RECORD No. 217-24-000293 PLNG

RECEIVED
OCT 24 2024
Crook County
Community Development

Crook County Community Development
Planning Division
300 NE 3rd Street, Room 12, Prineville Oregon 97754
541-447-3211
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www.co.crook.or.us

CONDITIONAL USE – COMMERCIAL ENERGY FACILITY

NOTICE TO ALL APPLICANTS: The Crook County Community Development, Planning Division is required to review all applications for accuracy and to determine whether the staff and/or Planning Commission have the information needed to make a decision. Crook County Code (C.C.C.) allows 30 days to determine whether the application is complete. If the Planning Division determines that your application is incomplete, you will be requested in writing to provide the necessary missing information, and a decision on your application will be postponed until the information is received. State Law requires that information to support an application be available for public inspection at our office 20-days before a public hearing. Any information submitted after this date may require a postponement of the hearing date if necessary. Make sure your application is complete. The burden of proof lies with the applicant.

IMPORTANT: In addition to this form, a detailed explanation of the use and how the applicable standards and criteria are satisfied is required. Please refer to the Crook County Code, Title 18 for the applicable standards and criteria.

PROPERTY OWNER

Last Name: Raasch First Name: Ron A. and Susan L.
Mailing Address: PO Box 11
City: Powell Butte State: OR Zip: 97753
Day Time Phone: (541) 447 - 1992 Cell Phone: (____) ____ - ____
Email: rar97753@gmail.com
Size of property: ____ acres Zoning: EFU-3
Physical Address: ____

AGENT/REPRESENTATIVE:

Last Name: Stephens First Name: Jacob
Mailing Address: 550 NW Franklin Ave., Ste. 408
City: Bend State: OR Zip: 97703
Day Time Phone: (____) ____ - ____ Cell Phone: (520) 981 - 7303
Email: ____

16-15-0000003 00

PROPERTY LOCATION:

Township 16 South, Range 15 East WM, Section 10,11 Tax Lot A portion of TL 300
Township ____ South, Range ____ East WM, Section ____ Tax Lot ____
Size of property: ____ acres Zoning: EFU-3
Physical address: ____
Subdivision name, if applicable: ____

SCANNED

REQUEST: Detailed explanation of your proposal.

Application for a commercial photovoltaic solar power generation facility.
Please see accompanying attachment, Exhibit A: Main Proposal

ACCESS / ROADS:

Explain how you will access your property for the proposed structure:
Access will be by a modified access road off the existing private road from SW George Millican road.

Will you ACCESS this property from an existing access? Yes ____ No ____
If yes, submit a copy of an "APPROVED" Road Approach Access.
If no, will the proposed access be from:
County_____ Public_____ *Private__X__ **State _____(check one only)
* If private easement, provide legal recorded documentation.
** If accessing from State Highway, an "approved" ODOT permit must be attached with this application: No Exceptions!
*** If accessing from a county maintained or public road, a road approach application is required.

FLOOD ZONE

Is the property located within a Flood Zone? Yes ___ No __X__
If yes, a "Special Flood Hazard Area Development Permit" is required to be submitted at the same time.

DOMESTIC WATER

Water will be supplied by: (check only one)
_____ An existing individual well
_____ A proposed individual well
_____ 4 to 14 dwellings on one well State regulated system.
_____ Shared well (Number of dwellings_____)
If shared well, indicate the location of well and other property locations (Tax Map #), as well as a copy of a recorded "Shared Well Agreement." A "Shared Well" is 3 or less dwellings on one well un-regulated system.
__X__ Other: Please explain Please see Exhibit A—Main Proposal
_____ Community Water System: Name _____
PWS# _____

Community Water System Authorization
Print Name: _____ Daytime phone:_____
Authorization Signature:_____ Date: _____
(or) a signed authorized letter must be attached to this application. No exceptions.

IRRIGATION WATER

Does the property have irrigation water right? Yes _____ No __X__

If the property has irrigation water rights, who is the supplier:

_____Central Oregon Irrigation District - 541-548-6047

_____Ochoco Irrigation District - 541-447-6449

_____Water Resources Department - 541-306-6885

_____People's Irrigation District - 541-447-7797

_____Other: _____

Watermaster Signature: _____ Date: _____

Print Name Clearly: _____ Phone: _____

Irrigation District Signature: _____Date: _____

Print Name Clearly: _____ Phone: _____

COMMENTS:_____

_____

_____

_____

COMMENTS: _____

_____

_____

_____

WILDLIFE

ODF&W, Prineville Field Office, 2042 SE Paulina Hwy Phone: (541) 447-5111

Is the subject property located within a "Winter Wildlife" overlay zone? Yes __X__ No _____

Is the subject property located within a "Sensitive Bird Habitat" zone? Yes _____ No __X__

COMMENTS: See Application and Exhibit L: Wildlife and Sensitive Plant Review for details on consultation with ODF&W

_____

_____

ODF&W Signature: _____ Date: _____

SUPPLEMENTAL INFORMATION

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PROPERTY OWNERS SIGNATURES:

By signing below, I/WE agree to meet the standards governing the laws as outlined in the State of Oregon's OAR, ORS, Crook County Code, and/or the Crook County Comprehensive Plan. I/We agree that all the information contained in this application is true to the best of my knowledge.

Property Owner Signature: See Agent Authorization Form Date _____

Print name: See Agent Authorization Form

Property Owner Signature: See Agent Authorization Form Date _____

Print name: See Agent Authorization Form

Agent/Representative Signature: _____ Date October 18, 2024

Print name: Jacob Stephens

CHECK LIST OF REQUIREMENTS

- ☐ A completed application form with the appropriate signatures.
- ☐ A copy of the Tax Lot Card. (Available from the Crook County Community Development Department)
- ☐ A copy of the current owners Warranty Deed.
- ☐ A signed copy of a "Statement of Understanding"
- ☐ A signed Authorization Form; if applicable.
- ☐ A detailed "Plot Plan/Site Plan" of the subject property. (See below for detailed information)

- ❑ An approved Road Access Permit, if applicable, from the Community Development Department for County Maintained Roads and Public Roads, or the Oregon Department of Transportation for access from State Highways.
- ❑ A copy of the irrigation map for the area and historical water rights information on the subject property. (Available from the Irrigation District); if applicable.
- ❑ Special Flood Hazard Area Development Permit; if applicable
- ❑ Comments & signature from ODF&W
- ❑ Supplemental Information
- ❑ Submit the correct application fee.

Community Development Department

Phone: 541-447-3211 Fax: 541-416-2139
bld@co.crook.or.us

AUTHORIZATION FORM

Let it be known that

Jacob H. Stephens

(Print Name Clearly)

Has been retained to act as my authorized agent to perform all acts for development on my property noted below: These acts include: Pre- application conference, filing applications and/or other required documents relative to all Permit applications.

Physical address of property:

and described in the records of CROOK COUNTY as:

Township 16 **South, Range** 15 **East, Section** 9, 10, 4, 3 2 & 5, **Tax lot** 300

The costs of the above actions, which are not satisfied by the agent, are the responsibility of the undersigned property owner.

(Please Print Clearly)

PROPERTY OWNER

Signature: _____ **Date:** _____
Print Name: Ronald A. Raasch and Susan L. Raasch
Mailing address: PO Box 11
City: Powell Butte **State:** OR **Zip:** 97753
Home Phone: (541) 447 - 1992 **/ Cell Phone:** (____) ____ - ____
Email: rar97753@gmail.com

AGENT

Signature: _____ **Date:** 7/31/24
Print Name: Jacob H. Stephens
Mailing address: 550 NW Franklin Ave., Ste. 408
City: Bend **State:** OR **Zip:** 97703
Home Phone: (____) ____ - ____ **/Cell Phone:** (520) 981 - 7303
Email: jstephens@newsunenergy.net

SITE PLAN

See Exhibit B — Site Plans

Exhibit A Main Proposal

(Explain Your Request Attachment)

In support of Moffatt Road Solar Farm LLC Conditional Use Permit Application

Contents

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Overview

This Application requests Conditional Use Permits of "Solar PV Facilities" as defined in OAR 660-033-0130(38)(f) and associated transmission lines (ATL) for its Site (as further described below) for uses including conventional technology for the commercial sale of electricity. Permit application is for the development, design, construction, maintenance, operation, repair, removal, and updates of all proposed and permitted facilities. Solar PV Facilities and Associated Transmission Lines are permitted uses on farmland zoned EFU-3 under applicable Crook County and state ordinance. The Moffatt Road Solar Farm (hereinafter, the Facility) is proposed to operate for up to 40 years.

Location:

The subject property is located on a portion of Tax Lot 300 in Crook County, OR, approximately 6 miles south of the junction of Hwy 126 and George Millican Highway, Prineville, OR. Tax Lots 300, 400,1208, 1209 and 2900 may be used for ATLs to connect to Utility Transmission Lines and/or Substation as needed. Applicant has legal agreements with the landowner(s) of these tax lots in place to allow ATL placement on those properties.

NOTE: Detailed/zoomed images of maps below are also provided in Exhibit B – Site Plans.

See Appendix C for tax lots and maps.

Zoning:

All of the property included as part of this application is zoned EFU-3 (Exclusive Farm Use) (Crook County Code 18.24).

Summary Description:

The proposed Facility will consist of photovoltaic panels, inverters, mounting infrastructure using fixed tilt and/or single axis tracker systems, an electrical collection system, a substation, an energy storage system, operation and maintenance facility, private access roads, fencing, and associated transmission lines to connect to the utility facility. Electricity generated by the Facility will be transmitted to a Facility substation, where it will be increased to appropriate transmission line voltage levels per Bonneville Power Administration (BPA) or PacifiCorp (PAC) requirements (depending on the transmission provider). Applicant has existing interconnect requests with BPA and PAC. Interconnection at the Ponderosa-Corral substation complex is most likely. Ponderosa substation is immediately adjacent to TL 1208. An alternative interconnection with PAC is also under study for connection to either the Corral Substation or the immediately adjacent 115kV transmission line. Please see Exhibit B Site Plan and the more detailed Facility description of Solar PV Facilities below and proposed gen-tie routing alternatives.

The overall design and construction of the project will be carried out in accordance with all applicable engineering codes and standards, including considerations for the results of any floodplain, wildlife impact mitigation findings and recommendations, wetland and riparian area analyses, or cultural surveys as required by Crook County and other regulatory agencies such as Oregon Department of Fish and Wildlife (ODFW) and Oregon State Historic Preservation Office (SHPO).

Construction will be performed by licensed and qualified contractors and their subcontractors, following an extensive vetting and bidding process. Following construction, on-site disturbances will be restored pursuant to county storm water discharge requirements, and Crook County Weedmaster consultation as applicable.

Facility Size:

The Solar Facility will use up to 320 acres. See Exhibit B site plan, which identifies the proposed PV Facility Siting Area relative to the overall size of the tax lot acreage. The final Solar Facility will conform to Crook County setback standards for parcels zoned EFU-3. Given the scope of existing uses on surrounding properties, Applicant does not anticipate a need for deviation from standard setback requirements.

Present Property Description:

TL 300 is bounded by three 500kV transmission lines to the west, the Gala Solar Facility to the south, private properties to the north, west and south that are zoned EFU3, and land managed by the Bureau of Land Management to the east. The property does not have irrigation rights and has not been irrigated in the past. The property is uncultivated, and non-irrigated; dominant vegetation on the site consists of low shrub / sagebrush and juniper trees.

Image A-1 – General Property Image.

Surrounding Land Uses:

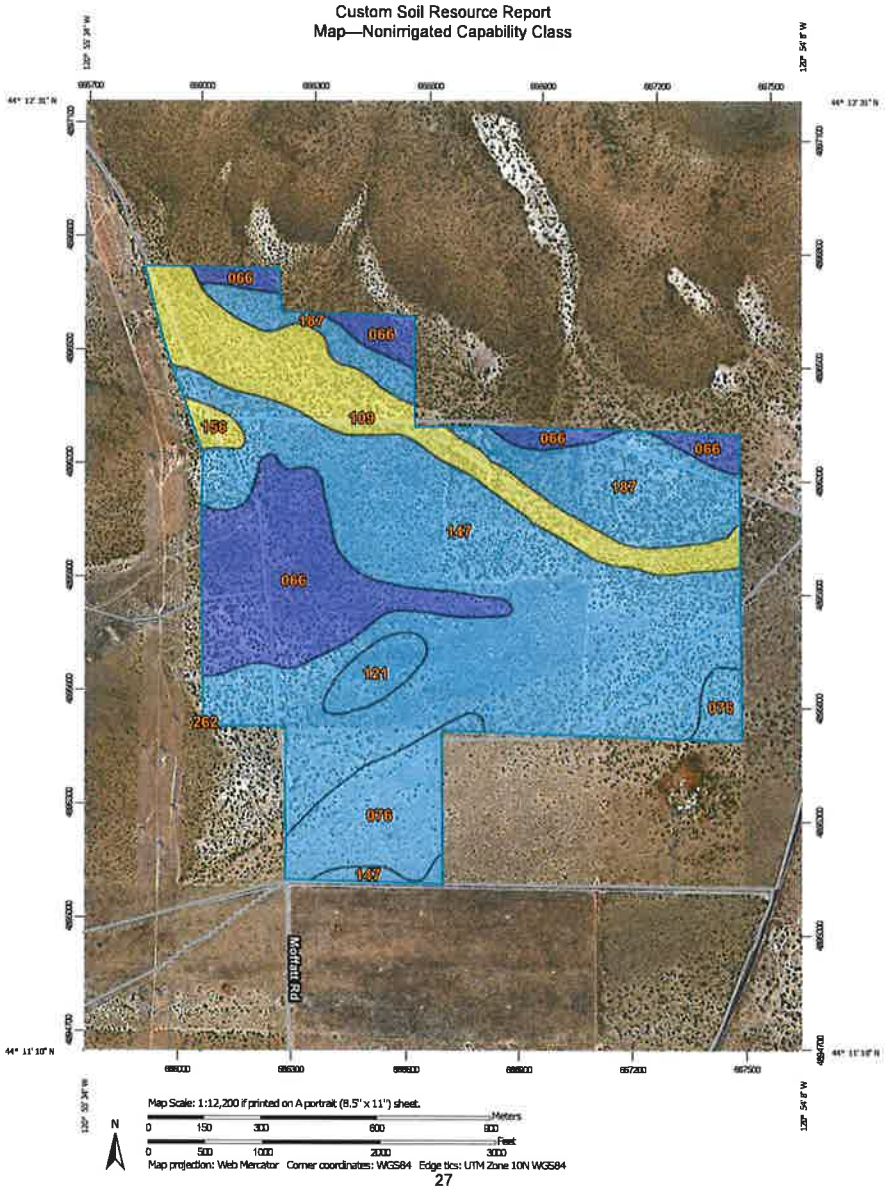
There is one existing residence to the south of the property on TL1300. Lands to the east, west and north are used for cattle grazing and other EFU3-zoned purposes. The Gala Solar project is located to the south of the project and was authorized under a separate conditional

use permit. It has been in operation since 2017 under separate, distinct ownership, not associated with the Applicant.

Soils:

A Custom Soil Resource Report for the Applicant property was prepared using data from the USDA National Cooperative Soil Survey. See Exhibit F.

Figure 1 below shows the site (Area of Interest/AOI), which is approximate to the actual site boundary.



Corresponding to this mapping, non-irrigated class soils are broken down into the following categories as shown in Table 1.

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
066	Ayres cobbly loam, 3 to 8 percent slopes	7	66.2	17.3%
076	Ayresbutte-Ayres complex, dry, 0 to 8 percent slopes	6	32.5	8.5%
109	Meadowridge-Era complex, 1 to 12 percent slopes	4	49.4	12.9%
121	Era ashy sandy loam, 0 to 3 percent slopes	6	8.1	2.1%
147	Ayresbutte-Ayres complex, 3 to 8 percent slopes	6	177.7	46.6%
156	Ginserly-Hatrock complex, 12 to 30 percent north slopes	4	3.3	0.9%
187	Deschutes ashy sandy loam, 0 to 3 percent slopes	6	44.3	11.6%
262	Tristan extremely cobbly loam, 12 to 35 percent south slopes	7	0.1	0.0%
Totals for Area of Interest			**381.7**	**100.0%**

Table 1: Soil Classifications

The mapping indicates that the majority of soils on the site (greater than 85 percent) are Class 6 and 7 while there is a narrow band along the northern property boundary of Class 4 soils (approximately 14 percent).

Please see Exhibit F Soils for additional information and a map of soil locations. The proposed Facility will not occur on any high-value farmland, will not exceed 20 acres of Class 4 or below soils (arable), and will be less than 320 acres in total.

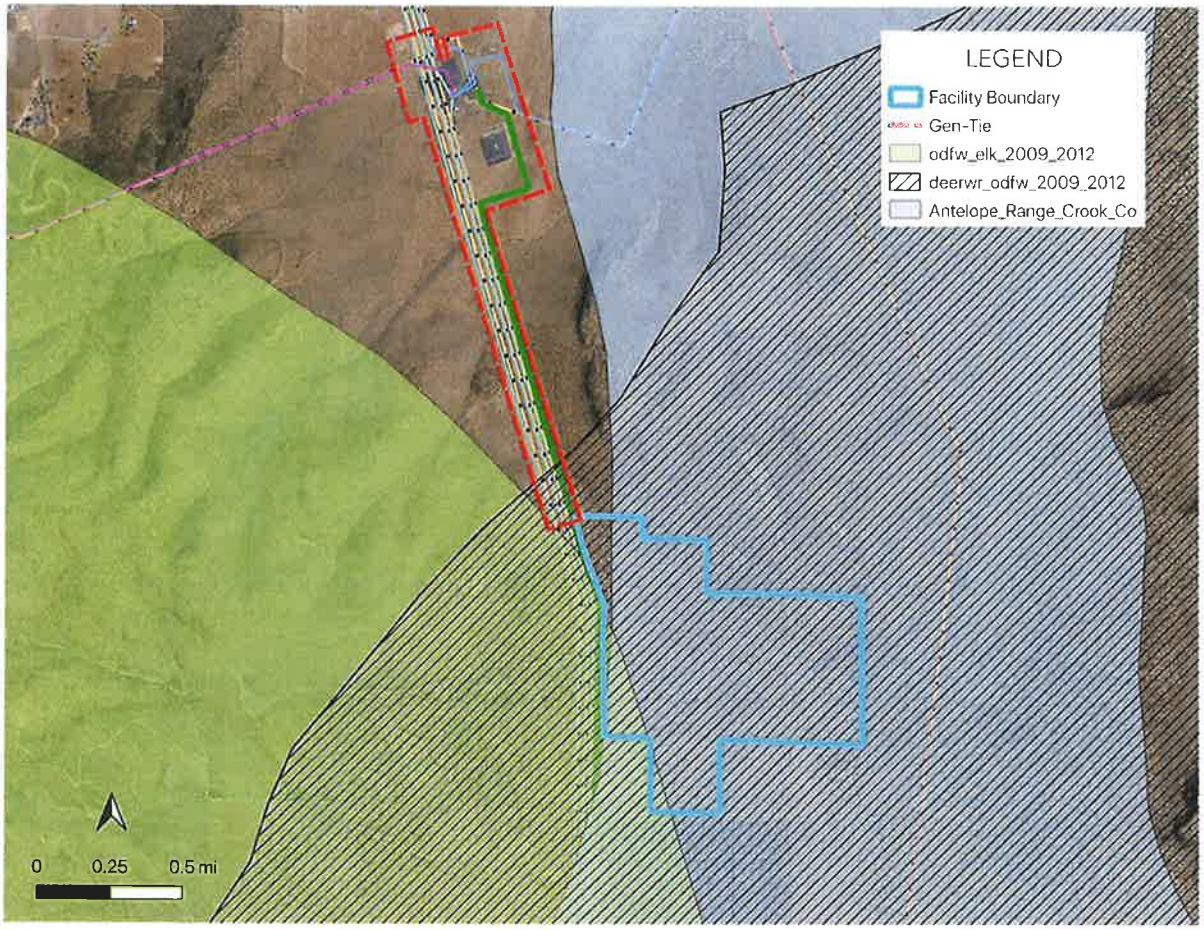
Ownership:
The property underlying the Facility site is wholly owned by Ronald Raasch and Susan Raasch, Trustees of the Raasch Family Trust. The Authorized Agent for the property owner is Jacob Stephens. See Exhibit C Deeds and Legal for details regarding land ownership.

Water Rights:
The subject property has no water rights and the site has not been irrigated in the past.

Flood Hazard Area:
There are no FEMA Special Flood Hazard Area (SFHA) Zones on this property.

Wildlife:
Applicant has engaged a wildlife biologist, PBS Engineering and Environmental, to perform a site specific Wildlife and Sensitive Plant Review, included as Exhibit L of the application.

The site is not identified as greater sage-grouse habitat. The subject property is in an area that is mapped by ODFW as winter range for deer, and a portion of the property is within ODFW mapped winter range for elk. Most of the project site is also within mapped pronghorn antelope range. See map below showing the ODFW big game overlays.



The Applicant has initiated and will continue consultation with ODFW to ensure best practices for wildlife and resource management, and a Wildlife Mitigation Plan (WMP) is being developed with consultation from ODFW and will be submitted as an application supplement under separate cover.

Cultural Resources: The Applicant has initiated consultation with the State Historical Preservation Office (SHPO) to review issues and perform a database review and will coordinate appropriate confirmation that there are no sites of cultural or historical significance in accordance with SHPO policies and procedures. If, upon SHPO's standard recommendation, pedestrian surveys are recommended, Applicant will work with a qualified provider to perform pedestrian on-site surveys if required.

To the extent that during investigation or the construction process any issue or cultural resource of material significance is identified, such issues/resources will either be 1) avoided through project design or 2) mitigation will be implemented which conforms to applicable current regulation and subject to SHPO's reasonable concurrence on such plans.

Airports:

The proposed Project property is not in close proximity to an airport and is outside of any airport control zone. The Prineville Airport, which does not have a designated airport control zone other than runway approach limits, is still approximately 5.25 miles north of the Project site. The

Redmond Municipal Airport, which has a 5-mile airport control zone, is approximately 11 miles northwest of the proposed Project site.

Access:

The Solar PV Facility will mostly likely be accessed by a modified access road off the existing private road from SW George Millican road, as designated in Exhibit B Site Plan (P2 of 3) showing the entryway off the highway. The Facility also has additional access from adjacent property to the north. As part of on-going development, any alternative entrances and/or additional road access permits will be obtained as necessary from the County or ODOT as applicable.

Water Supply:

Water for construction and operation may be purchased from the City of Prineville or procured from a water well on the property (in accordance with ORS 537.545(1)(f)), or a combination of both. Applicant and its subcontractors will ensure that if water is procured from a new or existing well in the area that the well provider has the appropriate license from the Oregon Water Resources Department to utilize groundwater from a well for construction purposes.

Fire Protection:

The subject property is located inside the Crook County Fire and Rescue District. Provisions for wildfire prevention and control as well as fire management generally are included in the Emergency Management Plan (Exhibit J) which will be presented to Crook County Fire and Rescue, and will be updated with site specifics once site layouts are determined closer to Facility construction.

Construction Facilities:

Applicant proposes to establish temporary construction facilities on the site in accordance with state and county regulations. These temporary buildings will house construction management and site personnel offices adjacent to a parking area and laydown yards, typical of a construction site. The temporary facilities area is proposed at the southern portion of the site adjacent to the existing private road. See Exhibit B – Site Plan (P2 and P3) for proposed details. The final location of these temporary construction facilities is subject to applicant's final site design.

Facilities and Structures Overview:

This section provides a narrative overview of the proposed use and structures for the Facility under the Application. Additional supporting layout and (larger) supporting diagram images are provided in Exhibit B – Site Plans.

Solar PV Facilities:

The primary structures of the proposed Facility will be the Solar PV Facilities. Solar PV Facilities will be predominantly comprised of commercially-available solar photovoltaic "PV" panels (or "modules") mounted to racking systems (described below) generally arranged in long rows with the modules wired together (in "strings") to collect DC power they generate at a desired voltage to either store or deliver to inverters which then in turn convert DC power to AC power, with related hardware and equipment. AC power is collected from inverters and stepped up to a collection voltage (nominally 34.5 KV) via transformers (generally pad-mounted) for delivery through switching and/or substation facilities. Facilities will include communications and control equipment, including to provide for remote and on-site monitoring and operations of facilities, including as required by the interconnecting utility, whether through radio communications, fiber optics, and/or conventional telephony. PV modules are typically anti-

reflective, in order to maximize absorption of solar energy for generation of power and maximize efficiency for direct use or commercial scale of resultant electricity, while also minimizing glare.

Image A-2 - PV Facility in central OR

Racking Structures:

Racking structures for PV modules may be either "fixed tilt" (stationary) or "single axis tracking". They are generally steel, ground-mounted structures less than 15' tall, located up to 25' apart. Final racking, modules, inverters, and other equipment selection will be subject to final design considerations before construction (and may be updated from time to time over the life of the Facility) based on commercially available products and other related commercial considerations. Spacing of rows and blocks of rows on the property will be interdependent with and subject to the acreage limitations and proposed shared use with continued agricultural use proposed herein. Sometimes modules are landscape or portrait mounted on racks; sometimes there are multiple rows of panels on the racking structures. Sometimes different racking structures may be use for different parts of a site due to design limitations, civil and geotechnical concerns, configurational issues, or other concerns.

Figure A-3 – PV Module Array strings on single axis tracking racking (central OR)

No reflection or glare issues:

Solar radiation, glare, and glint concerns will not be an issue of material concern (if any) with either a fixed tilt or single axis tracking system, and as demonstrated by other similar solar PV projects in the Oregon area and elsewhere nationally. Solar PV modules do not concentrate solar radiation, so that inadvertent reflection or misdirection from such a concentrated focal point is not feasible. The Facility will use commercially available modules treated with absorbent and anti-reflective coatings. These coatings help to absorb sunlight and minimize glare. Key finding from several Glint and Glare studies for private entities as well as performed at National Laboratories such as NREL and Sandia National Labs can be summarized: "Flat-plate photovoltaic solar panels are engineered to absorb, not reflect, sunlight. A panel with a single layer of anti-reflective coating reflects less than 10% of the sunlight striking it. By way of comparison agriculture vegetation reflects between 18 and 25% of solar radiation."[1]

AC Collection, Associated Transmission Lines (ATL), and Interconnection:

Energy will be delivered to/from Solar PV Facilities as applicable to and through the associated transmission lines for connection to the interconnection facilities interfacing with applicable utilities' infrastructure in the area. Utility infrastructure nearby the Property includes facilities owned by Bonneville Power Administration (BPA), Pacificorp (PAC), and Central Electric

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[1] Lanier and Ang. 1990. *Photovoltaic Engineering Handbook*. New York: Taylor & Francis.
4 Budikova, Dagmar. 2010. "Albedo." *Encyclopedia of Earth*. Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment. Retrieved July 5, 2010 at http://www.eoearth.org/article/Albedo.

Cooperative (CEC). Interconnection with these electric utilities will provide for any auxiliary power and/or charging needs of the facilities and for the delivery of energy for commercial sale.

AC Collection at (nominally) 34.5kV of several feeder circuits from power collection stations within PV facilities is accomplished with underground direct burial or aboveground cables. AC feeders are tied into the main low side feeder system inside the additionally fenced-in substation yard. The separately fenced substation yard contains all equipment relating to breakers, switching, and transforming power to associated transmission line level voltage, to meet BPA (or other utility) requirements at the Point of Interconnection (POI). Fencing for the Facility substation used will be a minimum of 8 ft tall chain link fence.

Figure A-4 Power Collection Station example in central Oregon.

Factory pre-built power collection stations may be installed throughout the site and are typically mounted on steel foundation supports similar to site module racking and tracker systems. Power collection stations are usually comprised of an inverter made by a qualified solar inverter OEM such as SMA or Power Electronics, a step up transformer, typically 1000 or 1500V:34.5kV. Inverters typically include their own DC combiner cable inputs. Stations also include AC breaker cabinets, local house power transformer and distribution, and specialized equipment for tracker controls, network communications, and meteorological equipment. See Figure A-5 showing a typical station.

Power Collection stations may be installed onto their foundations with the use of cranes.

Substation equipment consists of a multi-element protection and relay system for 34.5 kV feeders, main power transformer, and breaker relays, metering, and plant control and monitoring systems. It may also house the energy storage feeder and system equipment,

examples of which are shown in Figure A-5 below (which might also be located elsewhere in the Site).

Figure A-5. Example inside substation, showing modular energy storage equipment, 34.5 kV transformers, breaker cabinets, and ancillary equipment on concrete mounted pads.

Fencing:

Various approaches for fencing may be implemented and will take into account final design and operational considerations. It is anticipated that the solar field enclosure will be completely fenced at a minimum height of 8 feet using a chain-link fence. Secured gates will be in place at the Project entrance(s).

The substation(s) for the Facilities, however, will be separately fenced within the larger fenced area(s) for security and public safety reasons and security gated. There will be no public access to the Solar PV Facilities and substation equipment. Solar O&M personal will be given access to the site.

Supporting Documents and Plans:

Supporting documents are included as part of this application in later exhibits. These documents may be updated with site specifics as continuing facility development progresses. Applicant has included the following as part of this permit application and on-going facility development: Exhibit J Emergency Management Plan, Exhibit G Erosion Control Plan, Exhibit H Weed Control Plan, Exhibit I-1 to I-3 Decommissioning Plan, Exhibit N, Informal Traffic Assessment. As part of continuing development, these plans are subject to change; they will be adapted with site specifics and submitted for review to Crook County Planning and Development, Crook County Weedmaster, Crook County County Fire and Rescue, ODFW and other regulatory agencies as required. Additionally, other supporting exhibits have been submitted that contain support materials for Soil (Exhibit F), and Wildlife and Biological evaluation studies (Exhibit L),.

A mutually acceptable Covenant Not to Sue, similar to Exhibit K Covenant is under evaluation by Applicant and applicant will work to provide a mutually acceptable covenant as part of the on-going development process. commissioning requirements acceptable to Crook County as part of continued development.

Timeline & Process – Development, Construction, Operations:

Development: Initial facility development activities have commenced and will be on-going over the next several months and/or years. Development work includes and/or may include various studies, investigations, power and power purchase agreement (PPA) contracting, system and site design and engineering, establishing interconnection energy delivery and rights-of-way, and further entitlement and permitting. These initial and ongoing development activities require substantial investment and will continue through construction.

Construction: Once a qualified EPC (Engineering, Procurement and Construction) firm is contracted and mobilized, construction may take approximately 4-8 months. Additional retrofit, modification and possible capacity expansion may occur subsequent within the scope of the permit, subject to applicable building permit requirements, for repairs, upgrades and/or expansions, if applicable. Subject to final design and EPC construction plan.

Construction of the solar field is usually comprised of applicable site prep (civil work if needed and fencing), driving piles (or otherwise installing foundations structures, like ground screws) to which racking systems are mounted by manual labor, with surrounding electrical connections and conduit for collection. Installation of substation, interconnection facilities, and associated transmission lines is comparable to other power plants for the voltage involved. Dust control as needed will occur.

Traffic during the construction period is addressed in Exhibit N Traffic Assessment, which has been performed by Transight Consulting. Applicant staff has experience with on-site construction of solar facilities ranging in size from rooftop solar on existing buildings to large scale buildout of facilities comprising over 1000 acres. The traffic assessment addresses the amount and types of traffic that can be expected during peak construction periods for a facility comprising up to 320 acres, both for equipment deliveries and construction workers. Worker commuter travel is expected to peak for a period of 8-12 weeks in duration the overall construction period of 4-8 months. This informal assessment is based on prior assessments performed for similarly sized permitted and constructed solar facilities projects in Crook County.

Operations: During normal operations that will take place over the following 20-40 years after commercial operations of Solar PV Facilities has been achieved, the site will be locally and remotely monitored as needed and routinely inspected and maintained. Solar energy facilities typically require weekly on-site activity or disturbances during normal operations. Service will be provided by a qualified Operations and Maintenance organization and supporting OEM contractors that may reside local to the area and service other nearby solar sites. During normal operations, solar specific site traffic will be typically one or two site visits by solar O&M personnel per week. Basic maintenance activities include weed maintenance, occasional cleaning of modules (if rains aren't adequate), repair or replace of equipment as needed from time to time. PV facilities are based on solid state devices (the PV modules) which degrade very slowly over time and degrade at less than 1% per year of production (and are generally warrantied as such for 20+ years). Solar modules may be washed and cleaned on an as needed basis only (1-2x annually, if required), using generally only water and no solvents. Water use is fractional in this regard, relative to other types of energy generating facilities. No other water use is generally required for solar PV sites. Facility life may extend further including through repairs and retrofit of equipment.

Review of Applicable Criteria:

Applicant reviewed applicable Criteria within the Crook County Code (CCC) and other applicable state laws necessary for a Conditional Use Permit. A criteria assessment demonstrating that the Application complies with all applicable approval criteria is included as Exhibit D Local Crook County and State Criteria Review, submitted as part of this application.

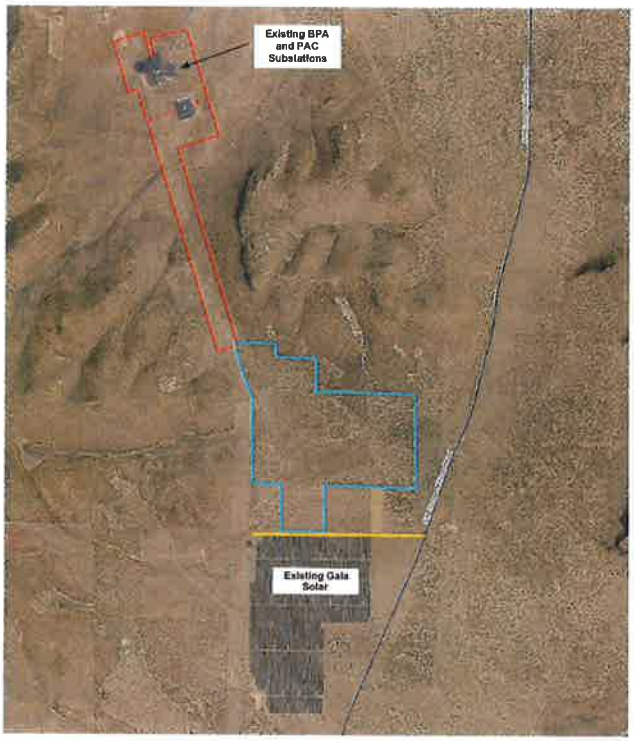
EXHIBIT B

SITE PLAN

Site Plan: Present Overview

Legend

- Site Boundaries
- Existing Access/Driveways (easement granted)
- Proposed Gen Tie Routing Line (All Routes Possible)
- Existing Buildings



GENERAL NOTES

1. DISTANCES, LOCATIONS, AND ROUTING OF ASSOCIATED TRANSMISSION LINES AND ACCESS ARE APPROXIMATE AND SUBJECT TO APPLICANT'S FINAL DESIGN.

2. SOLAR PV FACILITIES SUBJECT TO APPLICABLE ACREAGE RESTRICTIONS.

3. PV FACILITIES FOOTPRINT WILL NOT EXCEED 320 ACRES TOTAL.

4. SETBACK REQUIREMENTS SHALL CONFORM TO CROOK COUNTY STANDARDS FOR PARCELS ZONED EFU-3 INCLUDING TAX LOT BOUNDARIES.

5. CALCULATION FOR ACREAGE OF AGGREGATE GEN-TIE TO BE BASED ON GROUND FOOTPRINT OF POLE AND OTHER GROUND MOUNTED STRUCTURES.

6. ASSOCIATED TRANSMISSION LINES/GEN-TIE(S) ROUTING SUBJECT TO FINAL DESIGN FOR FACILITIES, WITH ROUTING OPTIONS TO INCLUDE BOTH AS SHOWN, AND OTHER ROUTES, INCLUDING AND ALONG OTHER TRANSMISSION AND ROAD FACILITIES IN THE PROJECT SITING AREA AND VICINITY.

7. NOT ALL POWER LINES AND RELATED FACILITIES IN AREA SHOWN.

Notes: Preliminary, Not for Construction	Prepared for: Moffatt Road Solar Farm LLC	TITLE: SITE PLAN OVERALL DRAWN BY: PLB REV: NA PAGE: P1 of 3

Site Plan: PV Facility Siting Area

Legend

- Existing Access Road
- Alternative Access Road
- PV Facility Siting Area
- Temporary Laydown Yard(s)
- Temporary Construction Trailer Options
- Associated Transmission Line(s) (example routing)
- Possible Substation/Collection Facilities Siting Area(s)*

* generally to be adjacent to solar facilities and/or transmission system in vicinity of site.

GENERAL NOTES

1. DISTANCES, LOCATIONS, AND ROUTING OF ASSOCIATED TRANSMISSION LINES AND ACCESS ARE APPROXIMATE AND SUBJECT TO APPLICANT'S FINAL DESIGN.

2. SOLAR PV FACILITIES SUBJECT TO APPLICABLE ACREAGE RESTRICTIONS.

3. CONSTRUCTION LAYDOWN AREAS TO BE FINALIZED BASED ON FINAL DESIGN.

4. SETBACK REQUIREMENTS SHALL CONFORM TO CROOK COUNTY STANDARDS FOR PARCELS ZONED EFU-3.

5. PV FACILTIES FOOTPRINT WILL NOT EXCEED 320 ACRES TOTAL.

N

Not To Scale

Notes:	Prepared for: Moffatt Road Solar Farm LLC	TITLE: SITE PLAN OVERALL
Preliminary, Not for Construction		DRAWN BY: FLS
		REV: AA / PAGE: P2 of 3

Site Plan: Example Solar PV Facility

(for illustrative purposes only)

ZOOMED IN VIEW OF MODULE/ TRACKER ROWS

Row-to-Row distance may vary and be increased or decreased in final design.

Not To Scale

GENERAL NOTES

1. DISTANCES, LOCATIONS, AND ROUTING OF ASSOCIATED TRANSMISSION LINES AND ACCESS ARE APPROXIMATE AND SUBJECT TO APPLICANT'S FINAL DESIGN.

2. SOLAR PV FACILITIES SUBJECT TO APPLICABLE ACREAGE RESTRICTIONS. TOTAL PV FACILITIES SITING AREA CONSIDERED IS LESS THAN 320 ACRES TOTAL.

3. INTERCONNECTION MAY BE TO ONE OR MORE VARIOUS TRANSMISSION AND DISTRIBUTION FACILITIES IN VICINITY.

4. SETBACK REQUIREMENTS SHALL CONFORM TO CROOK COUNTY STANDARDS FOR PARCELS ZONED EFU-3.

5. PV STRUCTURES LAYOUTS ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. TRACKER ROWS RUN NORTH SOUTH, FIXED RACKS RUN EAST-WEST. ACTUAL LOCATION SUBJECT TO FINAL DESIGN.

6. DRAWING NOT TO SCALE.

Legend

- Existing Access Road
- Alternative Access Road
- PV Facility Siting Area
- Temporary Laydown Yard(s)
- Temporary Construction Trailer Options
- Associated Transmission Line(s) (example routing)
- Possible Substation/Collection Facilities Siting Area(s)

Notes: Preliminary, Not for Construction	**Prepared for: Moffatt Road Solar Farm LLC**	TITLE: SITE PLAN: PV LAYOUT EXAMPLE DRAWN BY: PLS REV: NA PAGE: P3 of 3

EXHIBIT C

Deeds and Legal Documents

Crook County Ownership Report

REAL PROPERTY ACCOUNT NAMES

Account Number: 2157

Map Tax Lot: 16150000-00300-2157

Owner: PO BOX 11
POWELL BUTTE OR 97753-0011

Party Name	Party Type	Ownership Percentage
RAASCH FAMILY TRUST	OWNER	100.00
RAASCH RONALD A & SUSAN L TRUSTEES	OWNER	100.00
RAASCH RONALD A	Taxpayer	100.00

7/28/2024 1:48:47 PM

OFFICIAL RECORD OF DESCRIPTIONS OF REAL PROPERTIES

OFFICE OF COUNTY ASSESSOR CROOK COUNTY, OREGON

300

CODE NO. 1

MAP NO. 16 15	TAX LOT NO. ~~3~~	SECTION	TOWNSHIP 16 S.	RANGE 15 E.W.M.	AERIAL PHOTO
ACCOUNT NUMBER					
LOT NO.	BLOCK NO.	ADDITION	CITY		

INDENT EACH NEW COURSE TO THIS POINT

2157 LEGAL DESCRIPTION EKU 3

LEGAL DESCRIPTION				DATE OF ENTRY	DEED RECORD VOLUME	DEED RECORD PAGE	ACRES REMAINING
Lot 4; SW¼ NE¼; S½ NW¼; N½ SW¼	Sec.	2	235.35				
N½; E½ SE¼; NW¼ SE¼; W½ SW¼	"	3	488.08				
All	"	4	588.82				
Lots 1 & 2; SE¼ NE¼	"	5	88.81				
NE¼; N½ SE¼; N½ SW¼; SW¼ SW¼	"	9	360.00				
N½; N½ S½; S½ SW¼; SW¼ SE¼ (Less T.L. ~~18~~ 1200 — State)	"	10	598.00				
SW¼ NW¼; NW¼ SW¼	"	11	80.00				
Hudspeth, L. & L.				1-1-58	74	239	2439.06
Boston Ranch Co WD V#12516				5-10-67	96	165	
Brooks Resources Corporation V#45905 SWD				7/13/82	MF	63411	
Brooks Resources Investment Corporation V#49081 BSD				7-12-84	MF	71119	
Brooks Resources Corp V#51512 WD				11-21-85	MF	77463	
% Raasch, Ronald A V51868 Mem of Cont				3-5-86	MF	76672	
Raasch, Ronald A. V#63634 B&SD				5-1-92	MF#103644		
EASE				4-9-15			
Raasch, Ronald A. & Susan L., Trustees of the Raasch Family Trust BSD 3-22-16 267274							
AGREE				5-27-16			
Lease Agree				9-25-19			

STATE PRINTING 88188

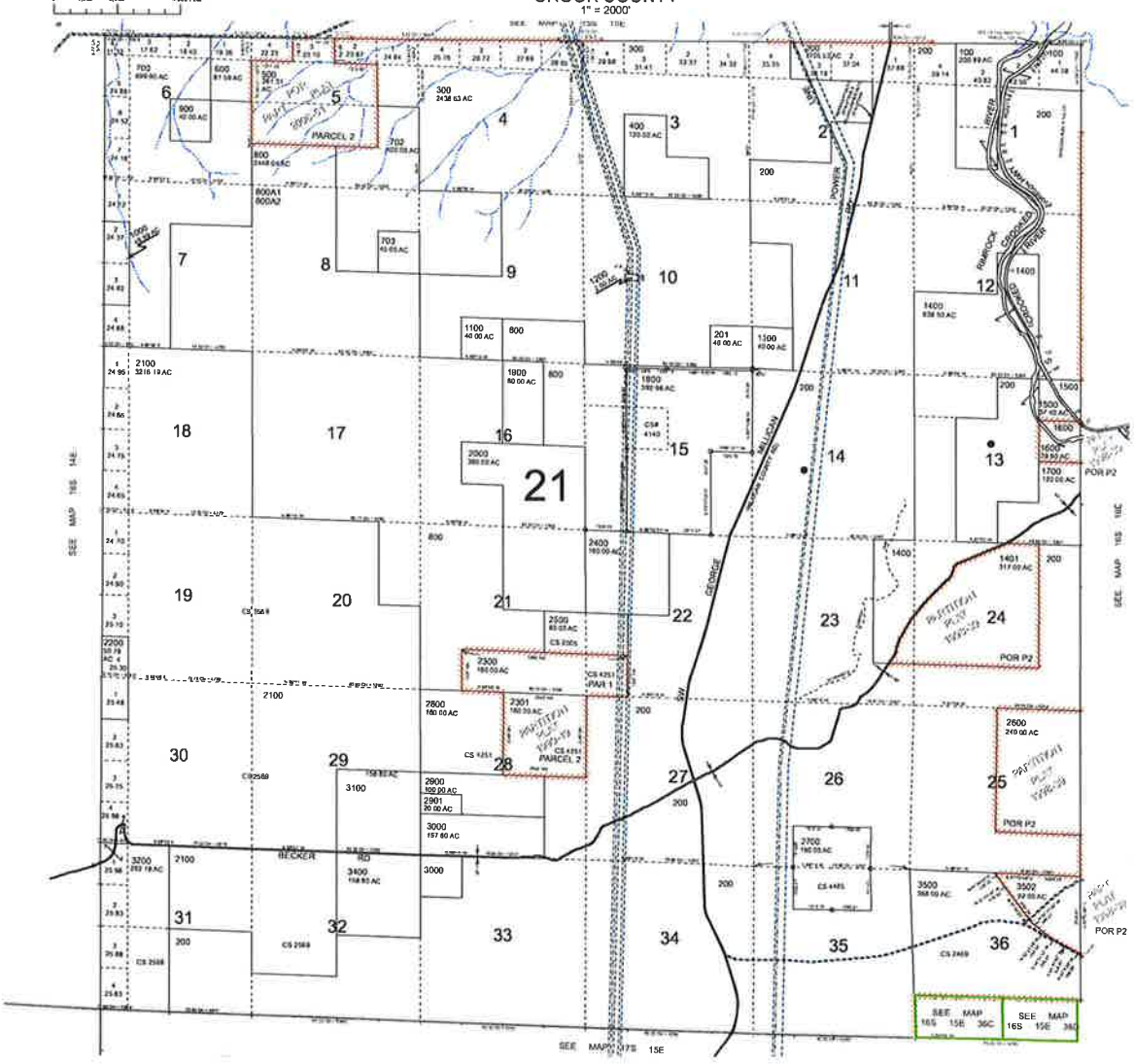
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

0 1,000 2,000 4,000 Feet

T.16S. R.15E. W.M.
CROOK COUNTY
1" = 2000'

16S15E

Cancelled
101
102
701
800U1
800U2
1000A1
1000U1
1000U2
1402
1403
2500U1
2500U2
3300
3501



Revised: RAA
09/21/2021

16S15E

EXHIBIT D

CROOK COUNTY AND STATE CRITERIA REVIEW

Crook County and State Criteria Review

This Exhibit reviews and responds to applicable approval criteria for the Application and proposed use within the Crook County Code and state statue and regulation, as informed by Crook County Planning Department staff from prior consultations and Applicant's legal review. Pertinent sections of these chapters and ordinances have been copied below, with responses provided to each as relates to this Application.

APPLICABLE CRITERIA

Crook County Code (CCC)

Chapter 18.16 Exclusive Farm Use Zones, EFU-1 (Post-Paulina Area), EFU-2 (Prineville Valley-Lone Pine Areas), and EFU-3 (Powell Butte Area)

Chapter 18.16.075 Development Standards

Chapter 18.160 Conditional Uses

Chapter 18.161 Commercial Power Generating Facilities

Crook County Comprehensive Plan

CCC Chapter 18.180 Transportation Impact Analysis

Oregon Revised Statutes

ORS 215.274 (Associated transmission lines)

Oregon Administrative Rules

OAR 660-033-0120

OAR 660-033-0130(5), (38) (Minimum standards for allowed uses)

APPLICABLE CRITERIA REVIEW AND APPLICANT RESPONSES

CCC Title 18, Chapter 18.16 Conditional Uses

18.16.010 Use Table

Table 1 Use Table For Exclusive Farm Use (EFU) District

	Use	Use Type	Review Procedure	Subject To
6	**Utility/Solid Waste Disposal Facility**			
6.4	Utility facilities necessary for public service, including associated transmission lines as defined in ORS 469.300 and wetland waste treatment systems but not including commercial facilities for the	STS	Notice and Opportunity for Hearing	18.16.015(15)

	Use	Use Type	Review Procedure	Subject To
	purpose of generating electrical power for public use by sale or transmission towers over 200 feet in height.			
6.8	Photovoltaic solar power generation facilities as commercial utility facilities for the purpose of generating power for public use by sale.	C	Planning Commission Hearing	18.16.060(3) 18.161

***Response**: The proposed use is a photovoltaic solar power generation facility allowed in the EFU-3 zone subject to conditional use review. The gen-tie lines to interconnect the facility meet the definition of an associated transmission line under CCC 18.08.010 A and are allowed in the EFU-3 (Powell Butte Area) zone, subject to notice and opportunity for hearing.*

18.16.020 Conditional use review criteria.

An applicant for a use permitted as a conditional use "C" in Table 1 must demonstrate compliance with the following criteria and specific requirements for conditional uses in Chapter 18.160 CCC:

(1) The use will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use;

(2) The use will not significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use; and

***Response**: The proposed use will force no significant changes (if any changes) to neighboring farm practices (there are no surrounding lands devoted to forest use). Property to the south is a solar photovoltaic facility. Property to the east is federal land managed by the Bureau of Land Management and Applicant, and there is no known accepted farming practice on that property. Other surrounding lands have limited seasonal grazing that will experience limited, if any, impacts associated with the solar facility. Potential impacts from the solar facility may be a temporary rise in traffic levels and dust from construction vehicles. Applicant will implement standard practices to minimize dust and will have an erosion control plan in place, and these impacts will be temporary. Potential impacts are minimal and do not rise to the level of significant.*

No significant changes (if any) in use or practices will be forced upon surrounding lands. The lands surrounding the proposed facility are all currently either in agricultural use, primarily for grazing, or are already a solar photovoltaic facility; none of surrounding lands are in forestry. The facility, once built, will be environmentally low impact and a relatively static facility comprised of racking structures of solar panels harvesting sun, much like other crops, with minimally detectable noise levels at or below agricultural practices, mostly due to occasional as-needed maintenance activity. The site has no irrigation rights and the facility will use minimal to no water.

Thus, overall, the proposed solar facility use is not expected to have a significant impact (if any) on surrounding land uses. The most significant impacts will occur during primary construction,

which may range from 4 – 8 months, with peak activity likely 2-4 months, during which times car and truck traffic delivering materials, equipment, and workers to the site will increase and there will be visual and acoustic impacts consistent with typical construction activities.

Once operational, the solar facilities will have only minor view shed effects and are often considered to look similar to crops or bodies of water from an aerial perspective. The facility will not include any tall structures other than the overhead transmission lines required for the facility substation to connect to the PAC or BPA substation facilities, as applicable. There are transmission lines immediately adjacent to the east of the parcel. The technologies and equipment selected are expected to avoid any glare impacts (for example, photovoltaic solar projects have been FAA approved on airport sites and are generally anti-reflective due to desire to absorb maximal amount of sunlight) and facilitate subsequent site restoration revegetation with native species. The facility is expected to be remotely monitored with maintenance personnel visiting the site periodically. Vegetation and weed control (discussed further below) will be included in the operations and maintenance plans for the project.

Based on the lack of significant changes to surrounding uses as described above, applicant believes that the proposed solar facility will not have a significant impact (if any) on the cost of surrounding land uses. Solar PV plants have not demonstrated an appreciable impact to the uses of neighboring land. The facility will be self-contained and should not impede any currently utilized routes for accessing surrounding properties, except for the landowner providing the land for the facility who is comfortable with minor expected effects and planned accordingly for his own adaptations. The facility will not utilize any water rights and will not compete for equipment and services that support surrounding agricultural uses.

Therefore, the proposed facility will not force a significant change in nor significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.

(3) The proposed use will be compatible with vicinity uses, and satisfies all relevant requirements of this title and the following general criteria:

(a) The use is consistent with those goals and policies of the comprehensive plan which apply to the proposed use;

***Response**: The proposed use is consistent with the goals and policies of the comprehensive plan. CCC 18.16.060(3)(H) allows photovoltaic solar power generation facilities on non-arable lands up to 320 acres. Since the Crook County zoning ordinance (Title 18) is implemented to give effect to the Comprehensive Plan, the use is consistent with the County's Comprehensive Plan.*

(b) The parcel is suitable for the proposed use considering its size, shape, location, topography, existence of improvements and natural features;

***Response**: The site is suitable for the proposed use considering the size, location and natural features. The property is relatively flat, has access to existing utility infrastructure, and is large enough to accommodate the proposed solar photovoltaic power generation facility of up to 320 acres, including any necessary setbacks or site design restrictions, if any.*

(c) The proposed use will not alter the character of the surrounding area in a manner which substantially limits, impairs or prevents the use of surrounding properties for the permitted uses listed in the underlying zoning district;

Response: *The facility, once constructed, will have low environmental impacts. The site has no irrigation water rights, will require minimal water, and thus will not affect area water users. Potential impacts to neighboring properties may occur during facility construction due to vehicle traffic and dust. However, the construction period will be limited, occurring 4-8 months with peak activity during a 2-4-month time frame. This will involve truck traffic delivering materials, equipment, and workers to the site as well as ground clearing and construction activities. Vegetation and weed control (discussed further below) will be included in the operations and maintenance plans for the project. The facility will therefore be compatible with existing uses and will not have any off-site impacts that will substantially limit, impair, or prevent use of surrounding properties for allowed uses, including farm uses, and this criterion is satisfied.*

> (d) The proposed use is appropriate, considering the adequacy of public facilities and services existing or planned for the area affected by the use; and

Response: *The proposed facility is within the Crook County Fire and Rescue District but will not require any other public services. Applicant has submitted an Emergency Response Plan to address emergencies and fire response to the site.*

> (e) The use is or can be made compatible with existing uses and other allowable uses in the area. (Ord. 309 § 2 (Exh. C), 2019)

Response: *As stated above, the proposed use is consistent with the goals and policies of the comprehensive plan. CCC 18.16.060(3)(H) allows photovoltaic solar power generation facilities on non-arable lands up to 320 acres. The facility, once built, will be environmentally low impact and a relatively static facility comprised of racking structures of solar panels harvesting sun, much like other crops, with minimally detectable noise levels at or below typical levels associated with agricultural practices. Therefore, the use is compatible with existing uses and this criterion is met.*

CCC 18.16.060(3) Photovoltaic Solar Power Generation Facility

CCC 18.16.060(3) establishes standards for siting a photovoltaic solar power generation facility on EFU ground. The code language mirrors the definitions and provisions in OAR 660-033-130(38).

> (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:
>
> > (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" do 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.

(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: *Crook County Code criteria in CCC 18.16.060(3) aligns with and is substantively similar to the applicable criteria under OAR 660-033-0130(38) and the CCC directly implements that rule into code, so the Applicant responds to the CCC criteria herein which is also responsive to the criteria in the OARs. The proposed project meets the definition of a "photovoltaic solar power generation facility" and includes the following equipment, components and facilities:*

- *PV solar panels using a fixed-tilt or single-axis racking system that would be supported by driven piles.*
- *Electrical equipment, including a direct current (DC) collection system from the solar panels to centralized inverters, and an altering current (AC) transformer system.*
- *A project substation and associated transmission line to interconnect to an existing utility substation.*
- *Perimeter fencing around the facility.*
- *Laydown and staging areas, including parking, storage for tools and parts, temporary office space, communications and facility monitoring hardware/software equipment.*
- *Storm water management facilities if necessary. The design of these facilities will be based on the final selection of the PV technology and layout.*

•An existing access road will be utilized for project construction and operation.

The Applicant does not own or control any existing or proposed facility within 1,320 feet of the subject tract. This is a stand-alone solar generating facility and will be operating independently from other approved or existing projects in this area of the County.

(f) For high-value farmland described at ORS 195.300(10), a photovoltaic solar power generation facility shall not use, occupy, or cover more than 12 acres unless an exception is taken pursuant to ORS 197.732 and OAR chapter 660, division 4 or the requirements of paragraph (G) are met. The governing body or its designate must find that:

[Criteria (f)(i) – (vi) are omitted as non-applicable criteria]

Response: *There is no high value farmland on the site, therefore this criterion is met.*

(g) For arable lands, a photovoltaic solar power generation facility shall not use, occupy, or cover more than 20 acres 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:

[Criteria (g)(i) – (iv) are omitted as non-applicable criteria]

Response: *While there are approximately 53 acres of Class 4 soils on the site (which meet the definition of arable lands), the Application does not propose for a photovoltaic solar power generation facility to use, occupy, or cover more than 20 acres of arable lands. The ultimate facility will therefore avoid at least 33 acres of Class 4 soils on the site. Thus, no exception is required.*

(h) For nonarable lands, a photovoltaic solar power generation facility shall not use, occupy, or cover more than 320 acres 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:

(i) 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;

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

(iii) 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 Chapter 660 OAR, Division 4;

(iv) The requirements of subsection (3)(f)(iv) of this section are satisfied;

Response: *Other than the 53 acres of Class 4 soils on the site, the remainder is lower soil capability class and qualifies as nonarable. The Application proposes a photovoltaic solar power generation on up to 320 acres of nonarable land. Therefore, the facility will not use, occupy, or cover more than 320 acres of nonarable lands, and no exception is required. Subsections (i), (ii), and (iii) apply to high-value farmland or properties that are arable. The up to 320-acre project site consists of > 86 percent non-arable soils and will not use more than 20 acres of the remaining arable soils.*

(v) 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: *The property does not include a Goal 5 resource protected under the county's comprehensive plan.*

(vi) 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.

Response: *A site-specific assessment has been conducted by the Applicant's consulting biologist and is included as Exhibit L of the application. The site is not identified as Sage-Grouse habitat (Sensitive Bird Habitat zone). The subject property is in an area that is mapped by ODFW as winter range for deer, and a portion of the property is within ODFW mapped winter range for elk. Most of the project site is also within mapped pronghorn antelope range. However, the property is not included in Goal 5 protected resources under the Crook County Comprehensive Plan and maps. Nonetheless, Applicant has and will continue to consult with ODFW to minimize impact to wildlife habitat and, where unavoidable, mitigate for those impacts. A Habitat Mitigation Plan (HMP) is being developed with consultation from ODFW and will be submitted to the County under separate cover as a supplement. Note that under this provision, where the Applicant and resource management agency cannot agree on what mitigation will be carried out, the county is responsible for determining appropriate mitigation. However, Applicant expects to reach agreement with ODFW on the scope and content of the HMP.*

No ground nests were observed during the site visit. However, three raptor nests were observed within juniper trees located in the north-central portion of the study area. No birds were observed occupying the nests or flying to and from the nests during the site visit. The Applicant's consulting biologist does not believe that these nests are bald eagle or golden eagle nests. The Wildlife Mitigation Plan will include migratory bird conservation measures and include language agreeing to conduct vegetation removal and construction activities to avoid impacts to active nest sites if present (March 1 – August 1) or to monitor for nest sites if construction occurs during normal nesting periods. Post construction, applicant will follow guidelines in a County Weedmaster approved noxious weed plan. Note that the solar PV technology proposed is not a concentrating solar technology.

(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: *Applicant will sign and record an agreement prohibiting the project owner and the project owner's successors in interest from pursuing relief or actions alleging injury from farm or forest practices as defined in ORS 30.930(2) and (4) (See Exhibit K: Crook County Farm Covenant Not to Sue). Applicant expects that the county will include a condition of approval addressing this criterion.*

(j) Nothing in this section shall prevent a 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: *Compared to other industrial facilities, decommissioning of a solar PV project is relatively simple, does not require highly skilled or specialized labor, could be undertaken by many regional contractors, and does not result in the generation of hazardous waste. In addition, many of the components of the system can be readily sold for scrap value (e.g., aluminum module frames, steel racking, copper conductors, etc.), whereby such residual value is estimated to exceed the cost of decommissioning a solar PV plant. A representative decommissioning plan typical for a facility such as proposed is attached as Exhibit I-1 and a representative cost estimate showing that salvage value typically exceeds deconstruction costs is attached as Exhibit I-2. Exhibit I-3 provides additional decommissioning and salvage support documents showing costs for another similar site. Regarding a decommissioning bond or other security, Applicant will comply with county requirements such that financial instruments will be posted, such as a bond or letter of credit, for the estimated cost. Applicant will provide an update of projected cost based on final design prior to construction and an instrument will be posted at a time suitable to the county which meets those estimated cost requirements.*

(k) Standards for photovoltaic generating facilities found in CCC 18.161.010 shall also apply.

Response: *See responses to CCC 18.161.010 in this document below.*

18.16.075 Development Standards

All dwellings and structures approved pursuant to Table 1 shall be sited in accordance with this section.

(1) Lot Size Standards. Lot size shall be consistent with the requirements of CCC 18.16.070.

Response: The Applicant does not propose parcel creations or divisions. Therefore, this standard does not apply.

(2) In an EFU zone, the minimum setback of a structure shall be as follows:

(a) Front setback shall be:

(i) Twenty feet from the property line for a property fronting on a local minor collector or marginal access street.
(ii) Thirty feet from a property line fronting on a major collector ROW.
(iii) Eighty feet from an arterial ROW unless other provisions for combining accesses are provided and approved by the county.

(b) Each side setback shall be a minimum of 20 feet from property line, except corner lots where the side yard on the street side shall be a minimum of 30 feet.

(c) Rear setback shall be a minimum of 25 feet from property line.

(d) If a parcel in the EFU zone is nonbuildable as a result of the setback requirements, the reviewing authority may consider a variance in accordance with Chapter 18.164 CCC from the land owner to adjust the setback requirements to make the parcel buildable. (Ord. 336 § 6 (Exh. E), 2023; Ord. 309 § 2 (Exh. C), 2019)

Response: *No residences or other habitable structures are proposed. Applicant asserts control enclosures, BESS or other structures such as a substation enclosure are not considered "habitable structures" for the purposes of these setback requirements.*

18.160.020 General Criteria

In judging whether or not a conditional use proposal shall be approved or denied, the planning director or planning 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, can be met by observance of conditions, or are not applicable:

(1) 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 proposed Project is consistent with the comprehensive plan and objectives of the zoning ordinance. Specifically, Crook County's Comprehensive plan includes the following policies:*

Air, Water and Land Resource Policies: Encourage non-pollutant industries to locate in Crook County.

Economic Policies: 1. To diversify, stabilize and improve the economy of the County. . . . 3. To require that development plans are based on the best economic information available and to take into account areas that are suitable for economic development, the effects on the existing economy, available resources, labor market factors, transportation and livability.

Energy Polices: To encourage renewable and/ or efficient energy systems design, siting and construction materials in all new development and improvements in the County.

The comprehensive plan also includes the following statement regarding solar energy production: "Prineville and Crook County receive about 300 days of sunshine per year. Solar energy will be a very feasible source of energy." The Project is allowed as a conditional use in the County's exclusive farm use (EFU) zones. In addition, the Crook County Court adopted specific standards in the zoning code (Chapter 18.161) for commercial wind and photovoltaic energy systems on June 16, 2010 to help promote development of renewable energy systems in the County and to address potential impacts associated with such developments. CCC 18.161 requires that an applicant evaluate potential adverse impacts to accepted farming practices, natural environments, and residential development, and that the development avoid, minimize, and mitigate impacts to the extent necessary. The Applicant states that the proposed Project will comply with all applicable criteria and standards, and in doing so, will further

promote the development of renewable energy in the County. As such, the County the Project is consistent with the applicable comprehensive plan goals and policies. The proposed location of the solar PV facility adjacent to existing transmission and less than 2 miles from interconnect facilities, support the County's goals to maximize use of existing infrastructure.

(2) Taking into account location, size, design and operation characteristics, the proposal will have minimal adverse impact on the (a) livability, (b) value and (c) appropriate development of abutting properties and the surrounding area compared to the impact of development that is permitted outright.

Response:

Taking into account the location, size, design, and operation of the proposed facility, the use will have minimal adverse impacts on abutting properties and the surrounding area compared to the impact of outright permitted development on the property.

(a) Livability: Solar farms, once constructed, are quiet and generally produce less noise than agricultural operations, as discussed previously. The only sound sources come from Inverter cooling system fans which can activate during warm days at peak generation, and these are typically undetectable from more than 100 ft away. Applicant will maintain setback requirements and work to reasonably address any nearby resident and county concerns, such as maintaining existing natural vegetation (juniper and sagebrush) where possible in the setback area, consistent with present vegetation on most adjacent properties. The addition of a solar facility will minimally impact views due to its low elevation profile. As most houses are located within Juniper steppe areas, and for the reasons sited above, it is hard to tell the difference between agricultural crops, a lake, and the solar facility beside them. Compared to other outright permitted or administratively permitted uses, the impact of the proposed facility will have a minimally adverse impact on the livability of abutting and surrounding properties.

(b) Value: The impact of the proposed use on surrounding values would be minimal relative to the impact from other currently permitted uses, such as composting or farm product processing which generate noise and odor or administratively approved uses such as oil and gas exploration or transportation facilities which are significantly more impactful to surrounding values than inert, quiet solar facilities .

(c) Appropriate Development. It is clear that EFU outright permitted land uses for the surrounding properties will not be affected by the solar facility as discussed above and in the application; neighboring farms can continue to pursue practices permitted outright without impact from the applicant facility, once construction is completed. Outright permitted uses such as industrial farms, hog farms, aggregate pits (such as that located on neighboring property), and compost facilities impose much greater impacts with respect to noise levels, emissions, dust control, odor, and water usage. By contrast the solar facility imposes none of these impacts on surrounding land use. The proposed use has less impact than other outright permitted uses on abutting property and surrounding area.

(3) The location and design of the site and structures for the proposal will be as attractive as the nature of the use and its setting warrant.

The site is suitable for a solar photovoltaic power generation facility because of the high solar resource, the generally flat topography, the size of the property, the vacancy of the property, and the proximity of existing transmission facilities including transmission lines adjacent to the property and large substations immediately to the north of the site. The site may be visible from

the George Millican Road, which is a transportation artery to Prineville, but will be located adjacent to the existing Gala Solar facility to the south of the site and, if visible at all, it will look similar to that facility. The most visible equipment will be the safety and security fencing required, and the PV module equipment, which are about 8-12 ft tall in the morning and the evening with single axis tracking equipment. While fencing is necessary and desired from a public safety and security standpoint, there may be other concerns, such as roadside view and even wildlife ingress and egress. Applicant will work to balance these concerns in its choice of fencing and any landscaping that is proximal to the road. Concerns such as glare (misdirection of solar) will not be impacted any more so than if an agricultural operation were in place. Photographs of reference solar PV systems are provided below for reference to the visual attributes. An added advantage to this site is that the associated transmission line (ATL), generally those most displeasing to the eye and highest elevation profile, will be located adjacent to the existing taller transmission lines which should make it less visually perceptible from Millican Road. Existing utility substation and powerlines are presently a permitted use on subject and adjoining properties.

Figure [D-1] Views of a single PV tracker row, and PV facility from above in distance.

Figure [D-2] Example image of tracking solar PV installation, aerial angle view.

(4) The proposal will preserve assets of particular interest to the county.

Response: *The Project will further the County's interest in renewable energy development, is not sited on commercial agricultural land, and will not have adverse impacts on other County interests*

(5) The applicant has a bona fide intent and capability to develop and use the land as proposed and has some appropriate purpose for submitting the proposal, and is not motivated solely by such purposes as the alteration of property values for speculative purposes.

Response: *Applicant affiliates have extensive experience based on prior business history of land use for solar development in central Oregon in Harney and Lake County, Arizona, and California. Applicant affiliates have successfully permitted and constructed Solar PV projects in central Oregon in Harney and Lake County and continue to pursue further development and investment.*

18.160.030 General Conditions

In addition to the standards and conditions set forth in a specific zone, this chapter, and other applicable regulations, in permitting a new conditional use or the alteration of an existing conditional use, the planning director or planning 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:

(1) 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.
(2) Establishing a special yard or other open space or lot area or dimension.
(3) Limiting the height, size or location of a building or other structure.
(4) Designating the size, number, location and nature of vehicle access points.

Response: *The Project will be designed to minimize impacts as much as possible. There will be a "laydown" yard for construction materials, parking areas for construction materials and an office/maintenance building. The Project will be accessed by an existing access road off SW George Millican Road or other alternative access within Applicant's control.*

(5) Increasing the amount of street dedication, roadway width or improvements within the street right-of-way.
(6) Designating the size, location, screening, drainage, surfacing or other improvement of a parking area or loading area.
(7) Limiting or otherwise designating the number, size, location, height and lighting of signs.
(8) Limiting the location and intensity of outdoor lighting and requiring its shielding.
(9) Requiring diking, screening, landscaping or another facility to protect adjacent or nearby property and designating standards for its installation and maintenance.
(10) Designating the size, height, location and materials for a fence.

(11) Protecting and preserving existing trees, vegetation, water resources, wildlife habitat or other significant natural resources.
(12) Other conditions necessary to permit the development of the county in conformity with the intent and purpose of this title and the policies of the comprehensive plan.

Response: *The Main Proposal (Exhibit A) addresses many of the factors listed above. The Applicant will designate parking areas. The Applicant agrees that any on-site lighting during construction and operation will be illuminated only when people are present on the site and will be directed downward and shielded. Motion-detection lighting will be used where appropriate. Lighting on the substation will meet required safety standards. An 8-foot-tall chain link fence shall be located on the Project perimeter. Applicant will comply with any conditions of approval imposed by the Planning Commission.*

Section 18.160.040 Permit and improvements assurance
The commission may require an applicant to furnish the county with an agreement and security in accordance with CCC 17.40.080 and 17.40.090 that the planning director or planning commission deems necessary to guarantee development in accordance with the standards established and the conditions attached in granting a conditional use permit. (Ord. 296 § 11 (Exh. I), 2016; Ord. 236 § 3 (Exh. C), 2010; Ord. 18 § 6.040, 2003)

Response: *The Applicant understands that the commission may require an agreement and or security. Should the commission require this as a condition of approval, the Applicant will comply with county requirements such that an agreement and/or financial instruments will be posted.*

18.160.050 Standards governing Conditional Uses
18.160.0500(19) Commercial Power Generating Facilities
A commercial power generating facility that is a conditional use in the applicable zone is governed by the general criteria and conditions in CCC 18.160.020 and 18.160.030 and the provisions of Chapter 18.161 CCC.

Response: *See responses to CCC 18.160.020 and 18.1060.030 below.*

CCC Title 18, Chapter 18.161 Commercial Power Generating Facilities

18.161.010(2) Commercial Photovoltaic Energy Systems.

(a) In addition to the requirements of this chapter, commercial photovoltaic energy systems in EFU zones are subject to OAR 660-033-0120 and 660-033-0130.

Response: *As shown in above responses the subject property and proposed energy facility meet or exceed the requirements of OAR 660-033-0120 and 0130, which align with the approval standards and criteria under the Crook County Code.*

(b) Application Requirements. An application for a commercial photovoltaic energy system shall include the following unless waived by the director in writing.

(i) A description of the proposed photovoltaic energy system, a tentative construction schedule, the legal description of the property on which the facility will be located, and identification of the general area for all components of the photovoltaic energy system, including a map showing the location of components and including:

(A) Evidence of an active utility transmission interconnect request and/or process and description of same; and
(B) A route and permitting plan for transmission lines connecting the project to the grid.

(ii) Identification of potential conflicts, if any, with:

(A) Accepted farming practices as defined in ORS 215.203(2)(c) on adjacent lands devoted to farm uses;
(B) Other resource operations and practices on adjacent lands including photovoltaic energy system facilities on such adjacent lands.

Response: *Exhibit A, Main Proposal contains a complete description of the facility and its components. This description contains additional details about the main components and nature of the proposed solar site. This description is consistent in detail with other recently permitted energy facility applications.*

Exhibit B, Site Plans provides information pertaining to the location of the proposed site within the larger tax lots. The remainder of the Exhibits support the conditional use application. Applicant has provided to the planning director interconnection request information and evidence of same.

There will be no conflict with surrounding uses or accepted farm practices, discussed in above responses. Furthermore, Applicant has agreed to review and file a covenant not to sue as part of this application. Final wording of this document shall be reviewed by both applicant and county legal representation (See Exhibit K: Crook County Farm Covenant Not to Sue).

The project site is adjacent to an existing commercial photovoltaic energy system (Avangrid Renewables Gala Sola Project). Construction activities and normal operation of a separately interconnected facility will not impact energy production or operation of the adjacent facility. Therefore, Applicant has determined there will not be any conflict with the operation of that facility.

(iii) A transportation impact analysis (TIA) or traffic assessment letter (TAL) with proposed recommendations, if any, reflecting the requirements in Section 7.1.7 of the Crook County transportation system plan (TSP) and the transportation impacts of the photovoltaic energy system upon the local and regional road system during and after construction, after consultation with the Crook County road master. The TIA or TAL will designate the size, number, location and nature of vehicle access points and shall include a construction and vehicle access plan and appropriate road access permits if needed.

Response: *Applicant has completed a traffic assessment letter. (See Exhibit N Traffic Assessment Letter) which speaks to the proposed site access roads and the amount of traffic during normal operation as well as during construction. The letter describes the proposed site access roads and estimates traffic during construction and normal operation. Access to the*

facility will be provided from Millican Road via the existing approach to the Gala Solar Plant, located directly east of the site. The traffic assessment concludes that the proposed solar facility generates less than the County trip thresholds, will conform with County access requirements and is not located near a high crash location. None of the County thresholds are met to require a Transportation Impact Analysis.

(iv) A wildlife impact and monitoring plan. A wildlife impact and monitoring plan shall be required for photovoltaic energy systems impacting inventoried wildlife resources identified within the County comprehensive plan. The wildlife impact and monitoring plan shall be designed and administered by the applicant's wildlife professionals. Contents and duration of the study shall be recommended by a technical advisory committee. At the request of applicant, this committee requirement may be waived or discontinued by the county planning commission. If applicant has completed a wildlife impact study, it can be submitted for review to the planning commission. Projects that do not impact inventoried wildlife resources identified within the county comprehensive plan shall provide sufficient information to address the application requirement and criteria relating to wildlife in subsections (2)(b)(viii) and (2)(c)(iv) of this section; however, a comprehensive wildlife impact and monitoring plan is not required.

Response: *A site-specific assessment has been conducted by the Applicant's consulting biologist and is included as Exhibit L of the application. The site is not identified as sage-grouse habitat (Sensitive Bird Habitat zone). The property does not include inventoried wildlife resources identified within the county comprehensive plan and, therefore, a comprehensive wildlife impact and monitoring plan is not required. The property is in an area that is mapped by ODFW as winter range for deer, and a portion of the property is within ODFW mapped winter range for elk. Most of the project site is also within mapped pronghorn antelope range. Therefore, Applicant has and will continue to consult with ODFW to minimize impact to wildlife and, where unavoidable, mitigate for those impacts. A Habitat Mitigation Plan (HMP) is being developed with consultation from ODFW will be submitted to the County under separate cover. See responses to CCC 18.16.060(3)(h)(vi) and note that under that provision, where the Applicant and resource management agency cannot agree on what mitigation will be carried out, the county is responsible for determining appropriate mitigation.*
No ground nests were observed during the site visit. However, three raptor nests were observed within juniper trees located in the north-central portion of the study area. No birds were observed occupying the nests or flying to and from the nests during the site visit. The Applicant's consulting biologist does not believe that these nests are bald eagle or golden eagle nests. The Wildlife Mitigation Plan will include migratory bird conservation measures and include language agreeing to conduct vegetation removal and construction activities to avoid impacts to active nest sites if present (March 1 – August 1) or to monitor for nest sites if construction occurs during normal nesting periods. Post construction, applicant will follow guidelines in a County Weedmaster approved noxious weed plan. The solar PV technology proposed is not a concentrating solar technology.

(v) An emergency management plan for all phases of the life of the facility. The plan shall address the major concerns associated with the terrain, dry conditions, limited access, and water quality. The plan shall identify the fire district and verify that the district has the appropriate equipment, training and personnel to respond to fires. If the local fire department or district does not have adequate rescue capability, the applicant shall provide a plan for providing such in case of an emergency.

Response: *Applicant has created a draft emergency management plan (see Exhibit J) which Crook County Fire & Rescue will reviewed and approve pending final design updates. The plan discusses the procedures that may be implemented in the event of an emergency during the construction and long-term operation of the facility. It includes a fire prevention plan as well as other emergency response measures to addresses concerns that Crook County Fire & Rescue may have such design for fire prevention, access, internal roads, specific possible hazards relating to solar facility specific and high voltage equipment concerns. As part of ongoing development, applicant will work with the Crook County Fire & Recure to review and further adapt the plan as necessary and update it as site specifics become finalized.*

(vi) An erosion control plan, developed in consultation with the Crook County soil and water conservation district, the Crook County watershed council, and the Oregon Agricultural Water Quality Management Program (administered by the Oregon Department of Agriculture and Department of Environmental Quality). At a minimum, the plan should include the seeding of all road cuts or related bare road areas as a result of all construction, demolition and rehabilitation with an appropriate mix of native vegetation or vegetation suited to the area. The plan should also address monitoring during post-construction.

Response: *Erosion control shall be addressed during on-going facility development activities, such as civil engineering design of the facility. Erosion control mitigation during construction will also be addressed. An Erosion Control Plan has been developed and is included as Exhibit G. The plan discusses erosion control and other mitigation measures to be undertaken by any qualified EPC contractor chosen for design and construction of the site. Applicant agrees to have appropriate agencies from the county review aspects of the plan, or the facility engineering design as a part of ongoing site development.*

(vii) A weed control plan addressing prevention and control of all Crook County identified noxious weeds.

Response: *A weed management plan has been developed and is included as Exhibit H. Similar to the EMP, this plan will be updated based on final design.*

(viii) Information pertaining to the impacts of the photovoltaic energy system on:

(A) Wetlands and streams;
(B) Wildlife (all wildlife listed as identified Goal 5 resources in the comprehensive plan, state and federal listed endangered, threatened, sensitive and special status species, bats and raptors and species of local sport and economic importance);
(C) Wildlife habitat; and

Response: *Wetlands and Wildlife concerns are discussed in the main proposal (Exhibit A) of this application, as well as being discussed above.*

(D) Criminal activity (vandalism, theft, trespass, etc.). Include a plan and proposed actions to avoid, minimize or mitigate impacts.

Response: *The solar facility shall be fenced appropriately with public safety and security in mind. Eight foot chain link fencing is commonly used. Any such fencing shall be appropriately secured gated entry points for all access roads. During construction, prior to fencing being installed, lay down yards will be appropriately secured with temporary fencing as a criminal deterrent, and it is possible that 24/7 on-site security may be considered during construction prior to fencing installation as a further deterrent. Public Safety, including Criminal activity management will also be addressed as part of an Emergency Management Plan mentioned above.*

(ix) A dismantling and decommissioning plan of all components of the photovoltaic energy system, as provided in subsection (2)(e) of this section.

Response: *Applicant addresses decommissioning requirements in the section below for CCC 19.030 (c) sections xiv-xvi.*

(x) A socioeconomic impact assessment of the photovoltaic energy system, evaluating such factors as, but not limited to, the project's effects upon the social, economic, public service, cultural, visual, and recreational aspects of affected communities and/or individuals. These effects can be viewed as either positive or negative. The purpose of this information is to provide decision makers with information in order to maximize potential benefits and to mitigate outcomes that are viewed as problematic. The applicant may submit information provided by the Economic Development of Central Oregon or similar entity to meet this requirement.

Response: *Facilities shall be designed to minimize adverse socioeconomic impacts to the County, including, but not limited to, increased demands for governmental services or capital expenditures. The facilities are expected to generally result in net positive socioeconomic impacts to the County, particularly as relates positive local economic benefits:*

- *During the development period: Frequent visits to Crook County by the developers and related consultants include frequenting local hotels, eateries, retail, and other businesses, as well as occasional support from local service providers.*
- *During the construction period: Construction will likely take place primarily over a 4-8 month period, with peak activity during 2-4 months. Dozens of workers will be required, through various general and sub-contractors, including utilization of various skilled and unskilled labor types such as manual labor, equipment operators, electricians & apprentices, management, and supervisors. It is expected that these will be a mix of local and non-local, depending on types, availability, and contractors. Local food and lodging support will be necessary, expected to result in positive economic impacts to the local area.*
- *During operations: Routine maintenance will occur from time-to-time for the facilities. The facilities are generally low maintenance by their nature but will require routine visits and (depending on ongoing needs) minor repairs and property maintenance. Some ongoing local positive economic impact is likely, in addition to property tax revenues accrued on an ongoing basis by the county.*

The facility is not expected to require any service or capital support from local governmental agencies with the exception of the rural fire protection agency. Applicant understands that there may be an EMR assessment to be borne by the project, in support of the county EMS. The cost of any required improvements will be borne by the project. As a result, no material (if any) adverse socioeconomic impacts are expected from the proposed use. Applicant is willing to provide a more detailed socioeconomic impact statement as part of on-going development as

part of on-going development activity. Once site plans and designs become finalized, additional information such as impact to state and local tax revenue may be considered.

***Cultural**: The Applicant has initiated consultation with OR SHPO and local Tribes. The Applicant has also and conducted an archival and database review and completed an archaeological inventory survey that conforms with SHPO policies and procedures and Tribal requests. That inventory survey demonstrated there are no historic, cultural or archeological resources that are listed on the National Register of Historic Places or are inventoried in a local comprehensive plan within the project boundaries. To the extent that during investigation or the construction process the Applicant discovers any issue or cultural resource of material significance, such issues/resources will either be 1) avoided through project design or 2) mitigation will be implemented which conforms to applicable current regulation and subject to SHPO's reasonable concurrence on such plans. Therefore, the project will not negatively affect cultural resources in the area.*

***Visual:** The location and design of the site and structures for the proposed use will not significantly detract from the visual character of the area and are consistent generally with the surrounding and otherwise permitted use on adjoining and surrounding lands.*

The proposed use is comparable to current permitted uses in the immediate Property vicinity, such as the adjacent Gala solar facility. The ATL route is located immediately adjacent to the three existing transmission lines and similarly will not stand out as a visually notable element in the existing landscape.

***Recreation:** The Project has been sited to avoid recreational resources. The PV Facility and ATL are proposed entirely on privately owned land. There are no recreational facilities or public use trails on the proposed project site. The Project will therefore not negatively impact recreational aspects of the area.*

(c) Criteria. The following requirements and restrictions apply to the siting of a photovoltaic energy system facility:

(i) Setbacks. No portion of the facility shall be within 100 feet of properties zoned residential use or designated on a comprehensive plan as residential. If the facility is located in a residential zone then this restriction does not apply to the lot or parcel that the facility is located on, or any adjacent property in common ownership. Structures shall not be constructed closer than 100 feet of an existing residence unless a written waiver is obtained from the landowner, which shall become a part of the deed to that property. New electrical transmission lines shall not be constructed closer than 500 feet to an existing residence without prior written approval of the owner, said written approval to be made a part of the deed to that property.

***Summary Response**: The Site and all Tax Lots that lie adjacent to the Site are lands zoned EFU-3, and there are no residential zones. No new transmission lines are proposed within 500 feet of an existing residence. Applicant asserts that internal fencing and roadways do not have to meet setback requirements.*

(ii) A plan shall identify how the development and operation of the facility will, to the extent practicable, protect and preserve existing trees, vegetation, water resources, wildlife habitat and other significant natural resources.

***Response:** The Wetland Determination Report (Exhibit M) did identify seven intermittent, ephemeral streams which lack any downstream connection and are therefore likely not within*

Oregon Department of State Lands (ODSL) jurisdiction. These intermittent streams will be avoided if required by ODSL.
As part of on-going development, the Applicant will continue to work with the County to protect and preserve trees and native vegetation where practical. Applicant will develop a Habitat Mitigation Plan to address habitat impacts resulting from the Project.

(iii) Ground Leveling. The proposed photovoltaic energy system shall be designed and constructed so that ground leveling is limited to those areas needed for effective solar energy collection and so that the natural ground contour is preserved to the greatest extent practical.

Response: *Areas which comprise the up to 320 acre solar facility are for the most part level, and minimal ground leveling will be required.*

(iv) Wildlife Resources. The proposed photovoltaic energy system shall be designed to reduce the likelihood of significant adverse effects on wildlife and wildlife habitat. Measures to reduce significant impact may include, but are not limited to, the following:

(A) Designing foundations and support structures for solar equipment to avoid creation of artificial habitat or shelter for raptor prey.
(B) Controlling weeds to avoid the creation of artificial habitat suitable for raptor prey.
(C) Using anti-perching protection devices on transmission line support structures and appropriate spacing of conductors.
(D) Avoiding construction activities near raptor nesting locations during sensitive breeding periods and using appropriate no construction buffers around known nest sites.
(E) Using suitable methods such as coloration or sound producing devices to discourage birds from entering areas of concentrated solar energy.
(F) Fencing as appropriate to limit access by people or wildlife.

Response*: The site is not identified as Sage Grouse habitat (Sensitive Bird Habitat zone). The property is in an area that is mapped by ODFW as winter range for deer, and a portion of the property is within ODFW mapped winter range for elk. Most of the project site is also within mapped pronghorn antelope range. The Applicant has and will continue to consult with ODFW to minimize impact to wildlife and where unavoidable, mitigate for those impacts. A Habitat Mitigation Plan (HMP) is being developed with consultation from ODFW and the County and will be submitted under separate cover. Note that under this provision, where the Applicant and resource management agency cannot agree on what mitigation will be carried out, the county is responsible for determining appropriate mitigation.*
No ground nests were observed during the site visit. However, three raptor nests were observed within juniper trees located in the north-central portion of the study area. No birds were observed occupying the nests or flying to and from the nests during the site visit. The Applicant's consulting biologist does not believe that these nests are bald eagle or golden eagle nests. The Habitat Mitigation Plan will include design features to reduce the likelihood of significant adverse effects on wildlife and wildlife habitat including migratory bird conservation measures and language agreeing to conduct vegetation removal and construction activities to avoid impacts to active nest sites if present (March 1 – August 1) or to monitor for nest sites if construction occurs during normal nesting periods. Post construction, applicant will follow guidelines in a County Weedmaster approved noxious weed plan for appropriate seed mixes. The solar PV technology proposed is not a concentrating solar technology.

(v) A finding by the Energy Facility Siting Council that a proposed energy facility meets the Council's fish and wildlife habitat standard, OAR 345-022-0060, satisfies the requirements of subsection (2)(c)(iv) of this section.

Response: *The proposed facility is not within EFSC jurisdiction so this criterion is not applicable.*

(vi) Misdirection of Solar Radiation. The proposed solar energy shall be designed and be operated to prevent the misdirection of solar radiation onto nearby property, public roads or other areas accessible to the public.

Response: *Fixed tilt and single axis tracking systems with reflection absorbent PV modules neither concentrate nor mis-direct solar radiation when properly installed. Therefore, the proposed facility will be designed, constructed, and operated to prevent the misdirection of concentrated solar radiation onto nearby properties, public roadways or other areas accessible to the public.*

(vii) Public Safety. The proposed photovoltaic energy system shall be designed and will be operated to protect public safety, including development and implementation of a plan of operating procedures to prevent public access to hazardous areas.

Response: *The facility will be fenced with security gates. All possible hazards (such as high voltage, for instance) within the facility shall be appropriately signed according to acceptable safety standards per NEC and other appropriate guidelines for high voltage guidelines. EMP discusses public safety issues.*

(viii) Airport Proximity. The proposed photovoltaic energy system is not located adjacent to, or within, the control zone of any airport.

Response: *Response: The subject property is not near or located within the portion of the Redmond Airport Control Zone located in Crook County. The Prineville Airport, located 5.25 miles north of the Project, does not have a Control Zone. Applicant will submit a notice of proposed construction to the FAA regarding the tallest proposed structures (gen-tie and lighting arrester on main power transformer) and the solar panel arrays prior to construction.*

(ix) Cleaning Chemicals and Solvents. During operation of the proposed solar energy project, all chemicals or solvents used to clean photovoltaic panels or heliostats should be low in volatile organic compounds and the operator should use recyclable or biodegradable products to the extent possible.

Response: *During operation of the proposed facility, all chemicals or solvents used to clean solar panels will be low in volatile organic compounds and to the extent reasonably practicable, the applicant will use recyclable or biodegradable products. Often times, water alone suffices and is preferred. During construction an operation, site personnel, and their sub-contractors will be required to conform to site safety plans which include plans for spill containment of commonly used chemicals.*

(x) Private access roads established and controlled by the photovoltaic energy system shall be gated to protect the facility and property owners from illegal or unwarranted trespass, illegal dumping, and hunting.

(xi) Where practicable the electrical cable collector system shall be installed underground, at a minimum depth of three feet; elsewhere the cable collector system shall be installed to prevent adverse impacts on agriculture operations.

(xii) In EFU zones any required permanent maintenance/operations buildings shall be located off site in one of Crook County's appropriately zoned areas, except that such a building may be constructed on site if:

(A) The building is designed and constructed generally consistent with the character of similar buildings used by commercial farmers or ranchers; and
(B) The building will be removed or converted to farm use upon decommissioning of the photovoltaic energy system consistent with the provisions of subsection (2)(e) of this section.

Response: *(sections x-xii) The solar facility will be fenced and gated with appropriate security measures. Solar collection cabling internal to the site may be installed underground, or aboveground to the extent underground cabling is not feasible, with several stations above ground used for Inverters, AC breakers, transformers and other required energy collection that will be appropriately signed and secured per safety standards. Any required maintenance/operations buildings such as substation control buildings will be designed and constructed generally consistent with the character of similar buildings in the vicinity and will be removed or converted to farm use upon decommissioning of the facility.*

(xiii) If the photovoltaic energy system is located in or adjacent to an EFU zone, a covenant not to sue with regard to generally accepted farming practices shall be recorded with the county. "Generally accepted farming practices" shall be consistent with the definition of farming practices under ORS 30.930. The applicant shall covenant not to sue owners, operators, contractors, employees, or invitees of property zoned for farm use for generally accepted farming practices.

Response: *Applicant has agreed to review and file a covenant not to sue as part of this application. Final wording of this document shall be reviewed by both applicant and county legal representation. See Exhibit K, Farm Covenant Not to Sue (draft).*

(xiv) A road use agreement with Crook County regarding the impacts and mitigation on county roads during and after construction shall be required as a condition of approval

Response: *Applicant will work with county roadmaster regarding possible road impacts during and post construction as part of on-going development and use.*

(xv) A plan for dismantling of uncompleted construction and/or decommissioning of the photovoltaic energy system shall be required. Contents of the plan are as set forth in subsection (2)(e) of this section.

(xvi) An agreement and security in accordance with CCC 17.40.080 and 17.40.090 acceptable to the county shall be established to cover the cost of dismantling of uncompleted construction and/or decommissioning of the facility, and site rehabilitation; see subsection (2)(e) of this section. Upon approval of the planning commission, the agreement may allow that the security may be phased throughout the proposed project. If phasing is proposed the applicant shall submit a phasing schedule. For projects being sited by the state of Oregon's Energy Facility Siting Council (EFSC), the bond, letter of credit, or other form of security required by EFSC will be deemed to meet this requirement. For non-EFSC projects the EFSC requirements on bonds shall serve as a guideline for the amount of the bond or other financial mechanism required.

Response: *A decommissioning plan addressing uncompleted construction and or decommissioning of the proposed facility in accordance with CCC 18.161.010(2)(e) and reviewed by Crook County officials will be implemented as part of on-going development; see responses to that subsection below. In general, compared to other industrial facilities, decommissioning of a solar PV project is relatively simple, does not require highly skilled or specialized labor, could be undertaken by many regional contractors, and does not result in the generation of hazardous waste. Many of the components of the system can be readily sold for scrap value (e.g., aluminum module frames, steel racking, copper conductors, etc.), whereby such residual value may be estimated to exceed the cost of decommissioning a solar PV plant. Applicant will comply with county requirements such that financial instruments will be posted, such as a bond or letter of credit, for the estimated cost of decommissioning. Applicant will provide an update of projected cost based on final design prior to construction and an instrument will be posted at that time suitable to the county which meets those estimated cost requirements.*

(xvii) A summary of as built changes in the facility from the original plan, if any, shall be provided by the owner/operator.

Response: *Applicant will provide additional site facility plans, as necessary, showing as designed and as built changes to Crook County.*

(xviii) Upon request of the county after the end of each calendar year the facility owner/operator shall provide Crook County an annual report including the following information:

(A) A summary of changes to the facility that do not require facility requirement amendments.
(B) A summary of the wildlife monitoring program – bird injuries, casualties, positive impacts on area wildlife and recommendations for changes in the monitoring program.
(C) Employment impacts to the community and Crook County during and after construction.
(D) Success or failure of weed control practices.
(E) Status of the decommissioning bond or other financial mechanism.
(F) Summary comments of any problems with the projects, any adjustments needed, or any suggestions.
(G) The annual report requirement may be discontinued or required at a less frequent schedule by the county. The reporting requirement and/or reporting

schedule shall be reviewed, and possibly altered, at the request of the facility owner/operator. For facilities under EFSC jurisdiction and for which an annual report is required, the annual report to EFSC satisfies this requirement.

Response: *Applicant will reasonably comply with all county reporting requirements. Reporting requirements identified above will be incorporated into an Operation and Maintenance contract plan.*

(d) Amendments. The photovoltaic energy system requirements shall be facility specific but can be amended as long as the facility does not exceed the boundaries of the Crook County land use permit where the original facility was constructed. An amendment to the specific requirements of the land use permit shall be subject to the standards and procedures found in Chapter 18.170 CCC. Additionally, an amendment shall be required if the facility changes would:

(i) Require an expansion of the established facility boundaries;
(ii) Increase the footprint of the photovoltaic energy system by more than 20 percent;
(iii) Increase generator output by more than 25 percent relative to the generation capacity authorized by the initial permit due to the repowering or upgrading of power generation capacity;
(iv) Changes to any roads or access points to be established at or inside the project boundaries;
(v) Notification by the facility owner/operator to the Crook County planning department of changes not requiring an amendment is encouraged, but not required. An amendment to a site certificate issued by EFSC will be governed by the rules for amendments established by EFSC.

Response: *Applicant will adhere to all amendment conditions and requirements.*

(e) Decommissioning. Plan elements shall include:

(i) A plan for dismantling and/or decommissioning that provides for completion of dismantling or decommissioning of the facility without significant delay and protects public health, safety and the environment in compliance with the restoration requirements of this section.
(ii) A description of actions the facility owner proposes to take to restore the site to a useful, nonhazardous condition, including options for post-dismantle or decommission land use, information on how impacts on wildlife populations and the environment would be minimized during the dismantling or decommissioning process, and measures to protect the public against risk or danger resulting from post-decommissioning site conditions in compliance with the requirements of this section.
(iii) A current detailed cost estimate, a comparison of that estimate with present funds of the bond or other financial mechanism for dismantling or decommissioning, and a plan for assuring the availability of adequate funds for completion of dismantling or decommissioning. The cost estimate will be reviewed and be updated by the facility owner/operator on a five-year basis, unless material changes have been made in the overall facility that would materially increase these costs. If so, the report must be revised within 120 days of completion of such changes.
(iv) Restoration of the site shall consist of the following:

(A) Dismantling and removal of all photovoltaic energy system structures. Concrete pads shall be removed to a depth of at least four feet below the surface grade.
(B) The underground collection and communication cables need not be removed if at a depth of three feet or greater. Cables at a depth of three feet or greater can be abandoned in place if they are deemed not a hazard or interfering with agricultural use or other consistent resource uses of the land.
(C) Access roads in EFU zones shall be removed by removing gravel and restoring the surface grade and soil.
(D) In EFU zones after removal of the structures and roads, the area shall be graded as close as is reasonably possible to a condition compatible with farm uses or consistent with other resource uses. Revegetation shall include planting by applicant of native plant seed mixes, planting by applicant of plant species suited to the area, or planting by landowner of agricultural crops, as appropriate, and shall be consistent with the weed control plan approved by Crook County.
(E) Roads, fences, gates, and improvements may be left in place if a letter from the landowner is submitted to Crook County indicating said landowner will be responsible for and will maintain said roads and/or facilities for farm or other purposes as permitted under applicable zoning.

(v) The facility owner/operator shall submit to Crook County an agreement and security in accordance with CCC 17.40.080 and 17.40.090, acceptable to the county in form and amount and naming Crook County as beneficiary, obligee, or payee.

(A) The calculation of present year dollars shall be made using the U.S. Gross Domestic Product Implicit Price Deflator as published by the U.S. Department of Commerce's Bureau of Economic Analysis (hereinafter "the Index"), or any decommissioning standards established by a successor agency. The amount of the bond or other financial mechanism shall be increased at such time when the cumulative requirements in the Index exceed 10 percent from the last change. If at any time the Index is no longer published, Crook County and the applicant shall select a comparable calculation of present year dollars. The amount of the security shall be pro-rated within the year to the date of decommissioning.
(B) The decommissioning security shall not be subject to revocation or reduction before both the decommissioning of the photovoltaic energy system and the rehabilitation of the site.
(C) The facility owner/operator shall describe the status of the decommissioning security in the annual report submitted to Crook County, or upon request.
(D) If any disputes arise between Crook County and the landowner on the expenditure of any proceeds from the required security, either party may request nonbinding arbitration. Each party shall appoint an arbitrator, with the two arbitrators choosing a third. The arbitration shall proceed according to the Oregon statutes governing arbitration. The cost of the arbitration (excluding attorney fees) shall be shared equally by the parties, or as the parties may otherwise agree among themselves.
(E) For projects sited by EFSC, compliance with EFSC's financial assurance and decommissioning standards shall be deemed to be in compliance with the dismantling and decommissioning requirements of this section.
(F) Crook County may impose additional clear and objective conditions in accordance with the Crook County comprehensive plan, county zoning code and

state law, which Crook County considers necessary to protect the best interests of the surrounding area, or Crook County as a whole.
(G) Prior to commencement of any decommissioning work, all necessary permits shall be obtained, e.g., Crook County land use permits, road access and other permits from the Crook County road master and the Oregon Department of Transportation; or other entities. (Ord. 296 § 12 (Exh. J), 2016; Ord. 245 § 1, 2011; Ord. 229 § 1 (Exh. A), 2010)

Response: *In general, compared to other industrial facilities, decommissioning of a solar PV project is relatively simple, does not require highly skilled or specialized labor, could be undertaken by many regional contractors, and does not result in the generation of hazardous waste. In addition, many of the components of the system can be readily sold for scrap value (e.g., aluminum module frames, steel racking, copper conductors, etc.), whereby such residual value may exceed the cost of decommissioning a solar PV plant.*
A preliminary Decommissioning Plan is included as Exhibit I-1. An updated decommissioning plan in compliance with the applicable CCC criteria will be provided and implemented during on-going development. Applicant will comply with county requirements such that security in accordance with CCC 17.40.080 and 17.40.090, such as a bond or letter of credit, for the estimated cost of decommissioning will be posted in form and amount and naming Crook County as beneficiary, obligee, or payee. Applicant will provide an update of projected cost based on final design prior to construction and an instrument will be posted at that time suitable to the county which meets those estimated cost requirements.

18.180.010 Transportation impact analysis.

(1) Purpose. The purpose of this section is to coordinate the review of land use applications with roadway authorities and to implement Section 660-012-0045(2)(e) of the state Transportation Planning Rule, which requires the county to adopt a process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities. The following provisions also establish when a proposal must be reviewed for potential traffic impacts, when a transportation impact analysis or transportation assessment letter must be submitted with a development application in order to determine whether conditions are needed to minimize impacts to and protect transportation facilities, the required contents of a transportation impact analysis and transportation assessment letter, and who is qualified to prepare the analysis.
(2) When a Transportation Impact Analysis Is Required. The county or other road authority with jurisdiction may require a transportation impact analysis (TIA) as part of an application for development, a change in use, or a change in access. A TIA shall be required where a change of use or a development would involve one or more of the following:

(a) The development generates 25 or more peak-hour trips or 250 or more daily trips.
(b) An access spacing exception is required for the site access driveway(s) and the development generates 10 or more peak-hour trips or 100 or more daily trips.
(c) The development is expected to impact intersections that are currently operating at the upper limits of the acceptable range of level of service during the peak operating hour.
(d) The development is expected to significantly impact adjacent roadways and intersections that have previously been identified as high crash locations or areas that contain a high concentration of pedestrians or bicyclists such as school zones.
(e) A change in zoning or a plan amendment designation.
(f) A TIA is required by ODOT.

(3) When a Transportation Assessment Letter (TAL) Is Required. If the provisions of subsections (2)(a) through (f) of this section do not apply, the applicant's traffic engineer shall submit a transportation assessment letter to Crook County planning department demonstrating that the proposed land use action is exempt from TIA requirements. This letter shall outline the trip-generating characteristics of the proposed land use and verify that the site-access driveways or roadways meet Crook County's sight-distance requirements and roadway design standards.
(4) Preparation of a TIA or TAL. A professional engineer registered by the state of Oregon, in accordance with the requirements of the road authority, shall prepare the TIA or TAL. If preparing a TIA, the content and methodologies of the analysis shall conform to the requirements of subsections (5) to (13) of this section.
(5) Contents of a Transportation Impact Analysis. As a guide in the preparation of a transportation impact analysis, Crook County recommends the following format be used to document the analysis:

(a) Table of Contents. Listing of all sections, figures, and tables included in the report.
(b) Executive Summary. Summary of the findings and recommendations contained within the report.
(c) Introduction. Proposed land use action, including site location, building square footage, and project scope. Map showing the proposed site, building footprint, access driveways, and parking facilities. Map of the study area, which shows site location and surrounding roadway facilities.
(d) Existing Conditions. Existing site conditions and adjacent land uses. Roadway characteristics (all transportation facilities and modal opportunities located within the study area, including roadway functional classifications, street cross section descriptions, posted speeds, bicycle and pedestrian facilities, on-street parking, and transit facilities). Existing lane configurations and traffic control devices at the study area intersections. Existing traffic volumes and operational analysis of the study area roadways and intersections. Roadway and intersection crash history analysis.
(e) Background Conditions (without the proposed land use action). Approved developments and funded transportation improvements in the study area. Traffic growth assumptions. Addition of traffic from other planned developments. Background traffic volumes and operational analysis.
(f) Full Build-Out Traffic Conditions (with the proposed land use action). Description of the proposed development plans. Trip-generation characteristics of the proposed development (including trip reduction documentation). Trip distribution assumptions. Full build-out traffic volumes and intersection operational analysis. Intersection and site-access driveway queuing analysis. Expected safety impacts. Recommended roadway and intersection mitigations (if necessary).
(g) Site Circulation Review. Evaluate internal site access and circulation. Review pedestrian paths between parking lots and buildings. Ensure adequate throat depth is available at the driveways and that vehicles entering the site do not block the public facilities. Review truck paths for the design vehicle.
(h) Turn Lane Warrant Evaluation. Evaluate the need to provide turn lanes at the site driveways.
(i) Conclusions and Recommendations. Bullet summary of key conclusions and recommendations from the transportation impact analysis.
(j) Appendix. Traffic counts summary sheets, crash analysis summary sheets, and existing/background/full build-out traffic operational analysis worksheets. Other analysis summary sheets such as queuing and signal warrant analyses.

(k) Figures. The following list of figures should be included in the transportation impact analysis: site vicinity map; existing lane configurations and traffic control devices; existing traffic volumes and levels of service (all peak hours evaluated); future year background traffic volumes and levels of service (all peak hours evaluated); proposed site plan; future year assumed lane configurations and traffic control devices; estimated trip distribution pattern; site-generated traffic volumes (all peak hours evaluated); full build-out traffic volumes and levels of service (all peak hours evaluated).

(6) Study Area. The study area shall include, at a minimum, all site-access points and intersections (signalized and unsignalized) adjacent to the proposed site. If the proposed site fronts an arterial or collector street, the study shall include all intersections along the site frontage and within the access spacing distances extending out from the boundary of the site frontage. Beyond the minimum study area, the transportation impact analysis shall evaluate all intersections that receive site-generated trips that comprise at least 10 percent or more of the total intersection volume. In addition to these requirements, the county roadmaster (or designee) shall determine any additional intersections or roadway links that might be adversely affected as a result of the proposed development. The applicant and the county roadmaster (or designee) will agree on these intersections prior to the start of the transportation impact analysis.

(7) Study Years to Be Analyzed in the Transportation Impact Analysis. A level-of-service analysis shall be performed for all study roadways and intersections for the following horizon years:

(a) Existing Year. Evaluate all existing study roadways and intersections under existing conditions.

(b) Background Year. Evaluate the study roadways and intersections in the year the proposed land use is expected to be fully built out, without traffic from the proposed land use. This analysis should include traffic from all approved developments that impact the study intersections, or planned developments that are expected to be fully built out in the horizon year.

(c) Full Build-Out Year. Evaluate the expected roadway, intersection, and land use conditions resulting from the background growth and the proposed land use action assuming full build-out and occupancy. For phased developments, an analysis shall be performed during each year a phase is expected to be completed.

(d) Twenty-Year Analysis. For all land use actions requesting a comprehensive plan amendment and/or a zone change, a long-term level-of-service analysis shall be performed for all study intersections assuming build-out of the proposed site with and without the comprehensive plan designation and/or zoning designation in place. The analysis should be performed using the future year traffic volumes identified in the transportation system plan (TSP). If the applicant's traffic engineer proposes to use different future year traffic volumes, justification for not using the TSP volumes must be provided along with documentation of the forecasting methodology.

(8) Study Time Periods to Be Analyzed in the Transportation Impact Analysis. Within each horizon year, a level-of-service analysis shall be performed for the time period(s) that experience the highest degree of network travel. These periods typically occur during the midweek (Tuesday through Thursday) morning (7:00 a.m. to 9:00 a.m.), midweek evening (4:00 p.m. to 6:00 p.m.), and Saturday afternoon (12:00 p.m. to 3:00 p.m.) periods. The transportation impact analysis should always address the weekday a.m. and p.m. peak hours when the proposed lane use action is expected to generate 25 trips or more during the peak time periods. If the applicant can demonstrate that the peak-hour trip generation of the proposed land use

action is negligible during one of the two peak study periods and the peak trip generation of the land use action corresponds to the roadway system peak, then only the worst-case study period need be analyzed. Depending on the proposed land use action and the expected trip-generating characteristics of that development, consideration of non-peak travel periods may be appropriate. Examples of land uses that have nontypical trip-generating characteristics include schools, movie theaters, and churches. The roadmaster (or his/her designee) and applicant should discuss the potential for additional study periods prior to the start of the transportation impact analysis.

(9) Traffic Count Requirements. Once the study periods have been determined, turning movement counts should be collected at all study area intersections to determine the base traffic conditions. These turning movement counts should typically be conducted during the weekday (Tuesday through Thursday) between 7:00 and 9:00 a.m. and between 4:00 and 6:00 p.m., depending on the proposed land use. Historical turning movement counts may be used if the data are less than 12 months old, but must be factored to meet the existing traffic conditions.

(10) Trip Generation for the Proposed Development. To determine the impacts of a proposed development on the surrounding transportation network, the trip-generating characteristics of that development must be estimated. Trip-generating characteristics should be obtained from one of the following acceptable sources:

(a) Institute of Transportation Engineers (ITE) Trip Generation Manual (latest edition).

(b) Specific trip generation studies that have been conducted for the particular land use action for the purposes of estimating peak-hour trip-generating characteristics. The roadmaster (or his/her designee) should approve the use of these studies prior to their inclusion in the transportation impact analysis.

(c) In addition to new site-generated trips, several land uses typically generate additional trips that are not added to the adjacent traffic network. These trips include pass-by trips and internal trips and are considered to be separate from the total number of new trips generated by the proposed development. The procedures listed in the most recent version of the Trip Generation Handbook (ITE) should be used to account for pass-by and internal trips.

(11) Trip Distribution. Estimated site-generated traffic from the proposed development should be distributed and assigned on the existing or proposed arterial/collector street network. Trip distribution methods should be based on a reasonable assumption of local travel patterns and the locations of off-site origin/destination points within the site vicinity. Acceptable trip distribution methods should be based on one of the following procedures:

(a) An analysis of local traffic patterns and intersection turning movement counts gathered within the previous 12 months.

(b) A detailed market study specific to the proposed development and surrounding land uses.

(12) Intersection Operation Standards. Crook County evaluates intersection operational performance based on levels of service and "volume-to-capacity" (v/c) ratio. When evaluating the volume-to-capacity ratio, the total traffic demand shall be considered.

(a) Intersection Volume-to-Capacity Analysis. A capacity analysis should be performed at all intersections within the identified study area. The methods identified in the latest edition of the Highway Capacity Manual, published by the Transportation Research Board, are to be used for all intersection capacity calculations. Crook County requires that all

intersections within the study area must maintain a v/c ratio of 0.95 or less. It should be noted that the mobility standards in the Oregon Highway Plan apply to Oregon Department of Transportation facilities.
(b) Intersection Levels of Service. Crook County requires all intersections within the study area to maintain an acceptable level of service (LOS) upon full build-out of the proposed land use action. LOS calculations for signalized intersections are based on the average control delay per vehicle, while LOS calculations for unsignalized intersections are based on the average control delay and volume-to-capacity ratio for the worst or critical movement. All LOS calculations should be made using the methods identified in the most recent version of the Highway Capacity Manual (or by field studies), published by the Transportation Research Board. The minimum acceptable level of service for signalized intersections is LOS "D." The minimum acceptable level of service for all-way stop controlled intersections and roundabouts is LOS "D." The minimum acceptable level of service for unsignalized two-way stop-controlled intersections is LOS "E" or LOS "F" with a v/c ratio of 0.95 or less for the critical movement. Any intersections not operating at these standards will be considered to be unacceptable.

(13) Review Policy and Procedure. The following criteria should be used in reviewing a transportation impact analysis as part of a subdivision or site plan review:

(a) The road system is designed to meet the projected traffic demand at full build-out.
(b) Adequate intersection and stopping sight distance is available at all driveways.
(c) Proposed driveways meet the county's access spacing standards in Chapter 18.176 CCC, Access Management Standards, or sufficient justification is provided to allow a deviation from the spacing standard.
(d) Opportunities for providing joint or crossover access have been pursued.
(e) The site does not rely upon the surrounding roadway network for internal circulation.
(f) The road system provides adequate access to buildings for residents, visitors, deliveries, emergency vehicles, and garbage collection.
(g) A pedestrian path system is provided that links buildings with parking areas, entrances to the development, open space, recreational facilities, and other community facilities consistent with the requirements of CCC 18.184.010, Pedestrian access and circulation.

(14) Conditions of Approval. In approving an action that requires a traffic impact study, the county may condition approval to ensure that the proposed application will meet operations and safety standards and provide the necessary right-of-way and improvements to develop the future planned transportation system. Conditions of approval may include, but are not limited to:

(a) Crossover easement agreements for all adjoining parcels to facilitate future access between parcels.
(b) Conditional access permits for new developments which have proposed access points that do not meet the designated access spacing policy and/or have the ability to align with opposing access driveways.
(c) Right-of-way dedications for future planned roadway improvements.
(d) Half-street improvements along site frontages that do not have full build-out improvements in place at the time of development. (Ord. 303 § 1 (Exh. C), 2017)

Response: *Applicant has completed a traffic assessment letter. (See Exhibit N Traffic Assessment Letter). Access to the facility will be provided from Millican Road via the existing approach to the Gala Solar Plant, located directly south of the site. The traffic assessment concludes that the proposed solar facility generates less than the County trip thresholds, will*

conform with County access requirements and is not located near a high crash location. None of the County thresholds are met to require a Transportation Impact Analysis.

Oregon Revised Statutes

ORS 215.274 - Associated transmission lines necessary for public service

Supporting info, re: Response to 215.274 Below: *As relates to the discussion below, the proposed route for Associated Transmission Lines (ATL) are identified in the Application, as shown in the site plan in Exhibit B. Furthermore, County has adopted standards and criteria substantively similar to the statutory standards in ORS 215.274 and, therefore, Applicant's responses in this section address the approval criteria.*

- ***ATL route:*** *The proposed ATL routes head north across TL300, T 400, TL1208, TL 1209, and TL2900 from the solar facility to the point of interconnection ("POI") at either the existing BPA or PAC substations.*

(1) As used in this section, "associated transmission line" has the meaning given that term in ORS 469.300 (Definitions).

Response: *ORS 469.300(3) defines associated transmission lines as "new transmission lines constructed to connect an energy facility to the first point of junction of such transmission line or lines with either a power distribution system or an interconnected primary transmission system or both or to the Northwest Power Grid." The proposed facility includes Associated Transmission Lines ("ATL"). The ATL described in the application [Exhibit A] meet the definition of an ATL in that they:*

a) ATL is to serve a proposed energy facility;

b) proposed ATL transmission lines are new; and

c) proposed lines are routed in order to connect the energy facility to nearby transmission lines at the first point of junction to the applicable primary transmission system where the ATL would interconnect.

(2) An associated transmission line is necessary for public service if an applicant for approval under ORS 215.213 (Uses permitted in exclusive farm use zones in counties that adopted marginal lands system prior to 1993) (1)(c)(B) or 215.283 (Uses permitted in exclusive farm use zones in nonmarginal lands counties) (1)(c)(B) demonstrates to the governing body of a county or its designee that the associated transmission line meets:

(a) At least one of the requirements listed in subsection (3) of this section; or

(b) The requirements described in subsection (4) of this section.

Response: *Application's proposed route meets multiple requirements of ORS 215.274 (3) and (4). See comments below.*

(3) The governing body of a county or its designee shall approve an application under this section if an applicant demonstrates that the entire route of the associated transmission line meets at least one of the following requirements:

(a) The associated transmission line is not located on high-value farmland, as defined in ORS 195.300 (Definitions for ORS 195.300 to 195.336), or on arable land;

Response: *Ground structures (i.e.; ATL poles) may be located exclusively on non-arable lands per the proposed ATL route. The soils along the proposed ATL route are all Class IV or higher soils and therefore there is no high-value farmland along the proposed route.*

(b) The associated transmission line is co-located with an existing transmission line;

Response: *The ATL route runs parallel and adjacent to other transmission lines that also route to the existing BPA and PAC substations to the north.*

(c) The associated transmission line parallels an existing transmission line corridor with the minimum separation necessary for safety; or

Response: *The ATL route runs parallel and adjacent to other transmission lines that also route to the existing BPA and PAC substations to the north.*

(d) The associated transmission line is located within an existing right of way for a linear facility, such as a transmission line, road or railroad, that is located above the surface of the ground.

Response: *Applicant may be able to route the ATL within an existing linear right of a way for the existing transmission lines depending on real estate rights and agreements.*

(4)

(a) Except as provided in subsection (3) of this section, the governing body of a county or its designee shall approve an application under this section if, after an evaluation of reasonable alternatives, the applicant demonstrates that the entire route of the associated transmission line meets, subject to paragraphs (b) and (c) of this subsection, two or more of the following factors:

(A) Technical and engineering feasibility;

Response: *Proposed ATL routes and construction are feasible from a technical and engineering perspective. There are no concerns related to this issue. Proposed use will be conventional power line facilities. No special topographical or other considerations of material (or any) difficulty exist on proposed routes.*

(B) The associated transmission line is locationally dependent because the associated transmission line must cross high-value farmland, as defined in ORS 195.300 (Definitions for ORS 195.300 to 195.336), or arable land to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands;

Response: *In order to connect the proposed Solar PV Facilities with any utilities' transmission system the ATL may navigate through surrounding arable lands. Proposed ATL routes comprise the most direct routes which most reasonably and maximally avoid high-value farmland, arable land, and interference with current agricultural activities. Thus, the proposed ATL are locationally dependent (per above criteria and response) to achieve a reasonably direct*

route, which cannot be satisfied on other lands, because only such lands are located between PV Facilities Siting Area and transmission lines. See Exhibit B – Site Plan.

(C) Lack of an available existing right of way for a linear facility, such as a transmission line, road or railroad, that is located above the surface of the ground;

Response: *1) Applicant has an ATL easement agreement and or required site control with the landowners along the proposed ATL route. 2) Certain other rights of way exist along a portion of the ATL route to the BPA and PAC substations, however they are not available as they are currently occupied by existing transmission facilities (and it is neither practicable nor permissible to share them).*

(D) Public health and safety; or

(E) Other requirements of state or federal agencies.

Response: *N/A at this time.*

(b) The applicant shall present findings to the governing body of the county or its designee on how the applicant will mitigate and minimize the impacts, if any, of the associated transmission line on surrounding lands devoted to farm use in order to prevent a significant change in accepted farm practices or a significant increase in the cost of farm practices on the surrounding farmland.

Response:

Finding: The property along the Proposed ATL route is not being farmed, and the soils are predominantly Class 6 and 7 soils that are not suitable for farming. Therefore, the ATL route will cause no significant changes to accepted farm practices nor to costs of farm practices.

Additionally, the proposed use is explicitly designed to minimize and/or entirely avoid changes to farm practices in surrounding area. Reasonable evaluation of proposed ATL route does not suggest significant adverse impacts related to these criteria, if any, nor suggest any specific concerns of substance.

(c) The governing body of a county or its designee may consider costs associated with any of the factors listed in paragraph (a) of this subsection, but consideration of cost may not be the only consideration in determining whether the associated transmission line is necessary for public service. [2013 c.242 §2]

Response: *Again, there are no high-value farmlands along the proposed ATL route and any costs of alternatives which wholly avoided any arable farmlands between PV Facilities Siting Area and the BPA and PAC substations would be spectacularly larger than proposed routes and/or not technically feasible without significant (and very likely project killing) economic consequences.*

EXHIBIT F

SOILS DATA

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Prineville Area, Oregon

April 26, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

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

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

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:12,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Prineville Area, Oregon
Survey Area Data: Version 23, Sep 8, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 11, 2014—Aug 17, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
066	Ayres cobbly loam, 3 to 8 percent slopes	66.2	17.3%
076	Ayresbutte-Ayres complex, dry, 0 to 8 percent slopes	32.5	8.5%
109	Meadowridge-Era complex, 1 to 12 percent slopes	49.4	12.9%
121	Era ashy sandy loam, 0 to 3 percent slopes	8.1	2.1%
147	Ayresbutte-Ayres complex, 3 to 8 percent slopes	177.7	46.6%
156	Ginserly-Hatrock complex, 12 to 30 percent north slopes	3.3	0.9%
187	Deschutes ashy sandy loam, 0 to 3 percent slopes	44.3	11.6%
262	Tristan extremely cobbly loam, 12 to 35 percent south slopes	0.1	0.0%
Totals for Area of Interest		**381.7**	**100.0%**

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas

are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

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

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

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

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

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

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

Prineville Area, Oregon

066—Ayres cobbly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2s43n
Elevation: 3,100 to 3,800 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 70 to 100 days
Farmland classification: Not prime farmland

Map Unit Composition

Ayres and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ayres

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash over alluvium from volcanic rock with a duripan.

Typical profile

A - 0 to 3 inches: very cobbly loam
AB - 3 to 8 inches: very cobbly loam
Bt1 - 8 to 12 inches: very cobbly loam
Bt2 - 12 to 15 inches: extremely cobbly clay loam
Bqm - 15 to 60 inches: cemented material

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: 10 to 20 inches to duripan
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R010XA003OR - DROUGHTY 8-10 PZ
Hydric soil rating: No

076—Ayresbutte-Ayres complex, dry, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 20c0p
Elevation: 3,100 to 3,800 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 70 to 100 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ayresbutte, dry, and similar soils: 50 percent
Ayres, dry, and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ayresbutte, Dry

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: > 7" of ash over alluvium from volcanic rock with a duripan.

Typical profile

A - 0 to 3 inches: gravelly ashy sandy loam
AB - 3 to 10 inches: ashy very gravelly sandy loam
2Bt1 - 10 to 16 inches: very cobbly loam
2Bt2 - 16 to 23 inches: extremely cobbly clay loam
2Bk - 23 to 26 inches: extremely cobbly loam
2Bkqm - 26 to 60 inches: cemented material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C

Ecological site: R010XA003OR - DROUGHTY 8-10 PZ
Hydric soil rating: No

Description of Ayres, Dry

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash over alluvium from volcanic rock with a duripan.

Typical profile
A - 0 to 3 inches: very cobbly loam
AB - 3 to 8 inches: very cobbly loam
Bt1 - 8 to 12 inches: very cobbly loam
Bt2 - 12 to 15 inches: extremely cobbly clay loam
Bqm - 15 to 60 inches: cemented material

Properties and qualities
Slope: 0 to 8 percent
Depth to restrictive feature: 10 to 20 inches to duripan
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R010XB029OR - JD Claypan 9-12 PZ
Hydric soil rating: No

109—Meadowridge-Era complex, 1 to 12 percent slopes

Map Unit Setting
National map unit symbol: 20c19
Elevation: 2,800 to 4,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 70 to 100 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Meadowridge and similar soils: 80 percent
Era and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Meadowridge

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash over colluvium/residuum from volcanic rock.

Typical profile

A - 0 to 7 inches: ashy sandy loam
Bw1 - 7 to 15 inches: ashy sandy loam
Bw2 - 15 to 29 inches: ashy sandy loam
Bw3 - 29 to 35 inches: ashy sandy clay loam
2Bt - 35 to 47 inches: cobbly silty clay loam
2C - 47 to 60 inches: cobbly clay loam

Properties and qualities

Slope: 1 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R010XA018OR - Juniper Shrubby Loam 10-12 PZ
Hydric soil rating: No

Description of Era

Setting

Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Volcanic ash mixed with a small amount of colluvium from volcanic rock on north slopes

Typical profile

A - 0 to 8 inches: ashy loam
AB - 8 to 16 inches: ashy sandy loam
Bw1 - 16 to 21 inches: ashy sandy loam
Bw2 - 21 to 30 inches: ashy sandy loam
2Bk - 30 to 37 inches: gravelly fine sandy loam
2Ck1 - 37 to 50 inches: gravelly fine sandy loam
2Ck2 - 50 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 1 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R010XA019OR - SHRUBBY LOAM 8-12 PZ
Hydric soil rating: No

121—Era ashy sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 20c1n
Elevation: 2,800 to 4,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 70 to 100 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Era and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Era

Setting

Landform: Stream terraces, alluvial fans, hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread

Down-slope shape: Linear, concave
Across-slope shape: Linear
Parent material: Volcanic ash mixed with a small amount of colluvium from volcanic rock on north slopes

Typical profile

Ap - 0 to 8 inches: ashy sandy loam
AB - 8 to 16 inches: ashy sandy loam
Bw1 - 16 to 21 inches: ashy sandy loam
Bw2 - 21 to 30 inches: ashy sandy loam
2Bk - 30 to 37 inches: gravelly fine sandy loam
2Ck1 - 37 to 50 inches: gravelly fine sandy loam
2Ck2 - 50 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 3c
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: R010XA019OR - SHRUBBY LOAM 8-12 PZ
Hydric soil rating: No

147—Ayresbutte-Ayres complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2r4v2
Elevation: 3,100 to 3,800 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 70 to 100 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ayresbutte and similar soils: 50 percent
Ayres and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ayresbutte

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: > 7" of ash over alluvium from volcanic rock with a duripan.

Typical profile

A - 0 to 3 inches: ashy gravelly sandy loam
AB - 3 to 10 inches: ashy very gravelly sandy loam
2Bt1 - 10 to 16 inches: very cobbly loam
2Bt2 - 16 to 23 inches: extremely cobbly clay loam
2Bk - 23 to 26 inches: extremely cobbly loam
2Bkqm - 26 to 60 inches: cemented material

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: R010XA027OR - Juniper Pumice Flat 8-10 PZ
Hydric soil rating: No

Description of Ayres

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash over alluvium from volcanic rock with a duripan.

Typical profile

A - 0 to 3 inches: very cobbly loam
AB - 3 to 8 inches: very cobbly loam
Bt1 - 8 to 12 inches: very cobbly loam
Bt2 - 12 to 15 inches: extremely cobbly clay loam
Bqm - 15 to 60 inches: cemented material

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to duripan
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R010XA003OR - DROUGHTY 8-10 PZ
Hydric soil rating: No

156—Ginserly-Hatrock complex, 12 to 30 percent north slopes

Map Unit Setting

National map unit symbol: 20c24
Elevation: 3,500 to 5,100 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 39 to 46 degrees F
Frost-free period: 50 to 80 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ginserly, north, and similar soils: 55 percent
Hatrock, north, and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ginserly, North

Setting

Landform: Mountain slopes, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: > 7" volcanic ash over colluvium/residuum from volcanic rock

Typical profile

A - 0 to 5 inches: cobbly ashy loam
AB - 5 to 17 inches: very cobbly ashy loam
2Bt1 - 17 to 31 inches: very cobbly loam
2Bt2 - 31 to 38 inches: extremely cobbly clay loam

2Bt3 - 38 to 45 inches: extremely cobbly clay loam
2R - 45 to 49 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 30 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R010XB085OR - JD Mountain North 12-16 PZ
Hydric soil rating: No

Description of Hatrock, North

Setting

Landform: Mountain slopes, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium from volcanic rock with volcanic ash throughout (vitrandic).

Typical profile

A - 0 to 2 inches: cobbly ashy fine sandy loam
AB - 2 to 12 inches: cobbly ashy fine sandy loam
Bw - 12 to 23 inches: gravelly ashy fine sandy loam
Bk - 23 to 60 inches: very stony ashy fine sandy loam

Properties and qualities

Slope: 12 to 30 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R010XB085OR - JD Mountain North 12-16 PZ
Hydric soil rating: No

187—Deschutes ashy sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 20c2m
Elevation: 3,000 to 4,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 70 to 100 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Deschutes and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deschutes

Setting

Landform: Lava flows
Landform position (three-dimensional): Flat
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash over residuum weathered from basalt

Typical profile

A1 - 0 to 3 inches: ashy sandy loam
A2 - 3 to 7 inches: ashy sandy loam
A3 - 7 to 17 inches: ashy sandy loam
2Bk - 17 to 28 inches: ashy sandy loam
2Bkq - 28 to 31 inches: ashy sandy loam
3R - 31 to 35 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups
Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: R010XA009OR - Juniper Shrubby Pumice Flat 10-12 PZ
Forage suitability group: Unnamed (G010AB000OR)
Other vegetative classification: Unnamed (G010AB000OR)
Hydric soil rating: No

262—Tristan extremely cobbly loam, 12 to 35 percent south slopes

Map Unit Setting
National map unit symbol: 20c37
Elevation: 3,500 to 4,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 70 to 100 days
Farmland classification: Not prime farmland

Map Unit Composition
Searles, south, and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Searles, South

Setting
Landform: Mountain slopes, hillslopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium over residuum from volcanic rock

Typical profile
A - 0 to 3 inches: extremely cobbly loam
Bw - 3 to 10 inches: very cobbly loam
Bt1 - 10 to 16 inches: very cobbly clay loam
Bt2 - 16 to 28 inches: extremely cobbly clay loam
C - 28 to 55 inches: extremely cobbly clay loam
R - 55 to 59 inches: unweathered bedrock

Properties and qualities
Slope: 12 to 35 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: R010XA007OR - Juniper Pumice South 9-12 PZ
Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Nonirrigated Capability Class

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The 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. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

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.

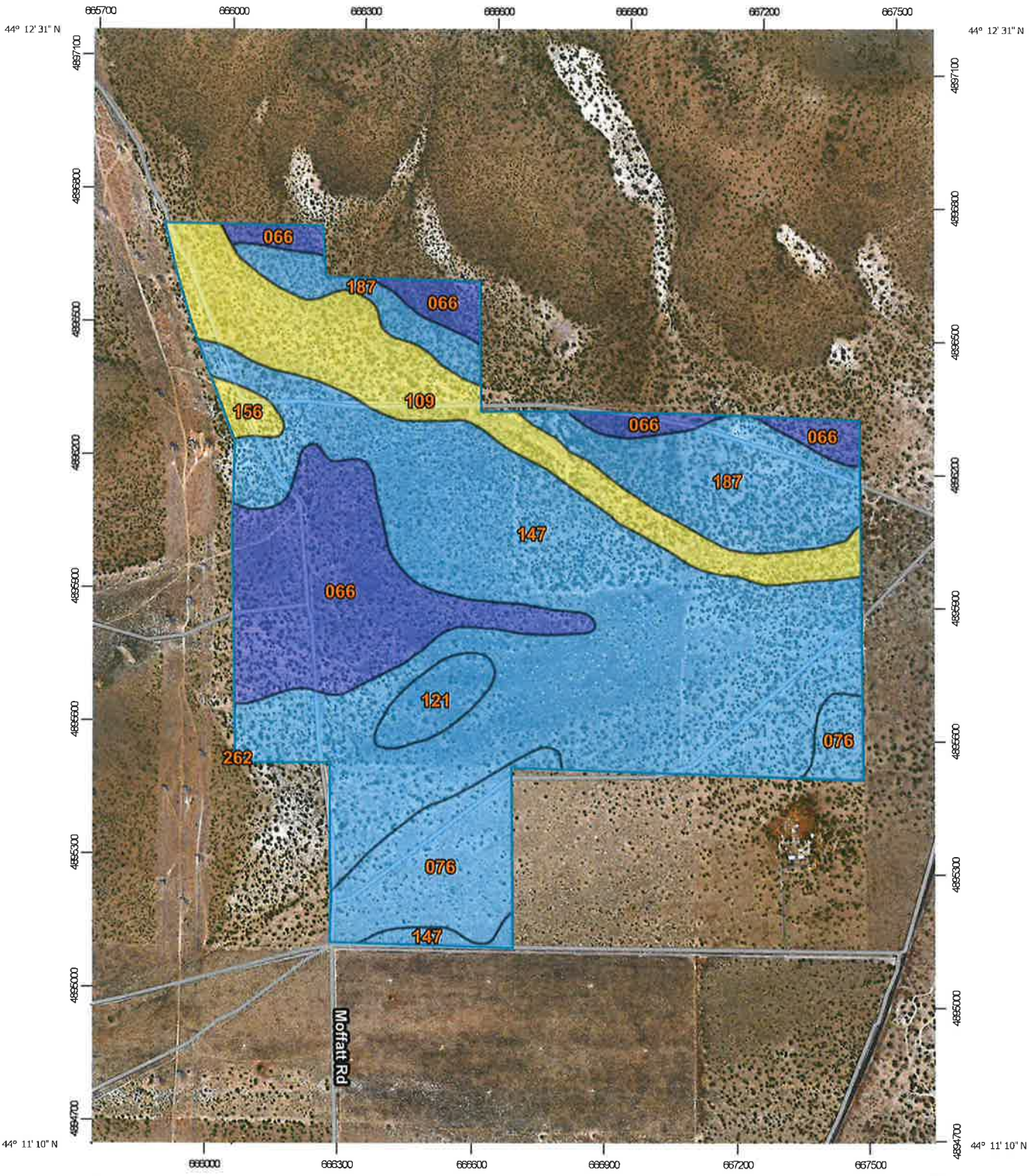
Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

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.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report
Map—Nonirrigated Capability Class



Map Scale: 1:12,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Lines
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Points
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Prineville Area, Oregon
Survey Area Data: Version 23, Sep 8, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 11, 2014—Aug 17, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Nonirrigated Capability Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
066	Ayres cobbly loam, 3 to 8 percent slopes	7	66.2	17.3%
076	Ayresbutte-Ayres complex, dry, 0 to 8 percent slopes	6	32.5	8.5%
109	Meadowridge-Era complex, 1 to 12 percent slopes	4	49.4	12.9%
121	Era ashy sandy loam, 0 to 3 percent slopes	6	8.1	2.1%
147	Ayresbutte-Ayres complex, 3 to 8 percent slopes	6	177.7	46.6%
156	Ginserly-Hatrock complex, 12 to 30 percent north slopes	4	3.3	0.9%
187	Deschutes ashy sandy loam, 0 to 3 percent slopes	6	44.3	11.6%
262	Tristan extremely cobbly loam, 12 to 35 percent south slopes	7	0.1	0.0%
Totals for Area of Interest			**381.7**	**100.0%**

Rating Options—Nonirrigated Capability Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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EXHIBIT G — EROSION CONTROL PLAN

Erosion Control Plan

Prepared for:

Moffatt Road Solar Farm LLC

3500 S DuPont Hwy

Dover, DE 19901

July 31, 2024

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1.0 INTRODUCTION

The Clearing, Grading and Erosion requirements described in this Plan apply to work associated with construction, operation, and maintenance of the proposed Applicant Facility. Applicant may implement the construction, mitigation, and reclamation actions contained in this plan to the extent that they do not conflict with the requirements of any applicable federal, state, or local rules and regulations, or other permits or approvals that are applicable to the facility. Construction contractors will be working to a completed and approved set of civil engineering drawings dictating the clearing, grading, and erosion control requirements.

Applicant will work with the county to amend the plan as needed as part of a condition of permit approval. Additionally, applicant may deviate from specific requirements of this plan on specific private lands as agreed to by landowners, county officials or as required to suit actual site conditions as determined and directed by the Applicant. All work must be in compliance with federal, state, and local Crook County permits. The facility will be designed, constructed, operated, and maintained in a manner that meets or exceeds applicable industry standards and regulatory requirements.

Following approval of the Plan, Applicant will be engaging in EPC Contractor (Contractor) bids and likely awarding contracts for various stages of construction of the facility. In addition to satisfying Crook County Conditional Use Permit requirements, this plan is meant to also be a specification and set of guidelines that the EPC Contractor firms(s) may adhere to.

Some parts of this plan may contain information duplicate to other specifically directed plans, such as a Facility Weed Control Plan, submitted as separate Exhibits to this conditional use permit application for the site. In those cases, the specific plans shall supersede this plan.

Questions or comments regarding this plan or required revisions to meet conditional use stipulations shall be directed to the Engineering and Construction Permit Manager.

2.0 Clearing, Grading and Erosion Control

2.1 Clearing

The Applicant site is composed of predominantly Class 6 and Class 7 soils with one small area of Class 4 soils. The objective of clearing is to provide a clear and unobstructed ROW for safe and efficient construction of the facility. The following mitigation measures shall be implemented:

- Construction traffic shall be restricted to the construction ROW, existing roads, and approved private roads.
- Construction ROW boundaries, including pre-approved temporary workspace, shall be clearly staked to prevent disturbance to unauthorized areas.

- Burning shall be prohibited on cultivated land or where prohibited by state and local regulations.

2.2 Topsoil Removal and Storage

The objective of topsoil handling is to maintain topsoil capability by conserving topsoil for future replacement and reclamation and to minimize the degradation of topsoil from compaction, rutting, loss of organic matter, or soil mixing so that successful reclamation of the ROW can occur. The following mitigation measures shall be implemented during topsoil removal and storage unless otherwise approved or directed by Applicant based on site-specific conditions or circumstances. All work shall be conducted in accordance with applicable permits.

- Segregate topsoil in the areas over the facility area on all lands to a minimum depth of 6 inches and a maximum depth of 12 inches.
- Stripped topsoil shall be stockpiled within designated areas shown on the construction plan in a windrow along the edge of the ROW. The Contractor shall perform work in a manner to minimize the potential for subsoil and topsoil to be mixed.
- Under no circumstances shall the Contractor use topsoil to fill a low area.
- If required due to excessively windy conditions, topsoil piles shall be tackified using either water or a suitable tackifier (liquid mulch binder).
- Gaps in the rows of topsoil will be left in order to allow drainage and prevent ponding of water adjacent to or on the ROW.
- Topsoil shall not be utilized to construct ramps at road or waterbody crossings.

2.3 Grading

The objective of grading is to develop a ROW that allows the safe passage of equipment and meets the requirements to construct the facility. The following mitigative measures shall be implemented during grading unless otherwise approved or directed by Applicant based on site-specific conditions or circumstances. However, all work shall be conducted in accordance with applicable permits.

- All grading for roadways and equipment shall be undertaken with the understanding that original contours and drainage patterns shall be re-established to the extent practicable.
- Some grading will be required to reduce the slopes in the areas that exceed the racking manufacturer's tolerances. The original drainage patterns and flows will be maintained.
- Agricultural areas that have terraces shall be surveyed to establish pre-construction contours to be utilized for restoration of the terraces after construction.
- On steep slopes, or wherever erosion potential is high, temporary erosion control measures shall be implemented.

- Bar ditches adjacent to existing roadways to be crossed during construction shall be adequately ramped with grade or ditch spoil to prevent damage to the road shoulder and ditch.
- Where the construction surface remains inadequate to support equipment travel, timber mats, timber riprap, or other method shall be used to stabilize surface conditions.

The Contractor shall limit the interruption of the surface drain network in the vicinity of the ROW using the appropriate methods:

- Providing gaps in the rows of subsoil and topsoil in order to prevent any accumulation of water on the land;
- Preventing obstructions in furrows, furrow drains, and ditches;
- Installing flumes and ramps in furrows, furrow drains, and ditches to facilitate water flow across the construction ROW and allow for construction equipment traffic; and
- Installing flumes over the trench for any watercourse where flow is continuous during construction.

2.4 Temporary Erosion and Sediment Control

2.4.1 General

Temporary erosion and sediment control measures shall be installed immediately prior to initial disturbance of the soil, maintained throughout construction, and reinstalled as necessary until replaced by permanent erosion control structures or restoration of the construction site is complete.

Specifications and configurations for erosion and sediment control measures may be modified by Applicant as necessary to suit actual site conditions. However, all work shall be conducted in accordance with applicable permits.

The Contractor shall inspect all temporary erosion control measures at least once every 14 days in areas of active construction or equipment operation, and once every 30 days in areas with no construction or equipment operation, and within 24 hours of each significant rainfall event of 0.5 inches or greater. The Contractor shall repair all ineffective temporary erosion control measures as expediently as practicable.

2.4.2 Sediment Barriers

Sediment barriers shall be constructed of silt fence, compacted earth (e.g., drivable berms across travel lanes), sand bags, or other appropriate materials.

The Contractor shall install sediment barriers in accordance with Company specifications or as otherwise approved or directed by Applicant. The Contractor is responsible for properly installing, maintaining, and replacing temporary and permanent erosion controls throughout construction and cleanup. Near wetland or riparian zones, the Contractor will install sediment control structures along the construction site edges prior to vegetation removal where practicable. The aforementioned sediment barriers may be used interchangeably or together depending on site-

specific conditions. In most cases, silt fence shall be utilized where longer sediment barriers are required.

Sediment barriers shall be installed below disturbed areas where there is hazard of off-site sedimentation. These areas include:

- The base of slopes adjacent to road crossings;
- The edge of the construction site adjacent to and up-gradient of a roadway, flowing stream, spring, wetland, or impoundment;
- Trench or test water discharge locations where required;
- Where waterbodies or wetlands are adjacent to the construction site; (the Contractor shall install sediment barriers along the edge of the construction site as necessary to contain spoil and sediment within the construction site);
- Across the entire construction site at flowing waterbody crossings;
- Along the edge of the construction site within 50 feet of wetland boundaries as necessary to contain spoil and sediment within the construction site.

Sediment barriers placed at the toe of a slope shall be set a sufficient distance from the toe of the slope, if possible, in order to increase ponding volume.

Sediment control barriers shall be placed so as not to hinder construction operations. If silt fence or other sediment controls are placed across the entire construction site at waterbodies, wetlands, or upslope of roads, a provision shall be made for temporary traffic flow through a gap for vehicles and equipment to pass within the structure. Immediately following each day's shutdown of construction activities, a section of silt fence or other sediment control shall be placed across the up-gradient side of the gap with sufficient overlap at each end of the barrier gap to eliminate sediment bypass flow. Following completion of the equipment crossing, the gap shall be closed using silt fence or other perimeter sediment control management practices.

The Contractor shall maintain sediment barriers by removing collected sediment and replacing damaged material. Sediment shall be removed and placed where it shall not reenter the barrier when sediment loading is greater than half the height of the device or if directed by Applicant.

The Contractor shall remove sediment barriers, except those needed for permanent erosion and sediment control, during restoration of the construction site.

2.4.3 Drainage Channels or Ditches

Drainage channels or ditches shall be used on a limited basis to provide drainage along the construction site and toe of cut slopes as well as to direct surface runoff across the construction site or away from disturbances and onto natural undisturbed ground. Channels or ditches shall be constructed by the Contractor during grading operations. Where there is inadequate vegetation at the channel or ditch outlet, sediment barriers, check berms, or other appropriate measures shall be used to control erosion.

2.4.4 Temporary Mulching

Unless otherwise directed by applicant, the Contractor shall apply temporary seed and/or mulch on disturbed construction work areas that have been inactive for 21 days or are expected to be inactive for 21 days or more. The Contractor shall not apply temporary mulch in cultivated areas

unless specifically requested by the landowner. The Contractor shall not apply mulch within wetland boundaries.

Temporary mulch of straw or equivalent applied on slopes shall be spread uniformly to cover at least 90 percent of the ground surface at an approximate rate of 2 tons per acre of straw or its equivalent. Mulch application on slopes within 100 feet of waterbodies and wetlands shall be increased to an approximate rate of 2 tons per acre.

2.4.5 Tackifier

When wetting topsoil piles with water does not prevent wind erosion, the Contractor shall temporarily suspend topsoil handling operations and apply a tackifier to topsoil stockpiles at the rate recommended by the manufacturer.

Should construction traffic, cattle grazing, heavy rains, or other related construction activity disturb the tackified topsoil piles and create a potential for wind erosion, additional tackifier shall be applied by the Contractor.

2.5 Trenching

The objective of trenching is to provide a ditch of sufficient depth and width with a bottom to continuously support the conduit and/or direct burial electrical collection cables and meet applicable civil, electrical engineering and safety requirements for depth, dependent on the types installed. During trenching operations, the following mitigation measures shall be implemented unless otherwise approved or directed by Applicant based on site-specific conditions or circumstances. All work shall be conducted in accordance with applicable permits.

- Subsoil shall be segregated from topsoil in separate, distinct rows with a separation that shall limit any admixing of topsoil and subsoil during handling.
- Gaps must be left in the spoil piles that coincide with breaks in the strung conduit to facilitate natural drainage patterns and to allow the passage of livestock or wildlife.
- Trenching operations shall be followed as closely as practicable by lower-in and backfill operations to minimize the length of time the ditch is open.
- Construction debris (e.g., welding debris) and other garbage shall not be deposited in the ditch.

2.5.1 Trench Dewatering/Well Points

The Contractor shall make all reasonable efforts to discharge trench water in a manner that avoids damage to adjacent agricultural land, crops, and pasture. Damage includes, but is not limited to, the inundation of crops for more than 24 hours, deposition of sediment in ditches, and the deposition of gravel in fields or pastures.

When pumping water from the trench for any reason, the Contractor shall ensure that adequate pumping capacity and sufficient hose is available to permit dewatering as follows:

- No heavily silt-laden trench water shall be allowed to enter a waterbody or wetland directly but shall instead be diverted through a well-vegetated area, a geotextile filter bag, or a permeable berm (or Applicant-approved equivalent).

- Trench water shall not be disposed of in a manner that could damage crops or interfere with the functioning of underground drainage systems.

The Contractor shall screen the intake hose and keep the hose either one foot off the bottom of the trench or in a container to minimize entrainment of sediment.

2.6 Cleanup

The objective of cleanup activities shall be to prepare the site and other disturbed areas to approximate preconstruction ground contours to the extent possible and to replace spoil and stockpiled material in a manner that preserves soil viability and quality to a degree reasonably equivalent to the original or that of representative undisturbed land. The following mitigation measures shall be utilized during cleanup, unless otherwise approved or directed by Applicant based on specific conditions or circumstances. All work shall be conducted in accordance with applicable permits.

- All garbage and construction debris shall be collected and disposed of at approved disposal sites.
- Subsoil shall not be placed on top of topsoil.
- During cleanup, temporary sediment barriers such as silt fence shall be removed; accumulated sediment shall be re-contoured with the rest of the site; and permanent erosion controls shall be installed as necessary.
- After construction, all temporary access shall be returned to pre-construction conditions unless specifically agreed with the landowner or otherwise specified by Applicant.
- All temporary gates installed during construction shall be replaced with permanent fence unless otherwise requested by the landowner.

2.7 Reclamation and Revegetation

The objectives of reclamation and revegetation are to return the disturbed areas to approximately pre-construction use and capability. This involves the treatment of soil as necessary to preserve approximate pre-construction capability and the stabilization of the work surface in a manner consistent with the initial land use.

The following mitigative measures will be utilized unless otherwise approved or directed by Applicant based on site-specific conditions or circumstances. However, all work shall be conducted in accordance with applicable permits and meet the guidelines and requirements of the site Noxious Weed Plan approved by the Crook County.

2.7.1 Rock Removal

- On agricultural land, rocks that are exposed on the surface due to construction activity shall be removed from the site prior to and after topsoil replacement. This effort will result in an equivalent quantity, size and distribution of rocks to that found on adjacent lands.
- Clearing of rocks may be carried out with a mechanical rock picker or by manual means, provided that preservation of topsoil is assured. Rock removed from the site shall be hauled off the landowner's premises or disposed of on the landowner's premises at a location that is mutually acceptable to the landowner and to Applicant.

2.7.2 Seeding

- Seed Mixes shall meet the requirements of the Noxious Weed Plan for the site.
- Certificates of seed analysis by the State of Oregon, Crook County, or the state in which the seed originated, are required for all seed mixes to limit the introduction of noxious weeds.
- Seeding shall follow cleanup and topsoil replacement as closely as possible. Seed shall be applied to all disturbed surfaces (except cultivated fields unless requested by the landowner).
- If mulch was applied prior to seeding for temporary erosion control, the Third Party Contractor shall remove and dispose of the excess mulch prior to seedbed preparation to ensure that seedbed preparation equipment and seed drills do not become plugged with excess mulch; and to support an adequate seedbed; and to ensure that seed incorporation or soil packing equipment can operate without becoming plugged with mulch.
- The Third Party Contractor may evenly re-apply and anchor (straw crimp) the removed temporary mulch on the construction site following seeding.
- Seed shall be applied at the rate recommended by the managing agency. Seeding rates shall be based on pure live seed.
- Weather conditions, construction site constraints, site access, and soil type shall influence the seeding method to be used (i.e., drill seeding versus broadcast seeding).
- The Third Party Contractor shall delay seeding as necessary until the soil is in the appropriate condition for drill seeding.
- The Third Party Contractor shall operate drill seeders at an appropriate speed so the specified seeding rate and depth is maintained.
- The Third Party Contractor shall calibrate drill seeders so that the specified seeding rate is planted. The site spacing on drill seeders shall not exceed 8 inches.
- The Third Party Contractor shall plant seed at depths consistent with the local or regional agricultural practices.
- Broadcast or hydro seeding, used in lieu of drilling, shall utilize double the recommended seeding rates. Where seed is broadcast, the Third Party Contractor shall use a harrow, cultipacker, or other equipment immediately following broadcasting to incorporate the seed to the specified depth and to firm the seedbed.
- The Third Party Contractor shall delay broadcast seeding during high wind conditions if even distribution of seed is impeded.
- The Third Party Contractor shall hand rake all areas that are too steep or otherwise cannot be safely harrowed or culti-packed in order to incorporate the broadcast seed to the specified depth.
- Hydro seeding may be used, on a limited basis, where the slope is too steep or soil conditions do not warrant conventional seeding methods. Fertilizer, where specified, may be included in the seed, virgin wood fiber, tackifier, and water mixture. When hydro-seeding, virgin wood fiber shall be applied at the rate of approximately 3,000 pounds per acre on an air-dry weight basis as necessary to provide at least 75 percent ground cover. Tackifier shall consist of biodegradable, vegetable-based material and shall be applied at the rate recommended by the manufacturer. The seed, mulch, and tackifier slurry shall be applied so that it forms a uniform, mat-like covering of the ground.

2.7.3 Permanent Erosion and Sediment Control

The Contractor shall restore all existing landowner soil conservation improvements and structures disturbed by facility construction to the approximate pre-construction line and grade. Soil conservation improvements and structures include, but are not limited to, grassed waterways, toe walls, drop inlets, grade control works, terraces, levees, and farm ponds.

2.7.3.1 Mulching

The Contractor shall apply mulch on all areas with high erosion potential and on slopes greater than 8 percent unless otherwise approved based on site-specific conditions or circumstances. The Contractor shall spread mulch uniformly over the area to cover at least 90 percent of the ground surface at an approximate rate of 2 tons per acre of straw or its equivalent. The Environmental Inspector may reduce the application rate or forego mulching an area altogether if there is an adequate cover of rock or organic debris to protect the slope from erosion.

Mulch application includes straw or grass hay mulch or hydro mulch and tackifier. The Contractor shall not apply mulch in cultivated areas unless deemed necessary by the County and Applicant.

The Contractor shall use mulch that is State of Oregon and/or Crook County certified, or by the state of origin, weed seed free.

The Contractor shall apply mulch immediately following seeding. The Contractor shall not apply mulch in wetlands.

If a mulch blower is used, the majority of strands of the mulching material shall not be shredded to less than 12 inches in length to allow anchoring. The Contractor shall anchor mulch immediately after application to minimize loss by wind and water.

When anchoring (straw crimping) by mechanical means, the Contractor shall use a tool specifically designed for mulch anchoring with flat, notched disks to properly crimp the mulch to a depth of 2 to 3 inches. A regular farm disk shall not be used to crimp mulch. The crimping of mulch shall be performed across the slope of the ground, not parallel to it. In addition, in areas of steep terrain, tracked vehicles may be used as a means of crimping mulch (equipment running up and down the hill to leave crimps perpendicular to the slope), provided they leave adequate coverage of mulch.

In soils possessing high erosion potential, the Contractor may be required to make two passes with the mulch crimping tool; passes must be as perpendicular to the others as possible.

When anchoring with liquid mulch binders (tackifiers), the Contractor shall use a biodegradable tackifier derived from a vegetable-based source. The Contractor shall apply mulch binders at rates recommended by the manufacturer.

The Contractor shall limit the use of tackifiers for anchoring straw and the use of hydromulch and tackifier to areas that are too steep or rocky to safely or effectively operate mechanical mulch-anchoring tools. No asphalt-based tackifiers shall be used on the Facility.

2.7.3.2 *Erosion Control Matting*

Erosion control matting shall be applied in areas of high erosion potential. The Contractor shall anchor the erosion control matting with staples or other approved devices.

The Contractor shall use erosion control matting made of biodegradable, natural fiber such as straw or coir (coconut fiber).

The Contractor shall prepare the soil surface and install the erosion control matting to ensure it is stable and the matting makes uniform contact with the soil of the slope face or waterbody bank with no bridging of rills, gullies, or other low areas.

3.0 WATERBODIES AND RIPARIAN AREAS

3.1 General

The Contractor shall comply with requirements of all permits issued for the waterbody crossings by federal, state, or local agencies.

Waterbody includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:

- Minor Waterbody includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of construction.
- Intermediate Waterbody includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of construction.
- Major Waterbody includes all waterbodies greater than 100 feet wide at the water's edge at the time of construction.

The Contractor shall supply and install advisory signs in a readily visible location along the construction ROW at a distance of approximately 50 feet on each side of the crossing and on all roads that provide direct construction access to waterbody crossing sites. Signs shall be supplied, installed, maintained, and then removed upon completion of the Facility.

The Contractor shall not store hazardous materials, chemicals, fuels, lubricating oils, or perform concrete coating within 100 feet of any waterbody. The Contractor shall not refuel construction equipment within 100 feet of any waterbody. All equipment maintenance and repairs shall be performed in upland locations at least 100 feet from waterbodies and wetlands. All equipment parked overnight shall be at least 100 feet from a watercourse or wetland, if possible. Equipment shall not be washed in waterbodies or wetlands.

Throughout construction, the Contractor shall maintain adequate flow rates to protect aquatic life and to prevent the interruption of existing downstream uses.

Applicant may allow modification of the following specification, as necessary, to accommodate specific situations or procedures. Any modifications must comply with all applicable regulations and permits. Applicant will complete site-specific crossing plans for certain waterbody crossings if required by the applicable regulatory agencies during federal or state permitting processes.

3.2 Easement and Work Space

The permanent easement, temporary workspace, additional temporary workspace, and any special restrictions will be depicted on the construction drawings. The work shall be contained

within these areas and be limited in size to the minimum required to construct the waterbody crossing.

The Contractor shall locate all extra work areas (such as staging areas and additional spoil storage areas) at least 10 feet from the water's edge if practicable.

At all waterbody crossings, the Contractor shall install flagging across the construction ROW at least 10 feet from the water's edge prior to clearing and ensure that riparian cover is maintained where practicable during construction.

3.3 Vehicle Access and Equipment Crossings

The Contractor shall inspect equipment for fluid leaks prior to entering or crossing over waterbodies.

Equipment crossings shall be perpendicular to drainage bottoms wherever possible.

Erosion and sediment control barriers shall be installed and maintained around vehicle access points, as necessary, to prevent sediment from reaching the waterway.

The Contractor shall be responsible for the installation, maintenance, and removal of all temporary access crossings including portable bridges, bridges made from timber or mats, flumes, culverts, sand bags, subsoil, coarse granular material, and riprap.

The Contractor shall ensure that culverts and flumes are sized and installed of sufficient diameter to accommodate the existing flow of water and those that potentially may be created by sudden runoffs. Flumes shall be installed with the inlet and outlet at natural grade, if possible.

Where bridges, culverts, or flumes are installed across the work area, the Contractor shall be responsible for maintaining them (e.g., preventing collapse, clogging, or tilting). All flumes and culverts shall be removed as soon as possible upon completion of construction.

The width of the temporary access road across culverts and flumes and the design of the approaches and ramps shall be adequate for the size of vehicle and equipment access required. The ramps shall be of sufficient depth and constructed to prevent collapse of the flumes, and the approaches on both sides of the flume shall be feathered.

Where culverts are installed for access, the culvert shall be of sufficient length to convey the stream flow through the construction zone.

The Contractor shall maintain equipment bridges to prevent soil from entering the waterbody.

3.4 Waterbody Crossing Methods

It is not anticipated that major waterbodies are located in the Facility area; however, construction methods pertinent to waterbody crossings are presented below. In conjunction with the appropriate jurisdictional agency, Applicant will develop specific crossing plans for major waterbodies that contain recreationally or commercially important fisheries, or are classified as special use. Applicant will consult with state fisheries agencies with respect to applicable construction windows for each crossing and develop specific construction and crossing methods for open cuts in conjunction with USACE permitting and USFWS consultation.

3.5 Clearing

All staging areas for materials and equipment shall be located at least 50 feet from the waterbody edge. The Contractor shall preserve as much vegetation as possible along the waterbody banks while allowing for safe equipment operation.

Clearing and grubbing for temporary vehicle access and equipment crossings shall be carefully controlled to minimize sediment entering the waterbody from the construction ROW.

Plant debris or soil inadvertently deposited within the highwater mark of waterbodies shall be promptly removed in a manner that minimizes disturbance of the waterbody bed and bank. Excess floatable debris shall be removed above the highwater mark from areas immediately above crossings.

3.6 Grading

The construction ROW adjacent to the waterbody shall be graded so that soil is pushed away from the waterbody rather than towards it whenever possible.

In order to minimize disturbance to woody riparian vegetation within extra workspaces adjacent to the construction ROW at waterbody crossings, the Contractor shall limit grading and grubbing to upland areas adjacent to waterbody banks.

3.7 Temporary Erosion and Sediment Control

The Contractor shall install and maintain sediment and erosion control barriers and cover across the entire construction ROW at all flowing waterbody crossings.

The Contractor shall install sediment barriers immediately prior to initial disturbance adjacent uplands. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete.

Where waterbodies are adjacent to the construction ROW, the Contractor shall install and maintain sediment barriers along the edge of the construction ROW as necessary to contain spoil and sediment within the construction ROW.

EXHIBIT H

WEED CONTROL PLAN

1.0 Site Background

Moffatt Road Solar Farm LLC ("Applicant") seeks permit approval for a photovoltaic solar power generation facility as defined in Oregon Administrative Rules 660-033-0130(38)(f) (the "Facility"). The Facility will be located in Crook County, Oregon, approximately 8 miles southwest from Prineville, Oregon, on a portion of Tax Lot 300. The Facility will use up to 320 acres of this tax lot. A detailed description of the Facility is provided as Exhibit A of the application. Dominant vegetation on the project site consists of low shrubs / sagebrush. Sagebrush scrubland, rangeland, and a rural residence border the site on the north, east, and south sides. The Gala Solar Faclity is located along the southern boundary.

2.0 Weed Control

Applicant and its contractors will be responsible for implementing weed control. Applicant shall ensure that it and its service providers or contractors comply with County-wide weed control standards and practices.

Inventory: Biological surveys for noxious and invasive weeds will be conducted to determine weed occurrence within the Facility area. The State of Oregon Noxious Weed Policy and Classification System 2022 lists noxious weeds of State concern and is attached. In addition, the Oregon State designated weed list may be supplemented by Crook County details as specified by the County Weedmaster.

Prevention: Prevention is the most effective method of preventing the spread and establishment of noxious and invasive weeds. Applicant will implement generally accepted practices as reasonable to minimize the spread and establishment of noxious and invasive weeds. Applicant will seek to minimize ground disturbance and vegetation removal as much as possible or practical. Applicant will aim to construct the Facility with minimal ground disturbance allowing existing ground cover to be preserved if possible. Primary ground disturbances will be temporary use of heavy equipment on and placement of access roads, which will be graveled and graded. Existing vegetation will be preserved when practicable during construction. Once construction is complete, temporary re-vegetation will be completed as soon as possible. Disturbed areas will be reseeded as necessary. Seeding will be conducted in an environmental acceptable time to ensure germination that will produce grass restoration. Noxious weed control measures will be implemented in accordance with existing state and county regulations.

Maintenance: Applicant will implement a plan to address methods to prevent, mitigate, and control the spread of noxious and invasive weeds during Facility operations. Weed management goals are to prevent the spread and establishment of noxious and invasive weeds in the Facility area and to minimize potential effects from control treatments such as herbicide spraying. Effective control of noxious and invasive weeds can be a combination of chemical, mechanical, biological, or cultural controls. The weed control plan for operations and maintenance will include arrangements for weed removal, clearing of any debris, and mitigating weeds within the Facility boundary and within 5-feet outside fenced areas. Applicant will continue to consult with the Crook County Weed Supervisor and relevant state agencies as necessary, and especially as related to appropriate seed mixtures.

OREGON
DEPARTMENT OF
AGRICULTURE

Noxious Weed Policy and Classification System 2022

Noxious Weed Control Program

Address: 635 Capitol Street NE, Salem, Oregon 97301

Phone: (503) 986-4621 **Fax:** (503) 986-4786

www.oregon.gov/ODA/programs/Weeds/Pages/AboutWeeds.aspx

Mission Statement

To protect Oregon's natural resources and agricultural economy from the invasion and proliferation of invasive noxious weeds.

Program Overview

The Oregon Department of Agriculture (ODA) Noxious Weed Control Program provides statewide leadership for coordination and management of state listed noxious weeds. The state program focuses on noxious weed control efforts by implementing early detection and rapid response projects for new invasive noxious weeds, implementing biological control, implementing statewide inventory and survey, assisting the public and cooperators through technology transfer and noxious weed education, maintaining noxious weed data and maps for priority listed noxious weeds, and assisting land managers and cooperators with integrated weed management projects. The Noxious Weed Control Program also supports the Oregon State Weed Board (OSWB) with administration of the OSWB Grant Program, developing statewide management objectives, developing weed risk assessments, and maintaining the state noxious weed list.

Tim Butler
Program Manager
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Noxious Weed Control Policy and Classification System

Definition

"Noxious weed" means a terrestrial, aquatic or marine plant designated by the Oregon State Weed Board under ORS 569.615 as among those representing the greatest public menace and as a top priority for action by weed control programs.

Noxious weeds have become so thoroughly established and are spreading so rapidly on private, state, county, and federally owned lands, that they have been declared by ORS 569.350 to be a menace to public welfare. Steps leading to eradication, where possible, and intensive control are necessary. It is further recognized that the responsibility for eradication and intensive control rests not only on the private landowner and operator, but also on the county, state, and federal governments.

Weed Control Policy

Therefore, it shall be the policy of ODA to:

1. Assess non-native plants through risk assessment processes and make recommendations to the Oregon State Weed Board for potential listing.
2. Rate and classify weeds at the state level.
3. Prevent the establishment and spread of listed noxious weeds.
4. Encourage and implement the control or containment of infestations of listed noxious weed species and, if possible, eradicate them.
5. Develop and manage a biological weed control program.
6. Increase awareness of potential economic losses and other undesirable effects of existing and newly invading noxious weeds, and to act as a resource center for the dissemination of information.
7. Encourage and assist in the organization and operation of noxious weed control programs with government agencies and other weed management entities.
8. Develop partnerships with county weed control districts, universities, and other cooperators in the development of control methods.
9. Conduct statewide noxious weed surveys and weed control efficacy studies.

Weed Classification System

The purpose of this Classification System is to:

1. Act as the ODA's official guideline for prioritizing and implementing noxious weed control projects.
2. Assist the ODA in the distribution of available funds through the Oregon State Weed Board to assist county weed programs, cooperative weed management groups, private landowners, and other weed management entities.
3. Serve as a model for private and public sectors in developing noxious weed classification systems that aid in setting effective noxious weed control strategies.

Criteria for Determining Economic and Environmental Significance

Detrimental Effects

1. A plant species that causes or has the potential to cause severe negative impacts to Oregon's agricultural economy and natural resources.
2. A plant species that has the potential to or does endanger native flora and fauna by its encroachment into forest, range, aquatic and conservation areas.
3. A plant species that has the potential or does hamper the full utilization and enjoyment of recreational areas.
4. A plant species that is poisonous, injurious, or otherwise harmful to humans and/or animals.

Plant Reproduction

1. A plant that reproduces by seed capable of being dispersed over wide areas or that is long-lived, or produced in large numbers.
2. A plant species that reproduces and spreads by tubers, creeping roots, stolons, rhizomes, or other natural vegetative means.

Distribution

1. A weed of known economic importance which occurs in Oregon in small enough infestations to make eradication/containment possible; or not known to occur, but its presence in neighboring states makes future occurrence seem imminent.
2. A weed of economic or ecological importance and of limited distribution in Oregon.
3. A weed that has not infested the full extent of its potential habitat in Oregon.

Difficulty of Control

A plant species that is not easily controlled with current management practices such as chemical, cultural, biological, and physical methods.

Noxious Weed Control Classification Definitions

Noxious weeds, for the purpose of this system, shall be listed as either A or B, and may also be designated as T, which are priority targets for control, as directed by the Oregon State Weed Board.

- **A Listed Weed:**
  A weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent (Table I).
  Recommended action: Infestations are subject to eradication or intensive control when and where found.
- **B Listed Weed:**
  A weed of economic importance which is regionally abundant, but which may have limited distribution in some counties (Table II).
  Recommended action: Limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.
- **T-Designated Weed (T):**
  A designated group of weed species selected from either the A or B list as a focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority. T-designated noxious weeds are determined by the Oregon State Weed Board and directs ODA to develop and implement a statewide management plan.

Weed Biological Control

Oregon implements biological control, or "biocontrol" as part of its integrated pest management approach to managing noxious weeds. This is the practice of using host-specific natural enemies such as insects or pathogens to control noxious weeds. The Oregon Department of Agriculture Noxious Weed Program has adopted the International Code of Best Practices for biological control of weeds. Only safe, effective, and federally- approved natural enemies will be used for biocontrol.

Table I: A Listed Weeds

Common Name	Scientific Name
African rue (T)	*Peganum harmala*
Camelthorn	*Alhagi pseudalhagi*
Cape-ivy (T)*	*Delairea odorata*
Coltsfoot	*Tussilago farfara*
Common frogbit	*Hydrocharis morsus-ranae*
Cordgrass	
Common	*Spartina anglica*
Dense-flowered (T)	*Spartina densiflora*
Saltmeadow (T)	*Spartina patens*
Smooth (T)	*Spartina alterniflora*
Delta arrowhead (T)	*Sagittaria platyphyla*
European water chestnut	*Trapa natans*
Flowering rush (T)	*Butomus umbellatus*
Garden yellow loosestrife (T)	*Lysimachia vulgaris*
Giant hogweed (T)	*Heracleum mantegazzianum*
Goatgrass	
Barbed (T)	*Aegilops triuncialis*
Ovate	*Aegilops ovata*
Goatsrue (T)	*Galega officinalis*
Hawkweed	
King-devil*	*Hieracium piloselloides*
Mouse-ear (T)*	*Hieracium pilosella*
Orange (T)*	*Hieracium aurantiacum*
Yellow (T)	*Hieracium floribundum*
Hoary alyssum (T)	*Berteroa incana*
Hydrilla	*Hydrilla verticillata*
Japanese dodder	*Cuscuta japonica*
Kudzu (T)	*Pueraria lobata*
Matgrass (T)	*Nardus stricta*
Oblong spurge (T)	*Euphorbia oblongata*
Paterson's curse (T)	*Echium plantagineum*
Purple nutsedge	*Cyperus rotundus*
Ravennagrass (T)	*Saccharum ravennae*
Silverleaf nightshade	*Solanum elaeagnifolium*
Squarrose knapweed (T)	*Centaurea virgata*

(T) T-Designated Weed (See page 4)

(Continued) **Table I: A Listed Weeds**

Common Name	Scientific Name
Starthistle	
Iberian (T)	*Centaurea iberica*
Purple (T)	*Centaurea calcitrapa*
Syrian bean-caper	*Zygophyllum fabago*
Thistle	
Plumeless (T)	*Carduus acanthoides*
Smooth distaff	*Carthamus baeticus*
Taurian (T)	*Onopordum tauricum*
Turkish (T)	*Carduus cinereus*
Welted (curly plumeless) (T)	*Carduus crispus*
Woolly distaff (T)	*Carthamus lanatus*
Water soldiers	*Stratiotes aloides*
West Indian spongeplant	*Limnobium laevigatum*
White bryonia	*Bryonia alba*
Yellow floating heart (T)	*Nymphoides peltata*
Yellowtuft (T)	*Alyssum murale, A. corsicum*

(T) T-Designated Weed (See page 4)

Table II: B Listed Weeds

Common Name	Scientific Name
Armenian (Himalayan) blackberry	*Rubus armeniacus (R. procerus, R. discolor)*
Biddy-biddy	*Acaena novae-zelandiae*
Broom	
French*	*Genista monspessulana*
Portuguese (T)	*Cytisus striatus*
Scotch*	*Cytisus scoparius*
Spanish	*Spartium junceum*
Buffalobur	*Solanum rostratum*
Butterfly bush	*Buddleja davidii (B. variabilis)*
Common bugloss (T)	*Anchusa officinalis*
Common crupina*	*Crupina vulgaris*
Common reed	*Phragmities australis ssp. australis*
Common viper's bugloss	*Echium vulgare*
Creeping yellow cress	*Rorippa sylvestris*
Cutleaf teasel	*Dipsacus laciniatus*
Dodder	
Smoothseed alfalfa	*Cuscuta approximata*
Five-angled	*Cuscuta pentagona*
Bigseed	*Cuscuta indecora*
Dyer's woad	*Isatis tinctoria*
English hawthorn	*Crataegus monogyna*
Eurasian watermilfoil*	*Myriophyllum spicatum*
False brome	*Brachypodium sylvaticum*
Field bindweed*	*Convolvulus arvensis*
Garlic mustard (T)	*Alliaria petiolata*
Geranium	
Herb Robert	*Geranium robertianum*
Shiny leaf	*Geranium lucidum*
Giant reed (T)*	*Arundo donax*
Gorse* (T)	*Ulex europaeus*
Halogeton	*Halogeton glomeratus*
Houndstongue	*Cynoglossum officinale*

* Biocontrol (See page 4) (T) T-Designated Weed (See page 4)

(Continued) **Table II: B Listed Weeds**

Common Name	Scientific Name
Indigo bush	*Amorpha fruticosa*
Ivy	
Atlantic	*Hedera hibernica*
English	*Hedera helix*
Johnsongrass	*Sorghum halepense*
Jointed goatgrass	*Aegilops cylindrica*
Jubata grass	*Cortaderia jubata*
Knapweed	
Diffuse*	*Centaurea diffusa*
Meadow*	*Centaurea pratensis*
Russian*	*Acroptilon repens*
Spotted* (T)	*Centaurea stoebe (C. maculosa)*
Knotweed	
Bohemian*	*Fallopia x bohemica*
Giant*	*Fallopia sachalinensis (Polygonum)*
Himalayan	*Polygonum polystachyum*
Japanese*	*Fallopia japonica (Polygonum)*
Kochia	*Kochia scoparia*
Lesser celandine	*Ranunculus ficaria*
Meadow hawkweed (T)	*Pilosella caespitosum (Hieracium)*
Mediterranean sage*	*Salvia aethiopis*
Medusahead rye	*Taeniatherum caput-medusae*
Old man's beard	*Clematis vitalba*
Parrot feather	*Myriophyllum aquaticum*
Perennial peavine	*Lathyrus latifolius*
Perennial pepperweed (T)	*Lepidium latifolium*
Pheasant's eye	*Adonis aestivalis*
Pine echium	*Echium pininana*
Poison hemlock*	*Conium maculatum*
Policeman's helmet	*Impatiens glandulifera*
Primrose-willow	
Large-flower (T)	*Ludwigia grandiflora*
Water primrose (T)	*Ludwigia hexapetala*
Floating (T)	*Ludwigia peploides*

*Biocontrol (See page 4) (T) T-Designated Weed (See page 4)

(Continued) **Table II: B Listed Weeds**

Common Name	Scientific Name
Puncturevine*	*Tribulus terrestris*
Purple loosestrife*	*Lythrum salicaria*
Ragweed	*Ambrosia artemisiifolia*
Ribbongrass (T)	*Phalaris arundinacea var. Picta*
Rose	
Dog	*Rosa canina*
Sweetbriar	*Rosa rubiginosa*
Rush skeletonweed* (T)	*Chondrilla juncea*
Saltcedar* (T)	*Tamarix ramosissima*
Small broomrape	*Orabanche minor*
South American waterweed	*Egeria densa (Elodea)*
Spanish heath	*Erica lusitanica*
Spikeweed	*Hemizonia pungens*
Spiny cocklebur	*Xanthium spinosum*
Spurge laurel	*Daphne laureola*
Spurge	
Leafy* (T)	*Euphorbia esula*
Myrtle	*Euphorbia myrsinites*
St. Johnswort*	*Hypericum perforatum*
Sulfur cinquefoil	*Potentilla recta*
Swainsonpea	*Sphaerophysa salsula*
Tansy ragwort* (T)	*Senecio jacobaea (Jacobaea vulgaris)*
Thistle	
Bull*	*Cirsium vulgare*
Canada*	*Cirsium arvense*
Italian*	*Carduus pycnocephalus*
Milk*	*Silybum marianum*
Musk*	*Carduus nutans*
Scotch	*Onopordum acanthium*
Slender-flowered*	*Carduus tenuiflorus*
Toadflax	
Dalmatian* (T)	*Linaria dalmatica*
Yellow*	*Linaria vulgaris*
Tree of heaven	*Ailanthus altissima*

*Biocontrol (See page 4) (T) T-Designated Weed (See page 4)

(Continued) **Table II: B Listed Weeds**

Common Name	Scientific Name
Velvetleaf	*Abutilon theophrasti*
Ventenata grass	*Ventenata dubia*
Whitetop	
Hairy	*Lepidium pubescens*
Lens-podded	*Lepidium chalepensis*
Whitetop (hoary cress)*	*Lepidium draba*
Yellow archangel	*Lamiastrum galeobdolon*
Yellow flag iris	*Iris pseudacorus*
Yellow nutsedge	*Cyperus esculentus*
Yellow starthistle*	*Centaurea solstitialis*

*Biocontrol (See page 4) (T) T-Designated Weed (See page 4)

EXHIBIT I-1

SOLAR FACILITY DECOMMISSIONING PLAN

Solar Facility Decommissioning Plan

Prepared for:

Moffatt Road Solar Farm LLC

3500 S DuPont Hwy

Dover, DE 19901

August 01, 2024

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1.0 Decommissioning Plan

1.1 General

The following decommissioning plan is to ensure that facilities are properly removed after their useful life of up to 40 years (or longer, as may be the case).

The plan includes provisions for removal of all structures and foundations, restoration of soil and vegetation and a plan ensuring financial resources will be available to fully decommission the site.

Qualified contractors shall be employed to implement this Decommissioning Plan (as may be amended per approval of applicable county officials and permit holder) and shall comply with requirements of all applicable permits during the decommissioning process.

1.2 Decommissioning and Reclamation

At the end of commercial operations, Applicant will be responsible for removing solar facilities at the site to a depth of 36 inches and to restore and reclaim the site to pre-construction topography and topsoil quality to the extent practical or to a general state suitable for continued agricultural use as permitted for property at time of decommissioning, which is presumed to be substantially similar to prior to construction. Applicant reserves the right to extend the Facility instead of decommissioning at the end commercial operations with landowner permission and upon obtaining all applicable necessary permits (if any required).

Removal of solar facilities, for the purpose of decommissioning as defined here in, includes equipment removal, as further described below, including removing the solar panels, solar panel racking, steel foundation posts and beams, inverters, transformers, overhead and underground cables and lines, equipment pads and foundations, equipment cabinets, and ancillary equipment to a depth of 36 inches. The civil facilities, access road, security fence, and any drainage structures are included in the scope. Dismantling and repurposing, salvaging/recycling, or disposing of the solar energy improvements will apply depending on the item.

After all equipment is removed, any holes or voids created by poles, piles, concrete pads and other equipment will be filled in with soil to the surrounding grade and seeded or revegetated with a previously County approved seed mix or an agricultural seed consistent with intended future use of the property for agricultural purposes (such as dry wheat).

1.3 List of Decommissioning Activities

1.3.1 Timeline

Decommissioning is estimated to take six to ten weeks to complete and the decommissioning crew will ensure that all equipment and materials are recycled or disposed of properly. Detailed schedule will depend on time of year and final size and design of facility.

1.3.2 Removal and Disposal of Site Components

The removal and disposal details of the site components are found below.

Solar PV Modules: Modules will be removed from site. Depending on owner's intentions for reuse of equipment, they may be inspected for physical damage, tested for functionality, and disconnected and removed from racking. If so, functioning modules may be packed and stored in an offsite facility for reuse or resale. Non-functioning modules or modules not otherwise retained for future use will be packed, palletized and shipped to the manufacturer or a third party for recycling or disposal in accordance with applicable regulations.

Racking: Racking and racking components will be disassembled and removed from the steel foundation posts, sorted, processed to appropriate size, and sent to a third party for recycling or disposal in accordance with applicable regulations.

Steel Foundation Posts: All structural foundation steel posts and other foundation structures will be pulled out to full depth, removed, processed to appropriate size, and shipped to a recycling facility. During decommissioning, the area around the foundation posts may be compacted by equipment and, if compacted, the area will be de-compacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent with grassland or agricultural uses. Removed piles and posted will be sorted, processed to appropriate size, packaged for shipment, and sent to a third party for recycling or disposal in accordance with applicable regulations.

Overhead and Underground Cables and Lines: As part of the decommissioning of the facility, cables and conduits will be removed up to a depth of 36 inches and shipped to a recycling facility. Topsoil will be segregated and stockpiled for later use prior to any excavation and the subsurface soils will be staged next to the excavation. Following the removal of the cable and conduits, the excavation will be back-filled with the spoils previously removed. The subgrade will be compacted to a density similar to grassland or agricultural uses. Topsoil will be redistributed across the disturbed area. All cable and conduit buried deeper than 36 inches will be left in place and abandoned.

Inverters, Transformers, and Ancillary Equipment: All electrical equipment will be disconnected and disassembled. All parts will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at Applicant's sole discretion, consistent with applicable regulations and industry standards.

Equipment Pads and Ancillary Foundations: Topsoil will be removed from an area surrounding the foundation and stockpiled for later use/replacement, as applicable. Foundations will be excavated to a depth sufficient to remove all conduits, cables, aggregate and concrete to a depth of 36 inches below grade. The remaining excavation will be filled with clean subgrade materials of quality comparable to the immediate surrounding area. All unexcavated areas compacted by equipment used in decommissioning will be de-compacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent and compatible with grassland or agricultural uses. All materials will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at Applicants' sole discretion, consistent with applicable regulations and industry standards.

Fence: All fence parts and foundations will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at Applicant's sole discretion, consistent with applicable regulations and industry standards, except to the extent the

landowner desires the same to remain in place. The surrounding areas will be restored to pre-construction conditions to extent feasible if necessary.

Computers, monitors, hard drives, and other components: All parts will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at Applicants sole discretion, consistent with applicable regulations and industry standards.

Access Roads: On-site facility access roads will be used for decommissioning purposes, after which removal of roads will be discussed with the Landowner, using the following process:

1) After final clean-up, roads may be left intact through mutual agreement of the landowner and Applicant unless otherwise restricted by Federal, State, or Local Regulations.

2) If a road is to be removed, aggregate will be removed and shipped from the site to be reused, sold, or disposed of appropriately, owner's sole discretion, consistent with applicable regulations and industry standards. Ditch crossings connecting access roads to public roads will be removed unless the landowner requests they remain. The subgrade will be de-compacted to a density similar to surrounding sub-grade material. Topsoil will be distributed across the open area. The access roads and adjacent areas that are compacted by equipment will be de-compacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent with grassland or agricultural uses.

Land Leveling: As part of site decommissioning, to the extent commercially reasonable, Applicant will restore the area disturbed by construction to pre-construction elevation and contour or to a state suitable for continued agricultural use to extent feasible. (For example, ground may be left more level than prior to facility.) If uneven settling occurs or surface drainage problems develop as a result of Facility decommissioning, Applicant will provide additional land leveling services, or compensation, within 45 days of receiving a landowner's written notice, weather permitting.

1.3.3 Restoration/Reclamation of Site

Applicant will restore and reclaim the site based upon the property use intended by the landowner after decommissioning. Applicant assumes that most site will be utilized for agriculture or pasture after decommissioning and will implement appropriate measures to facilitate such uses. If no specific use is identified, Applicant will vegetate the site with a dry wheat, or a grassland seed mix approved by the County weedmaster. The generally accepted decommissioning practices to minimize erosion and contain sediment that will be employed on the Facility to the extent practicable with the intent of meeting this goal include:

1. Minimize new disturbance and removal of native vegetation to the greatest extent practicable.

2. Removal of solar equipment and access roads up to three feet below surrounding grade, backfill with subgrade material and cover with suitable topsoil to allow adequate root penetration for plants, and so that subsurface structures do not substantially disrupt ground water movements.

3. Any topsoil that is removed from the surface for decommissioning will be stockpiled to be reused when restoring plant communities. Once decommissioning activity is complete, topsoil will be restored to assist in establishing and maintaining plant communities.

4. Stabilize soils and re-vegetate with regional plants appropriate for the soil conditions and adjacent habitat and use local seed sources where feasible, consistent with landowner objectives. Reseeding with native plants will not be performed for site that will be returned to agricultural use or other more intensive beneficial uses.

5. During and after decommissioning activities, install erosion and sediment control measures in all disturbance areas where potential for erosion and sediment transport exists, consistent with storm water management objectives and requirements.

6. Remediate any petroleum product leaks and chemical releases prior to completion of decommissioning, if applicable.

Decommissioning and restoration activities at each site will be completed within 12 months after the date the site ceases to operate.

1.4 Post-Restoration Monitoring

Decommissioning of the site will not require new permits or approvals. Decommissioning should include post-restoration monitoring. In addition, Applicant's Field Representative assigned to decommissioning monitoring will stay in contact with site and county agencies, until conditions have stabilized.

In situations where additional restoration is necessary, the compliant procedure will be followed to determine the need for additional restoration (fertilizing or reseeding) in a manner consistent herewith.

As part of the post restoration monitoring, Applicant's Field Representative will also survey for excessive noxious weeds and address if this is an issue. This may involve consulting an agronomist or biologist if revegetation is not sufficient or if there are problems with noxious weeds during the first growing season, or until Applicant no longer has control over the land.

EXHIBIT I-2
SOLAR DECOMMISSIONING
COST ESTIMATE

Solar PV Facility Removal Cost vs. Salvage Value

In solar, the prevailing industry understanding is that, given the relative simplicity of the facilities and predominance of valued scrap metals in the overall composition of a facility (primarily steel racks and piles, etc), that the salvage value of PV facilities materially exceeds the cost of removal.

Compared to other industrial facilities, decommissioning of a solar PV project is relatively simple, does not require highly skilled or specialized labor, could be undertaken by many regional contractors, and does not result in the generation of hazardous waste (or such is minimal/trace and/or self contained, for example in a transformer, that would be removed as a whole (not demolished)) (See Exhibit I-1, Decommissioning Plan). In addition, the vast majority of the components of the system can be readily sold for scrap value (e.g., aluminum module frames, steel racking, copper conductors, etc.), whereby such residual value is typically estimated to exceed the cost of decommissioning a solar PV plant. For example, there will be thousands of steel piles to which modules are mounted. Thus, such major components have major scrap value, and are expected to result in a number of parties will to pay for the right to remove the facility in order to secure the scrap value.

Thus, the industry understanding is that solar PV facility removal cost is functionally negative, as third parties are expected to be willing to pay to remove the facility in exchange for scrap metals.

Cost Estimate:

Cost estimate for removal: Less than zero. < $0.00.

Salvage value exceeds removal costs materially. Thus the appropriate estimate is negative.

Further, a full actual detailed cost estimate can not be completed until a facility is fully designed and final. This final design cannot occur until final permits are received for the facility, which cannot be even started until after a Conditional Use Permit is secured for the facility.

Thus, *if* any additional cost estimate is required for the facility, it should be done subsequent to prior design, and prior to construction, based on detailed final design. It is not appropriate to provide a project specific removal cost estimate at this time, if any should be required at all, which Applicant believes is not necessary. [Can discuss further at Planning Commission meeting if necessary.]

Conclusion:

Given 1) the negative-cost-of-removal backdrop, and 2) the intrinsic value of the facility (including interconnection) and which is likely to never be removed (only retrofitted with more efficient equipment later): The decommissioning cost does not comprise a material, if any risk to the county or the landowner. Thus security to address removal and decommissioning is not a major concern, and it is thus reasonable to not require posting of decommissioning security at the time of construction.

If any security is required, it should be posted based on a cost estimate for removal completed at Year 10 of operations, and posted, if materially different than the initial estimate (zero) if applicable, at that time. It could be removed every 5-10 years thereafter.

Documentation / Example:

An example of a detailed cost estimate completed for another project (roughly 80 acres in size, located on similarly non-rectangular ground, for a South Carolina project) is attached in *Exhibit I-3 "Example Decommissioning vs Salvage Value Estimate"*. The estimate was prepared by a professional engineering services firm, based on a final facility design, for that specific project.

As you can see in Exhibit I-3, the salvage value ($450,000) exceeded the removal cost ($315,000)

This cost estimate was created using the detailed design data available for the site, and includes interconnection removal and site remediation costs. While the actual number of panels and associated equipment for Wasco Solar Farm will vary, either up or down based on its final design, the outcome will scale in a similar fashion: the cost to remove facility material from the site, and remediate the site to its prior condition shall be less than the salvage value of the equipment removed by about 35%. This brings the cost of decommissioning the site to either a negative number or $0.

Prior to construction, an updated cost estimate for decommissioning the site can be performed for the as-designed facility if required by the Planning Commission as a permit condition. At that time, and at as requested review intervals agreeable to Crook County, financial assurances can be revisited and applied, if any.

EXHIBIT I-3

DECOMMISSIONING AND SALVAGE SUPPORT DOCUMENTS

McGAVRAN
ENGINEERING, P.C.

Decommissioning Report

Nimitz Solar LLC

February 2017

Performed By:

McGavran Engineering, P.C.
801 Baxter Street, Suite 410
Charlotte, North Carolina 28202

February 2, 2017

Nimitz Solar, LLC c/o
Greg S.K. Ness
General Counsel
Southern Current LLC
1634 Ashley River Road
Charleston, SC 29407

Dear Greg,

Please find enclosed the Decommissioning Report for the Nimitz Solar LLC, project located in the town of Ridgeland, South Carolina.

As you will note, these sites are not complicated by any wetland nor navigable waterways, that can be problematic for both construction and decommissioning. The report reflects that fact, and makes it clear that decommissioning, will be a simple matter and a relatively low cost activity.

Also, it is the case that much of the hardware used, (steel, solar panels, etc.) are salvageable, and will have considerable value at the time of decommissioning, which will defray cost issues as well for the decommissioning. In this instance, there will be little or no remediation required, other than preventing the loss of topsoil and erosion control, ongoing mitigation will be minimal as well

We appreciate the opportunity to do this work for you and look forward to other engagements with you on similar projects.

Please contact me if you have any questions regarding this matter.

Sincerely,

Edward G. (Ted) McGavran, III, P.E.
President
McGavran Engineering P.C.

Engineering Services

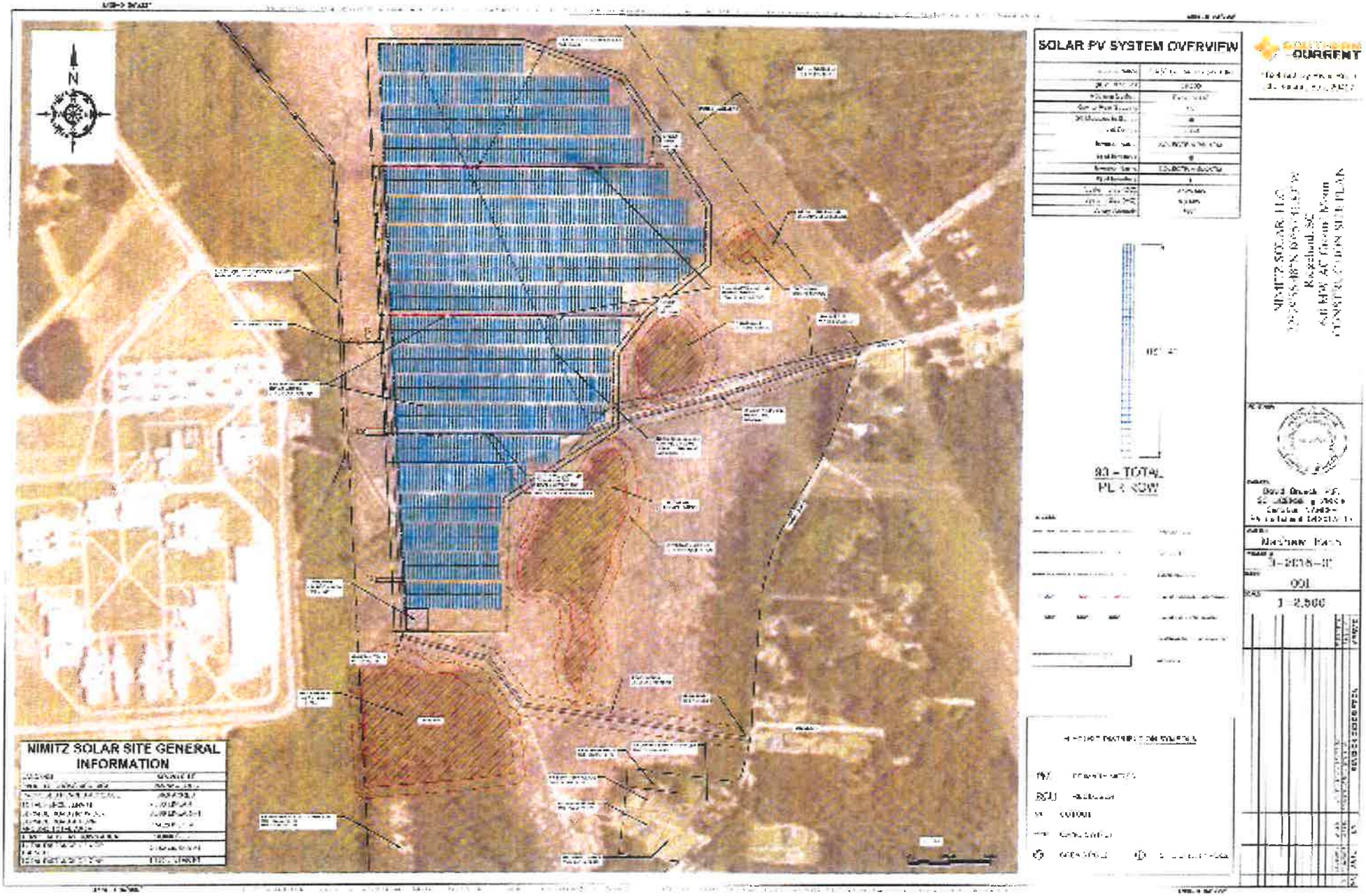
801 Baxter Street Suite 410

Charlotte, NC 28202

704-347-4806 FAX 704-347-4808

Appendix 3

Site Layout


SOLAR PV SYSTEM OVERVIEW
NIMITZ SOLAR SITE GENERAL INFORMATION
93 - TOTAL PER ROW
CURRENT
001
1 - 2,500

Appendix 5

Decommissioning Detailed Cost Estimate

Detailed Decommission Cost Estimate

Project Size: 8 MW ac
Project land area: 93.56 acres

Item	Qty	Cost/Unit	Total Cost
117.5 W Solar Panels First Solar Series 4	89,600	N/A	$25,000.00
Panel Support Posts	4,850	$25.00	$121,250.00
1500 KVA Transformers	5	$1,000.00	$5,000.00
500 KVA Transformers	1	$1,000.00	$1,000.00
Inverters	11	$1,000.00	$11,000.00
Fence Removal			$20,000.00
Conductor Removal (overhead and underground			$20,000.00
Interconnection Removal			$10,000.00
Site Remediation	94 acres		$100,000.00
Total Cost			**$313,250.00**

Salvage Values

Project Size: 8 MW ac
Project land area: 93.56 acres

Item	Qty	Cost/Unit	Total Cost	Salvage value
117.5 W Solar Panels First Solar Series 4	89,600	$0.40 W	$4,211,120	$421,112*
Aluminum	18 acres	@ $1,000/ton salvage value		$18,000
1500 KVA Transformers	3	$30,000	$150,000	$30,000
500 KVA Transformers	1	$12,000	$12,000	$2,400
Inverters	11	$1,000.00	$11,000.00	
Fence: @ 900 galvanized steel posts, 15lb/post. @ 13,500 Lbs. @ $100/ton				$675
@ 8679' chain link fence @ 5lb/foot @ 43,395 lbs @ $100/ton				@$2100
Conductor (copper and Al.) (overhead and underground)				$5,000**
Interconnection (meters, switches, recloser/breaker)				$30,000***
Total Salvage				**$454,295.00**

Notes

*Based on scrap value 10% of original cost given 80 - 85% remaining capacity.
**Experience factor on similar projects including major substation projects decommissioned.
***Same as experience factor above.

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Conclusion:

Given 1) the negative-cost-of-removal backdrop, and 2) the intrinsic value of the facility (including interconnection) and which is likely to never be removed (only retrofitted with more efficient equipment later): The decommissioning cost does not comprise a material, if any risk to the county or the landowner. Thus security to address removal and decommissioning is not a major concern, and it is thus reasonable to not require posting of decommissioning security at the time of construction.

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Documentation / Example:

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As you can see in Exhibit I-3, the salvage value ($450,000) exceeded the removal cost ($315,000)

This cost estimate was created using the detailed design data available for the site, and includes interconnection removal and site remediation costs. While the actual number of panels and associated equipment for Wasco Solar Farm will vary, either up or down based on its final design, the outcome will scale in a similar fashion: the cost to remove facility material from the site, and remediate the site to its prior condition shall be less than the salvage value of the equipment removed by about 35%. This brings the cost of decommissioning the site to either a negative number or $0.

Prior to construction, an updated cost estimate for decommissioning the site can be performed for the as-designed facility if required by the Planning Commission as a permit condition. At that time, and at as requested review intervals agreeable to Crook County, financial assurances can be revisited and applied, if any.

EXHIBIT J

EMERGENCY MANAGEMENT PLAN

1. Facility Description

Moffatt Road Solar Farm I LLC (Applicant) is proposing to construct a renewable energy facility comprised of photovoltaic (PV) modules on single-axis or fixed tilt tracking systems with an accompanying optional energy storage system and all necessary appurtenances. The main electrical generation area within the facility area will include solar modules, step up transformers, switchgear and transmission line substation, solar inverter stations, an energy storage subsystem, monitoring and maintenance facilities, collector lines, and temporary use areas (collectively, the Facility).

The Facility will be located west of George Millican Road, approximately 8 miles southwest of Prineville, in Crook County, Oregon (the Facility Site). The Facility is expected to occupy up to a maximum of 320 acres within a fenced boundary. The Facility area will be seeded with a low growth seed mix to reduce storm water, runoff, and erosion. See Attachment A for detailed site layout information. During construction, a temporary construction trailer/office and laydown yard will be located on-site. When operation commences, the Facility will be unmanned on a daily basis, with periodic visits by maintenance personnel.

1.1 General Information: Pre-Construction, Construction and Operation

The purpose of this Emergency Response Plan (EMP or Plan) is to discuss the procedures that will be implemented in the event of a fire or other emergency during the construction and operation of the Facility, as well as general safety practices to reduce the risk of fire and emergency. This Plan is meant as a working plan for Applicant and local fire, emergency response, and public safety officials to better understand the Facility at various stages of development, construction, and operation. This Plan will be updated periodically as necessary as site design specifics become available and are finalized.

1.2 Site Access

1.2.1 Site Address

The Facility will be located in Crook County, OR, off of the west side of George Millican, approximately 8 miles Southwest of Prineville, OR. The Facility is located immediately north of the existing Gala Solar Farm at 12515 SW George Millican Road, Prineville, OR 97754.

1.2.2 Site Driveways

Vehicular access to the site is provided from the site to SW George Millican Road through an existing access road within an 80' wide strip along the northern border of the existing solar farm. During the early development and pre-construction phases, the access road will be unmarked, except for a small sign. Once construction begins, the access road will be marked with signage. The main driveway access off of this existing access road will be controlled with an approximately 20' wide security gate. The fence will be locked with a Knox box. Attachment A includes a map depicting the main site access locations once final facility design has been completed.

1.3 Facility Team

Applicant and its associated representatives will manage the development cycle of this EMP during early development phase portions of the contract. Early development phase involves all pre-construction activities and may include site surveying and assessments of site soils, biology, wildlife, and cultural resources. Once construction is ready to start (when Engineering, Procurement, and Construction (EPC) contractors are chosen and have mobilized to the site) the EMP will be updated with detailed site design, access, safety, and contact information based on the EPC contractor chosen and final Facility layout. During early development, site contacts for issues in the field are as follows:

Table 1: Applicant Contact Info

Facility Manager	Brent Beverly	(541) 589-0302	bbeverly@newsunenergy.net

2. Site Specific Fire Prevention and Public Safety Plan

During the early development phases of the Project and when on site for official business with any subcontractors, land surveyors, or consultants, Applicant or its representatives should have access to the Emergency Contact form in Section 3.1 for any possible emergency notifications.

3. Emergency Response and Crisis Management

Different types of Emergencies call for different types of responses for on-site personnel.

Types of Emergencies:

- Fire - Structure fire, wildfire, equipment fire, etc.
- Medical – Injury, Shortness of Breath, Stroke, Heart Attack, etc.
- Hazardous Material Release – Chemical Storage Spill (chemical usage and storage anticipated to be minimal), Ruptured Equipment (hydraulics hose, engine oil spill, etc.)
- Natural Disasters / Catastrophic – Earthquake, Flood, Tornado, Other High Wind Event
- Violence - Fight Or Disturbance, Threat Of Weapons, Assault, Bomb Threat

3.1 Emergency Contacts

Emergency Response Contacts:

Category	**Emergency Contact Information**	**Telephone**
Facility Manager	Moffatt Road Solar Farm I LLC, Brent Beverly	541-589-0302
Fire Emergency	Crook County Fire & Rescue, Station 1202 8900 SW Reif Rd, Powell Butte	911
EMT	Ambulance	911
Hospital	St. Charles Prineville 384 SE Combs Flat Rd, Prineville, OR	541-447-6254
Emergency Services	Crook County Sheriff	911

Sheriff	Crook County Sheriff 308 NE 2nd St Prineville, OR	541-447-6398
Spill Hazard	Haz Mat Spill Response Clean Harbors – For any emergency can reach their hotline 24/7.	800-645-8265
EPC	EPC Emergency Response Team (ERT)	TBD
	EPC Safety Team Leader (STL)	TBD

3.2 Emergency Safety Communication and Training

Applicant will provide education, training documentation, and a fire site plan overview for Crook County Fire and Rescue and local Public Safety personnel. Education and site-specific information will be provided for:

- Access Gates to the site and other areas such as facility electrical substation
- Navigating the internal roadways at the site
- Various types of equipment hazard conditions associated with Photovoltaic Solar Arrays
- Emergency AC and DC Disconnect locations
- Shock hazards such as DC or AC voltages which emergency responders should be aware of to ensure emergency responder safety and prior to applying fire suppression methods
- Other Hazardous Material Presence
- Vegetation Fire procedures and prevention, including landscape and weed maintenance
- Electrical Fires
- EPC Contractor, Subcontractor, & Employee Training & Education requirements specific to Emergency First Response
- EPC Contractor, Subcontractor, & Employee Training & Education for Controlling Hazards & Prevention Practices

3.3 Fire Safety and Prevention

Wildfires in Crook County are generally caused by lightning or human activity, with lightning accounting for three times as many fires (Geiger 2014). Human caused fires are frequently caused by out-of-control brush burning at residences, fireworks, inadequately suppressed campfires, cigarette butts, and heated catalytic converters in dry grass.

At the Facility, Applicant will control many potential ignitions of human origin that cause wildfires. To minimize accidental fire ignition at the Facility site, Applicant and its contractors will develop, implement, and maintain strict standard practices as an integral part of daily activities. General safety practices include the following:

- Combustible and flammable waste should not be allowed to accumulate in any work area.
- Flammable and combustible materials should not be stacked or stored against any temporary or permanent building, structure, or storage facility.
- Rags and fabric contaminated with natural oils, biodiesel, or other hydrocarbon products should be contained in a closed metal container and removed daily from the workplace to a safe disposal area.

- Contractors should have an appropriate number of portable fire extinguishers on-site during construction, operations, and decommissioning. In addition, the contractor should have a fire suppression water tank onsite during construction and decommissioning.
- During periods when the risk of wildfire is high, activities with inherent fire risks such as hot work (grinding, cutting, welding), chainsaw/chipping operations, etc. should be limited.
- In the collector line corridor and particularly around related infrastructure (i.e., poles), vegetation should be maintained pursuant to the North American Electric Reliability Corporation and National Electric Code regulations.
- Smoking is strictly prohibited and permitted only in specific areas designated with fire safety in mind. These areas will be clearly identified.

Fire Emergencies

All fires, regardless of the size or circumstances, shall be immediately reported using the 911 system. Employees and subcontractors shall be trained in proper reporting procedures such as the nature of the emergency, the exact location, a contact person/callback number, and any other important information. The O&M building will have an alarm system reporting to a monitoring station.

Crook County Fire and Rescue is the primary fire response organization for the Facility site. Crook County Fire and Rescue has three fire stations in the vicinity. Two are located in Prineville (approximately 11 miles/19 minute drive from the stie) while one station (Station 1202) is located in Powell Butte (approximately 17 miles/24 minute drive from the site). Oregon State Forestry Fire Agency may provide backup fire services if needed.

During Construction and Decommissioning

Training

Fire prevention and fire precaution training should be given to all employees and contractors at the Project site. This training should be conducted as part of the Applicant's Site Safety Rule and Regulations and required for all employees before beginning work at the Project site. The training program should include:

- Hazard recognition and risk potential;
- Inspection methods;
- Hot Work Permit requirements;
- Emergency fire procedures;
- Selection and use of portable fire extinguishers; and
- Storage and handling of flammable and combustible liquids brought onto the site.

Material Storage

Materials in work areas should be limited to actual needs and should be stored in a manner to protect combustible material from ignition sources. Storage areas should be kept clean, and materials should be neatly stacked or placed. Construction materials should be stored or placed in in an orderly manner. Storage quantities will be minimized.

Compressed Gas Cylinders

Compressed gas cylinders will be handled in accordance with industry best practices. Compressed gas cylinder valves should be closed whenever work is finished, when the cylinders are empty, or when the cylinders are moved. Cylinders should be stored in well-

protected, ventilated, dry locations, at least 20 feet from highly combustible materials. Welding gases should be stored in isolated areas and segregated by type of gas. Compressed gas cylinders should be secured in an upright position at all times, except for short periods when being carried or hoisted. Cylinders should be transported in an upright position and should not be hauled in equipment beds or truck beds on their side. Cylinders lifted from one elevation to another should be lifted only in racks or containers designed for that purpose. Compressed gas cylinders should not be hoisted by the valve cap or by means of magnets or slings. Compressed gas cylinders should not be used as, or placed where they may become part of, an electrical circuit. Oxygen cylinders should be kept free of oil and grease.

Flammable and Combustible Liquids

The storage of flammable and combustible liquids will be in accordance with NFPA 30. While no combustible liquids, including oil or grease, are intended for use by the Project, any such products should be stored in containers or storage tanks labeled with contents and tank capacity. The transformer may be designed to use mineral oil, albeit permanently sealed. Any container or tank for storage should meet criteria such as:

- Steel Tank Institute F911 and UL 142 standards;
- Capable of withstanding working pressures and stresses compatible with the type of liquid stored;
- Maintained in a manner that prevents leakage;
- Located in an area free of other types of combustible materials; and
- Vented or otherwise constructed to prevent development of pressures or vacuum as a result of filling, emptying or changes in atmospheric temperature in accordance with NFPA 30.

Flammable/combustible solvents should not be used near ignition sources. Flammable liquids should be handled and used only in approved, properly labeled safety cans. No equipment should be fueled while the engine is running. The use of cellular phones or other types of radio-frequency generating devices (pagers, two-way radios, etc.) is not be permitted within 25 feet during any fueling operations.

Hot Work

All hot work should be conducted under a Hot Work Permit that contains a checklist to promote fire and worker safety. Inspection items should include the work and surrounding area, weather and fire conditions, firefighting resources, emergency egress, work coordination, equipment and tool inspections, and fire watch provisions and duration. A permanent hot work site may be developed in a fire-safe area for the construction process. This area should have a daily hot work permit and daily inspection process. Before hot work is carried out in any construction area, welding fabrication area, or shop, the area should be cleared of all combustible and flammable material.

All employees shall use proper personal protective equipment and clothing when performing or assisting in cutting and welding operations (burning glasses, shields, moleskin suits or flame C resistant coveralls and gloves, etc.). At least two fire extinguishers with a 15-pound Class A, B, C rating should be at the work location during welding, cutting, soldering, etc. They should be placed in the most likely area of egress should a fire occur. Welding leads and equipment should be properly maintained and inspected before use. Defective equipment should not be used and should be reported to the supervisor. A fire-resistant container should be used for

spent electrode stubs. Welding machines should be turned off when being moved or when the welder must leave their work for any length of time.

Hoses and torches should be inspected before use, and defective hoses should be removed from service. Torches should be ignited by friction lighters or other approved devices only. Cylinders, all hose apparatus, and connectors should be kept free of oil and grease and not handled with oily or greasy hands or gloves. Oxygen/fuel gas systems should be equipped with approved back-flow valves, flash back arresters, and pressure relief devices.

Fuel gas/oxygen equipment should be disconnected from the source when left unattended and torches should not be left unattended inside a confined space. The frame of all arc welding or cutting machines should be effectively grounded when the machine's power outlets are being used as an electrical power source. If electrode holders are to be left unattended, the electrodes should be removed, and the holder placed where it is protected from unintentional contact.

Trained fire watchers should remain at the location for 30 minutes during normal fire risk and 60 minutes during periods of very high fire risk as defined by the National Weather Service for the site area. Hot work at height and from scaffolding presents special hazards. The controls are as follows:

- All work should be coordinated with other subcontractors working in the area.
- Areas beneath hot work should be cleared of all combustible and flammable materials.
- Fire-retardant material should be used to cover scaffold boards and enclose operations.
- Fire-retardant material should be removed at the end of every shift to expose scaffold boards or combustible materials.

Electrical Equipment

Task lighting, particularly halogen lamps, should be clear of combustible materials when in use. The use of cool lights for individual task lighting is encouraged. Only approved connectors should be used on electric arc welding leads. Flexible cables, tools, and equipment, including welding equipment, should be inspected regularly for damage. Document monthly inspections.

Fire Protection Equipment

Fire extinguishers should be inspected, tested, and maintained in accordance with applicable codes/standards such as NFPA standards or State of Oregon equivalent. Fire extinguishers should be conspicuously marked, and clear access to each should be maintained. Employees should be trained in the use of fire extinguishers. Each fire extinguisher should be replaced immediately after discharge with another fire extinguisher that is fully charged and of the proper size and type.

Fire extinguishers may be provided and maintained at the following locations:

- On all motorized vehicles;
- At any fuel dispensing or service area; and
- At storage areas for flammable or combustible liquids.

Smoking will be permitted only in designated areas. Electrical wiring and equipment for light, heat, or power purposes will be installed in compliance with local building codes or 29 CFR 1926 Subpart if K if for temporary use during construction activities.

Inspection and Testing
General and specific inspection schedules will be developed and implemented. General inspections will be conducted monthly and will include all construction areas, storage and lay down areas, and fabrication and painting areas.

During Operations

Flammable and Combustible Liquids
Bulk flammable and combustible liquids should be stored in STI F911 and UL 142 containers in accordance with NFPA 30 and local building codes. Non-bulk storage should be in accordance with local building codes in packaging approved by Department of Transportation and on secondary containment, if appropriate. Smaller quantities of flammables should be stored inside of a flammable materials locker.

Electrical Equipment
Task lighting, particularly halogen lamps, should be clear of combustible materials when in use.

Fire Protection Equipment
Fire extinguishers should be inspected, tested, and maintained in accordance with applicable local codes/standards and NFPA 10. Employees should be trained in the use of fire extinguishers. Each fire extinguisher should be replaced immediately after discharge with another fire extinguisher that is fully charged and of the proper size and type.

Fire extinguishers may be provided and maintained at the following locations:

- On all motorized vehicles;
- At the fuel area, if applicable; and
- At storage areas for flammable or combustible liquids.

Smoking will be permitted only in designated areas. Smoking will be prohibited at or in the vicinity "No Flame" of operations that constitute a fire hazard. A sign reading "No Smoking or Open Flame" should be conspicuously posted.

Attachments

A. Overall Site Plan, Site access, Site Muster Locations, Proposed Hazardous Material Storage Location
B. Flow Chart (in the event of an emergency)
C. Emergency Response Jurisdictional Boundary Map
D. Site Specific Safety Plan

ATTACHMENT A
SITE PLAN, ACCESS, STORAGE

[*to be provided*]

ATTACHMENT B
EMERGENCY FLOW CHART

[*to be provided*]

ATTACHMENT C
EMERGENCY RESPONSE JURISDICTION MAP

[*to be provided*]

ATTACHMENT D
SITE SPECIFIC SAFETY PLAN

[*to be provided*]

Moffatt Road Solar Farm LLC Wetland Delineation

SW George Millican Road
Powell Butte, Oregon

Prepared for:
NewSun Energy
550 NW Franklin Avenue, Suite 408
Bend, Oregon 97701

July 29, 2024
PBS Project 80812.026

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INTRODUCTION

PBS Engineering and Environmental LLC (PBS) was contracted by NewSun Energy (Client) to conduct a wetland delineation for a solar energy project. The 383.21-acre study area is in unincorporated Crook County east of the community of Powell Butte, Oregon (Figure 1; all figures provided in Appendix A) on a portion of Tax Lot 300 on Crook County Assessor map 16S15E (Figure 2). PBS fieldwork was conducted June 24 through June 26, 2024, by Hailey Gilliland, wetland scientist.

LANDSCAPE SETTING AND LAND USE

The study area is within the Blue Mountains–Deschutes River Valley ecoregion. This ecoregion is described as "a broad intermountain sagebrush–grassland. Because of the proximity of the high Cascades to the west, stream density and water availability are high. As a result, human population density is much higher than in Ecoregion 80g (the High Lava Plains). Canals carry river water to irrigated farms on floodplains and terraces" (Thorson et al. 2003).

The study area is a vacant parcel that consists of mixed shrub-steppe and western juniper (*Juniperus occidentalis*) woodland habitat. The study area has been and is still actively used for grazing livestock. Study area elevations range from 3,441 to 3,617 feet (NAVD 88) (US Geological Survey [USGS], 2015). Topography generally slopes to the east. The northern portion of the study area is situated on a steep hillside with a slope of approximately 15%, which transitions to a gentler slope of approximately 5% in the central and southern portions. The study area is bounded by shrub-steppe and western juniper woodland habitat to the north, east, and west. A solar field and a rural residential property border the study area to the south.

SITE ALTERATIONS

Land use in the study area is dominated by livestock grazing and associated ranch roads. Grazing has compacted the soil in certain areas; however, it does not appear to have affected hydrology or aquatic resources on the site. The construction of farm roads within the study area may have altered the flow of surface water across the site, but the effect appears to be generally negligible. One of the farm roads in the southwestern portion of the study area (Figure 6J) may have diverted the natural path of an ephemeral stream.

PRECIPITATION DATA AND ANALYSIS

Precipitation data were obtained from the Redmond Airport climate station via the National Oceanic and Atmospheric Administration (NOAA) Regional Climate Centers Applied Climate Information System (AgACIS) website (NOAA, 2024) (Appendix D). The Antecedent Precipitation Tool (Environmental Protection Agency, 2024) was used as an alternative to the NRCS WETS Table (Appendix D). Less than 0.25 inch of rain fell in the two weeks prior to the field investigation. Rainfall for the year and for the three-month period prior to the field visit was drier than normal (Table 1 and Appendix D). Secondary indicators of hydrology were relied upon because of the summer timing of the field visit.

Lower than normal precipitation levels did not affect the delineation of non-wetland waters, as determinations of intermittent versus ephemeral streams were made using indicators described in the Streamflow Duration Assessment Method (SDAM), which relies on multiple indicators (Nadeau, 2015).

Table 1. Precipitation Summary

Site Visit Date	Precipitation Day of Site Visit (in.)	Precipitation Two Weeks Prior to the Site Visit (in.)	Average Water Year to Date (in.)	Actual Water Year to Date (in.)	Percent of Normal	Relation to Normal
06/24/2024 to 06/26/2024	0.00	0.14	7.23	6.47	89%	Below

in.: inches

METHODS

The field investigation was conducted from June 24 through 26, 2024. The wetland delineation was based on the routine determination method presented in the US Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and guidance presented in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Supplement* (Version 2.0) (Supplement) (USACE, 2010). Soils, vegetation, and indicators of hydrology were recorded at 12 sample plot locations on standard wetland determination data forms (Appendix B). Wetland indicator status was assigned based on the Regional Wetland Plant List for the Arid West (USACE, 2022a). Plot locations were established to represent contrast in landscape position and plant communities.

Non-wetland waters were delineated according to guidance provided by the Oregon Department of State Lands (DSL) and USACE, which differs for each agency. The USACE-regulated ordinary high water mark (OHWM) was delineated according to Guidance Letter 05-05 (USACE, 2005) and *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams: Interim Version* (USACE, 2022b). The DSL-regulated ordinary high water line (OHWL) was delineated based on guidance presented in Oregon Administrative Rule (OAR) 141-085-0515(3)(a-f) (2009). Flow duration for non-wetland waters was determined using SDAM (Nadeau, 2015). The dry channel methodology within SDAM was specifically applied due to the summer timing of the investigation. SDAM was performed for each stream (Appendix B).

DESCRIPTION OF ALL WETLANDS AND OTHER NON-WETLAND WATERS

The field investigation identified seven ephemeral streams within the study area. The features are described below and illustrated in Figures 6A through 6F. Stream duration field assessment forms are included in Appendix B for all the ephemeral streams.

Ephemeral Stream 1 (0.02 acre, 850 square feet, 416 linear feet)

Ephemeral Stream 1 originates off site to the north and continues south through the study area before terminating. The ephemeral stream is located along a farm access road and generally follows the linear road. In its northern section, the stream has a relatively defined bed and bank, approximately 4 feet wide. As it progresses south, the bed and bank become less distinct, eventually flattening out and disappearing. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush *(Artemisia tridentata),* rubber rabbitbrush *(Ericameria nauseosa),* and cheat grass *(Bromus tectorum).* No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 2 (0.05 acre, 2,343 square feet, 680 linear feet)

Ephemeral Stream 2 originates just south of a farm road in the north-central portion of the study area. The stream flows southeast and terminates on site. The stream has a vague bed and banks that are almost entirely

vegetated, with little to no bare soil in the channel. The average width is approximately 4 feet. At the end of the stream, the bed and bank flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, rubber rabbitbrush, cheat grass, pale alyssum (*Alyssum alyssoides*), and needle and thread (*Hesperostipa comata*). No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 3 (0.02 acre, 1,651 square feet, 416 linear feet)
Ephemeral Stream 3 originates in the north-central portion of the study area, flows southeast, and terminates on site. The stream has a somewhat defined bed and banks that are almost entirely vegetated with little to no bare soil in the channel. The average width is approximately 2 feet. At the end of the stream, the bed and bank flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, rubber rabbitbrush, cheat grass, pale alyssum, and needle and thread. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 4 (0.01 acre, 274 square feet, 138 linear feet)
Ephemeral Stream 4 originates in the eastern portion of the study area and flows east for a short length and terminates on site. The stream has a very vague bed and banks that are almost entirely vegetated, with little to no bare soil in the channel. The average width is approximately 2 feet. At the end of the stream, the bed and bank flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous including western juniper, big sagebrush, rubber rabbitbrush, cheat grass, pale alyssum, and needle and thread. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 5 (0.01 acre, 392 square feet, 200 linear feet)
Ephemeral Stream 5 originates in the western portion of the study area and flows east for a short length and terminates on site. The stream has a very vague bed and banks that are almost entirely vegetated, with little to no bare soil in the channel. The average width is approximately 2 feet. At the end of the stream, the bed and banks flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, cheat grass, pale alyssum, junegrass *(Koeleria macrantha)*, and crested wheatgrass (*Agropyron cristatum)*. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 6 (0.04 acre, 1,711 square feet, 573 linear feet)
Ephemeral Stream 6 originates in the southern portion of the study area and flows north, where it continues off site to the northwest. An ephemeral tributary enters the site from the west and joins with Ephemeral Stream 6. This ephemeral tributary appears to be the ephemeral stream (ST-01) identified in WD2021-0542. Ephemeral Stream 6 is located alongside a farm access road and generally follows its linear shape. The stream is approximately 4 feet wide and has some bare soil. Before the stream exits the study area, the bed and banks flatten out and the channel becomes more vegetated. It is unlikely that the channel continues far off site. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, cheat grass, pale alyssum, and crested wheatgrass. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 7 (0.005 acre, 209 square feet, 416 linear feet)
Ephemeral Stream 7 originates in the southwestern portion of the study area, flows northeast for a short length, and terminates on site. The stream has a vague bed and bank that are almost entirely vegetated, with little to no bare soil in the channel. The average width is approximately 2 feet. At the end of the stream, the bed and banks flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, cheat grass, pale alyssum, junegrass, and crested wheatgrass. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

DEVIATION FROM SWI

The Statewide Wetlands Inventory (SWI) includes the National Wetlands Inventory (NWI) and National Hydrology Dataset (NHD). The results of this delineation somewhat concur with NWI and NHD mapping, with notable differences. The SWI (DSL, 2024) maps two NWI and NHD polygons in the northwestern corner of the study area that converge into one stream that terminates on site. The northern portion of this polygon was identified in the field; however, it is shorter than the SWI mapping. Additionally, the SWI maps illustrate an R4SBC (riverine, intermittent, streambed, seasonally flooded) feature; however, the stream identified in the field is accurately classified as ephemeral. Another R4SBC feature is mapped as originating in the eastern portion of the study area and continuing off site to the east. This feature was not found in the field. There were ephemeral drainages located to the west of the mapped SWI feature; however, they all terminate on site. Additionally, another R4SBC feature is mapped in the southwestern corner of the study area. The SWI feature enters from the west and flows into the study area where it terminates. This feature was partially confirmed; however, a farm road appears to have possibly altered the alignment. Additionally, the classification for these streams would be ephemeral.

MAPPING METHOD

A recent color aerial photograph with the study area boundaries was used as the basemap for the delineation maps (Google Earth, 2024). Contours were generated from USGS 3D Elevation Program (3DEP) lidar (USGS, 2015). Waterway boundaries and sample plot locations were collected using a Trimble DA2 handheld GPS unit with real-time kinematic (RTK) accuracy of ±2.7 feet based on real-time accuracy information at the time of recording. Tax lot boundaries were obtained from Crook County geographic information system (GIS), and accuracy is assumed to be within +/- 1 meter. Mapping and cartography were completed in ArcGIS Pro. Soil

mapping units are depicted in Figure 4 and an aerial photograph is included as Figure 5. Ground-level site photographs are included in Appendix C.

ADDITIONAL INFORMATION

State Jurisdiction

All seven streams identified on site are ephemeral and lack any fish presence due to a lack of downstream connection. DSL regulates "waters, including rivers, intermittent and perennial streams, lakes and ponds" (2009). DSL's definition of an intermittent stream is "any stream which flows during a portion of every year and which provides spawning, rearing or food-producing areas for food and game fish" (2009). The streams identified on site are ephemeral and lack any spawning, rearing, or food-producing areas for fish. Because of this, the features are likely not jurisdictional to DSL.

Federal Jurisdiction

On August 29, 2023, the USACE and EPA issued a final rule to amend the "Revised Definition of 'Waters of the United States'" to conform to the US Supreme Court's decision in the case of Sackett v. Environmental Protection Agency. The new rule defines jurisdictional waters as traditional navigable waters (TNW) or tributaries to TNWs. The ephemeral streams identified on site lack any downstream connection and are likely not jurisdictional; however, the final determination will be made by USACE.

RESULTS AND CONCLUSIONS

Seven ephemeral streams were delineated within the study area (Table 2).

Table 2. Delineation Summary

Field ID	Area (acre)	Cowardin Classification	HGM Classification
Ephemeral Stream 1	0.02	NA	NA
Ephemeral Stream 2	0.05	NA	NA
Ephemeral Stream 3	0.04	NA	NA
Ephemeral Stream 4	0.01	NA	NA
Ephemeral Stream 5	0.01	NA	NA
Ephemeral Stream 6	0.04	NA	NA
Ephemeral Stream 7	0.004	NA	NA

HGM: Hydrogeomorphic ; NA: not applicable

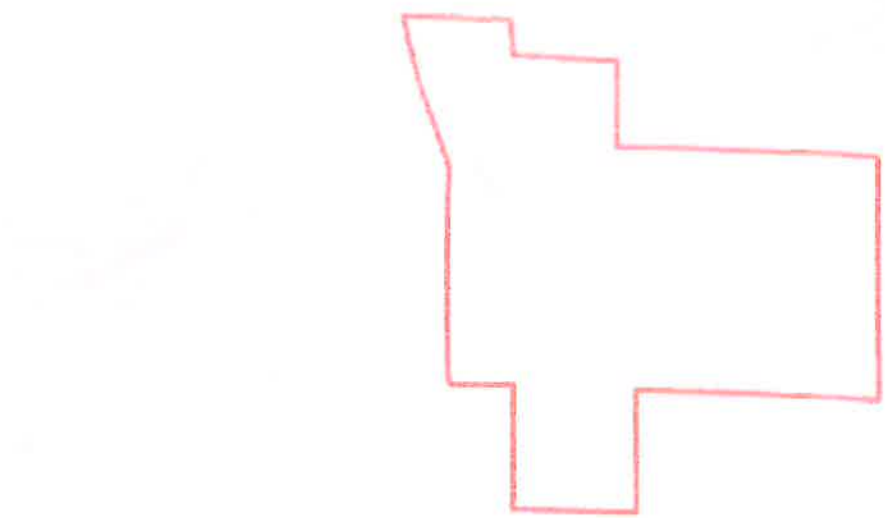
REQUIRED DISCLAIMER

This report documents the investigation, best professional judgment, and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by DSL in accordance with OARs 141-090-0005 through 141-090-0055.

Appendix A

Maps

Figure 1. Location Map
Figure 2. Tax Lot Map 16S15E
Figure 3. Statewide Wetlands Inventory Map
Figure 4. County Soil Survey Map
Figure 5. April 18, 2024 Aerial Photograph
Figure 6. Wetland Delineation Overview Map
Figure 6A-6J. Wetland Delineation Map



Legend

Study Area, 383.21 ac

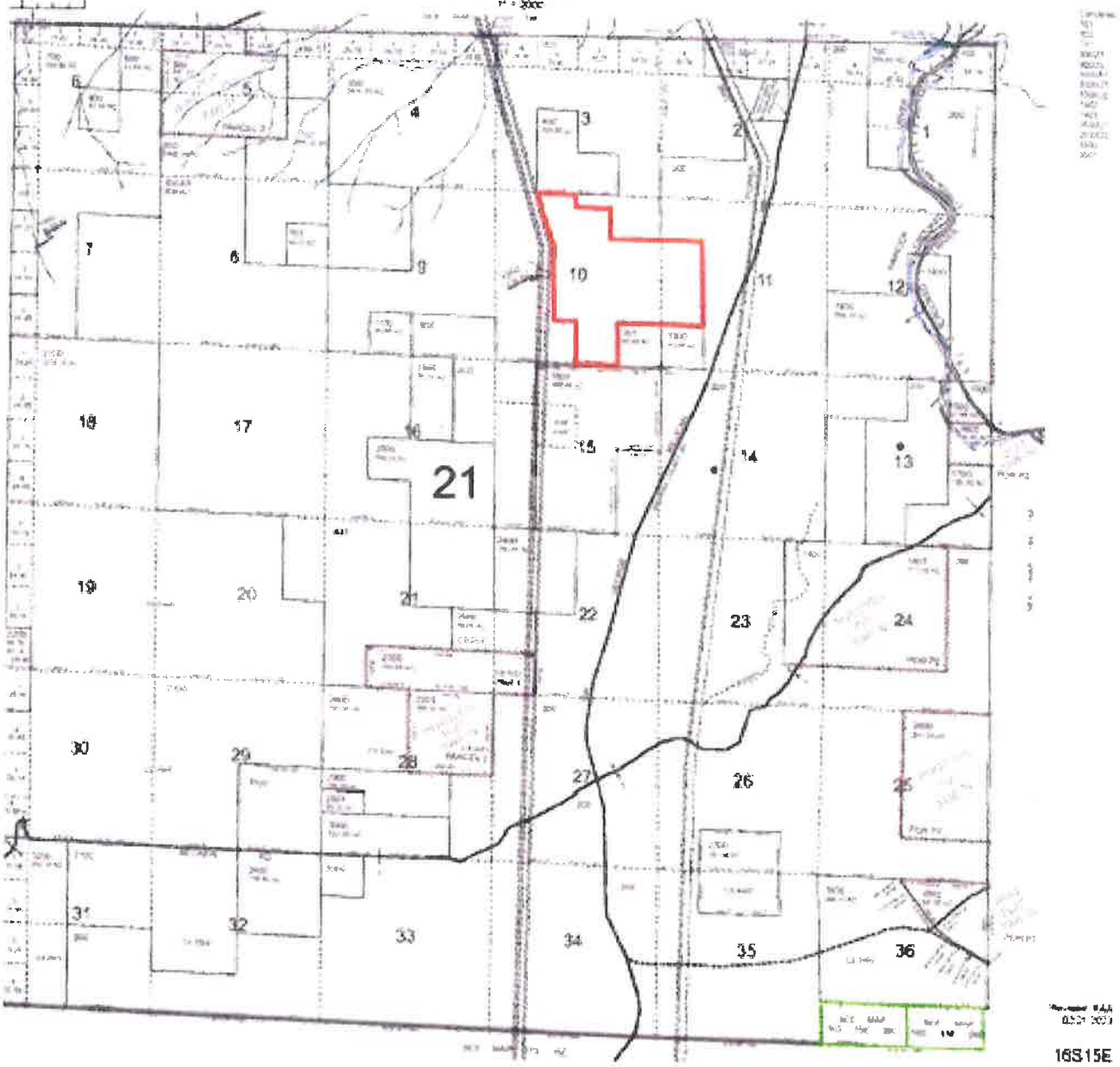
PREPARED FOR: NEWSUN ENERGY

PBS

LOCATION MAP

MOLALLA ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

1



Legend

Study Area 583.21 ac

SCALE: 1" = 5,000 (8.5X11 SHEET)

0 2,500 5,000 10,000

PREPARED FOR: NEWSUN ENERGY

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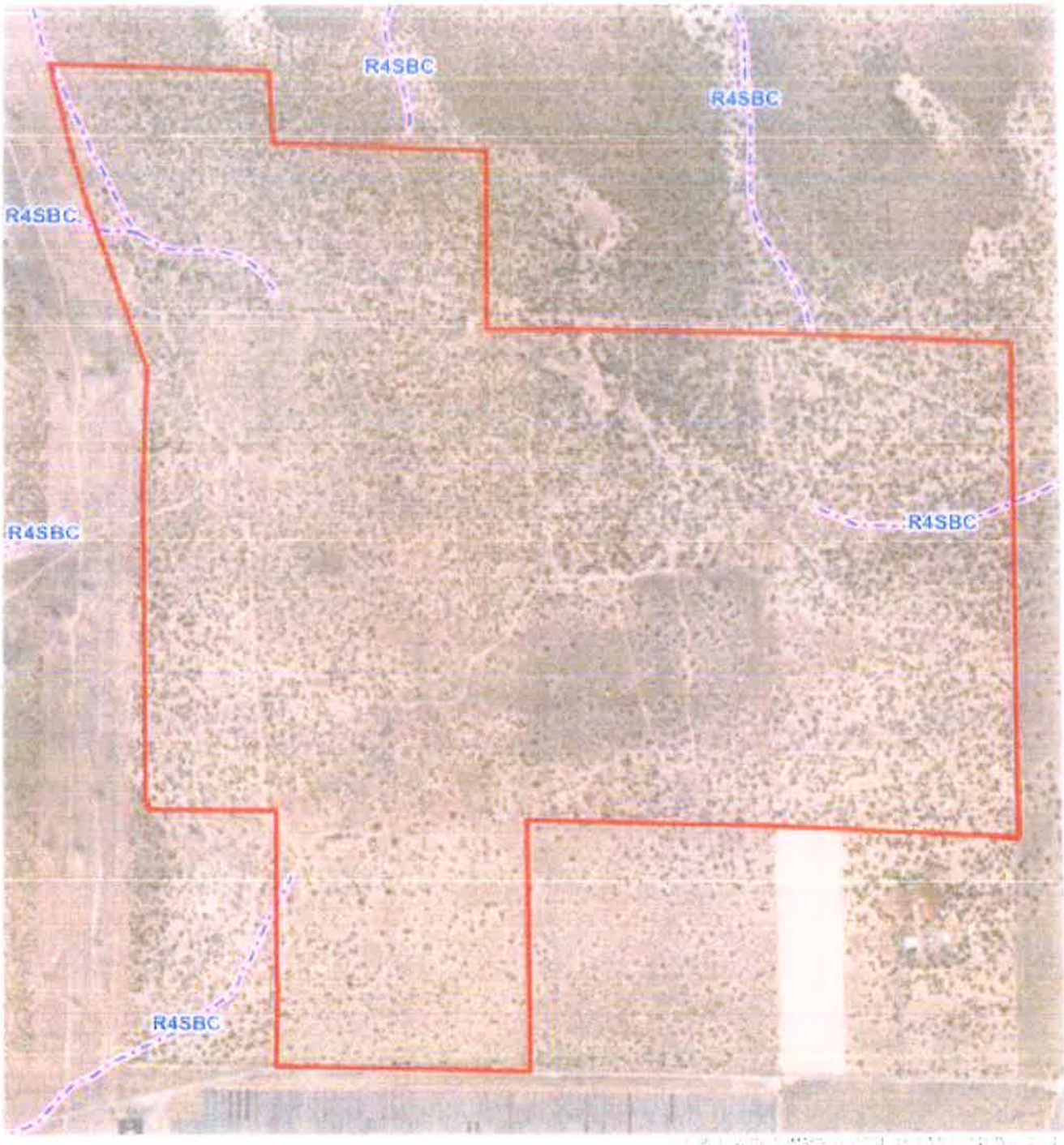
TAX LOT MAP 16S15E

MOFAT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024

FIGURE

2



Legend

Study Area 383.31 ac

NWI Polygon

NHD Streams and Rivers

Intermittent

NHD Waterbody

NWI Mapping Within Study Area

R4SBC - Riverine, intermittent, streambed, seasonally flooded

PREPARED FOR: NEWSUN ENERGY

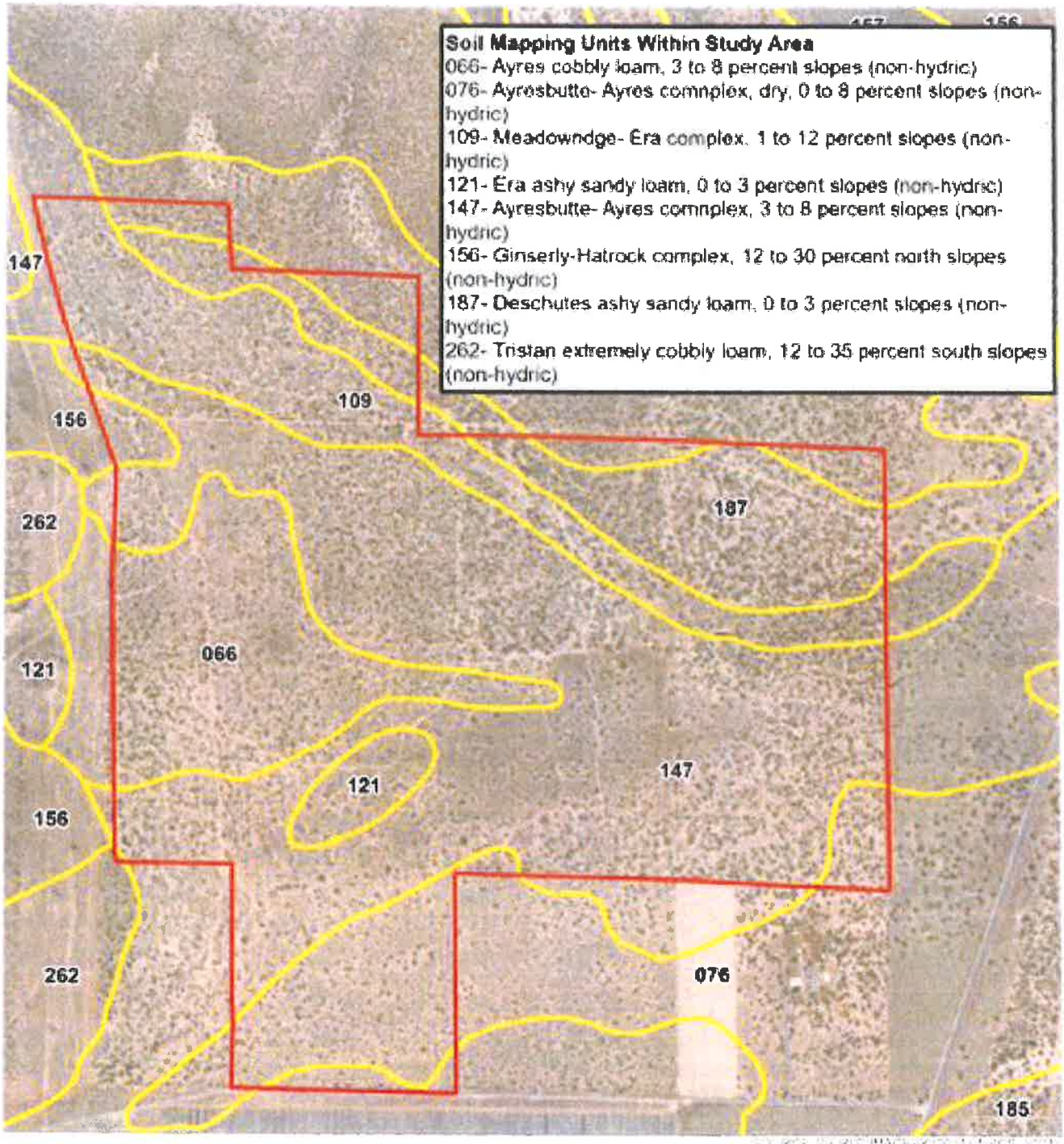
PBS

STATEWIDE WETLANDS INVENTORY MAP

MOLALLA ROAD SOLAR FARM LLC WETLAND DELINEATION

POWELL BUTTE, CROOK COUNTY, OREGON

3



PREPARED FOR: NEW SUN ENERGY

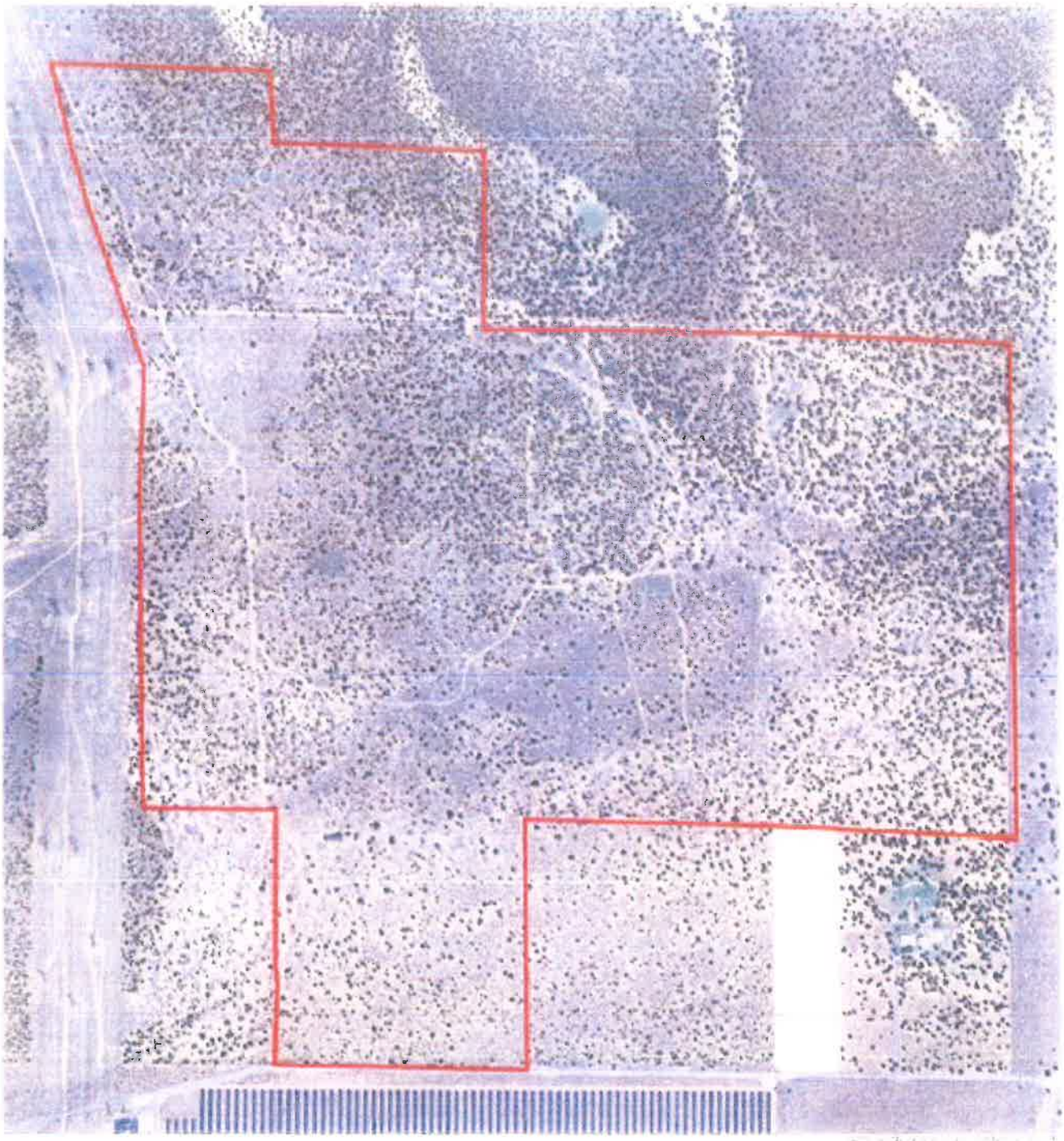
PBS

COUNTY SOIL SURVEY MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024

FIGURE
4



Legend

Study Area: 383.21 ac.

PREPARED FOR: NEXTERA ENERGY

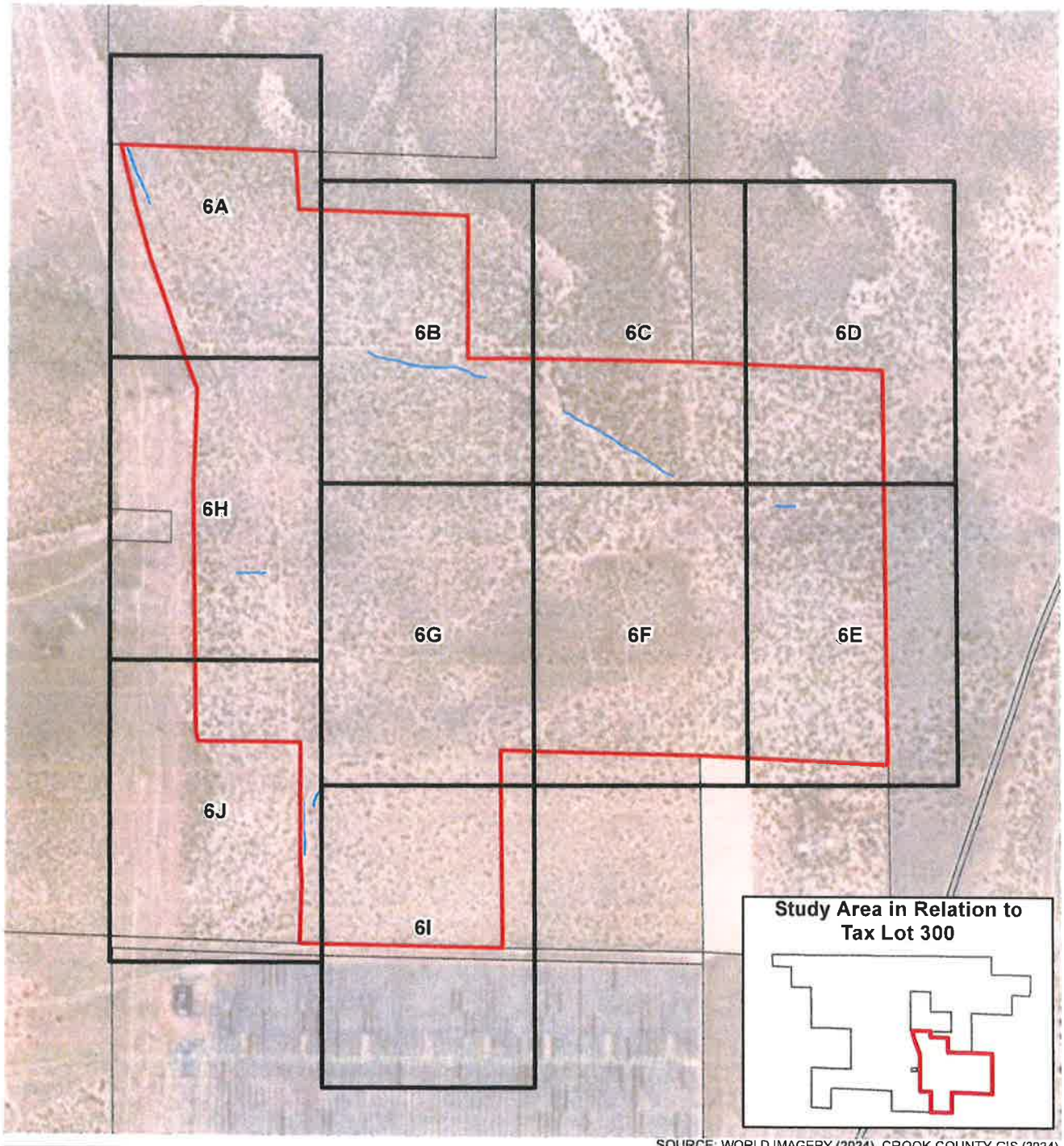
PBS

APRIL 18, 2024 AERIAL PHOTOGRAPH

SOLAR TRIAD SOLAR FARM LLC WETLAND DELINEATION

POWELL BUTTE, CROOK COUNTY, OREGON

5



SOURCE: WORLD IMAGERY (2024), CROOK COUNTY GIS (2024).

Legend
- Study Area, 383.21 ac.
- Ephemeral Streams
- Tax Lots

SCALE: 1" = 1,400' (8.5X11 SHEET)

0' 700' 1,400' 2,800'

PREPARED FOR: NEWSUN ENERGY.

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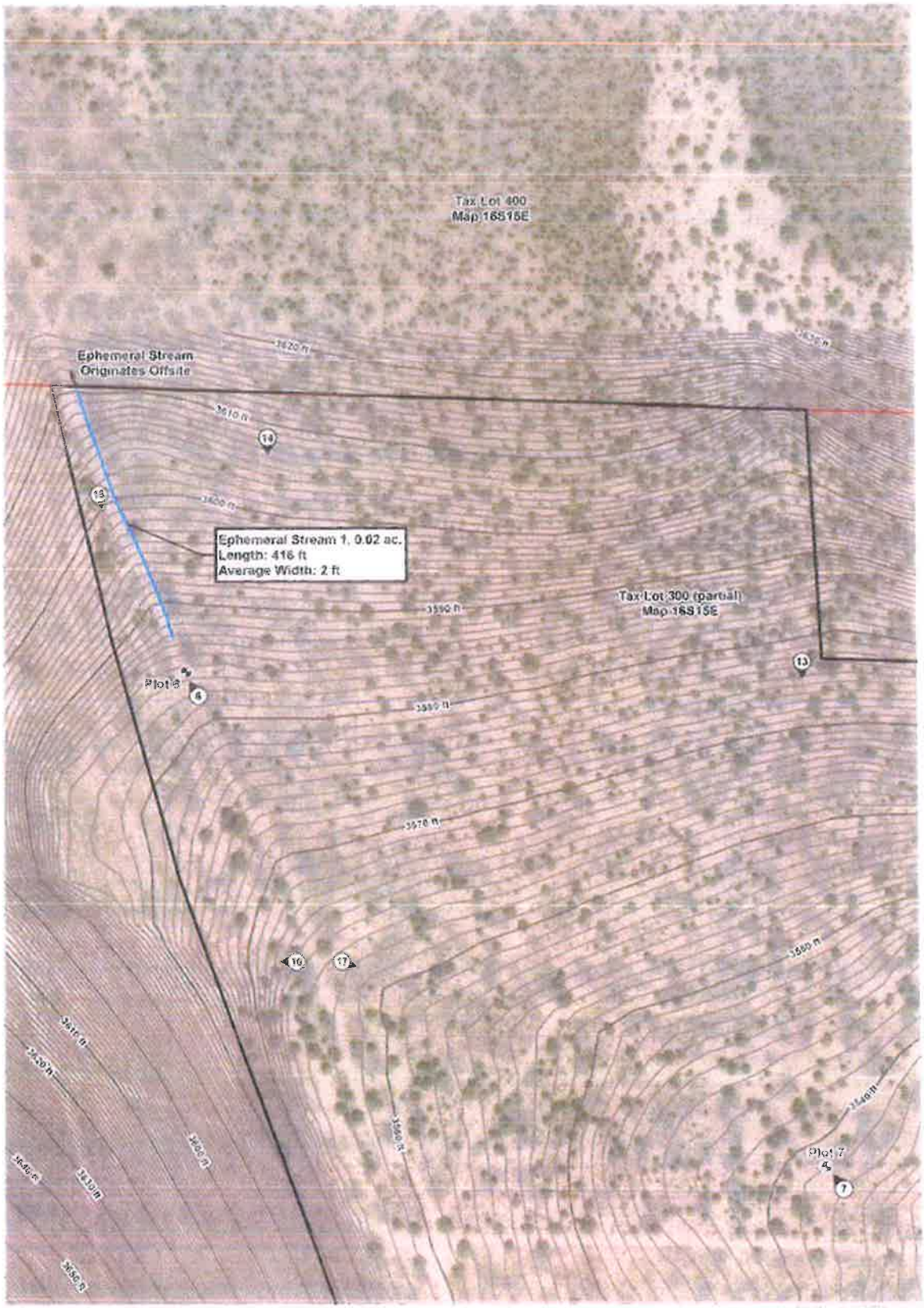
WETLAND DELINEATION OVERVIEW MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6

Filename: L:\Projects\80000\80700-80999\80812_NewSunEnergy_9ESAs\18. 80812.026 Peep\Phase 0002 - Wetlands\Mapping\APRX\PEEPS_Solar_Wetland_Delineation\PEEPS_Solar_Wetland_Delineation.aprx Plot Date/Time: 7/30/2024 3:17 PM



Legend

- Study Area, 383.21 ac.
- Plots
- Photo Points
- Ephemeral Streams
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble GA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-7 m rel. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

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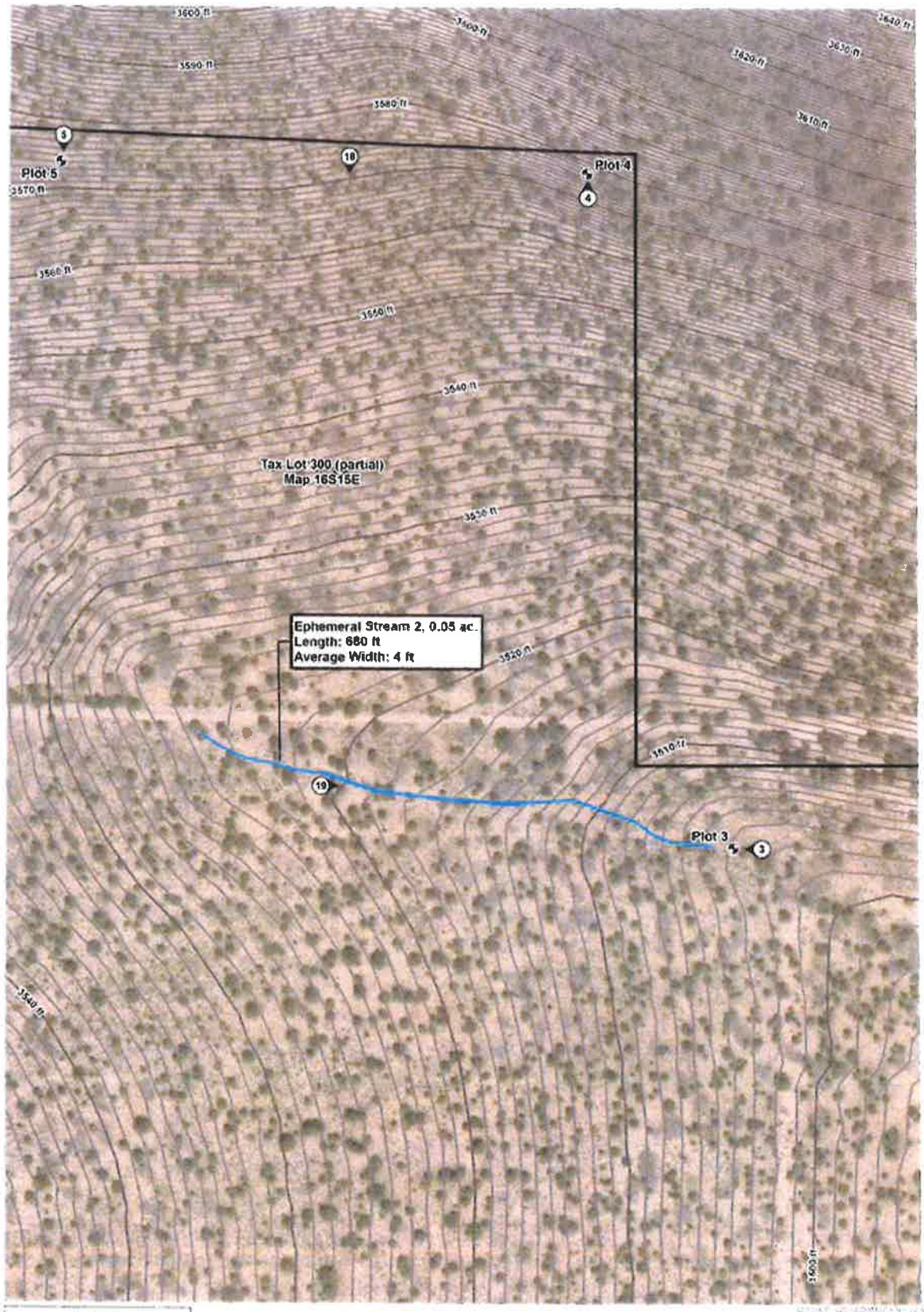
WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.020
FIGURE
6A

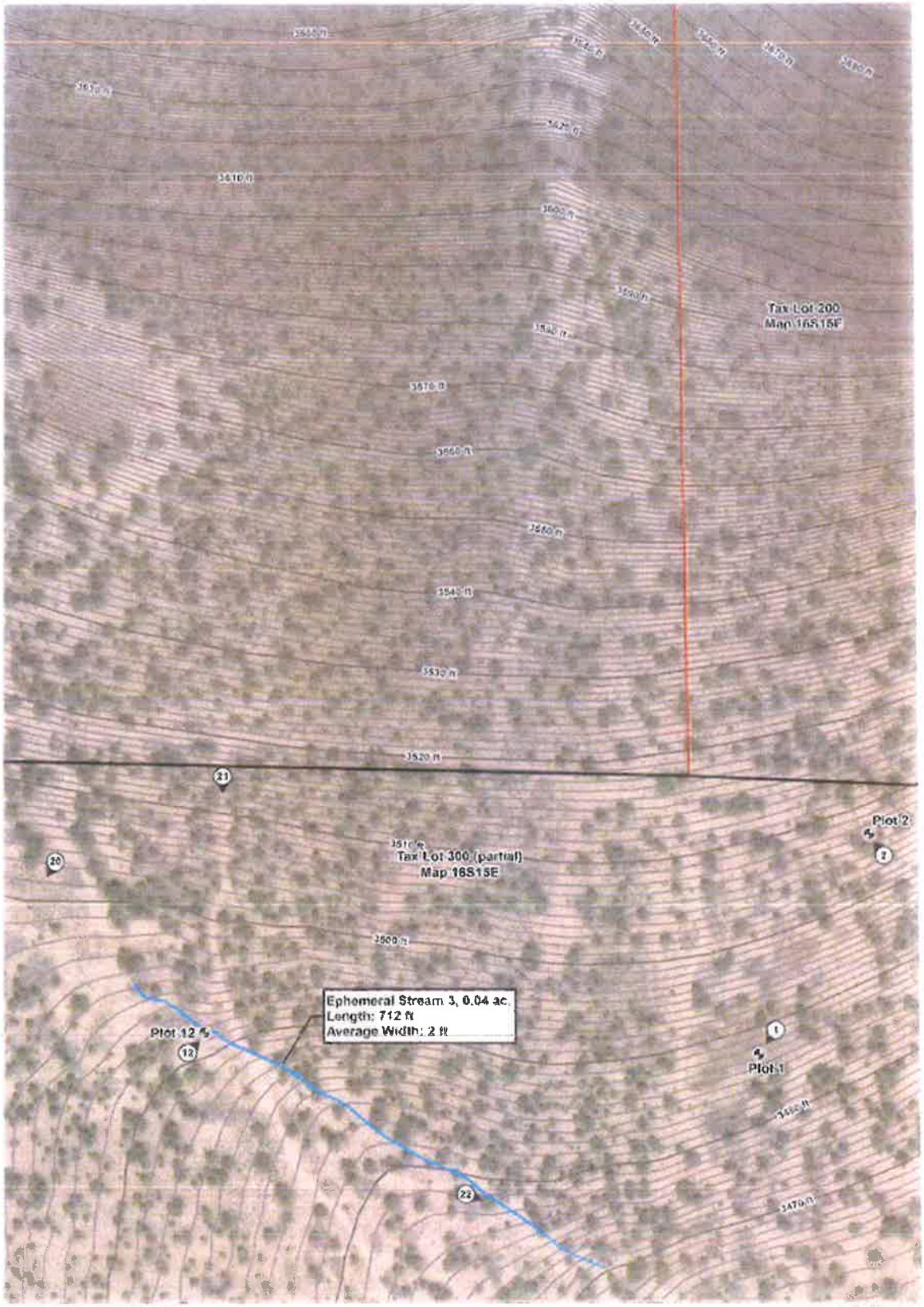


PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

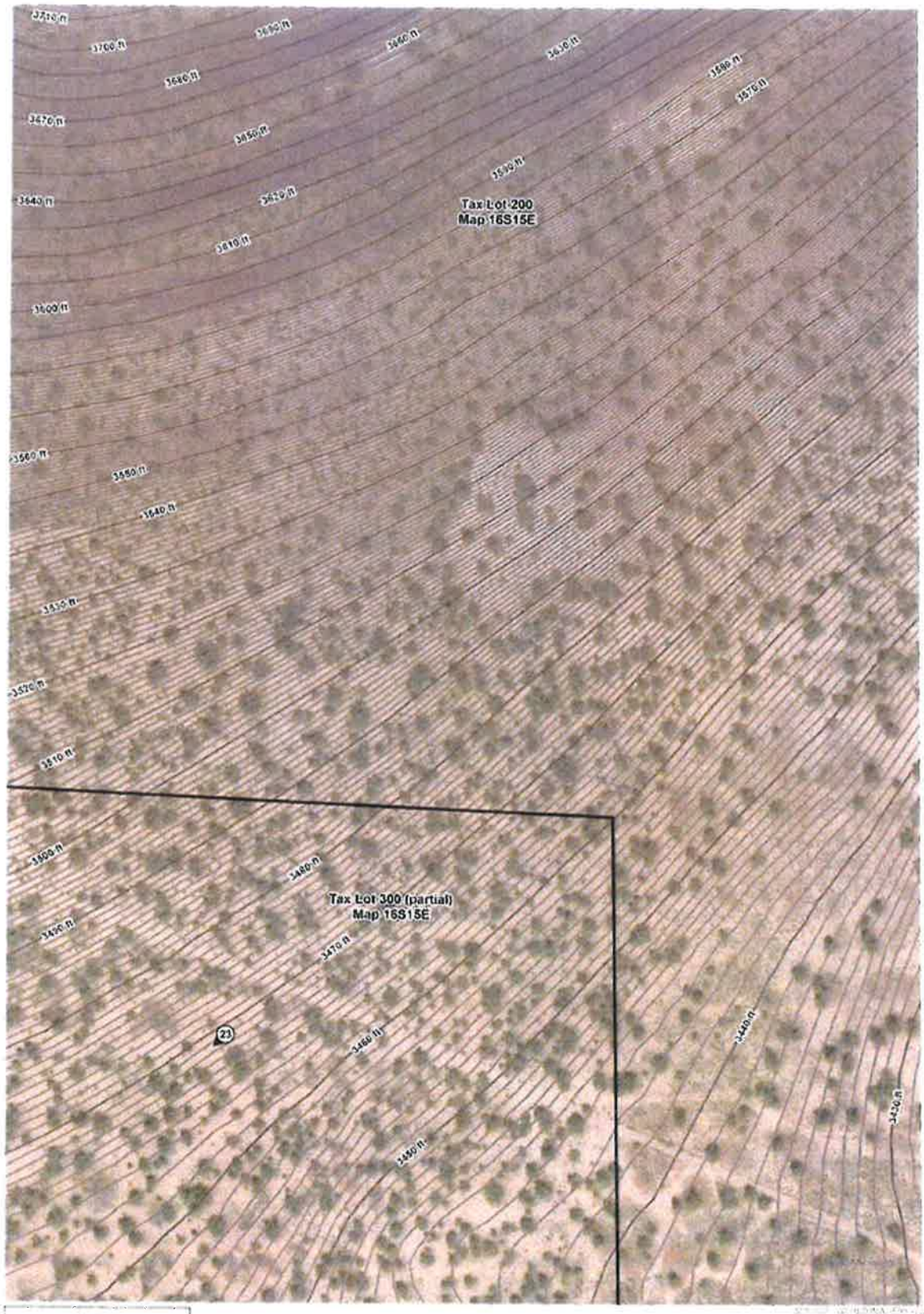
JUL 2024
80812.026
FIGURE
6B



WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812 026
FIGURE
6C



Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected sorveyed submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

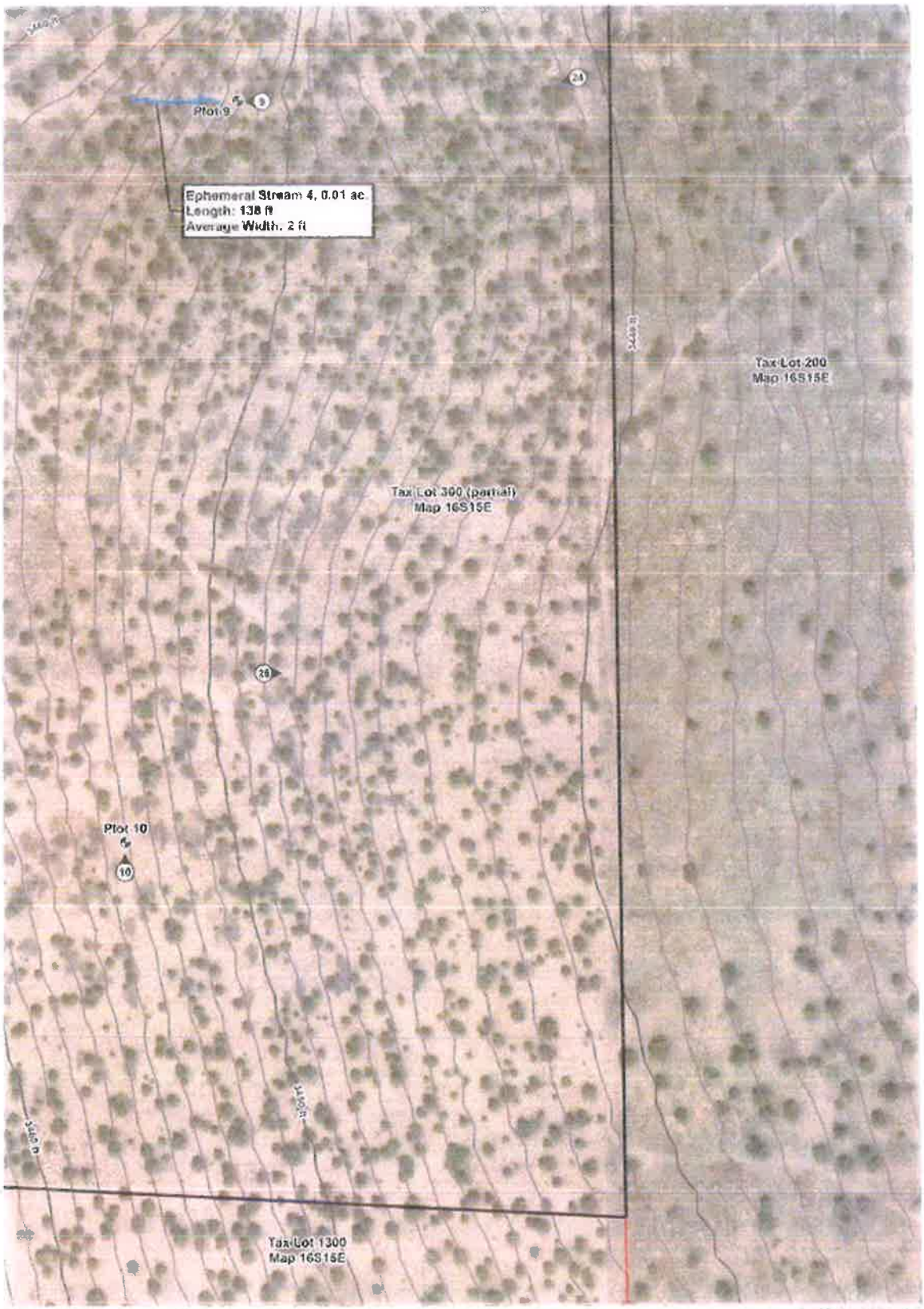
PREPARED FOR: NEWSUN ENERGY.

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6D



Legend

- Study Area, 383.21 ac.
- Plots
- Photo Points
- Ephemeral Streams
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

PREPARED FOR: NEWSUN ENERGY

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
30812.026
FIGURE
6E

Legend

- Study Area, 383.21 ac.
- Photo Points
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

PREPARED FOR: NEWSUN ENERGY.

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6F

Legend
- Study Area, 383.21 ac.
- Photo Points
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (YMI on est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

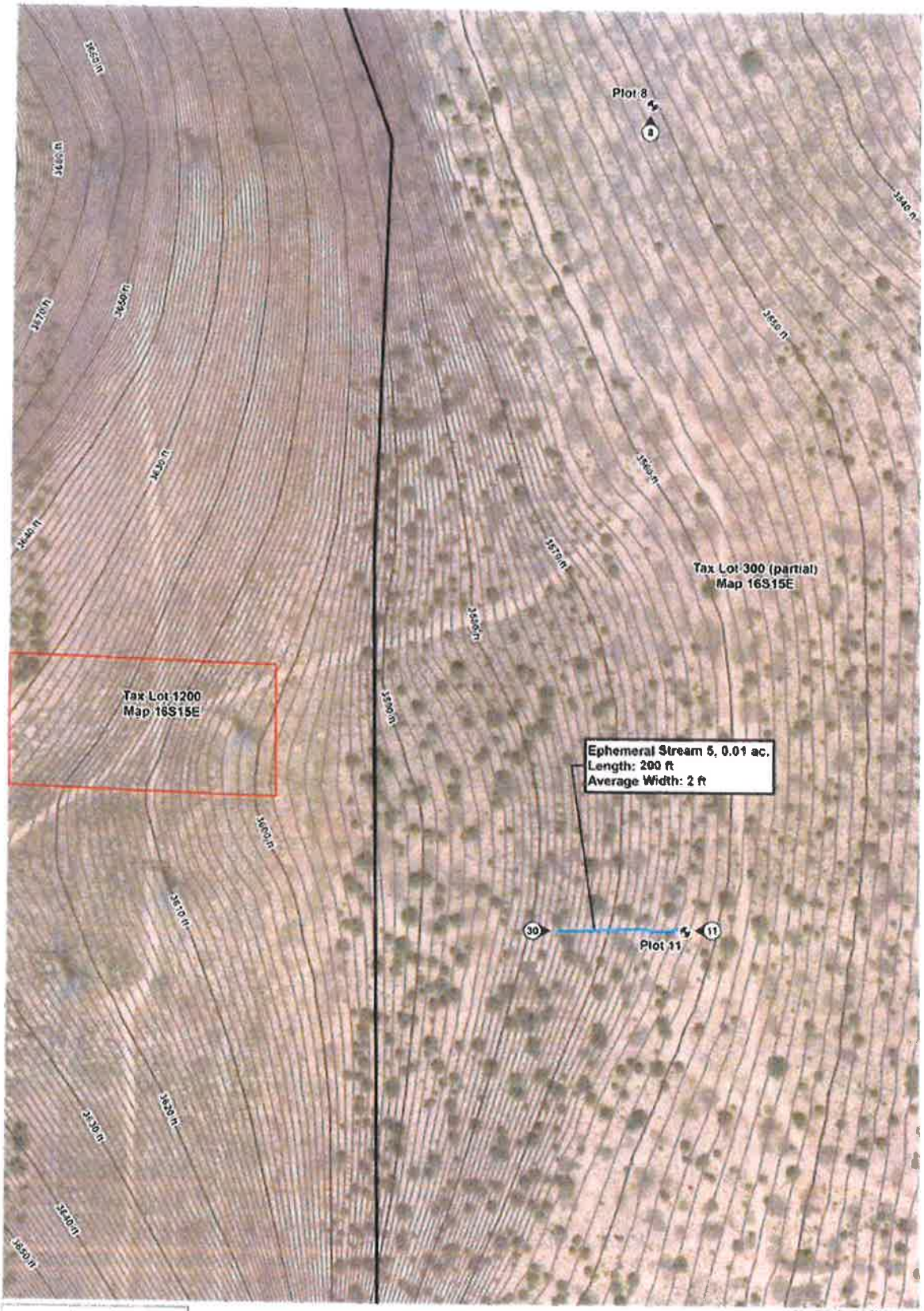
PREPARED FOR: NEWSUN ENERGY

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6G



Legend

- Study Area, 383.21 ac.
- Plots
- Photo Points
- Ephemeral Streams
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

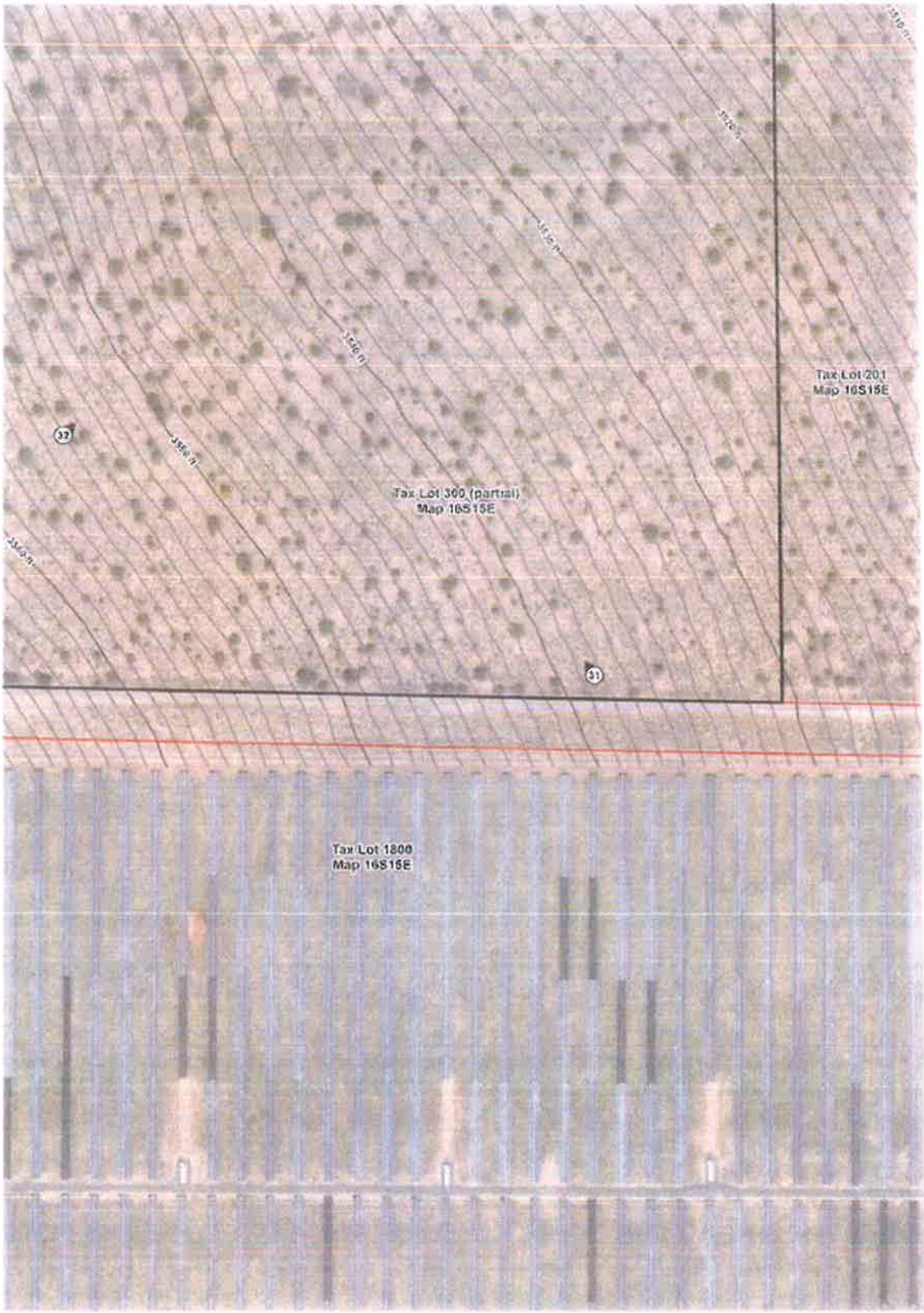
PREPARED FOR: NEWSUN ENERGY

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6H



Legend

- Study Area, 383.21 ac.
- Photo Points
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

PREPARED FOR: NEWSUN ENERGY

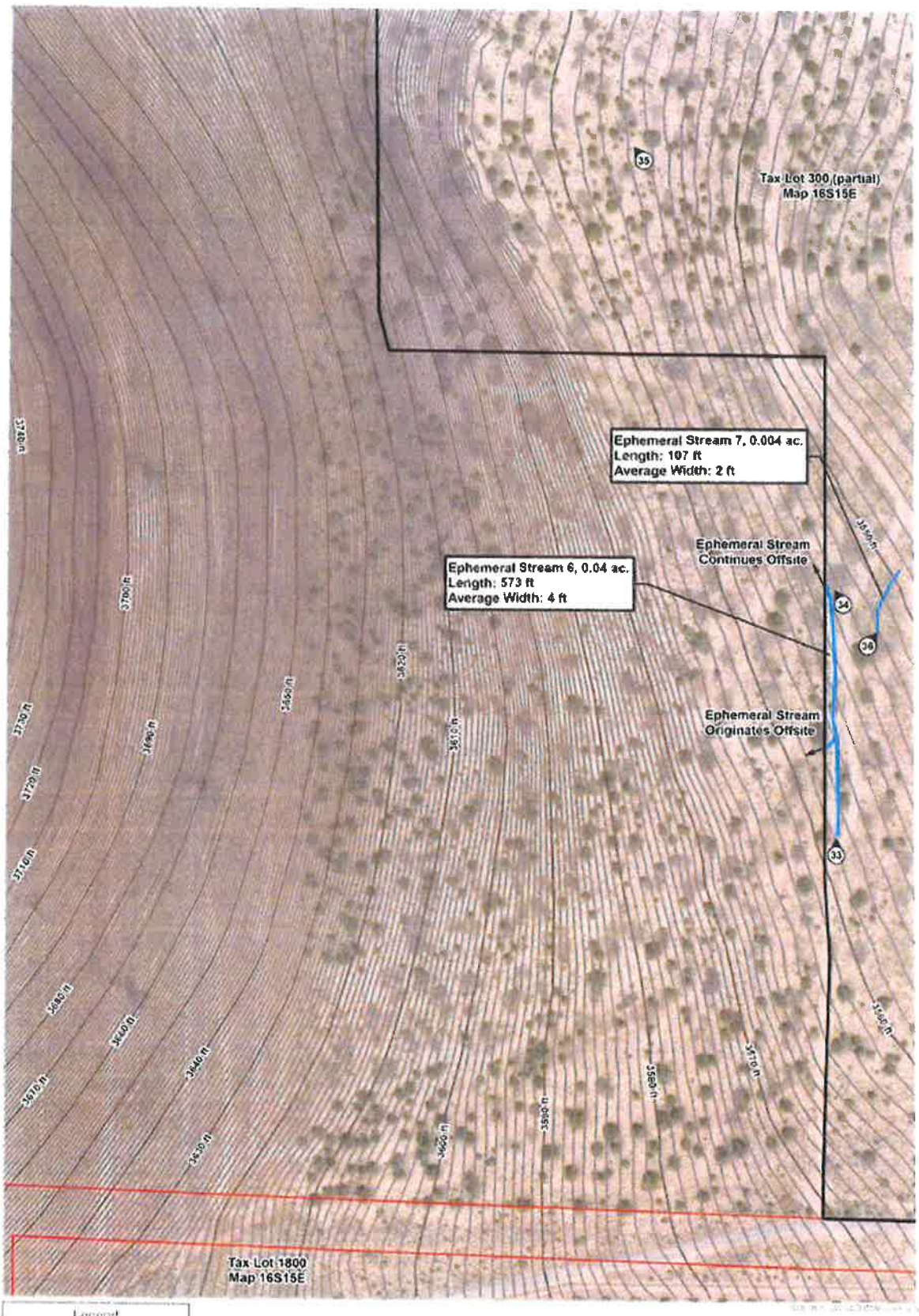
PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.028

FIGURE
6I



PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6J

Appendix B

Data Forms and SDAM Forms

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 1
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 11, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.199817 | Long: -120.909026 | Datum: NAD83
Soil Map Unit Name: Deschutes ashy sandy loam, 0 to 3 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	30	Y	UPL
2.			
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	65	Y	UPL
2. *Sisymbrium altissimum*	30	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 3 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	95	x 5 =	475
Column totals	125 (A)		595 (B)

Prevalence Index = B/A = 4.76

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present?

Yes ___ No X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 2
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 11, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.200762 | Long: -120.908373 | Datum: NAD83
Soil Map Unit Name: Deschutes ashy sandy loam, 0 to 3 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Juniperus occidentalis*	20	Y	UPL
2. *Artemisia tridentata*	15	Y	UPL
3. *Ericameria nauseosa*	10	Y	UPL
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	35	Y	UPL
2. *Phlox caespitosa*	15	Y	UPL
3. *Elymus elymoides*	10	N	FACU
4. *Alyssum alyssoides*	10	N	UPL
5. *Poa secunda*	5	N	FACU
6.			
7.			
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 5 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	105	x 5 =	525
Column totals	120 (A)		585 (B)

Prevalence Index = B/A = 4.88

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	small rocks, moist at 10".

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):	_____
Water Table Present?	Yes _____	No X	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):	_____

Wetland Hydrology Present?

Yes _____ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 3
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.200689 | Long: -120.914629 | Datum: NAD83
Soil Map Unit Name: Meadowridge-Era complex, 1 to 12 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?**	Yes ___ No X
Hydric soil present?	Yes ___	No X		
Indicators of wetland hydrology present?	Yes ___	No X		

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	5	Y	UPL
2.			
3.			
4.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	20	Y	UPL
2. *Ericameria nauseosa*	5	Y	UPL
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	35	Y	UPL
2. *Alyssum alyssoides*	20	Y	UPL
3. *Hesperostipa comota*	15	Y	UPL
4.			
5.			
6.			
7.			
8.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 6 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column totals	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 4
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 10
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.203603 | Long: -120.915521 | Datum: NAD83
Soil Map Unit Name: Ayres cobbly loam, 3 to 8 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	15	Y	UPL
2.			
3.			
4.			
	15 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Ericameria nauseosa*	10	Y	UPL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	35	Y	UPL
2. *Alyssum alyssoides*	30	Y	UPL
3. *Hesperostipa comota*	10	N	UPL
4.			
5.			
6.			
7.			
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 4 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column totals	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-13	7.5YR 3/3	100					sil	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present?

Yes ___ No X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 5
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.203636 | Long: -120.918680 | Datum: NAD83
Soil Map Unit Name: Deschutes ashy sandy loam, 0 to 3 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	10	Y	UPL
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Ericameria nauseosa*	10	Y	UPL
2. *Artemisia tridentata*	5	Y	UPL
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	20	Y	UPL
2. *Lolium perenne*	15	Y	FAC
3. *Alyssum alyssoides*	15	Y	UPL
4. *Achillea millefolium*	5	N	FACU
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across all Strata: 6 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 17% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	5	x 4 =	20
UPL species	60	x 5 =	300
Column totals	80 (A)		365 (B)

Prevalence Index = B/A = 4.56

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present?

Yes ___ No X

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

X

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 6
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.203725 | Long: -120.923367 | Datum: NAD83
Soil Map Unit Name: Meadowridge-Era complex, 1 to 12 percent slopes | NWI Classification: R4SBC
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:

Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	10	Y	UPL
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	20	Y	UPL
2. *Ericameria nauseosa*	10	Y	UPL
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	40	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust ___

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	80	x 5 =	400
Column totals	80 (A)		400 (B)

Prevalence Index = B/A = 5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	rocky

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Soil compacted by frequent livestock use.

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No	X	Depth (inches): _____
Water Table Present?	Yes	_____	No	X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

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

X

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 7
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.201607 | Long: -120.919556 | Datum: NAD83
Soil Map Unit Name: Meadowridge-Era complex, 1 to 12 percent slopes | NWI Classification: R4SBC
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:

Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	10	Y	UPL
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	20	Y	UPL
2. *Ericameria nauseosa*	20	Y	UPL
3.			
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	40	Y	UPL
2. *Poa secunda*	15	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust ___

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	90	x 5 =	450
Column totals	105 (A)		510 (B)

Prevalence Index = B/A = 4.86

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 3/3	100					sil	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No X	Depth (inches):	___
Water Table Present?	Yes	___	No X	Depth (inches):	___
Saturation Present? (includes capillary fringe)	Yes	___	No X	Depth (inches):	___

Wetland Hydrology Present?

Yes ___ No X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 8
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.200616 | Long: -120.920615 | Datum: NAD83
Soil Map Unit Name: Ayresbutte-Ayres complex, 3 to 8 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	20	Y	UPL
2. *Chrysothamnus viscidiflorus*	20	Y	UPL
3.			
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	30	Y	UPL
2. *Elymus elymoides*	15	Y	FACU
3. *Lolium perenne*	15	Y	FAC
4. *Koeleria macrantha*	10	N	UPL
5. *Achillea millefolium*	5	N	FACU
6.			
7.			
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ___

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% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	20	x 4 =	80
UPL species	80	x 5 =	400
Column totals	115 (A)		525 (B)

Prevalence Index = B/A = 4.57

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 3/3	100					sl	moist at 4 inches

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present?

Yes ___ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 9
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 11, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.198343 | Long: -120.906637 | Datum: NAD83
Soil Map Unit Name: Deschutes ashy sandy loam, 0 to 3 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	20	Y	UPL
2.			
3.			
4.			
	20 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	15	Y	UPL
2. *Ericameria nauseosa*	5	Y	UPL
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	25	Y	UPL
2. *Hesperostipa comota*	20	Y	UPL
3. *Poa secunda*	15	Y	FACU
4. *Alyssum alyssoides*	10	N	UPL
5.			
6.			
7.			
8.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 6 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	95	x 5 =	475
Column totals	110 (A)		535 (B)

Prevalence Index = B/A = 4.86

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-13	7.5YR 3/3	100					sil	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present?

Yes ___ No X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 10
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 11, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.195148 | Long: -120.907302 | Datum: NAD83
Soil Map Unit Name: Ayresbutte-Ayres complex, 3 to 8 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	10	Y	UPL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Eriopyllum lanatum*	25	Y	UPL
2. *Bromus tectoum*	20	Y	UPL
3. *Hesperostipa comota*	15	Y	UPL
4. *Poa secunda*	5	N	FACU
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 4 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	70	x 5 =	350
Column totals	75 (A)		370 (B)

Prevalence Index = B/A = 4.93

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No	X	Depth (inches): _____
Water Table Present?	Yes	_____	No	X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches): _____

Wetland Hydrology Present?

Yes _____ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 11
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.197048 | Long: -120.920377 | Datum: NAD83
Soil Map Unit Name: Ayres cobbly loam, 3 to 8 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	10	Y	UPL
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	10	Y	UPL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Alyssum alyssoides*	30	Y	UPL
2. *Bromus tectorum*	20	Y	UPL
3. *Koeleria macrantha*	10	N	UPL
4. *Agropyron cristatum*	5	N	UPL
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 4 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	85	x 5 =	425
Column totals	85 (A)		425 (B)

Prevalence Index = B/A = 5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100					sil	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	___
Water Table Present?	Yes ___	No X	Depth (inches):	___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	___

Wetland Hydrology Present?

Yes ___ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/26/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 12
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.199900 | Long: -120.912328 | Datum: NAD83
Soil Map Unit Name: Meadowridge-Era complex, 1 to 12 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Ericameria nauseosa*	10	Y	UPL
2. *Juniperus occidentalis*	5	Y	UPL
3. *Artemisia tridentata*	5	Y	UPL
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	35	Y	UPL
2. *Hesperostipa comota*	25	Y	UPL
3. *Alyssum alyssoides*	15	Y	UPL
4.			
5.			
6.			
7.			
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 6 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	95	x 5 =	475
Column totals	95 (A)		475 (B)

Prevalence Index = B/A = 5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present?

Yes ___ **No** X

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

Aerial Photograph

Remarks:

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/24/24
Waterway Name	Ephemeral Stream 1	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.2049563, 44.2038808 N
Reach Boundaries			Long. -120.92405, -120.9234 W
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	4 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Ericameria nauseosa* (UPL)
- *Bromus tectorum* (UPL)

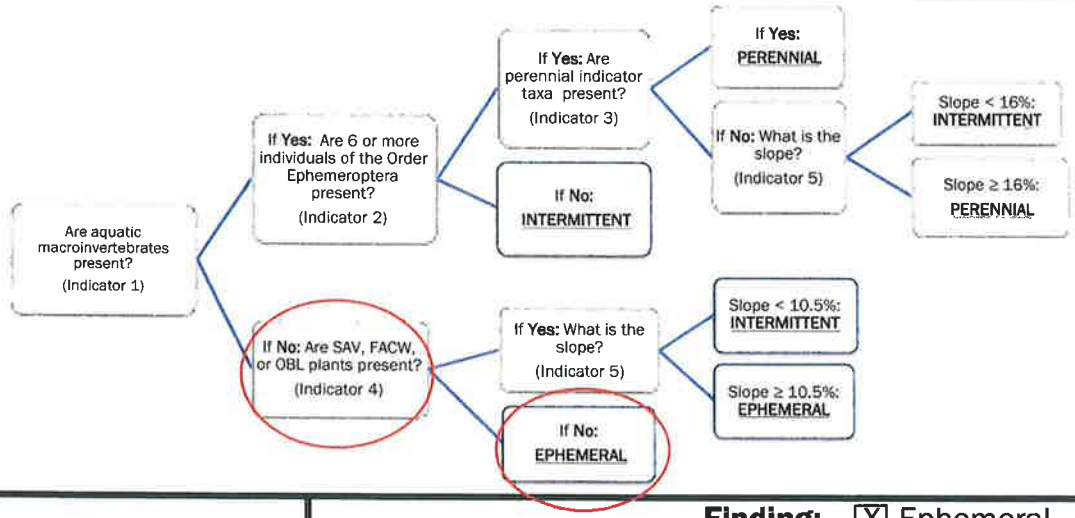
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___7___ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/24/24
Waterway Name	Ephemeral Stream 2	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.2011762 , 44.2007133 N
Reach Boundaries			Long. -120.917816, -120.9147 W
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	4 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Ericameria nauseosa* (UPL)
- *Bromus tectorum* (UPL)
- Alyssum alyssoides (UPL)
- Hesperostipa comota (UPL)

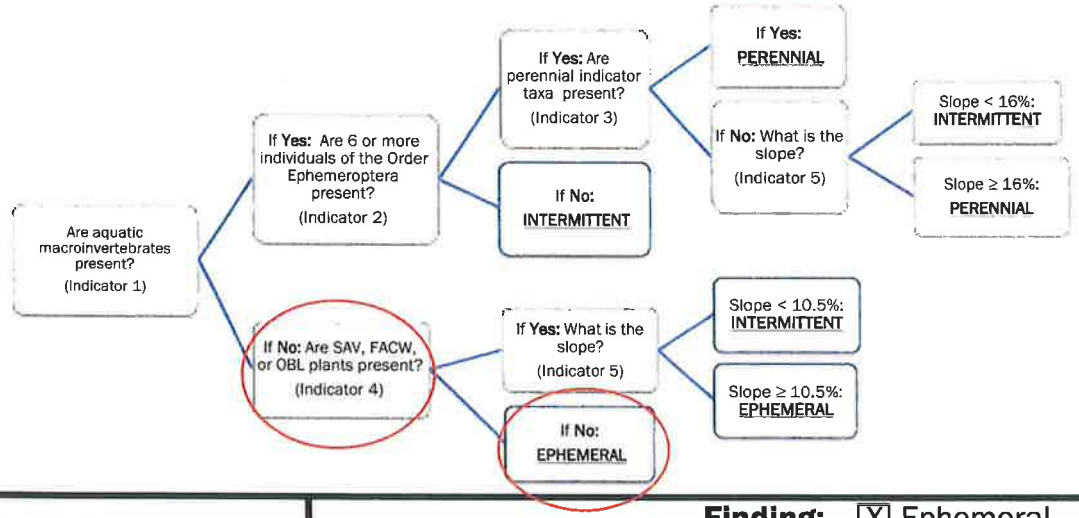
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___4___ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/26/24
Waterway Name	Ephemeral Stream 3	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.2001106, 44.198907 N
Reach Boundaries			Long. -120.91274,-120.90995 W
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	2 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Ericameria nauseosa* (UPL)
- *Bromus tectorum* (UPL)
- Alyssum alyssoides (UPL)
- Hesperostipa comota (UPL)

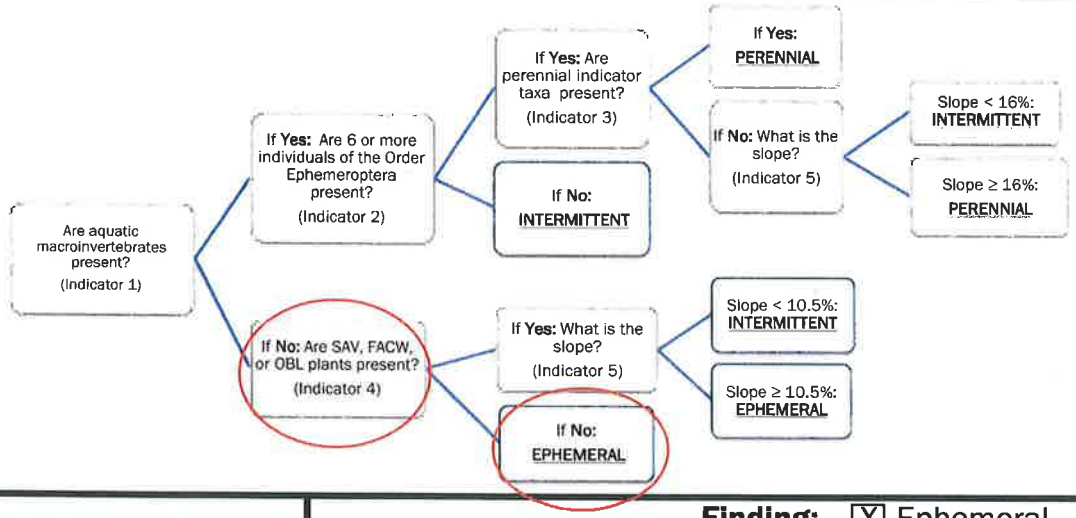
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___4___ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/25/24
Waterway Name	Ephemeral Stream 4	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.1983593,44.198345 N
Reach Boundaries			Long. -120.90727,-120.90675 W
Precipitation w/in 48 hours (cm)	0in	Channel Width (m) 2 ft	☐ Disturbed Site / Difficult Situation (Describe in "Notes")

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Ericameria nauseosa* (UPL)
- *Bromus tectorum* (UPL)
- Alyssum alyssoides (UPL)
- Hesperostipa comota (UPL)

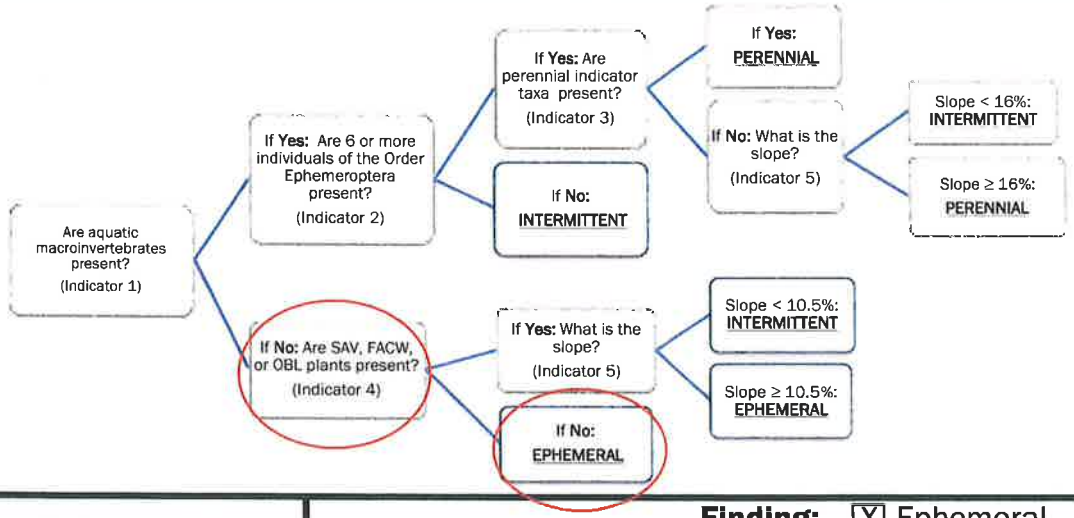
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___2__ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/25/24
Waterway Name	Ephemeral Stream 5	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.1970448,44.197057 N Long. -120.92115,-120.92040 W
Reach Boundaries			
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	2 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Koeleria macrantha* (UPL)
- *Bromus tectorum* (UPL)
- *Alyssum alyssoides* (UPL)
- *Agropyron cristatum* (UPL)

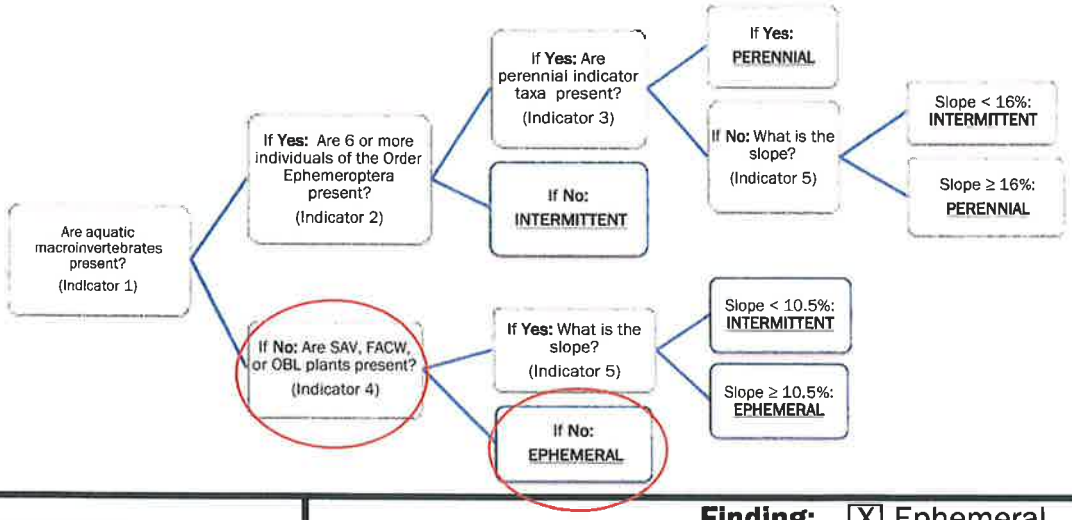
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___8__ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/26/24
Waterway Name	Ephemeral Stream 6	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.1918386,44.192919 N
Reach Boundaries			Long. -120.91937,-120.91944 W
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	4 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Koeleria macrantha* (UPL)
- *Bromus tectorum* (UPL)
- *Alyssum alyssoides* (UPL)
- *Agropyron cristatum* (UPL)

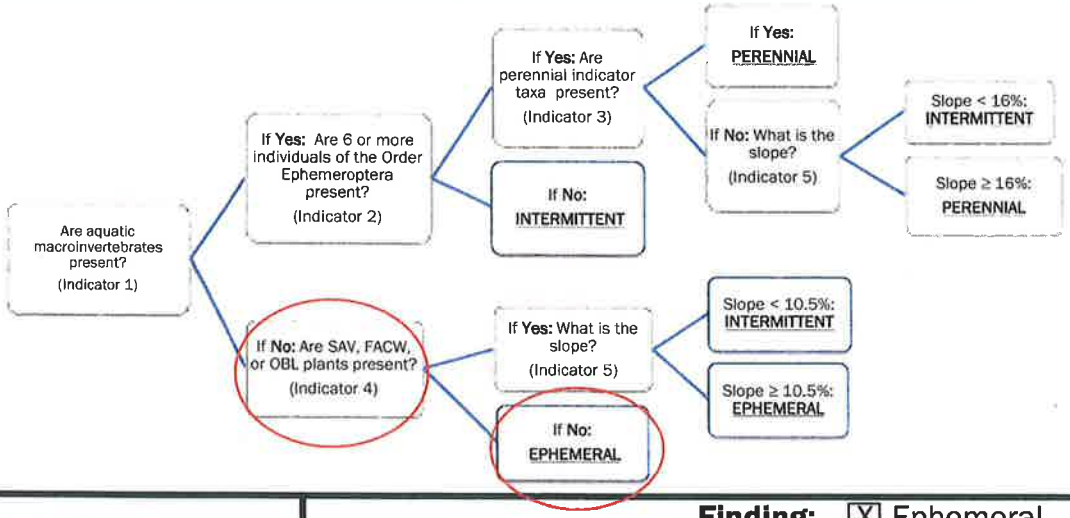
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___3__ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/26/24
Waterway Name	Ephemeral Stream 7	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.192740,44.193003 N
Reach Boundaries			Long. -120.91913,-120.91901 W
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	2 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Koeleria macrantha* (UPL)
- *Bromus tectorum* (UPL)
- *Alyssum alyssoides* (UPL)
- *Agropyron cristatum* (UPL)

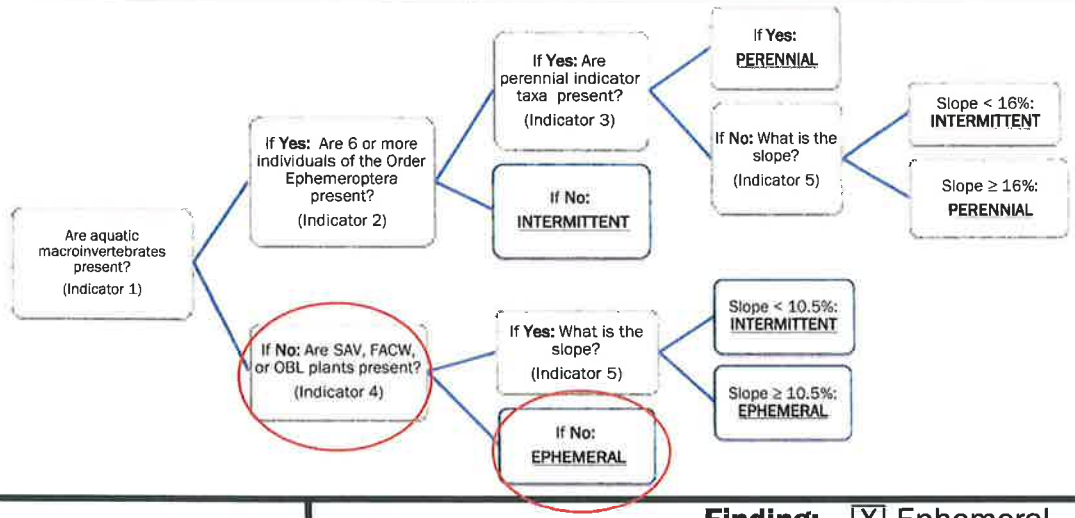
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___7__ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Appendix C
Ground-Level Color Photographs

Photo 1. Plot 1 facing southwest. Photo taken June 24, 2024.

Photo 2. Plot 2 facing northwest. Photo taken June 24, 2024.

Photo 3. Plot 3 facing west at the end of Ephemeral Stream 2. Photo taken June 24, 2024.

Photo 4. Plot 4 facing north. Photo taken June 24, 2024.

Photo 5. Plot 5 facing south. Photo taken June 24, 2024.

Photo 6. Plot 6 facing northwest at the end of Ephemeral Stream 1. Photo taken June 24, 2024.

Photo 7. Plot 7 facing northwest. Photo taken June 24, 2024.

Photo 8. Plot 8 facing north. Photo taken June 24, 2024.

Photo 9. Plot 9 facing west at the end of Ephemeral Stream 4. Photo taken June 24, 2024.

Photo 10. Plot 10 facing north. Photo taken June 24, 2024.

Photo 11. Plot 11 facing west at the end of Ephemeral Stream 5. Photo taken June 24, 2024.

Photo 12. Plot 12 facing northeast on edge of Ephemeral Stream 3. Photo taken June 24, 2024.

Photo 13. Northwest part of the site facing south. Photo taken June 24, 2024.

Photo 14. Northwest part of the site facing south. Photo taken June 24, 2024.

Photo 15. North portion of Ephemeral Stream 1 facing southeast. Photo taken June 24, 2024.

Photo 16. Location of NWI polygon facing west. NWI polygon was not found. Photo taken June 24, 2024.

Photo 17. Location of NWI polygon facing southeast. NWI polygon was not found. Photo taken June 24, 2024.

Photo 18. North part of study area facing south. Photo taken June 24, 2024.

Photo 19. West portion of Ephemeral Stream 2 facing east. Photo taken June 24, 2024.

Photo 20. North part of study area facing southwest. Photo taken June 24, 2024.

Photo 21. North part of study area facing south looking at an access road. Photo taken June 24, 2024.

Photo 22. South portion of Ephemeral Stream 3 facing southeast. Photo taken June 24, 2024.

Photo 23. Northeast part of study area facing southwest. Photo taken June 24, 2024.

Photo 24. Location of NWI polygon facing southwest. NWI polygon was not found in this area. Photo taken June 24, 2024.

Photo 25. East part of the study area facing east. Photo taken June 24, 2024.

Photo 26. Central part of the study area facing north. Photo taken June 24, 2024.

Photo 27. Central part of the study area facing west. Photo taken June 24, 2024.

Photo 28. West part of the study area facing east. Photo taken June 24, 2024.

Photo 29. Southeast part of the study area facing east. Photo taken June 24, 2024.

Photo 30. West part of Ephemeral Stream 5 looking east. Photo taken June 24, 2024.

Photo 31. South part of the study area facing northwest. Photo taken June 24, 2024.

Photo 32. South part of the study area facing northeast. Photo taken June 24, 2024.

Photo 33. South part of Ephemeral Stream 6 looking north downstream. Photo taken June 24, 2024.

Photo 34. North part of Ephemeral Stream 6 facing northwest. Photo taken June 24, 2024.

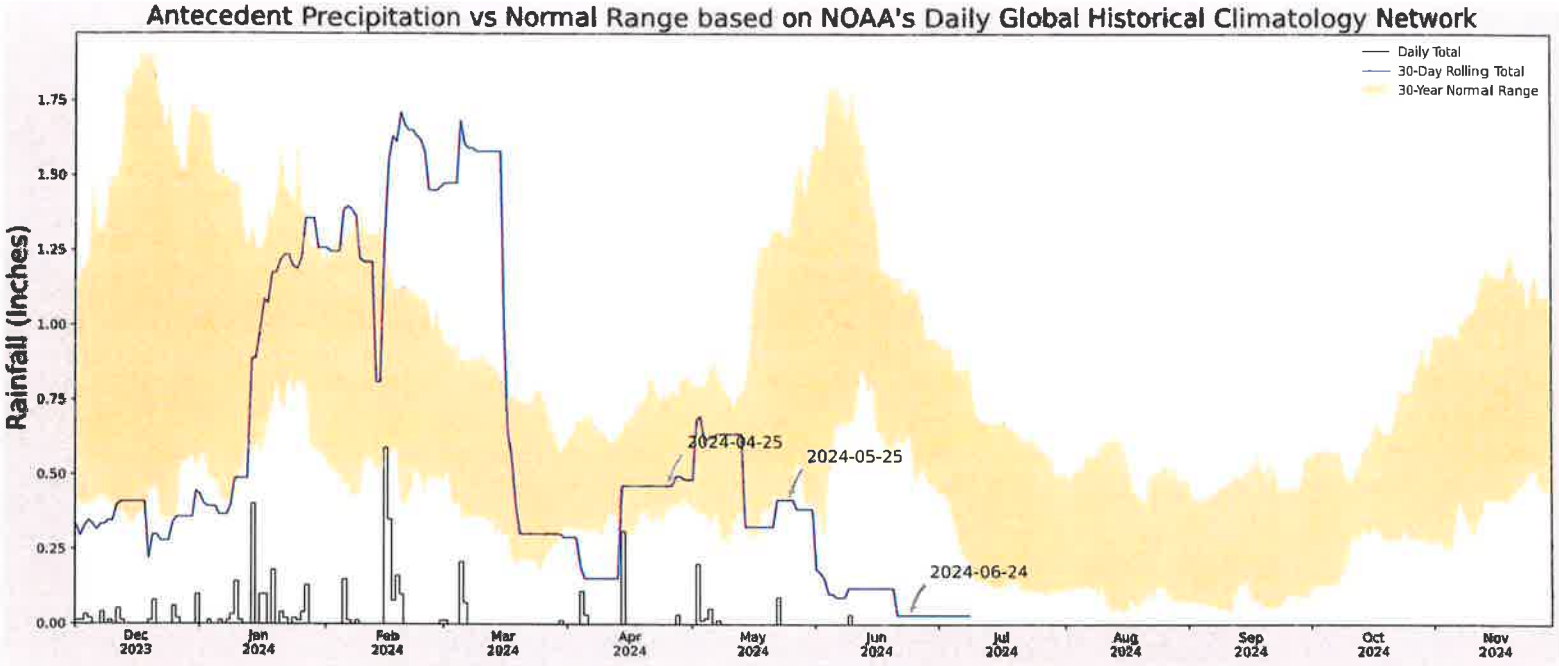
Photo 35. Southwest part of study area facing northwest. Photo taken June 24, 2024.

Photo 36. North part of Ephemeral Stream 7 facing northeast. Photo taken June 24, 2024.

Appendix D

Additional Tables and Information

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



Coordinates	44.1976862, -120.9137403
Observation Date	2024-06-24
Elevation (ft)	3496.176
Drought Index (PDSI)	Mild drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-06-24	0.646457	1.125197	0.031496	Dry	1	3	3
2024-05-25	0.430315	1.301575	0.417323	Dry	1	2	2
2024-04-25	0.391339	0.76811	0.464567	Normal	2	1	2
Result							Drier than Normal - 7

US Army Corps of Engineers.

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BEND 7 NE	44.1183, -121.2114	3359.908	15.741	136.268	9.229	10422	77
BEND 3.0 NNE	44.1051, -121.286	3479.003	3.811	119.095	2.169	125	0
BEND 3.0 NNE	44.1063, -121.2897	3460.958	3.972	101.05	2.189	134	4
BEND 5.1 NNW	44.1374, -121.3409	3375.0	6.557	15.092	3.05	226	0
BEND 2.7 E	44.0622, -121.2569	3591.864	4.486	231.956	3.059	12	0
BEND 2.1 ESE	44.0566, -121.2714	3658.137	5.2	298.229	3.891	10	7
BEND 6.3 N	44.1574, -121.3225	3166.995	6.136	192.913	3.945	3	1
BEND 0.8 ESE	44.0619, -121.2954	3627.953	5.706	268.045	4.097	17	0
BEND	44.0569, -121.285	3660.105	5.598	300.197	4.2	400	1
POWELL BUTTE 6.4 SSW	44.1605, -121.0568	3229.987	8.202	129.921	4.757	1	0
REDMOND AP	44.2558, -121.1408	3048.885	10.124	311.023	7.705	2	0

WETS Table

WETS Station: REDMOND AIRPORT, OR

Requested years: 1991 - 2020

Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	44.2	25.3	34.8	0.98	0.46	1.02	3	-
Feb	48.0	25.3	36.7	0.66	0.26	0.79	2	-
Mar	54.9	27.7	41.3	0.58	0.36	0.72	2	-
Apr	60.2	30.7	45.5	0.71	0.39	0.87	3	-
May	69.1	37.8	53.5	1.20	0.48	1.45	3	-
Jun	77.2	42.8	60.0	0.64	0.27	0.79	2	-
Jul	87.5	48.5	68.0	0.40	0.14	0.41	1	-
Aug	86.5	47.2	66.9	0.46	0.10	0.40	1	-
Sep	78.6	40.6	59.6	0.37	0.13	0.39	1	-
Oct	64.5	32.7	48.6	0.68	0.42	0.83	2	-
Nov	50.8	27.5	39.2	0.81	0.41	0.92	2	-
Dec	42.3	23.3	32.8	0.97	0.46	1.16	3	-
Annual:					6.39	9.03		
Average	63.7	34.1	48.9	-	-	-	-	-
Total	-	-	-	8.46			26	-

GROWING SEASON DATES

Years with missing data:	24 deg = 2	28 deg = 2	32 deg = 1
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 28	28 deg = 28	32 deg = 29
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	5/4 to 10/6: 155 days	5/26 to 9/21: 118 days	6/17 to 9/8: 83 days
70 percent *	4/28 to 10/12: 167 days	5/22 to 9/26: 127 days	6/13 to 9/13: 92 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1948					2.55	2.10	0.46	0.59	1.18	0.18	0.90	2.00	9.96
1949	0.37	0.40	1.02	0.08	0.60	T	T	T	0.19	0.15	1.36	0.22	4.39
1950	2.00	0.31	0.17	0.26	0.10	2.74	0.00	0.08	M0.08	2.75	0.91	1.25	10.65
1951	0.94	1.05	0.73	0.24	1.36	0.04	0.24	0.14	0.24	0.95	1.49	1.49	8.91
1952	0.58	1.28	0.24	0.17	0.28	2.77	0.03	0.09	0.94	T	0.03	1.67	8.08
1953	1.44	1.73	0.58	0.32	1.66	1.64	T	1.08	0.26	0.31	1.39	1.07	11.48
1954	1.94	0.36	0.40	0.22	0.62	1.30	T	0.56	0.72	0.20	0.30	0.19	6.81
1955	0.41	0.13	0.39	0.67	0.37	0.30	0.41	0.00	0.22	0.36	1.34	3.21	7.81
1956	2.72	1.47	0.19	0.18	4.25	0.60	1.02	0.03	0.	1.	0.34	0.40	12.

									20	40			80
1957	0.80	0.67	1.85	0.19	1.86	0.29	0.16	0.20	0.84	1.09	0.17	1.57	9.69
1958	1.34	1.19	0.41	0.43	1.47	1.75	0.14	0.18	0.11	0.02	1.46	0.98	9.48
1959	1.01	0.96	0.11	0.05	0.76	0.54	0.19	0.01	0.31	0.47	0.19	0.33	4.93
1960	1.93	1.15	1.94	0.47	0.58	T	0.12	T	0.15	0.44	1.59	0.69	9.06
1961	0.27	1.46	1.01	0.35	0.94	0.52	0.03	0.85	0.01	0.67	2.76	1.03	9.90
1962	1.01	0.49	0.96	0.19	2.00	0.05	T	0.98	0.13	1.91	0.90	0.92	9.54
1963	1.37	0.49	0.38	1.16	1.26	1.47	0.15	0.26	0.81	0.41	1.47	0.87	10.10
1964	1.04	T	0.32	0.11	0.03	0.85	0.95	0.06	0.05	0.44	0.97	5.48	10.30
1965	1.41	0.05	0.01	0.58	0.52	1.58	0.96	1.61	0.03	0.27	1.50	0.07	8.59
1966	1.47	0.61	0.52	0.08	0.08	0.60	1.29	0.00	0.99	0.21	1.99	1.56	9.40
1967	1.69	0.06	0.52	1.54	0.19	0.80	0.00	0.02	0.23	1.00	0.24	0.29	6.58
1968	0.35	0.78	0.01	T	0.90	0.16	0.11	1.59	0.48	0.35	2.01	1.23	7.97
1969	1.62	0.46	0.52	0.21	0.81	3.87	0.09	0.00	0.79	0.83	0.16	0.99	10.35
1970	3.07	0.70	0.41	0.54	0.30	0.65	0.09	T	0.39	0.25	1.78	0.43	8.61
1971	1.82	0.22	0.87	0.14	1.87	0.21	0.61	0.03	0.39	0.30	0.99	0.97	8.42
1972	1.12	0.28	1.45	0.12	1.05	1.12	0.03	0.62	0.20	0.70	0.32	1.06	8.07
1973	0.53	1.31	0.17	0.23	0.89	T	0.08	0.05	0.57	0.76	2.51	0.76	7.86
1974	0.47	0.43	1.52	1.12	0.04	0.01	0.54	0.00	0.00	0.36	0.29	0.68	5.46
1975	0.67	1.01	1.03	0.34	0.06	0.96	0.67	0.96	0.00	1.02	0.26	0.63	7.61
1976	0.91	0.56	0.16	1.07	0.08	0.48	0.03	2.54	0.27	0.08	0.12	T	6.30
1977	0.14	0.36	0.18	0.02	1.44	0.01	0.08	0.61	0.79	0.20	1.34	1.65	6.82
1978	1.26	0.39	1.06	1.64	0.20	0.77	0.44	0.50	0.23	0.03	1.14	0.65	8.31
1979	1.35	0.73	1.04	0.48	0.26	0.25	0.06	1.36	0.15	0.81	1.15	0.12	7.76
1980	1.98	0.68	0.18	0.90	0.90	1.34	0.19	T	0.65	0.72	0.92	0.72	9.18
1981	0.72	0.65	0.68	0.48	1.28	0.46	0.13	0.00	1.05	0.27	2.38	3.57	11.67
1982	1.09	0.44	0.42	0.48	0.68	2.47	1.02	0.58	1.25	0.91	0.31	1.23	10.88
1983	0.84	1.20	1.39	0.57	0.83	0.44	0.76	0.75	0.01	1.00	1.34	3.28	12.41
1984	0.13	0.76	1.20	0.86	0.21	1.05	0.26	0.34	0.34	1.11	3.15	0.48	9.89
1985	0.14	0.20	0.16	0.17	1.01	0.23	0.17	0.17	0.71	0.37	0.78	0.93	5.04
1986	1.09	2.37	0.47	0.02	0.31	0.09	0.38	T	1.10	0.55	0.73	0.46	7.57
1987	0.78	0.77	1.07	0.55	1.30	0.13	3.73	0.08	T	T	0.26	1.62	10.29
1988	0.92	0.28	0.25	1.17	0.38	1.01	0.00	0.33	0.13	0.00	2.36	0.52	7.35
1989	1.19	0.35	1.65	1.75	0.53	0.11	0.13	1.33	0.21	0.26	0.26	0.10	7.87
1990	1.40	T	0.95	0.43	1.08	M0.08					0.48	0.34	4.76

1991	0.40	0.10	1.03	0.19	1.30	1.14	0.30	0.19	0.04	0.45	1.22	0.59	6.95
1992	0.27	0.27	0.19	1.13	0.67	0.75	0.80	0.00	M0.13	1.17	0.50	1.85	7.73
1993	1.55	0.95	1.56	0.60	2.33	0.78	M0.73	0.89	0.00	0.52	0.23	0.29	10.43
1994	0.18	0.62	0.36	0.77	1.41	0.28	0.43	M0.00	0.64	0.53	0.51	0.07	5.80
1995	1.96	0.60	0.51	1.26	0.97	1.70	1.20	0.06	0.29	0.22	0.90	M1.04	10.71
1996									0.12				0.12
1997						1.70	1.49	0.62	0.92	0.64	0.38	0.17	5.92
1998	M0.73	M0.60	M0.73	0.55	4.62	0.36	1.70	0.77	0.32	0.46	2.34	M0.64	13.82
1999	0.92	M1.26	0.53	0.11	0.08	0.24	0.02	2.29	0.00	1.08	M0.47	0.38	7.38
2000	M1.50	M1.61	M1.05	0.75	0.38	0.07	0.74	T	0.32	0.83	0.47	0.49	8.21
2001	0.22	0.48	0.62	1.30	0.02	0.60	0.49	0.14	0.54	0.67	1.31	1.28	7.67
2002	0.67	0.15	0.50	0.39	0.34	0.05	0.22	0.23	0.12	0.33	0.05	0.97	4.02
2003	1.36	0.42	0.61	0.92	2.19	0.04	0.19	0.32	0.56	0.38	0.80	1.71	9.50
2004	1.29	1.94	0.14	0.56	1.60	0.51	0.06	0.82	0.07	0.75	0.42	2.05	10.21
2005	0.31	0.55	0.68	1.99	2.55	0.23	0.29	0.02	0.62	1.06	1.67	1.41	11.38
2006	1.46	0.48	0.97	0.89	0.79	2.04	0.07	0.22	0.27	0.34	1.00	1.42	9.95
2007	0.48	0.17	0.11	0.33	0.07	0.40	0.15	0.74	0.34	0.66	0.25	0.08	3.78
2008	0.22	0.04	0.03	0.12	0.26	0.03	0.06	0.99	0.11	0.81	0.59	0.81	4.07
2009	0.36	0.33	0.68	0.69	0.69	1.42	0.06	1.31	T	1.22	0.54	0.36	7.66
2010	1.43	0.37	0.46	1.40	1.14	0.53	T	0.09	1.72	1.64	0.71	2.05	11.54
2011	0.47	1.14	0.40	0.28	1.11	0.98	0.60	0.36	T	0.31	0.21	0.81	6.67
2012	1.51	0.70	1.23	1.19	1.14	1.84	0.03	0.01	0.04	1.35	0.91	1.67	11.62
2013	0.41	0.01	0.33	0.10	0.61	0.46	T	1.16	1.01	0.14	0.20	0.37	4.80
2014	0.52	1.39	0.60	0.58	0.36	0.30	0.29	0.96	0.42	0.56	2.04	1.58	9.70
2015	0.28	0.70	0.40	0.15	2.39	0.11	0.44	0.02	0.07	0.80	0.89	1.88	8.13
2016	1.22	0.12	0.57	0.29	1.98	0.65	0.64	0.02	0.05	1.74	0.27	1.74	9.29
2017	1.62	1.14	0.57	0.89	0.17	0.36	T	0.29	0.43	0.52	0.47	0.12	6.58
2018	0.17	0.31	0.73	0.69	0.93	0.61	T	T	0.04	0.29	0.43	0.65	4.85
2019	1.03	2.31	0.59	1.34	1.61	0.36	0.22	MT	1.53	0.28	0.52	0.84	10.63
2020	0.74	0.18	0.54	0.61	1.80	0.42	T	0.01	0.16	0.13	1.54	0.37	6.50
2021	0.61	0.44	0.12	0.22	0.60	0.38	0.12	T	1.02	0.84	1.20	0.70	6.25
2022	0.73	M0.01	0.41	0.56	M0.47	1.88	0.20	0.05	0.20	0.13	0.90	1.91	7.45
2023	0.24	0.09	0.70	0.33	2.04	0.01	0.00	0.05	0.64	0.32	0.42	0.68	5.52
2024	1.69	1.67	0.20	0.82	0.52	0.15	M0.03						5.08

Notes: Data missing in any

month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2024-07-24

Climatological Data for REDMOND AIRPORT, OR - October 2023

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2023-10-01	62	30	46.0	6	0	T	M	M
2023-10-02	67	30	48.5	9	0	0.03	M	M
2023-10-03	70	41	55.5	16	6	T	M	M
2023-10-04	76	35	55.5	16	6	0.00	M	M
2023-10-05	81	39	60.0	20	10	0.00	M	M
2023-10-06	78	39	58.5	19	9	0.00	M	M
2023-10-07	83	36	59.5	20	10	0.00	M	M
2023-10-08	85	43	64.0	24	14	0.00	M	M
2023-10-09	67	44	55.5	16	6	0.01	M	M
2023-10-10	64	40	52.0	12	2	0.07	M	M
2023-10-11	57	35	46.0	6	0	0.12	M	M
2023-10-12	62	33	47.5	8	0	0.00	M	M
2023-10-13	69	32	50.5	11	1	0.01	M	M
2023-10-14	64	49	56.5	17	7	T	M	M
2023-10-15	73	46	59.5	20	10	T	M	M
2023-10-16	69	45	57.0	17	7	0.00	M	M
2023-10-17	72	39	55.5	16	6	0.00	M	M
2023-10-18	86	34	60.0	20	10	0.00	M	M
2023-10-19	85	41	63.0	23	13	0.00	M	M
2023-10-20	82	39	60.5	21	11	0.00	M	M
2023-10-21	80	39	59.5	20	10	0.00	M	M
2023-10-22	66	39	52.5	13	3	0.00	M	M
2023-10-23	64	31	47.5	8	0	0.00	M	M
2023-10-24	52	28	40.0	0	0	0.02	M	M
2023-10-25	50	28	39.0	0	0	0.06	M	M
2023-10-26	51	19	35.0	0	0	0.00	M	M
2023-10-27	45	22	33.5	0	0	0.00	M	M
2023-10-28	45	11	28.0	0	0	0.00	M	M
2023-10-29	52	13	32.5	0	0	0.00	M	M
2023-10-30	54	14	34.0	0	0	0.00	M	M
2023-10-31	61	19	40.0	0	0	0.00	M	M
Average/Sum	66.8	33.3	50.1	358	141	0.32	M	M

Climatological Data for REDMOND AIRPORT, OR - November 2023

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2023-11-01	61	28	44.5	5	0	0.06	M	M
2023-11-02	68	44	56.0	16	6	T	M	M
2023-11-03	65	34	49.5	10	0	0.04	M	M
2023-11-04	69	47	58.0	18	8	0.10	M	M
2023-11-05	59	41	50.0	10	0	T	M	M
2023-11-06	57	36	46.5	7	0	0.07	M	M
2023-11-07	54	27	40.5	1	0	T	M	M
2023-11-08	55	22	38.5	0	0	0.00	M	M
2023-11-09	53	18	35.5	0	0	0.00	M	M
2023-11-10	54	28	41.0	1	0	0.00	M	M
2023-11-11	60	36	48.0	8	0	0.00	M	M
2023-11-12	58	32	45.0	5	0	0.00	M	M
2023-11-13	54	34	44.0	4	0	T	M	M
2023-11-14	55	28	41.5	2	0	0.05	M	M
2023-11-15	63	34	48.5	9	0	T	M	M
2023-11-16	45	25	35.0	0	0	0.00	M	M
2023-11-17	48	37	42.5	3	0	0.00	M	M
2023-11-18	48	37	42.5	3	0	0.08	M	M
2023-11-19	45	26	35.5	0	0	0.01	M	M
2023-11-20	56	23	39.5	0	0	0.00	M	M
2023-11-21	59	28	43.5	4	0	0.00	M	M
2023-11-22	51	39	45.0	5	0	T	M	M
2023-11-23	44	33	38.5	0	0	0.00	M	M
2023-11-24	41	14	27.5	0	0	0.00	M	M
2023-11-25	43	9	26.0	0	0	0.00	M	M
2023-11-26	45	8	26.5	0	0	0.00	M	M
2023-11-27	39	10	24.5	0	0	0.00	M	M
2023-11-28	38	13	25.5	0	0	0.00	M	M
2023-11-29	40	6	23.0	0	0	0.00	M	M
2023-11-30	39	25	32.0	0	0	0.01	M	M
Average|Sum	52.2	27.4	39.8	111	14	0.42	M	M

Climatological Data for REDMOND AIRPORT, OR - December 2023

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2023-12-01	47	27	37.0	0	0	0.01	M	M
2023-12-02	50	36	43.0	3	0	0.04	M	M
2023-12-03	58	41	49.5	10	0	0.21	M	M
2023-12-04	62	50	56.0	16	6	T	M	M
2023-12-05	65	51	58.0	18	8	0.00	M	M
2023-12-06	59	35	47.0	7	0	0.01	M	M
2023-12-07	42	29	35.5	0	0	0.03	M	M
2023-12-08	44	21	32.5	0	0	T	M	M
2023-12-09	46	16	31.0	0	0	T	M	M
2023-12-10	48	41	44.5	5	0	0.17	M	M
2023-12-11	53	36	44.5	5	0	0.01	M	M
2023-12-12	41	32	36.5	0	0	T	M	M
2023-12-13	48	31	39.5	0	0	0.00	M	M
2023-12-14	50	29	39.5	0	0	0.00	M	M
2023-12-15	37	25	31.0	0	0	0.00	M	M
2023-12-16	53	23	38.0	0	0	0.00	M	M
2023-12-17	40	25	32.5	0	0	T	M	M
2023-12-18	50	29	39.5	0	0	T	M	M
2023-12-19	56	34	45.0	5	0	0.16	M	M
2023-12-20	55	32	43.5	4	0	0.00	M	M
2023-12-21	58	29	43.5	4	0	0.00	M	M
2023-12-22	45	24	34.5	0	0	T	M	M
2023-12-23	42	15	28.5	0	0	0.00	M	M
2023-12-24	45	18	31.5	0	0	0.00	M	M
2023-12-25	44	31	37.5	0	0	0.04	M	M
2023-12-26	51	30	40.5	1	0	0.00	M	M
2023-12-27	52	31	41.5	2	0	T	M	M
2023-12-28	53	36	44.5	5	0	0.00	M	M
2023-12-29	37	34	35.5	0	0	0.00	M	M
2023-12-30	54	33	43.5	4	0	0.00	M	M
2023-12-31	48	25	36.5	0	0	0.00	M	M
Average/Sum	49.5	30.6	40.0	89	14	0.68	M	M

Climatological Data for REDMOND AIRPORT, OR - January 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-01-01	45	21	33.0	0	0	0.00	M	M
2024-01-02	34	28	31.0	0	0	0.00	M	M
2024-01-03	47	28	37.5	0	0	0.00	M	M
2024-01-04	47	30	38.5	0	0	T	M	M
2024-01-05	47	23	35.0	0	0	0.00	M	M
2024-01-06	42	30	36.0	0	0	T	M	M
2024-01-07	41	26	33.5	0	0	0.00	M	M
2024-01-08	46	25	35.5	0	0	0.01	M	M
2024-01-09	46	29	37.5	0	0	0.13	M	M
2024-01-10	37	17	27.0	0	0	0.15	M	M
2024-01-11	40	17	28.5	0	0	0.00	M	M
2024-01-12	42	5	23.5	0	0	T	M	M
2024-01-13	6	-3	1.5	0	0	0.44	M	M
2024-01-14	12	-1	5.5	0	0	T	M	M
2024-01-15	13	6	9.5	0	0	T	M	M
2024-01-16	21	2	11.5	0	0	0.07	M	M
2024-01-17	48	10	29.0	0	0	T	M	M
2024-01-18	42	19	30.5	0	0	0.25	M	M
2024-01-19	25	19	22.0	0	0	T	M	M
2024-01-20	28	21	24.5	0	0	0.03	M	M
2024-01-21	48	28	38.0	0	0	0.03	M	M
2024-01-22	51	33	42.0	2	0	0.01	M	M
2024-01-23	53	27	40.0	0	0	0.00	M	M
2024-01-24	53	31	42.0	2	0	0.28	M	M
2024-01-25	50	30	40.0	0	0	T	M	M
2024-01-26	48	36	42.0	2	0	0.26	M	M
2024-01-27	61	45	53.0	13	3	0.03	M	M
2024-01-28	64	43	53.5	14	4	T	M	M
2024-01-29	69	37	53.0	13	3	0.00	M	M
2024-01-30	68	41	54.5	15	5	0.00	M	M
2024-01-31	60	53	56.5	17	7	T	M	M
Average|Sum	43.0	24.4	33.7	78	22	1.69	M	M

Climatological Data for REDMOND AIRPORT, OR - February 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-02-01	56	35	45.5	6	0	T	M	M
2024-02-02	49	31	40.0	0	0	0.21	M	M
2024-02-03	47	27	37.0	0	0	0.00	M	M
2024-02-04	45	20	32.5	0	0	0.09	M	M
2024-02-05	52	33	42.5	3	0	0.10	M	M
2024-02-06	44	30	37.0	0	0	0.00	M	M
2024-02-07	47	26	36.5	0	0	T	M	M
2024-02-08	46	28	37.0	0	0	T	M	M
2024-02-09	43	26	34.5	0	0	T	M	M
2024-02-10	54	22	38.0	0	0	0.00	M	M
2024-02-11	57	30	43.5	4	0	0.00	M	M
2024-02-12	50	25	37.5	0	0	0.00	M	M
2024-02-13	49	20	34.5	0	0	0.00	M	M
2024-02-14	34	24	29.0	0	0	0.22	M	M
2024-02-15	46	26	36.0	0	0	0.31	M	M
2024-02-16	30	25	27.5	0	0	0.04	M	M
2024-02-17	30	25	27.5	0	0	0.25	M	M
2024-02-18	46	25	35.5	0	0	0.09	M	M
2024-02-19	37	32	34.5	0	0	0.13	M	M
2024-02-20	50	33	41.5	2	0	0.06	M	M
2024-02-21	51	29	40.0	0	0	0.01	M	M
2024-02-22	54	25	39.5	0	0	0.00	M	M
2024-02-23	61	28	44.5	5	0	0.00	M	M
2024-02-24	62	26	44.0	4	0	0.00	M	M
2024-02-25	57	31	44.0	4	0	0.00	M	M
2024-02-26	46	28	37.0	0	0	0.01	M	M
2024-02-27	44	25	34.5	0	0	0.00	M	M
2024-02-28	54	39	46.5	7	0	0.00	M	M
2024-02-29	51	32	41.5	2	0	0.15	M	M
Average/Sum	48.0	27.8	37.9	37	0	1.67	M	M

Climatological Data for REDMOND AIRPORT, OR - March 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-03-01	44	28	36.0	0	0	T	M	M
2024-03-02	40	24	32.0	0	0	0.01	M	M
2024-03-03	44	21	32.5	0	0	T	M	M
2024-03-04	40	21	30.5	0	0	0.07	M	M
2024-03-05	40	22	31.0	0	0	0.04	M	M
2024-03-06	45	15	30.0	0	0	0.00	M	M
2024-03-07	46	19	32.5	0	0	0.00	M	M
2024-03-08	57	22	39.5	0	0	0.00	M	M
2024-03-09	54	37	45.5	6	0	0.00	M	M
2024-03-10	51	38	44.5	5	0	T	M	M
2024-03-11	48	31	39.5	0	0	T	M	M
2024-03-12	52	35	43.5	4	0	T	M	M
2024-03-13	50	24	37.0	0	0	T	M	M
2024-03-14	56	17	36.5	0	0	0.00	M	M
2024-03-15	60	21	40.5	1	0	0.00	M	M
2024-03-16	68	24	46.0	6	0	0.00	M	M
2024-03-17	71	26	48.5	9	0	0.00	M	M
2024-03-18	77	28	52.5	13	3	0.00	M	M
2024-03-19	76	31	53.5	14	4	0.00	M	M
2024-03-20	71	29	50.0	10	0	0.00	M	M
2024-03-21	62	26	44.0	4	0	0.00	M	M
2024-03-22	63	35	49.0	9	0	0.01	M	M
2024-03-23	55	39	47.0	7	0	0.00	M	M
2024-03-24	55	23	39.0	0	0	0.00	M	M
2024-03-25	52	27	39.5	0	0	T	M	M
2024-03-26	55	27	41.0	1	0	0.00	M	M
2024-03-27	56	39	47.5	8	0	0.06	M	M
2024-03-28	53	31	42.0	2	0	T	M	M
2024-03-29	52	26	39.0	0	0	0.01	M	M
2024-03-30	58	27	42.5	3	0	T	M	M
2024-03-31	56	20	38.0	0	0	0.00	M	M
Average|Sum	55.1	26.9	41.0	102	7	0.20	M	M

Climatological Data for REDMOND AIRPORT, OR - April 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-04-01	71	23	47.0	7	0	0.00	M	M
2024-04-02	80	32	56.0	16	6	0.00	M	M
2024-04-03	49	35	42.0	2	0	0.01	M	M
2024-04-04	44	33	38.5	0	0	0.32	M	M
2024-04-05	48	25	36.5	0	0	0.00	M	M
2024-04-06	49	26	37.5	0	0	T	M	M
2024-04-07	55	26	40.5	1	0	0.00	M	M
2024-04-08	60	24	42.0	2	0	0.00	M	M
2024-04-09	62	31	46.5	7	0	0.00	M	M
2024-04-10	57	24	45.5	5	0	0.00	M	M
2024-04-11	69	30	49.5	10	0	0.00	M	M
2024-04-12	53	35	44.0	4	0	0.01	M	M
2024-04-13	57	32	44.5	5	0	0.29	M	M
2024-04-14	70	46	58.0	18	8	0.15	M	M
2024-04-15	57	33	45.0	5	0	0.00	M	M
2024-04-16	57	29	43.0	3	0	0.00	M	M
2024-04-17	56	21	38.5	0	0	0.00	M	M
2024-04-18	62	23	42.5	3	0	0.00	M	M
2024-04-19	62	24	43.0	3	0	0.00	M	M
2024-04-20	74	28	51.0	11	1	T	M	M
2024-04-21	59	26	42.5	3	0	0.00	M	M
2024-04-22	67	23	45.0	5	0	0.00	M	M
2024-04-23	70	30	50.0	10	0	0.00	M	M
2024-04-24	66	33	49.5	10	0	0.00	M	M
2024-04-25	59	32	45.5	6	0	0.01	M	M
2024-04-26	59	38	48.5	9	0	0.02	M	M
2024-04-27	57	29	43.0	3	0	0.00	M	M
2024-04-28	62	29	45.5	6	0	0.00	M	M
2024-04-29	53	25	39.0	0	0	T	M	M
2024-04-30	54	19	36.5	0	0	0.01	M	M
Average/Sum	60.3	28.8	44.5	155	15	0.82	M	M

Climatological Data for REDMOND AIRPORT, OR - May 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-05-01	58	21	39.5	0	0	0.00	M	M
2024-05-02	53	35	44.0	4	0	0.24	M	M
2024-05-03	67	29	48.0	8	0	T	M	M
2024-05-04	54	41	47.5	8	0	0.23	M	M
2024-05-05	52	34	43.0	3	0	T	M	M
2024-05-06	60	32	46.0	6	0	T	M	M
2024-05-07	54	31	42.5	3	0	0.00	M	M
2024-05-08	63	27	45.0	5	0	0.00	M	M
2024-05-09	73	33	53.0	13	3	0.00	M	M
2024-05-10	81	39	60.0	20	10	0.00	M	M
2024-05-11	85	40	62.5	23	13	0.00	M	M
2024-05-12	84	45	64.5	25	15	0.00	M	M
2024-05-13	79	43	61.0	21	11	0.00	M	M
2024-05-14	75	38	56.5	17	7	0.00	M	M
2024-05-15	84	37	60.5	21	11	0.00	M	M
2024-05-16	81	42	61.5	22	12	0.00	M	M
2024-05-17	68	39	53.5	14	4	0.00	M	M
2024-05-18	69	32	50.5	11	1	0.00	M	M
2024-05-19	60	29	44.5	5	0	0.00	M	M
2024-05-20	67	28	47.5	8	0	0.00	M	M
2024-05-21	66	32	49.0	9	0	0.05	M	M
2024-05-22	56	41	48.5	9	0	T	M	M
2024-05-23	69	33	51.0	11	1	0.00	M	M
2024-05-24	70	37	53.5	14	4	T	M	M
2024-05-25	62	38	50.0	10	0	0.00	M	M
2024-05-26	76	31	53.5	14	4	0.00	M	M
2024-05-27	83	40	61.5	22	12	0.00	M	M
2024-05-28	71	46	58.5	19	9	0.00	M	M
2024-05-29	63	38	50.5	11	1	0.00	M	M
2024-05-30	72	32	52.0	12	2	0.00	M	M
2024-05-31	78	32	55.0	15	5	0.00	M	M
Average|Sum	68.8	35.3	52.1	383	125	0.52	M	M

Climatological Data for REDMOND AIRPORT, OR - June 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-06-01	77	47	62.0	22	12	0.00	M	M
2024-06-02	70	53	61.5	22	12	T	M	M
2024-06-03	64	50	57.0	17	7	0.01	M	M
2024-06-04	78	51	64.5	25	15	0.00	M	M
2024-06-05	84	39	61.5	22	12	0.00	M	M
2024-06-06	89	41	65.0	25	15	0.00	M	M
2024-06-07	89	46	67.5	28	18	0.00	M	M
2024-06-08	87	46	66.5	27	17	0.00	M	M
2024-06-09	85	47	66.0	26	16	T	M	M
2024-06-10	86	46	66.0	26	16	0.00	M	M
2024-06-11	84	44	64.0	24	14	0.00	M	M
2024-06-12	80	37	58.5	19	9	0.00	M	M
2024-06-13	86	37	61.5	22	12	0.00	M	M
2024-06-14	74	43	58.5	19	9	0.00	M	M
2024-06-15	63	36	49.5	10	0	0.00	M	M
2024-06-16	59	31	45.0	5	0	0.14	M	M
2024-06-17	63	37	50.0	10	0	0.00	M	M
2024-06-18	75	32	53.5	14	4	0.00	M	M
2024-06-19	83	38	60.5	21	11	0.00	M	M
2024-06-20	85	44	64.5	25	15	0.00	M	M
2024-06-21	91	48	69.5	30	20	0.00	M	M
2024-06-22	94	50	72.0	32	22	0.00	M	M
2024-06-23	87	43	65.0	25	15	0.00	M	M
2024-06-24	86	38	62.0	22	12	0.00	M	M
2024-06-25	94	45	69.5	30	20	0.00	M	M
2024-06-26	86	55	70.5	31	21	0.00	M	M
2024-06-27	74	39	56.5	17	7	0.00	M	M
2024-06-28	83	42	62.5	23	13	0.00	M	M
2024-06-29	81	47	64.0	24	14	0.00	M	M
2024-06-30	83	49	66.0	26	16	0.00	M	M
Average/Sum	80.7	43.4	62.0	669	374	0.15	M	M

Appendix E
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EXHIBIT J

EMERGENCY MANAGEMENT PLAN

1. Facility Description

Moffatt Road Solar Farm I LLC (Applicant) is proposing to construct a renewable energy facility comprised of photovoltaic (PV) modules on single-axis or fixed tilt tracking systems with an accompanying optional energy storage system and all necessary appurtenances. The main electrical generation area within the facility area will include solar modules, step up transformers, switchgear and transmission line substation, solar inverter stations, an energy storage subsystem, monitoring and maintenance facilities, collector lines, and temporary use areas (collectively, the Facility).

The Facility will be located west of George Millican Road, approximately 8 miles southwest of Prineville, in Crook County, Oregon (the Facility Site). The Facility is expected to occupy up to a maximum of 320 acres within a fenced boundary. The Facility area will be seeded with a low growth seed mix to reduce storm water, runoff, and erosion. See Attachment A for detailed site layout information. During construction, a temporary construction trailer/office and laydown yard will be located on-site. When operation commences, the Facility will be unmanned on a daily basis, with periodic visits by maintenance personnel.

1.1 General Information: Pre-Construction, Construction and Operation

The purpose of this Emergency Response Plan (EMP or Plan) is to discuss the procedures that will be implemented in the event of a fire or other emergency during the construction and operation of the Facility, as well as general safety practices to reduce the risk of fire and emergency. This Plan is meant as a working plan for Applicant and local fire, emergency response, and public safety officials to better understand the Facility at various stages of development, construction, and operation. This Plan will be updated periodically as necessary as site design specifics become available and are finalized.

1.2 Site Access

1.2.1 Site Address

The Facility will be located in Crook County, OR, off of the west side of George Millican, approximately 8 miles Southwest of Prineville, OR. The Facility is located immediately north of the existing Gala Solar Farm at 12515 SW George Millican Road, Prineville, OR 97754.

1.2.2 Site Driveways

Vehicular access to the site is provided from the site to SW George Millican Road through an existing access road within an 80' wide strip along the northern border of the existing solar farm. During the early development and pre-construction phases, the access road will be unmarked, except for a small sign. Once construction begins, the access road will be marked with signage. The main driveway access off of this existing access road will be controlled with an approximately 20' wide security gate. The fence will be locked with a Knox box. Attachment A includes a map depicting the main site access locations once final facility design has been completed.

1.3 Facility Team

Applicant and its associated representatives will manage the development cycle of this EMP during early development phase portions of the contract. Early development phase involves all pre-construction activities and may include site surveying and assessments of site soils, biology, wildlife, and cultural resources. Once construction is ready to start (when Engineering, Procurement, and Construction (EPC) contractors are chosen and have mobilized to the site) the EMP will be updated with detailed site design, access, safety, and contact information based on the EPC contractor chosen and final Facility layout. During early development, site contacts for issues in the field are as follows:

Table 1: Applicant Contact Info

Facility Manager	Brent Beverly	(541) 589-0302	bbeverly@newsunenergy.net

2. Site Specific Fire Prevention and Public Safety Plan

During the early development phases of the Project and when on site for official business with any subcontractors, land surveyors, or consultants, Applicant or its representatives should have access to the Emergency Contact form in Section 3.1 for any possible emergency notifications.

3. Emergency Response and Crisis Management

Different types of Emergencies call for different types of responses for on-site personnel.

Types of Emergencies:

- Fire - Structure fire, wildfire, equipment fire, etc.
- Medical – Injury, Shortness of Breath, Stroke, Heart Attack, etc.
- Hazardous Material Release – Chemical Storage Spill (chemical usage and storage anticipated to be minimal), Ruptured Equipment (hydraulics hose, engine oil spill, etc.)
- Natural Disasters / Catastrophic – Earthquake, Flood, Tornado, Other High Wind Event
- Violence - Fight Or Disturbance, Threat Of Weapons, Assault, Bomb Threat

3.1 Emergency Contacts

Emergency Response Contacts:

Category	**Emergency Contact Information**	**Telephone**
Facility Manager	Moffatt Road Solar Farm I LLC, Brent Beverly	541-589-0302
Fire Emergency	Crook County Fire & Rescue, Station 1202 8900 SW Reif Rd, Powell Butte	911
EMT	Ambulance	911
Hospital	St. Charles Prineville 384 SE Combs Flat Rd, Prineville, OR	541-447-6254
Emergency Services	Crook County Sheriff	911

Sheriff	Crook County Sheriff 308 NE 2nd St Prineville, OR	541-447-6398
Spill Hazard	Haz Mat Spill Response Clean Harbors – For any emergency can reach their hotline 24/7.	800-645-8265
EPC	EPC Emergency Response Team (ERT)	TBD
	EPC Safety Team Leader (STL)	TBD

3.2 Emergency Safety Communication and Training

Applicant will provide education, training documentation, and a fire site plan overview for Crook County Fire and Rescue and local Public Safety personnel. Education and site-specific information will be provided for:

- Access Gates to the site and other areas such as facility electrical substation
- Navigating the internal roadways at the site
- Various types of equipment hazard conditions associated with Photovoltaic Solar Arrays
- Emergency AC and DC Disconnect locations
- Shock hazards such as DC or AC voltages which emergency responders should be aware of to ensure emergency responder safety and prior to applying fire suppression methods
- Other Hazardous Material Presence
- Vegetation Fire procedures and prevention, including landscape and weed maintenance
- Electrical Fires
- EPC Contractor, Subcontractor, & Employee Training & Education requirements specific to Emergency First Response
- EPC Contractor, Subcontractor, & Employee Training & Education for Controlling Hazards & Prevention Practices

3.3 Fire Safety and Prevention

Wildfires in Crook County are generally caused by lightning or human activity, with lightning accounting for three times as many fires (Geiger 2014). Human caused fires are frequently caused by out-of-control brush burning at residences, fireworks, inadequately suppressed campfires, cigarette butts, and heated catalytic converters in dry grass.

At the Facility, Applicant will control many potential ignitions of human origin that cause wildfires. To minimize accidental fire ignition at the Facility site, Applicant and its contractors will develop, implement, and maintain strict standard practices as an integral part of daily activities. General safety practices include the following:

- Combustible and flammable waste should not be allowed to accumulate in any work area.
- Flammable and combustible materials should not be stacked or stored against any temporary or permanent building, structure, or storage facility.
- Rags and fabric contaminated with natural oils, biodiesel, or other hydrocarbon products should be contained in a closed metal container and removed daily from the workplace to a safe disposal area.

- Contractors should have an appropriate number of portable fire extinguishers on-site during construction, operations, and decommissioning. In addition, the contractor should have a fire suppression water tank onsite during construction and decommissioning.
- During periods when the risk of wildfire is high, activities with inherent fire risks such as hot work (grinding, cutting, welding), chainsaw/chipping operations, etc. should be limited.
- In the collector line corridor and particularly around related infrastructure (i.e., poles), vegetation should be maintained pursuant to the North American Electric Reliability Corporation and National Electric Code regulations.
- Smoking is strictly prohibited and permitted only in specific areas designated with fire safety in mind. These areas will be clearly identified.

Fire Emergencies

All fires, regardless of the size or circumstances, shall be immediately reported using the 911 system. Employees and subcontractors shall be trained in proper reporting procedures such as the nature of the emergency, the exact location, a contact person/callback number, and any other important information. The O&M building will have an alarm system reporting to a monitoring station.

Crook County Fire and Rescue is the primary fire response organization for the Facility site. Crook County Fire and Rescue has three fire stations in the vicinity. Two are located in Prineville (approximately 11 miles/19 minute drive from the stie) while one station (Station 1202) is located in Powell Butte (approximately 17 miles/24 minute drive from the site). Oregon State Forestry Fire Agency may provide backup fire services if needed.

During Construction and Decommissioning

Training

Fire prevention and fire precaution training should be given to all employees and contractors at the Project site. This training should be conducted as part of the Applicant's Site Safety Rule and Regulations and required for all employees before beginning work at the Project site. The training program should include:

- Hazard recognition and risk potential;
- Inspection methods;
- Hot Work Permit requirements;
- Emergency fire procedures;
- Selection and use of portable fire extinguishers; and
- Storage and handling of flammable and combustible liquids brought onto the site.

Material Storage

Materials in work areas should be limited to actual needs and should be stored in a manner to protect combustible material from ignition sources. Storage areas should be kept clean, and materials should be neatly stacked or placed. Construction materials should be stored or placed in in an orderly manner. Storage quantities will be minimized.

Compressed Gas Cylinders

Compressed gas cylinders will be handled in accordance with industry best practices. Compressed gas cylinder valves should be closed whenever work is finished, when the cylinders are empty, or when the cylinders are moved. Cylinders should be stored in well-

protected, ventilated, dry locations, at least 20 feet from highly combustible materials. Welding gases should be stored in isolated areas and segregated by type of gas. Compressed gas cylinders should be secured in an upright position at all times, except for short periods when being carried or hoisted. Cylinders should be transported in an upright position and should not be hauled in equipment beds or truck beds on their side. Cylinders lifted from one elevation to another should be lifted only in racks or containers designed for that purpose. Compressed gas cylinders should not be hoisted by the valve cap or by means of magnets or slings. Compressed gas cylinders should not be used as, or placed where they may become part of, an electrical circuit. Oxygen cylinders should be kept free of oil and grease.

Flammable and Combustible Liquids

The storage of flammable and combustible liquids will be in accordance with NFPA 30. While no combustible liquids, including oil or grease, are intended for use by the Project, any such products should be stored in containers or storage tanks labeled with contents and tank capacity. The transformer may be designed to use mineral oil, albeit permanently sealed. Any container or tank for storage should meet criteria such as:

- Steel Tank Institute F911 and UL 142 standards;
- Capable of withstanding working pressures and stresses compatible with the type of liquid stored;
- Maintained in a manner that prevents leakage;
- Located in an area free of other types of combustible materials; and
- Vented or otherwise constructed to prevent development of pressures or vacuum as a result of filling, emptying or changes in atmospheric temperature in accordance with NFPA 30.

Flammable/combustible solvents should not be used near ignition sources. Flammable liquids should be handled and used only in approved, properly labeled safety cans. No equipment should be fueled while the engine is running. The use of cellular phones or other types of radio-frequency generating devices (pagers, two-way radios, etc.) is not be permitted within 25 feet during any fueling operations.

Hot Work

All hot work should be conducted under a Hot Work Permit that contains a checklist to promote fire and worker safety. Inspection items should include the work and surrounding area, weather and fire conditions, firefighting resources, emergency egress, work coordination, equipment and tool inspections, and fire watch provisions and duration. A permanent hot work site may be developed in a fire-safe area for the construction process. This area should have a daily hot work permit and daily inspection process. Before hot work is carried out in any construction area, welding fabrication area, or shop, the area should be cleared of all combustible and flammable material.

All employees shall use proper personal protective equipment and clothing when performing or assisting in cutting and welding operations (burning glasses, shields, moleskin suits or flame C resistant coveralls and gloves, etc.). At least two fire extinguishers with a 15-pound Class A, B, C rating should be at the work location during welding, cutting, soldering, etc. They should be placed in the most likely area of egress should a fire occur. Welding leads and equipment should be properly maintained and inspected before use. Defective equipment should not be used and should be reported to the supervisor. A fire-resistant container should be used for

spent electrode stubs. Welding machines should be turned off when being moved or when the welder must leave their work for any length of time.

Hoses and torches should be inspected before use, and defective hoses should be removed from service. Torches should be ignited by friction lighters or other approved devices only. Cylinders, all hose apparatus, and connectors should be kept free of oil and grease and not handled with oily or greasy hands or gloves. Oxygen/fuel gas systems should be equipped with approved back-flow valves, flash back arresters, and pressure relief devices.

Fuel gas/oxygen equipment should be disconnected from the source when left unattended and torches should not be left unattended inside a confined space. The frame of all arc welding or cutting machines should be effectively grounded when the machine's power outlets are being used as an electrical power source. If electrode holders are to be left unattended, the electrodes should be removed, and the holder placed where it is protected from unintentional contact.

Trained fire watchers should remain at the location for 30 minutes during normal fire risk and 60 minutes during periods of very high fire risk as defined by the National Weather Service for the site area. Hot work at height and from scaffolding presents special hazards. The controls are as follows:

- All work should be coordinated with other subcontractors working in the area.
- Areas beneath hot work should be cleared of all combustible and flammable materials.
- Fire-retardant material should be used to cover scaffold boards and enclose operations.
- Fire-retardant material should be removed at the end of every shift to expose scaffold boards or combustible materials.

Electrical Equipment
Task lighting, particularly halogen lamps, should be clear of combustible materials when in use. The use of cool lights for individual task lighting is encouraged. Only approved connectors should be used on electric arc welding leads. Flexible cables, tools, and equipment, including welding equipment, should be inspected regularly for damage. Document monthly inspections.

Fire Protection Equipment
Fire extinguishers should be inspected, tested, and maintained in accordance with applicable codes/standards such as NFPA standards or State of Oregon equivalent. Fire extinguishers should be conspicuously marked, and clear access to each should be maintained. Employees should be trained in the use of fire extinguishers. Each fire extinguisher should be replaced immediately after discharge with another fire extinguisher that is fully charged and of the proper size and type.

Fire extinguishers may be provided and maintained at the following locations:

- On all motorized vehicles;
- At any fuel dispensing or service area; and
- At storage areas for flammable or combustible liquids.

Smoking will be permitted only in designated areas. Electrical wiring and equipment for light, heat, or power purposes will be installed in compliance with local building codes or 29 CFR 1926 Subpart if K if for temporary use during construction activities.

Inspection and Testing

General and specific inspection schedules will be developed and implemented. General inspections will be conducted monthly and will include all construction areas, storage and lay down areas, and fabrication and painting areas.

During Operations

Flammable and Combustible Liquids

Bulk flammable and combustible liquids should be stored in STI F911 and UL 142 containers in accordance with NFPA 30 and local building codes. Non-bulk storage should be in accordance with local building codes in packaging approved by Department of Transportation and on secondary containment, if appropriate. Smaller quantities of flammables should be stored inside of a flammable materials locker.

Electrical Equipment

Task lighting, particularly halogen lamps, should be clear of combustible materials when in use.

Fire Protection Equipment

Fire extinguishers should be inspected, tested, and maintained in accordance with applicable local codes/standards and NFPA 10. Employees should be trained in the use of fire extinguishers. Each fire extinguisher should be replaced immediately after discharge with another fire extinguisher that is fully charged and of the proper size and type.

Fire extinguishers may be provided and maintained at the following locations:

- On all motorized vehicles;
- At the fuel area, if applicable; and
- At storage areas for flammable or combustible liquids.

Smoking will be permitted only in designated areas. Smoking will be prohibited at or in the vicinity "No Flame" of operations that constitute a fire hazard. A sign reading "No Smoking or Open Flame" should be conspicuously posted.

Attachments

A. Overall Site Plan, Site access, Site Muster Locations, Proposed Hazardous Material Storage Location
B. Flow Chart (in the event of an emergency)
C. Emergency Response Jurisdictional Boundary Map
D. Site Specific Safety Plan

ATTACHMENT A
SITE PLAN, ACCESS, STORAGE

[*to be provided*]

ATTACHMENT B
EMERGENCY FLOW CHART

[*to be provided*]

ATTACHMENT C
EMERGENCY RESPONSE JURISDICTION MAP

[*to be provided*]

ATTACHMENT D
SITE SPECIFIC SAFETY PLAN

[*to be provided*]

EXHIBIT K—CROOK COUNTY FARM COVENANT NOT TO SUE

CROOK COUNTY

FARM COVENANT NOT TO SUE

"DRAFT"

Moffatt Road Solar Farm LLC a Delaware limited liability company ("Grantor"), in accordance with the conditions set forth in the Conditional Use Permit for the Moffatt Road Solar Farm Project, dated _____ and as may be amended from time to time, approving the Moffatt Road Solar Farm Project on real property located in Crook County, Oregon (the "Project") hereby grants to the owners of all property adjacent to the Project Property (and described more specifically in Exhibit A), this Covenant Not to Sue:

1. The Grantor, its heirs, successors, transferees, and assigns hereby acknowledges by granting of the covenant that the Project is situated in a farm zone in Crook County, Oregon, and may be subjected to conditions resulting from farm operations on adjacent lands. Farm management activities ordinarily and necessarily produce noise, dust, odor, and other conditions which may conflict with Grantor's use of the Project Property. Grantor hereby waives all common law rights to object to normal and necessary farm management activities legally conducted on adjacent lands which may conflict with Grantor's use of the Project Property, based on uses in effect at time of Conditional Use Permit approval.

2. Grantor shall comply with all applicable restrictions and conditions for maintaining residences or other non-farm structures in the farm zone that may be required by state and local land use laws and regulations.

3. This covenant is appurtenant to all property adjacent to the Project

Property and shall bind the heirs, successors, transferees, and assigns of Grantor and shall endure for the benefit of the adjacent landowners, their heirs, successors, and assigns.

IN WITNESS WHEREOF, the Grantor has executed this easement on _____, 2021.

GRANTOR:

Moffatt Road Solar Farm LLC,
A Delaware limited liability company

By:

_____
Name:

_____
Title:

By:

_____
Name:

_____
Title:

STATE OF OREGON)
) ss.
COUNTY OF Deschutes)

The foregoing instrument was acknowledged before me this ___ day of _____, 2021, by _____, _____ Moffat Road Solar Farm LLC, an xxxx limited liability company.

_____
Notary Public for Oregon
My commission expires:_____
Commission No.:_____

STATE OF OREGON)
) ss.
COUNTY OF Deschutes)

The foregoing instrument was acknowledged before me this ___ day of _____, 2021, by _____, _____ of Moffat Road Solar Farm LLC, a Delaware limited liability company.

_____
Notary Public for Oregon
My commission expires:_____
Commission No.:_____

Attachment A

Legal Description Project Property

All of that real property located in Crook County, Oregon, more particularly described as follows:

EXHIBIT L

WILDLIFE AND FEDERAL SENSITIVE PLANT REVIEW

SW George Millican Road
Powell Butte, Oregon

Prepared for:
NewSun Energy
550 NW Franklin Avenue, Suite 408
Bend, Oregon 97701

July 29, 2024
PBS Project 80812.026

AN APEX COMPANY
4412 S CORBETT AVENUE
PORTLAND, OR 97239
503 248 1939 MAIN
866 727 0140 FAX
PBSUSA COM

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Figure 6. Wetland Delineation Overview Map
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Appendix B: Data Forms and SDAM Forms

Appendix C: Ground-Level Color Photographs

Appendix D: Additional Tables and Information

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INTRODUCTION

PBS Engineering and Environmental LLC (PBS) was contracted by NewSun Energy (Client) to conduct a wetland delineation for a solar energy project. The 383.21-acre study area is in unincorporated Crook County east of the community of Powell Butte, Oregon (Figure 1; all figures provided in Appendix A) on a portion of Tax Lot 300 on Crook County Assessor map 16S15E (Figure 2). PBS fieldwork was conducted June 24 through June 26, 2024, by Hailey Gilliland, wetland scientist.

LANDSCAPE SETTING AND LAND USE

The study area is within the Blue Mountains–Deschutes River Valley ecoregion. This ecoregion is described as "a broad intermountain sagebrush–grassland. Because of the proximity of the high Cascades to the west, stream density and water availability are high. As a result, human population density is much higher than in Ecoregion 80g (the High Lava Plains). Canals carry river water to irrigated farms on floodplains and terraces" (Thorson et al. 2003).

The study area is a vacant parcel that consists of mixed shrub-steppe and western juniper (*Juniperus occidentalis*) woodland habitat. The study area has been and is still actively used for grazing livestock. Study area elevations range from 3,441 to 3,617 feet (NAVD 88) (US Geological Survey [USGS], 2015). Topography generally slopes to the east. The northern portion of the study area is situated on a steep hillside with a slope of approximately 15%, which transitions to a gentler slope of approximately 5% in the central and southern portions. The study area is bounded by shrub-steppe and western juniper woodland habitat to the north, east, and west. A solar field and a rural residential property border the study area to the south.

SITE ALTERATIONS

Land use in the study area is dominated by livestock grazing and associated ranch roads. Grazing has compacted the soil in certain areas; however, it does not appear to have affected hydrology or aquatic resources on the site. The construction of farm roads within the study area may have altered the flow of surface water across the site, but the effect appears to be generally negligible. One of the farm roads in the southwestern portion of the study area (Figure 6J) may have diverted the natural path of an ephemeral stream.

PRECIPITATION DATA AND ANALYSIS

Precipitation data were obtained from the Redmond Airport climate station via the National Oceanic and Atmospheric Administration (NOAA) Regional Climate Centers Applied Climate Information System (AgACIS) website (NOAA, 2024) (Appendix D). The Antecedent Precipitation Tool (Environmental Protection Agency, 2024) was used as an alternative to the NRCS WETS Table (Appendix D). Less than 0.25 inch of rain fell in the two weeks prior to the field investigation. Rainfall for the year and for the three-month period prior to the field visit was drier than normal (Table 1 and Appendix D). Secondary indicators of hydrology were relied upon because of the summer timing of the field visit.

Lower than normal precipitation levels did not affect the delineation of non-wetland waters, as determinations of intermittent versus ephemeral streams were made using indicators described in the Streamflow Duration Assessment Method (SDAM), which relies on multiple indicators (Nadeau, 2015).

Table 1. Precipitation Summary

Site Visit Date	Precipitation Day of Site Visit (in.)	Precipitation Two Weeks Prior to the Site Visit (in.)	Average Water Year to Date (in.)	Actual Water Year to Date (in.)	Percent of Normal	Relation to Normal
06/24/2024 to 06/26/2024	0.00	0.14	7.23	6.47	89%	Below

in.: inches

METHODS

The field investigation was conducted from June 24 through 26, 2024. The wetland delineation was based on the routine determination method presented in the US Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and guidance presented in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Supplement* (Version 2.0) (Supplement) (USACE, 2010). Soils, vegetation, and indicators of hydrology were recorded at 12 sample plot locations on standard wetland determination data forms (Appendix B). Wetland indicator status was assigned based on the Regional Wetland Plant List for the Arid West (USACE, 2022a). Plot locations were established to represent contrast in landscape position and plant communities.

Non-wetland waters were delineated according to guidance provided by the Oregon Department of State Lands (DSL) and USACE, which differs for each agency. The USACE-regulated ordinary high water mark (OHWM) was delineated according to Guidance Letter 05-05 (USACE, 2005) and *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams: Interim Version* (USACE, 2022b). The DSL-regulated ordinary high water line (OHWL) was delineated based on guidance presented in Oregon Administrative Rule (OAR) 141-085-0515(3)(a-f) (2009). Flow duration for non-wetland waters was determined using SDAM (Nadeau, 2015). The dry channel methodology within SDAM was specifically applied due to the summer timing of the investigation. SDAM was performed for each stream (Appendix B).

DESCRIPTION OF ALL WETLANDS AND OTHER NON-WETLAND WATERS

The field investigation identified seven ephemeral streams within the study area. The features are described below and illustrated in Figures 6A through 6F. Stream duration field assessment forms are included in Appendix B for all the ephemeral streams.

Ephemeral Stream 1 (0.02 acre, 850 square feet, 416 linear feet)

Ephemeral Stream 1 originates off site to the north and continues south through the study area before terminating. The ephemeral stream is located along a farm access road and generally follows the linear road. In its northern section, the stream has a relatively defined bed and bank, approximately 4 feet wide. As it progresses south, the bed and bank become less distinct, eventually flattening out and disappearing. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush *(Artemisia tridentata),* rubber rabbitbrush *(Ericameria nauseosa),* and cheat grass *(Bromus tectorum).* No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 2 (0.05 acre, 2,343 square feet, 680 linear feet)

Ephemeral Stream 2 originates just south of a farm road in the north-central portion of the study area. The stream flows southeast and terminates on site. The stream has a vague bed and banks that are almost entirely

vegetated, with little to no bare soil in the channel. The average width is approximately 4 feet. At the end of the stream, the bed and bank flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, rubber rabbitbrush, cheat grass, pale alyssum (*Alyssum alyssoides*), and needle and thread (*Hesperostipa comata*). No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 3 (0.02 acre, 1,651 square feet, 416 linear feet)
Ephemeral Stream 3 originates in the north-central portion of the study area, flows southeast, and terminates on site. The stream has a somewhat defined bed and banks that are almost entirely vegetated with little to no bare soil in the channel. The average width is approximately 2 feet. At the end of the stream, the bed and bank flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, rubber rabbitbrush, cheat grass, pale alyssum, and needle and thread. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 4 (0.01 acre, 274 square feet, 138 linear feet)
Ephemeral Stream 4 originates in the eastern portion of the study area and flows east for a short length and terminates on site. The stream has a very vague bed and banks that are almost entirely vegetated, with little to no bare soil in the channel. The average width is approximately 2 feet. At the end of the stream, the bed and bank flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous including western juniper, big sagebrush, rubber rabbitbrush, cheat grass, pale alyssum, and needle and thread. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 5 (0.01 acre, 392 square feet, 200 linear feet)
Ephemeral Stream 5 originates in the western portion of the study area and flows east for a short length and terminates on site. The stream has a very vague bed and banks that are almost entirely vegetated, with little to no bare soil in the channel. The average width is approximately 2 feet. At the end of the stream, the bed and banks flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, cheat grass, pale alyssum, junegrass *(Koeleria macrantha)*, and crested wheatgrass (*Agropyron cristatum)*. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 6 (0.04 acre, 1,711 square feet, 573 linear feet)
Ephemeral Stream 6 originates in the southern portion of the study area and flows north, where it continues off site to the northwest. An ephemeral tributary enters the site from the west and joins with Ephemeral Stream 6. This ephemeral tributary appears to be the ephemeral stream (ST-01) identified in WD2021-0542. Ephemeral Stream 6 is located alongside a farm access road and generally follows its linear shape. The stream is approximately 4 feet wide and has some bare soil. Before the stream exits the study area, the bed and banks flatten out and the channel becomes more vegetated. It is unlikely that the channel continues far off site. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, cheat grass, pale alyssum, and crested wheatgrass. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

Ephemeral Stream 7 (0.005 acre, 209 square feet, 416 linear feet)
Ephemeral Stream 7 originates in the southwestern portion of the study area, flows northeast for a short length, and terminates on site. The stream has a vague bed and bank that are almost entirely vegetated, with little to no bare soil in the channel. The average width is approximately 2 feet. At the end of the stream, the bed and banks flatten out and disappear. The stream channel and banks are dominated by upland shrubs and upland herbaceous vegetation, including western juniper, big sagebrush, cheat grass, pale alyssum, junegrass, and crested wheatgrass. No wetland plants were observed in or along the stream. During the field visit, no flow or water were observed. Additionally, there were no signs of soil or litter disturbance within the channel, no pools or moist areas, and a lack of macroinvertebrates, indicating infrequent water flow. Based on these characteristics and SDAM, the stream is considered ephemeral. Any flow likely comes off the steep hill slopes and is then quickly absorbed into the porous sandy soils.

DEVIATION FROM SWI

The Statewide Wetlands Inventory (SWI) includes the National Wetlands Inventory (NWI) and National Hydrology Dataset (NHD). The results of this delineation somewhat concur with NWI and NHD mapping, with notable differences. The SWI (DSL, 2024) maps two NWI and NHD polygons in the northwestern corner of the study area that converge into one stream that terminates on site. The northern portion of this polygon was identified in the field; however, it is shorter than the SWI mapping. Additionally, the SWI maps illustrate an R4SBC (riverine, intermittent, streambed, seasonally flooded) feature; however, the stream identified in the field is accurately classified as ephemeral. Another R4SBC feature is mapped as originating in the eastern portion of the study area and continuing off site to the east. This feature was not found in the field. There were ephemeral drainages located to the west of the mapped SWI feature; however, they all terminate on site. Additionally, another R4SBC feature is mapped in the southwestern corner of the study area. The SWI feature enters from the west and flows into the study area where it terminates. This feature was partially confirmed; however, a farm road appears to have possibly altered the alignment. Additionally, the classification for these streams would be ephemeral.

MAPPING METHOD

A recent color aerial photograph with the study area boundaries was used as the basemap for the delineation maps (Google Earth, 2024). Contours were generated from USGS 3D Elevation Program (3DEP) lidar (USGS, 2015). Waterway boundaries and sample plot locations were collected using a Trimble DA2 handheld GPS unit with real-time kinematic (RTK) accuracy of ±2.7 feet based on real-time accuracy information at the time of recording. Tax lot boundaries were obtained from Crook County geographic information system (GIS), and accuracy is assumed to be within +/- 1 meter. Mapping and cartography were completed in ArcGIS Pro. Soil

mapping units are depicted in Figure 4 and an aerial photograph is included as Figure 5. Ground-level site photographs are included in Appendix C.

ADDITIONAL INFORMATION

State Jurisdiction

All seven streams identified on site are ephemeral and lack any fish presence due to a lack of downstream connection. DSL regulates "waters, including rivers, intermittent and perennial streams, lakes and ponds" (2009). DSL's definition of an intermittent stream is "any stream which flows during a portion of every year and which provides spawning, rearing or food-producing areas for food and game fish" (2009). The streams identified on site are ephemeral and lack any spawning, rearing, or food-producing areas for fish. Because of this, the features are likely not jurisdictional to DSL.

Federal Jurisdiction

On August 29, 2023, the USACE and EPA issued a final rule to amend the "Revised Definition of 'Waters of the United States'" to conform to the US Supreme Court's decision in the case of Sackett v. Environmental Protection Agency. The new rule defines jurisdictional waters as traditional navigable waters (TNW) or tributaries to TNWs. The ephemeral streams identified on site lack any downstream connection and are likely not jurisdictional; however, the final determination will be made by USACE.

RESULTS AND CONCLUSIONS

Seven ephemeral streams were delineated within the study area (Table 2).

Table 2. Delineation Summary

Field ID	Area (acre)	Cowardin Classification	HGM Classification
Ephemeral Stream 1	0.02	NA	NA
Ephemeral Stream 2	0.05	NA	NA
Ephemeral Stream 3	0.04	NA	NA
Ephemeral Stream 4	0.01	NA	NA
Ephemeral Stream 5	0.01	NA	NA
Ephemeral Stream 6	0.04	NA	NA
Ephemeral Stream 7	0.004	NA	NA

HGM: Hydrogeomorphic ; NA: not applicable

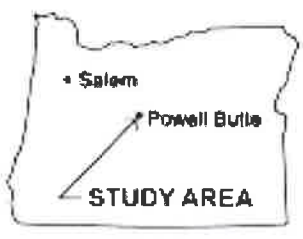
REQUIRED DISCLAIMER

This report documents the investigation, best professional judgment, and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by DSL in accordance with OARs 141-090-0005 through 141-090-0055.

Appendix A

Maps

Figure 1. Location Map
Figure 2. Tax Lot Map 16S15E
Figure 3. Statewide Wetlands Inventory Map
Figure 4. County Soil Survey Map
Figure 5. April 18, 2024 Aerial Photograph
Figure 6. Wetland Delineation Overview Map
Figure 6A-6J. Wetland Delineation Map



Legend

Study Area, 383.21 ac

SOURCE: ESRI USGS BASEMAP (2024)

SCALE: 1" = 2,000' (8.5X11 SHEET)

0' 1,000' 2,000' 4,000'

PREPARED FOR: NEWSUN ENERGY

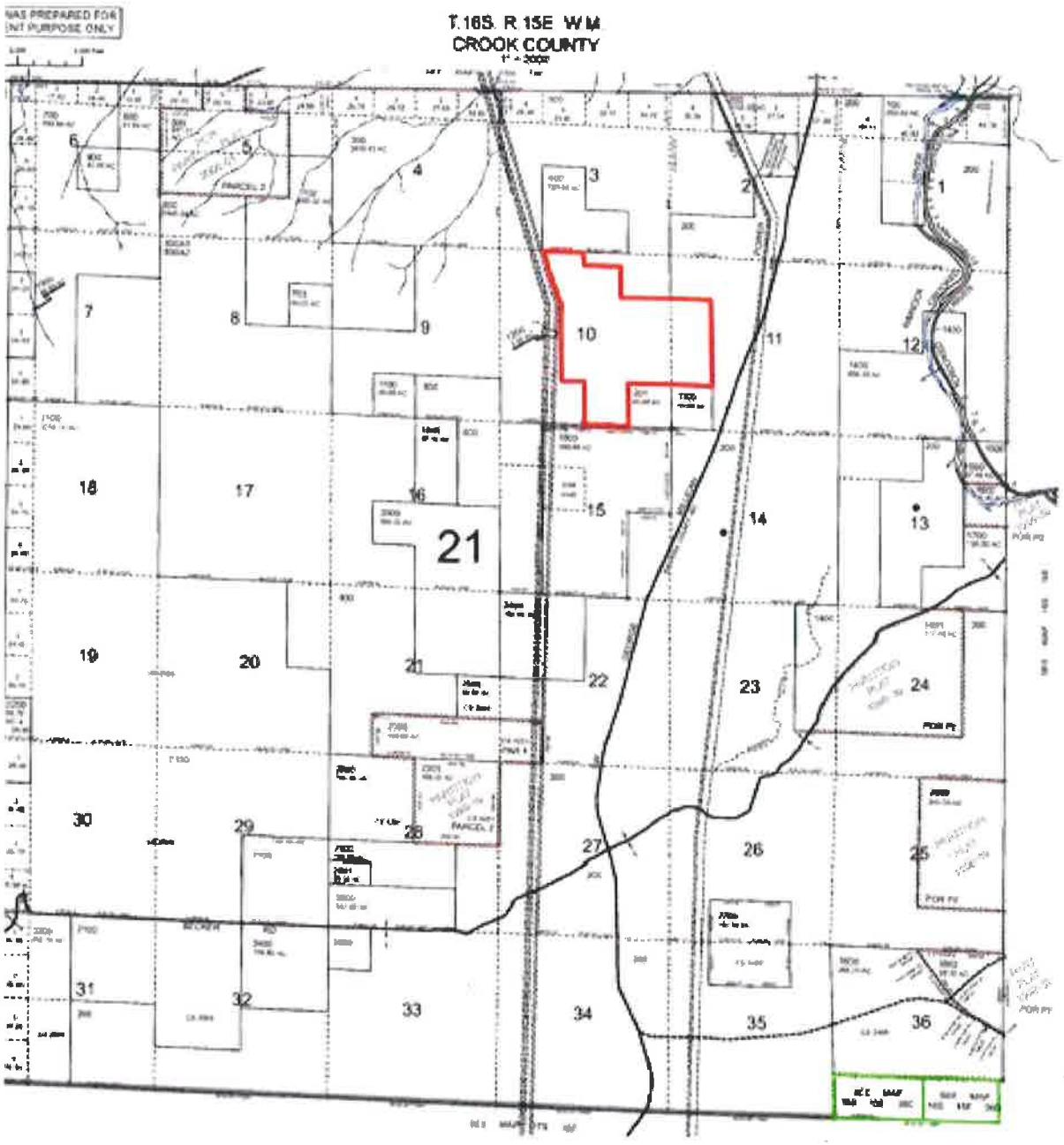
PBS

LOCATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
[illegible]

FIGURE
1



PREPARED FOR: NEWSUN ENERGY

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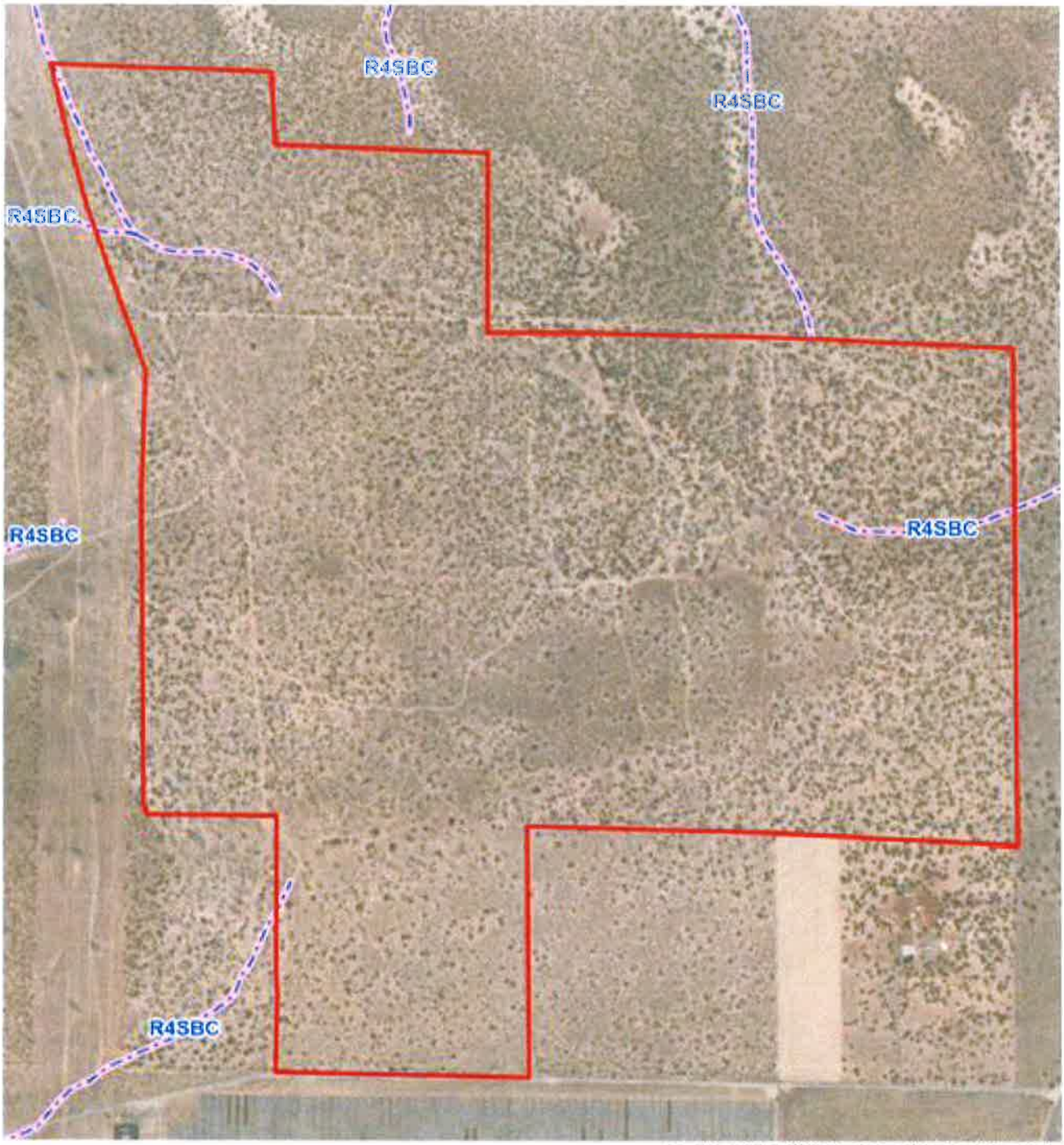
TAX LOT MAP 16S15E

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
60312.026

FIGURE
2



SOURCE: WORLD IMAGERY (2024); USFWS (2024); DSL (2024)

Legend
- Study Area: 383.21 ac
- NWI Polygon

NHD Streams and Rivers
- Intermittent
- NHD Waterbody

NWI Mapping Within Study Area

R4SBC - Riverine, intermittent, streambed, seasonally flooded

SCALE: 1" = 800' (8.5X11 SHEET)

0' 400' 800' 1,600'

PREPARED FOR: NEWSUN ENERGY

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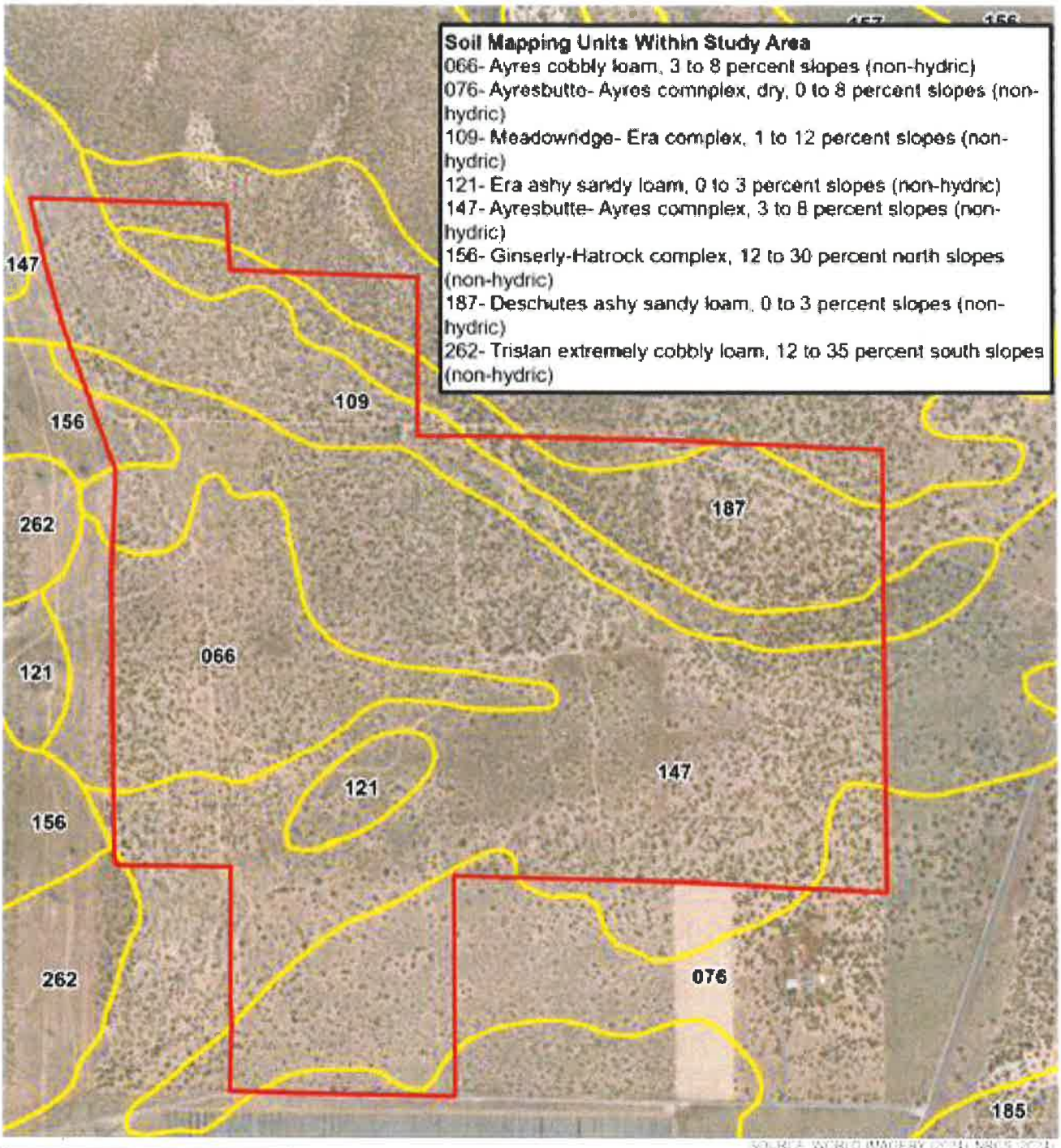
STATEWIDE WETLANDS INVENTORY MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80612.026

FIGURE
3



PBS

COUNTY SOIL SURVEY MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
808.12.028

FIGURE
4

SOURCE: GOOGLE EARTH, 2024

Legend

Study Area: 383.21 ac

SCALE: 1" = 800' (8.5X11 SHEET)

0' 400' 800' 1,600'

PREPARED FOR: NEWSUN ENERGY

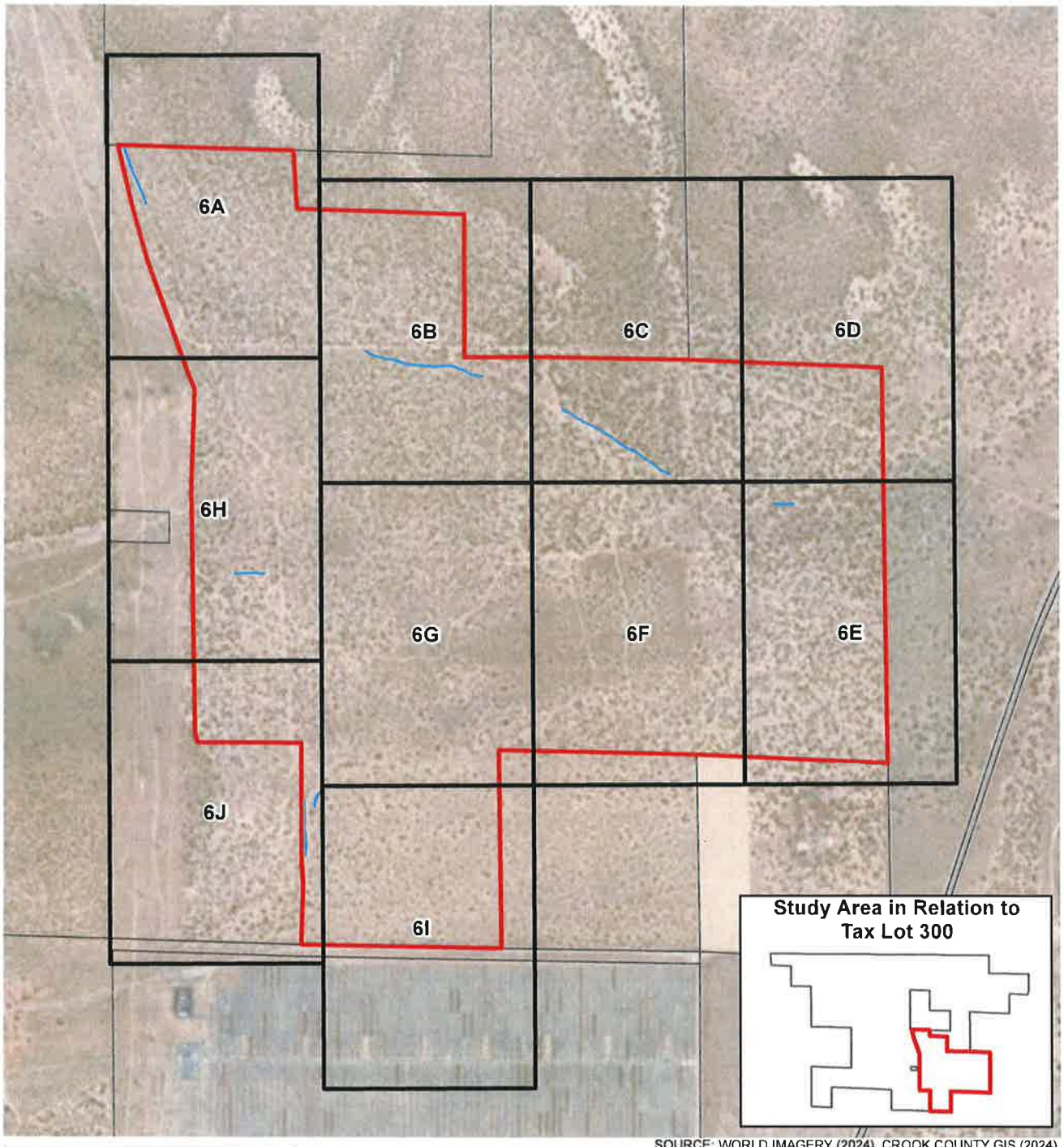
PBS

APRIL 18, 2024 AERIAL PHOTOGRAPH

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80612.028

FIGURE
5



SOURCE: WORLD IMAGERY (2024), CROOK COUNTY GIS (2024).

Legend
- Study Area, 383.21 ac.
- Ephemeral Streams
- Tax Lots

SCALE: 1" = 1,400' (8.5X11 SHEET)

0' 700' 1,400' 2,800'

PREPARED FOR: NEWSUN ENERGY.

PBS

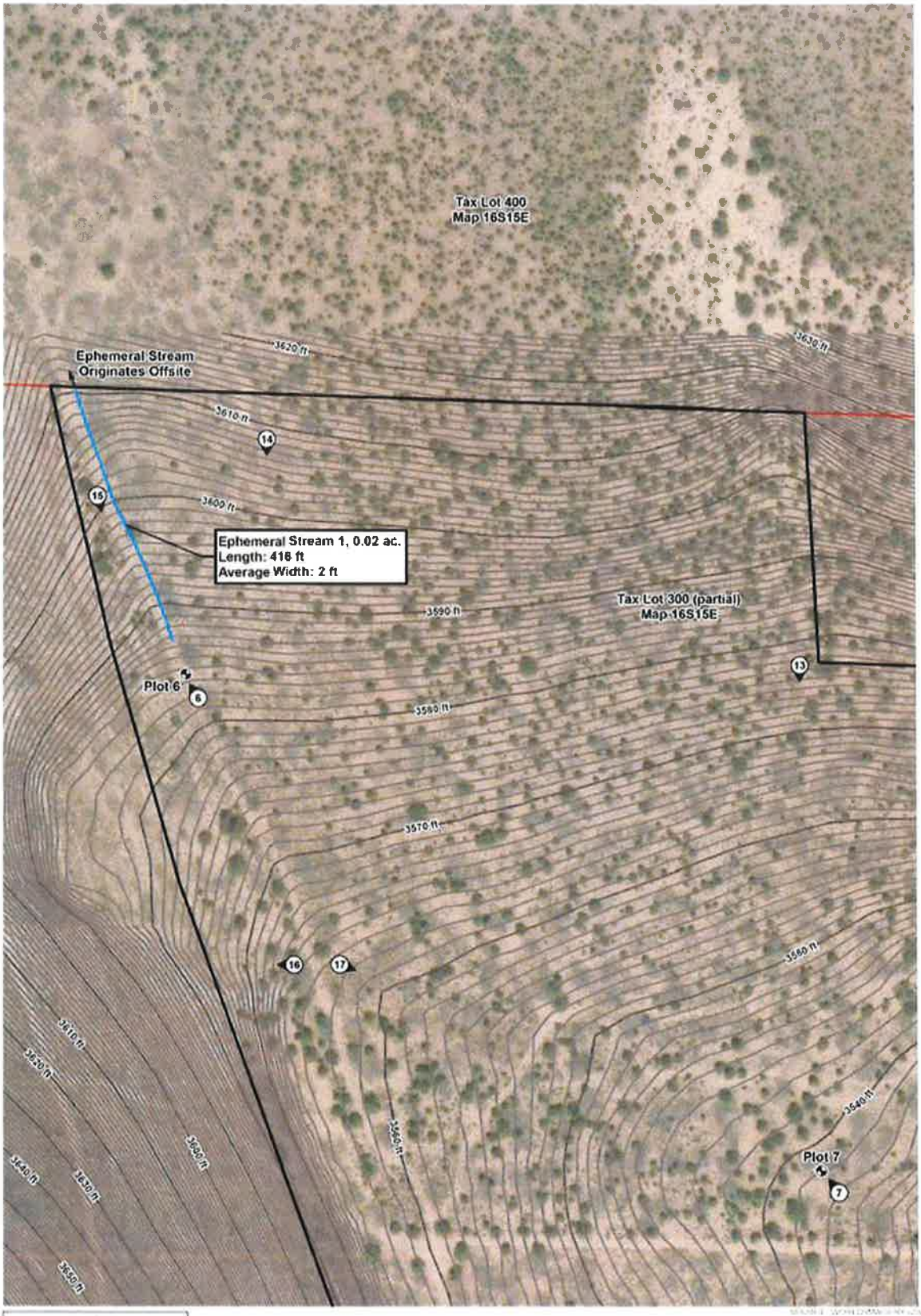
WETLAND DELINEATION OVERVIEW MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026

FIGURE
6

Filename: L:\Projects\80000\80700-80999\80812_NewSunEnergy_9ESAs\18. 80812.026 Peep\Phase 0002 - Wetlands\Mapping\APRX\PEEPS_Solar_Wetland_Delineation\PEEPS_Solar_Wetland_Delineation.aprx Plot Date/Time: 7/30/2024 3:17 PM



Legend
- Study Area, 383.21 ac.
- Plots
- Photo Points
- Ephemeral Streams
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

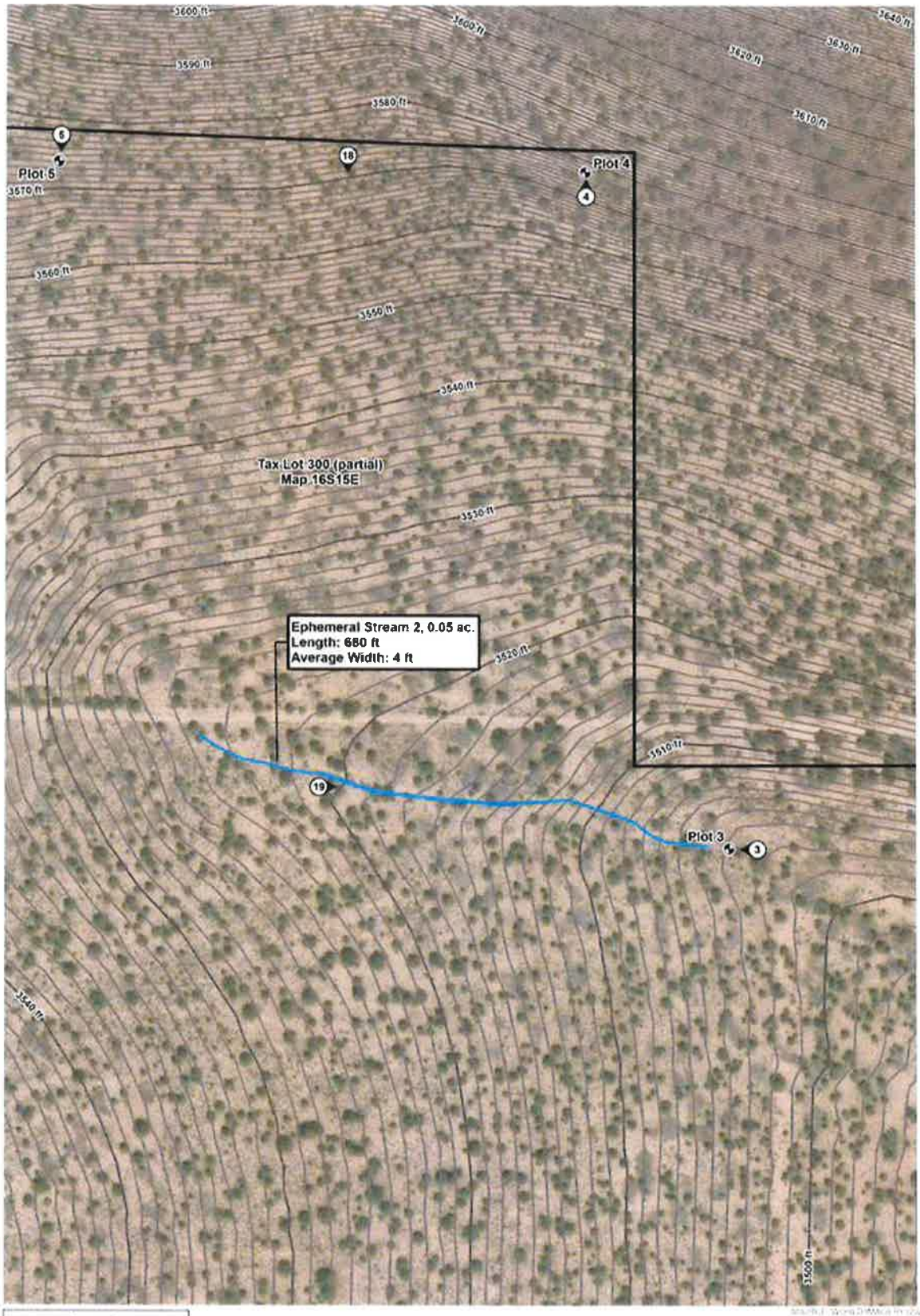
PREPARED FOR: NEWSUN ENERGY

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6A



WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6B

Legend

- Study Area, 383.21 ac.
- Plots
- Photo Points
- Ephemeral Streams
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

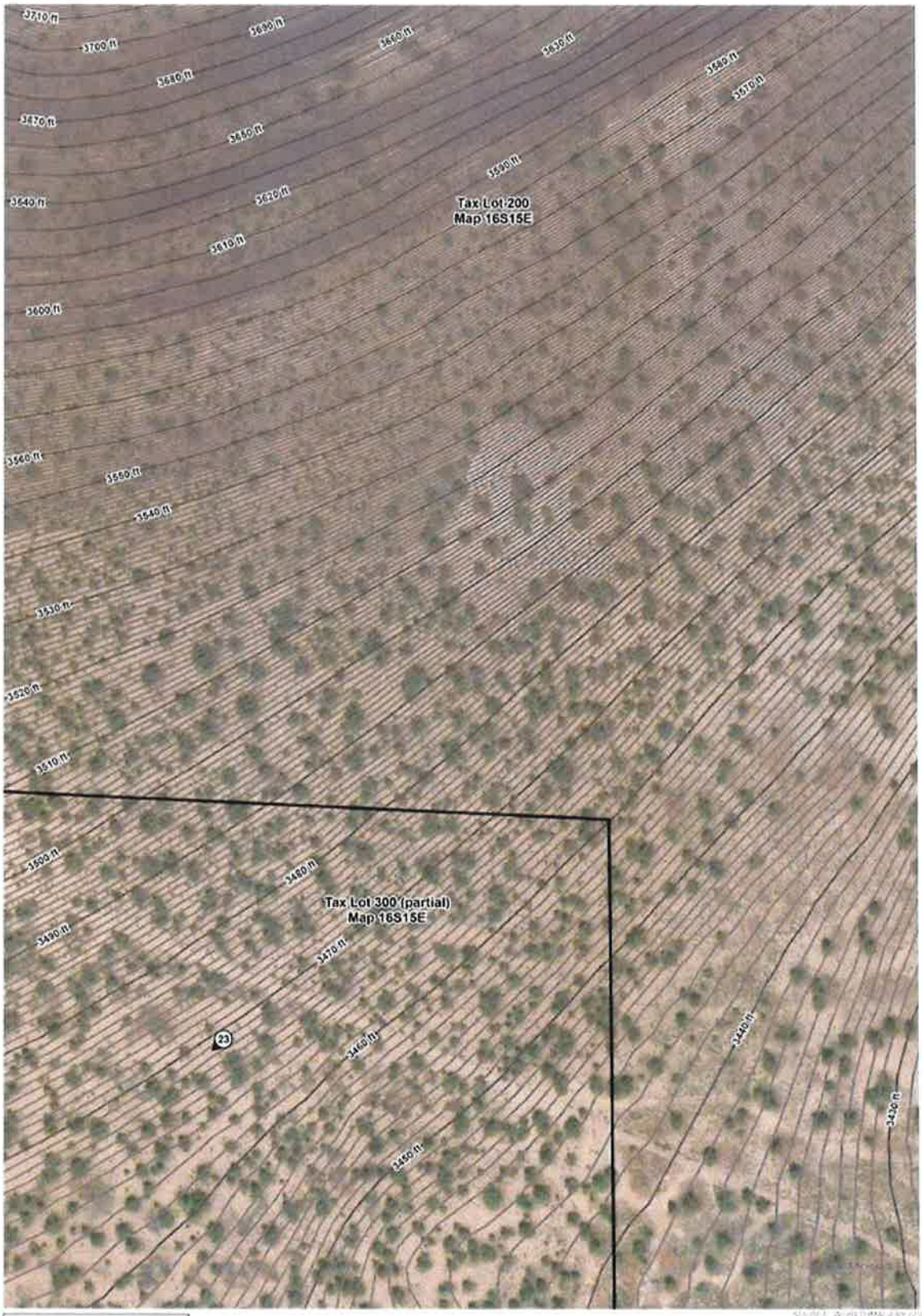
PREPARED FOR: NEWSUN ENERGY

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6C



Legend

- Study Area, 383.21 ac.
- Photo Points
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

N

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

PREPARED FOR: NEWSUN ENERGY

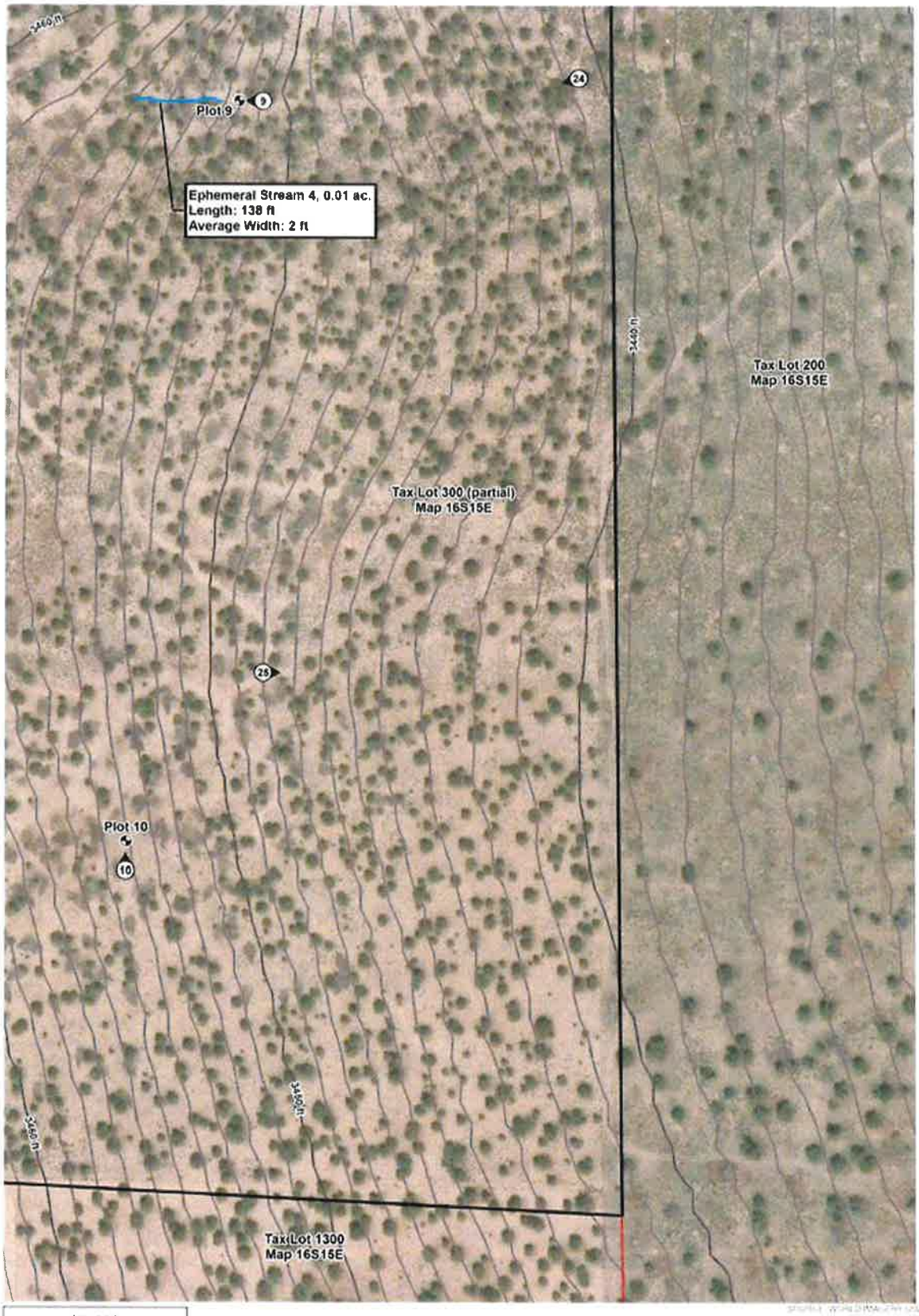
PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6D

Filename: L:\Projects\80000\80700-80999\80812_New



Legend

- Study Area, 383.21 ac.
- Plots
- Photo Points
- Ephemeral Streams
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

PREPARED FOR: NEWSUN ENERGY

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6E

Legend

- Study Area, 383.21 ac.
- Photo Points
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

PREPARED FOR: NEWSUN ENERGY.

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6F

Legend

- Study Area, 383.21 ac.
- Photo Points
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

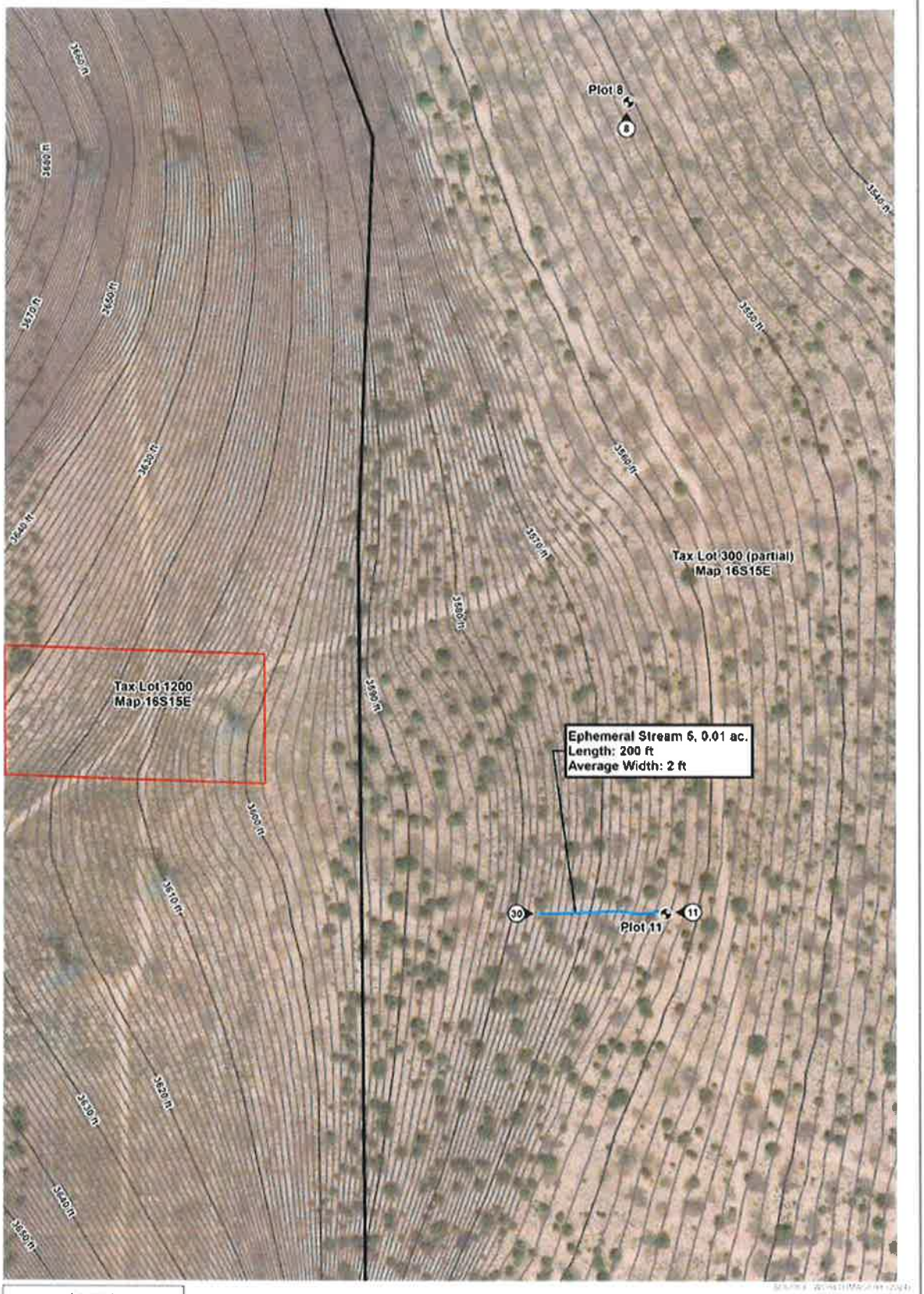
PREPARED FOR: NEWSUN ENERGY

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6G



Legend

- Study Area, 383.21 ac.
- Plots
- Photo Points
- Ephemeral Streams
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

PREPARED FOR: NEWSUN ENERGY

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6H

Filename: L:\Projects\80000\80700-80999\80812_New

Legend

- Study Area, 383.21 ac.
- Photo Points
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble GA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (edit in est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

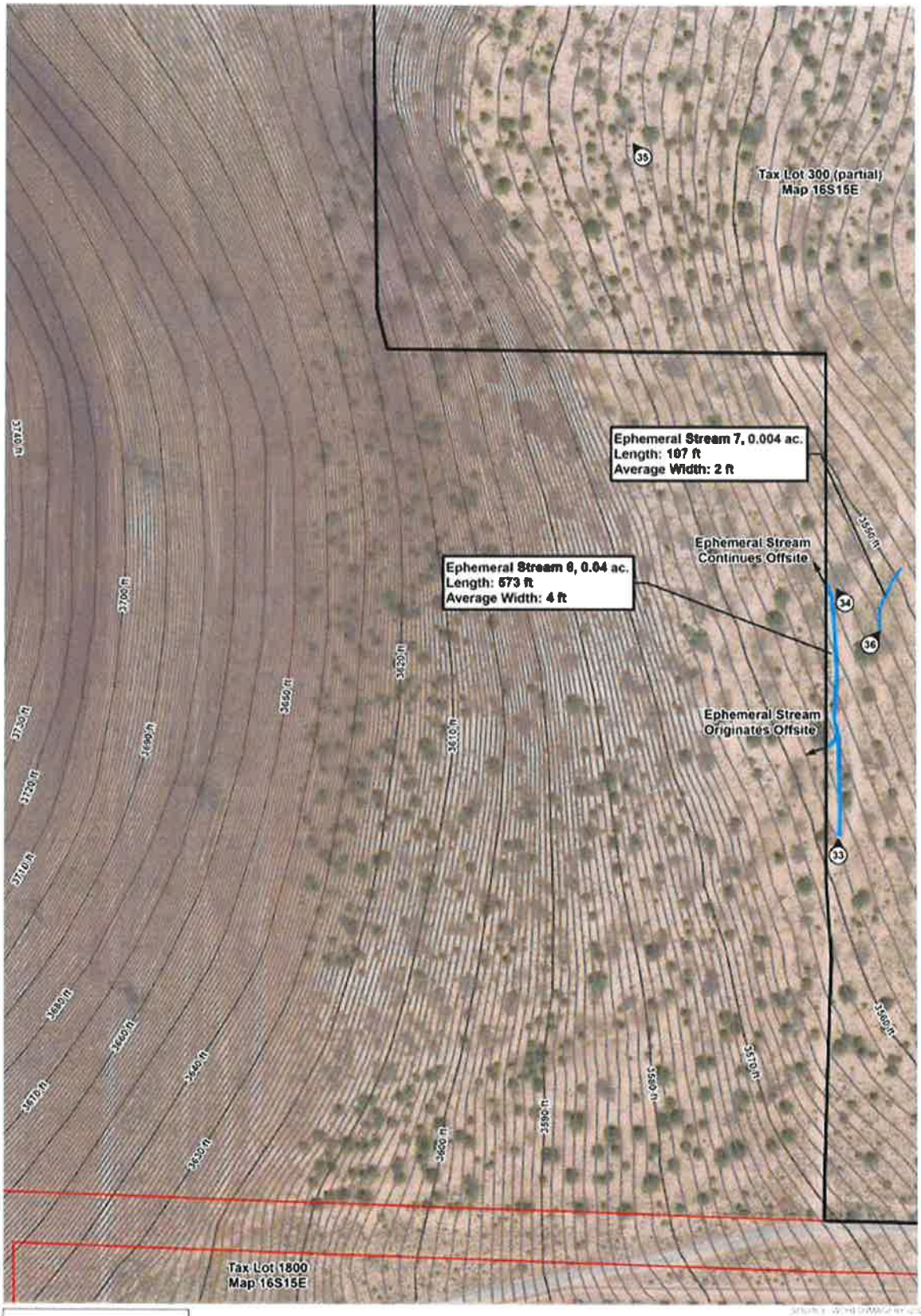
PREPARED FOR: NEWSUN ENERGY

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812.026
FIGURE
6I



Legend

- Study Area, 383.21 ac.
- Photo Points
- Ephemeral Streams
- Tax Lots

Sample plots, wetland boundaries, and photo points were mapped using a Trimble DA2 handheld GPS unit. All features collected achieved submeter accuracy. Study area boundaries based on tax lot boundaries and aerial photo interpretation (+/-1 m est. accuracy). Contours were generated using USGS 3DEP.

SCALE: 1" = 150' (11x17 SHEET)

0' 75' 150' 300'

PREPARED FOR: NEWSUN ENERGY.

PBS

WETLAND DELINEATION MAP

MOFATT ROAD SOLAR FARM LLC WETLAND DELINEATION
POWELL BUTTE, CROOK COUNTY, OREGON

JUL 2024
80812 026
FIGURE
6J

Appendix B

Data Forms and SDAM Forms

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024

Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 1

Investigator(s): H. Gilliland | Section, Township, Range: Sec. 11, T. 16S, R. 15E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4

Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.199817 | Long: -120.909026 | Datum: NAD83

Soil Map Unit Name: Deschutes ashy sandy loam, 0 to 3 percent slopes | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:

Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	30	Y	UPL
2.			
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	65	Y	UPL
2. *Sisymbrium altissimum*	30	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ___

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	95	x 5 =	475
Column totals	125 (A)		595 (B)

Prevalence Index = B/A = 4.76

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No	X	Depth (inches): _____
Water Table Present?	Yes	_____	No	X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches): _____

Wetland Hydrology Present?

Yes _____ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 2
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 11, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.200762 | Long: -120.908373 | Datum: NAD83
Soil Map Unit Name: Deschutes ashy sandy loam, 0 to 3 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Juniperus occidentalis*	20	Y	UPL
2. *Artemisia tridentata*	15	Y	UPL
3. *Ericameria nauseosa*	10	Y	UPL
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	35	Y	UPL
2. *Phlox caespitosa*	15	Y	UPL
3. *Elymus elymoides*	10	N	FACU
4. *Alyssum alyssoides*	10	N	UPL
5. *Poa secunda*	5	N	FACU
6.			
7.			
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 5 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	105	x 5 =	525
Column totals	120 (A)		585 (B)

Prevalence Index = B/A = 4.88

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	small rocks, moist at 10".

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No X	Depth (inches):	_____
Water Table Present?	Yes	_____	No X	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes	_____	No X	Depth (inches):	_____

Wetland Hydrology Present?

Yes _____ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 3
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.200689 | Long: -120.914629 | Datum: NAD83
Soil Map Unit Name: Meadowridge-Era complex, 1 to 12 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	5	Y	UPL
2.			
3.			
4.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	20	Y	UPL
2. *Ericameria nauseosa*	5	Y	UPL
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	35	Y	UPL
2. *Alyssum alyssoides*	20	Y	UPL
3. *Hesperostipa comota*	15	Y	UPL
4.			
5.			
6.			
7.			
8.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 6 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column totals	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present?

Yes ___ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 4
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 10
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.203603 | Long: -120.915521 | Datum: NAD83
Soil Map Unit Name: Ayres cobbly loam, 3 to 8 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	15	Y	UPL
2.			
3.			
4.			
	15 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Ericameria nauseosa*	10	Y	UPL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	35	Y	UPL
2. *Alyssum alyssoides*	30	Y	UPL
3. *Hesperostipa comota*	10	N	UPL
4.			
5.			
6.			
7.			
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 4 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column totals	100 (A)		500 (B)
Prevalence Index = B/A =			5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	7.5YR 3/3	100					sil	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No	X	Depth (inches): _____
Water Table Present?	Yes	_____	No	X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches): _____

Wetland Hydrology Present?

Yes _____ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 5
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.203636 | Long: -120.918680 | Datum: NAD83
Soil Map Unit Name: Deschutes ashy sandy loam, 0 to 3 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X
Hydric soil present?	Yes ___	No X
Indicators of wetland hydrology present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	10	Y	UPL
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Ericameria nauseosa*	10	Y	UPL
2. *Artemisia tridentata*	5	Y	UPL
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	20	Y	UPL
2. *Lolium perenne*	15	Y	FAC
3. *Alyssum alyssoides*	15	Y	UPL
4. *Achillea millefolium*	5	N	FACU
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust ___

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across all Strata: 6 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 17% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	5	x 4 =	20
UPL species	60	x 5 =	300
Column totals	80 (A)		365 (B)

Prevalence Index = B/A = 4.56

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No	X	Depth (inches): _____
Water Table Present?	Yes	_____	No	X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches): _____

Wetland Hydrology Present?

Yes _____ **No** X

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

X

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 6
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.203725 | Long: -120.923367 | Datum: NAD83
Soil Map Unit Name: Meadowridge-Era complex, 1 to 12 percent slopes | NWI Classification: R4SBC
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X
Hydric soil present?	Yes ___	No X
Indicators of wetland hydrology present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	10	Y	UPL
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	20	Y	UPL
2. *Ericameria nauseosa*	10	Y	UPL
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	40	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust ___

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	80	x 5 =	400
Column totals	80 (A)		400 (B)

Prevalence Index = B/A = 5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	rocky

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Soil compacted by frequent livestock use.

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No	X	Depth (inches): _____
Water Table Present?	Yes	_____	No	X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches): _____

Wetland Hydrology Present?

Yes _____ **No** X

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

X

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 7
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.201607 | Long: -120.919556 | Datum: NAD83
Soil Map Unit Name: Meadowridge-Era complex, 1 to 12 percent slopes | NWI Classification: R4SBC
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X
Hydric soil present?	Yes ___	No X
Indicators of wetland hydrology present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	10	Y	UPL
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	20	Y	UPL
2. *Ericameria nauseosa*	20	Y	UPL
3.			
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	40	Y	UPL
2. *Poa secunda*	15	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust ___

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	90	x 5 =	450
Column totals	105 (A)		510 (B)

Prevalence Index = B/A = 4.86

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 3/3	100					sil	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present?

Yes ___ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 8
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.200616 | Long: -120.920615 | Datum: NAD83
Soil Map Unit Name: Ayresbutte-Ayres complex, 3 to 8 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	20	Y	UPL
2. *Chrysothamnus viscidiflorus*	20	Y	UPL
3.			
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	30	Y	UPL
2. *Elymus elymoides*	15	Y	FACU
3. *Lolium perenne*	15	Y	FAC
4. *Koeleria macrantha*	10	N	UPL
5. *Achillea millefolium*	5	N	FACU
6.			
7.			
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ___

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% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 15	x 3 =	45
FACU species 20	x 4 =	80
UPL species 80	x 5 =	400
Column totals 115 (A)		525 (B)

Prevalence Index = B/A = 4.57

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 3/3	100					sl	moist at 4 inches

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** **X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No	X	Depth (inches): _____
Water Table Present?	Yes	_____	No	X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches): _____

Wetland Hydrology Present?

Yes _____ **No** **X**

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 9
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 11, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.198343 | Long: -120.906637 | Datum: NAD83
Soil Map Unit Name: Deschutes ashy sandy loam, 0 to 3 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	20	Y	UPL
2.			
3.			
4.			
	20 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	15	Y	UPL
2. *Ericameria nauseosa*	5	Y	UPL
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	25	Y	UPL
2. *Hesperostipa comota*	20	Y	UPL
3. *Poa secunda*	15	Y	FACU
4. *Alyssum alyssoides*	10	N	UPL
5.			
6.			
7.			
8.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 6 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 0	x 3 =	0
FACU species 15	x 4 =	60
UPL species 95	x 5 =	475
Column totals 110 (A)		535 (B)

Prevalence Index = B/A = 4.86

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	7.5YR 3/3	100					sil	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No X	Depth (inches):	_____
Water Table Present?	Yes	_____	No X	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes	_____	No X	Depth (inches):	_____

Wetland Hydrology Present?

Yes _____ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 10
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 11, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.195148 | Long: -120.907302 | Datum: NAD83
Soil Map Unit Name: Ayresbutte-Ayres complex, 3 to 8 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?**	Yes ___ No X
Hydric soil present?	Yes ___	No X		
Indicators of wetland hydrology present?	Yes ___	No X		

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	10	Y	UPL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Eriopyllum lanatum*	25	Y	UPL
2. *Bromus tectoum*	20	Y	UPL
3. *Hesperostipa comota*	15	Y	UPL
4. *Poa secunda*	5	N	FACU
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 4 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	70	x 5 =	350
Column totals	75 (A)		370 (B)

Prevalence Index = B/A = 4.93

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No	X	Depth (inches): _____
Water Table Present?	Yes	_____	No	X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches): _____

Wetland Hydrology Present?

Yes _____ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/25/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 11
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.197048 | Long: -120.920377 | Datum: NAD83
Soil Map Unit Name: Ayres cobbly loam, 3 to 8 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric soil present?	Yes ___	No X	
Indicators of wetland hydrology present?	Yes ___	No X	

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1. *Juniperus occidentalis*	10	Y	UPL
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Artemisia tridentata*	10	Y	UPL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Alyssum alyssoides*	30	Y	UPL
2. *Bromus tectorum*	20	Y	UPL
3. *Koeleria macrantha*	10	N	UPL
4. *Agropyron cristatum*	5	N	UPL
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 4 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	85	x 5 =	425
Column totals	85 (A)		425 (B)

Prevalence Index = B/A = 5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100					sil	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No	X	Depth (inches): _____
Water Table Present?	Yes	_____	No	X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches): _____

Wetland Hydrology Present?

Yes _____ **No** X

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

Aerial Photograph

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Moffatt Road Solar Farm LLC | City/County: Powell Butte / Crook | Sampling Date: 6/26/2024
Applicant/Owner: NewSun Engery | State: Oregon | Sampling Point: Plot 12
Investigator(s): H. Gilliland | Section, Township, Range: Sec. 10, T. 16S, R. 15E
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 4
Subregion (LRR): LRR B - Columbia/Snake River Plateau | Lat: 44.199900 | Long: -120.912328 | Datum: NAD83
Soil Map Unit Name: Meadowridge-Era complex, 1 to 12 percent slopes | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No X (If no, explain in Remarks)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? (If needed, explain any answers in remarks) Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic vegetation present?	Yes ___	No X	**Is the Sampled Area within a Wetland?**	Yes ___ No X
Hydric soil present?	Yes ___	No X		
Indicators of wetland hydrology present?	Yes ___	No X		

Remarks:
Drier than normal conditions were present at the time of the field work.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1. *Ericameria nauseosa*	10	Y	UPL
2. *Juniperus occidentalis*	5	Y	UPL
3. *Artemisia tridentata*	5	Y	UPL
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Bromus tectorum*	35	Y	UPL
2. *Hesperostipa comota*	25	Y	UPL
3. *Alyssum alyssoides*	15	Y	UPL
4.			
5.			
6.			
7.			
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ___

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 6 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	95	x 5 =	475
Column totals	95 (A)		475 (B)

Prevalence Index = B/A = 5.00

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]

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

Hydrophytic vegetation present? Yes ___ No X

Remarks

SOIL

Sampling Point: Plot 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-14	10YR 3/3	100					sl	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A10) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5

Field Observations:

Surface Water Present?	Yes	_____	No X	Depth (inches):	_____
Water Table Present?	Yes	_____	No X	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes	_____	No X	Depth (inches):	_____

Wetland Hydrology Present?

Yes _____ **No** X

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

Aerial Photograph

Remarks:

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/24/24
Waterway Name	Ephemeral Stream 1	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.2049563, 44.2038808 N
Reach Boundaries			Long. -120.92405, -120.9234 W
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	4 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Ericameria nauseosa* (UPL)
- *Bromus tectorum* (UPL)

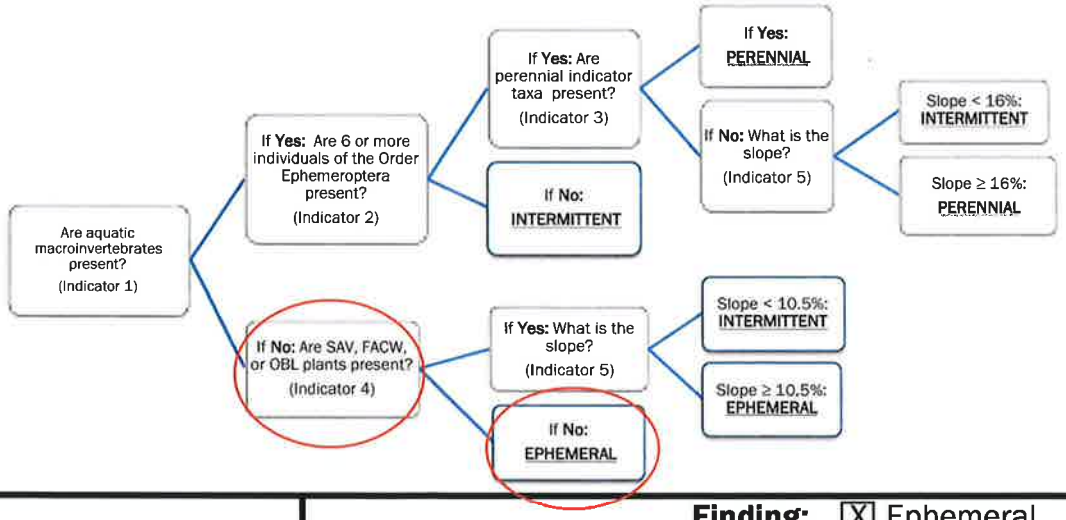
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___7___ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/24/24
Waterway Name	Ephemeral Stream 2	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.2011762 , 44.2007133 N Long. -120.917816, -120.9147 W
Reach Boundaries			
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	4 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Ericameria nauseosa* (UPL)
- *Bromus tectorum* (UPL)
- Alyssum alyssoides (UPL)
- Hesperostipa comota (UPL)

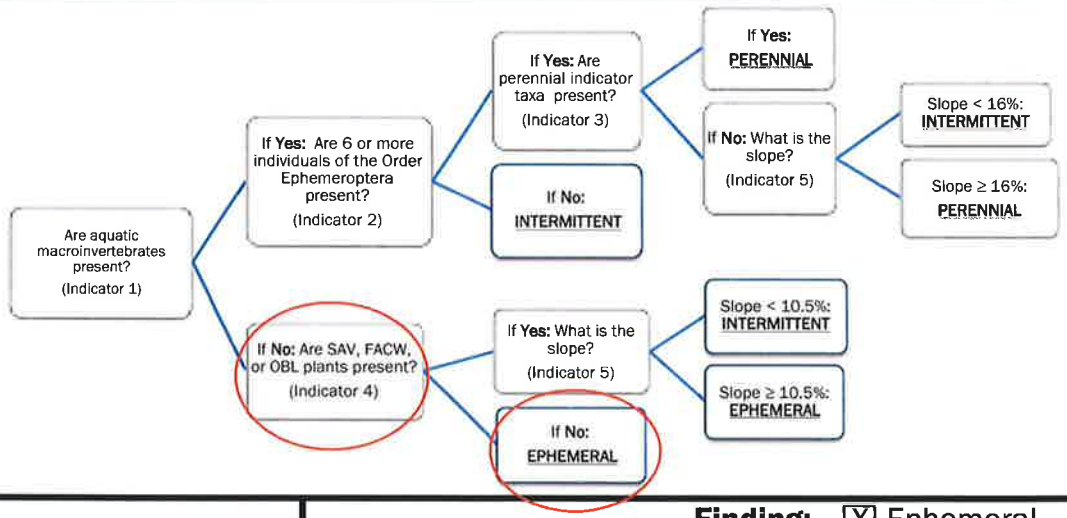
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___4___ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/26/24
Waterway Name	Ephemeral Stream 3	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.2001106, 44.198907 N Long. -120.91274,-120.90995 W
Reach Boundaries			
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	2 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Ericameria nauseosa* (UPL)
- *Bromus tectorum* (UPL)
- Alyssum alyssoides (UPL)
- Hesperostipa comota (UPL)

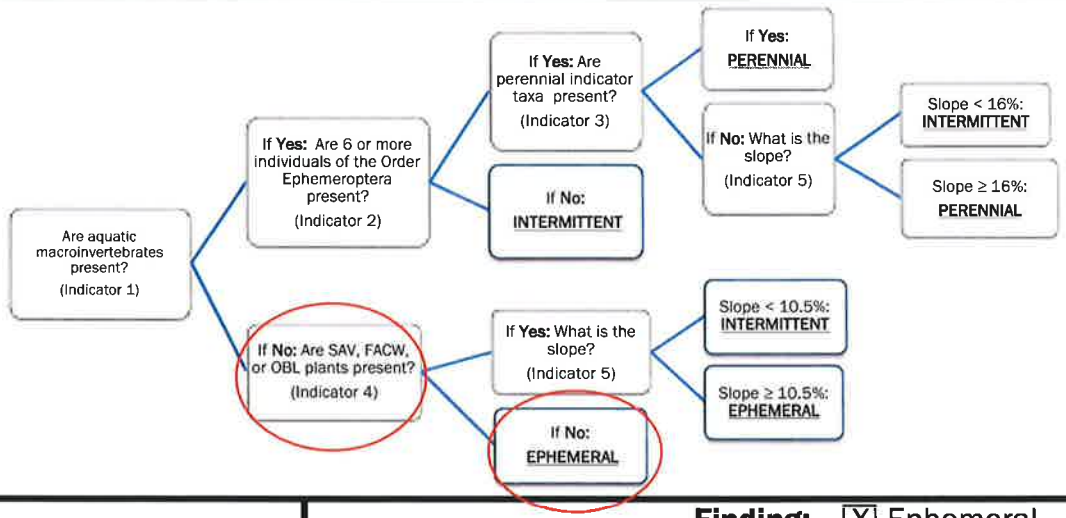
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___4___ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/25/24
Waterway Name	Ephemeral Stream 4	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.1983593,44.198345 N Long. -120.90727,-120.90675 W
Reach Boundaries			
Precipitation w/in 48 hours (cm)	0in	Channel Width (m) 2 ft	☐ Disturbed Site / Difficult Situation (Describe in "Notes")

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Ericameria nauseosa* (UPL)
- *Bromus tectorum* (UPL)
- Alyssum alyssoides (UPL)
- Hesperostipa comota (UPL)

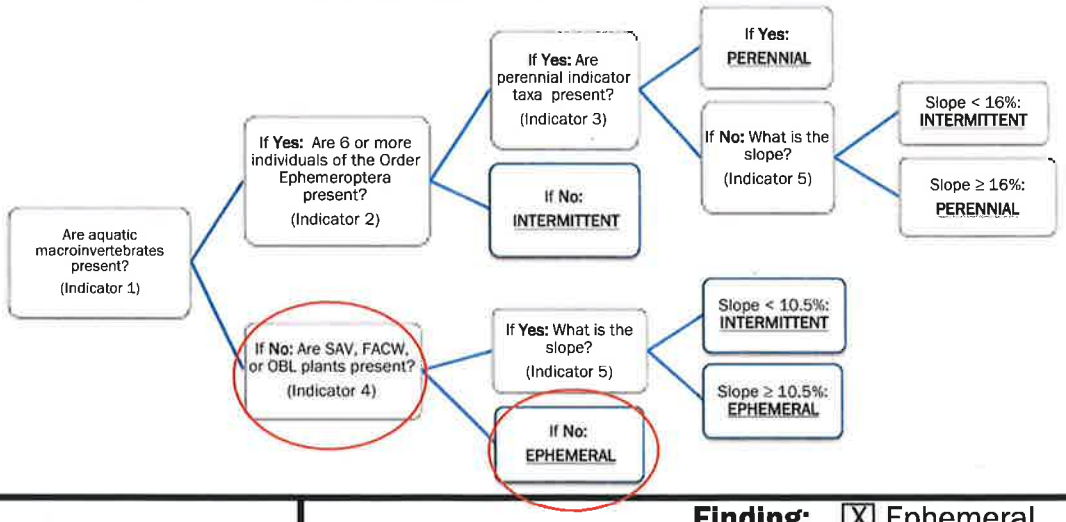
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___2__ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/25/24
Waterway Name	Ephemeral Stream 5	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.1970448,44.197057 N Long. -120.92115,-120.92040 W
Reach Boundaries			
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	2 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Koeleria macrantha* (UPL)
- *Bromus tectorum* (UPL)
- *Alyssum alyssoides* (UPL)
- *Agropyron cristatum* (UPL)

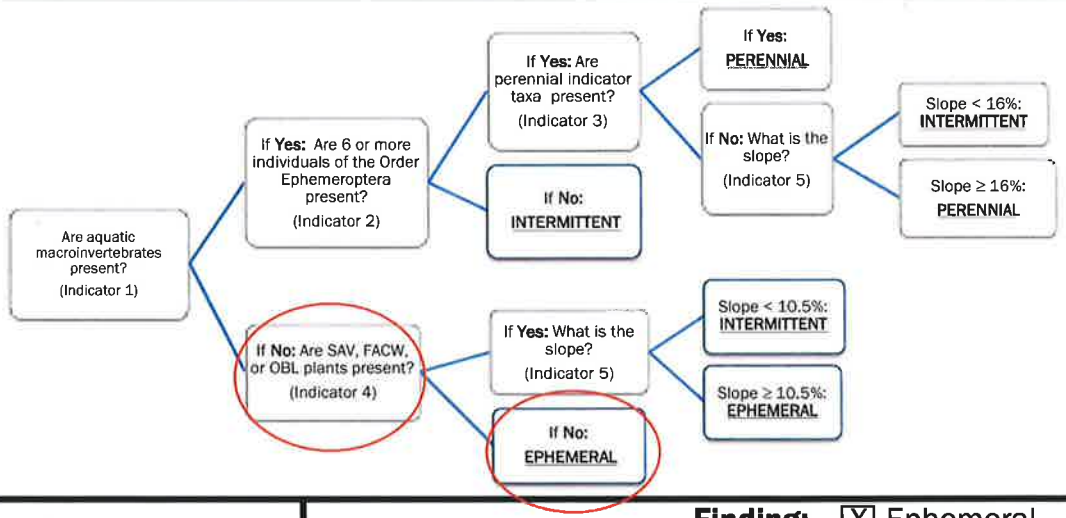
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___8__ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/26/24
Waterway Name	Ephemeral Stream 6	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.1918386,44.192919 N Long. -120.91937,-120.91944 W
Reach Boundaries			
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	4 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Koeleria macrantha* (UPL)
- *Bromus tectorum* (UPL)
- *Alyssum alyssoides* (UPL)
- *Agropyron cristatum* (UPL)

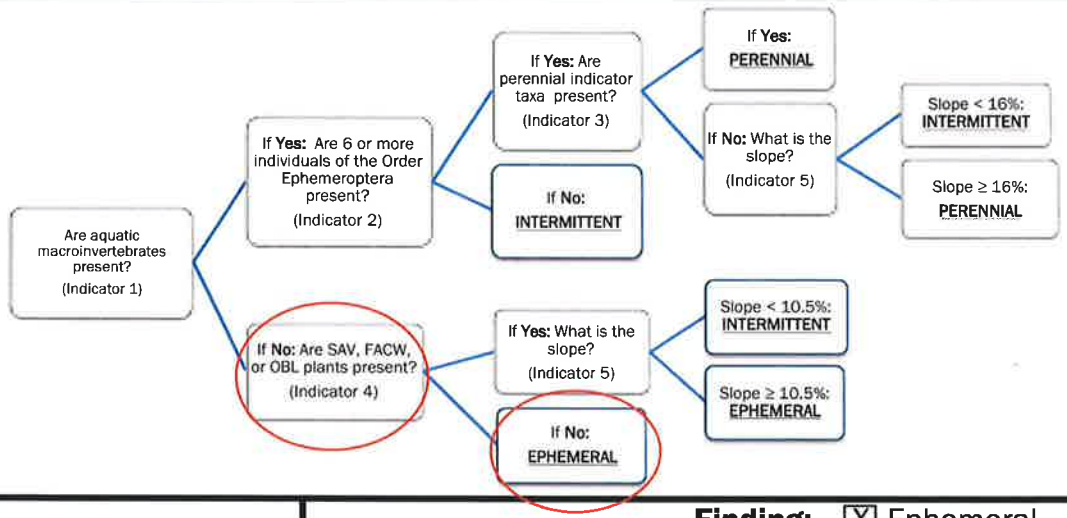
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___3__ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

SDAM was performed in the dry season and followed the dry channel SDAM methodology. The channel lacked any pools, macroinvertebrates, any obvious OHWL/M, and had upland vegetation within the channel. Additionally, there was no indicator of frequent flow or flooding.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Streamflow Duration Field Assessment Form

Project # / Name	PEEPS Solar Wetland Delineation	Assessor	H. Gilliland
Address	Powell Butte, OR	Date	6/26/24
Waterway Name	Ephemeral Stream 7	Coordinates at downstream end (ddd.mm.ss)	Lat. 44.192740,44.193003 N
Reach Boundaries			Long. -120.91913,-120.91901 W
Precipitation w/in 48 hours (cm)	0in	Channel Width (m)	2 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow___0____

% of reach w/any flow (surface or hyporheic) ____0___

# of pools observed___0____

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed in or along the stream.

- *Juniperus occidentalis* (UPL)
- *Artemisia tridentata* (UPL)
- *Koeleria macrantha* (UPL)
- *Bromus tectorum* (UPL)
- *Alyssum alyssoides* (UPL)
- *Agropyron cristatum* (UPL)

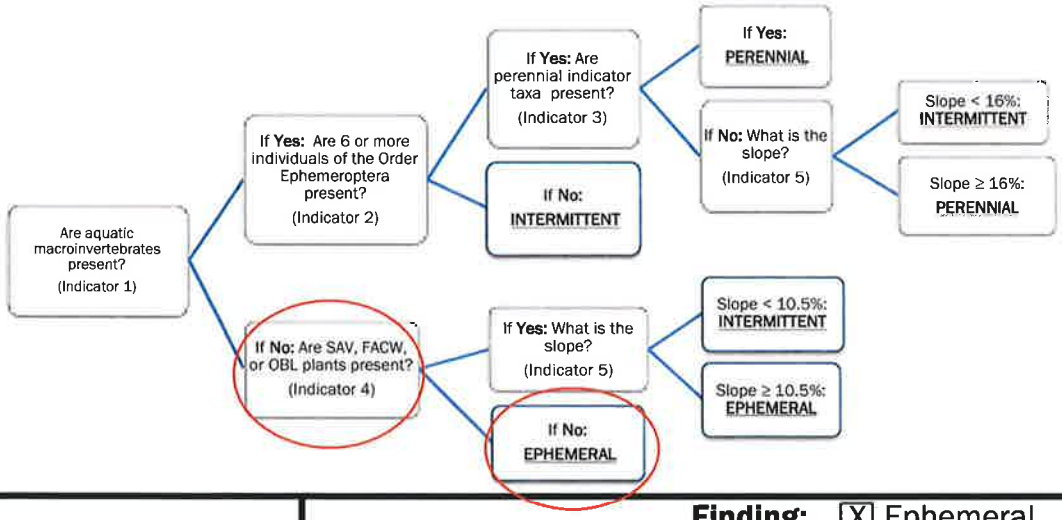
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None observed.			

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☒ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☒ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☒ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☒ No
5. What is the slope? (In percent, measured for the valley, not the stream)	___7__ %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☒ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

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Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed
None			

Appendix C
Ground-Level Color Photographs

Photo 1. Plot 1 facing southwest. Photo taken June 24, 2024.

Photo 2. Plot 2 facing northwest. Photo taken June 24, 2024.

Photo 3. Plot 3 facing west at the end of Ephemeral Stream 2. Photo taken June 24, 2024.

Photo 4. Plot 4 facing north. Photo taken June 24, 2024.

Photo 5. Plot 5 facing south. Photo taken June 24, 2024.

Photo 6. Plot 6 facing northwest at the end of Ephemeral Stream 1. Photo taken June 24, 2024.

Photo 7. Plot 7 facing northwest. Photo taken June 24, 2024.

Photo 8. Plot 8 facing north. Photo taken June 24, 2024.

Photo 9. Plot 9 facing west at the end of Ephemeral Stream 4. Photo taken June 24, 2024.

Photo 10. Plot 10 facing north. Photo taken June 24, 2024.

Photo 11. Plot 11 facing west at the end of Ephemeral Stream 5. Photo taken June 24, 2024.

Photo 12. Plot 12 facing northeast on edge of Ephemeral Stream 3. Photo taken June 24, 2024.

Photo 13. Northwest part of the site facing south. Photo taken June 24, 2024.

Photo 14. Northwest part of the site facing south. Photo taken June 24, 2024.

Photo 15. North portion of Ephemeral Stream 1 facing southeast. Photo taken June 24, 2024.

Photo 16. Location of NWI polygon facing west. NWI polygon was not found. Photo taken June 24, 2024.

Photo 17. Location of NWI polygon facing southeast. NWI polygon was not found. Photo taken June 24, 2024.

Photo 18. North part of study area facing south. Photo taken June 24, 2024.

Photo 19. West portion of Ephemeral Stream 2 facing east. Photo taken June 24, 2024.

Photo 20. North part of study area facing southwest. Photo taken June 24, 2024.

Photo 21. North part of study area facing south looking at an access road. Photo taken June 24, 2024.

Photo 22. South portion of Ephemeral Stream 3 facing southeast. Photo taken June 24, 2024.

Photo 23. Northeast part of study area facing southwest. Photo taken June 24, 2024.

Photo 24. Location of NWI polygon facing southwest. NWI polygon was not found in this area. Photo taken June 24, 2024.

Photo 25. East part of the study area facing east. Photo taken June 24, 2024.

Photo 26. Central part of the study area facing north. Photo taken June 24, 2024.

Photo 27. Central part of the study area facing west. Photo taken June 24, 2024.

Photo 28. West part of the study area facing east. Photo taken June 24, 2024.

Photo 29. Southeast part of the study area facing east. Photo taken June 24, 2024.

Photo 30. West part of Ephemeral Stream 5 looking east. Photo taken June 24, 2024.

Photo 31. South part of the study area facing northwest. Photo taken June 24, 2024.

Photo 32. South part of the study area facing northeast. Photo taken June 24, 2024.

Photo 33. South part of Ephemeral Stream 6 looking north downstream. Photo taken June 24, 2024.

Photo 34. North part of Ephemeral Stream 6 facing northwest. Photo taken June 24, 2024.

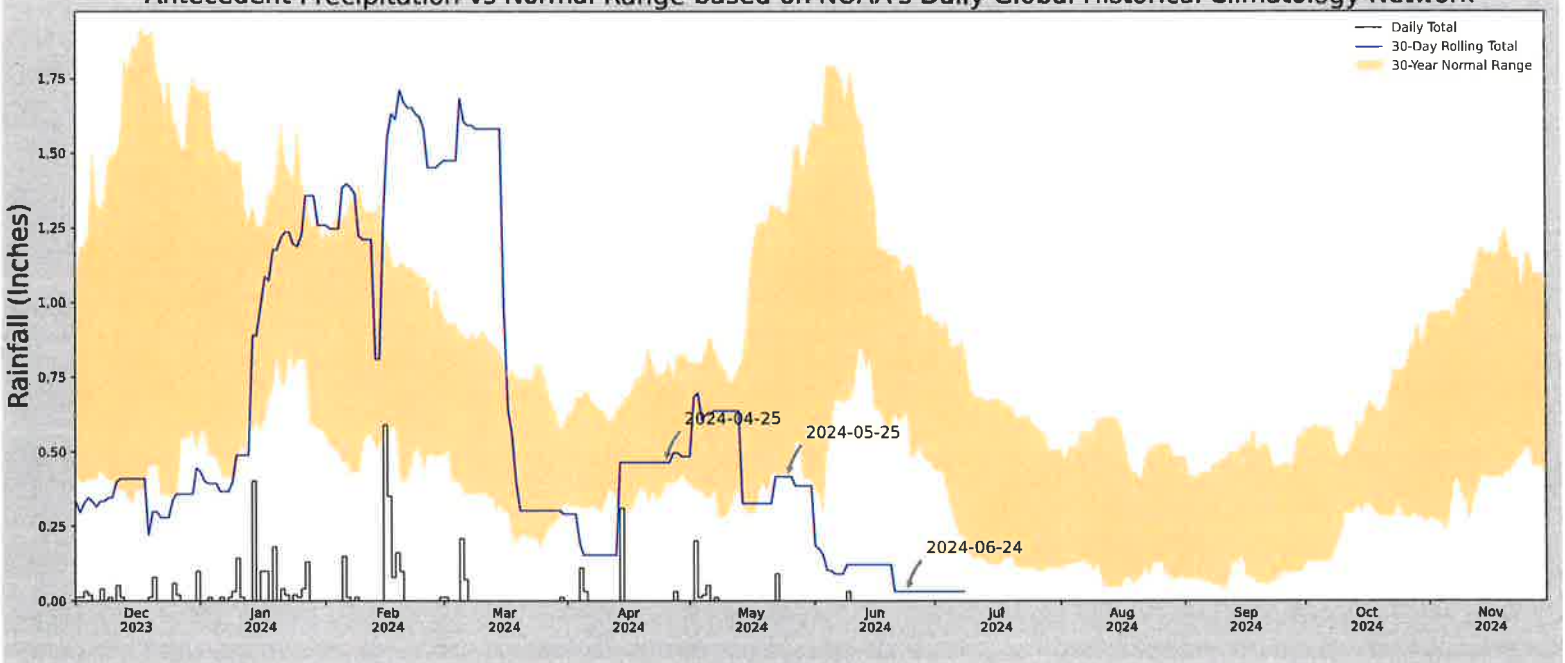
Photo 35. Southwest part of study area facing northwest. Photo taken June 24, 2024.

Photo 36. North part of Ephemeral Stream 7 facing northeast. Photo taken June 24, 2024.

Appendix D

Additional Tables and Information

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



Coordinates	44.1976862, -120.9137403
Observation Date	2024-06-24
Elevation (ft)	3496.176
Drought Index (PDSI)	Mild drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-06-24	0.646457	1.125197	0.031496	Dry	1	3	3
2024-05-25	0.430315	1.301575	0.417323	Dry	1	2	2
2024-04-25	0.391339	0.76811	0.464567	Normal	2	1	2
Result							Drier than Normal - 7

US Army Corps of Engineers.

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BEND 7 NE	44.1183, -121.2114	3359.908	13.741	136.268	9.229	1042	77
BEND 3.0 NNE	44.1051, -121.286	3479.003	3.811	119.095	2.169	125	0
BEND 3.0 NNE	44.1063, -121.2897	3460.958	3.972	101.05	2.189	134	4
BEND 5.1 NNW	44.1374, -121.3409	3375.0	6.557	15.092	3.05	226	0
BEND 2.7 E	44.0622, -121.2569	3591.864	4.486	231.956	3.059	12	0
BEND 2.1 ESE	44.0566, -121.2714	3658.137	5.2	298.229	3.891	10	7
BEND 6.3 N	44.1574, -121.3225	3166.995	6.136	192.913	3.945	3	1
BEND 0.8 ESE	44.0619, -121.2954	3627.953	5.706	268.045	4.097	17	0
BEND	44.0589, -121.285	3660.105	5.598	300.197	4.2	400	1
POWELL BUTTE 6.4 SSW	44.1605, -121.0568	3229.987	8.202	129.921	4.757	1	0
REDMOND AP	44.2558, -121.1408	3048.885	10.124	311.023	7.705	2	0

WETS Table

WETS Station: REDMOND AIRPORT, OR

Requested years: 1991 - 2020

Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	44.2	25.3	34.8	0.98	0.46	1.02	3	-
Feb	48.0	25.3	36.7	0.66	0.26	0.79	2	-
Mar	54.9	27.7	41.3	0.58	0.36	0.72	2	-
Apr	60.2	30.7	45.5	0.71	0.39	0.87	3	-
May	69.1	37.8	53.5	1.20	0.48	1.45	3	-
Jun	77.2	42.8	60.0	0.64	0.27	0.79	2	-
Jul	87.5	48.5	68.0	0.40	0.14	0.41	1	-
Aug	86.5	47.2	66.9	0.46	0.10	0.40	1	-
Sep	78.6	40.6	59.6	0.37	0.13	0.39	1	-
Oct	64.5	32.7	48.6	0.68	0.42	0.83	2	-
Nov	50.8	27.5	39.2	0.81	0.41	0.92	2	-
Dec	42.3	23.3	32.8	0.97	0.46	1.16	3	-
Annual:					6.39	9.03		
Average	63.7	34.1	48.9	-	-	-	-	-
Total	-	-	-	8.46			26	-

GROWING SEASON DATES

Years with missing data:	24 deg = 2	28 deg = 2	32 deg = 1
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 28	28 deg = 28	32 deg = 29
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	5/4 to 10/6: 155 days	5/26 to 9/21: 118 days	6/17 to 9/8: 83 days
70 percent *	4/28 to 10/12: 167 days	5/22 to 9/26: 127 days	6/13 to 9/13: 92 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1948					2.55	2.10	0.46	0.59	1.18	0.18	0.90	2.00	9.96
1949	0.37	0.40	1.02	0.08	0.60	T	T	T	0.19	0.15	1.36	0.22	4.39
1950	2.00	0.31	0.17	0.26	0.10	2.74	0.00	0.08	M0.08	2.75	0.91	1.25	10.65
1951	0.94	1.05	0.73	0.24	1.36	0.04	0.24	0.14	0.24	0.95	1.49	1.49	8.91
1952	0.58	1.28	0.24	0.17	0.28	2.77	0.03	0.09	0.94	T	0.03	1.67	8.08
1953	1.44	1.73	0.58	0.32	1.66	1.64	T	1.08	0.26	0.31	1.39	1.07	11.48
1954	1.94	0.36	0.40	0.22	0.62	1.30	T	0.56	0.72	0.20	0.30	0.19	6.81
1955	0.41	0.13	0.39	0.67	0.37	0.30	0.41	0.00	0.22	0.36	1.34	3.21	7.81
1956	2.72	1.47	0.19	0.18	4.25	0.60	1.02	0.03	0.	1.	0.34	0.40	12.

									20	40			80
1957	0.80	0.67	1.85	0.19	1.86	0.29	0.16	0.20	0.84	1.09	0.17	1.57	9.69
1958	1.34	1.19	0.41	0.43	1.47	1.75	0.14	0.18	0.11	0.02	1.46	0.98	9.48
1959	1.01	0.96	0.11	0.05	0.76	0.54	0.19	0.01	0.31	0.47	0.19	0.33	4.93
1960	1.93	1.15	1.94	0.47	0.58	T	0.12	T	0.15	0.44	1.59	0.69	9.06
1961	0.27	1.46	1.01	0.35	0.94	0.52	0.03	0.85	0.01	0.67	2.76	1.03	9.90
1962	1.01	0.49	0.96	0.19	2.00	0.05	T	0.98	0.13	1.91	0.90	0.92	9.54
1963	1.37	0.49	0.38	1.16	1.26	1.47	0.15	0.26	0.81	0.41	1.47	0.87	10.10
1964	1.04	T	0.32	0.11	0.03	0.85	0.95	0.06	0.05	0.44	0.97	5.48	10.30
1965	1.41	0.05	0.01	0.58	0.52	1.58	0.96	1.61	0.03	0.27	1.50	0.07	8.59
1966	1.47	0.61	0.52	0.08	0.08	0.60	1.29	0.00	0.99	0.21	1.99	1.56	9.40
1967	1.69	0.06	0.52	1.54	0.19	0.80	0.00	0.02	0.23	1.00	0.24	0.29	6.58
1968	0.35	0.78	0.01	T	0.90	0.16	0.11	1.59	0.48	0.35	2.01	1.23	7.97
1969	1.62	0.46	0.52	0.21	0.81	3.87	0.09	0.00	0.79	0.83	0.16	0.99	10.35
1970	3.07	0.70	0.41	0.54	0.30	0.65	0.09	T	0.39	0.25	1.78	0.43	8.61
1971	1.82	0.22	0.87	0.14	1.87	0.21	0.61	0.03	0.39	0.30	0.99	0.97	8.42
1972	1.12	0.28	1.45	0.12	1.05	1.12	0.03	0.62	0.20	0.70	0.32	1.06	8.07
1973	0.53	1.31	0.17	0.23	0.89	T	0.08	0.05	0.57	0.76	2.51	0.76	7.86
1974	0.47	0.43	1.52	1.12	0.04	0.01	0.54	0.00	0.00	0.36	0.29	0.68	5.46
1975	0.67	1.01	1.03	0.34	0.06	0.96	0.67	0.96	0.00	1.02	0.26	0.63	7.61
1976	0.91	0.56	0.16	1.07	0.08	0.48	0.03	2.54	0.27	0.08	0.12	T	6.30
1977	0.14	0.36	0.18	0.02	1.44	0.01	0.08	0.61	0.79	0.20	1.34	1.65	6.82
1978	1.26	0.39	1.06	1.64	0.20	0.77	0.44	0.50	0.23	0.03	1.14	0.65	8.31
1979	1.35	0.73	1.04	0.48	0.26	0.25	0.06	1.36	0.15	0.81	1.15	0.12	7.76
1980	1.98	0.68	0.18	0.90	0.90	1.34	0.19	T	0.65	0.72	0.92	0.72	9.18
1981	0.72	0.65	0.68	0.48	1.28	0.46	0.13	0.00	1.05	0.27	2.38	3.57	11.67
1982	1.09	0.44	0.42	0.48	0.68	2.47	1.02	0.58	1.25	0.91	0.31	1.23	10.88
1983	0.84	1.20	1.39	0.57	0.83	0.44	0.76	0.75	0.01	1.00	1.34	3.28	12.41
1984	0.13	0.76	1.20	0.86	0.21	1.05	0.26	0.34	0.34	1.11	3.15	0.48	9.89
1985	0.14	0.20	0.16	0.17	1.01	0.23	0.17	0.17	0.71	0.37	0.78	0.93	5.04
1986	1.09	2.37	0.47	0.02	0.31	0.09	0.38	T	1.10	0.55	0.73	0.46	7.57
1987	0.78	0.77	1.07	0.55	1.30	0.13	3.73	0.08	T	T	0.26	1.62	10.29
1988	0.92	0.28	0.25	1.17	0.38	1.01	0.00	0.33	0.13	0.00	2.36	0.52	7.35
1989	1.19	0.35	1.65	1.75	0.53	0.11	0.13	1.33	0.21	0.26	0.26	0.10	7.87
1990	1.40	T	0.95	0.43	1.08	M0.08					0.48	0.34	4.76

1991	0.40	0.10	1.03	0.19	1.30	1.14	0.30	0.19	0.04	0.45	1.22	0.59	6.95
1992	0.27	0.27	0.19	1.13	0.67	0.75	0.80	0.00	M0.13	1.17	0.50	1.85	7.73
1993	1.55	0.95	1.56	0.60	2.33	0.78	M0.73	0.89	0.00	0.52	0.23	0.29	10.43
1994	0.18	0.62	0.36	0.77	1.41	0.28	0.43	M0.00	0.64	0.53	0.51	0.07	5.80
1995	1.96	0.60	0.51	1.26	0.97	1.70	1.20	0.06	0.29	0.22	0.90	M1.04	10.71
1996									0.12				0.12
1997						1.70	1.49	0.62	0.92	0.64	0.38	0.17	5.92
1998	M0.73	M0.60	M0.73	0.55	4.62	0.36	1.70	0.77	0.32	0.46	2.34	M0.64	13.82
1999	0.92	M1.26	0.53	0.11	0.08	0.24	0.02	2.29	0.00	1.08	M0.47	0.38	7.38
2000	M1.50	M1.61	M1.05	0.75	0.38	0.07	0.74	T	0.32	0.83	0.47	0.49	8.21
2001	0.22	0.48	0.62	1.30	0.02	0.60	0.49	0.14	0.54	0.67	1.31	1.28	7.67
2002	0.67	0.15	0.50	0.39	0.34	0.05	0.22	0.23	0.12	0.33	0.05	0.97	4.02
2003	1.36	0.42	0.61	0.92	2.19	0.04	0.19	0.32	0.56	0.38	0.80	1.71	9.50
2004	1.29	1.94	0.14	0.56	1.60	0.51	0.06	0.82	0.07	0.75	0.42	2.05	10.21
2005	0.31	0.55	0.68	1.99	2.55	0.23	0.29	0.02	0.62	1.06	1.67	1.41	11.38
2006	1.46	0.48	0.97	0.89	0.79	2.04	0.07	0.22	0.27	0.34	1.00	1.42	9.95
2007	0.48	0.17	0.11	0.33	0.07	0.40	0.15	0.74	0.34	0.66	0.25	0.08	3.78
2008	0.22	0.04	0.03	0.12	0.26	0.03	0.06	0.99	0.11	0.81	0.59	0.81	4.07
2009	0.36	0.33	0.68	0.69	0.69	1.42	0.06	1.31	T	1.22	0.54	0.36	7.66
2010	1.43	0.37	0.46	1.40	1.14	0.53	T	0.09	1.72	1.64	0.71	2.05	11.54
2011	0.47	1.14	0.40	0.28	1.11	0.98	0.60	0.36	T	0.31	0.21	0.81	6.67
2012	1.51	0.70	1.23	1.19	1.14	1.84	0.03	0.01	0.04	1.35	0.91	1.67	11.62
2013	0.41	0.01	0.33	0.10	0.61	0.46	T	1.16	1.01	0.14	0.20	0.37	4.80
2014	0.52	1.39	0.60	0.58	0.36	0.30	0.29	0.96	0.42	0.66	2.04	1.58	9.70
2015	0.28	0.70	0.40	0.15	2.39	0.11	0.44	0.02	0.07	0.80	0.89	1.88	8.13
2016	1.22	0.12	0.57	0.29	1.98	0.65	0.64	0.02	0.05	1.74	0.27	1.74	9.29
2017	1.62	1.14	0.57	0.89	0.17	0.36	T	0.29	0.43	0.52	0.47	0.12	6.58
2018	0.17	0.31	0.73	0.69	0.93	0.61	T	T	0.04	0.29	0.43	0.65	4.85
2019	1.03	2.31	0.59	1.34	1.61	0.36	0.22	MT	1.53	0.28	0.52	0.84	10.63
2020	0.74	0.18	0.54	0.61	1.80	0.42	T	0.01	0.16	0.13	1.54	0.37	6.50
2021	0.61	0.44	0.12	0.22	0.60	0.38	0.12	T	1.02	0.84	1.20	0.70	6.25
2022	0.73	M0.01	0.41	0.56	M0.47	1.88	0.20	0.05	0.20	0.13	0.90	1.91	7.45
2023	0.24	0.09	0.70	0.33	2.04	0.01	0.00	0.05	0.64	0.32	0.42	0.68	5.52
2024	1.69	1.67	0.20	0.82	0.52	0.15	M0.03						5.08

Notes: Data missing in any

month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2024-07-24

Climatological Data for REDMOND AIRPORT, OR - October 2023

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2023-10-01	62	30	46.0	6	0	T	M	M
2023-10-02	67	30	48.5	9	0	0.03	M	M
2023-10-03	70	41	55.5	16	6	T	M	M
2023-10-04	76	35	55.5	16	6	0.00	M	M
2023-10-05	81	39	60.0	20	10	0.00	M	M
2023-10-06	78	39	58.5	19	9	0.00	M	M
2023-10-07	83	36	59.5	20	10	0.00	M	M
2023-10-08	85	43	64.0	24	14	0.00	M	M
2023-10-09	67	44	55.5	16	6	0.01	M	M
2023-10-10	64	40	52.0	12	2	0.07	M	M
2023-10-11	57	35	46.0	6	0	0.12	M	M
2023-10-12	62	33	47.5	8	0	0.00	M	M
2023-10-13	69	32	50.5	11	1	0.01	M	M
2023-10-14	64	49	56.5	17	7	T	M	M
2023-10-15	73	46	59.5	20	10	T	M	M
2023-10-16	69	45	57.0	17	7	0.00	M	M
2023-10-17	72	39	55.5	16	6	0.00	M	M
2023-10-18	86	34	60.0	20	10	0.00	M	M
2023-10-19	85	41	63.0	23	13	0.00	M	M
2023-10-20	82	39	60.5	21	11	0.00	M	M
2023-10-21	80	39	59.5	20	10	0.00	M	M
2023-10-22	66	39	52.5	13	3	0.00	M	M
2023-10-23	64	31	47.5	8	0	0.00	M	M
2023-10-24	52	28	40.0	0	0	0.02	M	M
2023-10-25	50	28	39.0	0	0	0.06	M	M
2023-10-26	51	19	35.0	0	0	0.00	M	M
2023-10-27	45	22	33.5	0	0	0.00	M	M
2023-10-28	45	11	28.0	0	0	0.00	M	M
2023-10-29	52	13	32.5	0	0	0.00	M	M
2023-10-30	54	14	34.0	0	0	0.00	M	M
2023-10-31	61	19	40.0	0	0	0.00	M	M
Average|Sum	66.8	33.3	50.1	358	141	0.32	M	M

Climatological Data for REDMOND AIRPORT, OR - November 2023

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2023-11-01	61	28	44.5	5	0	0.06	M	M
2023-11-02	68	44	56.0	16	6	T	M	M
2023-11-03	65	34	49.5	10	0	0.04	M	M
2023-11-04	69	47	58.0	18	8	0.10	M	M
2023-11-05	59	41	50.0	10	0	T	M	M
2023-11-06	57	36	46.5	7	0	0.07	M	M
2023-11-07	54	27	40.5	1	0	T	M	M
2023-11-08	55	22	38.5	0	0	0.00	M	M
2023-11-09	53	18	35.5	0	0	0.00	M	M
2023-11-10	54	28	41.0	1	0	0.00	M	M
2023-11-11	60	36	48.0	8	0	0.00	M	M
2023-11-12	58	32	45.0	5	0	0.00	M	M
2023-11-13	54	34	44.0	4	0	T	M	M
2023-11-14	55	28	41.5	2	0	0.05	M	M
2023-11-15	63	34	48.5	9	0	T	M	M
2023-11-16	45	25	35.0	0	0	0.00	M	M
2023-11-17	48	37	42.5	3	0	0.00	M	M
2023-11-18	48	37	42.5	3	0	0.08	M	M
2023-11-19	45	26	35.5	0	0	0.01	M	M
2023-11-20	56	23	39.5	0	0	0.00	M	M
2023-11-21	59	28	43.5	4	0	0.00	M	M
2023-11-22	51	39	45.0	5	0	T	M	M
2023-11-23	44	33	38.5	0	0	0.00	M	M
2023-11-24	41	14	27.5	0	0	0.00	M	M
2023-11-25	43	9	26.0	0	0	0.00	M	M
2023-11-26	45	8	26.5	0	0	0.00	M	M
2023-11-27	39	10	24.5	0	0	0.00	M	M
2023-11-28	38	13	25.5	0	0	0.00	M	M
2023-11-29	40	6	23.0	0	0	0.00	M	M
2023-11-30	39	25	32.0	0	0	0.01	M	M
Average|Sum	52.2	27.4	39.8	111	14	0.42	M	M

Climatological Data for REDMOND AIRPORT, OR - December 2023

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2023-12-01	47	27	37.0	0	0	0.01	M	M
2023-12-02	50	36	43.0	3	0	0.04	M	M
2023-12-03	58	41	49.5	10	0	0.21	M	M
2023-12-04	62	50	56.0	16	6	T	M	M
2023-12-05	65	51	58.0	18	8	0.00	M	M
2023-12-06	59	35	47.0	7	0	0.01	M	M
2023-12-07	42	29	35.5	0	0	0.03	M	M
2023-12-08	44	21	32.5	0	0	T	M	M
2023-12-09	46	16	31.0	0	0	T	M	M
2023-12-10	48	41	44.5	5	0	0.17	M	M
2023-12-11	53	36	44.5	5	0	0.01	M	M
2023-12-12	41	32	36.5	0	0	T	M	M
2023-12-13	48	31	39.5	0	0	0.00	M	M
2023-12-14	50	29	39.5	0	0	0.00	M	M
2023-12-15	37	25	31.0	0	0	0.00	M	M
2023-12-16	53	23	38.0	0	0	0.00	M	M
2023-12-17	40	25	32.5	0	0	T	M	M
2023-12-18	50	29	39.5	0	0	T	M	M
2023-12-19	56	34	45.0	5	0	0.16	M	M
2023-12-20	55	32	43.5	4	0	0.00	M	M
2023-12-21	58	29	43.5	4	0	0.00	M	M
2023-12-22	45	24	34.5	0	0	T	M	M
2023-12-23	42	15	28.5	0	0	0.00	M	M
2023-12-24	45	18	31.5	0	0	0.00	M	M
2023-12-25	44	31	37.5	0	0	0.04	M	M
2023-12-26	51	30	40.5	1	0	0.00	M	M
2023-12-27	52	31	41.5	2	0	T	M	M
2023-12-28	53	36	44.5	5	0	0.00	M	M
2023-12-29	37	34	35.5	0	0	0.00	M	M
2023-12-30	54	33	43.5	4	0	0.00	M	M
2023-12-31	48	25	36.5	0	0	0.00	M	M
Average|Sum	49.5	30.6	40.0	89	14	0.68	M	M

Climatological Data for REDMOND AIRPORT, OR - January 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-01-01	45	21	33.0	0	0	0.00	M	M
2024-01-02	34	28	31.0	0	0	0.00	M	M
2024-01-03	47	28	37.5	0	0	0.00	M	M
2024-01-04	47	30	38.5	0	0	T	M	M
2024-01-05	47	23	35.0	0	0	0.00	M	M
2024-01-06	42	30	36.0	0	0	T	M	M
2024-01-07	41	26	33.5	0	0	0.00	M	M
2024-01-08	46	25	35.5	0	0	0.01	M	M
2024-01-09	46	29	37.5	0	0	0.13	M	M
2024-01-10	37	17	27.0	0	0	0.15	M	M
2024-01-11	40	17	28.5	0	0	0.00	M	M
2024-01-12	42	5	23.5	0	0	T	M	M
2024-01-13	6	-3	1.5	0	0	0.44	M	M
2024-01-14	12	-1	5.5	0	0	T	M	M
2024-01-15	13	6	9.5	0	0	T	M	M
2024-01-16	21	2	11.5	0	0	0.07	M	M
2024-01-17	48	10	29.0	0	0	T	M	M
2024-01-18	42	19	30.5	0	0	0.25	M	M
2024-01-19	25	19	22.0	0	0	T	M	M
2024-01-20	28	21	24.5	0	0	0.03	M	M
2024-01-21	48	28	38.0	0	0	0.03	M	M
2024-01-22	51	33	42.0	2	0	0.01	M	M
2024-01-23	53	27	40.0	0	0	0.00	M	M
2024-01-24	53	31	42.0	2	0	0.28	M	M
2024-01-25	50	30	40.0	0	0	T	M	M
2024-01-26	48	36	42.0	2	0	0.26	M	M
2024-01-27	61	45	53.0	13	3	0.03	M	M
2024-01-28	64	43	53.5	14	4	T	M	M
2024-01-29	69	37	53.0	13	3	0.00	M	M
2024-01-30	68	41	54.5	15	5	0.00	M	M
2024-01-31	60	53	56.5	17	7	T	M	M
Average|Sum	43.0	24.4	33.7	78	22	1.69	M	M

Climatological Data for REDMOND AIRPORT, OR - February 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-02-01	56	35	45.5	6	0	T	M	M
2024-02-02	49	31	40.0	0	0	0.21	M	M
2024-02-03	47	27	37.0	0	0	0.00	M	M
2024-02-04	45	20	32.5	0	0	0.09	M	M
2024-02-05	52	33	42.5	3	0	0.10	M	M
2024-02-06	44	30	37.0	0	0	0.00	M	M
2024-02-07	47	26	36.5	0	0	T	M	M
2024-02-08	46	28	37.0	0	0	T	M	M
2024-02-09	43	26	34.5	0	0	T	M	M
2024-02-10	54	22	38.0	0	0	0.00	M	M
2024-02-11	57	30	43.5	4	0	0.00	M	M
2024-02-12	50	25	37.5	0	0	0.00	M	M
2024-02-13	49	20	34.5	0	0	0.00	M	M
2024-02-14	34	24	29.0	0	0	0.22	M	M
2024-02-15	46	26	36.0	0	0	0.31	M	M
2024-02-16	30	25	27.5	0	0	0.04	M	M
2024-02-17	30	25	27.5	0	0	0.25	M	M
2024-02-18	46	25	35.5	0	0	0.09	M	M
2024-02-19	37	32	34.5	0	0	0.13	M	M
2024-02-20	50	33	41.5	2	0	0.06	M	M
2024-02-21	51	29	40.0	0	0	0.01	M	M
2024-02-22	54	25	39.5	0	0	0.00	M	M
2024-02-23	61	28	44.5	5	0	0.00	M	M
2024-02-24	62	26	44.0	4	0	0.00	M	M
2024-02-25	57	31	44.0	4	0	0.00	M	M
2024-02-26	46	28	37.0	0	0	0.01	M	M
2024-02-27	44	25	34.5	0	0	0.00	M	M
2024-02-28	54	39	46.5	7	0	0.00	M	M
2024-02-29	51	32	41.5	2	0	0.15	M	M
Average|Sum	48.0	27.8	37.9	37	0	1.67	M	M

Climatological Data for REDMOND AIRPORT, OR - March 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-03-01	44	28	36.0	0	0	T	M	M
2024-03-02	40	24	32.0	0	0	0.01	M	M
2024-03-03	44	21	32.5	0	0	T	M	M
2024-03-04	40	21	30.5	0	0	0.07	M	M
2024-03-05	40	22	31.0	0	0	0.04	M	M
2024-03-06	45	15	30.0	0	0	0.00	M	M
2024-03-07	46	19	32.5	0	0	0.00	M	M
2024-03-08	57	22	39.5	0	0	0.00	M	M
2024-03-09	54	37	45.5	6	0	0.00	M	M
2024-03-10	51	38	44.5	5	0	T	M	M
2024-03-11	48	31	39.5	0	0	T	M	M
2024-03-12	52	35	43.5	4	0	T	M	M
2024-03-13	50	24	37.0	0	0	T	M	M
2024-03-14	56	17	36.5	0	0	0.00	M	M
2024-03-15	60	21	40.5	1	0	0.00	M	M
2024-03-16	68	24	46.0	6	0	0.00	M	M
2024-03-17	71	26	48.5	9	0	0.00	M	M
2024-03-18	77	28	52.5	13	3	0.00	M	M
2024-03-19	76	31	53.5	14	4	0.00	M	M
2024-03-20	71	29	50.0	10	0	0.00	M	M
2024-03-21	62	26	44.0	4	0	0.00	M	M
2024-03-22	63	35	49.0	9	0	0.01	M	M
2024-03-23	55	39	47.0	7	0	0.00	M	M
2024-03-24	55	23	39.0	0	0	0.00	M	M
2024-03-25	52	27	39.5	0	0	T	M	M
2024-03-26	55	27	41.0	1	0	0.00	M	M
2024-03-27	56	39	47.5	8	0	0.06	M	M
2024-03-28	53	31	42.0	2	0	T	M	M
2024-03-29	52	26	39.0	0	0	0.01	M	M
2024-03-30	58	27	42.5	3	0	T	M	M
2024-03-31	56	20	38.0	0	0	0.00	M	M
Average|Sum	55.1	26.9	41.0	102	7	0.20	M	M

Climatological Data for REDMOND AIRPORT, OR - April 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-04-01	71	23	47.0	7	0	0.00	M	M
2024-04-02	80	32	56.0	16	6	0.00	M	M
2024-04-03	49	35	42.0	2	0	0.01	M	M
2024-04-04	44	33	38.5	0	0	0.32	M	M
2024-04-05	48	25	36.5	0	0	0.00	M	M
2024-04-06	49	26	37.5	0	0	T	M	M
2024-04-07	55	26	40.5	1	0	0.00	M	M
2024-04-08	60	24	42.0	2	0	0.00	M	M
2024-04-09	62	31	46.5	7	0	0.00	M	M
2024-04-10	67	24	45.5	6	0	0.00	M	M
2024-04-11	69	30	49.5	10	0	0.00	M	M
2024-04-12	53	35	44.0	4	0	0.01	M	M
2024-04-13	57	32	44.5	5	0	0.29	M	M
2024-04-14	70	46	58.0	18	8	0.15	M	M
2024-04-15	57	33	45.0	5	0	0.00	M	M
2024-04-16	57	29	43.0	3	0	0.00	M	M
2024-04-17	56	21	38.5	0	0	0.00	M	M
2024-04-18	62	23	42.5	3	0	0.00	M	M
2024-04-19	62	24	43.0	3	0	0.00	M	M
2024-04-20	74	28	51.0	11	1	T	M	M
2024-04-21	59	26	42.5	3	0	0.00	M	M
2024-04-22	67	23	45.0	5	0	0.00	M	M
2024-04-23	70	30	50.0	10	0	0.00	M	M
2024-04-24	66	33	49.5	10	0	0.00	M	M
2024-04-25	59	32	45.5	6	0	0.01	M	M
2024-04-26	59	38	48.5	9	0	0.02	M	M
2024-04-27	57	29	43.0	3	0	0.00	M	M
2024-04-28	62	29	45.5	6	0	0.00	M	M
2024-04-29	53	25	39.0	0	0	T	M	M
2024-04-30	54	19	36.5	0	0	0.01	M	M
Average|Sum	60.3	28.8	44.5	155	15	0.82	M	M

Climatological Data for REDMOND AIRPORT, OR - May 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-05-01	58	21	39.5	0	0	0.00	M	M
2024-05-02	53	35	44.0	4	0	0.24	M	M
2024-05-03	67	29	48.0	8	0	T	M	M
2024-05-04	54	41	47.5	8	0	0.23	M	M
2024-05-05	52	34	43.0	3	0	T	M	M
2024-05-06	60	32	46.0	6	0	T	M	M
2024-05-07	54	31	42.5	3	0	0.00	M	M
2024-05-08	63	27	45.0	5	0	0.00	M	M
2024-05-09	73	33	53.0	13	3	0.00	M	M
2024-05-10	81	39	60.0	20	10	0.00	M	M
2024-05-11	85	40	62.5	23	13	0.00	M	M
2024-05-12	84	45	64.5	25	15	0.00	M	M
2024-05-13	79	43	61.0	21	11	0.00	M	M
2024-05-14	75	38	56.5	17	7	0.00	M	M
2024-05-15	84	37	60.5	21	11	0.00	M	M
2024-05-16	81	42	61.5	22	12	0.00	M	M
2024-05-17	68	39	53.5	14	4	0.00	M	M
2024-05-18	69	32	50.5	11	1	0.00	M	M
2024-05-19	60	29	44.5	5	0	0.00	M	M
2024-05-20	67	28	47.5	8	0	0.00	M	M
2024-05-21	66	32	49.0	9	0	0.05	M	M
2024-05-22	56	41	48.5	9	0	T	M	M
2024-05-23	69	33	51.0	11	1	0.00	M	M
2024-05-24	70	37	53.5	14	4	T	M	M
2024-05-25	62	38	50.0	10	0	0.00	M	M
2024-05-26	76	31	53.5	14	4	0.00	M	M
2024-05-27	83	40	61.5	22	12	0.00	M	M
2024-05-28	71	46	58.5	19	9	0.00	M	M
2024-05-29	63	38	50.5	11	1	0.00	M	M
2024-05-30	72	32	52.0	12	2	0.00	M	M
2024-05-31	78	32	55.0	15	5	0.00	M	M
Average|Sum	68.8	35.3	52.1	383	125	0.52	M	M

Climatological Data for REDMOND AIRPORT, OR - June 2024

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2024-06-01	77	47	62.0	22	12	0.00	M	M
2024-06-02	70	53	61.5	22	12	T	M	M
2024-06-03	64	50	57.0	17	7	0.01	M	M
2024-06-04	78	51	64.5	25	15	0.00	M	M
2024-06-05	84	39	61.5	22	12	0.00	M	M
2024-06-06	89	41	65.0	25	15	0.00	M	M
2024-06-07	89	46	67.5	28	18	0.00	M	M
2024-06-08	87	46	66.5	27	17	0.00	M	M
2024-06-09	85	47	66.0	26	16	T	M	M
2024-06-10	86	46	66.0	26	16	0.00	M	M
2024-06-11	84	44	64.0	24	14	0.00	M	M
2024-06-12	80	37	58.5	19	9	0.00	M	M
2024-06-13	86	37	61.5	22	12	0.00	M	M
2024-06-14	74	43	58.5	19	9	0.00	M	M
2024-06-15	63	36	49.5	10	0	0.00	M	M
2024-06-16	59	31	45.0	5	0	0.14	M	M
2024-06-17	63	37	50.0	10	0	0.00	M	M
2024-06-18	75	32	53.5	14	4	0.00	M	M
2024-06-19	83	38	60.5	21	11	0.00	M	M
2024-06-20	85	44	64.5	25	15	0.00	M	M
2024-06-21	91	48	69.5	30	20	0.00	M	M
2024-06-22	94	50	72.0	32	22	0.00	M	M
2024-06-23	87	43	65.0	25	15	0.00	M	M
2024-06-24	86	38	62.0	22	12	0.00	M	M
2024-06-25	94	45	69.5	30	20	0.00	M	M
2024-06-26	86	55	70.5	31	21	0.00	M	M
2024-06-27	74	39	56.5	17	7	0.00	M	M
2024-06-28	83	42	62.5	23	13	0.00	M	M
2024-06-29	81	47	64.0	24	14	0.00	M	M
2024-06-30	83	49	66.0	26	16	0.00	M	M
Average|Sum	80.7	43.4	62.0	669	374	0.15	M	M

Appendix E
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EXHIBIT N

TRAFFIC ASSESSMENT LETTER

TRANSIGHT CONSULTING, LLC

Date:	August 16, 2024
To:	Paul Stern, New Sun Energy
From:	Joe Bessman, PE
Project Reference No.:	1954
Project Name:	Moffatt Road Solar Farm, LLC

This letter provides an assessment of the transportation impacts anticipated with the proposed solar farm located within a 378-acre parcel on the west side of George Millican Road, immediately north of the existing Gala Solar Farm. Vehicular access to the site is provided from the site to SW George Millican Road through an existing access road within an 80' wide strip along the northern border of the existing Gala Solar Farm, which will provide shared access to the Powell East Solar, Gala Solar, and the proposed Moffatt Road solar site. The overall tax lot (tax lot 1615000000300) is a 2,438.63-acre site zoned for Exclusive Farm Use, which per CCC 18.24.025 allows commercial photovoltaic energy systems to the extent permitted by State law. Within the overall parcel approximately 320 acres will be used for the solar facility. Figure 1 illustrates the overall location of the tax lot, the approximate solar facility boundaries of the site and previously approved locations that surround it, and the location of the proposed (shared) access route onto Millican Road.

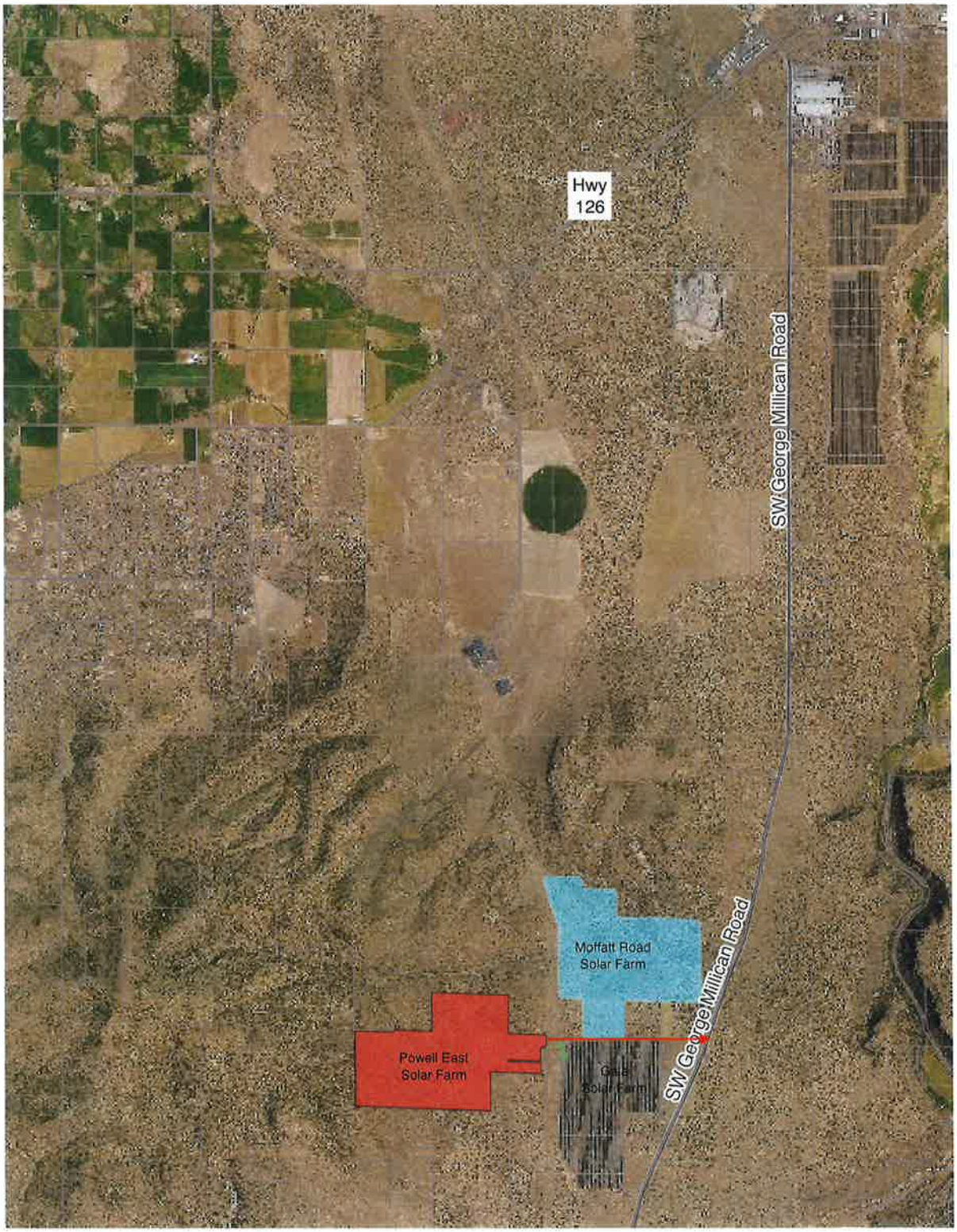

Figure 1. Site Vicinity Map. *Image Source: Crook County GIS.*

The shared access to the property is proposed from a private driveway connection onto George Millican Road, which is located along a straight, flat tangent segment of the facility. There is currently an existing gated access near this location that serves as a shared access with the Powell East and Gala solar farm, as shown in Figure 3. It was noted that the location of the access is along a portion of Millican Road that permits passing maneuvers today with a dashed centerline stripe.

Figure 3. Shared gravel access drive into the solar farms.

TRIP GENERATION

Trip generation estimates are typically prepared for new development using the standard reference *Trip Generation, 11th Edition,* published by the Institute of Transportation Engineers (ITE). However, this manual generally contains information applicable only in suburban and urban areas. Trip generation data for solar facilities is not available, and so in most jurisdictions is based on estimates of employee/maintenance trips when the facility is fully built-out.

Based on information from other solar facilities, only nominal trip generation occurs with full build-out. These trips are typically associated with security, on-site maintenance of equipment, and inspections. Inspections and maintenance occur throughout the year on both a scheduled and an as-needed basis. Accounting for both inbound and outbound trips, a solar facility will typically generate up to about four trips per day (one to two vehicles per day both in and out), as summarized in Table 1. The co-location of these three adjacent facilities allows the same personnel to support operations at each of the facilities.

There is likely little to no impact during the weekday p.m. peak hour as these trips do not occur on typical shift schedules. For transportation purposes it was assumed that one additional vehicle was exiting during the weekday p.m. peak hour as shown in Table 1.

Table 1. Trip Generation Summary (Full Build-out)

Land Use	ITE Code	Size	Weekday Daily Trips	Weekday PM Peak Hour		
				Total	In	Out
Moffatt Rd Solar Farm	n/a	320 acres	4	1	0	1

Crook County Code 18.180 identifies the thresholds for when a formal Transportation Impact Analysis is required. This identifies the following conditions:

- The development generates 25 or more peak hour trips (or more than 250 daily trips)
- An access spacing exception is required for the site access driveway and the development generates 10 or more peak hour trips (or 100 or more daily trips)
- The development is expected to impact intersections that are currently operating at the upper limits of the acceptable range of level of service during the peak operating hour.
- The development is expected to significantly impact adjacent roadways and intersections that have previously been identified as high crash locations or areas that contain a high concentration of pedestrians or bicyclists (such as school zones)
- A change in zoning or a plan amendment designation.
- ODOT requirements.

The proposed solar facility generates less than the County trip thresholds, will conform with County access requirements (using a shared access) and is not located within a high crash location. None of the County thresholds are met to require a Transportation Impact Analysis, and with the limited trip generation of the site, conducting a study would not identify any capacity needs. Accordingly, this transportation assessment focuses on construction needs to maintain safety at the access for the development of the site. This will conform with the County's Transportation Assessment Letter (TAL) requirements.

Crash History Review

Intersection crash records were obtained from the ODOT crash database for all of Crook County for the period between January 1, 2017 and December 31, 2021. This reflects the most recent five-year period available. Crashes that are required to be reported to ODOT during this period includes any collision that involves one or more motor vehicle, results in more than $1,500 in property damage (increased to $2,500 in 2018), or results in any level of personal injury.

There was a single reported crash in the vicinity of the existing access. This crash occurred on Millican Road on June 8, 2017, at 12:00 p.m. during clear and dry conditions. The crash records indicate that a single vehicle towing a trailer was involved in an overturn crash, with the cause cited as improper driving. No personal injury resulted from the crash. Two collisions were also reported along the Gala Solar frontage, with both classified as "fixed object" collisions associated with speeds exceeding the posted speed. No crash patterns or safety deficiencies were identified as a result of this crash.

ACCESS CHARACTERISTICS

Access to the facility will be provided from Millican Road via the existing paved approach to the Gala Solar Plant, located directly south of the site. This roadway's connection to Millican Road has already been designed to accommodate the turning radius of the construction vehicles and trucks supporting solar equipment, with no changes planned. Internal staging areas will be developed within the parcel that will take access from this road.

The location of the existing access along Millican Road provides adequate sight lines in the northbound and southbound directions. As travel speeds are high within this roadway section it is recommended that Intersection Sight Distance as recommended within the standard reference *A Policy on Geometric Design of Highways and Streets, 7th Edition*, published by the American Association of State Highway and Transportation Officials (AASHTO) be verified during the access permit process for a 65 mile per hour design speed. The specific requirements for trucks entering a two-lane facility with this speed are shown below in Figure 4.

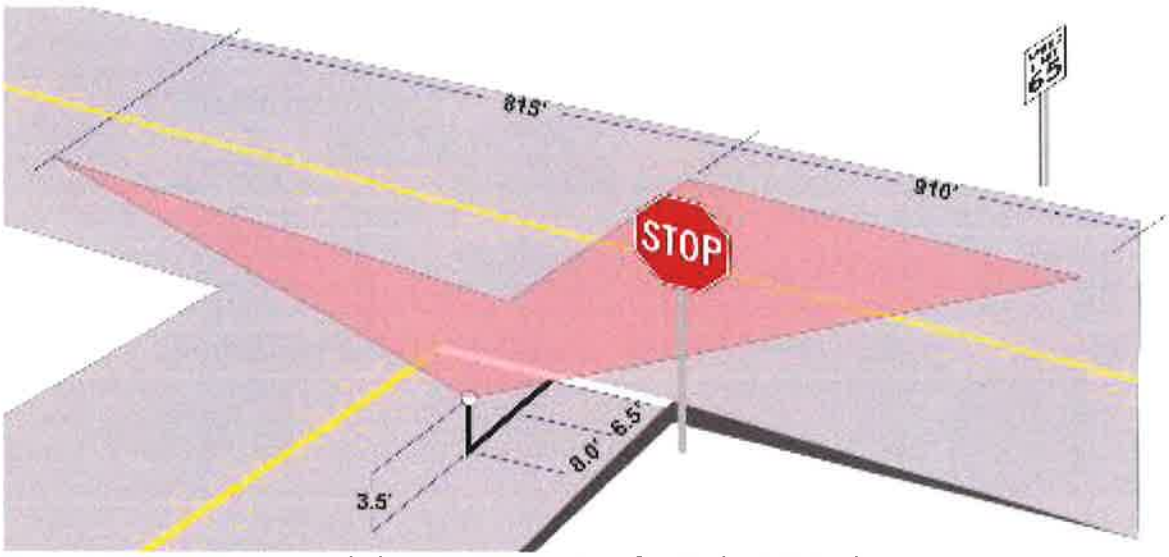

Figure 4. AASHTO Recommended Distance Dimensions for Single-Unit Trucks.

Prior field review was conducted along Millican Road as part of the prior solar application, with this review showing that these sight lines can easily be met with the current road grades and characteristics of the existing frontage. Figures 5 and 6 illustrate the current sight lines in this area.

Figure 5. Shared access location onto Millican Road facing south, highlighting the clear sight lines.

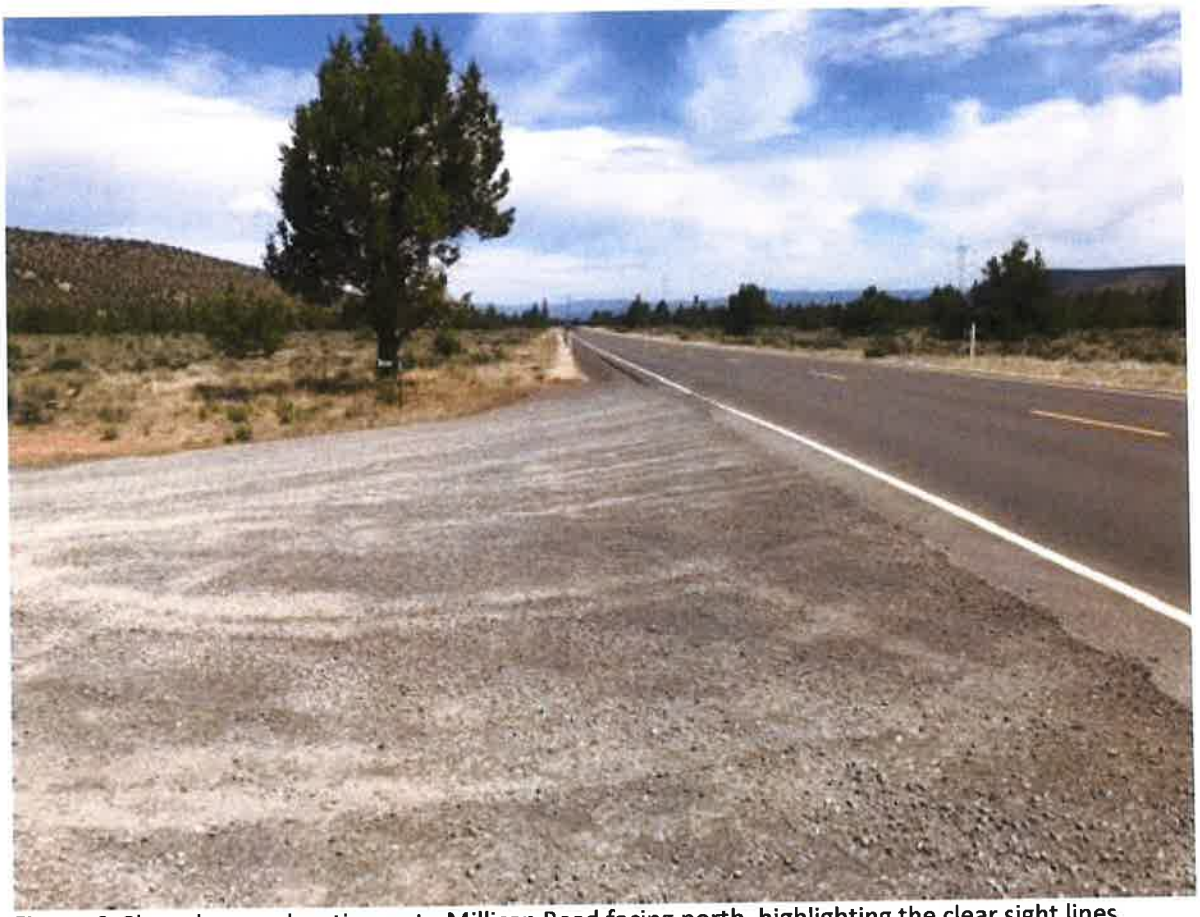

Figure 6. Shared access location onto Millican Road facing north, highlighting the clear sight lines.

TEMPORARY CONSTRUCTION CONDITIONS

Similar to recommendations provided for other solar facilities, to address construction traffic needs temporary construction signage is recommended at the shared access to highlight the elevated construction activity. To maintain the safety of the access connection to Millican Road and to increase visibility and awareness for deliveries and labor trips that are unfamiliar with the area, the following summarizes the recommended construction mitigation measures:

- "Trucks Entering Highway" temporary construction signage should be installed on either side of the access throughout the construction period to warn motorists of construction activity.
- The applicant should coordinate with the Crook County public works to ensure a plan is in place to prevent rocks and debris from entering Millican Road. This should include extending an asphalt driveway apron a minimum of 75-feet into the property.
- The allowed passing maneuvers along Millican Road should be restricted while construction activity is occurring. This may be provided through No Passing Zone (W14-3) or Do Not Pass/Pass with Care signage per the MUTCD.
- Separate on-site areas should be designated for passenger vehicle parking and truck staging. No parking should be permitted along the Millican Road shoulders.
- Since the proposed solar facility will use a shared access already approved for solar farms a new access permit onto Millican Road should not be required.

We trust this letter provides a general understanding of the long-term build-out and construction needs of the proposed Moffatt Road Solar Facility. The operations of the facility will not trigger the County's formal Transportation Impact Analysis requirements. If you have any questions or need any additional information on this traffic letter please contact me at (503) 997-4473 or via email at joe@transightconsulting.com.