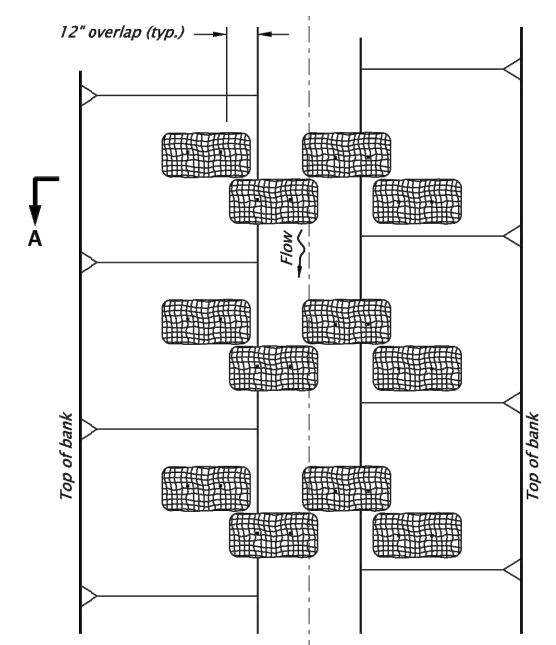
NOTE:
Pt "A" must be a minimum of 6" higher than Pt "B"

SANDBAG CHECK DAM - TYPE 4
NOT TO SCALE

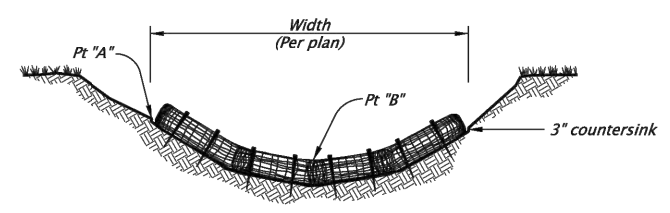
- NOTES:
- Type 3 - stake biofilter bags with two 2"x2"x18" (minimum) wood stakes per bag. Drive stakes a minimum of 6" into the ground and flush with the top of the bags. Omit stakes if placed over paved surfaces. Overlap bags 12" minimum at each joint.
 - Type 4 - Tightly abut or overlap ends of sandbags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

Ditch Grade	MAXIMUM CHECK DAM SPACING "L"			
	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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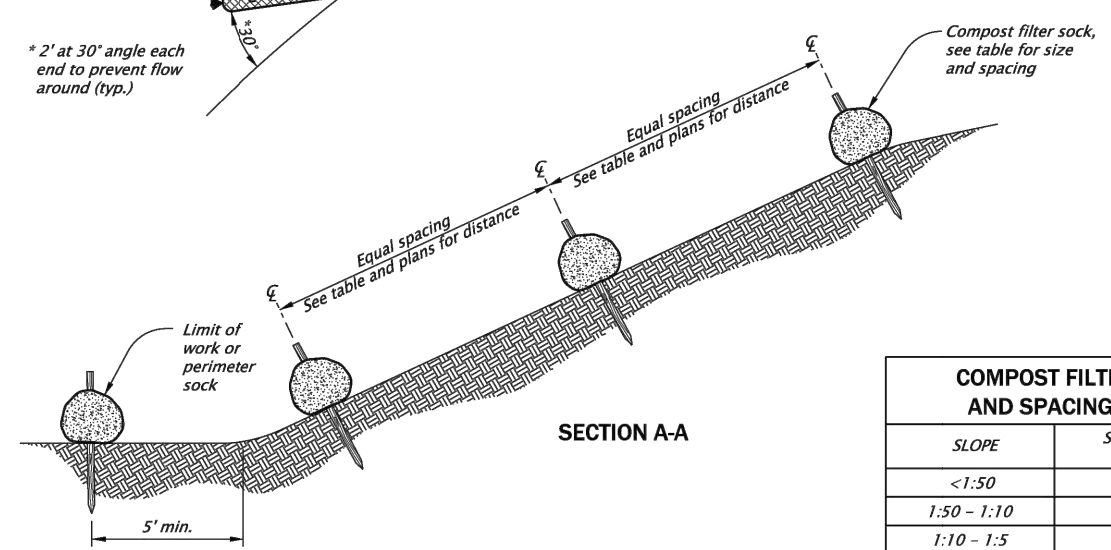
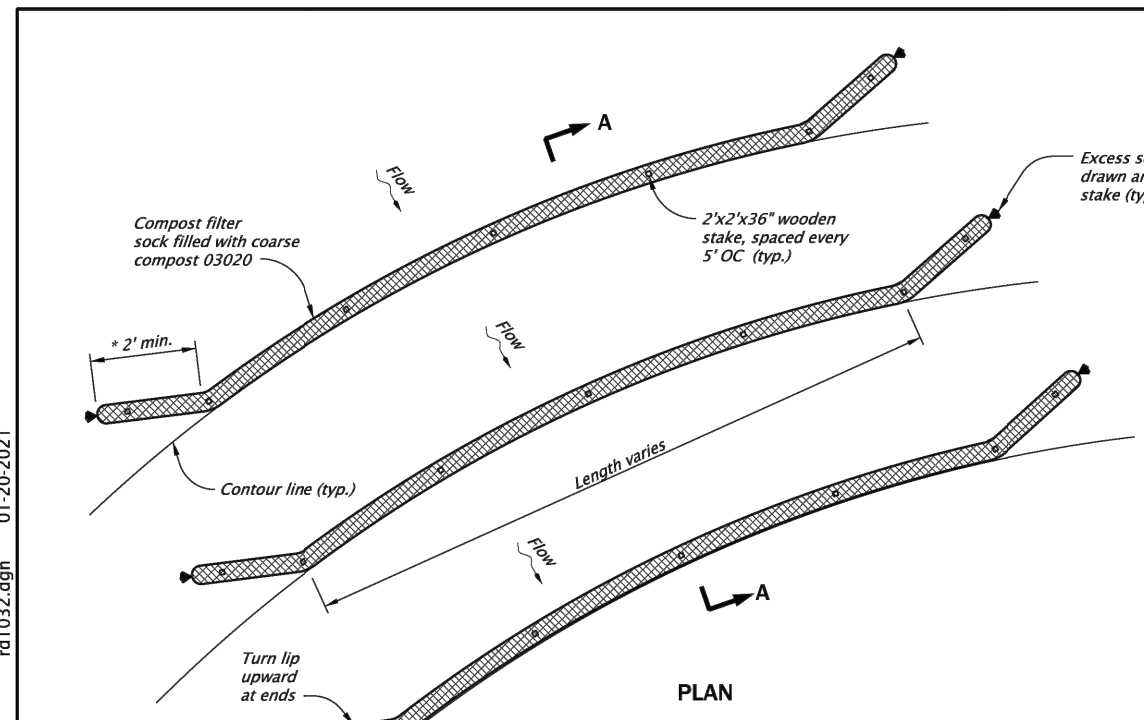
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B	1/22/24	DRAFT ESC PERMIT PLANS	CAH
C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

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CARTY SOLAR FARM
EROSION AND SEDIMENT CONTROL PLAN DETAILS

Project No.: 194-1121-0007
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ESC-15

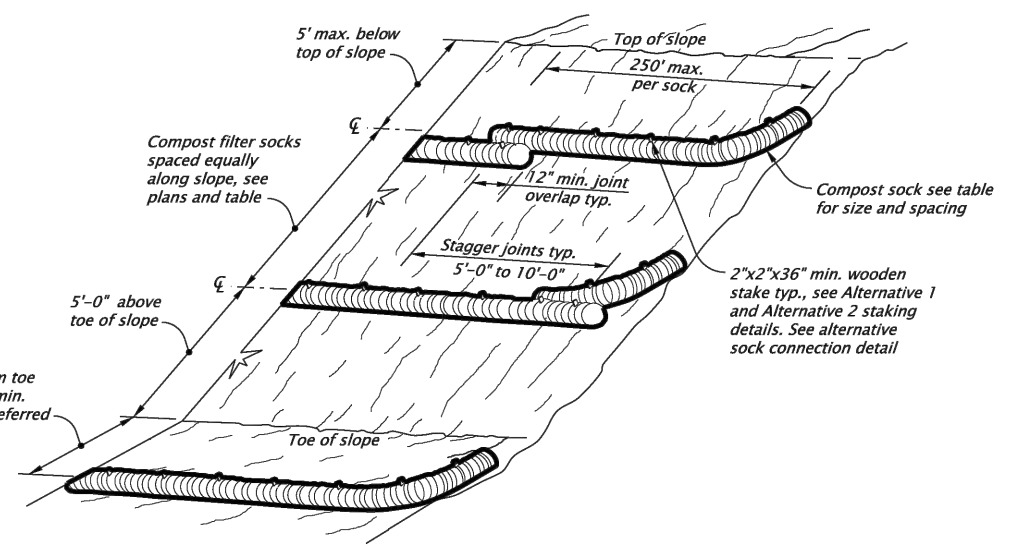
rd1032.dgn 10-20-2021

RD1032

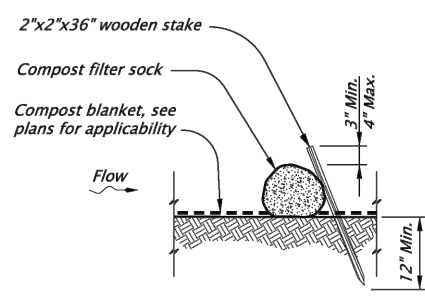


SLOPE	SPACING (ft)	DIAMETER (in)
<1:50	250	8
1:50 - 1:10	125	12
1:10 - 1:5	100	12
1:5 - 1:2	50	18
>1:2	25	18

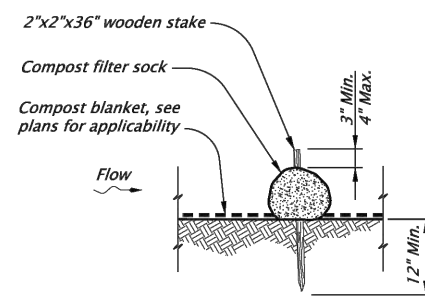
COMPOST FILTER SOCK (WATTLE)
NOT TO SCALE



SLOPE APPLICATION - PERSPECTIVE VIEW



ALTERNATIVE 1 (Staking)



ALTERNATIVE 2 (Staking)

CALC. BOOK NO. N/A	SDR DATE January, 2021
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
OREGON STANDARD DRAWINGS	
SEDIMENT BARRIER TYPE 8	
2021	
DATE	REVISION DESCRIPTION
Jan 2021	Removed Calc book numbers

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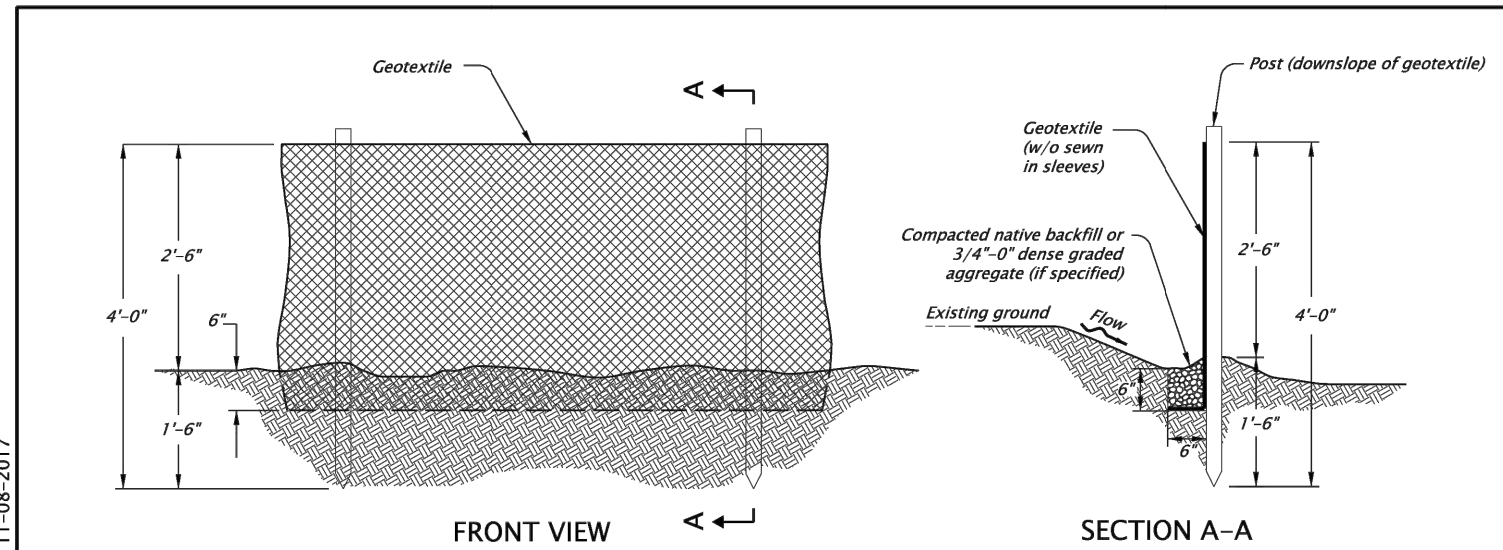
RD1032

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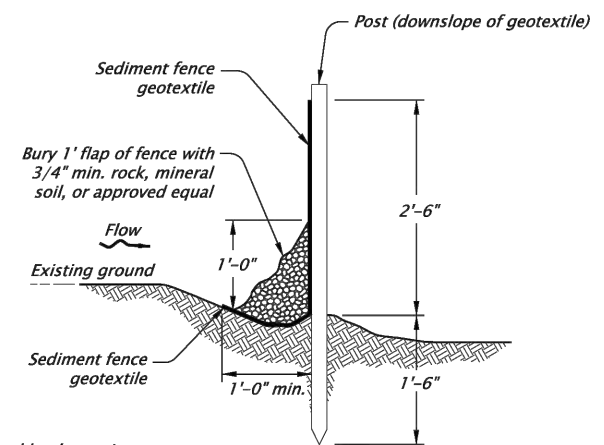
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C	2/1/24	DRAFT ESC PERMIT PLANS	CAN

PORTLAND GENERAL ELECTRIC
CARTY SOLAR FARM
EROSION AND SEDIMENT CONTROL PLAN DETAILS

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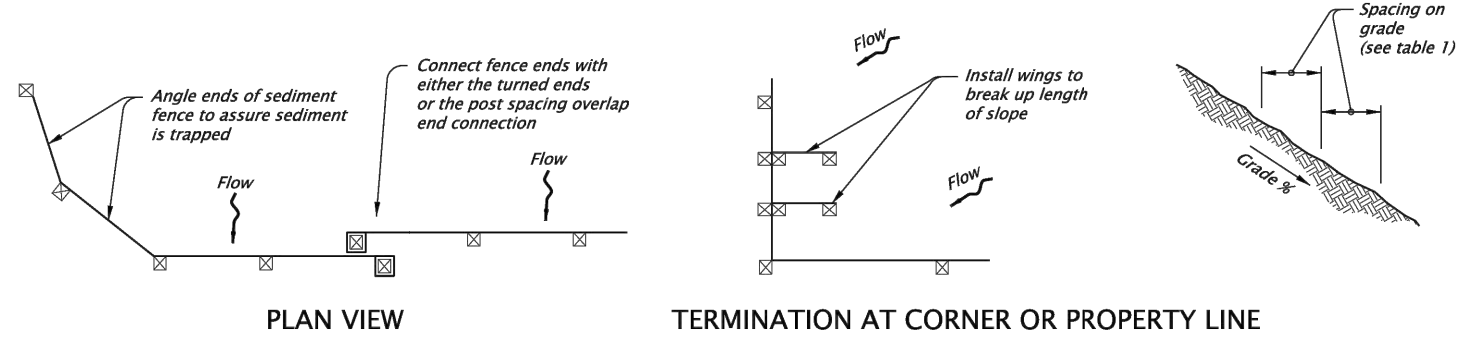
SEDIMENT FENCE AND GEOTEXTILE BURY DETAIL - TYPE 1



ALTERNATE SEDIMENT FENCE W/O TRENCHING - TYPE 2

- NOTES:
1. Use must be approved by the engineer.
 2. Not approved for use with sediment fencing with sewn-in post sleeves.

rd1040.dgn 11-08-2017



PLAN VIEW TERMINATION AT CORNER OR PROPERTY LINE

- 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.

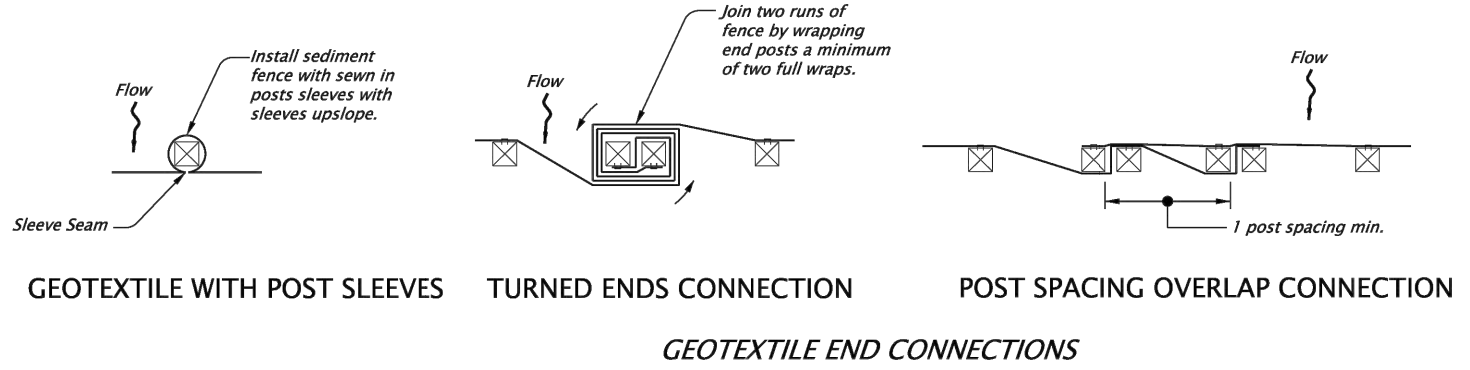
TABLE 1
FENCE SPACING
FOR GENERAL APPLICATION

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

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



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

RD1040

CALC. BOOK NO. <u>6403, 6404, 6405</u>	BASELINE REPORT DATE <u>November 2017</u>
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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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

Exhibit J

Wetlands and Other Jurisdictional Waters

**Carty Generating Station
February 2024**

Prepared for



Portland General Electric Company

Prepared by



TETRA TECH

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Figure J-1. National Wetlands Inventory and National Hydrography Dataset

Figure J-2. Delineated Wetlands and Waters

List of Attachments

Attachment J-1. Wetland Delineation Report

Acronyms and Abbreviations

AC	alternating current
BCP	Boardman Coal Plant
BESS	battery energy storage system
Certificate Holder/ PGE	Portland General Electric Company
CFR	Code of Federal Regulations
CGS/ Facility	Carty Generating Station
MW	megawatt
NWI	National Wetland Inventory
OAR	Oregon Administrative Rules
ODSL	Oregon Department of State Lands
OHWL/M	ordinary high-water line/mark
ORS	Oregon Revised Statutes
RFA	Request for Amendment
SWI	Statewide Wetland Inventory
USACE	United States Army Corps of Engineers
WOS	Waters of the State
WOUS	Waters of the United States

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 500 megawatts (MW) of electrical power. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and includes the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm) on 315 acres (0.49 sq. miles) located south of the Carty Reservoir.

In RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW alternating current (AC) of nominal and average generating capacity by expanding into areas formerly used for PGE's Boardman Coal Plant (BCP) and maximizing the buildable area southeast of Carty Reservoir, and adding a battery energy storage system (BESS) to the Facility. The Certificate Holder proposes the 185 MW of solar generation as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. Thus, the overall changes proposed with RFA 4 (including the BESS) are referred to throughout this request as the Amended 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)].

This Exhibit J provides information about the wetlands and other jurisdictional waters that could be affected by the Amended Carty Solar Farm. This Exhibit J was prepared to meet the submittal requirements in Oregon Administrative Rules (OAR) 345-021-0010(1)(j).

2.0 Analysis Area

The analysis area for wetlands and other jurisdictional waters is composed of approximately 1,213 acres within and adjacent to the Amended Site Boundary. The analysis area is referred to in this exhibit as the Wetland Study Area (see Figures J-1 and J-2). The Wetland Study Area is where the Certificate Holder is proposing permanent and temporary disturbance for RFA 4. All permanent and temporary disturbance associated with RFA 4 are proposed within the Wetland Study Area; however, not all of the study area will be disturbed. Figure J-1 shows that the northeast corner of the Wetland Study Area is outside the Amended Site Boundary, as this specific area has been removed from consideration for permanent and temporary disturbance. 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 Wetlands and Other Jurisdictional Waters – OAR 345-021-0010(1)(j)(A)

OAR 345-021-0010(1)(j) Information based on literature and field study, as appropriate, about waters of this state, as defined under ORS 196.800, including:

OAR 345-021-0010(1)(j)(A) A description of all areas within the site boundary that might be waters of this state and a map showing the location of these features;

3.1 Definitions

3.1.1 Federal

Waters of the United States (WOUS) are defined in 33 Code of Federal Regulations (CFR) 36 328.3(a)(1-7) as:

1. *All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
2. *All interstate waters including interstate wetlands;*
3. *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:*
 - a) *Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
 - b) *From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or*
 - c) *Which are used or could be used for industrial purpose by industries in interstate commerce;*
4. *All impoundments of waters otherwise defined as WOUS under the definition;*
5. *Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;*
6. *The territorial seas; and*
7. *Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.*

Wetlands are defined federally at 33 CFR § 328.3(b) as “Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that

under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”

3.1.2 State

Oregon Revised Statute (ORS) 196.800(14) defines WOS more broadly than federal WOUS. Specifically, WOS include “all natural waterways, tidal and non-tidal bays, intermittent streams, constantly flowing streams, lakes, wetlands, that portion of the Pacific Ocean that is in the boundaries of this state, all other navigable and non-navigable bodies of water in this state and those portions of the ocean shore, as defined in ORS 390.605, where removal or fill activities are regulated under a state-assumed permit program as provided in 33 United States Code 1344(g) of the Federal Water Pollution Control Act, as amended.”

The Oregon Department of State Lands (ODSL) definition of wetlands mirrors the federal definition; see OAR 141-085-0510 (101).

3.2 Jurisdictional Versus Non-Jurisdictional Waters

Not all wetlands and streams are within the jurisdiction of state or federal regulation, and not all waters falling within the state’s jurisdiction fall under federal jurisdiction. For the Amended Carty Solar Farm, several jurisdictional distinctions are important, to estimate impacts only to jurisdictional wetlands and other waters. These include determinations related to the following:

- Ephemeral streams, which generally are not under state jurisdiction and are evaluated on a case-by-case basis for federal jurisdiction, as distinct from perennial and intermittent (USACE 2005, USACE 2008).
- Artificially created roadside and farm ditches, which are considered WOS if they contain food or game fish and are connected to WOS (OAR 141-085-0515(8)) and WOUS if they connect to other WOUS and are not ephemeral (EPA and USACE 2011).

Ephemeral streams are defined in the Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015) as streams that flow:

“...only in direct response to precipitation. Water typically flows only during and shortly after large precipitation events. An ephemeral stream may or may not have a well-defined channel, the stream bed is always above the water table, and stormwater runoff is the primary source of water. An ephemeral stream typically lacks biological, hydrological, and physical characteristics commonly associated with the continuous or intermittent conveyance of water.”

In contrast, intermittent streams are defined by Oregon as “any stream which flows during a portion of every year and which provides spawning, rearing or food-producing areas for food and game fish” (OAR 141-085-0510(46)). Food-producing streams are typically one stream order above a fish-bearing stream.

This exhibit presents the Certificate Holder’s best professional judgment as to which wetland and other water features are jurisdictional under ODSL regulation. While Exhibit J uses the term

“jurisdictional waters,” the Certificate Holder recognizes that final determination of agency jurisdiction will be made by ODSL, based on the information presented by the Certificate Holder.

3.3 Delineation of Wetlands and Other Water Features

The following sections detail the methods and results of the wetland delineation surveys.

3.3.1 Methods

The Certificate Holder conducted a desktop study of potentially jurisdictional wetlands and other waters to assist in planning for field delineations. The results of the desktop study are shown on Figure J-1. Site-specific literature and geographic information system map layers reviewed as part of the desktop study included:

- Statewide Wetland Inventory (SWI) / National Wetland Inventory (NWI) mapping (USFWS 2023)
- Natural Resources Conservation Service Soil Survey of Morrow County (NRCS 2023a)
- Aerial photography (ArcGIS desktop application)
- National Hydrography Dataset (USGS 2023)

Field investigations for the delineation of wetlands and other waters were conducted by AECOM Technical Services Inc. in April and May of 2023 and included pedestrian surveys within the Wetland Study Area (see Figure J-2).

Delineations were conducted utilizing techniques published in the 1987 United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008), and OARs for wetland delineations (141-090-0005 through 141-090-0055; ODSL 2001).

During the delineation effort, each other water encountered was examined for wetland characteristics consistent with Waters of the State definitions (see Section 2.1.2). The location and extent of each other water (regardless of its characteristics) was mapped with Global Positioning System technology. Upland plots were also established at some survey locations with orthoimagery signatures to confirm that the sites did not meet wetland criteria.

Detailed descriptions of delineation methods for wetlands and other waters are provided in the Wetland Delineation Report (Attachment J-1). The report will be submitted to ODSL for written concurrence.

3.3.2 Results

The wetland and other waters surveys within the Wetland Study Area resulted in the delineation of two wetlands, a portion of Carty Reservoir, several artificially created settling ponds, an artificially constructed channel, and two dry ditches (see Figure J-2). Since the time of the wetland delineation

surveys, four of the artificially created ponds have been demolished (Ponds 3, 4, 5, and 6) as part of demolition of PGE's BCP. Two wetlands (Wetland A and Wetland B) totaling 0.89 acres were delineated within the Wetland Study Area. The wetlands occur on a low terrace of Sixmile Canyon, south of Tower Road. They are depressional features with shallow saturation/groundwater associated with an off-site stream.

A 0.41-acre portion of Carty Reservoir was delineated within the Wetland Study Area. The ordinary high-water line/mark (OHWL/M) boundaries were assessed using ODSL field indicators of ordinary high water per Oregon Administrative Rule (OAR) 141-085-0515(3), which include a clear, natural line impressed on the bank, vegetation lines, scour lines, and/or wrack line debris created by controlled water elevations.

4.0 Effects on Wetlands and Other Jurisdictional Waters of the State – OAR 345-021-0010(1)(j)(B)

OAR 345-021-0010(1)(j)(B) An analysis of whether construction or operation of the proposed facility would adversely affect any waters of this state;

OAR 345-021-0010(1)(j)(B) requests an analysis of any adverse effects on Waters of the State from the Facility. The Amended Carty Solar Farm will not adversely affect WOS as defined under OAR 141-085-0510 (see Figure J-2; also see Figure 2 in the RFA 4's Division 27 document [Request for Amendment 4 for the Carty Generating Station]). The wetlands within the Wetland Study Area will have at least 50-foot buffers from any construction activities. The channel, ditches, ponds, and portion of the Carty Reservoir delineated within the Wetland Study Area are artificially created and will likely not be considered WOS. The Wetland Delineation Report will be submitted to ODSL for concurrence.

4.1 Significance of Impacts – OAR 345-021-0010(1)(j)(C)

OAR 345-021-0010(1)(j)(C) A description of the significance of potential adverse impacts to each feature identified in (A), including the nature and amount of material the applicant would remove from or place in the waters analyzed in (B);

There will be no impacts to WOS during the construction or operation of the Amended Carty Solar Farm (see Figure J-2; also see Figure 2 in the RFA 4's Division 27 document [Request for Amendment 4 for the Carty Generating Station]).

5.0 Information Supporting Lack of Requirement for Removal-Fill Permit – OAR 345-021-0010(1)(j)(D)

OAR 345-021-0010(1)(j)(D) If the proposed facility would not need a removal-fill authorization, an explanation of why no such authorization is required for the construction and operation of the proposed facility;

There will be no impacts to WOS during the construction or operation of the Amended Carty Solar Farm, so no Removal-Fill Permit is needed (see Figure J-2; also see Figure 2 in the RFA 4's Division 27 document [Request for Amendment 4 for the Carty Generating Station]).

6.0 Information Supporting Issuance of Removal-Fill Permit – OAR 345-021-0010(1)(j)(E)

OAR 345-021-0010(1)(j)(E) If the proposed facility would need a removal-fill authorization, information to support a determination by the Council that the Oregon Department of State Lands should issue a removal-fill permit, including information in the form required by the Department of State Lands under OAR Chapter 141 Division 85; and

There will be no impacts to WOS during the construction or operation of the Amended Carty Solar Farm, so no Removal-Fill Permit is needed (see Figure J-2; also see Figure 2 in the RFA 4's Division 27 document [Request for Amendment 4 for the Carty Generating Station]).

7.0 Mitigation and Monitoring Program – OAR 345-021-0010(1)(j)(F)

OAR 345-021-0010(1)(j)(F) A description of proposed actions to mitigate adverse impacts to the features identified in (A) and the applicant's proposed monitoring program, if any, for such impacts.

There will be no impacts to WOS during the construction or operation of the Amended Carty Solar Farm, so no mitigation or monitoring is required.

8.0 References

EPA (U.S. Environmental Protection Agency) and USACE (U.S. Army Corps of Engineers). 2011. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*.
<http://www.epa.gov/owow/wetlands/pdf/RapanosGuidance6507.pdf>.

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- USACE. 2005. Regulatory Guidance Letter (RGL) 05-05 Ordinary High Water Mark Identification. December 2005.
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- USFWS. 2023. National Wetland Inventory Wetlands Mapper. Wetlands Data by State, Oregon. U.S. Fish and Wildlife Service. <http://www.fws.gov/wetlands/Data/Mapper.html>.

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





Figures

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Carty Generating Station Request for Amendment 4

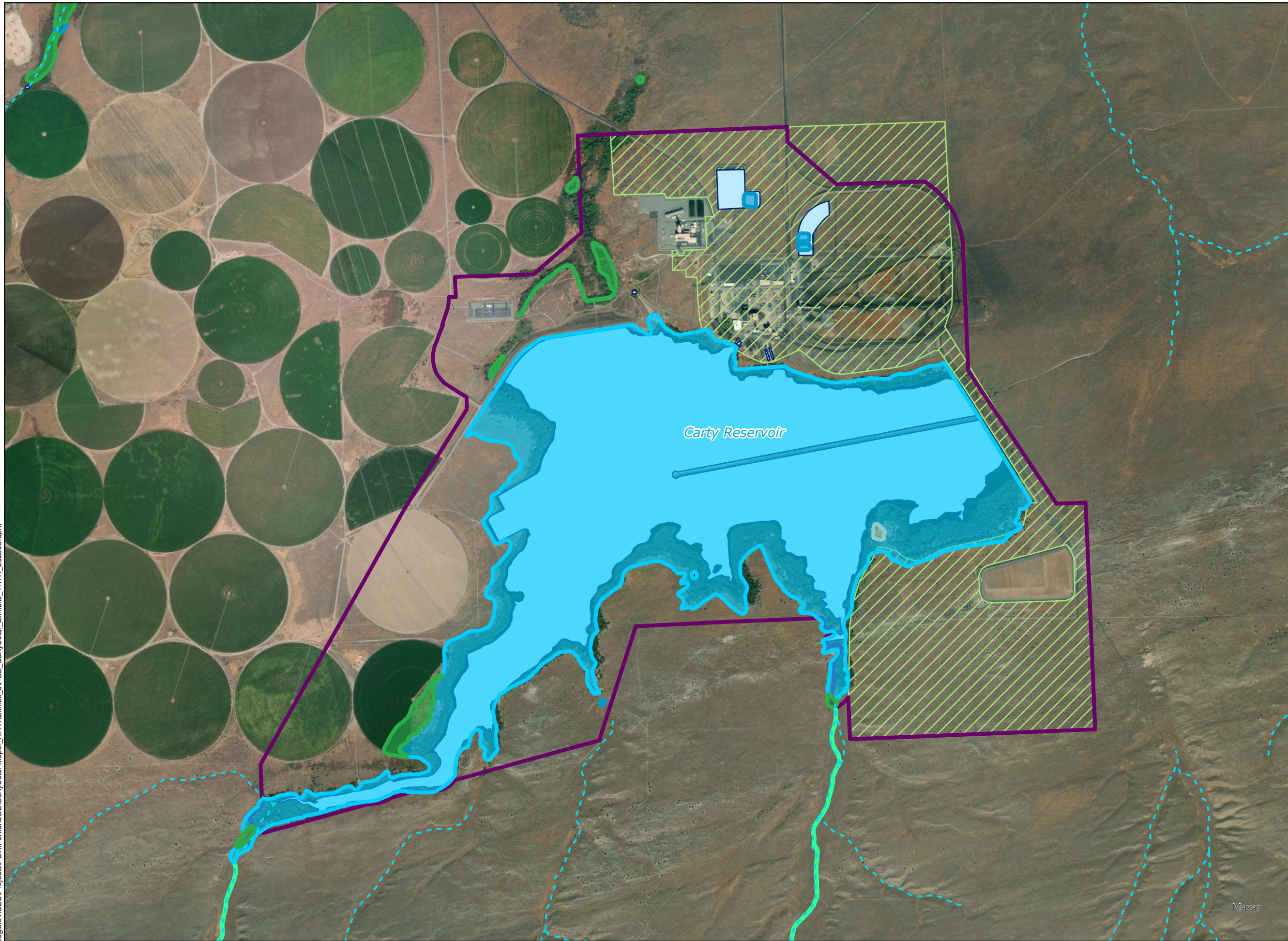
Figure J-1 National Wetlands Inventory and National Hydrography Dataset

MORROW COUNTY, OR

-  Amended Site Boundary
-  Wetland Study Area
- National Hydrography Dataset
-  Intermittent Stream
-  Waterbody
- National Wetland Inventory
-  Freshwater Emergent Wetland
-  Freshwater Forested/ Shrub Wetland
-  Freshwater Pond
-  Lake
-  Riverine



Reference Map

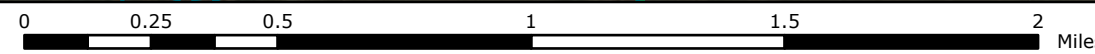


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WGS 1984 UTM Zone 10N



NOT FOR CONSTRUCTION

Carty Generating Station Request for Amendment 4

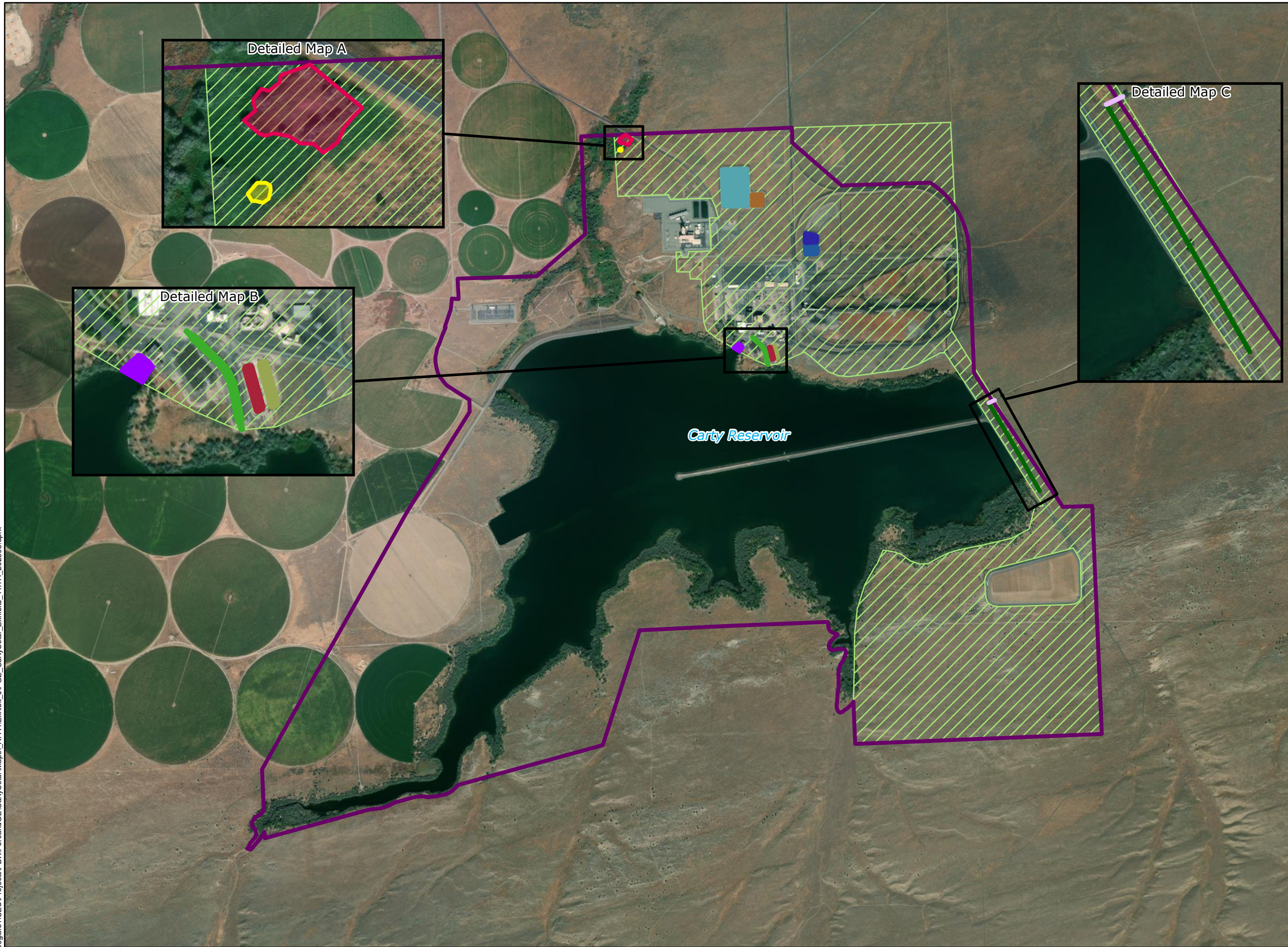
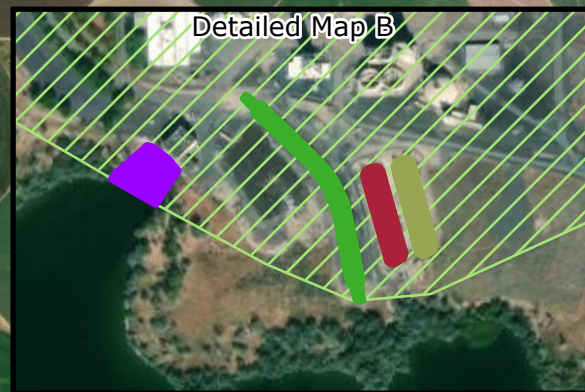
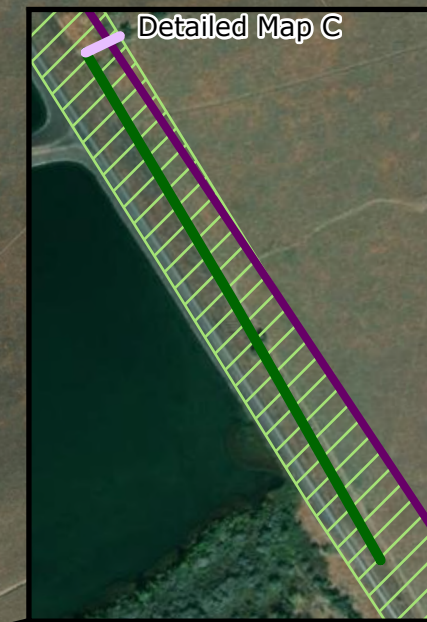
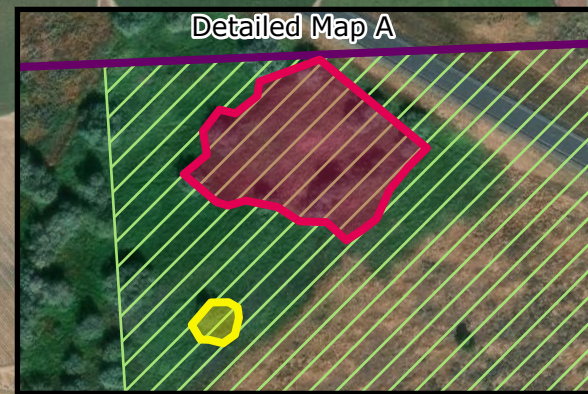
Figure J-2 Delineated Wetlands and Waters

MORROW COUNTY, OR

-  Amended Site Boundary
-  Wetland Study Area
- Wetlands**
-  Wetland A
-  Wetland B
- Constructed Features**
-  Carty Reservoir
-  Constructed Channel 1
-  Constructed Pond 1
-  Constructed Pond 2
-  Constructed Pond 3
-  Constructed Pond 4
-  Constructed Pond 5
-  Constructed Pond 6
-  Dry Ditch 1
-  Dry Ditch 2



Reference Map



Carty Reservoir

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Attachment J-1. Wetland Delineation Report

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Submitted to
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121 SW Salmon St – 1WTC0401
Portland, OR 97204
(503) 464-8061

Submitted by
AECOM
888 SW 5th Ave
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Portland General Electric Carty Generating Station Solar Farm

Wetland and Waters Delineation Report



October 2023
Job# 60706827

Executive Summary

On behalf of Portland General Electric (PGE), AECOM Technical Services Inc. (AECOM) conducted a field study to delineate wetland and waters boundaries within areas associated with an anticipated Request for Site Certificate Amendment No. 4 for the Carty Generating Station Solar Farm (the Carty site) located in Morrow County, Oregon.

AECOM conducted two visits to the Carty site in April and May of 2023 to delineate wetlands and other waters within the study area. Two wetlands (Wetland A and Wetland B) totaling 0.89 acres, and 0.41 acres of Carty Reservoir, were delineated within the study area. Wetlands A and B are isolated depressions associated with an off-site stream within Sixmile Canyon. Carty Reservoir extends on-site at a facility intake area. Six artificially constructed ponds, an artificially constructed channel, and two dry ditches were also documented. The constructed ponds, channels, and Carty Reservoir are all controlled by the associated power generating facilities.

Wetlands A and B are likely to be regulated by the state but unlikely to be federally regulated. Carty Reservoir and the artificially constructed ponds and channels are collectively considered wastewater impoundments and would not be considered waters of this state.

This report was prepared according to the required wetland delineation report format described in Oregon Administrative Rule 141-090-0035.

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5	Recent Aerial Photograph
6	Wetland & Waters Delineation Map
B	Photographs
C	Wetland Determination Data Forms
D	Additional Tables and Information

Site Data Summary

Project Name	PGE Carty Generating Station Solar Farm Wetland and Waters Delineation Report	
PGE Contact	Lenna Cope Portland General Electric 121 SW Salmon Street – 1WTC0403 Portland, OR 97204 lenna.cope@pgn.com	
AECOM Wetland Delineators	Lex Francis Biologist Lex.Francis@aecom.com (971) 323-6309	Brian Fletcher, PWS Wetland Ecologist Brian.Fletcher@aecom.com (971) 323-6287
Report Preparer	Lex Francis	
Quality Control	Brian Fletcher and Danni Kline	
Site Visit Dates	April 24 and May 25, 2023	
General Site Location	Approximately 13 miles southwest of Boardman, Morrow County, Oregon	
Legal Description	Township 3 North, Range 24 East, Sections 33, 34, 35 Willamette Meridian Township 2 North, Range 24 East, Sections 2, 3, 10, 11 Willamette Meridian	
Latitude/Longitude	45.702335°, -119.812176°	
Study Area Size	1,212.94 acres	
Previous Concurrences	WD2018-0158 and WD2010-0023	
USGS Topo Map	Ella, OR 7.5-minute quadrangle	
Drainage Basin	Sixmile Canyon (Hydrologic Unit Code 1707010108)	
Mapped NRCS Soil Series	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 58C - Taunton fine sandy loam, 5 to 12 percent slopes 78 - Xeric Torriorthents, nearly level 9 - Dune land	
Cowardin Classes	PEM1C – Palustrine emergent, persistent, seasonally flooded L1UBHh – Lacustrine limnetic, unconsolidated bottom, permanently flooded, diked/impounded PUBHx – Palustrine unconsolidated bottom, permanently flooded, excavated	
HGM Classes	Depressional, lacustrine	
Total On-Site Wetland Area	0.89 acres	
Total On-Site Waters Area	0.41 acres (Carty Reservoir)	

Section A. Landscape Setting and Land Use

The Portland General Electric (PGE) Carty Generating Station (the Carty site) is located approximately 13 miles southwest of Boardman, in Morrow County, Oregon (Figure 1; Appendix A). The Carty site is located in Township 2 North, Range 24 East, Sections 2, 3, 10, and 11; and Township 3 North, Range 24 East, Sections 33, 34, and 35, Willamette Meridian. It is within the Sixmile Canyon watershed (Hydrologic Unit Code 1707010108) and the Columbia Plateau Oregon Conservation Strategy Ecoregion (OCS 2016).

The study area and surrounding lands have been used for the Boardman Coal Plant (now retired and demolished) and the Carty Generating Station gas facility or open range for decades.

Section B. Site Alterations

B.1 Habitats

The study area is situated within a mix of shrub-steppe, agricultural, and heavily developed habitat types. The site is generally flat; one gently sloping drainage is present within Sixmile Canyon, and Carty Reservoir is at the south and west end of the study area. Dominant vegetation in the area consists of big sage (*Artemisia tridentata*; UPL¹), cheatgrass (*Bromus tectorum*; UPL), bluebunch wheatgrass (*Pseudoroegneria spicata*; UPL), broom snakeweed (*Gutierrezia sarothrae*; UPL), and rubber rabbitbrush (*Ericameria nauseosa*; UPL). Small off-site areas surrounding the Carty Reservoir are dominated by riparian vegetation, which includes black cottonwood (*Populus trichocarpa*; FAC) and Russian olive (*Elaeagnus angustifolia*; FAC). Wetland areas associated with Sixmile Canyon also contain this riparian vegetation, in addition to wetland plants such as common reed (*Phragmites australis*; FACW).

B.2 Local Soil Types

The Natural Resources Conservation Service (NRCS 2023a) maps eight soil types within the study area (Table 1). Mapped soils are shown in Figure 4 in Appendix A.

¹ Indicator Status Ratings

Indicator Status	Abrv.	Definitions - Short Version (ERDC/CRREL TN-12-1)
OBL		Obligate - Occur almost always under natural conditions in wetlands
FACW		Facultative Wetland - Usually occur in wetlands, but occasionally found in non-wetlands.
FAC		Facultative - Equally likely to occur in wetlands and non-wetlands.
FACU		Facultative Upland - Usually occur in non-wetlands, but occasionally found in wetlands.
UPL		Upland - Occur almost always under natural conditions in non-wetlands.

Table 1. Soil Mapping Units within the Study Area

Map Unit Name	Map Unit Symbol	Hydric Rating (percent)
Royal silt loam, 0 to 3 percent slopes	53A	0
Sagehill fine sandy loam, 2 to 5 percent slopes	54B	0
Sagehill fine sandy loam, 12 to 20 percent slopes	54D	0
Sagehill fine sandy loam, hummocky, 2 to 5 percent slopes	55B	0
Sagehill fine sandy loam, hummocky 5 to 12 percent slopes	55C	0
Taunton fine sandy loam, 5 to 12 percent slopes	58C	0
Xeric Torriorthents, nearly level	78	0
Dune land	9	0

Source: NRCS 2023

The majority of the study area is underlain with Sagehill fine sandy loam with Royal silt loam and Taunton fine sandy loam in wetland or riparian areas. The Sagehill mapping unit forms on terraces and are deep to very deep, well-drained soils formed in lacustrine deposits with slopes ranging from 0 to 60 percent. The Taunton mapping unit forms on structural benches, fan terraces, or mesas on slopes ranging from 0 to 45 percent. They are moderately deep to a duripan and well drained. Royal soils form on terraces with slopes ranging from 0 to 40 percent in very deep well-drained soils (NRCS 2023a).

Section C. Precipitation Data and Analysis

Observed precipitation data were obtained from the National Oceanic and Atmospheric Administration (NOAA 2023) Boardman, Oregon, station for both site visits (Appendix D). The closest NRCS Climate Analysis for Wetlands Tables (WETS) station to the project site is the Boardman station (NRCS 2023b).

According to the Boardman station data, no rainfall was received the day of the April 24, 2023, site visit, and 0.32 inches was received in the 2 weeks prior. Observed water-year-to-date (since October 1, 2022) was 5.85 inches, which was 0.07 inches above normal. According to the WETS data, monthly observed precipitation for the Boardman area was drier than normal for the 3 months preceding the site visit, as shown in Table 2.

Table 2. Rainfall Assessment for the 3-Month Period Preceding April 24, 2023 Site Visit

Prior Month	WETS Rainfall Percentile (inches)		Measured Rainfall (in.)	Condition: Dry Normal Wet	Value: Dry=1 Normal=2 Wet=3	Month Weight	Multiply Previous Columns
	30th	70th					
Mar 2023	0.40	0.82	0.00	Dry	1	3	3
Feb 2023	0.52	1.14	0.30	Dry	1	2	2
Jan 2023	0.83	1.53	0.70	Dry	1	1	1
						Sum	6

If sum is 6-9, rainfall of prior period was **drier than normal**

If sum is 10-14, rainfall of prior period was normal

If sum is 15-18, rainfall of prior period was wetter than normal

Data sources: NOAA 2023, NRCS 2023b

According to Boardman station data, no rainfall was received the day of the May 25, 2023, site visit, and no rainfall was received in the 2 weeks prior. Observed water-year-to-date (since October 1, 2022) was 6.34 inches, which was 0.11 inches above normal. According to the WETS data, monthly observed precipitation for the Boardman area was drier than normal for the 3 months preceding the site visit, as shown in Table 3.

Table 3. Rainfall Assessment for the 3-Month Period Preceding May 25, 2023, Site Visit

Prior Month	WETS Rainfall Percentile (inches)		Measured Rainfall (in.)	Condition: Dry Normal Wet	Value: Dry=1 Normal=2 Wet=3	Month Weight	Multiply Previous Columns
	30th	70th					
Apr 2023	0.26	0.72	0.40	Normal	2	3	6
Mar 2023	0.40	0.82	0.00	Dry	1	2	2
Feb 2023	0.52	1.14	0.30	Dry	1	1	1
						Sum	9

If sum is 6-9, rainfall of prior period was **drier than normal**
 If sum is 10-14, rainfall of prior period was normal
 If sum is 15-18, rainfall of prior period was wetter than normal

Data sources: NOAA 2023, NRCS 2023b

Because the field investigation was conducted after the beginning of the growing season in below-normal conditions, the lack of primary hydrology indicators was not considered sufficient to rule out the presence of wetland hydrology.

Section D. Methods

D.1 Existing Data Review

Prior to conducting the wetland and waters delineation, AECOM reviewed data from the following sources.

- Statewide Wetland Inventory (SWI) / National Wetland Inventory (NWI) mapping (USFWS 2023)
- NRCS Soil Survey of Morrow County (NRCS 2023a)
- Aerial photography (ArcGIS desktop application)
- National Hydrography Dataset (USGS 2023)

A Local Wetland Inventory has not been completed for the study area.

D.2 Site-Specific Field Methodology

Site visits were conducted on April 24 and May 25, 2023. Wetland presence was determined by AECOM wetland scientists using the methods outlined in the 1987 U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the*

Corps of Engineers Wetland Delineation Manual: Arid West Region (Regional Supplement) (USACE 2008). All wetlands and other waters are described in Section E. Representative ground-level photographs can be seen in Appendix B.

Wetland Determination

Wetland boundaries were determined by examining the vegetation, soils, and hydrology indicators at eight sample plot locations throughout the study area. At each sample plot, vegetation composition, soil profiles, and wetland hydrology indicators were recorded on standard Wetland Determination Data Forms sourced from the Regional Supplement (USACE 2008). These forms describe the wetland or upland conditions and are provided in Appendix C.

Vegetation

AECOM determined the dominant plant species present within circular plots centered on each sample plot location. Unless recorded as otherwise, trees were documented within a 30-foot radius, shrubs were documented within a 15-foot radius, and herbaceous species were documented within a 5-foot radius. Dominant plant species were determined using the 50/20 rule (Environmental Laboratory 1987). The wetland indicator status for each dominant species was assigned using the Oregon subset of the National Wetland Plant List, Arid West Region (USACE 2020).

Soils

Soil profile characteristics were examined to determine if they met the definition of a hydric soil indicator per the Field Indicators of Hydric Soils in the United States (NRCS 2018). Soil colors were determined using a Munsell Soil Color Chart (X-Rite 2009). Soils were also examined for the presence of oxidized rhizospheres along living roots to support determinations of wetland hydrology.

Hydrology

Per the Regional Supplement (USACE 2008), wetland hydrology was determined by observing at least one primary indicator (e.g., ponding, high water table and/or saturation within 12 inches of the soil surface) or two secondary indicators.

Classification

Wetlands were classified per the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979) and the Oregon Hydrogeomorphic (HGM) method (Adamus and Field 2001). Under the Cowardin classification system, palustrine wetlands include all non-tidal wetlands dominated by vegetation, including forested, scrub-shrub, and emergent wetlands, based on the percent cover of woody vegetation and the height of the dominant vegetation. Modifiers are included in the Cowardin classification to indicate water regime or other pertinent information. The HGM method classifies wetlands based on the hydrologic and geomorphic characteristics that control many wetland functions.

Section E. Description of Wetlands and Other Non-Wetland Waters

E.1 Wetlands

Two wetlands (Wetland A and Wetland B) totaling 0.89 acres were delineated within the study area. The wetlands occur on a low terrace of Sixmile Canyon, south of Tower Road. They are depressional features with shallow saturation/groundwater associated with an off-site stream. Details about each wetland are summarized in Table 4. Wetlands are shown in Figure 6 in Appendix A, and photographs are provided in Appendix B. The wetland-upland boundary conditions are documented on wetland determination data forms provided in Appendix C.

Additional sample plots were taken in three locations, with potential wetland conditions observed within riparian areas or drainages (Plots 1 through 3). Plot 8 was taken at the furthest extent of the study area in the northwest corner near another likely wetland just outside the study area boundary. Plots 1, 2, 3, and 8 were all determined to meet upland conditions.

Table 4. Summary of Wetlands within the Study Area

Feature Name (Acreage within Study Area)	Paired Sample Plots/ Photo No.	Cowardin[^]/ HGM Classification	Anticipated State/Federal Jurisdiction*
Wetland A (0.84 ac)	SP-4 SP-5 Photos 1, 2	PEM1C/ Depressional	Likely / Unlikely
Wetland B (0.05 ac)	SP-6 SP-7 Photo 3	PEM1C/ Depressional	Likely / Unlikely

[^] Cowardin Classification: PEM1C = Palustrine emergent, persistent, seasonally flooded.

* State jurisdiction (Oregon DSL) is considered Likely if the wetland is a naturally occurring feature. Federal jurisdiction (USACE) is considered Likely if there is continuous surface water connection to a WOTUS. Federal jurisdiction is Not Likely if the feature is isolated from a WOTUS.

Key: ac = acre; DSL = Department of State Lands; HGM = hydrogeomorphic; USACE = U.S. Army Corps of Engineers; WOTUS = Waters of the U.S.

E.2 Other Waters

A 0.41-acre portion of Carty Reservoir was delineated within the study area. The ordinary high water line/mark (OHWL/M) boundaries were assessed using Oregon DSL field indicators of ordinary high water per Oregon Administrative Rule (OAR) 141-085-0515(3), which include a clear, natural line impressed on the bank, vegetation lines, scour lines, and/or wrack line debris created by controlled water elevations. A summary of Carty Reservoir is provided in Table 5.

Table 5. Summary of Other Waters within the Study Area

Feature Name (Acreage within Study Area)	Photo No.	Cowardin[^]/ HGM Classification	Anticipated State/Federal Jurisdiction*
Carty Reservoir OHWL/M (0.41 ac)	Photos 4, 5	L1UBHh/ Lacustrine	Unlikely / Unlikely

[^] Cowardin Classifications: L1UBHh = Lacustrine limnetic, unconsolidated bottom, permanently flooded, diked/impounded.

* State jurisdiction (Oregon DSL) is considered Likely if the stream is a naturally occurring feature. Federal jurisdiction (USACE) is considered Likely if there is at least a direct connection to a WOTUS. Anticipated jurisdiction is for advisory/planning purposes; the ultimate decision is at the discretion of the USACE and the Oregon DSL.

Key: ac = acre; DSL = Department of State Lands; HGM = hydrogeomorphic; OHWL/M = ordinary high water line/mark; USACE = U.S. Army Corps of Engineers; WOTUS = Waters of the U.S.

E.3 Artificially Constructed Features

The study area contains three artificially constructed channels for discharges of the former Boardman Coal Plant or overflows of the Carty Reservoir. Six artificially constructed ponds within the facility are/were used for water settling and treatment.

Constructed Channel 1 is an approximately 680-foot-long artificial water discharge conveyance within the facility (Photo 6) that connects to the Carty Reservoir via concrete tunnel. The channel banks and bottom were fully lined with riprap and concrete. It contained sparsely scattered vegetation throughout. There was no flow in the channel during the site visits.

Dry Ditches 1 and 2 occur just east of Carty Reservoir’s eastern berm/access road embankment. These ditches serve to drain the toe of the Carty Reservoir impoundment and were clearly constructed in uplands (Sample Plot 2). Dry Ditch 1 runs parallel to the toe of the eastern embankment (Photo 7). Dry Ditch 2 runs east and continues off-site.

Four artificially constructed pond features (wastewater/sanitary lagoons) were documented in the northern portion of the study area east of Tower Road. Constructed Ponds 1 and 2 are 9.74 and 1.31 acres in size, respectively. Constructed Ponds 3 and 4 are 1.10 acres and 1.13 acres in size, respectively. The ponds are graveled and bermed, lined with plastic, and do not contain wetlands at the pond fringe. After the delineation site visit, these features were removed and graded as part of the Boardman Coal Plant demolition.

Two nearly identical artificially constructed industrial basins (Constructed Ponds 5 and 6) were also documented within the Carty site, just east of Constructed Channel 1. They are gravel-lined and each contains four rectangular cells in series that were used to treat facility discharges. Reportedly, they have not been used since October 2020 when the facility ceased its operations. Vegetation within and surrounding the features was largely dried and dead at the time of the field study. After the delineation site visit, these features were removed and graded as part of the Boardman Coal Plant demolition.

Section F. Deviation from SWI

As shown in Figure 3 in Appendix A, the SWI / NWI only maps four features within the study area. Carty Reservoir is described as lacustrine, limnetic, unconsolidated bottom, permanently flooded, diked/impounded (L1UBHh). The three artificially constructed ponds are categorized as palustrine, unconsolidated bottom, permanently flooded, excavated (PUBHx). The SWI / NWI does not document any wetland features in the vicinity of delineated Wetlands A and B, or stream features in the vicinity of any of the constructed channels.

Section G. Mapping Method

A handheld Trimble TDC2600 with DA2 Catalyst GPS unit with sub-meter horizontal accuracy was used to survey wetland and water boundaries and sample plot locations. Raw GPS data were collected in the field as point data. At each point, 30 GPS positions were collected and averaged. The surveyed wetland and water boundaries are shown in Figure 6 in Appendix A.

Section H. Additional Information

An old coal ash landfill area (now capped with plastic ClosureTurf and gravel) is located in the southern portion of the study area, as shown on Figure 1—it is obvious upland. Wetlands A and B are likely regulated under Oregon DSL jurisdiction, as they are naturally occurring. The wetlands lack a direct surface connection to a WOTUS and are not likely jurisdictional by the USACE.

The Carty Reservoir is a constructed industrial pond that meets the definition of an Exempt Artificially Created Pond constructed for the purpose of wastewater treatment (OAR 141-085-0515(7)(a)). Based on the landscape setting and lack of mapped hydric soils in the area, it appears that the land was upland before the Carty Reservoir was constructed. Because the hydrology source is water pumped from the Columbia River, the Reservoir would likely revert to dry land if the pumping ceased; therefore, the USACE is unlikely to have jurisdiction.

The Constructed Channel 1, Dry Ditches 1 and 2, and the six constructed ponds are unlikely to be determined jurisdictional by DSL under OAR 141-085-0515(7). These artificial settling ponds were constructed in uplands and have no connection to WOTUS; they are unlikely to be regulated under state or federal jurisdictions.

Section I. Results and Conclusions

Two wetlands totaling 0.89 acre and a portion of Carty Reservoir totaling 0.41 acres were delineated. Photographs of the features can be seen in Appendix B. Appendix C contains the wetland determination data forms completed during the site visits.

Section J. Disclaimer

This report documents the investigation, best professional judgment, and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at one's own risk until it has been reviewed and approved in writing by the Oregon DSL in accordance with OAR 141-090-0005 through 141-090-0055.

Section K. References

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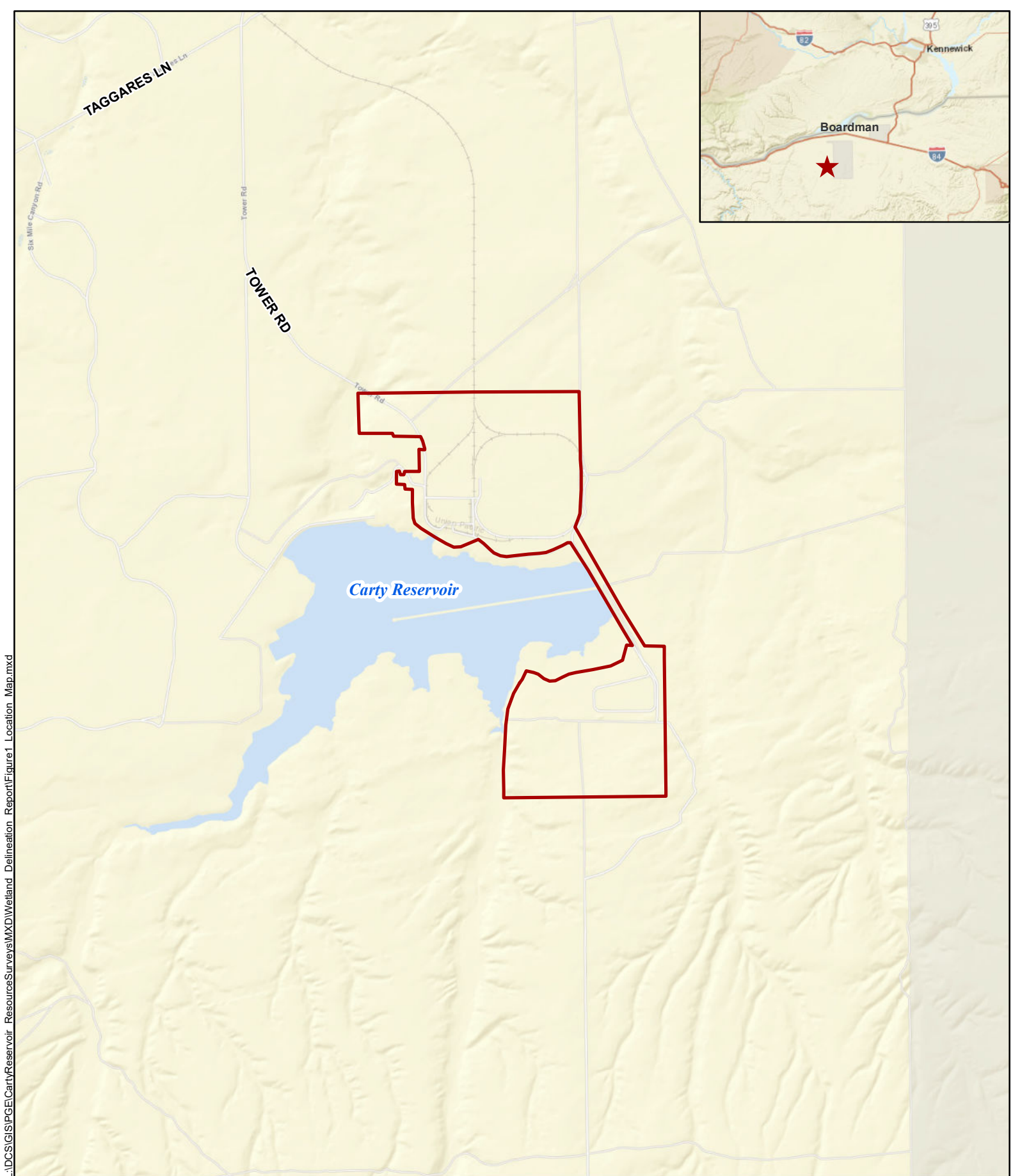
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Appendix A: Figures



L:\DCS\GIS\PG&E\CartyReservoir_ResourceSurveys\MXD\Wetland_Delineation_Report\Figure1_Location_Map.mxd

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Legend
 Study Area (1,212.94 acres)

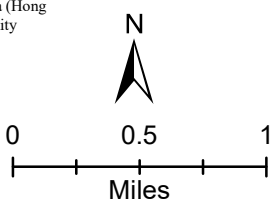
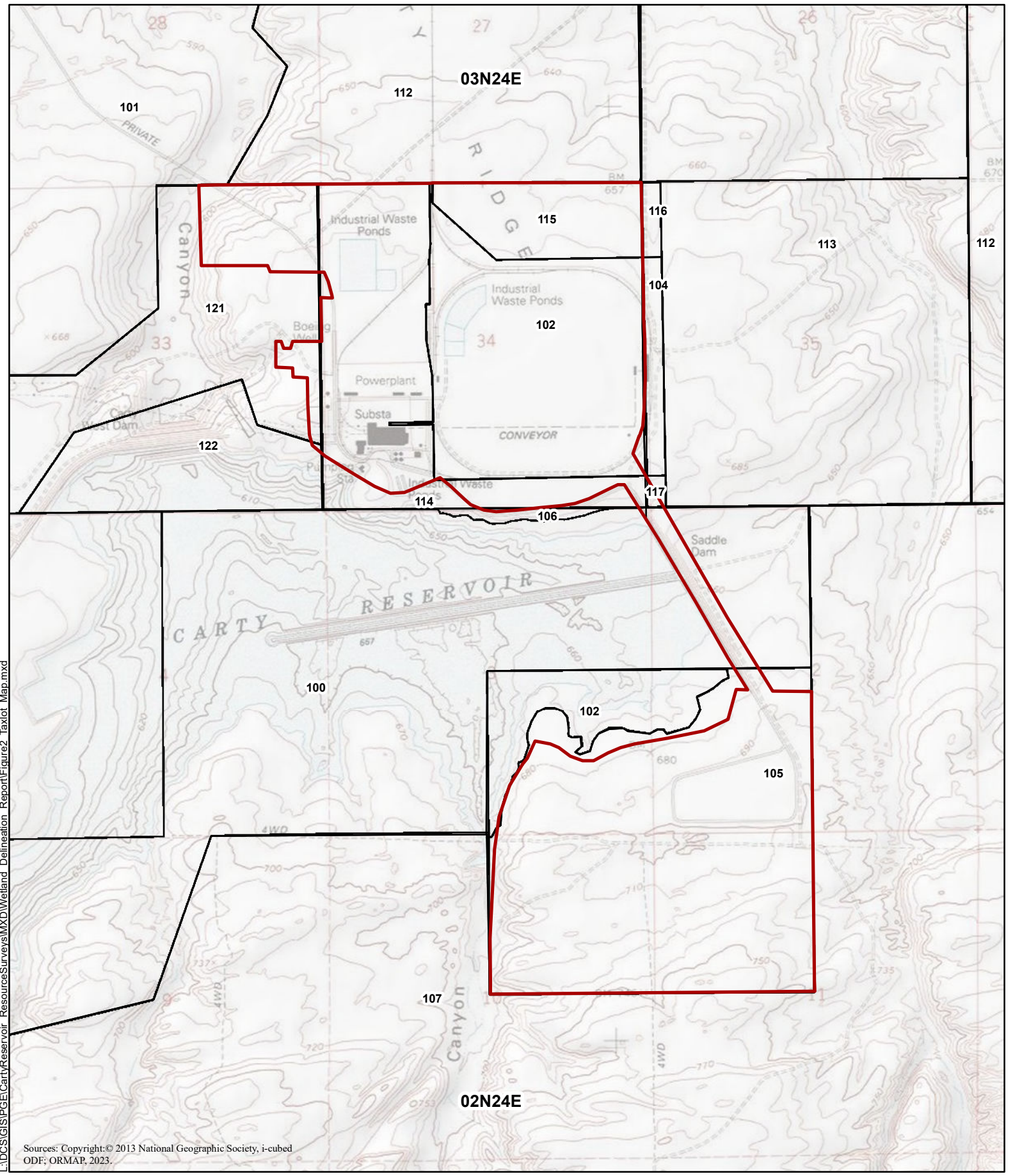


FIGURE 1 – LOCATION MAP

PORTLAND GENERAL ELECTRIC
 CARTY GENERATING STATION SOLAR FARM
 MORROW COUNTY, OREGON

October 2023
 AECOM Project No. 60706827





Sources: Copyright © 2013 National Geographic Society, i-cubed
 ODF: ORMAP, 2023.

- Legend**
- Study Area
 - Tax Lot

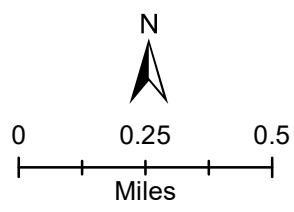
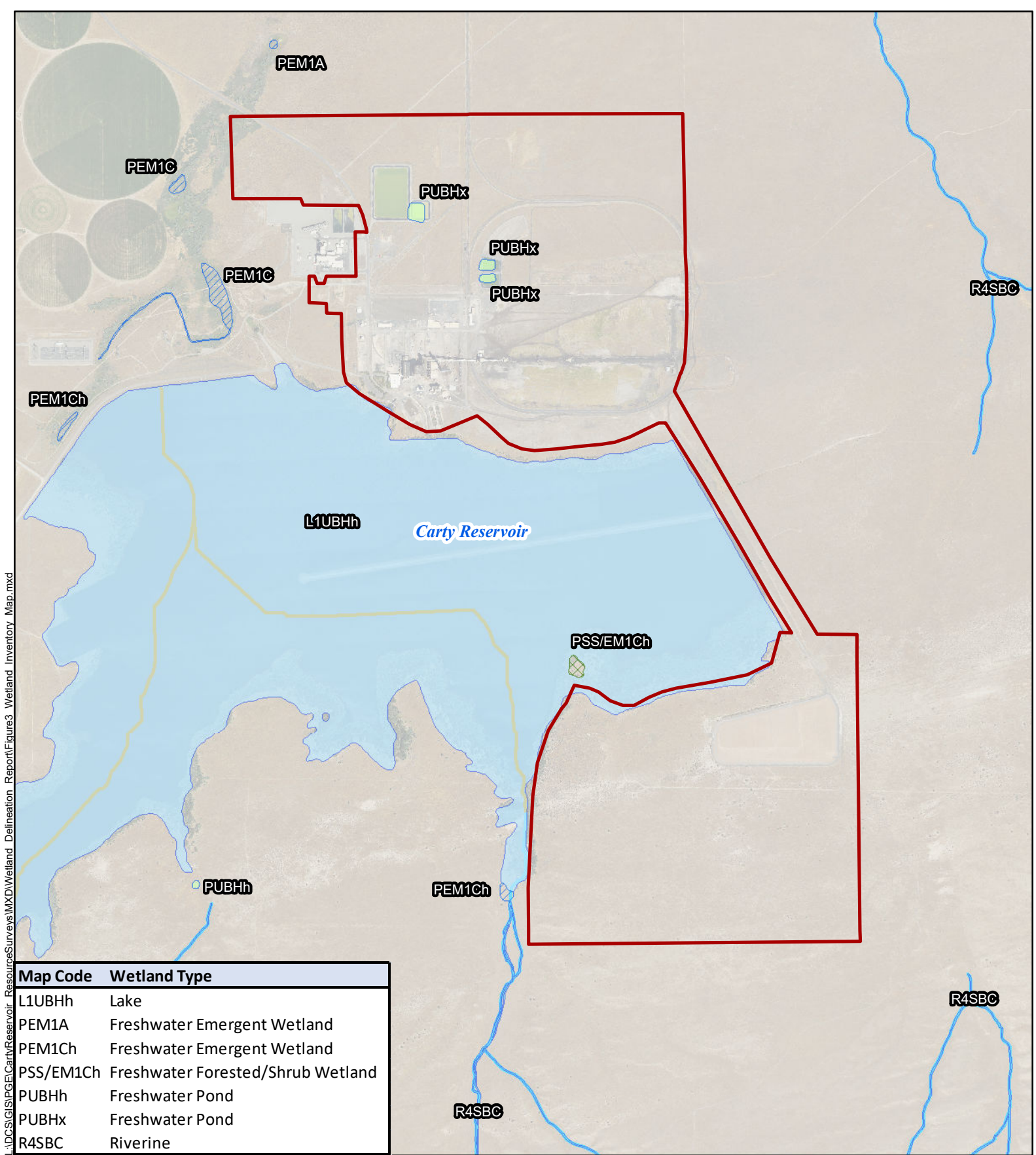


FIGURE 2 – TAX LOT MAP
 PORTLAND GENERAL ELECTRIC
 CARTY GENERATING STATION SOLAR FARM
 MORROW COUNTY, OREGON

October 2023
 AECOM Project No. 60706827



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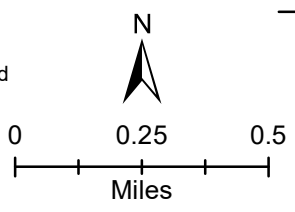
L:\DCS\GIS\PCGE\CartyReservoir_Resources\Surveys\MXD\Wetland_Delineation_Report\Figure3_Wetland_Inventory_Map.mxd

Map Code	Wetland Type
L1UBHh	Lake
PEM1A	Freshwater Emergent Wetland
PEM1Ch	Freshwater Emergent Wetland
PSS/EM1Ch	Freshwater Forested/Shrub Wetland
PUBHh	Freshwater Pond
PUBHx	Freshwater Pond
R4SBC	Riverine

Sources: Morrow County NAIP, 2022; ORMMap, 2023; NWI, 2023; NHD, 2023.

Legend

- Study Area
- National Hydrography Dataset**
- Artificial Path
- Intermittent
- National Wetland Inventory**
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine



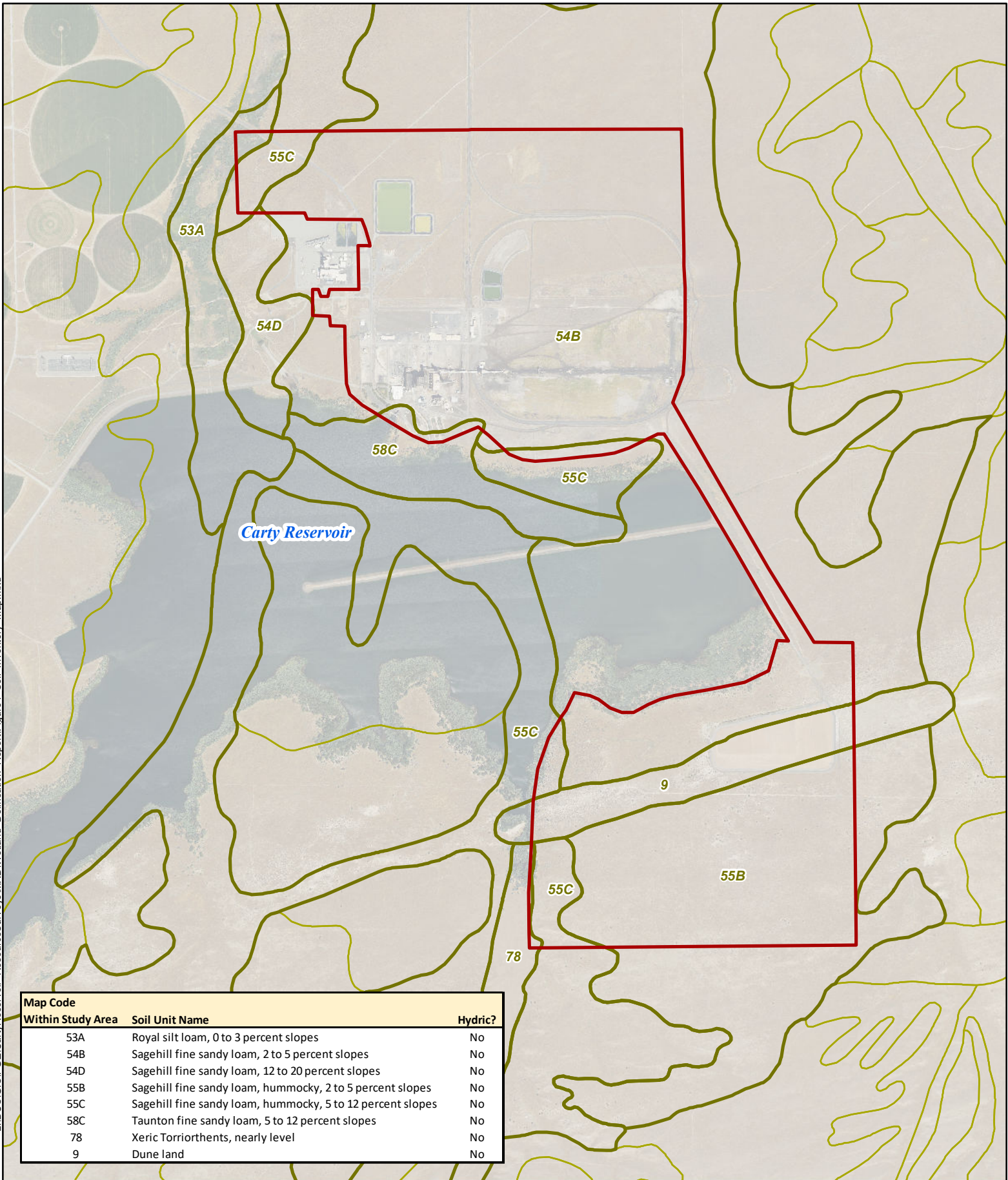
**FIGURE 3
NATIONAL WETLAND INVENTORY MAP**

PORTLAND GENERAL ELECTRIC
CARTY GENERATING STATION SOLAR FARM
MORROW COUNTY, OREGON

October 2023
AECOM Project No. 60706827



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Map Code		
Within Study Area	Soil Unit Name	Hydric?
53A	Royal silt loam, 0 to 3 percent slopes	No
54B	Sagehill fine sandy loam, 2 to 5 percent slopes	No
54D	Sagehill fine sandy loam, 12 to 20 percent slopes	No
55B	Sagehill fine sandy loam, hummocky, 2 to 5 percent slopes	No
55C	Sagehill fine sandy loam, hummocky, 5 to 12 percent slopes	No
58C	Taunton fine sandy loam, 5 to 12 percent slopes	No
78	Xeric Torriorthents, nearly level	No
9	Dune land	No

Sources: Morrow County NAIP, 2022; NRCS, 2023.

Legend

- Study Area
- Project Soil Unit
- Other Soil Unit

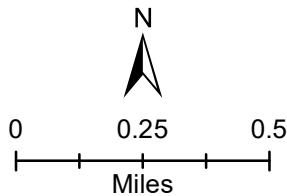
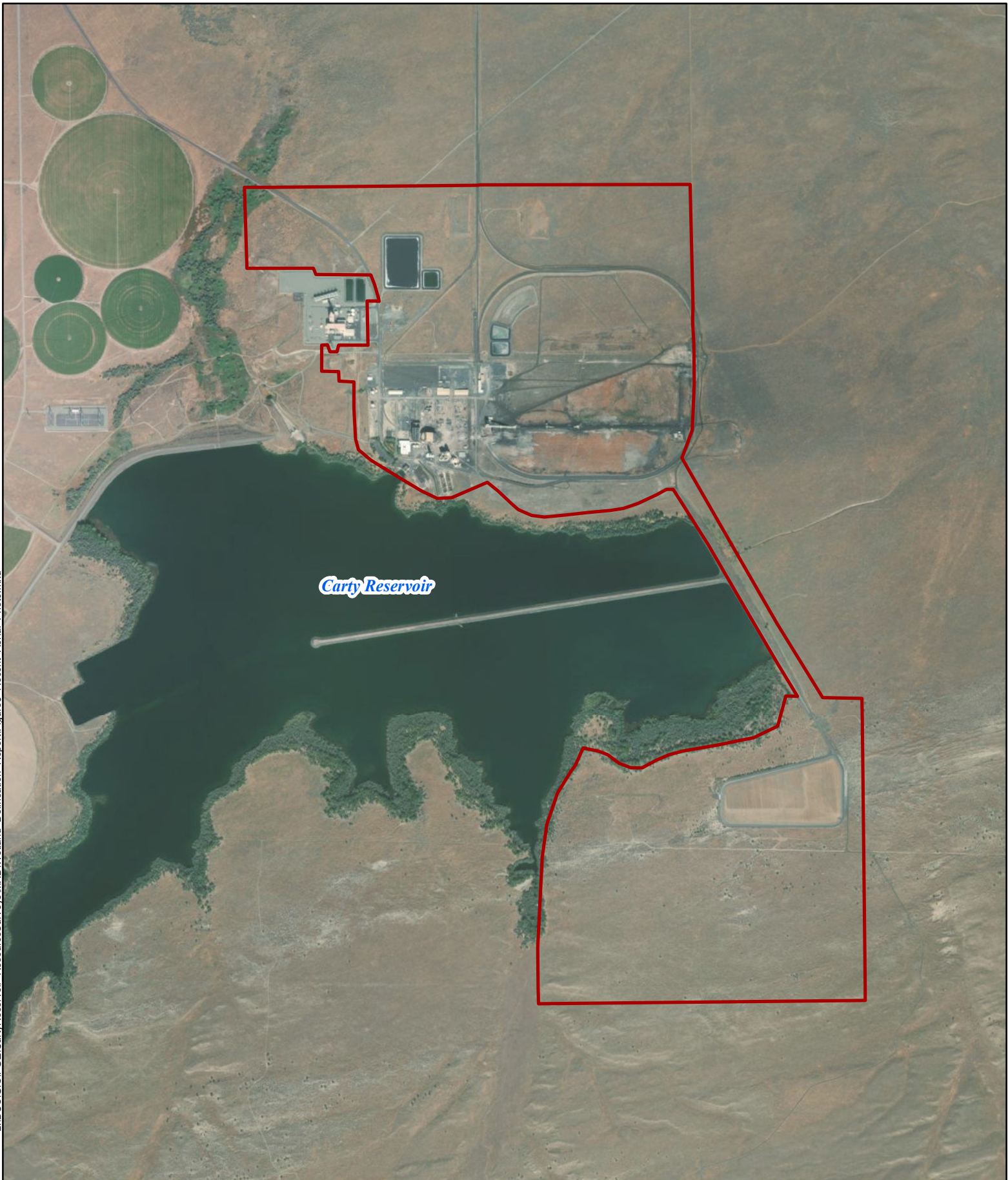


FIGURE 4 – COUNTY SOIL SURVEY MAP

PORTLAND GENERAL ELECTRIC
 CARTY GENERATING STATION SOLAR FARM
 MORROW COUNTY, OREGON

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Carty Reservoir

Source: ArcGIS Online Imagery, October, 2022

Legend
[Red Outline] Study Area

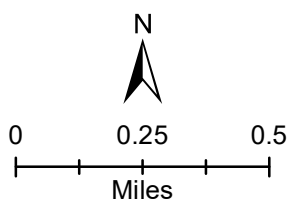


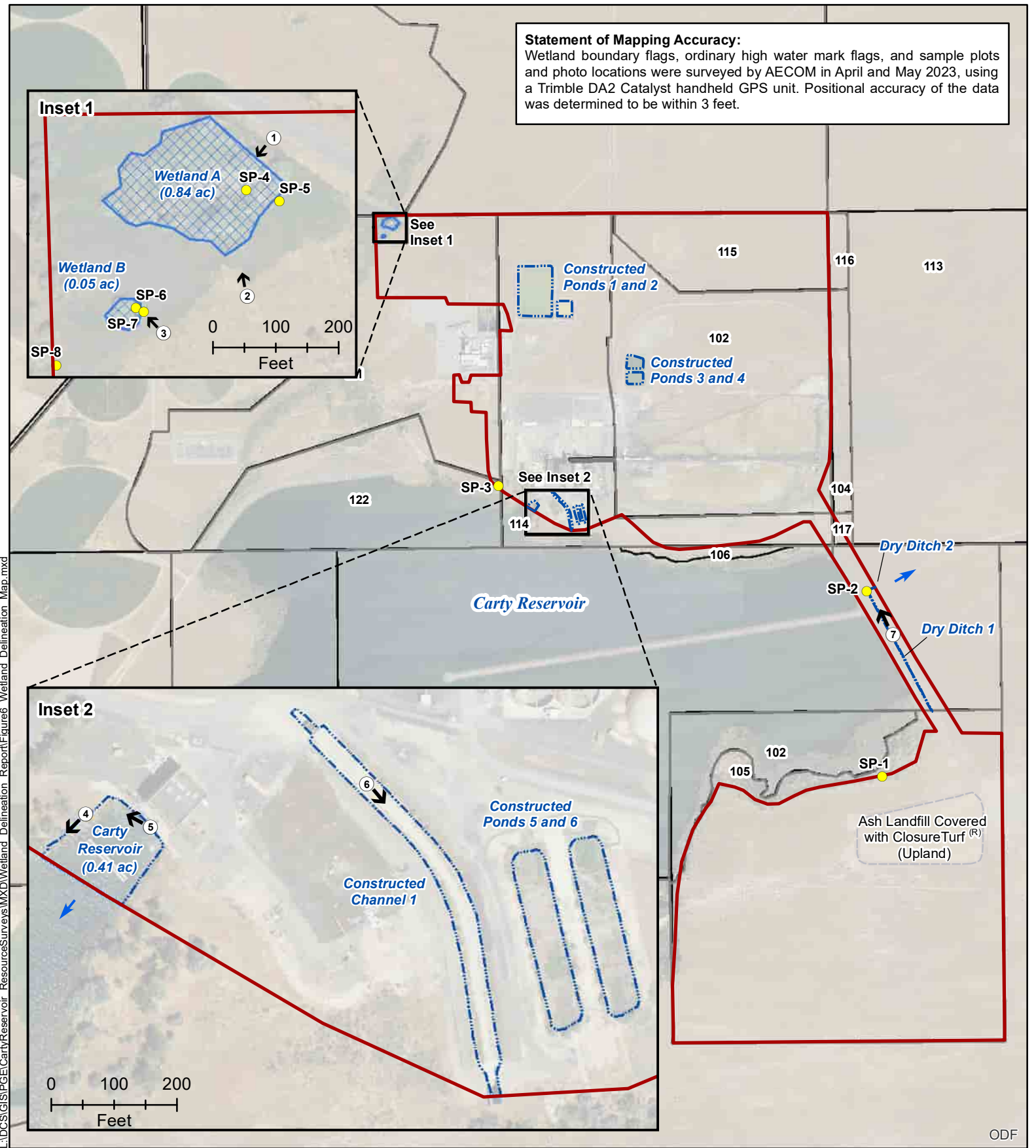
FIGURE 5 – RECENT AERIAL PHOTOGRAPH

PORTLAND GENERAL ELECTRIC
CARTY GENERATING STATION SOLAR FARM
MORROW COUNTY, OREGON

October 2023
AECOM Project No. 60706827



Statement of Mapping Accuracy:
 Wetland boundary flags, ordinary high water mark flags, and sample plots and photo locations were surveyed by AECOM in April and May 2023, using a Trimble DA2 Catalyst handheld GPS unit. Positional accuracy of the data was determined to be within 3 feet.



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Sources: Morrow County NAIP Imagery, 2022; ORMAP, 2023; NWI, 2023; NHD, 2023.

- Legend**
- Study Area
 - Tax Lot
 - Sample Plot
 - Photo Point
 - Wetland (PEM)
 - Constructed Feature
 - ➔ Feature Continues Offsite

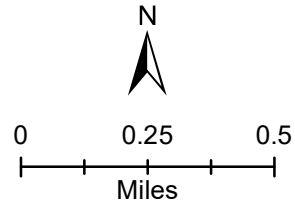


FIGURE 6
WETLAND & WATERS DELINEATION MAP
 PORTLAND GENERAL ELECTRIC
 CARTY GENERATING STATION SOLAR FARM
 MORROW COUNTY, OREGON

October 2023
 AECOM Project No. 60706827



ODF

Appendix B: Photographs


Project: PGE Carty Generating Station		SITE PHOTOS	AECOM Project No. 60682780
Photo No. 1	Date 5/25/23		
Direction Photo Taken: Southwest			
Description: Wetland A is an 0.84-acre shallow depression that is seasonally flooded. Vegetation is dominated by common reed and the fringe contains several Russian olive trees and shrubs.			


Photo No. 2	Date: 5/25/23		
Direction Photo Taken: North			
Description: Photo shows Wetland A from the south. The wetland-upland boundary was easily identified by the abrupt transition from the dominant common reed (FAC). Scattered Russian olive trees and shrubs can also be seen.			


Photo No. 3	Date: 5/25/23	
Direction Photo Taken:		
Northwest		
Description:		
<p>Photo shows the upland sample plot SP-7 located near the boundary of Wetland B. The wetland is overwhelmingly dominated by common reed and the upland contains a dense thatch of unknown dead grasses.</p>		


Photo No. 4	Date: 5/25/23	
Direction Photo Taken:		
Southwest		
Description:		
<p>The OHWL/M of Carty Reservoir was an obvious topographic transition and change in vegetation from the largely unvegetated rocky shore.</p>		


Photo No. 5	Date: 5/25/23	
Direction Photo Taken: Northwest		
Description: Photo shows Carty Reservoir from the top of the facility's concrete intake structure. The controlled water elevation on the concrete and riprap-lined bank can be seen.		



Photo No. 6	Date: 5/25/23	
Direction Photo Taken: Southeast		
Description: Photo shows Constructed Channel 1, a sparsely vegetated, cobble and riprap-lined water discharge conveyance within the Carty facility.		

Photo No. 7	Date: 4/24/23	
Direction Photo Taken: Northwest		
Description: Dry Ditch 1 drains the toe of the Carty Reservoir / access road embankment. It was rock-lined, dry, and partially vegetated.		

Appendix C: Wetland Determination Data Forms

Project/Site: Carty Generating Station Solar Farm City/County: Boardman / Morrow County Sampling Date: 04/24/2023
 Applicant/Owner: Portland General Electric (PGE) State: OR Sampling Point: SP-1
 Investigator(s): Lex Francis Section, Township, Range: T2N, R24E, Section 2
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 3
 Subregion (LRR): LRR B Lat: 45.680076 Long: -119.787500 Datum: NAD1983
 Soil Map Unit Name: Sagehill fine sandy loam, 2 to 5 percent slopes NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
---	--

Remarks:
 Drier than normal climatic conditions. Plot located within riparian forest community within documented NWI area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Populus balsamifera</u>	15	Yes	FAC	
2. _____				
3. _____				
4. _____				
	15	=Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Juniperus communis</u>	15	Yes	FACU	
2. <u>Artemisia tridentata</u>	10	Yes	UPL	
3. <u>Elaeagnus angustifolia</u>	5	No	FAC	
4. _____				
5. _____				
	30	=Total Cover		
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Bromus tectorum</u>	40	Yes	UPL	
2. <u>Holosteum umbellatum</u>	25	Yes	UPL	
3. <u>Achillea millefolium</u>	5	No	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	70	=Total Cover		
Woody Vine Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
		=Total Cover		
% Bare Ground in Herb Stratum <u>30</u>		% Cover of Biotic Crust <u>0</u>		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u> </u>	x 1 = <u> </u>
FACW species <u> </u>	x 2 = <u> </u>
FAC species <u> </u>	x 3 = <u> </u>
FACU species <u> </u>	x 4 = <u> </u>
UPL species <u> </u>	x 5 = <u> </u>
Column Totals: <u> </u> (A)	<u> </u> (B)
Prevalence Index = B/A = <u> </u>	

Hydrophytic Vegetation Indicators:

 Dominance Test is >50%

 Prevalence Index is ≤3.0¹

 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-18	2.5Y 4/3	100				Loamy Sand (LS)	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Aerial, previous delineations

Remarks:
Soils dry from 0-14 inches, and slightly moist from 14 to 18 inches. No saturation, water table, or other indicators of wetland hydrology.

Project/Site: Carty Generating Station Solar Farm City/County: Boardman / Morrow County Sampling Date: 04/24/2023
 Applicant/Owner: Portland General Electric (PGE) State: OR Sampling Point: SP-2
 Investigator(s): Lex Francis Section, Township, Range: T2N, R24E, Section 2
 Landform (hillside, terrace, etc.): Dry ditch Local relief (concave, convex, none): Concave Slope (%): 3
 Subregion (LRR): LRR B Lat: 45.688196 Long: -119.788359 Datum: NAD1983
 Soil Map Unit Name: Sagehill fine sandy loam, 2 to 5 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil X, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
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Remarks:
 Drier than normal climatic conditions. Plot located at the confluence of two ditches at the toe of the Carty Reservoir impoundment. No evidence of recent/regular flow.

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____					Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
2. _____					
3. _____					
4. _____					
=Total Cover					
Sapling/Shrub Stratum	(Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Elaeagnus angustifolia</u>		<u>15</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____					
3. _____					
4. _____					
5. _____					
=Total Cover					
Herb Stratum	(Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Schedonorus arundinaceus</u>		<u>60</u>	<u>Yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Bassia hyssopifolia</u>		<u>15</u>	<u>No</u>	<u>FACU</u>	
3. <u>Elymus repens</u>		<u>15</u>	<u>No</u>	<u>FAC</u>	
4. <u>Bromus tectorum</u>		<u>10</u>	<u>No</u>	<u>UPL</u>	
5. _____					
6. _____					
7. _____					
8. _____					
=Total Cover					
Woody Vine Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____					Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
2. _____					
=Total Cover					
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>			

Remarks:

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	2.5Y 4/3	100					Sandy Loam (SL)	
6-13	2.5Y 4/3	95	10YR 4/6	5	C	PL/M	Sandy Loam (SL)	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: <u>Angular gravels</u> Depth (inches): <u>13</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/>
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Remarks:
Shovel refusal at 13 inches due to restrictive gravel layer within the ditch.

HYDROLOGY

Wetland Hydrology Indicators:	Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Aerial, previous delineations

Remarks:
Soils dry throughout.

Project/Site: Carty Generating Station Solar Farm City/County: Boardman / Morrow County Sampling Date: 5/25/2023
 Applicant/Owner: Portland General Electric (PGE) State: OR Sampling Point: SP-3
 Investigator(s): Lex Francis Section, Township, Range: T3N, R24E, Section 33
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Sl. Concave Slope (%): 3
 Subregion (LRR): LRR B Lat: 45.692903 Long: -119.811225 Datum: NAD1983
 Soil Map Unit Name: Sagehill fine sandy loam, 2 to 5 percent slopes NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
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Remarks:
 Drier than normal climatic conditions. Plot located within slight depression in riparian forest to the north of Carty Reservoir.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Populus deltoides</u>	<u>25</u>	Yes	FAC	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>25</u> =Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Elaeagnus angustifolia</u>	<u>5</u>	Yes	FAC	
2. <u>Ericameria nauseosa</u>	<u>3</u>	Yes	UPL	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>8</u> =Total Cover				
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Nassella leucotricha</u>	<u>70</u>	Yes	UPL	
2. <u>Poa bulbosa</u>	<u>5</u>	No	FACU	
3. <u>Agropyron cristatum</u>	<u>5</u>	No	UPL	
4. <u>Bromus tectorum</u>	<u>5</u>	No	UPL	
5. <u>Melilotus officinalis</u>	<u>3</u>	No	FACU	
6. <u>Lactuca serriola</u>	<u>3</u>	No	FACU	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>91</u> =Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ =Total Cover				
% Bare Ground in Herb Stratum <u>9</u> % Cover of Biotic Crust <u>0</u>				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across All Strata: 4 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%
 ___ Prevalence Index is ≤3.0¹
 ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	2.5Y 3/2	99	7.5YR 3/3	1	C	M	Silty Loam (SiL)	
10-16	2.5Y 4/3	95	10YR 4/6	5	C	PL/M	Silty Loam (SiL)	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
Remarks: 	

HYDROLOGY

Wetland Hydrology Indicators:	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Aerial, previous delineations

Remarks:
Soils dry throughout.

Project/Site: Carty Generating Station Solar Farm City/County: Boardman / Morrow County Sampling Date: 5/25/2023
 Applicant/Owner: Portland General Electric (PGE) State: OR Sampling Point: SP-4
 Investigator(s): Lex Francis Section, Township, Range: T3N, R24E, Section 33
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 3
 Subregion (LRR): LRR B Lat: 45.704424 Long: -119.817537 Datum: NAD1983
 Soil Map Unit Name: Royal silt loam, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
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Remarks:
 Drier than normal climatic conditions. Plot located within depressional wetland to the south of Tower Road (Wetland A).

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u><i>Elaeagnus angustifolia</i></u>		30	Yes	FAC	
2. _____					
3. _____					
4. _____					
		30	=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
			=Total Cover		
Herb Stratum	(Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Phragmites australis</i></u>		100	Yes	FACW	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
		100	=Total Cover		
Woody Vine Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. _____					
2. _____					
			=Total Cover		
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>			

Remarks:

SOIL

Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	2.5Y 2.5/1	100					Muck	observable fibers- greasy
4-6	10YR 5/2	85	10YR 4/6	15	C	PL/M	Silty clay loam (SiCL)	
6-16	10YR 3/2	95	7.5YR 3/4	5	C	M	Silt loam (SiL)	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)	
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>7</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
 See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
 Requirement Control Symbol EXEMPT:
 (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Carty Generating Station Solar Farm City/County: Boardman / Morrow County Sampling Date: 05/25/2023
 Applicant/Owner: Portland General Electric (PGE) State: OR Sampling Point: SP-5
 Investigator(s): Lex Francis Section, Township, Range: T3N, R24E, Section 33
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 4
 Subregion (LRR): LRR B Lat: 45.704374 Long: -119.817331 Datum: NAD1983
 Soil Map Unit Name: Royal silt loam, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	

Remarks:
 Drier than normal climatic conditions. Plot paired with Plot 4, approximately 10-15 away. ± 6 inches higher in slight topographic shift.

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
=Total Cover					
Sapling/Shrub Stratum	(Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
=Total Cover					
Herb Stratum	(Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	<u>Epilobium spp</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
2.	<u>Astragalus spp</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
<u>15</u> =Total Cover					
Woody Vine Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
=Total Cover					
% Bare Ground in Herb Stratum <u>85</u>		% Cover of Biotic Crust <u>0</u>			

Remarks:
 Assumed FAC.

SOIL

Sampling Point: SP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/2	100					Loam (L)	high organic content, +/- 2" duff layer above
2-16	10YR 3/2	100					Silt Loam (SiL)	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Aerial, previous delineations

Remarks:
Soils dry throughout. No saturation, water table, or other indicators of wetland hydrology.

Project/Site: Carty Generating Station Solar Farm City/County: Boardman / Morrow County Sampling Date: 5/25/2023
 Applicant/Owner: Portland General Electric (PGE) State: OR Sampling Point: SP-6
 Investigator(s): Lex Francis Section, Township, Range: T3N, R24E, Section 33
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 3
 Subregion (LRR): LRR B Lat: 45.703913 Long: -119.818231 Datum: NAD1983
 Soil Map Unit Name: Royal silt loam, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
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Remarks:
 Drier than normal climatic conditions. Plot located within depressional wetland to the south of Tower Road (Wetland B).

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30'</u>)				
1. <u><i>Elaeagnus angustifolia</i></u>	<u>20</u>	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>20</u> =Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				
1. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	_____ =Total Cover			
Herb Stratum (Plot size: <u>5'</u>)				
1. <u><i>Phragmites australis</i></u>	<u>100</u>	Yes	FACW	Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>100</u> =Total Cover			
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
2. _____	_____	_____	_____	
	_____ =Total Cover			
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				

Remarks:

SOIL

Sampling Point: SP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	2.5Y 3/2	100					Sandy Loam (SL)	very fine
2-16	2.5Y 3/2	95	10YR 3/6	5	C	PL	Sandy Loam (SL)	very fine

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?
Type: _____	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Depth (inches): _____	

Remarks:
Soils very wet below 8".

HYDROLOGY

Wetland Hydrology Indicators:	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:	Wetland Hydrology Present?
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u>	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Aerial, previous delineations

Remarks:
Water table not established in short duration of open pit. Drier than normal precipitation conditions, and collection of data in the later part of the growing season may have impacted hydrology at this plot. Assumed stronger indicators of wetland hydrology within the early part of the growing season or within a normal rainfall year.

Project/Site: Carty Generating Station Solar Farm City/County: Boardman / Morrow County Sampling Date: 05/25/2023
 Applicant/Owner: Portland General Electric (PGE) State: OR Sampling Point: SP-7
 Investigator(s): Lex Francis Section, Township, Range: T3N, R24E, Section 33
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5
 Subregion (LRR): LRR B Lat: 45.703896 Long: -119.818183 Datum: NAD1983
 Soil Map Unit Name: Royal silt loam, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
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Remarks:
 Drier than normal climatic conditions. Plot paired with Plot 6 approximately 10' away.

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
				=Total Cover
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
				=Total Cover
<u>Herb Stratum</u> (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Astragalus spp</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
				=Total Cover
<u>Woody Vine Stratum</u> (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
				=Total Cover
% Bare Ground in Herb Stratum <u>95</u>		% Cover of Biotic Crust <u>0</u>		

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
 Total Number of Dominant Species Across All Strata: 1 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by:
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
 _____ Prevalence Index is ≤3.0¹
 _____ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 _____ Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
 Assumed FAC.

SOIL

Sampling Point: SP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-16	10YR 2/2	100				Loamy Sand (LS)	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
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Remarks:
Soils slightly damp

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Aerial, previous delineations

Remarks:

Project/Site: Carty Generating Station Solar Farm City/County: Boardman / Morrow County Sampling Date: 05/25/2023
 Applicant/Owner: Portland General Electric (PGE) State: OR Sampling Point: SP-8
 Investigator(s): Lex Francis Section, Township, Range: T3N, R24E, Section 33
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRR): LRR B Lat: 45.703667 Long: -119.818733 Datum: NAD1983
 Soil Map Unit Name: Royal silt loam, 0 to 3 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
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Remarks:
 Drier than normal climatic conditions. Plot located at edge of study area within FACW vegetation. Plot determined upland, wetland located off site to the west.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Elaeagnus angustifolia</i></u>	<u>10</u>	Yes	FAC	
2. _____				
3. _____				
4. _____				
	<u>10</u> =Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	=Total Cover			
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Phragmites australis</i></u>	<u>75</u>	Yes	FACW	
2. <u><i>Astragalus spp</i></u>	<u>3</u>	No	FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>78</u> =Total Cover			
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
	=Total Cover			
% Bare Ground in Herb Stratum <u>22</u>		% Cover of Biotic Crust <u>0</u>		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

 Prevalence Index is ≤3.0¹

 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
 Assumed FAC.

SOIL

Sampling Point: SP-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-16	10YR 3/2	100					Loamy Sand (LS)

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
--	--

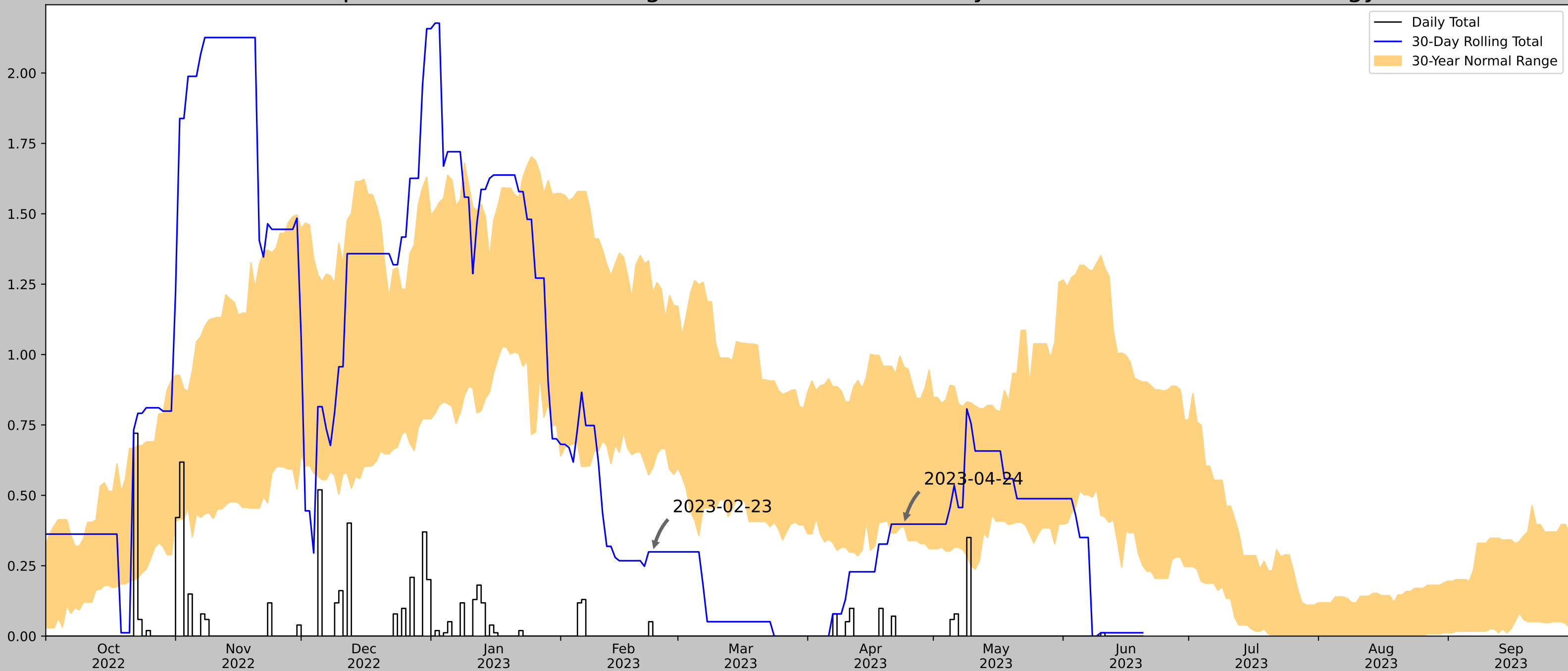
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Aerial, previous delineations

Remarks:
Soils slightly damp

Appendix D: Additional Tables and Information

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network

Rainfall (Inches)



Coordinates	45.688574, -119.791770
Observation Date	2023-04-24
Elevation (ft)	670.17
Drought Index (PDSI)	Mild wetness
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-04-24	0.390551	0.955906	0.397638	Normal	2	3	6
2023-03-25	0.381496	0.872441	0.0	Dry	1	2	2
2023-02-23	0.597638	1.220866	0.299213	Dry	1	1	1
Result							Drier than Normal - 9

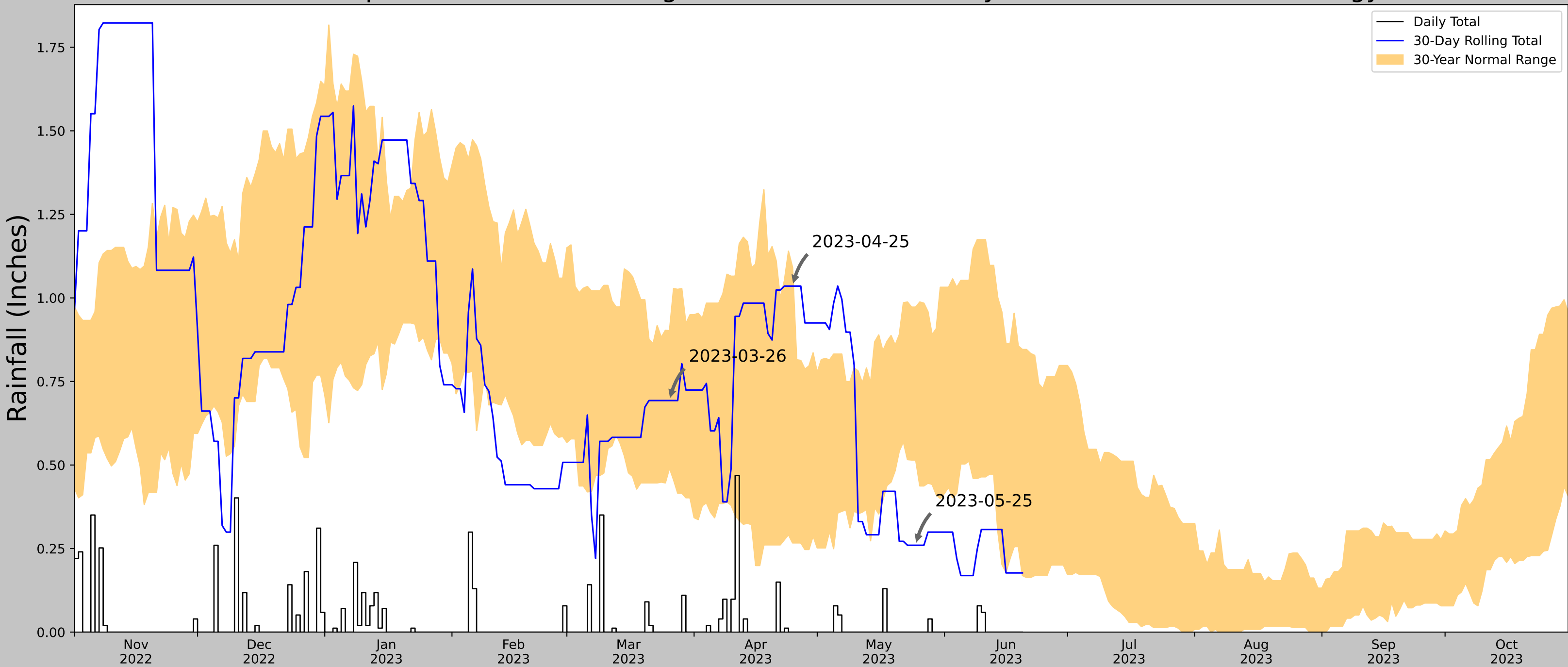


Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BOARDMAN	45.8472, -119.6933	279.856	11.943	390.314	10.036	10415	90
BOARDMAN 0.5 SW	45.8331, -119.7101	325.131	1.266	45.275	0.627	1	0
UMATILLA 0.7 WSW	45.9094, -119.3414	393.045	17.464	113.189	9.836	28	0
MCNARY DAM #2	45.9306, -119.2956	360.892	19.976	81.036	10.608	681	0
MCNARY DAM	45.9406, -119.2978	360.892	20.084	81.036	10.665	197	0
HERMISTON 2.2 NW	45.8581, -119.3101	456.037	18.456	176.181	11.557	2	0
HERMISTON 2.1 NNW	45.861, -119.2967	499.016	19.109	219.16	12.787	11	0
HERMISTON 1 SE	45.8289, -119.2636	640.092	20.723	360.236	16.791	1	0
HERMISTON MUNI AP	45.8258, -119.2611	640.092	20.858	360.236	16.9	17	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.688574, -119.791770
Observation Date	2023-05-25
Elevation (ft)	670.17
Drought Index (PDSI)	Mild wetness
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-05-25	0.514961	0.972441	0.259843	Dry	1	3	3
2023-04-25	0.266929	1.090945	1.035433	Normal	2	2	4
2023-03-26	0.490551	0.901969	0.692913	Normal	2	1	2
Result							Drier than Normal - 9



Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
PROSSER	46.2014, -119.7581	830.053	35.47	159.883	21.632	9370	90
PROSSER 0.4 SSE	46.2009, -119.7616	770.997	0.171	59.056	0.087	725	0
PROSSER 1.9 WSW	46.2002, -119.805	659.121	2.244	170.932	1.393	155	0
GRANDVIEW 1.1 NNE	46.2593, -119.9027	814.961	7.986	15.092	3.714	3	0
HERMISTON 1 SE	45.8289, -119.2636	640.092	35.006	189.961	22.402	623	0
HERMISTON MUNI AP	45.8258, -119.2611	640.092	35.245	189.961	22.555	176	0
BOARDMAN	45.8472, -119.6933	279.856	24.67	550.197	24.675	268	0
M McNARY DAM	45.9406, -119.2978	360.892	28.487	469.161	26.184	33	0

Exhibit K

Land Use

Carty Generating Station
February 2024

Prepared for



Portland General Electric Company

Prepared by



TETRA TECH

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Acronyms and Abbreviations

AADT	average annual daily traffic
AC	alternating current
ASC	Application for Site Certificate
AVA	American Viticulture Area
BCP	Boardman Coal Plant
BESS	battery energy storage system
BMP	best management practice
BPA	Bonneville Power Administration
Certificate Holder/ PGE	Portland General Electric Company
CGS / Facility	Carty Generating Station
Council	Energy Facility Siting Council
EFU	Exclusive Farm Use
ESCP	Erosion and Sediment Control Plan
FAA	Federal Aviation Administration
goals	Statewide Land Use Planning Goals
kV	kilovolt
LCDC	Land Conservation and Development Commission
MCCP or Comprehensive Plan	Morrow County Comprehensive Plan
MCZO	Morrow County Zoning Ordinance
MG	General Industrial
MW	megawatt
NRCS	Natural Resources Conservation Service
NWSTF	Naval Weapons Systems Training Facility
O&M	operations and maintenance
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
ORS	Oregon Revised Statutes
PV	photovoltaic
RFA	Request for Amendment

RPS	Renewable Portfolio Standard
TNC	The Nature Conservancy
UGB	urban growth boundary
WPCF	Water Pollution Control Facilities

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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 500 megawatts (MW) of electrical power. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and includes the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm) on 315 acres (0.49 sq. miles) located south of the Carty Reservoir.

In RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW alternating current (AC) of nominal and average generating capacity by expanding into areas formerly used for PGE's Boardman Coal Plant (BCP) and maximizing the buildable area southeast of Carty Reservoir, and adding a battery energy storage system (BESS) to the Facility. The Certificate Holder proposes the 185 MW of solar generation as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. Thus, the overall changes proposed with RFA 4 (including the BESS) are referred to throughout this request as the Amended 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)].

This Exhibit K was prepared to meet the submittal requirements in Oregon Administrative Rule (OAR) 345-021-0010(1)(k). The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the approved Facility in compliance with the land use standard OAR 345-022-0030 and related Site Certificate Conditions as reviewed during prior requests for amendment. This Exhibit K demonstrates that the Council may find that the Amended Carty Solar Farm, as proposed in RFA 4, complies with the land use standard and related Site Certificate Conditions.

To issue a site certificate, the Council must find that the Amended Carty Solar Farm complies with the Statewide Land Use Planning Goals adopted by the Land Conservation and Development Commission (LCDC); see OAR 345-022-0030(1).

OAR 345-021-0010 (1)(k) Information about the proposed facility's compliance with the statewide planning goals adopted by the Land Conservation and Development Commission, providing evidence to support a finding by the Council as required by OAR 345-022-0030. The applicant must state whether the applicant elects to address the Council's land use standard by obtaining local land use approvals under ORS 469.504(1)(a) or by obtaining a Council determination under ORS 469.504(1)(b)...

The Certificate Holder has elected to seek a Council determination of compliance under Oregon Revised Statutes (ORS) 469.504(1)(b). Under this election, a finding of compliance is required when the Council determines the following:

ORS 469.504(1)(b)(A) The facility complies with applicable substantive criteria from the affected local government's acknowledged comprehensive plan and land use regulations that are required by the statewide planning goals and in effect on the date the application is submitted, and with any Land Conservation and Development Commission administrative rules and goals and any land use statutes that apply directly to the facility under ORS 197.646;

ORS 469.504(1)(b)(B) For an energy facility or a related or supporting facility that must be evaluated against the applicable substantive criteria pursuant to subsection (5) of this section, that the proposed facility does not comply with one or more of the applicable substantive criteria but does otherwise comply with the applicable statewide planning goals, or that an exception to any applicable statewide planning goal is justified under subsection (2) of this section; or

ORS 469.504(1)(b)(C) For a facility that the council elects to evaluate against the statewide planning goals pursuant to subsection (5) of this section, that the proposed facility complies with all applicable statewide planning goals or that an exception to any applicable statewide planning goal is justified under subsection (2) of this section.

Exhibit K demonstrates the Amended Carty Solar Farm is in compliance with the applicable substantive criteria from the Morrow County Zoning Ordinance (MCZO) (Morrow County 2018) and Morrow County Comprehensive Plan (MCCP) (Morrow County 2013). In addition, Exhibit K demonstrates the Amended Carty Solar Farm's compliance with the LCDC administrative rules and goals and any land use statutes directly applicable to the amended Facility. Exhibit K also demonstrates that a "reasons" exception to Statewide Planning Goal 3, Agricultural Lands, is justified under ORS 469.504(2). Finally, Exhibit K provides evidence upon which the Council may find that the Amended Carty Solar Farm meets OAR 345-022-0030.

2.0 Land Use Analysis Area – OAR 345-021-0010 (1)(k)(A)

OAR 345-021-0010 (1)(k) Information about the proposed facility's compliance with the statewide planning goals adopted by the Land Conservation and Development Commission, providing evidence to support a finding by the Council as required by OAR 345-022-0030. The applicant must state whether the applicant elects to address the Council's land use standard by obtaining local land use approvals under ORS 469.504(1)(a) or by obtaining a Council determination under ORS 469.504(1)(b). An applicant may elect different processes for an energy facility and a related or supporting facility but may not otherwise combine the two processes. Once the applicant has made an election, the applicant may not amend the application to make a different election. In this subsection, "affected local government" means a local government that has land use jurisdiction over any part of the proposed site of the facility. In the application, the applicant must:

OAR 345-021-0010 (1)(k)(A) Include a map showing the comprehensive plan designations and land use zones in the analysis area.

Response: In accordance with OAR 345-001-0010(35)(c), the analysis area for land use is defined as the area within and extending 0.5 mile from the Amended Site Boundary (Figure K-1). Figure K-2 shows the Morrow County land use zones and comprehensive plan designations within the analysis area. In Morrow County, the comprehensive plan designation is the same as the zoning map designation. Table K-1 provides the acreages of potential permanent and temporary impacts that encompass the Amended Carty Solar Farm. The Amended Carty Solar Farm is located within two zoning designations in Morrow County: Exclusive Farm Use (EFU) and General Industrial (MG).

Table K-1. Land Area/Zoning Description

Land Areas (Acres)	Morrow County	
	Exclusive Farm Use (EFU)	General Industrial (MG)
Amended Carty Solar Farm - Permanent Areas	499.9	360.0
Amended Carty Solar Farm - Temporary Areas	8.7	28.4
Total	508.7	388.4

3.0 Local Land Use Approval – OAR 345-021-0010 (1)(k)(B)

OAR 345-021-0010 (1)(k)(B) If the applicant elects to obtain local land use approvals:

- (i) Identify the affected local governments from which land use approvals will be sought;*
- (ii) Describe the land use approvals required in order to satisfy the Council's land use standard;*
- (iii) Describe the status of the applicant's application for each land use approval;*
- (iv) Provide an estimate of time for issuance of local land use approvals.*

Response: PGE intends to obtain a Council determination on land use for the Amended Carty Solar Farm; therefore, this requirement does not apply.

4.0 EFSC Determination on Land Use – OAR 345-021-0010 (1)(k)(C)

OAR 345-021-0010 (1)(k)(C) If the applicant elects to obtain a Council determination on land use:

- (i) Identify the affected local governments.*

Response: Morrow County is the affected local government for RFA 4.

(ii) Identify the applicable substantive criteria from the affected local government's acknowledged comprehensive plan and land use regulations that are required by the statewide planning goals and that are in effect on the date the application is submitted and describe how the proposed facility complies with those criteria.

Response: The applicable substantive criteria of the MCZO and Morrow County Comprehensive Plan MCCP are addressed in Sections 6.0 and 7.0 of this exhibit:

- **Morrow County Zoning Ordinance (Morrow County 2018):**

- MCZO 1.050 Zoning Permit
- MCZO 3.010 Exclusive Farm Use, EFU
- MCZO 3.070 General Industrial Zone, MG
- MCZO 4.040 Off-Street Vehicle Parking Requirements
- MCZO 4.050 Off-Street Parking and Loading
- MCZO 4.165 Site Plan Review
- MCZO 6.015 Requirements Under a State Energy Facility Site Certificate
- MCZO 6.020 General Criteria
- MCZO 6.025 Resource Zone Standards for Approval
- MCZO 6.030 General Conditions
- MCZO 6.040 Permit Improvements
- MCZO 6.050 Standards Governing Conditional Uses

- **Morrow County Comprehensive Plan (Morrow County 2013):**

- Goal 3 Agricultural Lands Element – Policies 1 and 4
- Goal 9 Economic Element – Policies 2A, 3A, 5A and 6C
- Goal 13 Energy Conservation Element – Policies 3 and 9

(iii) Identify all Land Conservation and Development Commission administrative rules, statewide planning goals and land use statutes directly applicable to the facility under ORS 197.646(3) and describe how the proposed facility complies with those rules, goals and statutes.

Response: State statutes and LCDC administrative rules directly applicable to the Amended Carty Solar Farm are addressed in Section 8.0 of this exhibit. The statutes and administrative rules are:

- ORS 215.296(1)
- OAR 660-033-0130(5)

- OAR 660-033-0130(16)
- OAR 660-033-0130(38)

(iv) If the proposed facility might not comply with all applicable substantive criteria, identify the applicable statewide planning goals and describe how the proposed facility complies with those goals.

Response: As discussed in this exhibit, the Amended Carty Solar Farm complies with all substantive criteria, with the exception that the Amended Carty Solar Farm will occupy more than 12 acres of high-value farmland and more than 20 acres of arable land in the EFU zone. The majority of the Amended Carty Solar Farm proposed in the EFU zone is to the south and east of the Carty Reservoir, referred to throughout this exhibit as the Southern Solar Area (see Figure 2 in RFA 4's Division 27 document [Request for Amendment 4 for the Carty Generating Station]). The northern portion of the Amended Carty Solar Farm, referred to throughout this exhibit as the Northern Solar Area, includes approximately 8 acres in the EFU zone. Therefore, the Amended Carty Solar Farm does not meet the acreage standards under MCZO 3.010(K)(3)(f) and OAR 660-033-0130(38)(g), and thus PGE is requesting an exception to Statewide Planning Goal 3. In addition, the majority of the Northern Solar Area does not comply with MCZO Section 3.070, which provides the outright and conditionally permitted uses for the MG zoning district. Therefore, in Section 9.0 of this exhibit, the Certificate Holder identifies the applicable Statewide Land Use Planning Goals and, since these conditions primarily occur within the Northern Solar Area and Southern Solar Area respectively, the Certificate Holder describes how the Northern Solar Area and Southern Solar Area otherwise comply with the applicable Statewide Land Use Planning Goals.

(v) If the proposed facility might not comply with all applicable substantive criteria or applicable statewide planning goals, describe why an exception to any applicable statewide planning goal is justified, providing evidence to support all findings by the Council required under ORS 469.504(2).

Response: As discussed in this exhibit, the Amended Carty Solar Farm does not comply with the requirement of the Statewide Planning Goal 3 implementing rule because it will occupy more than 12 acres of high-value farmland and more than 20 acres of arable land in the EFU zone. Therefore, PGE is requesting an exception to Statewide Planning Goal 3 for the Amended Carty Solar Farm.

5.0 Overview of Facility, Land Uses, and Farmland Characteristics

5.1 Facility Overview

As currently approved, the Facility is an electrical generation facility capable of generating up to 500 MW of electrical power on 4,997 acres in Morrow County, Oregon. CGS consists of the operating 450 MW natural gas-fueled combined-cycle unit (Unit 1) and its associated components; the not-yet-constructed 50-MW Carty Solar Farm; the 500-kV Grassland to Slatt transmission line

(approximately 17 miles long); the 230-kV BCP to Dalreed transmission line (approximately 16 miles long); the 34.5-kV BCP to the railroad crossing at Tower Road transmission line; and Carty Reservoir.

In RFA 4, the Certificate Holder proposes to amend the Third Amended Site Certificate to allow 135 MW of additional solar energy generation, amend the Facility's Approved Site Boundary to expand into areas formerly used for the BCP, and add BESS with the capability of storing up to 156 MW. The Certificate Holder proposes the Amended Carty Solar Farm with up to 185-MW AC of nominal and average generating capacity as defined in ORS 469.300(4)(c). The Amended Carty Solar Farm is proposed as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. If the Amended Carty Solar Farm is approved by the Council, the Certificate Holder's right to construct the approved 50-MW configuration would terminate.

The RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station) provides a detailed overview of the Amended Carty Solar Farm and the changes proposed as part of RFA 4. Table 1 in the RFA 4's Division 27 document summarizes those changes that include amending the Approved Site Boundary, increasing the maximum peak generating capacity from the photovoltaic solar energy generation and for the total Facility, amending the Facility description to include approximately 849.7 acres of photovoltaic solar energy generation, adding a BESS as a related and supporting facility, applying uniform construction commencement and completion deadlines for all solar energy generation, and making amendments to Site Certificate Conditions.

This RFA 4 demonstrates that the Amended Carty Solar Farm will be designed, constructed, and operated consistent with the relevant Council siting criteria and standards.

5.2 Overview of Existing Land Uses

The zoning designations, underlying land uses, and soil classifications within the Amended Site Boundary and analysis area are relevant for purposes of analyzing the Amended Carty Solar Farm's compliance with applicable substantive criteria and directly applicable state land use regulations. Zoning is discussed in Section 2.0. Existing land uses are discussed in this section while soil classifications are discussed in Section 5.3.2.

As shown on Figure K-4, a majority of the Amended Site Boundary is non-cultivated land and open water from the Carty Reservoir. Cultivated land within the Amended Site Boundary is owned and operated by Threemile Canyon Farms. The facilities (including related or supporting facilities) proposed for the Amended Carty Solar Farm are not located on cultivated land.

5.3 Farmland Characteristics

To support the responses to the applicable substantive criteria under OAR 660-033-0130(38), this section describes the factors that influence whether the land within a site boundary and analysis area meets the definition of arable land under OAR 660-033-0130(38)(a) and/or meets the definition of high-value farmland under ORS 195.300(10). These factors include:

- Whether the land is within a place of use for a permit, certificate, or decree for the use of water for irrigation issued by the Oregon Water Resources Department or is within the boundaries of an irrigation district (as defined under ORS 540.505);
- Whether the land in a tract¹ is predominantly composed of soils that are irrigated or not irrigated and classified by the Natural Resources Conservation Service (NRCS) as prime, unique, Class 1 or Class 2 (for high-value soils) or as cultivated land and arable soils (for arable land); and
- Whether the land is located within the Columbia Valley American Viticulture Area (AVA), as described in 27 Code of Federal Regulations 9.74, and meets the elevation, aspect, and slope criteria listed under ORS 195.300(10)(f).

The following subsections investigate each of these factors as they apply to the Amended Site Boundary and analysis area.

5.3.1 Existing Water Rights

As shown on Figure K-5, there are currently no irrigated agricultural lands within the permanent or temporary disturbance footprint for the Amended Carty Solar Farm. In addition, none of the land within the Amended Site Boundary and analysis area are included within the boundaries of an irrigation district. However, there are approximately 1,007 acres of irrigated agricultural land located within the analysis area and 227 acres of irrigated agricultural land within the Amended Site Boundary, located to the west of the proposed solar areas. The areas that comprise the Amended Carty Solar Farm have no known history of cultivation, no water rights for irrigation, and no infrastructure for irrigation.

As a practical matter, irrigation is typically necessary to produce crops in the arid climate of Morrow County. Threemile Canyon Farms, LLC, for example, does not cultivate unirrigated land. Thus, without irrigation rights (either through a new water right or a transfer), the Amended Carty Solar Farm site while technically containing arable land—and high-value farmland as part of the Columbia Valley AVA (see Section 5.3.3)—would not be productive cropland. The solar areas could be utilized for commercial agriculture only if new irrigation rights were obtained or existing irrigation rights were transferred from other agricultural land, and if the necessary irrigation infrastructure were constructed. Although it is theoretically possible to transfer irrigation rights, cultivated lands in the area are irrigated with center pivot irrigation. In order to transfer irrigation rights to the Amended Carty Solar Farm site, it would be necessary to “dry up” lands in which the investment in center pivot irrigation and irrigation water pipelines have already been made. The result is no net increase in cultivated acreage, and a substantial economic inefficiency associated

¹ Per OAR 660-033-0020(14) “Tract” means one or more contiguous lots or parcels under the same ownership. As mapped in Figure K-3, there are three tracts located within the Amended Site Boundary. While Threemile Canyon, LLC owns the land west of Tract 1, it is separated by the right-of-way of Tower Road and is therefore not “contiguous” per the definition under OAR 660-033-0020(14).

with abandoning existing irrigation infrastructure at the “donor” site and establishing new infrastructure at the Amended Carty Solar Farm site.

5.3.2 Soil Classifications

According to the NRCS web-based soil survey (NRCS 2023), there are 10 major soil types in the Amended Site Boundary. The NRCS assigns land capability classifications to each soil unit to show, in a general way, the suitability of soils for most kinds of field crops. Soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management (NRCS 2019). Soil classifications can depend on whether the soils are irrigated. The definition of “irrigated” in OAR 660-033-0020(9) means:

watered by an artificial or controlled means, such as sprinklers, furrows, ditches, or spreader dikes. An area or tract is "irrigated" if it is currently watered, or has established rights to use water for irrigation, including such tracts that receive water for irrigation from a water or irrigation district or other provider. For the purposes of this division, an area or tract within a water or irrigation district that was once irrigated shall continue to be considered "irrigated" even if the irrigation water was removed or transferred to another tract.

Per this definition, an area or tract is “irrigated” if it is:

- Currently watered;
- Has established rights to use water for irrigation;
- Receives water for irrigation from a water or irrigation district or other provider; or
- Is located within a water or irrigation district and currently or historically was irrigated.

In accordance with Section 5.3.1, there are currently no irrigated agricultural lands within the permanent or temporary disturbance footprint for the Amended Carty Solar Farm. In addition, none of the land within the Amended Site Boundary and analysis area are included within the boundaries of an irrigation district. However, there are approximately 1,007 acres of irrigated agricultural land located within the analysis area and 227 acres of irrigated agricultural land within the Amended Site Boundary, located to the west of the proposed solar areas. The Amended Carty Solar Farm’s solar areas have no known history of cultivation, no water rights for irrigation, and no infrastructure for irrigation.

In accordance with the definition of “irrigated” in OAR 660-033-0020(9), Figure K-6 shows irrigated NRCS soil capability classes for soils within established place of use water rights and non-irrigated NRCS soil capability classes for soils not currently being irrigated and outside any water right.

The NRCS provides the following descriptions for each soil class associated with the soils in the analysis area (NRCS 2019):

- Class 1 soils have few limitations that restrict their use.

- Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.
- Class 5 soils have very severe limitations that restrict the choice of plants or require very careful management, or both.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

In addition to the irrigated and non-irrigated soil capability classifications, the NRCS assigns farmland classifications to map units as prime farmland, prime farmland if irrigated, farmland of statewide importance, farmland of local importance, or unique farmland. Farmland classifications identify the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops (NRCS 2019). Soils in the Amended Site Boundary are classified by the NRCS as either prime farmland if irrigated, farmland of statewide importance, or not prime farmland. See Table K-2.

Table K-2. Soil Classifications in Amended Site Boundary

Soil Type ID/Soil Unit	NRCS Farmland Classification	NRCS Irrigated Soil Capability Class	NRCS Non-Irrigated Soil Capability Class	Acreage within Amended Site Boundary
53A, Royal silt loam, 0 to 3 percent slopes	Prime farmland if irrigated	2	6	60
54B, Sagehill fine sandy loam, 2 to 5 percent slopes	Prime farmland if irrigated	2	4	969
54D, Sagehill fine sandy loam, 12 to 20 percent slopes	Farmland of statewide importance	6	4	96
55B, Sagehill fine sandy loam, hummocky, 2 to 5 percent slopes	Prime farmland if irrigated	2	4	449
55C, Sagehill fine sandy loam, hummocky, 5 to 12 percent slopes	Farmland of statewide importance	3	4	223

Soil Type ID/Soil Unit	NRCS Farmland Classification	NRCS Irrigated Soil Capability Class	NRCS Non-Irrigated Soil Capability Class	Acreage within Amended Site Boundary
58B, Taunton fine sandy loam, 2 to 5 percent slopes	Prime farmland if irrigated	4	6	553
58C, Taunton fine sandy loam, 5 to 12 percent slopes	Farmland of statewide importance	4	6	120
71E, Warden silt loam, 20 to 40 percent slopes	Farmland of statewide importance	<Null>	6	2
78, Xeric Torriorthents, nearly level	Farmland of statewide importance	3	6	19
9, Dune land	Not prime farmland	<Null>	8	88

Arable lands are defined under OAR 660-033-0130(38) as “land in a tract that is predominantly cultivated, or if not cultivated, predominantly comprised of arable soils. ‘Arable soils’ means soils that are suitable for cultivation as determined by the governing body or its designate based on substantial evidence in the record of a local land use application, but ‘arable soils’ does not include high-value farmland soils described at ORS 195.300(10) unless otherwise stated.” NRCS soil capability classes 1 through 4 are generally considered arable soils (Helms 1992) whereas NRCS soil classes 5 through 8 are generally considered nonarable soils. Per OAR 660-033-0130(38), “nonarable soils” means “soils that are not suitable for cultivation. Soils with an NRCS agricultural capability class 5–8 and no history of irrigation shall be considered nonarable in all cases. The governing body or its designate may determine other soils, including soils with a past history of irrigation, to be nonarable based on substantial evidence in the record of a local land use application.” Figure K-8 shows a composite of arable soils and cultivated lands within the Amended Site Boundary and analysis area. As can be seen in Figure K-6, the Amended Site Boundary is largely composed of predominately arable soils or cultivated lands and is therefore considered arable lands. Table K-6 (see Section 5.3.3) provides a breakdown of total acreage of arable land within the analysis area, tracts, Amended Site Boundary, and permanent disturbance footprint.

5.3.3 High-Value Farmland and Arable Lands Analysis

5.3.3.1 High Value Farmland

Certain lands within the EFU zone are considered high-value farmland. High-value farmland is defined under ORS 195.300(10), and the provisions of this statute potentially applicable to the analysis area are summarized below:

- ORS 195.300(10)(a) relies on land in the EFU zone meeting the description of high-value farmland under ORS 215.710, which describes land in a tract composed predominantly of soils, that at the time the siting approval, are irrigated and classified as prime, unique, Class 1, or Class 2 or not irrigated and classified as prime, unique, Class 1, or Class 2.
- ORS 195.300(10)(c) relies on the land in the EFU zone being located within a place of use water right, an irrigation district, or a diking district.
- ORS 195.300(10)(f) relies on the land in the EFU zone being located within the boundaries of the Columbia Valley American Viticulture Area (see 27 Code of Federal Regulations Part 9, Subpart C - Approved American Viticultural Areas [AVA], Section 9.74 Columbia Valley)—and meeting certain elevation (below 3,000 feet), slope (between zero and 15 percent), and aspect (between 67.5 and 292.5 degrees) criteria.

Per the predominance test in Table K-3, the Amended Carty Solar Farm tracts (Figure K-3) do not meet the definition of high-value farmland under ORS 195.300(10)(a) and ORS 215.710 as none of the tracts are composed of over 50 percent high value soils. However, portions of the Amended Carty Solar Farm do meet the definition of high-value farmland under ORS 195.300(10)(f) (i.e., location in the Columbia Valley AVA).

Table K-3. Tract Analysis Predominance Test of High-Value Farmland Soils

Tract	Owner	Water Right	Total Tract Acreage (within EFU zone)	Acreage of High Value Soils	
				NRCS Soils Class 1, 2, Prime, or Unique	Percent of Tract Area
1	Threemile Canyon Farms, LLC	Cert:76712 OR * IR Cert:76713 OR * IR Cert:86056 OR * PW Cert:86057 OR * PW Cert:87965 (RR) * IR Cert:87969 (T 11159 RR) * IR Cert:89691 OR * IM Permit: R 6605 * ST Permit: S 41645 * IR Permit: S 41645 * IS Permit: S 54925 * IM	27,543	4,208	15
2	Portland General Electric	Cert:56275 OR * IM Cert:76713 OR * IR Cert:86056 OR * PW Cert:86057 OR * PW Permit: R 6605 * ST Permit: S 54925 * IM	2,117	0.06	0.003
3	Portland General Electric	Cert:86056 OR * PW Cert:86057 OR * PW Permit: R 6605 * ST	639	0	0

Based on the definition under ORS 195.300(10)(c), approximately 227 acres (6 percent) of land within the Amended Site Boundary qualify as high-value farmland based on being located within a place of use water right. Further, approximately 993 acres (28 percent) of the Amended Site Boundary qualifies as high-value farmland based on being located in the Columbia Valley AVA and meeting the criteria under ORS 195.300(10)(f). However, as the lands that qualify as high-value farmland under ORS 195.300(10)(c) and (f) overlap in some areas within the Amended Site Boundary and analysis area (see Figure K-7), a composite of the two categories was calculated for a net total of 1,219 acres of high-value farmland within the Amended Site Boundary. However, Table K-4 details only 85 acres of high-value farmland per the Columbia Valley AVA will be permanently impacted by the Amended Carty Solar Farm.

Table K-4. High-Value Farmland Classifications

Land Type	Analysis Area ¹		Amended Site Boundary		Estimated Permanent Disturbance within Amended Site Boundary (Acres/%)	
	Acres	Percent	Acres	Percent	Acres	Percent
High-value land per ORS 195.300(10)(a) (i.e., Class 1 or 2 soils)	835	11%	0	0%	0	0%
High-value land per ORS 195.300(10)(c) (i.e., within place of use water right or irrigation district)	929	12%	227	6%	0	0%
High-value land per ORS 195.300(10)(f) (i.e., within AVA and meets slope, elevation, aspect criteria.	2,548	32%	993	28%	85	10%
High-value lands/high-value soils (merged all 3 HVFs and includes overlap) ²	3,380	43%	1,219	34%	85	10%
<p>1. Portions of the analysis area were not included in the high-value farmland soils tract analysis per ORS 195.300(10)(a) detailed on Table K-3 because the tract boundary for Threemile Canyon Farms, LLC breaks at the right-of-way of Tower Road (see Figure K-3), and therefore does not extend fully across the analysis area. As such, the analysis area column accounts for the acreage of Class 1 and 2 soils present regardless of predominance throughout the tracts that extend further beyond the analysis area boundary.</p> <p>2. High-value farmland designations per ORS 195.300(10)(a), (c), and (f). Note: lands that qualify as high-value farmland under these designations overlap in some areas, so a composite of high-value farmland was calculated.</p>						

5.3.3.2 Arable Lands

Per OAR 660-033-0130(38)(a), “arable land’ means land in a tract that is predominantly cultivated or, if not currently cultivated, predominantly comprised of arable soils.”

Since the definition in OAR 660-033-0130(38)(a) refers to land in a tract being *predominately* cultivated or comprised of arable soils, a predominance test per tract associated with the Amended Carty Solar Farm is provided in Table K-5 below. Based on the results of the predominance test, more than 50 percent of the area within Tracts 1 and 3 is composed of cultivated land and NRCS Class 3 and 4 soils, and therefore meet the definition of arable land under OAR 660-033-0130(38)(a).

Table K-5. Tract Analysis Predominance Test of Arable Land

Tract	Owner	Total Tract Acreage (within EFU zone)	Acreage of Cultivated Land and Arable Soils ¹	Percent of Tract Area
1	Threemile Canyon Farms, LLC	27,543	22,646	82%
2	Portland General Electric	2,117	711	34%
3	Portland General Electric	639	510	80%

1. Per OAR 660-033-0130(38)(b), “arable soils’ means soils that are suitable for cultivation as determined by the governing body or its designate based on substantial evidence in the record of a local land use application, but ‘arable soils’ does not include high-value farmland soils described at ORS 195.300(10) unless otherwise stated.” Per the USDA Soil Conservation Service, NRCS Class 1 through 4 soils are considered suitable for cultivation or arable soils while Class 5 and higher are considered nonarable soils (Helms 1992). As Class 1 and 2 soils are considered high-value farmland soils per ORS 195.300(10) and the definition of arable soils per OAR 660-033-0130(38)(b) excludes high-value farmland soils, the predominance test included only NRCS Class 3 and 4 soils.

Figure K-8 shows a composite of arable soils and cultivated lands within the Amended Site Boundary and analysis area. Table K-6 provides a breakdown of total acreage of arable soils and nonarable soils within the Amended Site Boundary. As Tracts 1 and 3 are predominately cultivated and/or comprised of arable soils, all the land within those tracts is considered arable land. Tract 2 is not predominantly comprised of cultivated land and/or arable soils, therefore all the land within that tract is considered nonarable land. The Amended Site Boundary contains approximately 2,209 acres of arable soils (see Table K-6).

Table K-6. Arable and Nonarable Land Classifications

Classification	Amended Analysis Area		Amended Site Boundary		Estimated Permanent Disturbance	
	Acres	Percent	Acres	Percent	Acres	Percent
Arable	6,001	99	2,209	72	492	98
Nonarable	74	1	845	28	8	2

5.3.3.3 Summary of High-Value Farmland and Arable Lands Analysis

Per OAR 660-033-0130(38), a photovoltaic solar power generation facility shall not use, occupy, or cover more than 12 acres of high-value farmland or 20 acres of arable lands unless certain criteria under OAR 660-033-0130(38) is met or an exception is taken pursuant to ORS 194.732. The Amended Carty Solar Farm is estimated to disturb up to 85 acres of high-value farmland (Table K-4) and 492 acres of arable land (Table K-6). Therefore, the Amended Carty Solar Farm will use,

occupy, or cover more than 12 acres of high-value farmland and 20 acres of arable lands and a Goal 3 exception is required. See Section 10.0 for a demonstration that a “Reasons” exception under ORS 469.504(2)(c)(A) is appropriate for the Amended Carty Solar Farm.

6.0 Compliance with the Applicable Substantive Criteria from the Morrow County Zoning Ordinance

6.1 Article 1 Introductory Provisions

6.1.1 Section 1.050. Zoning Permit

Prior to the construction, reconstruction, alteration, or change of use of any structure larger than 100 square feet or use for which a zoning permit is required, a zoning permit for such construction, reconstruction, alteration, or change of use or uses shall be obtained from the Planning Director or authorized agent thereof. A zoning permit shall become void after 1 year unless the development action has commenced. A 12-month extension may be granted when submitted to the Planning Department prior to the expiration of the approval period. At the Planning Director’s sole discretion, the Director may refer any Zoning Permit application to the Planning Commission for consideration and decision, following notice and public hearing consistent with the public hearing procedures in Section 9.050.

Response: The Council previously found that, based on compliance with existing conditions, components proposed in RFA 1² and RFA 2³ would satisfy the MCZO Section 1.050 provision. On the more recent RFA 3, the Oregon Department of Energy (ODOE) evaluated the changes applicable to the request and determined the Council should rely on the Final Order on Amendment 1.⁴ Site Certificate Condition 4.6 in the Third Amended Site Certificate requires the Certificate Holder to obtain all necessary local permits, including the zoning permit (Council 2022). This condition will apply to the Amended Carty Solar Farm proposed with RFA 4. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior findings that the requirements under MCZO Section 1.050 will be satisfied.

² Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 37 (December 2018).

³ Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 34 (November 2020).

⁴ Final Order on Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 24 (July 2022).

6.2 Article 3 Use Zones

6.2.1 Section 3.010. EFU Zone; B. Uses Permitted Outright

In the EFU zone, the following uses and activities and their accessory buildings and uses are permitted subject to the general provisions set forth by this ordinance:

25. Utility facilities necessary for public service, including associated transmission lines as defined in Article 1 and wetland waste treatment systems, but not including commercial facilities for the purpose of generating electrical power for public use by sale or transmission towers over 200 feet in height as provided in Subsection D.10.

Response: Energy generated by the Amended Carty Solar Farm will be sent via 34.5-kV collection lines to the proposed collector substation. The new substation will step up the energy from 34.5-kV to 500-kV and then interconnect with the existing transmission system remaining from the BCP. The new substation will connect to the existing dead-end structure, which is 100 feet tall, via new lines that will be approximately 300 feet in length. The 34.5 kV collector lines are primarily buried, with one approximately 1-mile-long aboveground segment along the eastern shore of the Carty Reservoir. As such, the Certificate Holder evaluates the 34.5-kV segment as a collection system permitted under the standards for "photovoltaic solar power generation facility" in MCZO 3.010(K).⁵ The 300-foot 500-kV interconnection is within the MG zone, where "utility, transmission and communications towers less than 200 feet in height" are listed as an outright permitted use.

The Certificate Holder proposes the deletion of existing Site Certificate Condition 6.26 in its entirety (Attachment 1) since it addresses the three alternative transmission line routes previously considered as part of RFA 1, which are no longer proposed as part of RFA 4.

6.2.2 Section 3.010. EFU Zone; C. Conditional Uses

The following uses are permitted subject to county review, any specific standards for the use set forth in Section D, Article 6, the general standards for the zone, and any other applicable standards and review process in the ordinance:

24. Photovoltaic solar power generation facilities as commercial utility facilities for the purpose of generating power for public use by sale subject to Subsection K.3.

Response: With RFA 4, the Certificate Holder is proposing a complete reconfiguration to increase the output of the Carty Solar Farm from 50 MW to approximately 185 MW by expanding into areas formerly used for PGE's BCP and maximizing the buildable area southeast of Carty Reservoir within Morrow County's EFU zone. In RFA 1, the Carty Solar Farm proposed a total of 349 acres impacted within the EFU zone. Table K-1 above details the Amended Carty Solar Farm proposes a total of

⁵ The Council previously found the 34.5-kV interconnection transmission line segments proposed with RFA 1 should be evaluated as an "associated transmission line." On the more recent RFA 3, ODOE evaluated the changes applicable to the request and determined the Council should rely on the Final Order on Amendment 1.

approximately 509 acres of potential impact within the EFU zone. The proposed photovoltaic (PV) solar power generation facility locations are referred throughout this exhibit as the Northern Solar Area and Southern Solar Area. The Southern Solar Area is entirely within the EFU zone, while only a small portion—8 acres—of the Northern Solar Area’s eastern, southern, and western edges is within the EFU zone. Both portions of the Amended Carty Solar Farm within the EFU zone are considered a “photovoltaic solar power generation facility” per the definition provided under MCZO Section 3.010(K)(3)(e).

6.2.3 Section 3.010. EFU Zone; K. Commercial Facilities for Generating Power⁶

3. Photovoltaic Solar Power Generation Facility. A proposal to site a photovoltaic solar power generation facility shall be subject to the following definitions and provisions:

Response: The Certificate Holder previously obtained Council approval for the Carty Solar Farm, which includes 50 MW of PV solar power generation within Morrow County’s EFU zone.⁷ To address applicable EFU zone standards for the Amended Carty Solar Farm, the Certificate Holder re-assesses the PV solar power generation facility standards of MCZO Section 3.010(K)(3) that parallel the requirements under OAR 660-033-0130(38) for siting a PV solar power generation facility on EFU land. The applicable regulations depend on whether the solar power generation facility is located on “high-value farmland,” “arable land,” or “nonarable land.” “High-value farmland” is defined in ORS 195.300(10). The definitions of “arable land” and “nonarable land” are set forth in MCZO Section 3.010(K)(3)(a)-(d), below:

a. “Arable land” means land in a tract that is predominantly cultivated or, if not currently cultivated, predominantly comprised of arable soils.

b. “Arable soils” means soils that are suitable for cultivation as determined by the governing body or its designate based on substantial evidence in the record of a local land use application, but “arable soils” does not include high-value farmland soils described at ORS 195.300(10) unless otherwise stated.

c. “Nonarable land” means land in a tract that is predominantly not cultivated and predominantly comprised of nonarable soils.

d. “Nonarable soils” means soils that are not suitable for cultivation. Soils with an NRCS agricultural capability class V–VIII and no history of irrigation shall be considered nonarable in all cases. The governing body or its designate may determine other soils, including soils with a past history of irrigation, to be nonarable based on substantial evidence in the record of a local land use application.

⁶ MCZO 3.010(K)(3) parallels the requirements under OAR 660-033-0130(38) for siting a photovoltaic solar power generation facility on EFU land.

⁷ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 73 (December 2018).

The soil classifications of the Amended Carty Solar Farm are detailed above in the overview of farmland characteristics in Section 5.3 of this exhibit. As discussed, the Amended Carty Solar Farm is within the Columbia Valley AVA and portions meet the elevation, aspect, and slope criteria under ORS 195.300(10)(f). Thus, although the solar areas have never been cultivated, have no irrigation rights, and are composed of soils that are not themselves identified as “high-value farmland soils,” the site contains “high value farmland” pursuant to ORS 195.300(10)(f)(C). The criteria for siting a PV solar power generation facility on high-value farmland are set forth in MCZO Section 3.010(K)(3)(f)(3)(i), and (j).

e. “Photovoltaic solar power generation facility” includes, but is not limited to, an assembly of equipment that converts sunlight into electricity and then stores, transfers, or both, that electricity. This includes photovoltaic modules, mounting and solar tracking equipment, foundations, inverters, wiring, storage devices and other components. Photovoltaic solar power generation facilities also include electrical cable collection systems connecting the photovoltaic solar generation facility to a transmission line, all necessary grid integration equipment, new or expanded private roads constructed to serve the photovoltaic solar power generation facility, office, operation and maintenance buildings, staging areas and all other necessary appurtenances. For purposes of applying the acreage standards of this Section, a photovoltaic solar power generation facility includes all existing and proposed facilities on a single tract, as well as any existing and proposed facilities determined to be under common ownership on lands with fewer than 1320 feet of separation from the tract on which the new facility is proposed to be sited. Projects connected to the same parent company or individuals shall be considered to be in common ownership, regardless of the operating business structure. A photovoltaic solar power generation facility does not include a net metering project established consistent with ORS 757.300 and OAR chapter 860, division 39 or a Feed-in-Tariff project established consistent with ORS 757.365 and OAR chapter 860, division 84.

Response: As described earlier in the response to MCZO Section 3.010(C), the portions of the Amended Carty Solar Farm within the EFU zone meet the definition of “photovoltaic solar power generation facility,” which includes photovoltaic modules, racking, collection system, inverters, new or expanded private roads, and a portion of the operations and maintenance (O&M) building in the Northern Solar Area. The Northern Solar Area also includes the battery energy storage system (BESS) and collector substation; however, the BESS and collector substation location is proposed within the MG zoning district.

f. For high-value farmland described at ORS 195.300(10), a photovoltaic solar power generation facility shall not preclude more than 12 acres from use as a commercial agricultural enterprise unless an exception is taken pursuant to ORS 197.732 and OAR chapter 660, division 4. The governing body or its designate must find that:

Response: The Certificate Holder demonstrated with RFA 1 that the Carty Solar Farm would preclude 57 acres of high-value farmland and therefore requested a Goal 3 exception.⁸ The Council found an exception to Goal 3 to be justified under OAR 345-022-0030(4)(c) and ORS 469.504(2)(c).⁹

As outlined in Table K-4 and discussed in Section 5.3, the Amended Carty Solar Farm would preclude 85 acres of high-value farmland from use as a commercial agricultural enterprise. Therefore, an exception to Goal 3 is necessary. For projects under Council jurisdiction, the standards for approving an exception are set forth in ORS 469.504(2)(c) and the Council’s rule (which mirrors the statute), OAR 345-022-0030(4). The justification for an exception to Statewide Planning Goal 3 is detailed in Section 10.0 of this exhibit.

(1) The proposed photovoltaic solar power generation facility will not create unnecessary negative impacts on agricultural operations conducted on any portion of the subject property not occupied by project components. Negative impacts could include, but are not limited to, the unnecessary construction of roads dividing a field or multiple fields in such a way that creates small or isolated pieces of property that are more difficult to farm, and placing photovoltaic solar power generation facility project components on lands in a manner that could disrupt common and accepted farming practices;

Response: The Council previously found the Carty Solar Farm proposed with RFA 1 would not create unnecessary negative impacts on agricultural operations conducted on any portion of the subject property not occupied by facility components and therefore would satisfy the requirements of MCZO Section 3.010(K)(3)(f)(1).¹⁰

There are no agricultural operations within the Amended Carty Solar Farm, which has no known history of cultivation. The neighboring lands to the south and east of the Southern Solar Area, while owned by Threemile Canyon Farms, LLC, are not cultivated and are subject to a conservation easement managed by The Nature Conservancy which prevents any development on the land. As shown on Figure K-4, the nearest agricultural operations are approximately 1.7 miles from the western edge of the Southern Solar Area and are separated from the Amended Carty Solar Farm by uncultivated land and the Carty Reservoir. Land approximately 1 mile west of the Northern Solar Area, beyond the Amended Site Boundary, is actively cultivated by Threemile Canyon Farms, LLC. The Amended Carty Solar Farm will not affect infrastructure, including road access, to or within those agricultural operations, and will not affect the ability to plant, irrigate, fertilize, or harvest the center pivot circles in question.

(2) The presence of a photovoltaic solar power generation facility will not result in unnecessary soil erosion or loss that could limit agricultural productivity on the

⁸ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 205 (December 2018).

⁹ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 73 (December 2018).

¹⁰ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 43 (December 2018).

subject property. This provision may be satisfied by the submittal and county approval of a soil and erosion control plan prepared by an adequately qualified individual, showing how unnecessary soil erosion will be avoided or remedied and how topsoil will be stripped, stockpiled and clearly marked. The approved plan shall be attached to the decision as a condition of approval;

Response: The Council previously found that, based on compliance with existing conditions, the Carty Solar Farm proposed with RFA 1 would satisfy the requirements under MCZO Section 3.010(K)(3)(f)(2).¹¹ Site Certificate Condition 9.1 requires that the Certificate Holder, during operation, implement an Oregon Department of Environmental Quality (ODEQ)-approved Erosion and Sediment Control Plan (ESCP). Site Certificate Condition 5.5 requires that the Certificate Holder, during construction and operation, implement a Revegetation and Noxious Weed Control Plan. These plans include best management practices (BMPs) to be implemented during construction and operation designed to reduce and minimize unnecessary soil erosion or loss that could limit agricultural productivity within the subject property and on adjacent EFU-zoned land. The potential for soil erosion is addressed in Exhibit I of this RFA. Construction of the Amended Carty Solar Farm will be performed under a National Pollutant Discharge Elimination System 1200-C permit, including an ODEQ-approved ESCP. After completing construction in an area, the Certificate Holder will monitor the area until soils are stabilized, to evaluate whether construction-related impacts to soils are being adequately addressed by the mitigation procedures described in the ESCP and the Amended Revegetation and Noxious Weed Control Plan (Exhibit P, Attachment P-2). The Amended Revegetation and Noxious Weed Control Plan addresses topsoil management and describes a monitoring program (and remedial measures) for evaluating (and addressing impacts to) long-term soil stability. Consistent with the recommendations included for satisfying MCZO Section 3.010(K)(3)(f)(2), Site Certificate Condition 5.5 also requires the Certificate Holder to, prior to construction, submit the Amended Revegetation and Noxious Weed Control Plan to ODOE and Morrow County Weed Control Supervisor for review and approval. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the Amended Carty Solar Farm will satisfy the requirements under MCZO Section 3.010(K)(3)(f)(2).

(3) Construction or maintenance activities will not result in unnecessary soil compaction that reduces the productivity of soil for crop production. This provision may be satisfied by the submittal and county approval of a plan prepared by an adequately qualified individual, showing how unnecessary soil compaction will be avoided or remedied in a timely manner through deep soil decompaction or other appropriate practices. The approved plan shall be attached to the decision as a condition of approval;

Response: The Council previously found that, based on compliance with existing conditions, the Carty Solar Farm proposed with RFA 1 would satisfy the requirements under MCZO

¹¹ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 44 (December 2018).

3.010(K)(3)(f)(3).¹² As stated previously, Site Certificate Condition 5.5 requires the Certificate Holder to, prior to construction, submit the Amended Revegetation and Noxious Weed Control Plan to the ODOE and Morrow County Weed Control Supervisor for review and approval. The Amended Revegetation and Noxious Weed Control Plan (Exhibit P, Attachment P-2) states soil decompaction measures will be implemented, as necessary, including scarification, ripping compacted soils to a depth of 12 inches, and roughening the soil to provide maximum seed-soil contact. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the Amended Carty Solar Farm will satisfy the requirements under MCZO Section 3.010(K)(3)(f)(3).

(4) Construction or maintenance activities will not result in the unabated introduction or spread of noxious weeds and other undesirable weed species. This provision may be satisfied by the submittal and county approval of a weed control plan prepared by an adequately qualified individual that includes a long-term maintenance agreement. The approved plan shall be attached to the decision as a condition of approval;

Response: The Council previously found that, based on compliance with existing conditions, the Carty Solar Farm proposed with RFA 1 would satisfy the requirements under MCZO 3.010(K)(3)(f)(4).¹³ As stated previously, Site Certificate Condition 5.5 requires the Certificate Holder to submit the Amended Revegetation and Noxious Weed Control Plan to ODOE and Morrow County Weed Control Supervisor for review and approval, prior to construction (Exhibit P, Attachment P-2). Condition 5.5 adequately ensures that construction and maintenance activities at the Amended Carty Solar Farm will not result in the unabated introduction or spread of noxious weeds and other undesirable weed species. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the Amended Carty Solar Farm will satisfy the requirements under MCZO Section 3.010(K)(3)(f)(4).

(5) The project is not located on high-value farmland soils unless it can be demonstrated that:

- (a) Non high-value farmland soils are not available on the subject tract;*
- (b) Siting the project on non high-value farmland soils present on the subject tract would significantly reduce the project's ability to operate successfully; or*
- (c) The proposed site is better suited to allow continuation of an existing commercial farm or ranching operation on the subject tract than other possible sites also located on the subject tract, including those comprised of non high-value farmland soils; and*

Response: The Amended Carty Solar Farm will be located on land defined by statute as high-value farmland because it is within the Columbia Valley AVA. As shown on Figure K-7, high-value

¹² Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 44 (December 2018).

¹³ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 45 (December 2018).

farmland occurs on a patchy basis throughout the Amended Site Boundary and analysis area. Due to that statutory designation, there is no EFU land on the subject tract—or within miles of the subject tract—that does not contain high-value farmland. Figure K-7 shows most of the Northern Solar Area is not high-value farmland due to its location primarily within the MG zone. As noted throughout this exhibit, only approximately 8 acres of the Northern Solar Area’s eastern, southern, and western edges fall within EFU land relevant to the high-value farmland analysis. Figure K-7 shows some of the areas contain patches of high-value farmland within the Columbia Valley AVA. With this RFA 4, the Certificate Holder proposes to increase the output from renewable solar energy at the CGS by expanding into areas formerly used for PGE’s BCP and maximizing the buildable area southeast of Carty Reservoir. Despite a minimal increase of impact to high-value farmland within the Columbia Valley AVA, the Certificate Holder views these expansion areas as the most practicable locations to allow the Amended Carty Solar Farm to operate successfully while minimizing farmland impacts. Limiting the solar farm facilities to non-high-value farmland soils would reduce the nominal capacity of the Amended Carty Solar Farm, when the purpose of this RFA is to expand nominal capacity of the Facility in areas adjacent to already approved uses.

As described in Section 5.3 of this exhibit, the tracts associated with RFA 4 are not predominantly composed of high-value farmland soils per ORS 195.300(10)(a). In addition, there are no water rights for irrigation within the Amended Carty Solar Farm siting areas and therefore no high-value farmland impact per ORS 195.300(10)(c). However, as described above, high-value farmland per ORS 195.300(10)(f) (within the Columbia Valley AVA) occurs on a patchy and irregular basis throughout the Amended Site Boundary and analysis area. Thus, it is not possible to site the Amended Carty Solar Farm in a manner that entirely avoids high-value farmland. The Amended Carty Solar Farm is almost entirely surrounded by uncultivated lands. The closest cultivated agricultural land is approximately 1.7 miles west of the western edge of the Southern Solar Area and is separated from the Facility by uncultivated land and the Carty Reservoir. Land approximately 1 mile west of the Northern Solar Area, beyond the Amended Site Boundary, is actively cultivated by Threemile Canyon Farms, LLC. However, the Amended Carty Solar Farm will not affect infrastructure within those agricultural operations, and will not affect the ability to plant, irrigate, fertilize, or harvest the center pivot circles in question. In other words, as shown on Figure K-4, the Amended Carty Solar Farm is physically isolated from other cultivated lands. As such, the Amended Carty Solar Farm location is a better location for solar power generation rather than a commercial farm or ranching operation.

(6) A study area consisting of lands zoned for exclusive farm use located within one mile measured from the center of the proposed project shall be established and:

(a) If fewer than 48 acres of photovoltaic solar power generation facilities have been constructed or received land use approvals and obtained building permits within the study area, no further action is necessary.

(b) When at least 48 acres of photovoltaic solar power generation have been constructed or received land use approvals and obtained building permits, either as a single project or as multiple facilities within the study area, the local

government or its designate must find that the photovoltaic solar energy generation facility will not materially alter the stability of the overall land use pattern of the area. The stability of the land use pattern will be materially altered if the overall effect of existing and potential photovoltaic solar energy generation facilities will make it more difficult for the existing farms and ranches in the area to continue operation due to diminished opportunities to expand, purchase or lease farmland or acquire water rights, or will reduce the number of tracts or acreage in farm use in a manner that will destabilize the overall character of the study area.

Response: The area within 1 mile of the center of the Amended Carty Solar Farm comprises uncultivated lands and the Carty Reservoir. No other solar PV power generation facilities have been constructed or are approved for construction within the required study area. Therefore, the Council may find no further action is necessary.

g. For arable lands, a photovoltaic solar power generation facility shall not preclude more than 20 acres from use as a commercial agricultural enterprise unless an exception is taken pursuant to ORS 197.732 and OAR chapter 660, division 4. The governing body or its designate must find that:

(1) The project is not located on high-value farmland soils or arable soils unless it can be demonstrated that:

(a) Nonarable soils are not available on the subject tract;

(b) Siting the project on nonarable soils present on the subject tract would significantly reduce the project's ability to operate successfully; or

(c) The proposed site is better suited to allow continuation of an existing commercial farm or ranching operation on the subject tract than other possible sites also located on the subject tract, including those comprised of nonarable soils;

Response: As outlined in Table K-5, Tracts 1 and 3 are predominately cultivated and/or comprised of arable soils, so all the land within those tracts is considered arable land. Tract 2 is not predominantly composed of cultivated land and/or arable soils; therefore, all the land within that tract is considered nonarable land. The Amended Site Boundary contains approximately 2,209 acres of arable soils (see Table K-6). Table K-6 shows the expansion of solar generation proposed with RFA 4 has an estimated permanent disturbance of approximately 492 acres to arable land within the Amended Site Boundary. The increased impact to arable lands compared to prior RFAs is less than it seems because the most recent assessment of arable land conditions with RFA 1 did not demonstrate a tract analysis predominance test of arable land necessary to fully assess cultivated land and arable soils across the associated tracts. The configuration of the Amended Carty Solar Farm, and the Southern Solar Area in particular, is the most practicable location to allow the Amended Carty Solar Farm to operate successfully while minimizing farmland impacts.

The Amended Carty Solar Farm is almost entirely surrounded by uncultivated lands. The closest cultivated agricultural land is approximately 1.7 miles west of the western edge of the Southern Solar Area and is separated from the Facility by uncultivated land and the Carty Reservoir. Land approximately 1 mile west of the Northern Solar Area, beyond the Amended Site Boundary, is actively cultivated by Threemile Canyon Farms, LLC. However, the Amended Carty Solar Farm will not affect infrastructure to or within those agricultural operations, and will not affect the ability to plant, irrigate, fertilize, or harvest the center pivot circles in question. In other words, as shown on Figure K-4, the Amended Carty Solar Farm is physically isolated from cultivated lands and without water rights has no prospect of being cultivated. Further, a significant portion (approximately 46 acres) of Tract 3, which is considered predominantly arable due to NRCS soil classifications (Table K-5), contains the BCP Ash Disposal Area, where coal ash was disposed during operations of the BCP. So, while this area is considered “arable land” due to soils mapped by the NRCS per the definition in OAR 660-033-0130(38)(a), it should not be considered arable land in a practical sense due to its history of industrial waste and has been capped by a synthetic impermeable liner. As such, the Certificate Holder views the Amended Carty Solar Farm location as a better location for solar power generation rather than commercial farm or ranching operation.

(2) No more than 12 acres of the project will be sited on high-value farmland soils described at ORS 195.300(10) unless an exception is taken pursuant to 197.732 and OAR chapter 660, division 4;

Response: As the total area of high-value farmland within the Amended Site Boundary that will be precluded from use as a commercial agricultural enterprise is more than 12 acres, a Goal 3 exception is requested for the Amended Carty Solar Farm. The exception request is provided in Section 10.0 of this exhibit.

(3) A study area consisting of lands zoned for exclusive farm use located within one mile measured from the center of the proposed project shall be established and:

(a) If fewer than 80 acres of photovoltaic solar power generation facilities have been constructed or received land use approvals and obtained building permits within the study area no further action is necessary.

(b) When at least 80 acres of photovoltaic solar power generation have been constructed or received land use approvals and obtained building permits, either as a single project or as multiple facilities, within the study area the local government or its designate must find that the photovoltaic solar energy generation facility will not materially alter the stability of the overall land use pattern of the area. The stability of the land use pattern will be materially altered if the overall effect of existing and potential photovoltaic solar energy generation facilities will make it more difficult for the existing farms and ranches in the area to continue operation due to diminished opportunities to expand, purchase or lease farmland, acquire water rights or diminish the number of tracts or acreage in farm use in a manner that will destabilize the overall character of the study area; and

Response: The area within 1 mile of the center of the Amended Carty Solar Farm comprises uncultivated lands and the Carty Reservoir. No other solar PV power generation facilities have been constructed or are approved for construction within the required study area. Therefore, the Council may find no further action is necessary.

(4) The requirements of Subsections K.3.f(1), (2), (3), and (4) are satisfied.

Response: The requirements of Subsections K.3.f(1), (2), (3), and (4) are discussed above. This criterion is satisfied.

h. For nonarable lands, a photovoltaic solar power generation facility shall not preclude more than 320 acres from use as a commercial agricultural enterprise unless an exception is taken pursuant to ORS 197.732 and OAR chapter 660, division 4. The governing body or its designate must find that:

Response: The Amended Carty Solar Farm does not preclude more than 320 acres of nonarable land from use as a commercial agricultural enterprise (see Table K-6), and is therefore compliant with MCZO Section 3.010(K)(3)(h).

(1) The project is not located on high-value farmland soils or arable soils unless it can be demonstrated that:

(a) Siting the project on nonarable soils present on the subject tract would significantly reduce the project's ability to operate successfully; or

(b) The proposed site is better suited to allow continuation of an existing commercial farm or ranching operation on the subject tract as compared to other possible sites also located on the subject tract, including sites that are comprised of nonarable soils;

Response: See response to MCZO 3.010(K)(3)(g)(1).

(2) No more than 12 acres of the project will be sited on high-value farmland soils described at ORS 195.300(10);

Response: See response to MCZO 3.010(K)(3)(g)(2).

(3) No more than 20 acres of the project will be sited on arable soils unless an exception is taken pursuant to ORS 197.732 and OAR chapter 660, division 4;

Response: As the total area of arable land within the Amended Site Boundary that will be precluded from use as a commercial agricultural enterprise is more than 20 acres, a Goal 3 exception is requested for the Amended Carty Solar Farm. The exception request is provided in Section 10.0 of this exhibit.

(4) The requirements of Subsection K.3.f(4) are satisfied;

Response: See response to MCZO 3.010(K)(3)(f)(4).

(5) If a photovoltaic solar power generation facility is proposed to be developed on lands that contain a Goal 5 resource protected under the County's comprehensive plan,

and the plan does not address conflicts between energy facility development and the resource, the applicant and the county, together with any state or federal agency responsible for protecting the resource or habitat supporting the resource, will cooperatively develop a specific resource management plan to mitigate potential development conflicts. If there is no program present to protect the listed Goal 5 resource(s) present in the local comprehensive plan or implementing ordinances and the applicant and the appropriate resource management agency(ies) cannot successfully agree on a cooperative resource management plan, the county is responsible for determining appropriate mitigation measures; and

Response: There are no Goal 5 resources in the Amended Site Boundary.

(6) If a proposed photovoltaic solar power generation facility is located on lands where the potential exists for adverse effects to state or federal special status species (threatened, endangered, candidate, or sensitive), or to wildlife species of concern identified and mapped by the Oregon Department of Fish and Wildlife (including big game winter range and migration corridors, golden eagle and prairie falcon nest sites, and pigeon springs), the applicant shall conduct a site-specific assessment of the subject property in consultation with all appropriate state, federal, and tribal wildlife management agencies. A professional biologist shall conduct the site-specific assessment by using methodologies accepted by the appropriate wildlife management agency and shall determine whether adverse effects to special status species or wildlife species of concern are anticipated. Based on the results of the biologist's report, the site shall be designed to avoid adverse effects to state or federal special status species or to wildlife species of concern as described above. If the applicant's site-specific assessment shows that adverse effects cannot be avoided, the applicant and the appropriate wildlife management agency will cooperatively develop an agreement for project-specific mitigation to offset the potential adverse effects of the facility. Where the applicant and the resource management agency cannot agree on what mitigation will be carried out, the county is responsible for determining appropriate mitigation, if any, required for the facility.

(7) The provisions of Subsection K.3.h(6) are repealed on January 1, 2022.

Response: Professional biologists conducted site-specific assessments for the Amended Carty Solar Farm using methodologies reviewed and accepted by the Oregon Department of Fish and Wildlife (ODFW) (see Exhibits P and Q). The Amended Carty Solar Farm has been designed to avoid adverse effects to state or federal special status species or to wildlife species of concern identified and mapped by ODFW.

i. The project owner shall sign and record in the deed records for the county a document binding the project owner and the project owner's successors in interest, prohibiting them from pursuing a claim for relief or cause of action alleging injury from farming or forest practices as defined in ORS 30.930(2) and (4).

Response: The Council previously found that, based on compliance with existing conditions, the Carty Solar Farm proposed with RFA 1 would satisfy the requirements under MCZO 3.010(K)(3)(i).¹⁴ Site Certificate Condition 6.28 requires the Certificate Holder, prior to construction, to record in the real property records of Morrow County a Covenant Not to Sue with regard to generally accepted farming practices on adjacent farmland consistent with MCZO 3.010(K)(3)(i). In compliance with this condition, the Certificate Holder will sign and record with the subject tract's deed a document prohibiting them from pursuing a claim for relief or cause of action alleging injury from farming practices as defined in ORS 30.930(2) and (4). The proposed changes described in RFA 4 do not alter the basis for the prior finding that the requirements under MCZO Section 3.010(K)(3)(i) will be satisfied.

j. Nothing in this Section shall prevent the county from requiring a bond or other security from a developer or otherwise imposing on a developer the responsibility for retiring the photovoltaic solar power generation facility.

Response: The Council previously found that, based on compliance with existing conditions, the Carty Solar Farm proposed with RFA 1 would satisfy the requirements under MCZO 3.010(K)(3)(j).¹⁵ The Council previously imposed several conditions of compliance requiring the Certificate Holder to maintain a bond or letter of credit in amount and form satisfactory to the Council to restore the Facility site following cessation of operation (see conditions under Section 15.0 of the Third Amended Site Certificate [Council 2022]). As such, retirement of the Amended Carty Solar Farm will be the responsibility of the Certificate Holder pursuant to Council rules and the conditions of the Site Certificate, per the Council's Retirement and Financial Assurance standard, OAR 345-022-0050 (see Exhibit X). Therefore, the proposed changes described in RFA 4 do not alter the basis for the Council's prior finding that the requirements under MCZO Section 3.010(K)(3)(j) will be satisfied.

6.2.4 Section 3.010. EFU Zone; M. Yards

In an EFU Zone, the minimum yard setback requirements shall be as follows:

- 1. The front yard setback from the property line shall be 20 feet for property fronting on a local minor collector or marginal access street ROW, 30 feet from a property line fronting on a major collector ROW, and 80 feet from an arterial ROW unless other provisions for combining accesses are provided and approved by the County.*
- 2. Each side yard shall be a minimum of 20 feet except that on corner lots or parcels the side yard on the street side shall be a minimum of 30 feet.*
- 3. Rear yards shall be a minimum of 25 feet.*

¹⁴ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 48 (December 2018).

¹⁵ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 48 (December 2018).

4. Stream Setback. All sewage disposal installations such as outhouses, septic tank and drainfield systems shall be set back from the high-water line or mark along all streams and lakes a minimum of 100 feet, measured at right angles to the high-water line or mark. All structures, buildings, or similar permanent fixtures shall be set back from the high-water line or mark along all streams or lakes a minimum of 100 feet measured at right angles to the high-water line or mark.

Response: The Council previously found that, based on compliance with existing conditions, the components proposed in RFA 1¹⁶ and RFA 2¹⁷ would satisfy the provisions under MCZO 3.010(M). Site Certificate Condition 6.22(b) imposed by the Council mirrors the requirements of MCZO 3.010(M)(1-4). On the more recent RFA 3, ODOE evaluated the changes applicable to the request and determined the Council should rely the Final Order on Amendment 1.¹⁸ Consistent with this condition, the Certificate Holder will document consistency with the applicable setbacks based on final design, as confirmed and submitted to Morrow County as part of the zoning permit. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior findings that the requirements under MCZO Section 3.010(M) will be satisfied.

6.2.5 Section 3.010. EFU Zone; N. Transportation Impacts

1. *1. Traffic Impact Analysis (TIA). In addition to the other standards and conditions set forth in this section, a TIA will be required for all projects generating more than 400 passenger car equivalent trips per day. Heavy vehicles – trucks, recreational vehicles and buses – will be defined as 2.2 passenger car equivalents. A TIA will include: trips generated by the project, trip distribution for the project, identification of intersections for which the project adds 30 or more peak hour passenger car equivalent trips, and level of service assessment, impacts of the project, and, mitigation of the impacts. If the corridor is a State Highway, use ODOT standards. (MC-C-8-98)*

Response: The Council previously found that, based on compliance with existing conditions and the estimated operational traffic, the components proposed in RFA 1¹⁹ and RFA 2²⁰ would satisfy the provisions under MCZO 3.010(N). On the more recent RFA 3, ODOE evaluated the changes applicable to the request and determined the Council should rely the Final Order on Amendment 1.²¹ As described in Exhibit U, the Certificate Holder expects there will be up to 12 personnel for

¹⁶ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 48 (December 2018).

¹⁷ Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 34 (November 2020).

¹⁸ Final Order on Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 24 (July 2022).

¹⁹ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 50 (December 2018).

²⁰ Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 35 (November 2020).

²¹ Final Order on Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 24 (July 2022).

operations and maintenance of the Amended Carty Solar Farm, generating approximately 12 two-way car equivalent trips per day. During construction, it is currently estimated that the Amended Carty Solar Farm will result in a peak construction trip count of 433 trips per day (includes both passenger car equivalent and truck trips).

The Council previously imposed Conditions 6.17 and 6.27 to require a traffic impact analysis (TIA) if peak construction traffic is anticipated to exceed 400 passenger car equivalent (PCE) per day. Prior to the start of construction, when staging and workforce assumptions are better known, the Certificate Holder will confirm expected PCE trips during peak construction and prepare a TIA (per Site Certificate Conditions 6.17 and 6.27; Council 2022) for submittal to ODOE and the Morrow County Planning Department. The TIA will also be used to inform consultation with the Morrow County Sheriff's Office. Consistent with Conditions 6.17 and 6.27, the Certificate Holder will also prepare a Construction Traffic Management Plan, which will include: measures or other recommendations to minimize traffic impacts on Tower Road; staggering shift start times or other measures that significantly reduce the total number of construction worker vehicle trips through the westbound I-84/Tower Road ramp terminal; and installation of temporary traffic controls during peak construction to prioritize westbound left-turning vehicles at the westbound Tower Road ramp terminal during the weekday a.m. peak hour. The Construction Traffic Management Plan will be submitted concurrently with the TIA (Condition 6.17 and 6.27). Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior findings that the requirements under MCZO Section 3.010(N) will be satisfied.

6.2.6 Section 3.070. General Industrial Zone, MG; A. Uses Permitted Outright

The General Industrial Zone is intended to provide, protect and recognize areas well suited for medium and heavy industrial development and uses free from conflict with commercial, residential and other incompatible land uses. This district is intended to be applied generally only to those areas which have available excellent highway, rail or other transportation.

In an M-G Zone, the following uses and their accessory uses are permitted outright; except as limited by subsection C of this section. A Zoning Permit is required and projects larger than 100 acres are subject to Site Development Review (Article 4 Supplementary Provisions Section 4.170 Site Development Review).

15. Utility, transmission and communications towers less than 200 feet in height.

Response: The Council previously found that, based on compliance with existing conditions, the Certificate Holder would comply with MCZO Section 3.070(A) for portions of the proposed 34.5-kV interconnection transmission line within the MG zone.²² The Final Order on RFA 2 noted MCZO Section 3.070 does not include a commercial utility facility for purpose of generating power for public use by sale as a permitted outright or conditional use, and therefore the Council needed to determine whether the establishment of the proposed facility components in the MG zone complies

²² Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 50 (December 2018).

with statewide planning goals.²³ On the more recent RFA 3, ODOE evaluated the changes applicable to the request and determined the Council should rely the Final Order on Amendment 1.²⁴

In this RFA 4, the Certificate Holder is proposing to introduce PV solar power generation into areas formerly used for PGE's BCP, which is within the MG zone. The proposed PV solar power generation facility in this location is referred throughout this exhibit as the Northern Solar Area. The Amended Carty Solar Farm will connect to the grid via a proposed collector substation and existing transmission line infrastructure, which used to serve the BCP. The collector substation is proposed adjacent to an existing electrical transmission dead-end structure for a 500-kV transmission line, which used to serve the BCP. The new substation will connect to the existing dead-end structure, which is 100 feet tall, via new lines that will be approximately 300 feet in length. On the existing dead-end structure old switch components and operators will be replaced with new equipment, but there will be no modifications made to the structure. Once connected to the existing dead-end structure the energy will be conveyed through the existing BCP 500-kV transmission line to the existing Grassland Switchyard. The proposed transmission infrastructure, which includes the 300 feet of 500-kV lines between the proposed collector substation and the existing dead-end structure, is less than 200 feet in height and is therefore a use permitted outright in the MG zone. However, although the MG zone was placed on the BCP site by Morrow County in recognition of the site being committed to use as a power plant, the Morrow County Zoning Ordinance does not include a generation facility, including a PV solar power generation facility, as a permitted outright or conditional use in the MG zone. Therefore, the Certificate Holder needs to demonstrate how establishment of the proposed solar components in the MG zone complies with the Statewide Land Use Planning Goals. This analysis is addressed under Section 9.0 of this exhibit.

6.2.7 Section 3.070. General Industrial Zone, MG; C. Use Limitations

In an M-G Zone, the following limitations and standards shall apply to all permitted uses:

- 1. No use permitted under the provisions of this section that requires a lot area exceeding two (2) acres shall be permitted to locate adjacent to an existing residential lot in a duly platted subdivision, or a lot in a residential zone, except as approved by the Commission.*
- 2. No use permitted under the provisions of this section that is expected to generate more than 20 auto-truck trips during the busiest hour of the day to and from the subject property shall be permitted to locate on a lot adjacent to or across the street from a residential lot in a duly platted subdivision, or a lot in a residential zone.*

Response: There are no residentially zoned lands or residential uses adjacent to the Northern Solar Area. Therefore, these standards do not apply.

²³ Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 36 (November 2020).

²⁴ Final Order on Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 24 (July 2022).

6.2.8 Section 3.070. General Industrial Zone, MG; D. Dimension Requirements

The following Dimensional requirements apply to all buildings and structures constructed, placed or otherwise established in the MG zone.

1. *Lot size and frontage: A minimum lot size has not been determined for this zone although the lot must be of a size necessary to accommodate the proposed use, however, it is anticipated that most, if not all uses will be sited on lots of at least two acres. The determination of lot size will be driven by the carrying capacity of the land given the proposed use. Minimum lot frontage shall be 300 feet on an arterial or collector; 200 feet on a local street.*

Response: The Council previously found that the proposed components within MG-zoned land for both RFA 1²⁵ and RFA 2²⁶ would satisfy the MCZO Section 3.070(D)(1) provision. On the more recent RFA 3, ODOE evaluated the changes applicable to the request and determined the Council should rely the Final Order on Amendment 1.²⁷ The Amended Carty Solar Farm where proposed on MG-zoned land is located on lots that are large enough to accommodate the proposed use. These lots used to accommodate the BCP and are all owned by the Certificate Holder. The Amended Carty Solar Farm will be accessed via Tower Road, which is privately owned for approximately 5,000 feet where it extends onto PGE property, well over the minimum amount of frontage required under this standard. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior findings that the requirements under MCZO 3.070(D)(1) will be satisfied.

2. *Setbacks: No specific side or rear yard setbacks are identified within this zone, but may be dictated by provisions of the Building Code or other siting requirements. The minimum setback between a structure and the right-of-way of an arterial shall be 50 feet. The minimum setback of a structure from the right-of-way of a collector shall be 30 feet, and from all lower class streets the minimum setback shall be 20 feet. There shall be no setback requirement where a property abuts a railroad siding or spur if the siding or spur will be utilized by the permitted use.*

3. *Stream Setback: All sewage disposal installations such as outhouses, septic tank and drainfield systems shall be set back from the high-water line or mark along all streams and lakes a minimum of 100 feet, measured at right angles to the high-water line or mark. All structures, buildings, or similar permanent fixtures shall be set back from the high-water line or mark along all streams or lakes a minimum of 10 feet measured at right angles to the high-water line or mark.*

²⁵ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 52 (December 2018).

²⁶ Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 37 (November 2020).

²⁷ Final Order on Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 24 (July 2022).

Response: The Council previously found that the proposed components within MG-zoned land for both RFA 1²⁸ and RFA 2²⁹ would satisfy the provisions of MCZO Section 3.070(D)(2) and MCZO Section 3.070(D)(3). On the more recent RFA 3, ODOE evaluated the changes applicable to the request and determined the Council should rely the Final Order on Amendment 1.³⁰ Condition 6.22.a of the Third Amended Site Certificate requires compliance with these setbacks (Council 2022). However, Tower Road is a private roadway for approximately 2.27 miles extending north from PGE-owned property and the MCZO Section 3.070(D)(2) provision does not require setbacks along the private portion of Tower Road. In addition, as indicated in Condition 6.22 of the Third Amended Site Certificate, the setbacks do not apply to transmission lines (Council 2022). The proposed O&M building where toilets will be connected to the existing Facility sanitary sewer system is not located within 100 feet of streams or lakes as confirmed by the 2023 wetland and waters delineation (see Exhibit J, Attachment J-1). Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior findings that the requirements under MCZO 3.070(D)(2) and MCZO Section 3.070(D)(3) will be satisfied.

4. Uses adjacent to residential uses. A sight-obscuring fence shall be installed to buffer uses permitted in the General Commercial Zone from residential uses. Additional landscaping or buffering such as diking, screening, landscaping or an evergreen hedge may be required as deemed necessary to preserve the values of nearby properties or to protect the aesthetic character of the neighborhood or vicinity.

Response: The Council previously found for both RFA 1³¹ and RFA 2³² that the provisions of MCZO Section 3.070(D)(4) do not apply. On the more recent RFA 3, ODOE evaluated the changes applicable to the request and determined the Council should rely the Final Order on Amendment 1.³³ The provisions of MCZO Section 3.070(D)(4) are intended to refer to buffering uses “permitted in the General Industrial Zone.” There are no residential uses within proximity of the Northern Solar Area. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior findings that the provisions of MCZO Section 3.070(D)(4) do not apply.

6.2.9 Section 3.070. General Industrial Zone, MG; E. Transportation Impacts

1. Traffic Impact Analysis (TIA). In addition to the other standards and conditions set forth in this section, a TIA will be required for all projects generating more than 400 passenger

²⁸ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 52 (December 2018).

²⁹ Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 37 (November 2020).

³⁰ Final Order on Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 24 (July 2022).

³¹ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 52 (December 2018).

³² Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 37 (November 2020).

³³ Final Order on Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 24 (July 2022).

car equivalent trips per day. Heavy vehicles B trucks, recreational vehicles and buses B will be defined as 2.2 passenger car equivalents. A TIA will include: trips generated by the project, trip distribution for the project, identification of intersections for which the project adds 30 or more peak hour passenger car equivalent trips, and level of service assessment, impacts of the project, and, mitigation of the impacts. If the corridor is a State Highway, use ODOT standards. (MC-C-8-98)

Response: The Council previously found that the proposed components within MG-zoned land for both RFA 1³⁴ and RFA 2³⁵ would satisfy the provisions of MCZO Section 3.070(E)(1). On the more recent RFA 3, ODOE evaluated the changes applicable to the request and determined the Council should rely the Final Order on Amendment 1.³⁶ The requirements of this provision mirror those of MCZO Section 3.010(N), discussed in Section 6.2.5 of this exhibit. As described in Exhibit U, which estimates potential traffic associated with the Amended Carty Solar Farm, more than 400 passenger car equivalents per day are currently estimated during the peak of construction. The Certificate Holder expects there will be up to 12 personnel for operations and maintenance of the Amended Carty Solar Farm, generating approximately 12 two-way vehicle trips per day.

The Council previously imposed Conditions 6.17 and 6.27 to require a Traffic Impact Assessment (TIA) if peak construction traffic is anticipated to exceed 400 passenger car equivalents per day. Prior to the start of construction, when staging and workforce assumptions are better known, the Certificate Holder will confirm expected passenger car equivalents during peak construction and prepare a TIA (per Site Certificate Conditions 6.17 and 6.27; Council 2022) for submittal to ODOE and the Morrow County Planning Department. The TIA will also be used to inform consultation with the Morrow County Sheriff's Office. Consistent with Conditions 6.17 and 6.27, the Certificate Holder will also prepare a Construction Traffic Management Plan, which will include: measures or other recommendations to minimize traffic impacts on Tower Road; staggering shift start times or other measures that significantly reduce the total number of construction worker vehicle trips through the westbound I-84/Tower Road ramp terminal; and installation of temporary traffic controls during peak construction to prioritize westbound left-turning vehicles at the westbound Tower Road ramp terminal during the weekday a.m. peak hour. The Construction Traffic Management Plan will be submitted concurrently with the TIA (Condition 6.17 and 6.27). Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior findings that the requirements under MCZO Section 3.070(E) will be satisfied.

³⁴ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 54 (December 2018).

³⁵ Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 38 (November 2020).

³⁶ Final Order on Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 24 (July 2022).

6.3 Article 4. Supplementary Provisions

6.3.1 Section 4.040 Off-Street Vehicle Parking Requirements

Because vehicle parking facilities can occupy large amounts of land, they must be planned and designed carefully to use the land efficiently while maintaining the visual character of the community. At the time of construction, reconstruction, or enlargement of a structure, or at the time a use is changed in any zone, off-street parking space shall be provided as follows unless greater requirements are otherwise established. When the requirements are based on the number of employees, the number counted shall be those working on the premises during the largest shift at peak season. Fractional space requirements shall be counted as a whole space. Off-street parking spaces may include spaces in garages, carports, parking lots, and/or driveways if vehicles are not parked in a vehicle travel lane (including emergency or fire access lanes), public right-of-way, pathway or landscape area. The County may allow credit for “on-street parking”, as provided in Section 4.050. For uses not specified in Table 4.040-1, parking requirements shall be determined by the use in Table 4.040-1 found to be most similar in terms of parking needs.

MINIMUM PARKING REQUIREMENTS

USE	MINIMUM VEHICLE PARKING REQUIREMENTS
F. Industrial 1. Storage warehouse, manufacturing establishment, rail or trucking freight terminal	One space per employee on the largest shift.

Response: As described in Exhibit U of RFA 4, the Certificate Holder proposes minimal parking at the new O&M building for the Amended Carty Solar Farm and expects there will be up to 12 personnel for daily operations and maintenance activities. The Council previously found that there is not a listed use for the Facility in MCZO Table 4.040-1 and the most similar use and category in the table are “Industrial” and “Storage warehouse, manufacturing establishment, rail or trucking freight terminal.”³⁷ The “storage warehouse, manufacturing establishment, rail or trucking freight terminal” category requires a minimum of one space per employee on the largest shift. The Certificate Holder will provide 12 standard parking spaces and one Americans with Disabilities Act (ADA) parking space at the proposed O&M building.

The Certificate Holder proposes modifying Site Certificate Condition 5.3 to require submittal of a final parking lot plan for the Amended Carty Solar Farm O&M building. The proposed revisions are as follows to incorporate the proposed amendments in RFA 4:

³⁷ Final Order on Application for Site Certificate for the Carty Generating Station, pg. 56-57 (June 2012).

- 5.3 *Before beginning construction of Unit 1 and before beginning construction of the Carty Solar O&M building, the certificate holder shall submit a final parking lot plan to Morrow County for approval as part of the certificate holder's building permit application for the energy facility. This parking lot plan shall comply with Section 4.040 and 4.060 of the Morrow County Zoning Ordinance (MCZO) and with Americans with Disabilities Act (ADA) requirements. For Unit 1, this plan shall provide a minimum of 22 parking spaces and one ADA-accessible space, or the minimum number of parking spaces required by MCZO Section 4.040 based on the number of employees on the largest shift, whichever is greater. For the Carty Solar O&M building the minimum number of parking spaces required is based on MCZO Section 4.040 and the number of employees on the largest shift. The certificate holder shall construct on-site parking in conformance with the approved parking lot plans.*
[Final Order IV.E.4.2] [MCZO Section 4.040-4.060] [AMD2, AMD4]

6.3.2 Section 4.050 Off-Street Parking and Loading

Buildings or structures to be built or substantially altered which receive and distribute materials and merchandise by trucks shall provide and maintain off-street loading berths in sufficient number and size to handle adequately the needs of the particular use. Off-street parking areas used to fulfill the requirements of this Ordinance shall not be used for loading and unloading operations except during periods of the day when not required to care for parking needs.

Response: The Amended Carty Solar Farm will not receive or distribute materials or merchandise; therefore, no off-street loading berths are required under this section.

6.3.3 Section 4.165 Site Plan Review

Site Plan Review is a nondiscretionary or "ministerial" review conducted without a public hearing by the County Planning Director or designee. Site Plan Review is for less complex developments and land uses that do not require site development or conditional use review and approval through a public hearing.

A. Purpose. The purpose of Site Plan Review (ministerial review) is based on clear and objective standards and ensures compliance with the basic development standards of the land use district, such as building setbacks, lot coverage, maximum building height, and similar provisions. Site Plan review also addresses conformity to floodplain regulations, consistency with the Transportation System Plan, and other standards identified below.

B. Pre-application review. Prior to filing its application for site plan review, the applicant shall confer with the County Planning Director or designee, who shall identify and explain the relevant review procedures and standards.

C. Applicability. Site Plan Review shall be required for all land use actions requiring a Zoning Permit as defined in Section 1.050 of this Ordinance. The approval shall lapse, and a new application shall be required, if a building permit has not been issued within one year of Site Review approval, or if development of the site is in violation of the approved plan or other applicable codes.

*D. Review Criteria.**1. The lot area shall be adequate to meet the needs of the establishment.*

Response: The Council previously found that the Certificate Holder has secured a site adequate to meet the needs of the proposed use and would satisfy MCZO Section 4.165(D)(1).³⁸ On the more recent RFA 3, ODOE evaluated the changes applicable to the request and determined the Council should rely the Final Order on Amendment 1 for MCZO Section 4.165.³⁹ Figure 2 in the RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station) shows the proposed areas of permanent and temporary disturbance on the Amended Carty Solar Farm, which is adequate to accommodate the proposed uses. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the requirements under MCZO Section 4.165(D)(1) will be satisfied.

2. The proposed land use is permitted by the underlying land use district.

Response: The Council previously found that the Certificate Holder has demonstrated that the Carty Solar Farm would be permissible within Morrow County and would satisfy MCZO Section 4.165(D)(2).⁴⁰ As discussed in this exhibit, the Amended Carty Solar Farm complies with all substantive criteria, with three exceptions. The Amended Carty Solar Farm will occupy more than 12 acres of high-value farmland and more than 20 acres of arable land in the EFU zone. Therefore, in Section 10.0 of this exhibit, PGE is requesting an exception to Statewide Planning Goal 3 for the Amended Carty Solar Farm. In addition, the Amended Carty Solar Farm does not comply with MCZO Section 3.070, because a generation facility is not among the outright and conditionally permitted uses for the MG zoning district. Therefore, in Section 9.0 of this exhibit, the Certificate Holder identifies the applicable Statewide Land Use Planning Goals and describes how the Amended Carty Solar Farm complies with those goals. As a result, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the requirements under MCZO Section 4.165(D)(2) will be satisfied.

3. The land use, building/yard setback, lot area, lot dimension, density, lot coverage, building height and other applicable standards of the underlying land use district and any sub-district(s) are met.

Response: The Council previously found that the Certificate Holder could design and construct the proposed facility components for both RFA 1⁴¹ and RFA 2⁴² in accordance with applicable substantive criteria identified by Morrow County and would satisfy the provisions of MCZO Section

³⁸ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 55 (December 2018).

³⁹ Final Order on Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 24 (July 2022).

⁴⁰ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 55 (December 2018).

⁴¹ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 56 (December 2018).

⁴² Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 39 (November 2020).

4.165(D)(3). The proposed RFA 4 does not propose the creation or reconfiguration of existing lots. Condition 6.22 of the Third Amended Site Certificate requires compliance with the setbacks of the MG and EFU zones (Council 2022). Compliance with other applicable standards of the MG and EFU zones is addressed in this exhibit. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the requirements under MCZO Section 4.165(D)(3) will be satisfied.

4. Development in flood plains shall comply with Section 3.100 Flood Hazard Overlay Zone of the Ordinance.

Response: The Council previously found for both RFA 1⁴³ and RFA 2⁴⁴ that the flood hazard overlay zone requirements per MCZO Section 4.165(D)(4) and MCZO Section 3.100 would not apply. The development proposed in this RFA is not within a floodplain. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the flood hazard overlay zone requirements per MCZO Section 4.165(D)(4) and MCZO Section 3.100 will not apply.

5. Development in hazard areas identified in the Morrow County Comprehensive Plan shall safely accommodate and not exacerbate the hazard and shall not create new hazards.

Response: Morrow County Comprehensive Plan, Natural Hazards Element states: “A natural hazard occurs when a natural hazard impacts people or property and creates adverse conditions within a community.” The Natural Hazards Element, and the Morrow County Natural Hazard Mitigation Plan updated in 2016, identify eight natural hazards of concern within some or all of Morrow County: drought; earthquake; flood; landslide; volcano; wildfire; windstorm; and winter storm.

The Natural Hazard Element indicates that only some natural hazards, “such as flooding and landslide hazard areas,” can be mitigated through development standards, whereas “for other, more widespread or random hazards such as drought, wildfire, winter storm, or windstorms, effective mitigation must come in the form of public awareness, preparedness and participation.”

As indicated in response to MCZO 4.165(D)(4), the development proposed in this RFA is not within a floodplain. Exhibit H of this RFA addresses geologic and soil stability, and Exhibit I addresses soil conditions. Moreover, conditions of the Site Certificate address natural hazards. Condition 6.8 of the Third Amended Site Certificate requires the certificate holder to “design, engineer and construct the facility to avoid dangers to human safety presented by non-seismic hazards,” including “settlement, landslides, flooding and erosion” (Council 2022). Condition 6.7 of the Third Amended Site Certificate requires the certificate holder to “design, engineer and construct the facility to avoid danger to human safety presented by seismic hazards affecting the area that are expected to result from all maximum probable seismic events” (Council 2022). Other conditions, 6.10 and 6.11 of the

⁴³ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 55 (December 2018).

⁴⁴ Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station, p. 39 (November 2020).

Third Amended Site Certificate, require notification to the Oregon Department of Energy, Department of Geology and Mineral Industries, and the State Building Codes Division if previously unknown conditions are identified at the energy facility site (Council 2022). The Certificate Holder proposes to implement actions included in RFA 4 in compliance with these Site Certificate Conditions. Therefore, this provision is met.

6. Off-street parking and loading-unloading facilities shall be provided as required in Section 4.040 and 4.050 of the Morrow County Zoning Ordinance. Safe and convenient pedestrian access to off-street parking areas also shall be provided as applicable.

Response: The Certificate Holder expects there will be up to 12 personnel for daily operations and maintenance activities at the Amended Carty Solar Farm. Compliance with MCZO Sections 4.040 and 4.050 is described above in Section 6.3.1 and Section 6.3.2, respectively. Therefore, this provision is met.

7. County transportation facilities shall be located, designed and constructed in accordance with the design and access standards in the Morrow County Transportation System Plan.

Response: The Amended Carty Solar Farm proposed in RFA 4 does not involve or require the development of new county transportation facilities or new access to existing county transportation facilities. The primary transportation route to the Amended Carty Solar Farm consists of Interstate 84 (I-84), Interstate 82 (I-82), and Tower Road (Exhibit U, Figure U-1). It is assumed that Tower Road is of sufficient quality to accommodate the construction and operational traffic, and that no road upgrades will be required. Construction workers and operational staff will travel south on Tower Road for approximately 10 miles until reaching the Facility entrance near the existing Carty Generating Station Unit 1 building. Tower Road is a private roadway for approximately 2.27 miles extending north from the Facility. New access roads are only needed as part of the Amended Carty Solar Farm within the perimeter fence for each of the two solar areas. Therefore, this provision is met.

8. Site planning, including the siting of structures, roadways and utility easements, shall provide, wherever practicable, for the protection of trees eight inch caliper or greater measured four feet from ground level, with the exception of noxious or invasive species, such as Russian olive trees.

Response: Development and operation of the Amended Carty Solar Farm proposed in RFA 4 are not expected to require the removal of any trees 8 inches or more in diameter except in the Southern Solar Area. There are scattered juniper trees over 8 inches in diameter in the Southern Solar Area that will have to be removed because there is not a practicable way to site solar modules to fully maximize the buildable area while leaving the trees in place. Therefore, this provision is met.

9. Development shall comply with Section 3.200 Significant Resources Overlay Zone or 3.300 Historic Buildings and Sites protecting inventoried significant natural and historic resources.

Response: There are no inventoried historic buildings or sites within the Amended Site Boundary. The Significant Resources Overlay Zone applies to certain inventoried resources: aggregate and mineral sites; sensitive bird nesting sites; riparian vegetation/wetlands; big game range; and wildlife habitat zone.

There are no inventoried “Goal 5 significant” aggregate and mineral sites within the Amended Site Boundary, as shown on the Morrow County Comprehensive Plan Map of Aggregate and Mineral Resources, adopted September 4, 2013 (Morrow County 2013).

“Sensitive bird nesting sites” are limited to “bald and golden eagle nest sites and communal roost sites,” pursuant to MCZO 3.200(C)(2)(a). The closest identified nest is a bald eagle nest 0.5 miles west of the Southern Solar Area along the southern shoreline of Carty Reservoir. There are no nests within the Amended Site Boundary inventoried on Morrow County’s 1986 Significant Resource Overlay Map.

Requirements for protection of riparian vegetation and wetlands in MCZO 3.200(C)(3) limit road construction in riparian zones, and require setbacks of dwellings and non-water-dependent structures “from the high water level of a stream or water body.” RFA 4 does not propose any road construction in riparian areas, nor will any dwellings or structures be located within the required 100- foot minimum setback from any stream or water body.

The Amended Carty Solar Farm also is not within “big game range” as mapped by either ODFW or Morrow County; therefore, the restrictions of MCZO 3.200(C)(4) for protection of big game range do not apply. Although MCZO 3.200(C)(5) also lists “wildlife habitat zone,” there are no use or development restrictions identified.

Exhibits P and Q specifically address impacts to and mitigation for fish and wildlife habitat and threatened and endangered species in accordance with the Council’s standards. Therefore, this provision is met.

10. The applicant shall determine if compliance is required with Oregon Water Resources Department water quantity and/or Oregon Department of Environmental Quality water quality designations.

Response: Exhibit O in this RFA 4 describes water uses, quantities, and sources for the Amended Carty Solar Farm and Exhibit W describes the proposed disposition of water. Water used for construction will be sourced from the Carty Reservoir under the Certificate Holder’s existing water right and obtained by a third-party contractor through a limited water use license. Site Certificate Condition 2.14 will continue to apply, which requires evidence prior to construction that a limited water use license has been obtained from the Oregon Water Resources Department by the Certificate Holder’s third-party contractor. Carty Reservoir is sufficient for all non-potable water needs during construction of the Amended Carty Solar Farm. Potable water for use during construction will be obtained from a temporary tie-in with the existing Facility potable water system or provided by bottled water or water coolers.

Water for solar panel washing during operations will also be obtained from the Carty Reservoir under the Certificate Holder's existing water right. The potable water within the O&M building will be obtained from the Facility's existing potable water system.

Water use for dust control and concrete production will result in water loss primarily through evaporation and infiltration. The disposition of construction water through evaporation and infiltration is allowed under the terms and conditions of the Facility's Water Pollution Control Facilities (WPCF) Permit (100189) and subsequent Addendums 1 and 2 to the permit. The WPCF permit is explained in Exhibit W of this RFA 4.

Minimal water loss will occur during operations of the Amended Carty Solar Farm. During periodic washing of solar panels (approximately twice per year), wash water will evaporate or infiltrate into the ground allowed under the terms and conditions of the Facility's WPCF permit described above and in Exhibit W.

Therefore, this provision is met.

11. The applicant shall determine if previous Code Enforcement violations have been cleared as applicable.

Response: The Certificate Holder does not know of any Code Enforcement violations. Therefore, this provision does not apply.

12. The applicant shall determine the method of disposal for solid waste, with staff providing information to the applicant about recycling opportunities.

Response: Exhibit W of RFA 4 addresses disposal of solid waste and recycling. During construction of the Amended Carty Solar Farm, all waste will be disposed of following the Construction Waste Management Plan (Site Certificate Condition 6.3). Standard construction waste bins will be kept on-site to keep construction debris until it is hauled off-site. Separate containers for small quantities of hazardous materials, such as oily rags or contained soil from minor spills, will be provided according to the Hazardous Materials Management and Monitoring Plan (Site Certificate Condition 10.37). As noted earlier, materials will be recycled as feasible.

During operations, solid waste generated by the operation of the solar modules, BESS, and associated infrastructure will be collected by the maintenance crews and transported to off-site to facilities such as Finley Buttes Landfill that handle the disposal or recycling of these items. Wastes generated at the proposed O&M building will be collected in appropriate waste or recycling containers, to be removed by a licensed waste hauler under contract to the Certificate Holder. All operational waste will be handled according to the Operations Waste Management Plan (Site Certificate Condition 10.22) which will be consistent with Morrow County Solid Waste Management Ordinance (Site Certificate Condition 6.24).

13. The applicant shall obtain the necessary access permit through the Public Works Department as required by Morrow County Resolution R-29-2000.

Response: The Certificate Holder does not anticipate needing new access to county roads. Access to the Amended Carty Solar Farm is proposed via Tower Road, an existing county road. Tower Road is

a private roadway for approximately 2.27 miles extending north from PGE-owned property. If access is needed, Condition 4.5 of the Third Amended Site Certificate requires that the certificate holder obtain the permit (Council 2022).

6.4 Article 6. Conditional Uses

The Amended Carty Solar Farm, as a “photovoltaic solar power generation facility,” is a listed conditional use in the EFU zone pursuant to MCZO 3.010(C)(24) and therefore is subject to Article 6 of the MCZO.

6.4.1 Section 6.015. Requirements Under a State Energy Facility Site Certificate

If a holder of a Site Certificate issued by the Oregon Energy Facility Siting Council requests a conditional use permit for an energy facility as outlined under ORS 469.401(3) and pays the requisite fee, the Planning Director shall issue such conditional use permit. The conditional use permit shall incorporate only the standards and conditions in Morrow County’s land use and other ordinances as contained in the site certificate. Issuance of the Conditional Use Permit shall be done promptly, not taking more than four weeks once it has been determined that a valid Site Certificate has been issued, the applicant has submitted a complete application and the fee has been received.

Response: The Council previously found, subject to Condition 4.6 (requirement to obtain all local permits), the Carty Solar Farm would be consistent with MCZO Section 6.015.⁴⁵ That condition will also apply to the Amended Carty Solar Farm. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the Carty Solar Farm will be consistent with MCZO Section 6.015.

6.4.2 Section 6.020. General Criteria

In judging whether or not a conditional use proposal shall be approved or denied, the Commission shall weigh the proposal’s appropriateness and desirability, or the public convenience or necessity to be served against any adverse conditions that would result from authorizing the particular development at the location proposed and, to approve such use, shall find that the following criteria are either met or can be met by observance of conditions.

A. The proposal will be consistent with the Comprehensive Plan and the objectives of the Zoning Ordinance and other applicable policies and regulations of the County.

Response: The Amended Carty Solar Farm’s compliance with applicable zoning regulations is addressed in Section 6.0; consistency with applicable provisions of the Comprehensive Plan is addressed in Section 7.0. The design, construction and operation of the Amended Carty Solar Farm will comply with the land use conditions of the Third Amended Site Certificate, including Condition

⁴⁵ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 59 (December 2018).

4.6 (requirement to obtain all local permits), Condition 6.22 (compliance with setbacks), and Condition 6.23 (limitations on signage)(Council 2022). Therefore, this provision is met.

B. If located within the Urban Growth Boundary of a city, that said city has had an opportunity to review and comment on the subject proposal.

Response: The Amended Carty Solar Farm is not located within the urban growth boundary of a city; therefore, this criterion is not applicable.

C. The proposal will not exceed carrying capacities of natural resources or public facilities.

Response: Exhibits I (Soils), J (Wetlands), P (Fish and Wildlife Habitat), Q (Threatened and Endangered Species), and S (Cultural Resources) of this RFA 4 demonstrate that the carrying capacities of natural resources will not be exceeded. Exhibit U (Public Services) demonstrates that the carrying capacity of public services and facilities will not be exceeded.

6.4.3 Section 6.025. Resource Zone Standards for Approval

A. In the Exclusive Farm Use zone a conditional use may be approved only when the County finds that the use will not:

- 1. Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or*
- 2. Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.*

Response: The Council previously found the Carty Solar Farm would be consistent with MCZO Section 6.025.⁴⁶ There is no forest use within the analysis area or Amended Site Boundary as shown on Figure K-2. As shown on Figure K-4, the closest cultivated agricultural land is approximately 1 mile west of the western edge of the Northern Solar Area and is separated by uncultivated land associated with the CGS Unit 1 and the drainage along the western edge of the Facility. The nearest cultivated land to the Southern Solar Area is located approximately 1.7 miles west of the western edge of the Southern Solar Area and is separated from the Facility by uncultivated land and the Carty Reservoir. The cultivated land to the west is owned and actively farmed by Threemile Canyon Farms, LLC, which has approximately 35,000 acres under cultivation, all using center pivot irrigation. Construction and operation of solar panels and associated equipment at the Amended Carty Solar Farm will not alter or reduce the area under cultivation by Threemile Canyon Farms, LLC, will not necessitate relocating any access routes or farm infrastructure, and will not result in changes to the practices for planting, irrigating, fertilizing, or harvesting the circles. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the Carty Solar Farm will be consistent with MCZO Section 6.025.

⁴⁶ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, pg. 60 (December 2018).

6.4.4 Section 6.030. General Conditions

In addition to the standards and conditions set forth in a specific zone, this article, and other applicable regulations; in permitting a new conditional use or the alteration of an existing conditional use, the Commission may impose conditions which it finds necessary to avoid a detrimental impact and to otherwise protect the best interests of the surrounding area or the County as a whole. These conditions may include the following:

- A. Limiting the manner in which the use is conducted including restricting the time an activity may take place and restraints to minimize such environmental effects as noise, vibration, air pollution, glare and odor.*

Response: Exhibit Y of RFA 4 addresses the Amended Carty Solar Farm’s compliance with applicable noise regulations of ODEQ. The nearest noise sensitive receptor⁴⁷ as regulated under ODEQ’s noise regulations in OAR 340-035-0035 (Noise Control Regulations for Industry and Commerce) is located approximately 2.5 miles from the Amended Carty Solar Farm. Land immediately surrounding the Amended Carty Solar Farm is either in conservation easement, cultivated for farming, or part of the Boardman Bombing Range. Although sound originating from construction sites is exempt from state noise regulations per OAR 340-035-0035(5)(g), construction noise will be short-term and not impact any surrounding uses. The Certificate Holder modeled noise sources from operation of the Amended Carty Solar Farm to demonstrate sound levels are well below applicable ODEQ statistical noise limits.

The PV solar and BESS components of the Amended Carty Solar Farm will not include equipment that will create noticeable vibration, emit air pollution, or create odor.

The Naval Weapons Systems Training Facility (NWSTF) Boardman is a U.S. Navy aviation training and testing site located more than 1 mile east of the Amended Carty Solar Farm and will therefore not create any physical obstruction to use of the training facility. As part of RFA 1, the U.S. Navy and PGE discussed the potential for glare from the Carty Solar Farm to impact flight paths to the NWSTF Boardman. Following that discussion, PGE filed a Notice of Proposed Construction (Form 7460-1) with the Federal Aviation Administration (FAA) on July 13, 2016, and the FAA subsequently issued a determination of no hazard. In support of the Amended Carty Solar Farm, the U.S. Navy and PGE discussed the potential for increased glare from the additional solar modules. The U.S. Navy concluded that no additional glare and glint analysis is required for the Amended Carty Solar Farm (Kimberly Peacher, U.S. Navy NW Training Range Complex, pers. comm., e-mail message, October 23, 2023).

- B. Establishing a special yard or other open space or lot area or dimension.*

⁴⁷ “Noise sensitive property” is defined by OAR 340-035-0015(38) as “real property normally used for sleeping, or normally used as schools, churches, hospitals, or public libraries. Property used in industrial or agricultural activities is not Noise Sensitive Property unless it meets the above criteria in more than an incidental manner.”

Response: This RFA 4 for the Amended Carty Solar Farm does not propose the creation or reconfiguration of any lots. Condition 6.22 of the Third Amended Site Certificate requires compliance with the yard and setback requirements of the MG zone and the EFU zone (Council 2022).

C. Limiting the height, size or location of a building or other structure.

Response: The components, structures, and systems proposed with RFA 4 are the same in height and general location as what the Council has previously approved for the Facility. The location of the Southern Solar Area is generally the same as the Carty Solar Farm approved with RFA 1. The Northern Solar Area—including the BESS, collector substation, and O&M building—are in an area previously used by the BCP. The maximum heights of the PV solar modules, inverters, and transformers will be similar to what was approved for the Carty Solar Farm with RFA 1. The collector substation and O&M building will be similar to the existing substations and buildings already present at the Facility.

By far, the tallest component proposed with the Amended Carty Solar Farm is the aboveground segment of the collection system, proposed to extend for approximately 1 mile along the eastern shore of the Carty Reservoir. This segment of the collection system is proposed on wood support poles at a height of up to approximately 70 feet above ground. This same location of aboveground line, pole design, and height was approved with RFA 1.

D. Designating the size, number, location and nature of vehicle access points.

- 1. Where access to a county road is needed, a permit from Morrow County Public Works department is required. Where access to a state highway is needed, a permit from ODOT is required.*

Response: The Amended Carty Solar Farm does not include new vehicle access to a county road or a state highway needed to construct, operate, and retire the facilities. Access to the Amended Carty Solar Farm is proposed via Tower Road. Tower Road is a private roadway for approximately 2.27 miles extending north from PGE-owned property. If access is needed, Condition 4.5 of the Third Amended Site Certificate requires that the Certificate Holder obtain the permit (Council 2022).

- 2. In addition to the other standards and conditions set forth in this section, a Traffic Impact Analysis (TIA) will be required for all projects generating more than 400 passenger car equivalent trips per day. A TIA will include: trips generated by the project, trip distribution for the project, identification of intersections for which the project adds 30 or more peak hour passenger car equivalent trips, and level of service assessment, impacts of the project, and mitigation of the impacts. If the corridor is a State Highway, use ODOT standards. (MC-C-8-98)*

Response: The requirements of this provision mirror those of MCZO Section 3.010(N) and Section 3.070(E)(1), discussed earlier in this exhibit. As described in Exhibit U, which estimates potential traffic associated with the Amended Carty Solar Farm, more than 400 passenger car equivalents per day are currently estimated during the peak of construction, and therefore a TIA is required. The

Certificate Holder expects there will be up to 12 personnel for operations of the Amended Carty Solar Farm, generating approximately 12 two-way vehicle trips per day.

The Council previously imposed Condition 6.17 to require a TIA if peak construction traffic is anticipated to exceed 400 passenger car equivalents per day. Prior to the start of construction, when staging and workforce assumptions are better known, the Certificate Holder will confirm expected passenger car equivalents during peak construction and prepare a TIA (per Site Certificate Condition 6.27; Council 2022) for submittal to ODOE and the Morrow County Planning Department. The TIA will also be used to inform consultation with the Morrow County Sheriff's Office. Consistent with Condition 6.27, the Certificate Holder will also prepare a Construction Traffic Management Plan, which will include: measures or other recommendations to minimize traffic impacts on Tower Road; staggering shift start times or other measures that significantly reduce the total number of construction worker vehicle trips through the westbound I-84/Tower Road ramp terminal; and installation of temporary traffic controls during peak construction to prioritize westbound left-turning vehicles at the westbound Tower Road ramp terminal during the weekday a.m. peak hour. The Construction Traffic Management Plan will be submitted concurrently with the TIA (Condition 6.17 and 6.27). Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior findings that the requirements under MCZO Section 3.070(E) will be satisfied.

E. Increasing the amount of street dedication, roadway width or improvements within the street right-of-way.

1. It is the responsibility of the landowner to provide appropriate access for emergency vehicles at the time of development. (MC-C-8-98)

Response: The Amended Carty Solar Farm does not include new access or street dedication. Access to the Amended Carty Solar Farm is proposed via Tower Road, an existing county road. Tower Road is a private roadway for approximately 2.27 miles extending north from PGE-owned property.

F. Designating the size, location, screening, drainage, surfacing or other improvement of a parking area or loading area.

Response: The proposed O&M building will include a designated parking area adjacent to the structure. The O&M building area is proposed to be approximately 20,000 square feet (0.5 acres). The O&M building will include additional area for parking, maneuvering, and buffer. The Certificate Holder expects there will be up to 12 personnel for daily operations and maintenance activities and will provide 12 standard parking spaces and one Americans with Disabilities Act (ADA) parking space at the proposed O&M building in compliance with MCZO Section 4.040.

G. Limiting or otherwise designating the number, size, location, height, and lighting of signs.

Response: The Amended Carty Solar Farm will comply with Condition 6.23 of the Third Amended Site Certificate, which limits signage associated with the Facility (Council 2022).

H. Limiting the location and intensity of outdoor lighting and requiring its shielding.

Response: The Amended Carty Solar Farm will comply with Condition 6.14 of the Third Amended Site Certificate, which limits exterior nighttime lighting at the Facility (Council 2022).

I. Requiring diking, screening, landscaping or another facility to protect adjacent or nearby property and designating standards for its installation and maintenance.

Response: The facilities proposed in this RFA are not in close proximity to uses requiring protection by diking, screening, or landscaping. The Amended Carty Solar Farm is surrounded by undeveloped and uncultivated land to the north, east, and south. The land to the east and south is within a conservation easement, which restricts development. The land immediately to the west of both the Northern Solar Area and Southern Solar Area is either already part of the overall Facility or is undeveloped.

J. Designating the size, height, location and materials for a fence

Response: The Amended Carty Solar Farm includes perimeter fencing around the Northern Solar Area, Southern Solar Area, BESS, and collector substation. The perimeter fencing around Northern Solar Area, Southern Solar Area, and BESS will be chain-link, up to 8 feet in height, with an additional 1 foot of razor or barb wire. The collector substation perimeter fence will be chain-link, up to 11 feet in height, with an additional 1 foot of razor or barb wire.

The Certificate Holder proposes the addition of BESS to existing Site Certificate Condition 7.2, which requires fencing around specific Facility components (Council 2022).

Condition 7.2 is proposed to be modified as follows:

7.2 *To protect the public from electrical hazards, the certificate holder must enclose the facility switchyard or substations and BESS with appropriate fencing and locked gates.*
[Final Order IV.E.4.2] [MCZO Section 4.040-4.060] [AMD2, AMD4]

K. Protecting and preserving existing trees, vegetation, water resources, wildlife habitat or other significant natural resources.

Response: Protection of these resources in accordance with Council standards is addressed in Exhibits I (Soils), J (Wetlands), P (Fish and Wildlife Habitat), Q (Threatened and Endangered Plants and Animals), and W (Generation of Solid Waste and Wastewater) of this RFA 4. In addition, the Third Amended Site Certificate includes extensive conditions for protection of natural resources, including 40 conditions in Section 10 (Protection of Natural Resources) of the Third Amended Site Certificate (Council 2022).

L. Other conditions necessary to permit the development of the County in conformity with the intent and purpose of this Ordinance and the policies of the Comprehensive Plan.

Response: The provisions under MCZO 6.030 describe conditions that may be imposed “to avoid a detrimental impact and to otherwise protect the best interests of the surrounding area or the County as a whole.” The Amended Carty Solar Farm, as proposed, has been designed to avoid

detrimental impacts. In addition, the Certificate Holder and Facility must comply with the conditions in the Site Certificate.

6.4.5 Section 6.040. Permit and Improvements Assurance

The Commission may require an applicant to furnish the County with a performance bond or such other form of assurance that the Commission deems necessary to guarantee development in accordance with the standards established and the conditions attached in granting a conditional use permit.

Response: The Council previously imposed several conditions of compliance requiring the Certificate Holder to maintain a bond or letter of credit in amount and form satisfactory to the Council to restore the Facility site following cessation of operation (see conditions under Section 15.0 of the Third Amended Site Certificate). As such, retirement of the Amended Carty Solar Farm will be the responsibility of the Certificate Holder pursuant to Council rules and the conditions of the Site Certificate, per the Council's Retirement and Financial Assurance standard, OAR 345-022-0050 (see Exhibit X).

6.4.6 Section 6.050. Standards Governing Conditional Uses

A conditional use shall comply with the standards of the zone in which it is located and with the standards set forth in this subsection.

0. Radio, television tower, utility station or substation:

1. In a residential zone, all equipment storage on the site may be required to be within an enclosed building.

Response: This provision, MCZO 6.050(O)(1), does not apply because the Amended Carty Solar Farm is not located in a residential zone.

2. The use may be required to be fenced and provided with landscaping.

Response: Although the ordinance does not contain a substantive standard for imposing the fencing or landscaping requirement, this RFA proposes to include security fencing around the perimeter of the Northern Solar Area, Southern Solar Area, BESS, and collector substation. The perimeter fencing around Northern Solar Area, Southern Solar Area, and BESS will be chain-link, up to 8 feet in height, with an additional 1 foot of razor or barb wire. The collector substation perimeter fence will be chain-link, up to 11 feet in height, with an additional 1 foot of razor or barb wire.

3. The minimum lot size for a public utility facility may be waived on finding that the waiver will not result in noise or other detrimental effects to adjacent property.

Response: The provision is not applicable to RFA 4 as a new lot is not proposed or required.

4. Transmission towers, hoses, overhead wires, plumbing stations, and similar gear shall be so located, designed and installed as to minimize their conflict with scenic values.

Response: The Amended Carty Solar Farm does not include transmission towers or plumbing stations. The majority of the proposed 34.5-kV collector lines will be buried to a minimum of 3 feet below ground. The approximately 1-mile-long segment of overhead 34.5-kV collector line will be mounted on wooden poles approximately 70 feet in height. This same location of aboveground line, pole design, and height was approved with RFA 1. The new substation will step up the energy from 34.5-kV to 500-kV and then interconnect with the existing transmission system remaining from the BCP. The new substation will connect to the existing dead-end structure, which is 100 feet tall, via new lines that will be approximately 300 feet in length. The 300-foot-long, 500-kV interconnection between the collector substation and existing dead-end structure is technically a transmission line, but no new transmission towers will be constructed.

7.0 Compliance with the Applicable Substantive Criteria from the Morrow County Comprehensive Plan

In 1986, Morrow County adopted a comprehensive plan to address the sustainable management of resources within the county that might be threatened by population growth and development. The MCCP (Morrow County 2013) has several “Goals” or “Elements” relating to different resources within the county. This section demonstrates compliance with the MCCP Elements applicable to the Amended Carty Solar Farm.

7.1 Agricultural Lands Element

Agricultural Policy 1: It shall be the policy of Morrow County, Oregon, to preserve agricultural lands, to protect agriculture as its main economic enterprise, to balance economic and environmental considerations, to limit non-compatible nonagricultural development, and to maintain a high level of livability in the County.

Response: The site for the Amended Carty Solar Farm was selected in part because it is not cultivated, is not known to have been cultivated in the past, has no irrigation water rights, and is isolated from cultivated farmland by Carty Reservoir and conservation lands protected under conservation easement. The location, moreover, facilitates interconnection to existing transmission infrastructure including the Grassland to Slatt 500-kV transmission line, avoiding the need for a new high-voltage transmission line to connect the Amended Carty Solar Farm to the grid. As with the Amended Carty Solar Farm itself, the 34.5-kV collection system and 300-foot-long, 500-kV transmission line connection do not impact any cultivated farmland. The Northern Solar Area occurs almost entirely on industrial zoned land formerly occupied by the BCP, therefore will not impact any cultivated farmland. A small portion (approximately 8 acres) of the Northern Solar Area’s eastern, southern, and western edges fall within EFU land, but these areas are also not cultivated.

Agricultural Policy 4: It shall be the policy of the County to develop and implement comprehensive and definitive criteria for the evaluation of all non-farm developments to

ensure that all objectives and policies set forth herein are complied with to the maximum level possible.

Response: Section 6.0 of this exhibit demonstrates compliance with the criteria under the MCZO for siting the Amended Carty Solar Farm on land zoned EFU.

7.2 Economic Element

Economic Policy 2A: It shall be the policy of Morrow County, Oregon, to maximize the utilization of the local work force as job opportunities increase.

Response: As discussed in Exhibit U to this RFA 4, the Certificate Holder will not know for certain the size of the labor force or the overall timeline for construction until it enters into contracts for the development of the Amended Carty Solar Farm. However, a substantial portion of the labor force needed during construction is expected to come from communities within driving distance of the site. PGE anticipates that approximately 30 percent of the construction workforce will be local residents within 70 miles (1-hour duration) commuting distance. The Certificate Holder expects that the Amended Carty Solar Farm will require up to 12 personnel for daily maintenance activities during operations. The O&M staff will be hired locally, to the extent that skilled workers are available.

Economic Policy 3A: It shall be the policy of Morrow County, Oregon, to encourage local producers to new markets for local products and to seek out new products that are in demand in the market place and that can be produced locally.

Response: The Amended Carty Solar Farm will provide a renewable source of electric power, diversifying Morrow County's economic mix without removing any land from another productive economic use or adversely affecting the economic productivity of surrounding lands.

Economic Policy 5A: It shall be the policy of Morrow County, Oregon, to utilize appropriate mechanisms in implementing regulations to reduce undesirable impacts from industrial and commercial developments, including the establishment of buffer zones or other mitigation measures if determined to be necessary.

Response: Condition 6.22 of the Third Amended Site Certificate incorporates the setback requirements of the Morrow County EFU and MG zones (Council 2022). The Statewide Planning Goal 3 exception in Section 10.0 of this exhibit addresses how elements of the Amended Carty Solar Farm located on land zoned EFU are compatible with surrounding land uses.

Economic Policy 6C: It shall be the policy of Morrow County, Oregon, to require that development plans be based on the best economic information available, comply with applicable environmental standards, and take into account the effects of the development on the existing economy and available resources, including transportation and work force.

Response: The layout for the Southern Solar Area maximizes the buildable area southeast of Carty Reservoir. The Northern Solar Area will utilize land formerly used as a coal-fired power plant to provide a new source of clean, renewable energy. The Amended Carty Solar Farm will be isolated

from cultivated land, ensuring that its development will not adversely affect existing agricultural operations in Morrow County. The Amended Carty Solar Farm will utilize existing transportation facilities, as well as the existing transmission infrastructure.

7.3 Energy Conservation Element

Energy Conservation Policy 3: It shall be the policy of Morrow County, Oregon, to encourage development of solar and wind resources.

Response: This RFA 4 proposes a PV solar facility with 185 MW of generation capacity consistent with this policy.

Energy Conservation Policy 9: The County will encourage the development of alternative energy sources in County industries and businesses.

Response: Consistent with this policy, RFA 4 proposes an alternative energy source, which includes a PV solar facility with 185 MW of renewable energy generation capacity and BESS with the capability of storing up to 156 MW. The Northern Solar Area will repurpose the former site of the BCP and convert the site from a coal-fired power plant to an emission-free alternative renewable energy generation facility.

Compliance with Council standards, as well as conditions of the Third Amended Site Certificate, will ensure that the project will be protective of the environment and natural resources, including soil, water, fish and wildlife habitat, native plants, and scenic resources.

8.0 Directly Applicable Administrative Rules and Statutes

8.1 Oregon Administrative Rules

8.1.1 OAR 660-033-0130(5)

OAR 660-033-0130 Minimum Standards Applicable to the Schedule of Permitted and Conditional Uses

(5) Approval requires review by the governing body or its designate under ORS 215.296. Uses may be approved only where such uses:

(a) Will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; and

(b) Will not significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.

Response: The criteria of OAR 660-033-130(5) are identical to ORS 215.296(1) and the resource zone conditional use standards of MCZO Section 6.025(A) and are addressed under the Morrow County standards in Section 6.4.3 of this exhibit.

8.1.2 OAR 660-033-0130(38)

Response: OAR 660-033-0130(38) establishes standards specific to siting of a “photovoltaic solar power generation facility” as defined in OAR 660-033-0130(38)(e). These standards are implemented at the Morrow County level through MCZO Section 3.010(K)(3), which is addressed in Section 6.2.4 of this exhibit.

8.2 Oregon Revised Statutes

8.2.1 ORS 215.296 Standards for approval of certain uses in exclusive farm use zones

ORS 215.296 Standards for approval of certain uses in exclusive farm use zones; violation of standards; complaint; penalties; exceptions to standards.

(1) A use allowed under ORS 215.213 (2) or (11) or 215.283 (2) or (4) may be approved only where the local governing body or its designee finds that the use will not:

(a) Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or

(b) Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.

Response: The criteria of ORS 215.296(1) are identical to OAR 660-033-130(5) and the resource zone conditional use standards of MCZO Section 6.025(A) and are addressed under the Morrow County standards in Section 6.4.3 of this exhibit.

9.0 Statewide Land Use Goals Compliance

The Amended Carty Solar Farm does not comply with MCZO Section 3.010(K)(3)(f) as the total area of high-value farmland and arable land that will be precluded from use as a commercial agricultural enterprise is more than 12 acres and 20 acres respectively, thus requiring a Goal 3 exception. In addition, the PV solar energy generation in the Northern Solar Area does not comply with MCZO Section 3.070 because it is not an outright or conditionally permitted use in the MG zoning district. Because the Amended Carty Solar Farm does not comply with all applicable local land use criteria, the Council must determine, under ORS 469.504(1)(b)(B), whether the proposed facility otherwise complies with the applicable Statewide Land Use Planning Goals.

The applicable Statewide Land Use Planning Goals to use for a determination under ORS 469.504(1)(b)(B) include: Goal 3 (Agricultural Lands), Goal 5 (Natural Resources), Goal 6 (Air, Water and Land Resource Quality), Goal 7 (Areas Subject to Natural Hazards), Goal 8 (Recreational Needs), Goal 9 (Economic Development), Goal 10 (Housing), Goal 11 (Public Facilities and Services), Goal 12 (Transportation), Goal 13 (Energy Conservation), and Goal 14 (Urbanization). Goals 1 and 2

do not apply because they are process-oriented goals that do not apply to individual proposals, and Goal 4 does not apply because it pertains to forest lands.⁴⁸ Goals 15-19 apply to the Willamette River Greenway and ocean and coastal resources, which are not applicable to the site of the Amended Carty Solar Farm in eastern Oregon.⁴⁹

The following section provides a discussion of conformance with the applicable Statewide Land Use Planning Goals. The Certificate Holder provides a goal compliance response specific to the Northern and Southern solar areas of the Amended Carty Solar Farm, which are primarily located within MG and EFU zones respectively.⁵⁰

9.1.1 Goal 3, Agricultural Lands

“To preserve and maintain agricultural lands.”

Goal Compliance: This Goal is designed for the protection of agricultural lands. Goal 3 provides that “[a]gricultural lands shall be preserved and maintained for farm use, consistent with existing and future needs for agricultural products, forest and open space and with the state’s agricultural land use policy expressed in ORS 215.243 and 215.700.”

- Southern Solar Area: The southern portion of the Amended Carty Solar Farm preserves and maintains agricultural lands by avoiding direct impacts to and maintaining substantial separation from cultivated lands that have irrigation or potential for irrigation. None of the land within the Southern Solar Area is currently cultivated or shows evidence of commercial cultivation any time in the past. The land that will be occupied by the solar facility is not within any irrigation circles, does not have water rights for irrigation, and is not currently capable of commercial cultivation. The southern portion of the amended Carty Solar Farm is located on agricultural lands as defined in the MCCP. The proposed use—solar energy generation—is consistent with MCCP Goal 3, Policy 1, as it is a compatible nonagricultural use in the EFU zone without air or water emissions that could impact surrounding agricultural uses.
- Northern Solar Area: The northern portion of the Amended Carty Solar Farm preserves and maintains agricultural lands by utilizing industrial zoned land previously used for the BCP operations— reusing the former coal plant areas for solar energy generation. Aside from small portions of EFU-zoned land (8 acres total) along its eastern, southern, and western edges, the Northern Solar Area is primarily located on industrial land as defined in the MCCP. The MG zone was placed on and around the BCP in express recognition that the land was committed to a non-resource use as an electric power generation facility. For reasons that are not clear, however, the MG zone placed on the site does not recognize power generation as a permitted or conditional use. The Certificate Holder demonstrates in this exhibit how the Amended Carty Solar Farm complies with Morrow County’s substantive

⁴⁸ Final Order on Application for Site Certificate for the Carty Generating Station, pg. 72 (June 2012).

⁴⁹ Final Order on Application for Site Certificate for the Carty Generating Station, pg. 72 (June 2012).

⁵⁰ Only a small portion (approximately 8 acres) of the Northern Solar Area is located within the EFU zone.

criteria for development in the MG zone. The area within CGS zoned MG continues to be suited for further development and use by energy and utility facilities, consistent with its proximity to existing generation and transmission facilities, as well as surrounding vacant and uncultivated uses.

Although the energy facility will exceed the acreage limits of OAR 660-033-0130(38) (assuming the site is “high-value farmland”), an analysis of the Amended Carty Solar Farm’s compliance with Statewide Planning Goal 3 and its implementing regulations is provided in Section 10.0 this exhibit.

9.1.2 Goal 5, Open Spaces, Scenic, Historic and Natural Resources

“To protect natural resources and conserve scenic and historic areas and open spaces.”

Goal Compliance: Goal 5 requires local governments to adopt programs that will protect natural resources and conserve scenic, historic, and open space resources. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability.

As part of designing the layout for the Amended Carty Solar Farm to avoid, minimize, and mitigate for impacts to potential Goal 5 resources, the Certificate Holder has conducted surveys for: wetlands and waters (Exhibit J); fish and wildlife and their habitats (Exhibit P); threatened and endangered species (Exhibit Q); scenic resources (Exhibit R); cultural resources (Exhibit S); and recreational opportunities (Exhibit T). As demonstrated in this RFA 4, the Amended Carty Solar Farm will not significantly impact potential Goal 5 resources.

- **Southern Solar Area:** There are no Morrow County Goal 5 designated resources in the Southern Solar Area. The Southern Solar Area protects and conserves natural resources, scenic resources, cultural resources, and open spaces through avoidance, minimization, and mitigation measures. The Southern Solar Area is located entirely on private land, none of which is designated as open space, recreational opportunity, or as a scenic resource, and will be built primarily non-cultivated farmland adjacent to approved energy facilities. No cultural resources, wetlands, waters, or special status fish or wildlife species have been identified within the Southern Solar Area. The impacts to wildlife habitat will be mitigated as specified in the Certificate Holder’s Amended Wildlife and Habitat Monitoring and Mitigation Plan (Exhibit P, Attachment P-3).
- **Northern Solar Area:** There are no Morrow County Goal 5 designated resources in the Northern Solar Area. The Northern Solar Area protects and conserves natural resources, scenic resources, cultural resources, and open spaces through avoidance, minimization, and mitigation measures. The Northern Solar Area is located entirely on private land, none of which is designated as open space recreational opportunity, or as a scenic resource, and will be built on the site of the former BCP adjacent to approved energy facilities. No cultural resources, wetlands, waters, or special status fish or wildlife species have been identified within the Northern Solar Area. The impacts to wildlife habitat will be mitigated as specified in the Certificate Holder’s Amended Wildlife and Habitat Monitoring and Mitigation Plan (Exhibit P, Attachment P-3).

Therefore, the Southern Solar Area and Northern Solar Area comply with Goal 5.

9.1.3 Goal 6, Air, Water and Land Resources

“To maintain and improve the quality of the air, water and land resources of the state.”

Goal Compliance: Goal 6 instructs local governments to consider protection of air, water and land resources from pollution and pollutants when developing comprehensive plans. The pollutants addressed in Goal 6 include solid waste, water waste, noise and thermal pollution, air pollution, and industry-related contaminants.

The Amended Carty Solar Farm will not result in air or water emissions while generating renewable energy. The nearest noise sensitive receptor (NSR)⁵¹ as regulated under the ODEQ’s noise regulations in OAR 340-035-0035 (Noise Control Regulations for Industry and Commerce) is located approximately 2.5 miles from the Amended Carty Solar Farm. Although sound originating from construction sites is exempt from state noise regulations per OAR 340-035-0035(5)(g), construction noise will be short-term and not impact any surrounding uses. The Certificate Holder modeled noise sources from operation of the Amended Carty Solar Farm to demonstrate sound levels are well below applicable ODEQ statistical noise limits.

During construction of the Amended Carty Solar Farm, all waste will be disposed of following the Construction Waste Management Plan (Site Certificate Condition 6.3). Standard construction waste bins will be kept on-site to keep construction debris until it is hauled off-site. Separate containers for small quantities of hazardous materials, such as oily rags or contained soil from minor spills, will be provided consistent with the Hazardous Materials Management and Monitoring Plan (Site Certificate 10.37). As noted earlier, materials will be recycled as feasible. During operations, solid waste generated by the operation of the solar modules, BESS, and associated infrastructure will be collected by the maintenance crews and transported to off-site to facilities such as Finley Buttes Landfill that handle the disposal or recycling of these items. Wastes generated at the proposed O&M building will be collected in appropriate waste or recycling containers, to be removed by a licensed waste hauler under contract to the Certificate Holder. All operational waste will be handled according to the Operations Waste Management Plan (Site Certificate Condition 10.22) which will be consistent with Morrow County Solid Waste Management Ordinance (Site Certificate Condition 6.24).

Construction water that is used for dust control and concrete production will be allowed to evaporate and infiltrate. This disposition of construction water is allowed under the terms and conditions of the Facility’s WPCF Permit. Minimal water loss will occur during operations of the Amended Carty Solar Farm. During periodic washing of solar panels (approximately twice per

⁵¹ “Noise sensitive property” is defined by OAR 340-035-0015(38) as “real property normally used for sleeping, or normally used as schools, churches, hospitals, or public libraries. Property used in industrial or agricultural activities is not Noise Sensitive Property unless it meets the above criteria in more than an incidental manner.”

year), wash water will evaporate or infiltrate into the ground allowed under the Facility's WPCF permit.

- **Southern Solar Area:** The Southern Solar Area will result in negligible impacts to air, water and land resources by utilizing undeveloped, uncultivated land in the general area previously approved for the 50-MW Carty Solar Farm. Operation of the Southern Solar Area will not result in air or water emissions while generating renewable energy. The nearest NSR to the Southern Solar Area is approximately 2.5 miles south. The Certificate Holder modeled noise sources from operation of the Southern Solar Area to demonstrate sound levels are well below applicable ODEQ statistical noise limits. Solid waste generated during construction and operation of the Southern Solar Area will be disposed of in compliance with Site Certificate Conditions 6.3, 6.4, and 10.22. Wastewater generated during construction and operation of the Southern Solar Area will be allowed to evaporate and infiltrate under the terms and conditions of the Facility's WPCF Permit.
- **Northern Solar Area:** The Northern Solar Area will result in negligible impacts to air, water and land resources by reusing the area formerly utilized by the BCP. Operation of the Northern Solar Area will not result in air or water emissions while generating renewable energy. The nearest NSR to the Northern Solar Area is more than 3 miles away. The Certificate Holder modeled noise sources from operation of the Northern Solar Area to demonstrate sound levels are well below applicable ODEQ statistical noise limits. Solid waste generated during construction and operation of the Northern Solar Area will be disposed of in compliance with Site Certificate Conditions 6.3, 6.4, and 10.22. Wastewater generated during construction and operation of the Northern Solar Area will be allowed to evaporate and infiltrate under the terms and conditions of the Facility's WPCF Permit.

Therefore, the Southern Solar Area and Northern Solar Area comply with Goal 6.

9.1.4 Goal 7, Areas Subject to Natural Disasters and Hazards

"To protect people and property from natural hazards."

Goal Compliance: Goal 7 requires local comprehensive plans to address Oregon's natural hazards.

Exhibit H (Geologic and Soil Stability) in this RFA 4 analyzes potential seismic and non-seismic hazards, disaster resilience, and climate change. The risk of seismic hazards to human safety at the Amended Carty Solar Farm is low. The Certificate Holder reviewed regional geologic information and performed a site-specific desktop analysis of potential seismic, geologic, and soils hazards. In addition, several previous geotechnical investigations have been conducted within areas of the Amended Site Boundary that confirm low seismic risk. In addition, a site-specific geotechnical investigation will be conducted, allowing the Certificate Holder to design, engineer, and construct the Amended Carty Solar Farm to the most current standards at the time of construction (Condition 6.6, Council 2022). The site-specific geotechnical investigation and Amended Carty Solar Farm design will comply with the following conditions from the Third Amended Site Certificate: Conditions 5.4, 6.7, 6.8, 6.10, 6.11 (Council 2022). Exhibit H reflects input from DOGAMI and

demonstrates that the Certificate Holder can design, engineer, and construct the Amended Carty Solar Farm to avoid dangers to human safety. Pertinent design codes related to geology, seismicity, and near-surface soils are contained in OSSC Chapter 16, Section 1613 (Earthquake Loads) (State of Oregon 2022). The Amended Carty Solar Farm will be designed to meet or exceed the minimum standards required by these design codes.

- **Southern Solar Area:** There are no faults mapped within the Southern Solar Area; however, a fault is mapped on the geologic map to the east (USGS 2023). There is no indication that this fault is active within recent time. Several undifferentiated, Class B faults are mapped within 25 miles. The Southern Solar Area will be constructed within a flat-lying portion of the Amended Site Boundary. It will avoid steep slopes and drainages that could experience landslides, runoff, and severe water erosion. The non-seismic assessment of the Southern Solar Area showed no indication of volcanic, flood, or shrinking and swelling soils. A draft ESCP has been developed to reduce the potential for soil erosion (Exhibit I, Attachment I-1). The ESCP includes structural and nonstructural BMPs. A previous geotechnical investigation within the Amended Site Boundary found that near-surface soils exhibit moderate risk collapsible soils. Soil properties will be evaluated by laboratory testing and analysis. Subsurface soil conditions, such as loess or collapsing soils, will be identified during the site-specific geotechnical investigation and will inform the final design. If collapsible soils are found, collapse potential will be mitigated by construction techniques.
- **Northern Solar Area:** There are no faults mapped within the Northern Solar Area; however, a fault is mapped on the geologic map to the east (USGS 2023). There is no indication that this fault is active within recent time. Several undifferentiated, Class B faults are mapped within 25 miles. The Northern Solar Area will be constructed within a flat-lying portion of the Amended Site Boundary. It will avoid steep slopes and drainages that could experience landslides, runoff, and severe water erosion. The non-seismic assessment of the Northern Solar Area showed no indication of volcanic, flood, or shrinking and swelling soils. A draft ESCP has been developed to reduce the potential for soil erosion (Exhibit I, Attachment I-1). The ESCP includes structural and nonstructural BMPs. A previous geotechnical investigation within the Amended Site Boundary found that near-surface soils exhibit moderate risk collapsible soils. Soil properties will be evaluated by laboratory testing and analysis. Subsurface soil conditions, such as loess or collapsing soils, will be identified during the site-specific geotechnical investigation and will inform the final design. If collapsible soils are found, collapse potential will be mitigated by construction techniques.

Therefore, the Southern Solar Area and Northern Solar Area comply with Goal 7.

9.1.5 Goal 8, Recreation Needs

“To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.”

Goal Compliance: Goal 8 requires local governments to plan for the recreation needs of their residents and visitors. The goal places priority on non-motorized forms of recreation, and recreation areas that serve high-density populations with limited transportation options and limited financial resources. It also places priority on recreation areas that are free or available at a low cost to the public.

Exhibit T (Recreational Opportunities) in this RFA 4 identifies recreational resources within 5 miles of the Amended Carty Solar Farm. Exhibit T assesses the potential for direct adverse impacts to these recreational opportunities as a result of the Amended Carty Solar Farm. Further, the exhibit analyzes potential indirect noise, traffic, and visual impacts from the Facility on the identified recreational opportunities. The nearest recreational opportunity is over 2 miles to the south. Exhibit T demonstrates that the Amended Carty Solar Farm will have no significant, direct adverse impact on any important recreational opportunity within 5 miles. Nor will any indirect disturbance effects associated with traffic, noise, or visual aspects of the Amended Carty Solar Farm lead to an indirect loss of any important or identified recreational opportunity.

- **Southern Solar Area:** The Southern Solar Area avoids significant, direct adverse impacts to recreational opportunities within 5 miles. The nearest recreational opportunities to the Southern Solar Area are the Oregon National Historic Trail (ONHT) and Wells Spring Interpretive Site along the ONHT, located 2.1 and 4.3 miles to the south, respectively. Exhibit T shows that there will not be any indirect disturbance effects associated with traffic, noise, or visual aspects of the Southern Solar Area that will lead to an indirect loss at the ONHT or Wells Spring Interpretive Site.
- **Northern Solar Area:** The Northern Solar Area avoids significant, direct adverse impacts to recreational opportunities within 5 miles. The nearest recreational opportunities to the Northern Solar Area are the ONHT and Wells Spring Interpretive Site along the ONHT. These recreational resources are located even further south from the Northern Solar Area than they are from the Southern Solar Area. Exhibit T shows that there will not be any indirect disturbance effects associated with traffic, noise, or visual aspects of the Northern Solar Area that will lead to an indirect loss at the ONHT or Wells Spring Interpretive Site.

Therefore, the Southern Solar Area and Northern Solar Area comply with Goal 8.

9.1.6 Goal 9, Economic Development

“To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.”

Goal Compliance: Goal 9 provides certain guidelines for local governments to follow to stimulate orderly economic growth. In particular, the planning guidelines in the goal emphasize the use of "geographically appropriate" sites for major facilities and also the expansion and increased productivity of existing facilities.

The Amended Carty Solar Farm will create a strong economic development presence in the region. Development of the Amended Carty Solar Farm will increase economic diversity within Morrow County and offer nonagricultural employment opportunities for local residents. The Amended Carty Solar Farm will provide a number of employment opportunities during construction as well as permanent full-time staffing over the life of the Facility. This will also expand and diversify the County's economic base. The Amended Carty Solar Farm is expected to operate for at least 25 years, providing a stable contribution to the County's economy. Finally, development of the Amended Carty Solar Farm will result in an increase in annual property tax revenue to Morrow County, which will increase the County's ability to provide roadways, police protection, fire protection and emergency response, and other services to its citizens.

- **Southern Solar Area:** The Southern Solar Area will utilize Morrow County's renewable solar resource without detriment to other land or natural resources to provide economic growth and jobs within Morrow County. The predominant land use in the Southern Solar Area is open rangeland (e.g., shrub steppe and disturbed grasslands). As stated above, none of the land within the Southern Solar Area is currently cultivated or shows evidence of commercial cultivation any time in the past. The land that will be occupied by the Southern Solar Area does not have water rights for irrigation and is not currently capable of commercial cultivation. As such, existing economic use of the Southern Solar Area will not be significantly impacted by the expansion and increased productivity of the energy facilities approved with prior RFAs.
- **Northern Solar Area:** The Northern Solar Area will utilize Morrow County's renewable solar resource without detriment to other land or natural resources to provide economic growth and jobs within Morrow County. In addition, the Northern Solar Area will provide a source of renewable energy by reusing land and existing transmission infrastructure previously utilized for coal plant operations. Commercial operation of the BCP ceased on October 15, 2020.

Therefore, the Southern Solar Area and Northern Solar Area comply with Goal 9.

9.1.7 Goal 10, Housing

"To provide for the housing needs of citizens of the state."

Goal Compliance: Goal 10 guides cities to inventory their "buildable lands"; this refers to land inside an urban growth boundary that is suitable and available for residential use. Although the Amended Carty Solar Farm is not within an urban growth boundary and Goal 10 therefore is not directly applicable, Exhibit U to this RFA 4 provides additional details about the Amended Carty Solar Farm's potential impact on public services, including housing.

Exhibit U describes the temporary housing that could be required during the 24-month construction period assuming 70 percent of construction staff will not be existing residents and will migrate to the area during construction. Additionally, permanent housing for roughly 12 new households, including workers and their families (based on a household size of 3.0), may be

required during operations. Based on the availability of housing options in the analysis area for Exhibit U (10 miles from the Amended Site Boundary, as shown on Figure U-1) and within a commutable distance from the Facility (70 miles) outside of the analysis area for Exhibit U, an adequate supply of housing is available to accommodate the construction and operations employees. For the maximum 36 new permanent residents expected because of Amended Carty Solar Farm operations, it is anticipated that adequate opportunities will be available to purchase housing or to construct new housing in the analysis area for Exhibit U, or within a commutable distance from the Facility outside of the analysis area for Exhibit U.

- **Southern Solar Area:** The Southern Solar Area meets Goal 10 by utilizing a regional workforce, as practicable, and thereby minimizing the amount of a transient workforce. Where this is not available, the Certificate Holder and its subcontractors will seek available rental housing in the surrounding communities. Based on the availability of housing options in the analysis area for Exhibit U and within a commutable distance from the Facility (70 miles) outside of the analysis area for Exhibit U, an adequate supply of housing is available to accommodate the construction and operations employees.
- **Northern Solar Area:** The Northern Solar Area also meets Goal 10 by utilizing a regional workforce, as practicable, and thereby minimizing the amount of a transient workforce. Where this is not available, the Certificate Holder and its subcontractors will seek available rental housing in the surrounding communities. Based on the availability of housing options in the analysis area for Exhibit U and within a commutable distance from the Facility (70 miles) outside of the analysis area for Exhibit U, an adequate supply of housing is available to accommodate the construction and operations employees.

Therefore, the Southern Solar Area and Northern Solar Area comply with Goal 10 to the extent if may apply.

9.1.8 Goal 11, Public Facilities and Services

“To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.”

Goal Compliance: This Goal requires local governments to coordinate their land-use planning with an analysis of the availability of public facilities and services such as water, sewer, and roads. As the impact to public facilities and services (Goal 11) is the same for the Northern Solar Area and Southern Solar Area, the Certificate Holder structured this finding for the combined Amended Carty Solar Farm.

Exhibit U provides an analysis of impacts of the Amended Carty Solar Farm on public facilities and services. The exhibit demonstrates that the Amended Carty Solar Farm will not result in a significant adverse impact on the ability of public and private entities to provide the following services: sewers and sewage treatment, water, stormwater drainage, solid waste management, housing, transportation and traffic safety, police protection, fire protection and emergency response, health care, and schools.

Sewer and Sewage Treatment – No adverse impacts to sewer services are expected as a result of construction, as the only sewage services required for construction will be related to portable toilet sewage disposal via private contractor. During operations, the Certificate Holder’s staff will use the sanitary facilities at the proposed O&M building, which will not connect to public sewage infrastructure. PGE will follow Site Certificate Conditions 6.2, 6.22, and 10.24 in the Third Amended Site Certificate related to portable toilets and sewage management (Council 2022).

Water - The Certificate Holder does not expect adverse impacts to water services, as non-potable water for construction will be sourced from the existing Carty Reservoir and potable water will mostly be sourced from the existing on-site Boeing well. No public sources of water will be used, and no new water rights will be required. The Certificate Holder will follow Site Certificate Condition 10.23 regarding water sourcing.

Stormwater Drainage – The Amended Carty Solar Farm will not adversely impact public stormwater drainage facilities. Any construction-related stormwater will evaporate or infiltrate on site and no public stormwater facilities will be used. During construction, stormwater best management practices and monitoring will be implemented in accordance with the 1200-C National Pollution Discharge Elimination System (NPDES) Storm Water Discharge General Permit and draft ESCP (see Exhibit I, Attachment I-1) (Site Certificate Conditions 9.1, 9.2, and 9.4). During operation, the Certificate Holder 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 ESCP and the Amended Revegetation and Noxious Weed Control Plan (Site Certificate Condition 9.6).

Solid Waste Management - Construction and operation activities will not adversely impact solid waste management services. Solid waste will be disposed through contracts with local waste disposal providers (Site Certificate Condition 6.24) and recycling will be handled in accordance with ODEQ regulations (Site Certificate Condition 6.25). The Amended Carty Solar Farm will implement a waste management plan during construction and operation, in accordance with Site Certificate Conditions 6.3. and 10.22. The Certificate Holder will contract with a private disposal service to transport any solid waste that is not recycled to an approved landfill.

Housing – The Certificate Holder does not expect adverse impacts to housing as a result of constructing or operating the Amended Carty Solar Farm. Potential impacts on housing could result if there were an inadequate supply of housing in relation to the demand from the new temporary and permanent residents associated with the Amended Carty Solar Farm; it is not yet known where the new temporary and permanent residents will settle and what type of housing they will select. However, based on the availability of housing options within a 70-mile commuting distance, adequate supply is available to accommodate the construction and operations employees.

Traffic and Transportation – The response to Goal 12 immediately below provides detailed information regarding the Amended Carty Solar Farm’s potential traffic and transportation

related impacts. The primary transportation route for the Amended Carty Solar Farm is serviced by the Oregon Department of Transportation's (ODOT) I-84 and I-82, and Morrow County's Tower Road. Vehicles traveling to the Amended Carty Solar Farm will exit I-84 and travel south on Tower Road. During construction, increases in average annual daily traffic on I-84, I-82, and Tower Road just south of I-84 will be inconsequential. Roads within the primary transportation route are of sufficient quality to accommodate the temporary increase in construction traffic, and no road upgrades will be required outside of the Amended Site Boundary.

During operations, it is anticipated that 12 two-way vehicle trips per day will be associated with operations and maintenance staff. It is estimated that overall construction of the Amended Carty Solar Farm will result in a peak construction trip count of 433 trips per day. Prior to the start of construction, when staging and workforce assumptions are better known, the Certificate Holder will confirm expected trip counts and prepare a TIA consistent with Site Certificate Condition 6.27 (Council 2022). The Certificate Holder will implement all traffic-related Site Certificate Conditions (6.17–6.21, 6.23, 6.27, 7.3, 9.2, and 10.8), including those related to oversize/overweight delivery timing, parking, road wear and repair, and signage (Council 2022). A Construction Traffic Management Plan will be developed prior to construction, in accordance with Site Certificate Conditions 6.17 and 6.27, that will include traffic minimization measures (Council 2022). In accordance with Site Certificate Condition 6.19, the Certificate Holder will ensure that any wear or damage to county roads as a result of the Amended Carty Solar Farm is repaired, and that roads are restored to pre-construction condition or better (Council 2022).

Police and Fire Protection – The relatively small number of new temporary and permanent residents is not expected to create significant new demands on the police or fire protection services for the area. Any impacts to police and fire services will be intermittent and temporary during construction, as construction workers will remain on-site for 24 months. During construction and operation of the Amended Carty Solar Farm, the Certificate Holder will provide for on-site security and maintain good communications between on-site security personnel and the Morrow County Sheriff's Office, consistent with Condition 8.1. During operation, the Certificate Holder will ensure that appropriate law enforcement agency personnel have an up-to-date list of the names and telephone numbers of Amended Carty Solar Farm personnel available to respond on a 24-hour basis in case of an emergency on the site (Condition 8.1). The Certificate Holder will provide the Boardman Fire Rescue District with construction plans, schedules, and locations prior to the start of construction. The Certificate Holder will also implement a series of measures as described in Exhibit U to minimize fire and safety risks including those in compliance with Site Certificate Conditions 8.4, 8.5, 8.6, 8.7 and 8.8.

Health Care – The Certificate Holder does not expect construction or operation of the Amended Carty Solar Farm to have adverse impacts on local and regional emergency health service providers, hospitals, or health clinics, considering the relatively small number of

personnel that will be added for construction and operation. Healthcare providers appear to have adequate capacity for potential patients associated with the Amended Carty Solar Farm, and the need for healthcare services will be minimized through implementation of robust health and safety programs (Site Certificate Conditions 8.2 and 8.3; Council 2022). The Amended Carty Solar Farm will also comply with all emergency planning and notification requirements of Emergency Planning and Community Right-to-Know Act (Site Certificate Condition 7.4) and will notify ODOE and Morrow County within 72 hours of any event that threatens public health and safety or the environment (Site Certificate Condition 7.8; Council 2022).

Schools – The Certificate Holder does not expect construction or operation of the Amended Carty Solar Farm to have adverse impacts on schools, considering the relatively small number of new students that will be enrolled. No schools are located within the Amended Site Boundary or will be directly affected by Facility construction or operations. Construction will be temporary. During operations, up to 12 new permanent households (assuming a household size of 3.0) may require school services, which should not adversely impact school operations.

For the reasons described above, the Amended Carty Solar Farm will not require any new facilities or services from public service providers, nor will it interfere with any public service provider’s ability to provide facilities and services. The Amended Carty Solar Farm will not require public water, sewer, or stormwater drainage. The Amended Carty Solar Farm will utilize existing service providers and facilities for solid waste disposal, transportation, police, fire, health care, and schools, and no significant impacts are anticipated to these service providers and facilities due to the limited duration of construction and low number of operations and maintenance staff.

Prior to the start of construction, when staging and workforce assumptions are better known, the Certificate Holder will confirm expected trip counts and prepare a TIA consistent with Site Certificate Condition 6.27 (Council 2022). The Certificate Holder will also prepare a Construction Traffic Management Plan in accordance with Site Certificate Conditions 6.17 and 6.27 that will include traffic minimization measures and will ensure that any wear or damage to county roads is repaired, and that roads are restored to pre-construction condition or better per Site Certificate Condition 6.19. Therefore, the Amended Carty Solar Farm complies with Goal 11.

9.1.9 Goal 12, Transportation

“To provide and encourage a safe, convenient and economic transportation system.”

Goal Compliance: This Goal governs local government decisions regarding transportation facilities. Goal 12 requires cities, counties and the state to create a transportation system plan that takes into account all relevant modes of transportation. The resulting plan should support a variety of transportation modes so residents are not limited in the ways they can access the jobs, goods, or services available in different parts of their community. As the impact to transportation (Goal 12) is

the same for the Northern Solar Area and Southern Solar Area, the Certificate Holder structured this finding for the combined Amended Carty Solar Farm.

The primary transportation route for the Amended Carty Solar Farm is serviced by ODOT's I-84 and I-82, and Morrow County's Tower Road. Vehicles traveling to the Amended Carty Solar Farm will exit I-84 and travel south on Tower Road. The 2.27 miles of Tower Road north of the Amended Carty Solar Farm and extending into PGE-owned property is a private road. It is assumed that roads within the primary transportation route are of sufficient quality to accommodate the temporary increase in construction traffic, and that no road upgrades will be required outside of the Amended Site Boundary. The primary transportation route utilizes a commutable distance assumption of 70 miles, or 1 hour of travel. Existing roads within the Facility will not require improvements for construction or operation of the Amended Carty Solar Farm. New internal access roads are only necessary within the perimeter fences for both the Northern and Southern solar areas to provide access to solar components. Approximately 9.9 miles of new access roads are expected to be constructed within the solar perimeter fencing. All newly constructed roads within the solar areas will be graveled to meet load requirements for all equipment. These internal access roads are expected to be approximately 14 feet in width.

Construction and operation of the Amended Carty Solar Farm will temporarily increase the traffic volume within the primary transportation route. However, construction-related traffic typically occurs during off-peak hours. Construction workers generally start their days earlier than the surrounding residents and construction trucks typically use roads in the middle of the day during off-peak hours. Based on average annual daily traffic (AADT) estimates for the construction period, construction vehicles could cause a total increase of about 1.2 percent on I-82 and 1.3 percent on I-84. These increases are expected to be inconsequential. At Tower Road just south of I-84, it is estimated that average construction traffic will result in a total AADT increase in traffic of 3.1 percent. This increase is expected to be inconsequential.

Based on the potential traffic estimates in Exhibit U, the Amended Carty Solar Farm is not expected to have a significant impact on the adjacent roadway traffic operations upon buildout and normal daily operations. It is anticipated that 12 two-way vehicle trips per day will be required for maintenance personnel during operations. The Certificate Holder anticipates an average of 198 worker vehicle trips generated per day during construction of the Amended Carty Solar Farm, with a peak of 301 worker vehicle trips (assuming a carpooling factor of 1.25). During peak construction, the Certificate Holder expects a peak of 30 trucks per day or 60 truck trips per day by small and large trucks. Morrow County requires a passenger car equivalent (PCE) rate of 2.2 passenger cars per truck for the TIA calculation. These estimates result in a peak construction PCE of 433 trips per day. Thus, it is anticipated that the Amended Carty Solar Farm will require a TIA. Prior to the start of construction, when staging and workforce assumptions are better known, the Certificate Holder will confirm expected trip counts and prepare a TIA consistent with Site Certificate Condition 6.27 (Council 2022).

The Certificate Holder will coordinate with ODOT and Morrow County on any potential road closures, impacts, and permits needed for construction or movement of equipment and materials.

The Certificate Holder will implement all traffic-related Site Certificate Conditions (6.17–6.21, 6.23, 6.27, 7.3, 9.2, and 10.8), including those related to oversize/overweight delivery timing, parking, road wear and repair, and signage (Council 2022). A Construction Traffic Management Plan will be developed prior to construction, in accordance with Site Certificate Conditions 6.17 and 6.27, that will include traffic minimization measures at Tower Road, staggering shift start times to reduce vehicle trips through the westbound I-84/Tower Road ramp terminal, installation of temporary traffic controls during peak construction, and other mitigation measures, as applicable (Council 2022). In accordance with Site Certificate Condition 6.19, the Certificate Holder will ensure that any wear or damage to county roads as a result of the project is repaired, and that roads are restored to pre-construction condition or better (Council 2022).

For the reasons described above, the Amended Carty Solar Farm will neither require the construction of any new public roads nor will it create any long-term conflicts with such facilities in the county. Therefore, the Amended Carty Solar Farm complies with Goal 12.

9.1.10 Goal 13, Energy Conservation

“To conserve energy.”

Goal Compliance: Statewide Land Use Planning Goal 13 calls for land and uses developed on land to be managed and controlled so as to maximize the conservation of all forms of energy, based on sound economic principles. Furthermore, Goal 13’s Planning Guideline No. 5 encourages local land use plans to consider “as a major determinant the existing and potential capacity of the renewable energy sources to yield useful energy output” and calls for land conservation and development actions to “whenever possible.... Utilize renewable energy sources.”⁵²

The purpose of the Amended Carty Solar Farm is to generate renewable power for use by Northwest industrial, municipal, commercial, and residential users. The Amended Carty Solar Farm is needed to help ensure that the region has sufficient baseload capacity and to accommodate growth in the region.

- Southern Solar Area: The Southern Solar Area will assist the state with its mandate to meet the Renewable Portfolio Standard (RPS) and new clean energy goal. By using the area adjacent to and formerly used by approved energy facilities and by using existing transmission line infrastructure, Certificate Holder is able to expand renewable energy production.

⁵² The Certificate Holder is aware of caselaw suggesting that Goal 13 does not *require* counties to develop or facilitate the development of energy facilities. Because that issue is still under review and the Certificate Holder (among other interested parties) believes that Goal 13 is one of many reasons that may justify a statewide planning goal exception, the Certificate Holder has opted to address the Facility’s consistency with Goal 13 along with other statewide and county programs and policies that relate to the development of renewable energy. As discussed below, even if Goal 13 cannot be used to justify a Goal 3 exception, the record demonstrates that there are numerous reasons why the statewide policies embodied in Goal 3 should not apply.

- Northern Solar Area: The Northern Solar Area will assist the state with its mandate to meet the RPS and new clean energy goal. By using the Northern Solar Area, the Certificate Holder can introduce renewable energy generation and energy storage to the location of a decommissioned coal-fired power plant, while also utilizing existing transmission infrastructure.

The Amended Carty Solar Farm will utilize solar resources to generate and store renewable energy, which will improve grid reliability while still providing critical solar power to help achieve Oregon's renewable energy goals. Therefore, the Southern Solar Area and Northern Solar Area comply with Goal 13.

9.1.11 Goal 14, Urbanization

"To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities."

Goal Compliance: Goal 14 requires cities to estimate future growth and needs for land and then plan and zone enough land to meet those needs. It calls for each city to establish an "urban growth boundary" (UGB) to "identify and separate urbanizable land from rural land."

The development of the Amended Carty Solar Farm will not encourage additional residential or commercial developments outside of the UGB, primarily because the development of the Amended Carty Solar Farm is designed to provide for regional electrical provision, not local service in the surrounding rural area. In addition, the Amended Carty Solar Farm is proposed in an area previously and currently used for energy development.

- Southern Solar Area: The Southern Solar Area is located outside of UGBs and is not proposed to be converted to urban uses. The Southern Solar Area preserves and maintains agricultural lands by avoiding cultivated, arable lands that have irrigation or potential for irrigation. None of the land within the Southern Solar Area is currently cultivated or has water rights for irrigation.
- Northern Solar Area: The Northern Solar Area is located outside of UGBs and is not proposed to be converted to urban uses. The Northern Solar Area is proposed in the area formerly used for the BCP.

Therefore, the Southern Solar Area and Northern Solar Area comply with Goal 14.

10.0 Exception to Statewide Planning Goal 3

As discussed in Sections 5.3 of this exhibit, the Amended Carty Solar Farm will occupy more than 12 acres of high-value farmland and 20 acres of arable land, and therefore does not meet the acreage standards under MCZO 3.010(K)(3)(f) and OAR 660-033-0130(38)(g) and requires an exception to Statewide Planning Goal 3. The Council may take an exception to Goal 3 for an energy facility under

the Council’s jurisdiction if the controlling criteria listed under ORS 469.504(2)(c) and OAR 345-022-0030(4)(c) is met. Per the application requirements under OAR 345-021-0010(1)(k)(C)(v), the Certificate Holder provides the following evidence to support the Council’s finding that an exception to Goal 3 is justified for the Amended Carty Solar Farm.

ORS 469.504(2)(c) provides that an exception may be taken if:

(c) The following standards are met:

(A) Reasons justify why the state policy embodied in the applicable goal should not apply;

(B) The significant environmental, economic, social and energy consequences anticipated as a result of the proposed facility have been identified and adverse impacts will be mitigated in accordance with rules of the council applicable to the siting of the proposed facility; and

(C) The proposed facility is compatible with other adjacent uses or will be made compatible through measures designed to reduce adverse impacts.

The Amended Carty Solar Farm’s justification for an exception to Goal 3 is demonstrated under ORS 469.504(2)(c) and OAR 345-022-0030(4)(c).

10.1 Demonstration that a “Reasons” Exception is Appropriate

ORS 469.504(2)(c)(A); OAR 345-022-0030(4)(c)(A) Reasons justify why the state policy embodied in the applicable goal should not apply;

Response: The Council previously found, for the original ASC, that reasons justify an exception to Statewide Planning Goal 3, and that the proposed Carty Generating Station meets the requirements of ORS 469.504(2)(c)(A).⁵³ The Council previously found with RFA 1 that the proposed Carty Solar Farm would meet the goal exception “reasons” standards in OAR 345-022-0030(4)(c)(A) due to the site’s limited impacts to non-irrigated, non-productive agriculture lands; absence of impacts to adjacent farmland operations; access to I-84 and other transportation systems including existing access roads and the Port of Morrow; access to local energy infrastructure including the existing Carty Natural Gas Power Plant, Boardman Coal Plant, and Grasslands Switchyard; regional electric transmission grid-system including the existing 500-kV transmission line from Grassland to the Bonneville Power Administration (BPA) Slatt Substation; and benefits to the regional and county economy.⁵⁴

With RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW by expanding into areas formerly used for PGE’s BCP and maximizing use of the buildable area southeast of Carty Reservoir. The Certificate Holder proposes the 185 MW of solar generation in RFA 4 as a complete reconfiguration to the previously

⁵³ Final Order on Application for Site Certificate for the Carty Generating Station, pg. 70 (June 2012).

⁵⁴ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, p. 69 (December 2018).

approved 50-MW Carty Solar Farm. The larger expansion will occur in the Northern Solar Area, the location of the former BCP. The 50-MW Carty Solar Farm was approved immediately southeast of the Carty Reservoir, which is generally where the Southern Solar Area is proposed with RFA 4. However, the Southern Solar Area changes proposed with RFA 4 are meant to maximize the buildable area for solar generation by expanding the solar modules to the east, south, and west, beyond the footprint approved for the 50-MW Carty Solar Farm. Since the expansion to the approved Southern Solar Area on EFU land is minor, and only a small portion (approximately 8 acres) of the Northern Solar Area touches EFU land, the Certificate Holder does not propose any changes to its prior “reasons” justification provided with RFA 1, as discussed below.

- **Minimal Loss to Productive Agriculture**

While the areas proposed for the Amended Carty Solar Farm contain high-value farmland (based on the ORS 195.300(10)(f) definition) and arable land (per the definition in OAR 660-033-0130(38)(a)), none of this area is currently cultivated, nor is there a known history of cultivation. As detailed in Section 5.3.1, the Amended Carty Solar Farm does not contain irrigation infrastructure nor maintain irrigation water rights, which are typically necessary to cultivate land in Morrow County’s climate.

Transferring water rights to the areas proposed for the Amended Carty Solar Farm would require drying up land that is more suitable for farming than the land within the site. Irrigation could not occur unless the infrastructure necessary to bring irrigation water to the site were extended from existing irrigated lands. Given the distance of the closest irrigated lands to the site (1-2 miles), and the existence of the Carty Reservoir and uncultivated lands between the proposed site and these irrigated lands, irrigation infrastructure could not be readily and efficiently extended to the site (Figure K-4).

As discussed earlier in this exhibit, a significant portion (approximately 46 acres) of Tract 3 that is considered predominantly arable due to NRCS soil classifications (Table K-5) contains the BCP Ash Disposal Area where coal ash was disposed during operations of the BCP. The prior configuration of the Carty Solar Farm did not propose solar arrays on the area known as the BCP Ash Disposal Area, not because of its agricultural value, but because the BCP was still in operation. Even if this BCP Ash Disposal Area had irrigation water rights, agriculture use would not be feasible and it should not be considered arable land in a practical sense due to its history of industrial waste. RFA 4 proposes to expand solar and best utilize property owned by PGE southeast of Carty Reservoir by adding solar panels to the capped BCP Ash Disposal Area (capped using Closure Turf™ technology) and portions of the BCP north of the Carty Reservoir. The racking system and associated concrete ballast foundations for the fixed tilt system are expected to be specifically designed to be compatible with the synthetic cap installed on the BCP Ash Disposal Area and to withstand wind, snow, and seismic loads anticipated at the site.

Furthermore, the areas proposed for the Amended Carty Solar Farm are isolated from existing cultivated lands by a conservation easement on land immediately to the east and south, and the Carty Reservoir. Farm equipment would have to traverse either the

conservation area, Carty Reservoir, CGS Unit 1, or former BCP areas in order to reach the areas proposed for the Amended Carty Solar Farm for the purposes of planting, harvesting, and tending to any crops. The distance of the Amended Carty Solar Farm from land currently under cultivation to the west (and the presence of Carty Reservoir in between) not only limits the potential to cultivate the Amended Carty Solar Farm site, but also eliminates potential impacts to farming practices on those cultivated lands. The Amended Carty Solar Farm will not affect infrastructure, including road access, to or within Threemile Canyon Farms, LLC and will not affect the ability to plant, irrigate, fertilize, or harvest the center pivot circles in question.

Tower Road, a well-maintained paved county road, will be used to access the Amended Carty Solar Farm, and is primarily used for industrial/agricultural traffic. Traffic on this road associated with the potential up to 12 additional permanent staff for operations and maintenance of the Amended Carty Solar Farm combined will create a negligible impact to other users of Tower Road in the long-term. It is estimated that construction of the Amended Carty Solar Farm will result in a peak construction trip count of 433 trips per day. Prior to the start of construction, when staging and workforce assumptions are better known, the Certificate Holder will confirm expected trip counts and prepare a traffic impact assessment (TIA) consistent with Site Certificate Conditions 6.17 and 6.27 (Council 2022). The Certificate Holder will implement all traffic-related Site Certificate Conditions (6.17–6.21, 6.23, 6.27, 7.3, 9.2, and 10.8), including those related to oversize/overweight delivery timing, parking, road wear and repair, and signage (Council 2022). A Construction Traffic Management Plan will be developed prior to construction, in accordance with Site Certificate Conditions 6.17 and 6.27, that will include traffic minimization measures (Council 2022). In accordance with Site Certificate Condition 6.19, the Certificate Holder will ensure that any wear or damage to county roads as a result of the Amended Carty Solar Farm is repaired, and that roads are restored to pre-construction condition or better (Council 2022).

As explained in more detail under the evaluation of compliance with MCZO 3.010(K)(3) in Section 6.2.3 of this exhibit, the potential for construction-related impacts to soils (i.e., erosion, unnecessary compaction) and the unabated introduction or spread of noxious weeds will be minimized through implementation of the Certificate Holder's ESCP (Exhibit I, Attachment I-1) and Amended Revegetation and Noxious Weed Control Plan (Exhibit P, Attachment P-2).

- **Presence of Existing Energy Facility Infrastructure**

The use of EFU-zoned land for the Amended Carty Solar Farm site is advantageous due to the presence of existing energy facility infrastructure. Existing infrastructure, owned and operated by the Certificate Holder, to be utilized by the Amended Carty Solar Farm includes an existing 500-kV transmission line. The collector substation is proposed adjacent to an existing electrical transmission dead-end structure for a 500-kV transmission line, which used to serve the BCP. The new substation will connect to the existing dead-end structure,

which is 100 feet tall, via new lines that will be approximately 300 feet in length. On the existing dead-end structure old switch components and operators will be replaced with new equipment, but there will be no modifications made to the structure. Once connected to the existing dead-end structure, the energy will be conveyed through the existing BCP 500-kV transmission line to the existing Grassland Switchyard. From the Grassland Switchyard, electrical output from the Amended Carty Solar Farm will be routed to BPA's existing Slatt Substation through the existing 500-kV Grassland to Slatt transmission line (approximately 17 miles long). Utilizing the existing BCP 500-kV transmission line and Grassland to Slatt transmission line allows for efficient use of transmission infrastructure while consolidating land use impacts to a specific area as opposed to spreading these impacts out more broadly. Siting the Amended Carty Solar Farm elsewhere would likely require more infrastructure such as transmission that would result in more land use impacts. In addition, because the Carty Generating Station is already staffed on a 24-hour basis, locating the Amended Carty Solar Farm in close proximity to these existing facilities will enable personnel to respond quickly should any maintenance or operational issues arise at the Amended Carty Solar Farm.

- **Topography and Natural Resources**

The use of EFU-zoned land for the Amended Carty Solar Farm is advantageous because the area does not contain topography or structures that will create shading, and because the area receives some of the highest available solar energy resource in the state, as modeled by National Renewable Energy Laboratory (NREL).

- **Local Economic Benefits**

The use of EFU-zoned land for the Amended Carty Solar Farm is advantageous because it will provide direct and indirect local economic benefits. Construction, during peak activity, is expected to provide up to 188 jobs for local workers. The Certificate Holder anticipates that approximately 30 percent of the construction workforce will be local residents within 70 miles (1-hour duration) commuting distance to the Facility. In addition, the Facility will add to the local property tax base over the operational life. Ongoing service and maintenance of the Amended Carty Solar Farm could utilize local vendors, if available, for services such as landscaping, panel washing, and other miscellaneous services. Indirect benefits include the increased demand for short term rental property and hotel services, food service, and other commodities or service industries during construction.

- **Transportation Benefits**

The use of EFU-zoned land for the Amended Carty Solar Farm is advantageous because of transportation-related advantages. The Amended Carty Solar Farm is within 18 travel miles of the Port of Morrow, allowing for the delivery of materials via barge, if necessary, with minimal additional over land travel required once materials are off loaded at the Port. The site is accessed from a federal highway (I-84) by a well-maintained paved county road (Tower Road). Only a small portion of the traffic on Tower Road is associated with

residential travel and the road is primarily already used for industrial/agricultural uses. Since the additional permanent staff for the Amended Carty Solar Farm will be up to 12 staff, there is negligible impact to transportation during normal operations.

Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the Amended Carty Solar Farm will satisfy the requirements under ORS 469.504(2)(c)(A).

10.2 Evidence that Environmental, Socioeconomic, and Energy Consequences Favor the Exception

ORS 469.504(2)(B); OAR 345-022-0030(4)(c)(B) The significant environmental, economic, social and energy consequences anticipated as a result of the proposed facility have been identified and adverse impacts will be mitigated in accordance with rules of the Council applicable to the siting of the proposed facility;

Response: The Council previously found, for the original ASC, that the Carty Generating Station meets the requirements of ORS 469.504(2)(c)(B).⁵⁵ The Council previously found with RFA 1 that the Carty Solar Farm would meet the goal exception standard in OAR 345-022-0030(4)(c)(B).⁵⁶ This RFA 4 addresses the environmental, economic, social, and energy-related consequences anticipated as a result of the construction and operation of the Amended Carty Solar Farm. There are no significant adverse impacts that could not be mitigated, as discussed in the relevant exhibits of this RFA. Moreover, the impacts identified do not arise from the specific location of the energy facility on EFU land, which is the subject of this Goal 3 exception analysis.

Environmental. The potential impacts (if any) of the Amended Carty Solar Farm on fish and wildlife (Exhibit P), threatened and endangered species (Exhibit Q), and wetlands/waters (Exhibit J), soils (Exhibit I), and water emissions (Exhibit O and W) have been evaluated in the respective exhibits of this RFA 4.

As determined through a wetlands and waters delineation, there are no wetlands, streams, or other waterbodies on the approximately 860-acre Amended Carty Solar Farm.

The Amended Carty Solar Farm has been sited to avoid impacts to Washington ground squirrel (*Urocitellus washingtoni*; state endangered) colonies that were located in 2023 surveys.

Development of the Amended Carty Solar Farm will impact habitats in categories 2, 3, 4, and 6 per ODFW's Habitat Mitigation Policy. Of these categories, impacts to Category 2, 3 and 4 habitats must be mitigated in accordance with the Fish and Wildlife Habitat standard and ODFW's Habitat Mitigation Policy, and will be mitigated as described in the Amended Wildlife and Habitat Monitoring and Mitigation Plan (Exhibit P, Attachment P-3).

⁵⁵ Final Order on Application for Site Certificate for the Carty Generating Station, pg. 71 (June 2012).

⁵⁶ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, p. 71 (December 2018).

Operation of the Amended Carty Solar Farm will not result in any emissions of air pollutants or unregulated discharge of water pollutants. Construction water that is used for dust control and concrete production will be allowed evaporate and infiltrate. This disposition of construction water is allowed under the terms and conditions of the Facility's WPCF Permit. Minimal water loss will occur during operations of the Amended Carty Solar Farm. During periodic washing of solar panels (approximately twice per year), wash water will evaporate or infiltrate into the ground as allowed under the Facility's WPCF permit.

The potential for construction-related impacts to soils and the unabated introduction or spread of noxious weeds will be minimized through implementation of the Amended Carty Solar Farm's Erosion and Sediment Control Plan (Exhibit I, Attachment I-1) and Amended Revegetation and Noxious Weed Control Plan (Exhibit P, Attachment P-2).

Economic. The Amended Carty Solar Farm will benefit the Morrow County economy by increasing local area employment and adding to the local property tax base over the estimated 25-year life of the Facility. Development of the Amended Carty Solar Farm will increase economic diversity within Morrow County and offer nonagricultural employment opportunities for local residents. The Amended Carty Solar Farm will provide a number of employment opportunities during construction as well as permanent full-time staffing over the life of the Facility. In addition, construction could result in expenditures on local services (e.g., short-term property rental, hotel services, food service, and other commodities or service industries), and the Certificate Holder may utilize local vendors, if available, for services such as landscaping, panel washing, and other miscellaneous services during the operations phase. This will also expand and diversify the County's economic base.

The Amended Carty Solar Farm is expected to operate for at least 25 years, providing a stable contribution to the county's economy. Development of the Amended Carty Solar Farm will result in an increase in annual property tax revenue to Morrow County, which will increase the county's ability to provide public facilities and services to its citizens.

While existing area within the Amended Site Boundary contains high-value farmland and arable land, the land is not irrigated and does not possess a water right, is not used for crop production, and does not produce significant economic benefits.

Social. The Amended Carty Solar Farm will not result in significant adverse social consequences as analyzed in the RFA 4 exhibits for protected areas (Exhibit L), scenic resources (Exhibit R), cultural resources (Exhibit S), recreational opportunities (Exhibit T), public facilities and services (Exhibit U), and noise (Exhibit Y). Social consequences are impacts on a community from a proposed energy facility, such as impacts from facility visibility, noise, traffic, or demand on providers of public services. Based on distance, the Amended Carty Solar Farm will not result in significant adverse visual or noise impacts on any scenic resource, protected areas, or important recreational opportunity within the required analysis areas. The Certificate Holder will comply with existing Site Certificate Conditions for potential noise and visual impacts.

As determined through a cultural resources survey, there are no known historic, cultural, or archaeological resources on the area proposed for the Amended Carty Solar Farm. All construction work on the site will be performed in accordance with the Certificate Holder's Inadvertent Discovery Procedure, in the event that cultural resources are discovered during construction.

The Amended Carty Solar Farm will not require public water, sewer, or stormwater drainage. The Amended Carty Solar Farm will utilize existing service providers and facilities for solid waste disposal, transportation, police, fire, health care, and schools, and no significant impacts are anticipated to these service providers and facilities due to the limited duration of construction and low number of operations and maintenance staff.

Prior to the start of construction, when staging and workforce assumptions are better known, the Certificate Holder will confirm expected trip counts and prepare a TIA consistent with Site Certificate Condition 6.27 (Council 2022). The Certificate Holder will also prepare a Construction Traffic Management Plan in accordance with Site Certificate Conditions 6.17 and 6.27, that will include traffic minimization measures, and will ensure that any wear or damage to county roads is repaired, and that roads are restored to pre-construction condition or better per Site Certificate Condition 6.19.

Energy. The Amended Carty Solar Farm will provide 185 MW of renewable electric generating capacity with no associated air emissions and no fuel cost. The small area of the Northern Solar Area (i.e., approximately 8 acres) located on EFU-zoned land supports the overall solar energy generation in that area, which is replacing the BCP, a decommissioned coal-fired power plant. The Amended Carty Solar Farm will utilize existing transmission infrastructure remaining from the BCP to bring renewable energy to the grid. The energy consequences of constructing and operating the Amended Carty Solar Farm are positive.

Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the Carty Solar Farm will satisfy the requirements under ORS 469.504(2)(c)(B).

10.3 Compatibility with Adjacent Land Uses

OAR 345-022-0030(4)(C) The proposed facility is compatible with other adjacent uses or will be made compatible through measures designed to reduce adverse impacts.

Response: The Council previously found that the Carty Generating Station is compatible with the adjacent uses, and also that expected impact on adjacent uses can be mitigated, and that the Carty Generating Station meets the requirements of ORS469.504(2)(c)(C).⁵⁷ The Council previously found, with RFA 1, the Carty Solar Farm would be compatible with other adjacent land uses and land use zones and would meet the goal exception standard in OAR 345-022-0030(4)(c)(C).⁵⁸

⁵⁷ Final Order on Application for Site Certificate for the Carty Generating Station, pg. 72 (June 2012).

⁵⁸ Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station, p. 73 (December 2018).

The existing uses adjacent to the Amended Carty Solar Farm are the Carty Reservoir; the former BCP; Carty Generating Station Unit 1; Threemile Canyon Farms; conservation easement; and NWSSTF Boardman.

- **Carty Reservoir:** The Carty Reservoir provides water for CGS. The Amended Carty Solar Farm will be located directly adjacent to the Carty Reservoir. The Amended Carty Solar Farm will not interfere with any of the reservoir infrastructure, nor will the operation of the Carty Reservoir affect the ongoing operation or maintenance of the proposed Carty Solar Farm. Water from the Carty Reservoir will be used for construction of the Amended Carty Solar Farm and for washing solar modules during operation, under PGE's existing water right.
- **Former Boardman Coal Plant (BCP):** The BCP was a coal-fired power plant located on land zoned for General Industrial use on the north side of the Carty Reservoir. Commercial operation of the coal plant began in August 1980 and the plant ceased burning coal on October 15, 2020. Demolition of the plant was completed in December 2023. The Northern Solar Area, BESS, and proposed collector substation are proposed in areas formerly used by the BCP. Unlike the BCP, the Amended Carty Solar Farm will produce no air emissions or significant noise.
- **Carty Generating Station Unit 1:** Carty Generating Station Unit 1 is a PGE-owned and operated combined cycle natural gas-fired generating facility that is just to the northwest of the Northern Solar Area and separated from the Southern Solar Area by the Carty Reservoir. The Amended Carty Solar Farm will produce no air or water emissions or significant noise and will not affect the operations of the Carty Generating Station Unit 1. The operations of the Carty Generating Station Unit 1 will not affect the operations of the Amended Carty Solar Farm. The uses are compatible as energy generation facilities and both utilize infrastructure remaining from the BCP.
- **Threemile Canyon Farms:** Threemile Canyon Farms, LLC cultivates extensive areas using center pivot irrigation. The nearest center pivot circles are approximately 1-2 miles west of the western edge of the Amended Carty Solar Farm and are separated from the Facility by uncultivated land and the Carty Reservoir. The Amended Carty Solar Farm will not affect infrastructure, including road access, to or within Threemile Canyon Farms and will not affect the ability to plant, irrigate, fertilize or harvest the center pivot circles in question.
- **The Nature Conservancy:** The Nature Conservancy (TNC) manages a conservation area immediately to the east and south of the Amended Carty Solar Farm under the terms of an ODFW conservation easement, a sublease with Threemile Canyon Farms, LLC (i.e., underlying landowner), and a management plan approved by the U. S. Fish and Wildlife Service. TNC's management activities are designed to maintain and improve habitat of four species in particular: Washington ground squirrel, ferruginous hawk, loggerhead shrike, and sage sparrow. The Amended Carty Solar Farm is not part of the land managed by TNC. The construction and operation of the Amended Carty Solar Farm will not interfere with

TNC's ability to manage vegetation or to control soil disturbance, hunting, or similar activities within the conservation areas for the benefit of the four identified species. The Certificate Holder's implementation of its Erosion and Sediment Control Plan (Exhibit I, Attachment I-1) and Amended Revegetation and Noxious Weed Control Plan (Exhibit P, Attachment P-2) will mitigate the potential for construction-related impacts to soils (i.e., erosion, unnecessary compaction) and the possible introduction of noxious weed species incompatible with TNC's conservation efforts.

- Naval Weapons Systems Training Facility Boardman: NWSTF Boardman, commonly referred to as the Boardman Bombing Range, is located more than a mile east of the Amended Carty Solar Farm. NWSTF Boardman comprises more than 47,000 acres of land owned by the United States. Training activities conducted at NWSTF Boardman provide the U.S. Navy and Oregon National Guard personnel with a wide range of training opportunities, including conducting air combat maneuvers, conducting electronic combat training, and conducting bombing and missile exercises (nonexplosive), in addition to live-fire training activities against ground targets. The Amended Carty Solar Farm is physically separated from NWSTF Boardman by uncultivated land. NWSTF Boardman activities will not affect the ability to construct, operate, or maintain a PV solar generating facility as proposed. The Amended Carty Solar Farm will not create any physical obstruction to the use of NWSTF Boardman. As part of RFA 1, the U.S. Navy and PGE discussed the potential for glare from the Carty Solar Farm to impact flight paths to the NWSTF Boardman. Following that discussion, PGE filed a Notice of Proposed Construction (Form 7460-1) with the FAA on July 13, 2016, and the FAA subsequently issued a determination of no hazard. In support of the Amended Carty Solar Farm, the U.S. Navy and PGE discussed the potential for increased glare from the additional solar modules. The U.S. Navy concluded that no additional glare and glint analysis is required for the Amended Carty Solar Farm (Kimberly Peacher, U.S. Navy NW Training Range Complex, pers. comm., e-mail message, October 23, 2023).

Summary

The proposed location of the Amended Carty Solar Farm offers significant comparative advantages over other potential locations for energy generating facilities. Those advantages include but are not limited to: decades of prior use as energy facility site for the BCP; the ability to interconnect with existing transmission infrastructure within the site; the absence of any history of cultivation or irrigation rights; the isolation of the Amended Carty Solar Farm from any incompatible uses; and the difficulty of obtaining or extending irrigation water to the site and of accessing the site for planting, harvesting and tending crops. The development of the Amended Carty Solar Farm will provide renewable energy without lost productivity to resource lands. Therefore, the Council may find the proposed changes described in RFA 4 do not alter the basis for the prior finding that the Amended Carty Solar Farm will satisfy the requirements under ORS 469.504(2)(c)(C).

11.0 Federal Land Management Plans

11.1 Identification of Applicable Land Management Plans – OAR 345-021-0010 (1)(k)(D)(i)

OAR 3450-021-0010 (1)(k)(D) If the proposed facility will be located on federal land:

- (i) Identify the applicable land management plan adopted by the federal agency with jurisdiction over the federal land.*
- (ii) Explain any differences between state or local land use requirements and federal land management requirements.*
- (iii) Describe how the proposed facility complies with the applicable federal land management plan.*
- (iv) Describe any federal land use approvals required for the proposed facility and the status of application for each required federal land use approval.*
- (v) Provide an estimate of time for issuance of federal land use approvals.*
- (vi) If federal law or the land management plan conflicts with any applicable state or local land use requirements, explain the differences in the conflicting requirements, state whether the applicant requests Council waiver of the land use standard described under paragraph (B) or (C) of this subsection and explain the basis for a waiver.*

Response: The Amended Carty Solar Farm will not be located on lands under federal land use jurisdiction.

12.0 Summary

The information provided in this exhibit demonstrates the Amended Carty Solar Farm’s compliance with all applicable substantive criteria. Therefore, the Council may find that the Amended Carty Solar Farm complies with the Statewide Land Use Planning Goals under OAR 345-022-0030(2)(b)(A) and the land use standard set forth in OAR 345-022-0030.

13.0 References

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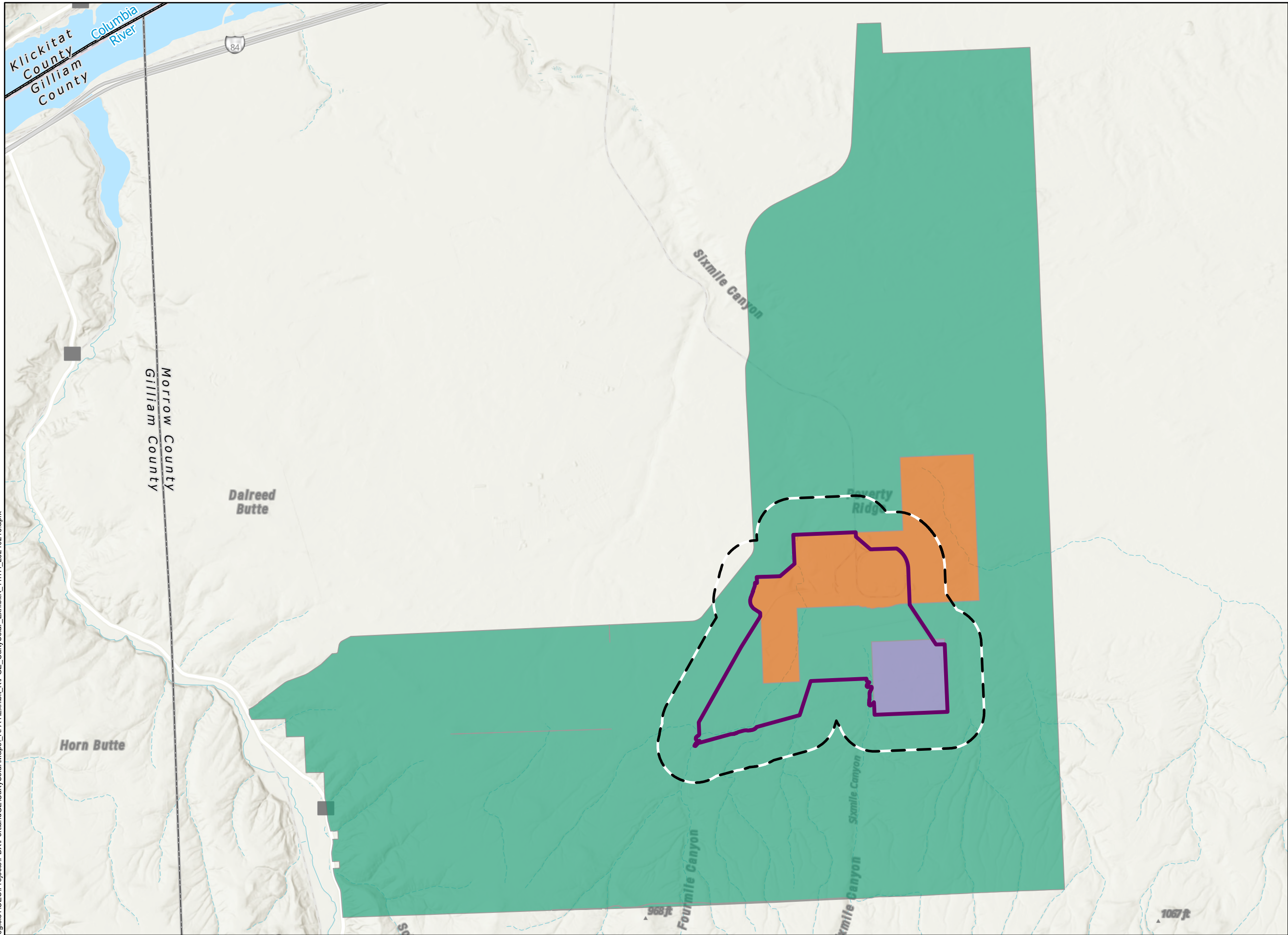
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Figures








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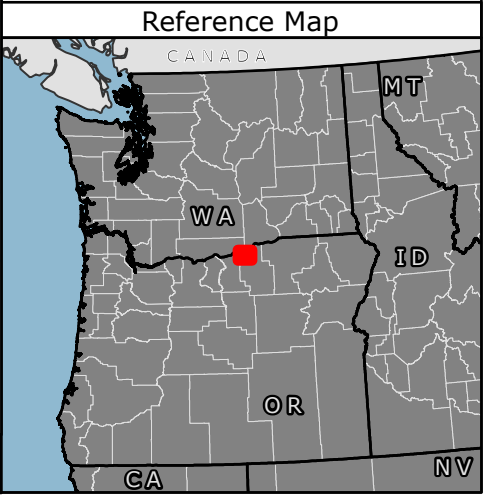


Carty Generating Station Request for Amendment 4

Figure K-1 Land Use Analysis Area

MORROW COUNTY, OR

-  Amended Site Boundary
-  Analysis Area (0.5-mile Buffer)
-  County Boundary
-  State Boundary
- Tract Number, Owner Name
-  1, Threemile Canyon Farms, LLC
-  2, Portland General Electric
-  3, Portland General Electric







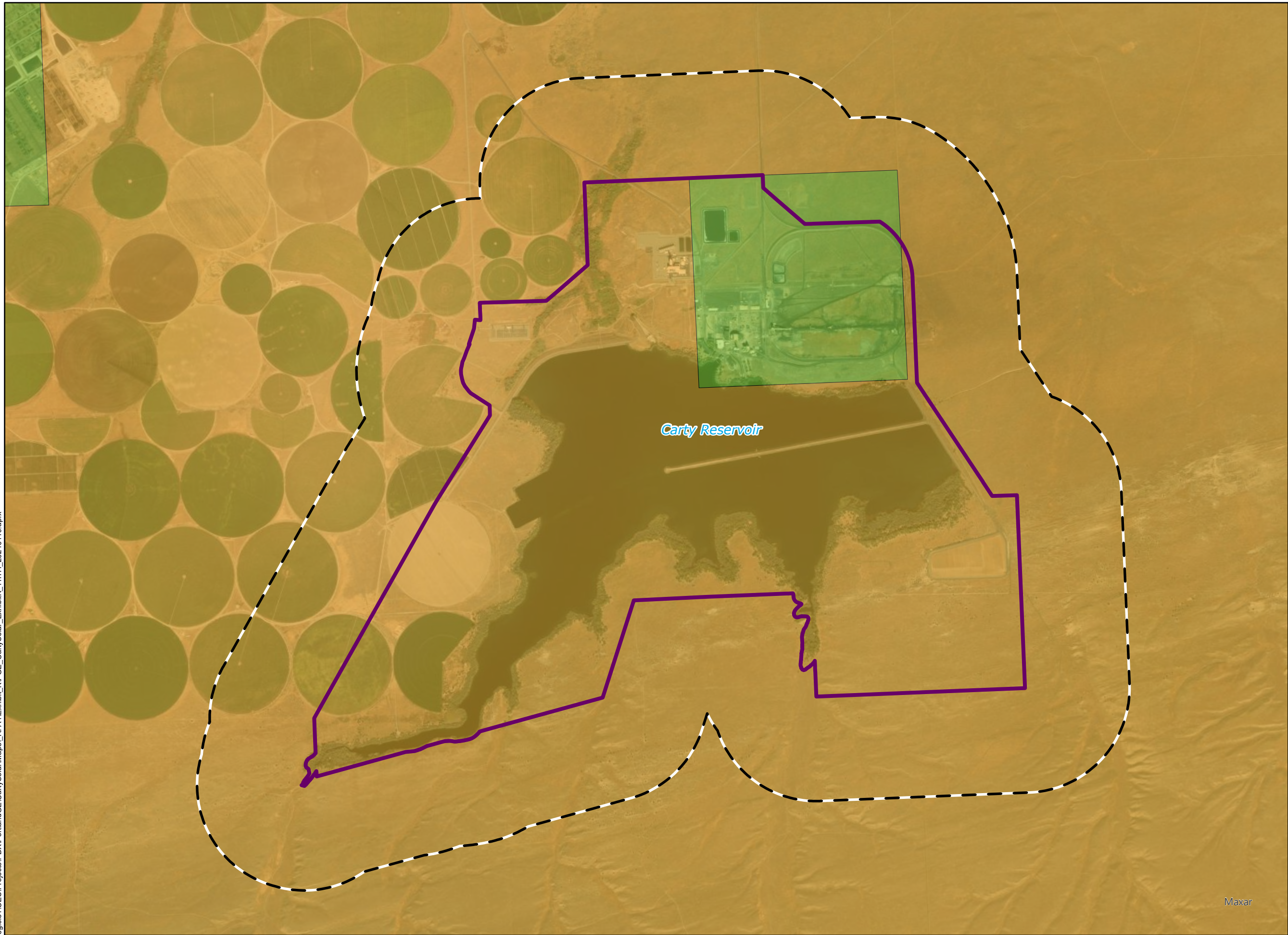
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Carty Generating Station Request for Amendment 4

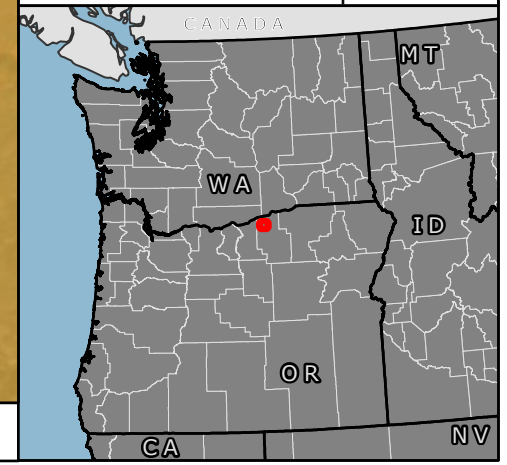
Figure K-2 Zoning and Comprehensive Plan Designations

MORROW COUNTY, OR

-  Amended Site Boundary
 -  Analysis Area (0.5-mile Buffer)
- Morrow County Zoning
-  Exclusive Farm Use (EFU)
 -  General Industrial (MG)



Reference Map

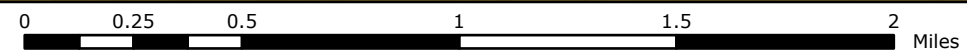


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WGS 1984 UTM Zone 10N















NOT FOR CONSTRUCTION

Carty Generating Station Request for Amendment 4

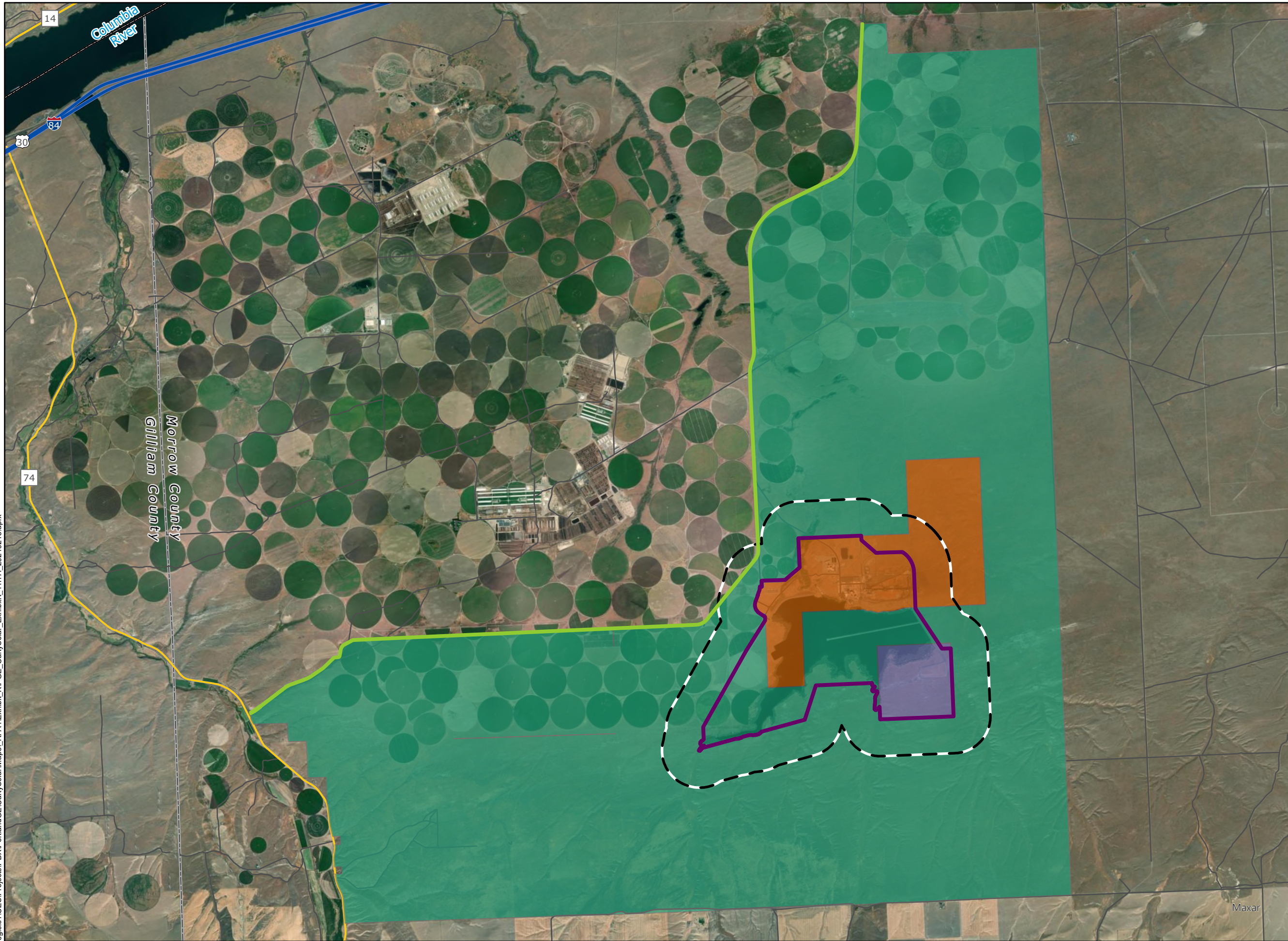
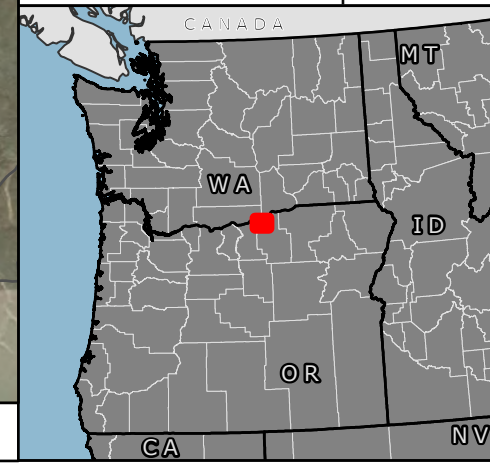
Figure K-3 Tracts

MORROW COUNTY, OR

-  Amended Site Boundary
 -  Analysis Area (0.5-mile Buffer)
 -  County Boundary
 -  State Boundary
 -  Interstate Highway
 -  US Highway
 -  State Highway
 -  Local Roads
 -  Tower Road Right-of-Way
- Tract Number, Owner Name
-  1, Threemile Canyon Farms, LLC
 -  2, Portland General Electric
 -  3, Portland General Electric



Reference Map








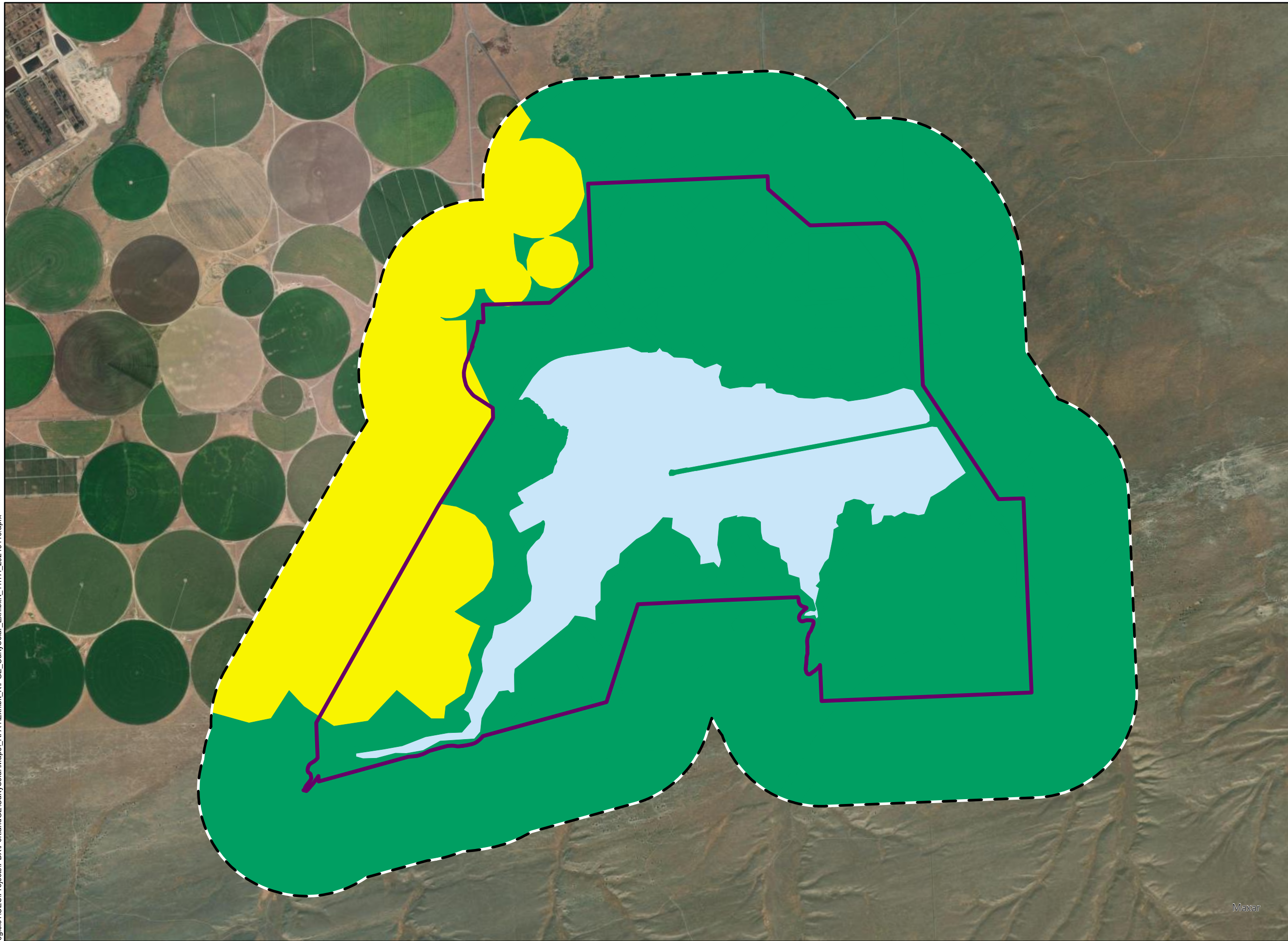
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Carty Generating Station Request for Amendment 4

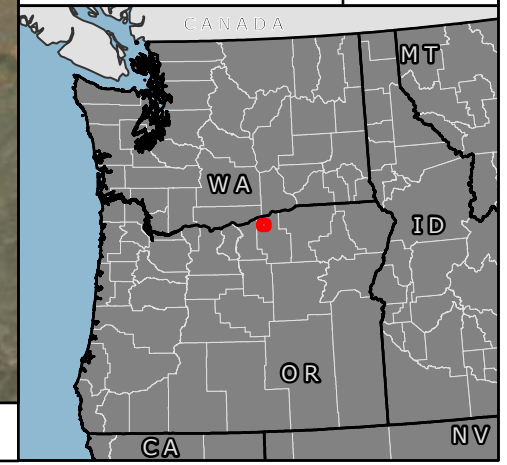
Figure K-4 Existing Land Use

MORROW COUNTY, OR

-  Amended Site Boundary
-  Analysis Area (0.5-mile Buffer)
- Land Use
 -  Cultivated
 -  Non-cultivated
 -  Open Water



Reference Map

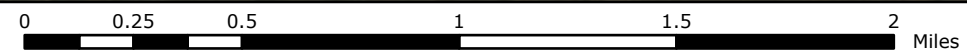


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WGS 1984 UTM Zone 10N










NOT FOR CONSTRUCTION

Carty Generating Station Request for Amendment 4

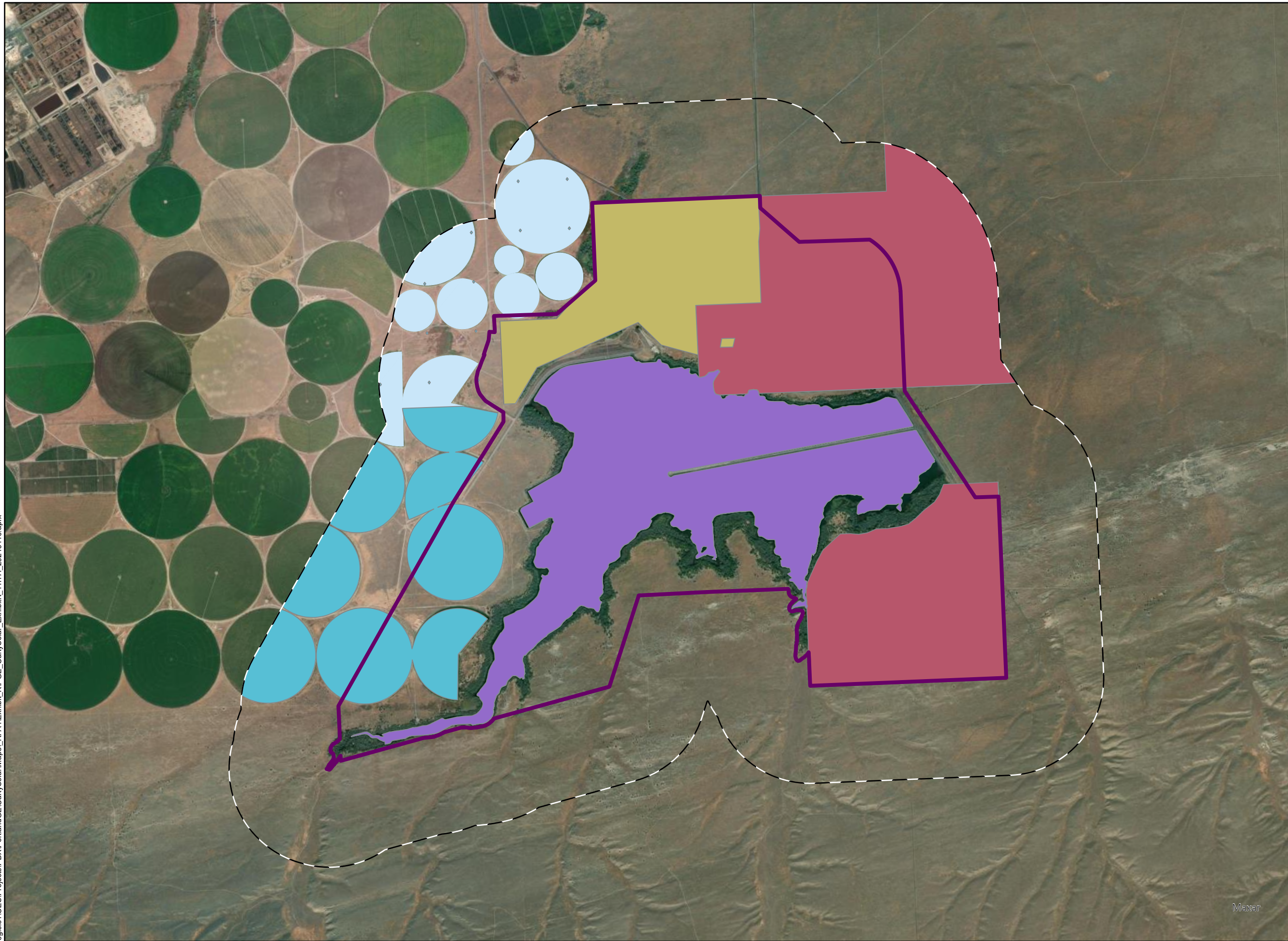
Figure K-5 Water Rights

MORROW COUNTY, OR

-  Amended Site Boundary
-  Analysis Area (0.5-mile Buffer)
- Water Right Type
-  Storage
-  Industrial/Manufacturing Uses
-  Irrigation
-  Power Development
-  Irrigation Mapped per Aerial Photo Interpretation



Reference Map

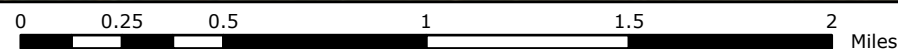


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WGS 1984 UTM Zone 10N











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Carty Generating Station Request for Amendment 4

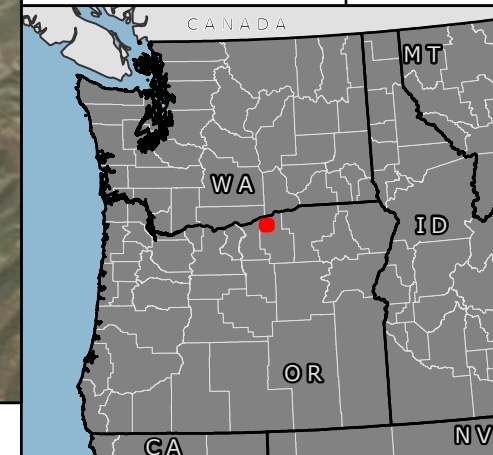
Figure K-6 NRCS Soil Capability Classifications

MORROW COUNTY, OR

-  Amended Site Boundary
 -  Analysis Area (0.5-mile Buffer)
 -  HVF per Water Right Authorized Place of Use
- Soil Capability Class
-  2
 -  4
 -  6
 -  7
 -  8



Reference Map

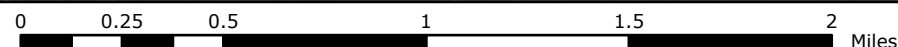


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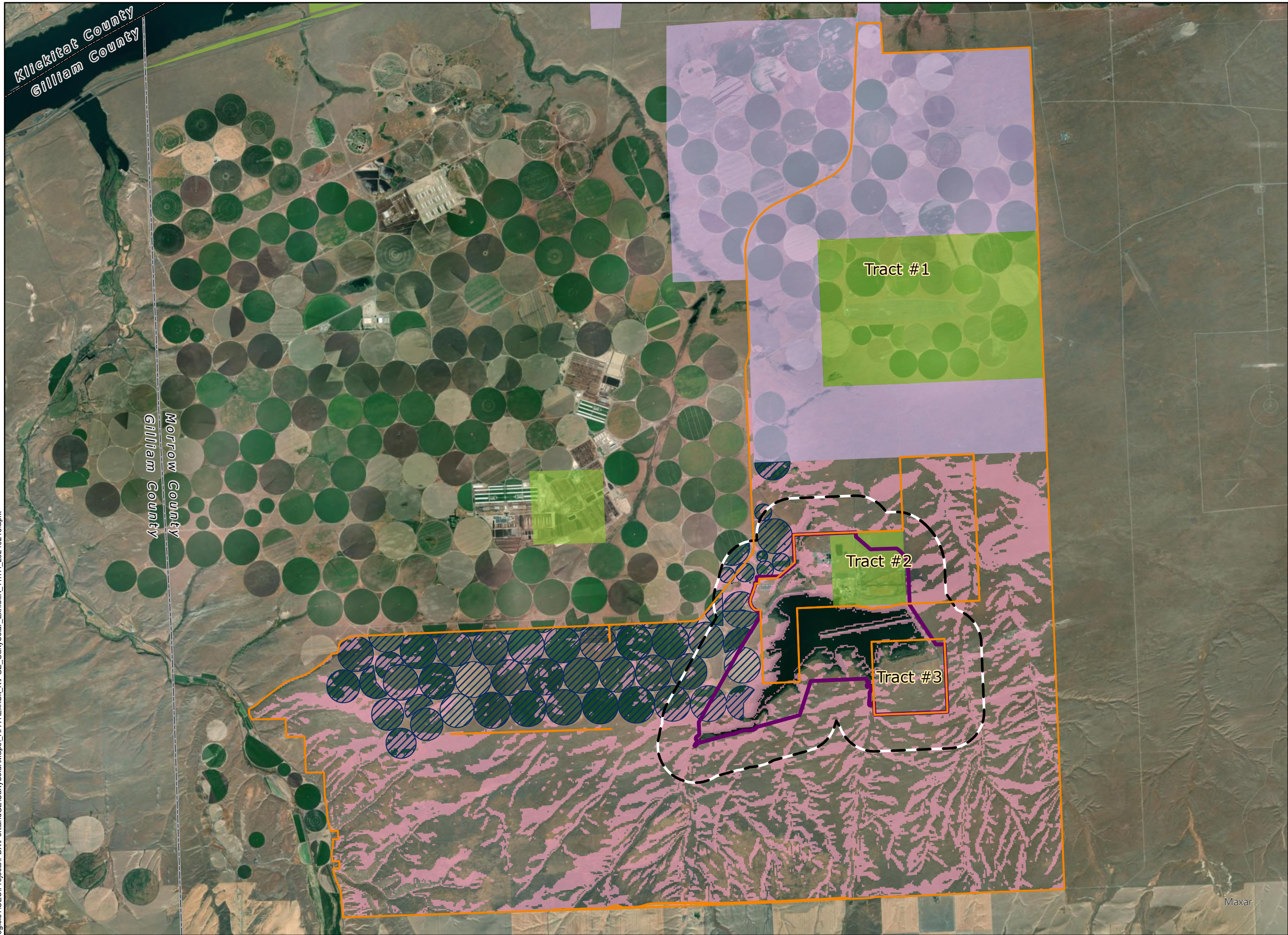


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
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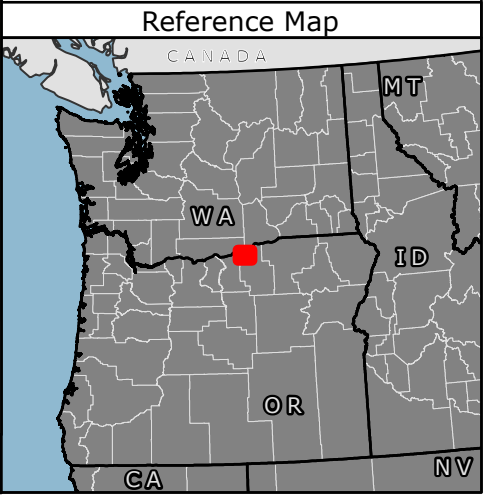


Carty Generating Station Request for Amendment 4

Figure K-7 High Value Farmland

MORROW COUNTY, OR

-  Amended Site Boundary
-  Analysis Area (0.5-mile Buffer)
-  County Boundary
-  State Boundary
-  Tract Boundary
-  HVF per Columbia Valley Viticulture Area
-  HVF per Water Right Authorized Place of Use
- Morrow County Zoning (non-EFU)
 -  General Industrial (MG)
 -  Space Age Industrial (SAI)

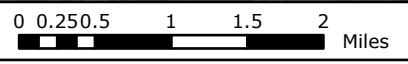


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



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Carty Generating Station Request for Amendment 4

Figure K-8 Arable and Non-Arable Land

MORROW COUNTY, OR

-  Amended Site Boundary
-  Analysis Area (0.5-mile Buffer)
-  Arable Land
-  Non-Arable Land
- Morrow County Zoning (non EFU)
 -  General Industrial (MG)



Reference Map

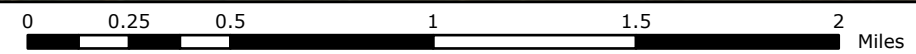


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NOT FOR CONSTRUCTION

Exhibit L

Protected Areas

**Carty Generating Station
February 2024**

Prepared for



Portland General Electric Company

Prepared by



TETRA TECH

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Acronyms and Abbreviations

AC	alternating current
ACEC	Area of Critical Environmental Concern
ASC	Application for Site Certificate
BCP	Boardman Coal Plant
BESS	battery energy storage system
BLM	Bureau of Land Management
BMP	best management practice
Certificate Holder / PGE	Portland General Electric Company
CGS / Facility	Carty Generating Station
Council	Oregon Energy Facility Siting Council
dba	decibels
kV	kilovolt
MW	megawatt
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
RFA	Request for Amendment
RNA	Research Natural Area
TNC	The Nature Conservancy
USFWS	U.S. Fish and Wildlife Service
WPCF	Water Pollution Control Facility
ZVI	zone of visual influence

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 500 megawatts (MW) of electrical power. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and includes the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm) on 315 acres (0.49 sq. miles) located south of the Carty Reservoir.

In RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW alternating current (AC) of nominal and average generating capacity by expanding into areas formerly used for PGE's Boardman Coal Plant (BCP) and maximizing the buildable area southeast of Carty Reservoir, and adding a battery energy storage system (BESS) to the Facility. The Certificate Holder proposes the 185 MW of solar generation as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. Thus, the overall changes proposed with RFA 4 (including the BESS) are referred to throughout this request as the Amended 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)].

Exhibit L provides the information required by Oregon Administrative Rules (OAR) 345-021-0010(1)(L) in support of RFA 4. Analysis in this exhibit incorporates and/or relies on reference information, analysis, and findings found in the Application for Site Certificate (ASC), 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 345-022-0040, and addresses the protected areas outlined in the updated OAR 345-001-0010(26).

The Oregon Energy Facility Siting Council (Council) previously found in the Final Order on RFA 1 that the Carty Solar Farm complies with the Council's Protected Areas standard.¹ The Council reaffirmed that the Carty Solar Farm complies with the Council's Protected Areas standard in the Final Order on RFA 3.²

2.0 Analysis Area

In accordance with OAR 345-001-0010(35)(e), the analysis area for protected areas is the area within and extending 20 miles from the site boundary (Figure L-1). The Amended Site Boundary is

¹ Final Order on Request for Amendment 1, p. 80 (December 2018).

² Final Order on Request for Amendment 3, p. 42 (July 2022).

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). The Amended Site Boundary used for analysis in RFA 4 is almost identical to the Approved Site Boundary. The proposed modifications to the Approved Site Boundary as described in Section 4.1 of the RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station) do not result in an expansion of the Approved Site Boundary's outer limits, and in fact retract the site boundary in the northeast corner.

3.0 Protected Areas Inventory – OAR 345-021-0010(1)(I)(A)(B)

OAR 345-021-0010(1)(L) Information about the potential impacts of the proposed facility on protected areas in the analysis area, providing evidence to support a finding by the Council as required by OAR 345-022-0040, including:

OAR 345-021-0010(1)(L)(A) A list of all protected areas within the analysis area identifying:

(i) The distance and direction of the protected area from the proposed facility;

(ii) The basis for protection by reference to a specific subsection under OAR 345-001-0010(26); and

(iii) The name, mailing address, phone number, and email address of the land management agency or organization with jurisdiction over the protected area;

OAR 345-021-0010(1)(L)(B) A map showing the location of the proposed facility in relation to the protected areas;

Based on the proposed amendments to the Facility in RFA 4, there are no new protected areas located within the analysis area since the Final Order on RFA 3 was issued (see Table L-1),³ and no protected areas are located within the Amended Site Boundary. Table L-1 provides an inventory of the eight protected areas⁴ within the analysis area and indicates the proximity and direction of each protected area relative to the Amended Site Boundary, the basis for protection under OAR 345-001-0010(26), and the contact information for the relevant land management agencies and organizations. As described in Section 2.0, RFA 4 does not result in an expansion of the Approved Site Boundary's outer limits, and in fact retracts the northeast corner of the currently Approved Site Boundary. Therefore, the impact to these protected areas is anticipated to be similar to what was previously described for the Carty Solar Farm in RFA 1 and approved in the Final Order on RFA 1.⁵

The inventory of protected areas was based on review of best available geographic information system data, maps, and the most current information for the categories of protected areas listed in

³ Final Order on Request for Amendment 3, p. 36 (July 2022).

⁴ Note that the previously identified Arlington Park/Wayside (in RFA 3) was found to not meet the definition of a protected area under the Protected Areas standard (per Final Order on RFA 3), and thus is not included in the RFA 4 protected areas analysis.

⁵ Final Order on Request for Amendment 1, p. 80 (December 2018).

OAR 345-001-0010(26).⁶ Figure L-1 shows the location of the protected areas identified in the analysis area.

⁶ Sources: BLM 2023a, BLM 2023b, BLM 2023c, BLM 2023d, BLM 2023e, Google Earth 2022, NOAA 2023, NPS 2023a, NPS 2023b, National Wild and Scenic Rivers System 2023, ODFW 2023a, ODFW 2023b, ODFW 2023c, OPRD 2020, OPRD 2023a, OPRD 2023b, OPRD 2023c, OPRD 2023d, OSU 2022, OSU 2023, USFWS 2023a, USFWS 2023b, USFS 2023a, USFS 2023b, USFS 2023c, USGS 2023, Wilderness Connect 2023.

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Table L-1. Protected Areas within the Analysis Area

Protected Areas within 20 Miles of the Amended Site Boundary			Distance to Facility (miles)			Cardinal Direction from Facility	Facility Potentially Visible? (Yes/No)		Visual Analysis Results	Operational Noise Analysis Results (worst-case modeled operational noise level [dBA L50] as applicable)
Applicable Protected Area Category	Land Management Agency Contact Information	Area Name	Amended Site Boundary	Solar Area (North and South)	Aboveground Collector Line		Solar Area (North and South)	Aboveground Collector Line		
National Parks OAR 345-001-0010(26)(a)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
National Monuments OAR 345-001-0010(26)(b)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wilderness Areas OAR 345-001-0010(26)(c)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
National Wild, Scenic, or Recreational Rivers OAR 345-001-0010(26)(d)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
National Wildlife Refuges OAR 345-001-0010(26)(e)	U.S. Fish and Wildlife Service (USFWS) 72650 Riverview Lane Irrigon, OR 97844 (509) 546-8300 No email listed	Umatilla National Wildlife Refuge	8.8	8.9	9.7	N	Yes	Yes	Negligible impact. Viewshed analysis indicates limited potential visibility from small portions of the Refuge. At a background viewing distance of 8.9 miles or greater, it is highly unlikely that the solar areas could be detected or identified by viewers. The aboveground collector line is highly unlikely to be visible or otherwise discernible at the background viewing distance of over 9.7 miles, and therefore will not contribute to visual contrast from this location. No management direction applicable to scenic qualities outside of the Refuge. Addition of the solar areas and associated infrastructure will not change the previous conclusion that views of the Facility, if any, will not compromise the purpose of the Refuge.	<26; Background (no increase from approved facility)
National Fish Hatcheries OAR 345-001-0010(26)(f)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
National Recreation Areas, Scenic Areas, or Special Resources Management Units OAR 345-001-0010(26)(g)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Protected Areas within 20 Miles of the Amended Site Boundary			Distance to Facility (miles)			Cardinal Direction from Facility	Facility Potentially Visible? (Yes/No)		Visual Analysis Results	Operational Noise Analysis Results (worst-case modeled operational noise level [dBA L50] as applicable)
Applicable Protected Area Category	Land Management Agency Contact Information	Area Name	Amended Site Boundary	Solar Area (North and South)	Aboveground Collector Line		Solar Area (North and South)	Aboveground Collector Line		
Wilderness Study Areas OAR 345-001-0010(26)(h)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Federal Land Management Plan Designated Lands OAR 345-001-0010(26)(i)	Bureau of Land Management (BLM) P.O. Box 2965 Portland, OR 97208 (503) 808-6001 Blm_or_so_land_office_mail@blm.gov	Boardman Research Natural Area (RNA)	2.6	2.6	2.8	E	Yes	Yes	Negligible impact. Viewshed analysis indicates potential, relatively close visibility of solar areas throughout most of the RNA. At a middleground viewing distance of 2.6 miles or greater, the solar modules will not create a prominent feature in the viewshed. The collector line is highly unlikely to be visible or otherwise discernible at the middleground viewing distance of over 2.8 miles, and therefore will not contribute to visual contrast from this location. If any solar facilities or collector line were visible, the additional visual contrast within an existing modified landscape that includes wind turbines, aboveground transmission lines, industrial structures, and agricultural irrigation equipment will be weak. The RNA is located within the Boardman Bombing Range and not accessible to the public, with occasional visits by The Nature Conservancy (TNC) staff for monitoring and maintenance. ¹ There is no management directive applicable to preservation of scenic qualities outside of or from the RNA. The addition of the solar areas and associated infrastructure will not change the previous conclusion that views of the Facility, if any, will not compromise the purpose of the RNA.	<26; Background (no increase from approved facility)
	BLM P.O. Box 2965 Portland, OR 97208 (503) 808-6001 Blm_or_so_land_office_mail@blm.gov	Horn Butte Area of Critical Environmental Concern (ACEC)	7.1	9.2	10.1	W	Yes	Yes	Negligible impact. Viewshed analysis indicates limited potential visibility from small portions of the ACEC. At a background viewing distance of 9.2 miles or greater, it is highly unlikely that solar areas could be detected or identified by viewers. The aboveground collector line is highly unlikely to be visible or otherwise discernible at the far background viewing distance of over 10.1 miles, and therefore will not contribute to visual contrast from this location. There is no management directive applicable to preservation of scenic qualities outside of or from the ACEC. Addition of the solar areas and associated infrastructure will not change the previous conclusion that views of the Facility, if any, will not compromise the purpose of the ACEC.	<26; Background (no increase from approved facility)
State Parks, Waysides, Corridors, Monuments, Historic, or Recreation Areas OAR 345-001-0010(26)(j)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Protected Areas within 20 Miles of the Amended Site Boundary			Distance to Facility (miles)			Cardinal Direction from Facility	Facility Potentially Visible? (Yes/No)		Visual Analysis Results	Operational Noise Analysis Results (worst-case modeled operational noise level [dBA L50] as applicable)
Applicable Protected Area Category	Land Management Agency Contact Information	Area Name	Amended Site Boundary	Solar Area (North and South)	Aboveground Collector Line		Solar Area (North and South)	Aboveground Collector Line		
Willamette River Greenway OAR 345-001-0010(26)(k)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oregon Register of Natural Areas Designated Natural Areas OAR 345-001-0010(26)(L)	The Nature Conservancy (TNC) 821 SE 14th Avenue Portland, OR 97214 (503) 802-8100 oregon@tnc.org	Lindsay Prairie Preserve	7.4	7.4	8.2	SE	Yes	Yes	Negligible impact. Viewshed analysis indicates limited potential visibility from small portions of the Preserve. At a background viewing distance of 7.4 miles or greater, it is highly unlikely that the solar areas could be detected or identified by viewers. The aboveground collector line is highly unlikely to be visible or otherwise discernible at the background viewing distance of over 8.2 miles, and therefore will not contribute to visual contrast from this location. There is no management directive applicable to preservation of scenic qualities outside of or from the Preserve. Addition of the solar areas and associated infrastructure will not change the previous conclusion that views of the Facility, if any, will not compromise the purpose of the Preserve.	<26; Background (no increase from approved facility)
South Slough National Estuarine Research Reserve OAR 345-001-0010(26)(m)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
State Scenic Waterways OAR 345-001-0010(26)(n)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
State Wildlife Refuges or Management Areas OAR 345-001-0010(26)(o)	Oregon Department of Fish and Wildlife (ODFW) 73471 Mytinger Lane Pendleton, OR 97801 (541) 276-2344 odfw.info@odfw.oregon.gov	Columbia Basin - Willow Creek Wildlife Area	9.5	10.5	11.4	NW	No	No	No impact. Viewshed analysis indicates no visibility of the solar areas or aboveground collector line at the Willow Creek Wildlife Area. There is no management directive applicable to preservation of scenic qualities outside of or from the Willow Creek Wildlife Area. The Facility will not compromise the purpose of the Willow Creek Wildlife Area.	<26; Background (no increase from approved facility)
	ODFW 73471 Mytinger Lane Pendleton, OR 97801 (541) 276-2344 odfw.info@odfw.oregon.gov	Columbia Basin - Coyote Springs Wildlife Area	11.9	11.9	12.4	NE	No	No	No impact. Viewshed analysis indicates no visibility of the solar areas or aboveground collector line at the Coyote Springs Wildlife Area. There is no management directive applicable to preservation of scenic qualities outside of or from the Coyote Springs Wildlife Area. The Facility will not compromise the purpose of the Coyote Springs Wildlife Area.	<26; Background (no increase from approved facility)

Protected Areas within 20 Miles of the Amended Site Boundary			Distance to Facility (miles)			Cardinal Direction from Facility	Facility Potentially Visible? (Yes/No)		Visual Analysis Results	Operational Noise Analysis Results (worst-case modeled operational noise level [dBA L50] as applicable)
Applicable Protected Area Category	Land Management Agency Contact Information	Area Name	Amended Site Boundary	Solar Area (North and South)	Aboveground Collector Line		Solar Area (North and South)	Aboveground Collector Line		
State Fish Hatcheries OAR 345-001-0010(26)(p)	ODFW 74135 Riverview Lane Irrigon, OR 97844 (541) 922-5732 odfw.info@odfw.oregon.gov	Irrigon Hatchery	19.6	19.6	20.1	NE	No	No	No impact. Viewshed analysis indicates no visibility of the solar areas or aboveground collector line at the Irrigon Hatchery. There is no management directive applicable to preservation of scenic qualities outside of or from the Irrigon Hatchery. The Facility will not compromise the purpose of the Irrigon Hatchery.	<26; Background (no increase from approved facility)
	ODFW 73959 Riverview Lane Irrigon, OR 97844 (541) 922-5659 odfw.info@odfw.oregon.gov	Umatilla Fish Hatchery	18.5	18.5	19.0	NE	No	No	No impact. Viewshed analysis indicates no visibility of the solar areas or aboveground collector line at the Umatilla Hatchery. There is no management directive applicable to preservation of scenic qualities outside of or from the Umatilla Hatchery. The Facility will not compromise the purpose of the Umatilla Hatchery.	<26; Background (no increase from approved facility)
Oregon State University Designated Agricultural Experiment Stations, Experimental Areas, or Research Centers OAR 345-001-0010(26)(q)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oregon State University Designated Research Forests OAR 345-001-0010(26)(r)	N/A	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1. Information on access and use obtained through a personal communication from Kelly Wallis, TNC, July 18, 2022 (see Attachment L-1).

4.0 Impact Assessment – OAR 345-021-0010(1)(I)(C)

OAR 340-021-0010(1)(I)(C) A description of significant potential impacts of the proposed facility, if any, on the protected areas including, but not limited to, potential impacts such as:

The Council previously found that the design, construction, and operation of the Carty Solar Farm are not likely to result in significant adverse impacts to any protected areas in the analysis area.⁷ The potential effects to protected areas in the analysis area were studied to determine whether the design, construction, and operation of the Amended Carty Solar Farm, when taking into account mitigation, will be likely to result in any significant adverse impacts. The following sections summarize the types of potential adverse impacts evaluated and provide summaries of the analysis.

4.1 Noise Impacts – OAR 345-021-0010(1)(I)(C)(i)

(i) Noise resulting from facility construction or operation;

Table L-1 provides a summary of operational noise levels from the Facility at protected areas within the analysis area. The Council previously found that noise generated by the construction and operation phases of the Carty Solar Farm is unlikely to cause significant adverse noise impacts to protected areas⁸; the Amended Carty Solar Farm proposes no significant additional noise impacts from the approved Facility. Exhibit Y provides an assessment of the existing acoustical environment and anticipated sound levels from the Amended Carty Solar Farm; the methodology for noise modeling is detailed in that exhibit. Activities associated with construction of the proposed solar areas and related or supporting facilities will be limited to the temporary duration of construction and similar to the construction noise already reviewed by Council for the Facility.

Exhibit Y describes sound level thresholds derived from the Oregon Department of Environmental Quality (ODEQ) noise regulations (OAR 340-035-0035), which are used to assess the significance of impacts to noise sensitive properties. As defined in OAR 340-035-0035, “noise sensitive properties” are “real property normally used for sleeping, or normally used as schools, churches, hospitals or public libraries. Property used in industrial or agricultural activities is not Noise Sensitive Property unless it meets the above criteria in more than an incidental manner.” None of the protected areas within the analysis area are considered a noise sensitive property.

Based on the results of operations noise modeling, described in detail in Exhibit Y, operation of the Amended Carty Solar Farm will not create new noise impacts to protected areas beyond those that were previously identified for the Facility. As detailed in Exhibit Y, the solar modules will create no significant operational noise, and operational noise from primarily cooling equipment associated with the BESS and electrical equipment will be similar to operational noise already reviewed by the Council for the Facility. Comprehensive Facility noise will attenuate to below 26 A-weighted

⁷ Final Order on Request for Amendment 1, p. 80 (December 2018).

⁸ Final Order on Request for Amendment 1, p. 77-78 (December 2018).

decibels (dBA)⁹, or less than the background/ambient (nighttime) noise level, within approximately 3.3 miles from the Amended Site Boundary. All but one protected area is located more than 3.3 miles from the Amended Site Boundary, so will not be affected by operational noise from the Amended Carty Solar Farm. The closest protected area is the Boardman RNA, located directly east 2.6 miles from the Amended Site Boundary (and approximately 2.6 miles to the nearest solar area).

Modeled worst-case amended Facility operational noise levels at the Boardman RNA will be a maximum of 23 dBA, which is below rural nighttime ambient background noise levels. This level of noise is unlikely to substantively diminish the experience at the Boardman RNA, for both it is inaccessible to the public (restricted by federal ownership) and is managed as a natural area (see Section 4.4.2.1 below; personal communication between Kristen Gulick, Tetra Tech, and Kelly Wallis, TNC, July 18, 2022; correspondence records included in Attachment L-1). The resource is not considered a noise sensitive property.

The remainder of the identified protected areas in the analysis area will similarly be unaffected by operational noise from the Amended Carty Solar Farm, due to their locations of over 7.1 miles from the Amended Site Boundary and the solar areas.

Noise from construction will similarly be less than 26 dBA⁹ within 12.2 miles from the Amended Site Boundary (daytime ambient sound level) and effectively inaudible at all but the closest protected area, the Boardman RNA. Pursuant to OAR 340-035-0035(5), noise from construction activities is exempt from the state noise standards. Construction activities associated with the Facility have the potential for localized noise on a temporary basis as construction activities progress through certain locations within the Amended Site Boundary. Noise-generating activities during construction could result from the use of heavy machinery, such as heavy trucks, bulldozers, graders, and cranes. Based on the estimated noise levels of construction equipment provided in Exhibit Y, construction noise levels at the Boardman RNA will peak at approximately 38 dBA; this noise level is comparable to a quiet library. This elevated noise level will occur sporadically while Facility infrastructure such as the amended solar area closest to the Boardman RNA is built. As construction progresses elsewhere in the Facility, noise levels will drop to background levels. Continued implementation of Site Certificate Condition 13.1 will help reduce construction noise impacts through the requirement of exhaust mufflers on combustion engine-powered equipment and establishment of a noise complaint response system. At this time, pending geotechnical investigation of the final layout, blasting is not anticipated to be required for Facility construction.

The Council previously found that the Facility noise will not result in a significant adverse impact to protected areas¹⁰ and the amendments in RFA 4 do not alter that conclusion.

⁹ Note that the 26 dBA value was selected as representative because OAR 340-035-0035(1)(b)(B)(iii)(I) allows for an assumed ambient sound level of 26 dBA for wind energy facilities. Site-specific ambient sound data was not collected for the Facility, but 26 dBA is assumed to be a conservative estimate.

¹⁰ Final Order on Request for Amendment 1, p. 77-78 (December 2018).

4.2 Traffic Impacts – OAR 345-021-0010(1)(I)(C)(ii)

(ii) Increased traffic resulting from facility construction or operation;

Traffic impacts in general are addressed in greater detail in Exhibit U, including information on anticipated traffic levels and typical travel routes for the Amended Carty Solar Farm.

As previously found by the Council for the Carty Solar Farm, traffic generated by construction and operation of the Amended Carty Solar Farm is unlikely to result in significant adverse impacts to any of the protected areas.¹¹ Based on the analysis provided in Exhibit U, the primary traffic route used for construction of the Amended Carty Solar Farm will be the same as what was already evaluated for the approved Facility. Four of the eight protected areas are located north of Interstate 84 (I-84) and will be virtually unaffected by traffic for the Amended Carty Solar Farm, which will be concentrated on I-84 and Tower Road, which extends south to the Facility from an interchange with I-84 (Figure L-1). Nominal traffic associated with construction of the Amended Carty Solar Farm could occur north of I-84, but this traffic will be dispersed on multiple roads throughout the area, rather than concentrated on any one road such that access to any protected area north of I-84 could be adversely affected. None of the four protected areas located south of I-84 are accessed by Tower Road or roads anticipated to carry traffic related to the Amended Carty Solar Farm. Construction worker traffic may occur on roads providing access to these areas; however, construction worker traffic will be dispersed on multiple roads throughout the area, and the nominal level of worker traffic anticipated on roads other than I-84 and Tower Road will not adversely affect level of service on those roads (see Exhibit U).

Timing patterns for construction-related traffic and recreational traffic to protected areas will likely differ substantially. Construction traffic will primarily be dispersed throughout the business work week and primarily during commuter hours, whereas peak recreational traffic will be greatest during the weekend. Additionally, no roads providing access to protected areas within the analysis area are expected to be closed during construction or operation of the Amended Carty Solar Farm.

The closest protected area to the south of I-84 is the Boardman RNA, located no less than 2.6 miles east from the Amended Site Boundary (and approximately 2.6 miles to the nearest solar area). The Boardman RNA is located within the Boardman Bombing Range, which is inaccessible to the public, with occasional visits by TNC staff for monitoring and maintenance (personal communication between Kristen Gulick, Tetra Tech, and Kelly Wallis, TNC, July 18, 2022; see Attachment L-1). Therefore, any construction traffic in the vicinity of the Boardman RNA will not disrupt visitors to this protected area.

The third closest protected area to the south of I-84 is the Lindsay Prairie Preserve, located no less than 7.4 miles southeast from the Amended Site Boundary (and approximately 7.4 miles to the nearest solar area). The Lindsay Prairie Preserve is accessed mainly via Bombing Range Road, which uses an exit approximately 8.7 miles east on I-84 from Tower Road.

¹¹ Final Order on Request for Amendment 1, p. 78 (December 2018).

Again, the eight protected areas are primarily accessed by roads that will not carry substantial amounts of construction traffic and are therefore unlikely to experience any traffic impacts. Temporary, short-term delays are most likely to occur only during deliveries of oversized loads, which will occur sporadically and will be accompanied by traffic control teams. Construction of the Amended Carty Solar Farm in general will be short in duration (lasting approximately 24 months) and thus any construction traffic impacts will be temporary.

Although there will be no significant traffic impacts to protected areas, the Certificate Holder will continue to implement Site Certificate Condition 6.17 which requires adhering to various traffic control measures and a Construction Traffic Management Plan. Site Certificate Condition 6.27 in turn requires that the plan be reviewed and approved by the Council and in consultation with Morrow County and requires that construction-related traffic will be evaluated to confirm whether a Traffic Impact Assessment will be required. Any damage or wear to county roads from Facility construction will be repaired and restored per Site Certificate Condition 6.19. Therefore, no significant adverse traffic impacts to protected areas are anticipated from construction of the Facility.

During operations, traffic will be minimal, as the Amended Carty Solar Farm will permanently employ up to 12 personnel. Solar and BESS-related equipment will require periodic maintenance, but traffic associated with repair or maintenance visits will be low and daily traffic generated by operation of the Amended Carty Solar Farm is not expected to affect operations of any of the state or local county roads used to access the protected areas within the analysis area.

The Council previously found that the construction and operational traffic will not be likely to result in significant adverse impacts to protected areas within the analysis area,¹² and the amendments in RFA 4 do not alter that conclusion.

4.3 Water Use and Wastewater – OAR 345-021-0010(1)(I)(C)(iii)(iv)

(iii) Water use during facility construction or operation.

(iv) Wastewater disposal resulting from facility construction or operation;

As previously found by the Council for the Carty Solar Farm, no significant water or wastewater impacts to protected areas are anticipated from the Amended Carty Solar Farm.¹³ The Amended Carty Solar Farm proposes some differences in water and wastewater quantities compared to the previously approved Carty Solar Farm during construction and operation, but nothing that results in significant potential impacts on the protected areas within the analysis area.

During construction, non-potable water will be sourced from the Carty Reservoir, located within the Amended Site Boundary and directly adjacent to the solar areas, under the Certificate Holder's existing water right and obtained by a third-party contractor through a limited water use license (see Exhibit O). Potable water for use during construction will be obtained from a temporary tie-in

¹² Final Order on Request for Amendment 1, p. 78 (December 2018).

¹³ Final Order on Request for Amendment 1, p. 79 (December 2018).

with the existing Facility potable water system derived from the existing Boeing Well located within the Amended Site Boundary or provided by bottled water or water coolers. No construction water will be extracted from a protected area or be delivered in a fashion that generates significant impacts to a protected area.

During operation, the Amended Carty Solar Farm will use non-potable water from the Carty Reservoir for solar panel washing under the Certificate Holder's existing water right, and potable water within the proposed operations and maintenance (O&M) building will come from the Facility's existing potable water system via the existing Boeing Well. No operational water will be extracted from a protected area or be delivered in a fashion that generates significant impacts to a protected area. Water used during construction and operation of the Amended Carty Solar Farm will not impact water availability or use at protected areas.

Wastewater generated by the Amended Carty Solar Farm during construction will be from the following construction activities: portable toilets, dust abatement, mixing of concrete, concrete equipment washwater, and concrete washout water. Wastewater generated by the Amended Carty Solar Farm during operation will be from the following activities: wastewater produced from the proposed O&M building and from periodic washing solar panels. The nature of the Facility is such that it will not produce industrial wastewater. Except for sanitary wastewater generated in portable toilets during construction, all other wastewater will remain within the Amended Site Boundary and none will be disposed of in protected areas within the analysis area. Again, the nearest protected area is the Boardman RNA, located at least 2.6 miles from the nearest solar area. Sanitary wastewater generated in portable toilets during the temporary construction phase will be disposed of in accordance with local jurisdictional regulations (Site Certificate Condition 6.2) and transportation of waste in accordance with Oregon Revised Statutes 466.005. The proposed O&M building will include toilets for use by maintenance staff during operations. The sanitary sewage will be collected and treated by the Facility's existing sanitary septic sewage system in compliance with county permit requirements (Site Certificate Conditions 6.22 and 10.24)

It is expected that any excess water used during construction and for solar panel washing during operations will be lost within the Amended Site Boundary through evaporation and infiltration. As described in Exhibit W, the disposition of construction wastewater and the disposal of solar panel washwater during operations are allowed under the terms and conditions of the Facility's Water Pollution Control Facility (WPCF) Permit.

During construction, stormwater runoff will continue to be managed on site according to the best management practices (BMPs) as described in the National Pollutant Discharge Elimination System (NPDES) 1200-C Permit and draft Erosion and Sediment Control Plan (see Exhibit I, Attachment I-1) such that no stormwater will leave the Amended Site Boundary. Stormwater discharges will be managed in accordance with the NPDES 1200-C permit, and appropriate control measures will be installed to ensure compliance with the discharge and water quality requirements of the permit. During operations, the Amended Carty Solar Farm may result in some changes to the stormwater drainage as a result of new impervious surfaces (e.g., gravel roads, concrete foundations, battery storage container pads, pads for substation components, etc.). However, impervious surfaces will

be a low percentage of the total area within the Amended Site Boundary. Again, the nearest protected area is at least 2.6 miles from the Amended Carty Solar Farm.

Exhibit O provides additional information on water use and Exhibit W provides information on wastewater. The Council previously found that water use and wastewater discharge from the Carty Solar Farm will have no impact to protected areas¹⁴ and the modifications proposed in RFA 4 do not alter that conclusion.

4.4 Visual Impacts – OAR 345-021-0010(1)(l)(C)(v)(vi)

(v) Visual impacts of facility structures or plumes, including, but not limited to, changes in landscape character or quality; and

(vi) Visual impacts from air emissions resulting from facility construction or operation, including, but not limited to, impacts on Class 1 Areas as described in OAR 340-204-0050.

The Council previously found that while the Facility components will result in a change to the existing viewshed of the protected areas, the visual impacts of construction and operation of the Facility will not likely result in a significant adverse impact to any protected area due to the distance to the Facility, vegetation and topographical screening, low impact to users, no specified management of scenic or visual qualities beyond the boundaries of each protected area, and presence of similar structures within the existing viewshed.¹⁵ The inclusion of the additional solar modules and associated infrastructure at the Facility, as proposed in RFA 4, will result in a change to the existing viewshed, but this change will not result in a significant visual impact on any of the surrounding protected areas.

The Amended Carty Solar Farm will not generate any emissions plumes, so will not cause any visual impacts from air emissions. Potential visual impacts due to dust created during construction of the Amended Carty Solar Farm will be largely prevented by following BMPs for dust control as detailed in Exhibit I.

Class I areas consist of the 12 federally designated Wilderness Areas in Oregon defined in OAR 340-204-0050, none of which are located within the analysis area.

Existing Visual Character

Since the Final Order on RFA 1 was issued, there has been one change in conditions within the Facility: the demolition of the BCP. Commercial operation of the coal plant ceased in October 2020 and demolition was completed at the end of 2023. The Northern Solar Area, BESS, and collector substation are all proposed in former BCP areas. Other Facility conditions have not changed. The Facility includes numerous existing aboveground transmission lines including the existing 500-kV transmission line and dead-end structure where the proposed collector substation will connect. Other existing transmission lines that support the Facility include the 500-kV Grassland to Slatt

¹⁴ Final Order on Request for Amendment 1, p. 79 (December 2018).

¹⁵ Final Order on Request for Amendment 1, p. 80 (December 2018).

transmission line (approximately 17 miles long) and 230-kV BCP to Dalreed transmission line (approximately 16 miles long). In addition, the CGS Unit 1 was constructed and placed into service in 2016. Unit 1 is located directly adjacent to the Northern Solar Area, BESS, and proposed collector substation. Adjacent lands outside the Facility continue under habitat conservation to the north, east, and south, and farm use to the west. The Boardman Bombing Range is also adjacent to the north and east.

4.4.1 Visual Impact Assessment Methodology

The potential for visual impacts from the Facility as amended by RFA 4 are primarily related to the components that will be the most prominent in terms of size and scale. The two most prominent components in terms of height off the ground and overall surface area include the Northern and Southern solar areas, and the 1-mile segment of aboveground 34.5-kV collector line proposed along the eastern shore of the Carty Reservoir. Thus, these two components were the main focus of the visual impact assessment.

A zone of visual influence (ZVI) analysis, also known as a viewshed analysis, was performed using Esri geographic information system software and a bare-earth 30-meter digital elevation model to identify those areas from which the Northern and Southern solar areas and the 1-mile segment of aboveground 34.5-kV collector line might be visible (Figures L-2 and L-3). The ZVI analysis assumed a maximum height of 12 feet for the solar modules and a maximum height of 70 feet for the aboveground collector line. All other components proposed with RFA 4 were deemed less visually impactful (due to height, being dispersed throughout the Amended Site Boundary, or adjacent to taller infrastructure, etc.) and addressed by the assessment of the solar areas and aboveground collector line. A typical viewing height of 1.8 meters (6 feet) was assumed. Visibility of the two components was defined by visible or not visible, indicated by color coding (see Figures L-2 and L-3), and by proximity, i.e., foreground (less than 0.5 mile), middleground (0.5 to 5 miles), or background distances (more than 5 miles).

It should be noted that this bare-earth modeling approach (based only on the effects of terrain on visibility) results in a highly conservative assessment of potential visibility for several reasons. First, a bare-earth analysis does not take into account the effects of vegetation or buildings, which will in practice block or screen views in some places. Finally, the model does not account for distance, lighting, weather, and atmospheric attenuation factors that diminish visibility under actual field conditions.

The solar modules will be the most visible components within the solar areas and will consist of solar module strings, the vast majority of which will be mounted on single-axis tracker systems. The visibility of the solar modules within the solar areas will depend primarily on topographic or other view obstructions and the distance from the viewer to the solar areas. With a maximum height of 12 feet to the top edge of the solar module when fully tilted, the modules will not be visible from sites lower in elevation than the area on which the solar modules are constructed. From sites that are similar in elevation to the solar modules, viewers will see only a line on the horizon and not individual solar panels. Depending on the viewing distance, viewers at sites higher in elevation may

have views of the modules, especially if the view direction is toward the angle at which the module is tilted toward the sun. To the extent practicable, reflectivity of solar modules will be minimized. Antireflective coating will be used to reduce glare, and the surface of the modules will have high transmittance to increase the amount of light reaching the photovoltaic cells. With these methods, the modules will be less reflective than a natural water body or a coated glass surface that is not antireflective.

4.4.2 Visual Impact Assessment Results

Based on the results of the ZVI analysis, there is the potential for visibility of some portions of the Amended Carty Solar Farm from four of the eight protected areas in the analysis area (see Figures L-2 and L-3, and Table L-1). The visibility of the solar areas and aboveground collector line are characterized as visible or not visible. The discussion below provides additional detail on the updated visual impact analysis that was conducted for RFA 4.

Potential visibility is one of several factors that comprise an assessment of visual impact to a protected area. Other factors to consider include the existing visual context, particularly other sources of visual contrast present within the view; the likely number and nature of visitors to a protected area; and whether there is any management direction related to preservation of scenic quality (see Exhibit R), either within the protected area or outside of it.

Table L-1, above, provides a summary of the visual impact assessment for each of the protected areas in the analysis area. Table L-1 also considers the visibility of the solar areas and aboveground collector line. Again, the proposed solar areas and aboveground collector line will potentially be visible from four protected areas. The visual impact is considered to be negligible for all of the protected areas, primarily due to their distance from the proposed infrastructure for the Amended Carty Solar Farm, ranging from 2.6 to 19.6 miles. Views of the solar areas and aboveground collector line from most protected areas will therefore be at a background viewing distance where viewers will be highly unlikely to detect or identify the low-profile solar modules, and both the solar modules and aboveground collector line will occupy a limited portion of the total viewshed. Moreover, the four protected areas with potential views of the Amended Carty Solar Farm, currently have views of other wind farms, transmission lines, industrial development, and agricultural irrigation equipment so the Amended Carty Solar Farm will not introduce a new or unusual feature to the view. In addition, potential views from some of the protected areas will be partially to fully screened by vegetation, terrain, and man-made structures.

The protected area closest to the Facility, Boardman RNA, will have middleground views of the Amended Carty Solar Farm; the associated visual impacts were found to be similar to the previously approved Facility.¹⁶ The following paragraphs provide a more in-depth visual impact assessment for this protected area.

¹⁶ Final Order on Request for Amendment 1, p. 80 (December 2018).

4.4.2.1 Boardman RNA

From the Boardman RNA, the visual impact of the Amended Carty Solar Farm is considered to be negligible. The visibility analysis indicates potential visibility of the solar modules at a middleground viewing distance of 2.6 miles or greater in portions of the RNA. Additionally, the visibility analysis indicates visibility of the aboveground collector line at a middleground viewing distance of at least 2.8 miles. However, views of the aboveground collector line (and in turn, the solar modules) will not present a new or unique feature as compared to the existing landscape modifications, including existing wind turbines, transmission lines, industrial development, and agricultural irrigation equipment. Because the solar modules will have a maximum height of 12 feet, they will not appear as a prominent feature to viewers at this distance. If they are visible, the modules will appear as a dark line on the horizon and will create minimal visual contrast.

The Boardman RNA is located within the Boardman Bombing Range, which is inaccessible to the public, with occasional visits by TNC staff for monitoring and maintenance (personal communication between Kristen Gulick, Tetra Tech, and Kelly Wallis, TNC, July 18, 2022; see Attachment L-1). Thus, views of the Facility will not compromise the purpose of the RNA and will essentially affect no users. Additionally, the site is not managed for its scenic qualities. Therefore, the Facility will not have a significant adverse visual impact on this protected area.

4.4.2.2 Visual Impact Summary

Based on this analysis, the Certificate Holder concludes that there will be no significant visual impacts to protected areas within the analysis area, and any associated visual impacts will be similar to the previously approved Facility.¹⁷ While four of the eight protected areas will potentially have some level of visibility, for most protected areas the Amended Carty Solar Farm will be in the background, and the solar modules and aboveground collector line will not represent a new or unusual features in the landscape because there are already wind turbines, transmission lines, and other utility infrastructure visible, as well as vegetative and topographical screening present. One protected area will have middleground views of the solar areas and aboveground collector line. However, these views will predominately be intermittent due to existing screening, and any views of the proposed infrastructure will not be dominant in the surrounding landscape. Only a few of the protected areas have any management direction related to scenic quality, and that direction does not apply to siting of the Facility *outside* of the protected areas themselves. Additionally, views from most of the protected areas already include wind turbines, transmission lines, and other industrial or agricultural infrastructure, indicating that viewers cannot reasonably expect pristine views free of developed infrastructure. Therefore, as modified by RFA 4, the solar areas, aboveground collector line, and other related or supporting facilities will not result in a significant adverse visual impact to protected areas.

¹⁷ Final Order on Request for Amendment 1, p. 80 (December 2018).

The Council previously found that the Carty Solar Farm and other related or supporting facilities will not cause significant visual impacts to protected areas¹⁸ and the changes proposed in RFA 4 do not alter the basis for that conclusion.

5.0 Conclusions

The analysis area contains all or part of eight protected areas. The Certificate Holder analyzed potential impacts to these areas and concluded as follows:

- **Noise.** Based on the results of the noise modeling presented in Exhibit Y, operational noise was determined to likely be less than 26 dBA, which is consistent with a rural nighttime background ambient according to OAR 340-035-0035. The closest protected area is not considered to be noise-sensitive receptor under the ODEQ noise regulations and is anticipated to receive sounds levels that are less than rural nighttime ambient background levels. Construction noise may be audible at the same protected area nearest the Facility; however, construction noise will be short-term and intermittent, and will not be considered a significant impact to any protected area. Therefore, the Amended Carty Solar Farm will result in no significant difference in operational or construction noise at the eight protected areas within the analysis area relative to the approved Facility.
- **Traffic.** Construction and operations traffic for the Amended Carty Solar Farm will not be located to significantly impact any protected areas. Some short-term, intermittent, and temporary delays could be possible during construction by visitors, specifically at the four protected areas located south of I-84; however, these will be temporary and traffic conditions will return to typical low levels following construction. Therefore, consistent with previous conclusions for the approved Facility, there will be no significant impact to protected areas resulting from the construction or operations traffic of the Amended Carty Solar Farm.
- **Water.** The amended Facility will not use water in sufficient quantities or from sources that will significantly impact any protected areas. Therefore, consistent with previous conclusions for the approved Facility, there will be no significant impacts to protected areas by water use for the Amended Carty Solar Farm.
- **Wastewater.** The Amended Carty Solar Farm will not change the fact that the Facility will manage its wastewater almost exclusively within the Amended Site Boundary and will thus not significantly impact any protected areas. Therefore, consistent with previous conclusions for the approved Facility, there will be no significant impacts to protected areas due to wastewater generated by the Amended Carty Solar Farm.
- **Visual.** No Class I areas are present within the analysis area. The Amended Carty Solar Farm will potentially be visible from four of the eight protected areas in the analysis area, with

¹⁸ Final Order on Request for Amendment 1, p. 80 (December 2018).

one of the eight protected areas in the analysis area having middleground views as compared to background views. However, due to distance from the Facility, vegetative and topographic obstructions, other features within view (i.e. wind turbines and other utility infrastructure), low impact to users, and an overall lack of management direction applicable to scenic quality beyond the boundaries of each protected area, the solar areas, aboveground collector line, and other associated infrastructure will not alter the Council's previous finding that the Facility will not have a significant visual impact on any protected area.

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Figures

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Carty Generating Station Request for Amendment 4

Figure L-1 Protected Areas within the Analysis Area

MORROW COUNTY, OR

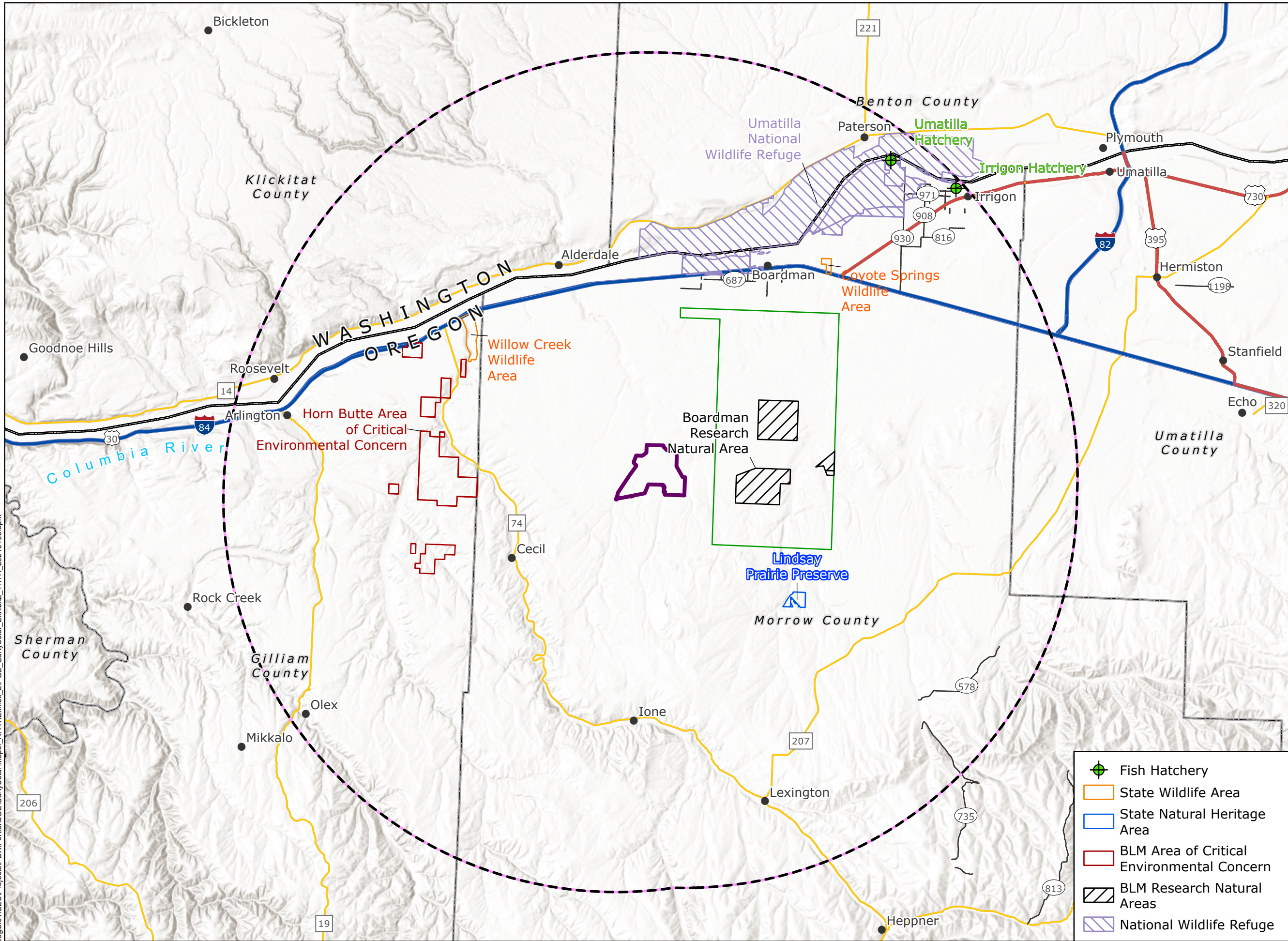
-  Amended Site Boundary
-  Analysis Area (20-mile Buffer)
-  Boardman Bombing Range
-  City/Town
-  County Boundary
-  State Boundary
-  Interstate Highway
-  US Highway
-  State Highway
-  County Highway



Reference Map



-  Fish Hatchery
-  State Wildlife Area
-  State Natural Heritage Area
-  BLM Area of Critical Environmental Concern
-  BLM Research Natural Areas
-  National Wildlife Refuge



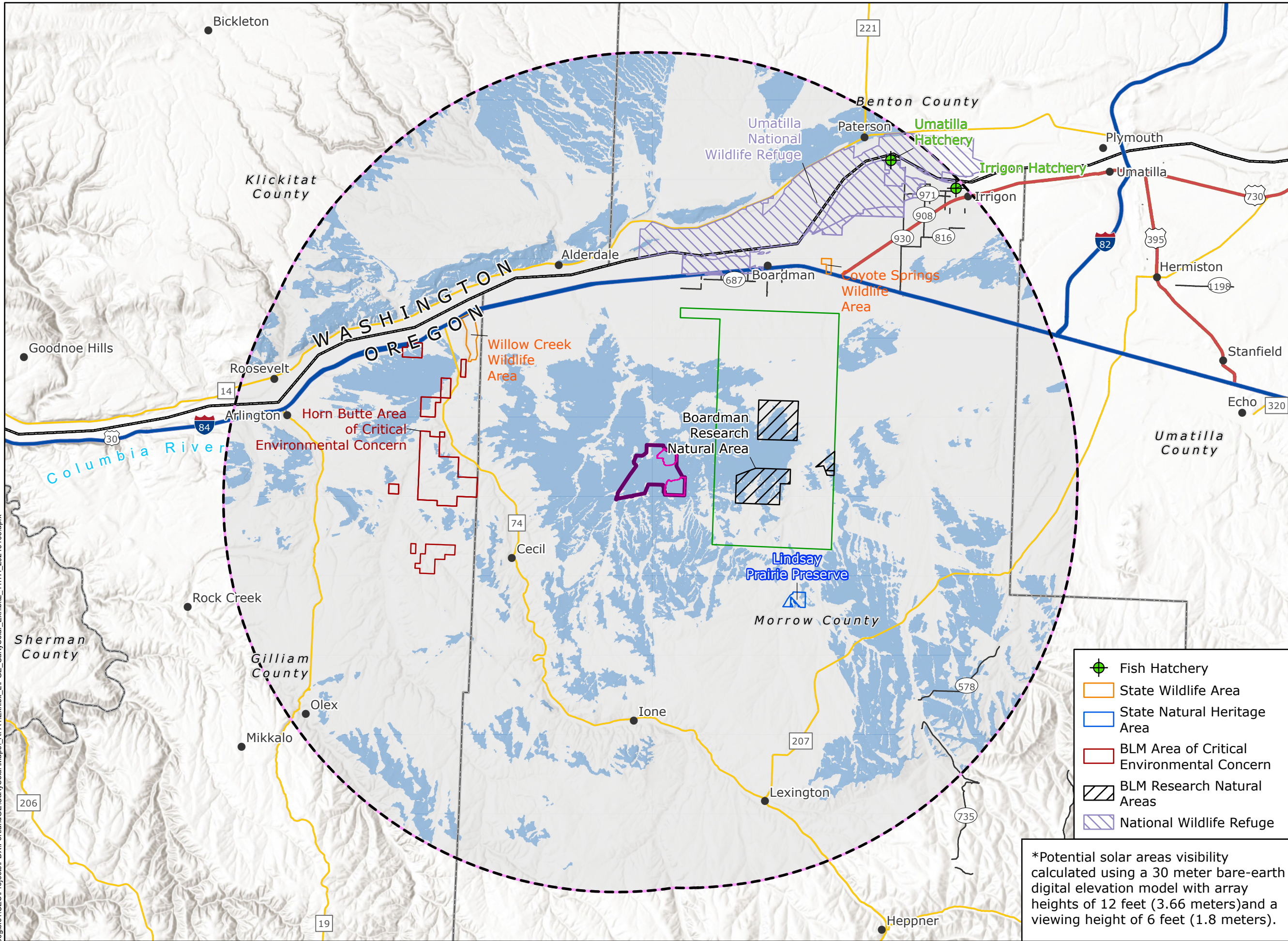
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NOT FOR CONSTRUCTION

Carty Generating Station Request for Amendment 4

Figure L-2 Zone of Visual Influence for Solar Areas

MORROW COUNTY, OR



- Amended Site Boundary
 - Analysis Area (20-mile Buffer)
 - Boardman Bombing Range
 - Solar Areas Fence Line
 - City/Town
 - County Boundary
 - State Boundary
 - Interstate Highway
 - US Highway
 - State Highway
 - County Highway
- Viewshed Results
- Solar Areas Not Visible
 - Solar Areas Potentially Visible

- Fish Hatchery
- State Wildlife Area
- State Natural Heritage Area
- BLM Area of Critical Environmental Concern
- BLM Research Natural Areas
- National Wildlife Refuge















*Potential solar areas visibility calculated using a 30 meter bare-earth digital elevation model with array heights of 12 feet (3.66 meters) and a viewing height of 6 feet (1.8 meters).



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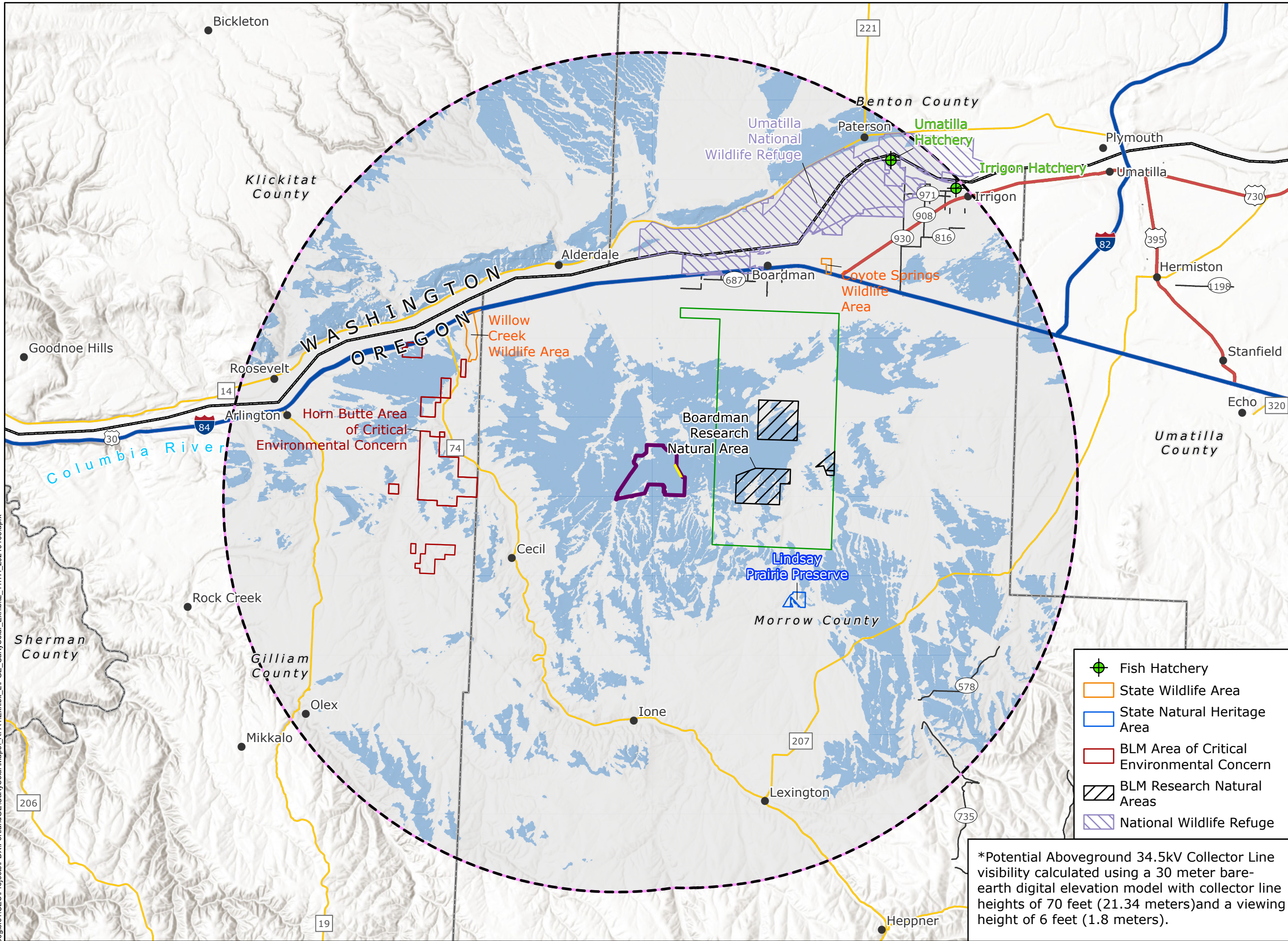
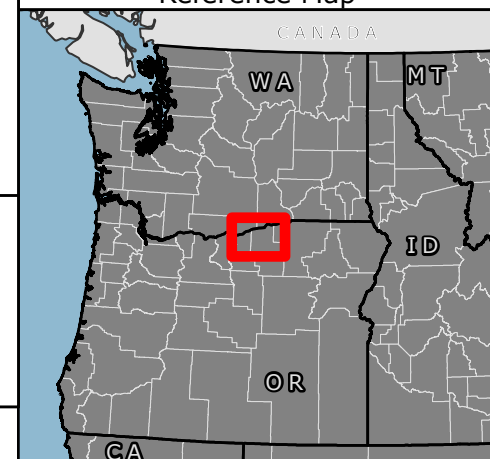
Carty Generating Station Request for Amendment 4 Figure L-3 Zone of Visual Influence for Aboveground 34.5kV Collector Line

MORROW COUNTY, OR

-  Amended Site Boundary
 -  Analysis Area (20-mile Buffer)
 -  Boardman Bombing Range
 -  Proposed Aboveground 34.5kV Collector Line
 -  City/Town
 -  County Boundary
 -  State Boundary
 -  Interstate Highway
 -  US Highway
 -  State Highway
 -  County Highway
 -  National Wildlife Refuge
- Viewshed Results
-  Aboveground 34.5kV Collector Line Not Visible
 -  Aboveground 34.5kV Collector Line Potentially Visible



Reference Map



-  Fish Hatchery
-  State Wildlife Area
-  State Natural Heritage Area
-  BLM Area of Critical Environmental Concern
-  BLM Research Natural Areas
-  National Wildlife Refuge

*Potential Aboveground 34.5kV Collector Line visibility calculated using a 30 meter bare-earth digital elevation model with collector line heights of 70 feet (21.34 meters) and a viewing height of 6 feet (1.8 meters).

\\Cess706\gis\1\CES\Projects\PDX\Portland\GECartySolar\Maps_RFA\4\Exhibit_LPGE_CartySolar_Exhibit_111171_20240105.aprx

Attachment L-1. Correspondence Records

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From: [Kelly Wallis](#)
To: [Gulick, Kristen](#)
Subject: FW: RESPONSE REQUESTED: Boardman Research Natural Area
Date: Monday, July 18, 2022 7:12:32 AM
Attachments: [image001.png](#)

CAUTION: This email originated from an external sender. Verify the source before opening links or attachments.

Hi Kristen,
That is correct. The RNA is still not accessible to the public.
Let me know if you have any further questions.
Thanks,
Kelly,

Kelly Wallis (she/her)
[The Nature Conservancy](#) | [Oregon Chapter](#)
Columbia Basin Preserves Manager
541-380-0925 (cell)
M-W 7:00 am to 4:00 pm; Th 7:00 am to 3:00 pm

From: "Gulick, Kristen" <Kristen.Gulick@tetrattech.com>
Date: July 14, 2022 at 12:03:29 PM PDT
To: oregon@tnc.org
Cc: Jim Desmond <jim.desmond@tnc.org>
Subject: **RESPONSE REQUESTED: Boardman Research Natural Area**

Hello,
I was wondering if you could confirm that the Boardman Research Natural Area (within the Boardman Bombing Range, DoD managed area, located near Bombing Range Road in Morrow County, Oregon) is excluded from the public. We previously received correspondence from Jeff Rosier, TNC, back in 2015 that confirmed that the RNA is not accessible to the public, with occasional visits by TNC staff for monitoring and maintenance, but I just wanted to ensure that this information is still accurate. Please let me know as soon as you're able.

Thank you in advance!

Kristen Gulick (she/her) | Environmental Planner II | Tetra Tech
Mobile (541) 740-3316 | kristen.gulick@tetrattech.com

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Exhibit M

Applicant's Financial Capability

**Carty Generating Station
February 2024**

Prepared for



Portland General Electric Company

Prepared by



TETRA TECH

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- Attachment M-1. Opinion of Legal Counsel
- Attachment M-2. JP Morgan Chase Bank, N.A. Letter

Acronyms and Abbreviations

BESS	battery energy storage system
Certificate Holder/ PGE	Portland General Electric Company
CGS / Facility	Carty Generating Station
JP Morgan	JP Morgan Chase Bank, N.A.
MW	megawatt
OAR	Oregon Administrative Rules
ORS	Oregon Revised Statutes
RFA	Request for Amendment

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 500 megawatts (MW) of electrical power. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and includes the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm) on 315 acres (0.49 sq. miles) located south of the Carty Reservoir.

In RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW alternating current of nominal and average generating capacity by expanding into areas formerly used for PGE's Boardman Coal Plant and maximizing the buildable area southeast of Carty Reservoir, and adding a battery energy storage system (BESS) to the Facility. The Certificate Holder proposes the 185 MW of solar generation as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. Thus, the overall changes proposed with RFA 4 (including the BESS) are referred to throughout this request as the Amended 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)].

2.0 Retirement and Financial Assurance – OAR 345-022-0050(1)(2)

OAR 345-022-0050 Retirement and Financial Assurance

To issue a site certificate, the Council must find that:

OAR 345-022-0050(1) The site, taking into account mitigation, can be restored adequately to a useful, non-hazardous condition following permanent cessation of construction or operation of the facility.

OAR 345-022-0050(2) The applicant has a reasonable likelihood of obtaining a bond or letter of credit in a form and amount satisfactory to the Council to restore the site to a useful, non-hazardous condition.

As discussed in Exhibit X, in the event that a permanent cessation of construction or operation of the Amended Carty Solar Farm occurs, the site can be restored to a useful, non-hazardous condition. Exhibit M establishes that the Certificate Holder has a reasonable likelihood of obtaining a bond or letter of credit in a form and amount satisfactory to the Energy Facility Siting Council to restore the site to a useful, non-hazardous condition, as discussed below.

3.0 Opinion of Legal Counsel – OAR 345-021-0010(1)(m)(A)

OAR 345-021-0010(1)(m) Information about the applicant's financial capability, providing evidence to support a finding by the Council as required by OAR 345-022-0050(2). Nothing in this subsection requires the disclosure of information or records protected from public disclosure by any provision of state or federal law. The applicant must include:

OAR 345-021-0010(1)(m)(A) An opinion or opinions from legal counsel stating that, to counsel's best knowledge, the applicant has the legal authority to construct and operate the facility without violating its bond indenture provisions, articles of incorporation, common stock covenants, or similar agreements;

Attachment M-1 is an opinion from the Certificate Holder's legal counsel. This letter confirms that PGE has the legal authority to construct and operate the Carty Generating Station in conformance with the requirements of the rule.

4.0 Proposed Bond or Letter of Credit – OAR 345-021-0010(1)(m)(B)(C)

OAR 345-021-0010(1)(m)(B) The type and amount of the applicant's proposed bond or letter of credit to meet the requirements of OAR 345-022-0050; and

Attachment M-2 includes a letter from JP Morgan Chase Bank, N.A. (JP Morgan) with the specified amount for the letter of credit. The letter explains that JP Morgan understands the potential liability of the letter of credit could total up to \$16,200,000 for the Amended Carty Solar Farm. JP Morgan explains in the letter the institution's willingness to furnish or arrange a letter of credit.

OAR 345-021-0010(1)(m)(C) Evidence that the applicant has a reasonable likelihood of obtaining the proposed bond or letter of credit in the amount proposed in paragraph (B), before beginning construction of the facility.

Prior to construction of the Amended Carty Solar Farm, the Certificate Holder will submit a new letter of credit to cover the amount required under Site Certificate Condition 15.1 in the Fourth Amended Site Certificate.

Attachment M-1. Opinion of Legal Counsel
Attached as a separate PDF

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**Attachment M-2. JP Morgan Chase Bank,
N.A. Letter**

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J.P.Morgan

Khawaja Tariq
Vice President

February 14, 2024

Chris Bozzini
Portland General Electric Company
121 SW Salmon St. 3WTC0403
Portland, OR 97204

Re: Carty Generating Station

Att: EFSC Financial Assurance Requirements for proposed Carty Generating Station

JPMorgan Chase Bank, N.A. has a long standing business relationship with Portland General Electric Company ("PGE" or the "Company"), and has acted as a lead underwriter for PGE in the placement of senior unsecured debt and has participated as a direct lender to PGE under various committed credit agreements.

PGE has always managed its credit relationship with JPMorgan Chase Bank, N.A. in a satisfactory manner and is considered to be a client in good standing. Based upon the Company's current credit profile, and subject to acceptable pricing, terms and requisite internal and credit approvals, J.P. Morgan would be willing to furnish or arrange a letter of credit in an amount up to \$16.2 million for a period not to exceed three years for the purpose of ensuring the Company's obligation that the site of the Carty Generating Station can be restored to a useful non-hazardous condition. The Bank does not hereby represent that a commitment can be or will be delivered. Any commitment or offer to commit by the Bank cannot occur prior to credit approval, which has not yet been obtained.

The information in this letter is provided as an accommodation to the inquirer as of the date hereof. This report and any information provided in connection therewith are furnished on the condition that no liability or responsibility whatsoever in connection herewith shall attach to JPMorgan Chase Bank, N.A. or any of its officers, employees or agents, that this report makes no representation regarding the general condition of the subject, its management, or its future ability to meet its obligations, and that any information provided herein is subject to change without notice.

Sincerely,



Khawaja Tariq

Exhibit O

Water Requirements

**Carty Generating Station
February 2024**

Prepared for



Portland General Electric Company

Prepared by



TETRA TECH

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Acronyms and Abbreviations

ASC	Application for Site Certificate
BCP	Boardman Coal Plant
BESS	battery energy storage system
BMP	best management practice
Certificate Holder / PGE	Portland General Electric Company
CGS / Facility	Carty Generating Station
Council	Oregon Energy Facility Siting Council
gpd	gallons per day
MW	megawatt
O&M	operations and maintenance
OAR	Oregon Administrative Rules
ODOE	Oregon Department of Energy
RFA	Request for Amendment
WPCF	Water Pollution Control Facilities

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 500 megawatts (MW) of electrical power. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and includes the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm) on 315 acres (0.49 sq. miles) located south of the Carty Reservoir.

In RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW alternating current (AC) of nominal and average generating capacity by expanding into areas formerly used for PGE's Boardman Coal Plant (BCP) and maximizing the buildable area southeast of Carty Reservoir, and adding a battery energy storage system (BESS) to the Facility. The Certificate Holder proposes the 185 MW of solar generation as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. Thus, the overall changes proposed with RFA 4 (including the BESS) are referred to throughout this request as the Amended 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)].

Exhibit O provides the information required by Oregon Administrative Rules (OAR) 345-021-0010(1)(o) in support of RFA 4. Analysis in this exhibit incorporates and/or relies on reference information, analysis, and findings found in the Application for Site Certificate (ASC), previous RFAs, and Oregon Department of Energy (ODOE) Final Orders to demonstrate that the Facility, as modified by RFA 4, continues to comply with applicable Site Certificate Conditions. OAR 345 Division 22 does not provide an approval standard specific to Exhibit O.

Although RFA 4 proposes changes to the Facility, the Certificate Holder) can still comply with all Site Certificate Conditions previously adopted by the Oregon Energy Facility Siting Council (Council) for compliance with respect to OAR 345-021-0010(1)(o).¹ Site Certificate Conditions applicable to water and that apply to the Amended Carty Solar Farm include:

- Condition 2.14: Prior to construction, provide evidence that a limited water use license has been obtained by the third-party contractor.
- Condition 2.15: During construction, PGE will provide ODOE with a record of all water use (with the allowable total and per minute water use) in semi-annual reports.

¹ Third Amended Site Certificate for the Carty Generating Station (July 2022).

- Condition 9.3: During construction, PGE will implement best management practices to control any dust generated by construction activities, such as applying water to roads and disturbed soil areas.
- Condition 10.23: During construction and operation, obtain potable water from the existing Boeing well or from a bottled water vendor. Water for construction and process water shall be obtained from Carty Reservoir.

2.0 Water Uses, Sources, and Amounts – OAR 345-021-0010(1)(o)(A)(B)

OAR 345-021-0010(1)(o) Information about anticipated water use during construction and operation of the proposed facility. The applicant must include:

OAR 345-021-0010(1)(o)(A) A description of the use of water during construction and operation of the proposed facility;

OAR 345-021-0010(1)(o)(B) A description of each source of water and the applicant's estimate of the amount of water the facility will need during construction and during operation from each source under annual average and worst-case conditions;

Table O-1 summarizes the anticipated water use during construction and operation of the Amended Carty Solar Farm. Note that the natural gas-fueled combined-cycle unit (Unit 1) is already operating at the Facility; thus, the water associated with the constructed portions of the Facility are not repeated for the purposes of this analysis. In addition, the Certificate Holder proposes the Amended Carty Solar Farm as a complete reconfiguration and not as an addition to the 50-MW approved Carty Solar Farm. Therefore, the information on water as previously documented in RFA 1 for the approved Carty Solar Farm are not repeated and are replaced by the information in this exhibit.

Table O-1. Anticipated Water Use for Construction and Operation

Use	Source	Amount	Final Disposition
Non-Potable Water – Construction (dust abatement, concrete, washing concrete trucks)	Carty Reservoir	81.04 million gallons (Mgal)	Primarily evaporation and infiltration for dust control per Water Pollution Control Facilities (WPCF) permit
Potable Water and Sanitary Systems (construction and operation)	Proposed operations & maintenance (O&M) building via existing well	Negligible	Carty Septic System
Non-Potable Water – Operation (panel washing)	Carty Reservoir	500,000 gallons annually	Evaporation and infiltration per WPCF permit

2.1 Construction

2.1.1 Water Uses and Amounts

During construction of the Amended Carty Solar Farm, water will be used for dust abatement (approximately 80,000,000 gallons), mixing of concrete (approximately 40,000 gallons), washing concrete trucks after delivery of concrete loads (approximately 1,000,000 gallons), and a nominal amount for fire prevention and on-site worker drinking and sanitation, for a total of approximately 81,040,000 gallons of water under worst-case conditions through all phases of construction. Substantial construction is expected to last 24 months; therefore, the Certificate Holder assumes that all construction water will be used in a 24-month timeframe. No on-site concrete batch plant is proposed as part of RFA 4; PGE will buy concrete directly from licensed suppliers (i.e., with a valid water use license) in the area.

Dust abatement and control will use by far the most water during construction (conservatively estimated at 80,000,000 gallons). Water trucks will be used to control dust generation throughout the construction site, in all disturbed areas including but not limited to foundation installations and trenching for collector lines in compliance with Site Certificate Condition 9.3. Water for dust control and road compaction will be applied via tanker truck in a manner that avoids erosion and sediment discharge and is consistent with the best management practices (BMPs) presented in the National Pollutant Discharge Elimination System 1200-C permit (Site Certificate Condition 9.1).

Water will be required for the mixing of concrete (approximately 40,000 gallons) for the construction of concrete pads and foundations such as for the power conversion station, battery energy storage system, substation foundation, and operations and maintenance (O&M) building.

Water will be used for washing concrete trucks after delivery of concrete loads (approximately 1,000,000 gallons). Concrete trucks and truck chutes will be washed down at each foundation site or at a centralized wash area within the previously disturbed BCP area to prevent the concrete from hardening within the chutes. Concrete wastewater will be handled using BMPs, which have been accepted by the Oregon Department of Environmental Quality (ODEQ). Concrete wash water will be put into a dedicated concrete washout area located within each foundation excavation or areas previously disturbed by the BCP.

Fire prevention represents a minor water use during construction; this will involve stationing a water truck at the job site to keep the ground and vegetation moist during extreme fire risk conditions. Potable water will also be provided for construction worker drinking and sanitation.

2.1.2 Water Sources

All non-potable water used for construction activities (dust abatement, concrete, washing concrete trucks, fire prevention) will be obtained from the Carty Reservoir, which is located within the Approved Site Boundary. The Carty Reservoir has a maximum surface area of approximately 1,450 acres and contains approximately 38,000 acre-feet (12 billion gallons) of water at a maximum pool elevation of 677 feet above mean sea level. The average pool elevation for the reservoir since 1990

has been approximately 667 to 668 feet above mean sea level. At this elevation, the reservoir surface area is approximately 1,100 acres and contains approximately 26,000 acre-feet of water (8.5 billion gallons).

Water used for construction will be sourced from the Carty Reservoir under the Certificate Holder's existing water right and obtained by a third-party contractor through a limited water use license.² The Oregon Water Resources Department issued PGE Permit S-54925 for the use of up to 3,736 acre-feet per year from the Carty Reservoir for industrial/manufacturing uses; this category allows use of water for construction purposes. Site Certificate Condition 2.14 will continue to apply, which requires evidence prior to construction that a limited water use license has been obtained from the Oregon Water Resources Department by the Certificate Holder's third-party contractor. This existing water right is sufficient for all non-potable water needs during construction of the Amended Carty Solar Farm.

Potable water for use during construction will be obtained from a temporary tie-in with the existing Facility potable water system or provided by bottled water or water coolers. Potable water for the existing Facility potable water system will be obtained from the existing potable water system which obtains water from an existing well located approximately 170 feet south of the Facility's existing Unit 1 generation building and within the Approved Site Boundary (Condition 10.23). Sanitation during construction activities will be addressed through the provision of portable toilets.

2.2 Operation

2.2.1 Water Uses and Amounts

The primary uses of water during operation of the Amended Carty Solar Farm will be for panel washing during regular facility maintenance, if and when washing is determined to be necessary. For the purpose of this analysis, it is conservatively assumed that they will be washed twice a year, which will require approximately 500,000 gallons of water per year.

Potable water for staff during operations will be provided at the proposed O&M building.

2.2.2 Water Sources

Water for solar panel washing during operations will also be obtained from the Carty Reservoir under the Certificate Holder's existing water right.³ Water from the Carty Reservoir to be used for

² Water necessary for construction would be obtained by a third-party contractor through a limited water use license to be applied for prior to starting construction. The proposed source of water for the limited water use license would be Carty Reservoir storage under PGE Certificate 86056. (Revised Request for Amendment 1 to the Site Certificate, Exhibit O, Appendix O-1 [February 2018] and Request for Amendment 3, p. 51 [June 2022]).

³ Water use for operations would come from an existing PGE held permit and/or certificated water right (Permit S-54925; 3,736 acre-feet per year from Carty Reservoir) and/or (Certificate 86057; 135.0 cubic feet per second from Columbia River or Carty Reservoir) which already cover all necessary Place of Use areas for

panel washing will first undergo treatment at the existing Facility water treatment building to produce water suitable for panel washing (e.g. demineralized water).

The potable water within the O&M building will be obtained from the Facility's existing potable water system, with an expected usage of approximately 250 additional gallons per day (gpd). The potable water is supplied by the existing well described above. The sanitary sewer within the O&M building will be collected and treated by the Facility's existing sanitary septic system. Once the number of additional employees is determined, if the existing system capacity is not sufficient a septic system alteration permit would be obtained from the Umatilla County Public Health Department to increase the capacity of the existing septic system.

3.0 Water Losses – OAR 345-021-0010(1)(o)(C)

OAR 345-021-0010(1)(o)(C) A description of each avenue of water loss or output from the facility site for the uses described in (A), the applicant's estimate of the amount of water in each avenue under annual average and worst-case conditions and the final disposition of all wastewater;

Water used for construction and operation of the Amended Carty Solar Farm will be permanent water loss (i.e., there is no planned water reuse). Water loss associated with the Amended Carty Solar Farm is equal to uses and volumes presented in Table O-1.

3.1 Construction

Water use for dust control and concrete production will result in water loss primarily through evaporation and infiltration from wetted construction surfaces and from curing concrete. No water used on the site will be discharged into wetlands, streams, and other waterways. Due to the dry conditions at the proposed Facility and the relatively low rates of water use and application, it is expected that any excess water used during construction will be lost within or near the Amended Site Boundary, primarily through evaporation and infiltration.

The disposition of construction water through evaporation and is allowed under the terms and conditions of the Facility's Water Pollution Control Facilities (WPCF) Permit (100189) and subsequent Addendums 1 and 2 to the permit. The WPCF permit is explained in Exhibit W.

3.2 Operations

Minimal water loss will occur during operations of the Amended Carty Solar Farm. During periodic washing of solar panels (approximately twice per year), wash water will evaporate or infiltrate into the ground allowed under the terms and conditions of the Facility's WPCF permit described above

operations. (Revised Request for Amendment 1 to the Site Certificate, Exhibit O, Appendix O-1 [February 2018]).

and in Exhibit W. Water from this activity will not be discharged into wetlands, streams, or waterways.

4.0 Water Balance Diagram – OAR 345-021-0010(1)(o)(D)

OAR 345-021-0010(1)(o)(D) For thermal power plants, a water balance diagram, including the source of cooling water and the estimated consumptive use of cooling water during operation, based on annual average conditions;

The Amended Carty Solar Farm proposed with RFA 4 is not a thermal power plant; therefore, this rule does not apply.

5.0 Permits – OAR 345-021-0010(1)(o)(E) and (F)

OAR 345-021-0010(1)(o)(E) If the proposed facility would not need a groundwater permit, a surface water permit or a water right transfer, an explanation of why no such permit or transfer is required for the construction and operation of the proposed facility.

OAR 345-021-0010(1)(o)(F) If the proposed facility would need a groundwater permit, a surface water permit or a water right transfer, information to support a determination by the Council that the Water Resources Department should issue the permit or transfer of a water use, including information in the form required by the Water Resources Department under OAR Chapter 690, Divisions 310 and 380; and

As described above, non-potable water for construction and operation of the Amended Carty Solar Farm will be obtained from the Carty Reservoir under the Certificate Holder's existing water right. Water used for construction and solar panel washing will be sourced from the Carty Reservoir under the Certificate Holder's existing water right and obtained by a third-party contractor through a limited water use license.⁴ As mentioned previously, the Oregon Water Resources Department issued PGE Permit S-54925 for the use of up to 3,736 acre-feet per year from the Carty Reservoir for industrial/manufacturing uses; this category allows use of water for construction purposes. Site Certificate Condition 2.14 will continue to apply, which requires evidence prior to construction that a limited water use license has been obtained from the Oregon Water Resources Department by the Certificate Holder's third-party contractor.

⁴ Water necessary for construction would be obtained by a third-party contractor through a limited water use license to be applied for prior to starting construction. The proposed source of water for the limited water use license would be Carty Reservoir storage under PGE Certificate 86056. (Revised Request for Amendment 1 to the Site Certificate, Exhibit O, Appendix O-1 [February 2018] and Request for Amendment 3, p. 51 [June 2022]).

6.0 Mitigation Measures – OAR 345-021-0010(1)(o)(G)

OAR 345-021-0010(1)(o)(G) A description of proposed actions to mitigate the adverse impacts of water use on affected resources.

Water use related to this project is not anticipated to have any adverse impacts on affected resources; therefore, PGE is not proposing any mitigation measures.

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