Docket # 210012

Goose Prairie Solar

OER WA Solar 1, LLC

Application for Site Certificate,
Washington Energy Facility Siting Evaluation Council

January 19, 2021

OneEnergy Renewables
2003 Western Ave, Suite 225
Seattle, Washington 98121

oneenergy
renewables
.com

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Acronyms and Abbreviations

AG	Agricultural
Applicant	OER WA Solar 1, LLC
BESS	Battery Energy Storage System
BMP	Best Management Practice
BPA	Bonneville Power Administration
CARA	Critical Aquifer Recharge Area
CFR	Code of Federal Regulations
County	Yakima County
CRP	Conservation Reserve Program
CSWGP	Construction Stormwater General Permit
CUP	Conditional Use Permit
DAHP	Washington Department of Archaeology and Historic Preservation
DOH	Washington State Department of Health
Ecology	Washington State Department of Ecology
EFSEC	Energy Facility Site Evaluation Council
ESLU	Especially Sensitive Land Use
Facility	Goose Prairie Solar
FEMA	Federal Emergency Management Agency
gen-tie line	Interconnection Tie Line
kV	kilovolt
MW	megawatt
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan
SR-24	State Route 24
SWOT	Strengths, Weaknesses, Opportunities, and Threats

SWPPP	Stormwater Pollution Prevention Plan
UL	Underwriters Laboratories
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
UWHCA	Upland Wildlife Habitat Conservation Area
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WISAARD	Washington Information System for Architectural and Archaeological Records Data
WSDOT	Washington State Department of Transportation
Yakama Nation	Confederated Tribes and Bands of the Yakama Nation
YCC	Yakima County Code
YCCP	Yakima County Comprehensive Plan
YCWRS	Yakima County Water Resource System

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Part 1 – Overview/Summary

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1.A. Basic Information

1.A.1. Applicant

Name/Contact:
OER WA Solar 1, LLC
c/o Blake Bjornson

Mailing address:
2003 Western Ave, Ste. 225
Seattle, WA 98121

Phone: 206-900-9931
Email: blake@oneenergyrenewables.com

1.A.2. Preparer

The Applicant prepared this Application for Site Certificate in conjunction with Tetra Tech, Inc.

Name/Contact:
Tetra Tech, Inc.
c/o Linnea Fossum

Mailing address:
19803 North Creek Parkway
Bothell, WA 98011

Phone: 425-482-7600
Email: linnea.fossum@tetratech.com

1.A.3. Property Owner

There are two sets of properties, distinguished by the property owners: 1) the Estate of Willamae G. Meacham and 2) S Martinez Livestock, Inc. The Applicant has executed an Option to Lease with each landowner for the Facility parcels.

Meacham

Name/Contact:
Estate of Willamae G. Meacham
c/o Ann Meacham

Mailing address:
3918 77th Ave Ct. NW
Gig Harbor, WA 98335

Martinez

Name/Contact:
S Martinez Livestock, Inc.
c/o Dan Martinez

Mailing address:
13395 Highway 24
Moxee, WA 98936

1.A.4. Location of Proposed Site

Meacham Property:

County: Yakima
County Assessor's number(s): 211218-11003, 211218-43004, 211218-44003

Section: 18 **Township:** 12 North **Range:** 21 E.W.M.

Legal description:

211218-11003
That portion of the following described tract lying Northerly of State Route 24:
Section 18, Township 12 North, Range 21, E.W.M., records of Yakima County, Washington;
EXCEPT the South 1/2 of the Southeast 1/4;
EXCEPT those portions deeded to the State of Washington by instruments recorded in Volume 371 of Deeds, under Auditor's File Number 1018033, and in Volume 377 of Deeds, under Auditor's File Number 1037489, and in Volume 843 of Official Records, under Auditor's File Number 2286850;
AND EXCEPT that portion appropriated by the State of Washington in Yakima County Superior Court Cause No. 80-2-02429-8;
ALSO
The South 350 feet of the North 450 feet of the West 450 feet of the Northwest 1/4 of the Northwest 1/4 of Section 18, Township 12 North, Range 21 East, W.M.
Situated in Yakima County, State of Washington.

211218-44003
That portion of the following described tract lying Northerly of State Route 24:
The Southeast 1/4 of the Southeast 1/4 of Section 18, Township 12 North, Range 21, E.W.M., records of Yakima County, Washington;
EXCEPT those portions deeded to the State of Washington by instruments recorded in Volume 370 of Deeds, under Auditor's File Number 1015996, and in Volume 843 of Official Records, under Auditor's File Number 2286858;
AND EXCEPT that portion appropriated by the State of Washington in Yakima County Superior Court Cause No. 80-2-02429-8.
Situated in Yakima County, State of Washington.

211218-44003
That portion of the Southwest 1/4 of the Southeast 1/4 of Section 18, Township 12 North, Range 21, E.W.M., lying Northerly of the right of way of State Highway 24.
Situated in Yakima County, State of Washington.

Martinez Property:

County: Yakima
County Assessor's number(s): 211207-11001, 211207-21001, 211208-32001, 211217-21002, 211208-11001

Section(s): ___7, 8, 17_____ **Township:** __12_North___ **Range:** __21 E.W.M.___

Legal description:

211207-11001
The East ½ of Section 7, Township 12 North, Range 21, E.W.M., records of Yakima County, Washington.
Situated in Yakima County, State of Washington.

211207-21001
The West ½ of Section 7, Township 12 North, Range 21, E.W.M., records of Yakima County, Washington.
Situated in Yakima County, State of Washington.

211208-32001
The West ½ of the Southwest ¼ of Section 8, Township 12 North, Range 21, E.W.M., records of Yakima County, Washington;
EXCEPT a strip 20 feet wide along the West side for road purposes.
Situated in Yakima County, State of Washington.

211217-21002
The North ½ of the Northwest ¼ of Section 17, Township 12 North, Range 21, E.W.M., records of Yakima County, Washington.
Situated in Yakima County, State of Washington.

211208-11001
The East 1/2 of the Northeast 1/4;
AND
The Southwest 1/4 of the Northeast 1/4;
AND
The Southeast 1/4 of the Northwest 1/4;
AND
The Northeast 1/4 of the Northeast 1/4 of the Southwest 1/4;
AND
The West 1/2 of the Northeast 1/4 of the Southwest 1/4;
AND
The West 1/2 of the Southeast 1/4;
All in Section 8, Township 12 North, Range 21, E.W.M.
Situated in Yakima County, State of Washington.

1.B. Project Summary

OER WA Solar 1, LLC (the Applicant) proposes to construct and operate Goose Prairie Solar (the Facility), an 80 megawatt (MW) solar photovoltaic project with an optional battery storage system located in Yakima County, Washington. The Facility will utilize solar photovoltaic (PV) panels to convert energy from the sun into electric power which is then delivered to the electric power grid.

The Facility will consist of PV modules mounted on single-axis trackers supported on stationary piles. Each row of solar panels will be strung together in a north-south orientation and the panels will tilt on a single-axis (facing east in the morning and tilting toward the west, following the sun, through the course of each day to maximize energy output). Each string of panels is arranged in rows with approximately eight to twelve feet of space between the rows. The racking system and panels are supported by steel piles driven to a depth of 5 to 9 feet below grade. The top of the panels will stand no higher than 14 feet.

Throughout the Facility, inverters paired with medium voltage step-up transformers convert the generated electricity from direct current (DC) to alternating current (AC) and increase the voltage to distribution class to minimize ohmic losses when collecting power circuits. The output will be conveyed to a central substation near the Point of Interconnection (POI) to the electrical grid. The central substation will house a generator step-up transformer, which will convert the power to 115 kilovolts (kV) and will house the controls for the Facility. An operations and maintenance (O&M) building may be built adjacent to the substation.

The optional battery energy storage system would not exceed the nominal 80 MW capacity of the Facility. As currently designed, optional battery storage system would be connected to the DC side of the transformer. The battery would store power generated by the Facility and dispatch it to the electrical grid at a later time. The Facility is currently designed to utilize lithium ion battery energy technology. However, pending commercial interest, the Facility could be designed to utilize flow battery technology.

The Facility will interconnect with a new POI to Bonneville Power Administration's (BPA) Midway to Moxee 115-kV transmission line, which bisects the Facility. BPA will build, own and operate the structures which constitute the POI.

The Facility will be accessed by an existing approach from Washington Highway 24. The Facility will be secured with a fence up to eight feet in height with access gates for authorized personnel. Internal gravel roads built to the applicable fire code will be used to maintain the Facility. During construction, a temporary lay-down area will be utilized for delivery of major equipment. This area will convert to parking during operations.

The Applicant intends for the Facility to have a Commercial Operations Date (COD) as early as November 30, 2022. In order to meet this schedule, it is expected that construction would begin in Q3 2021.

1.C. Site Summary

The Facility area is approximately eight miles east of the City of Moxee on parcels located just north of Washington Highway 24, between its intersections with Morris Lane and Desmarais Cutoff. The coordinates for the center point of the Facility are 46°32'07.08" north latitude and 120°13'52.64" west longitude.

The Facility will be located across a portion of eight parcels which together constitute the "Facility Parcels." Three of the parcels are owned by the Estate of Willamae G Meacham and together are known herein as the "Meacham Property" and the other five parcels are owned by S. Martinez Livestock, Inc. and together are known herein as the "Martinez Property". The Applicant has entered into long-term land leases with the landowners for adequate acreage to accommodate the Facility. All the parcels in the Facility area are zoned agricultural (AG). In Yakima County, "power generating facilities" are a Type 3 use in the AG zoning district and may be authorized subject to the approval of a conditional use permit.

The Meacham Property is currently in the Conservation Reserve Program (CRP) which is set to expire on 9/30/2022. The habitat type within the portion that will be utilized for the Facility is mainly CRP with a small component of Pasture Mixed Environs and the vegetation consists primarily of non-native species such as downy brome, crested wheat, Russian thistle, mustard species and others. There is no current agricultural use, though a portion of the area was previously used for row crops. No existing buildings are present on the Meacham Property.

The Martinez Property has two distinct areas: four of the parcels may be used for solar facilities and one parcel may be utilized for an aerial easement for the interconnection tie-line depending on the final design of the interconnection with BPA. The area that may be utilized for solar facilities has a historic and current use of grazing and has habitat types categorized as a mix of Eastside Grasslands, Shrub-steppe and Pasture Mixed Environs with predominantly native vegetation including sagebrush and wheatgrass; much of the shrub-steppe area is degraded in its quality due to heavy grazing. The area which may be utilized for an aerial easement is currently planted with an orchard. BPA's Midway-to-Moxee 115 kV transmission line, which the Facility directly relies on, crosses the Martinez Property. A few agricultural buildings exist on the Martinez Property, but none are within the Facility Area.

The Facility area is wholly outside of the 100-year FEMA floodplain and the only water features present are ephemeral streams, from which the Facility will maintain a minimum 50-foot buffer on both sides. A crossing of the ephemeral stream may be constructed. The Facility area generally has a south-facing slope, ideal for solar PV proejcts, and is mostly under 10% grade, ideal for constructibility. A few small areas with grades above 10% may require grading, though none of this will occur in surface waters, wetlands or frequently flooded areas.

1.D. Screening Summary

	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
1. Earth	Yes	Yes	Yes	Yes	Yes
2. Air Quality	Yes	Yes	Yes	Yes	Yes
3. Water Quality – Wetlands and Surface Waters	Yes	Yes	Yes	Yes	Yes
4. Water Quality – Wastewater Discharges	No	Yes	Yes	Yes	Yes
5. Water Quality – Stormwater Runoff	Yes	Yes	Yes	Yes	Yes
6. Water Quantity – Water Use	No	Yes	Yes	Yes	Yes
7. Water Quantity – Runoff, Stormwater, Point Discharge	No	Yes	Yes	Yes	Yes
8. Plants	Yes	Yes	Yes	Yes	Yes
9. Animals	Yes	Yes	Yes	Yes	Yes
10. Energy and Other Natural Resources	No	N/A	Yes	Yes	N/A
11. Waste Management	No	N/A	Yes	Yes	N/A
12. Environmental Health – Existing Site Contamination	No	Yes	Yes	Yes	N/A
13. Environmental Health – Hazardous Materials	Yes	Yes	Yes	Yes	Yes
14. Land Use, Nat. Resource Lands & Shoreline Compatibility	Yes	Yes	Yes	Yes	N/A
15. Housing	No	N/A	Yes	Yes	N/A
16. Noise, Light, Glare, and Aesthetics	Yes	Yes	Yes	Yes	Yes

	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
17. Recreation	No	N/A	Yes	Yes	N/A
18. Archaeological and Historical Resources	Yes	Yes	Yes	Yes	Yes
19. Cultural Resources	Yes	Yes	Yes	Yes	Yes
20. Traffic and Transportation	Yes	Yes	Yes	Yes	Yes
21. Public Services and Facilities	No	N/A	Yes	Yes	N/A
22. Utilities	Yes	Yes	Yes	Yes	Yes

1.E. List of Study Reports

Topic	**Name of Report and Location for Review**	**Status** (e.g., scoping, contracting for, started)	**Date of Completion** (past or expected)
Land Use	Land Use Consistency Review, Attachment A	Complete	Dec 2020
Habitat/Wildlife	Habitat and Wildlife Survey Report, Attachment F	Complete	Sep 2020
Plants/Wildlife	Review of Rare Plant Occurrence and Big Game Movement, Attachment G	Complete	Oct 2020
Cultural Resources	Cultural Resources Survey Report, Attachment H	Complete	Sep 2020
Noise	Acoustic Assessment Report, Attachment I	Complete	Jan 2021
Visual	Visual Impact Assessment Report, Attachment J	Complete	Dec 2020
Glare	Solar Glare Reports, Attachment K	Complete	Jan 2020
Earth	Geotechnical Site Investigation and Critical Areas/Geohazards Report, Attachment L	Complete	Dec 2020
Airspace	FAA Determination of No Hazard Letters, Attachment M	Complete	Jul 2020
Wetlands	Wetland Delineation Report, Attachment O	Complete	July 2020

1.F. List of Stakeholders

Type	Specific	Contact (name, program)	Areas of discussion	Status of engagement
Local Government	Yakima County	Thomas Carroll and Dinah Reed, Planning Department	Land Use, Permitting	Ongoing
State Government	WDFW	Eric Bartrand and Scott Downes	Wildlife	Ongoing
Local Government	Ecology	Lori White	Wetlands	Contacted
State Government	DAHP	Gretchen Kaehler	Cultural Resources	Contacted
Tribal Government	Yakama Nation	Jessica Lally	Cultural Resources	Ongoing
Federal Government	Department of Defense	Kim Peacher	Airspace	Complete
Federal Government	FAA	Daniel Shoemaker	Airspace	Ongoing
Federal Government	BPA	Christopher Lockman	Interconnection	Ongoing
Landowner	Neighbors	All neighbors within one mile of Facility Parcels	General	Best efforts to contact by phone during Nov/Dec 2020
State Government	WSDOT	Jacob Prilucik	Access	Ongoing
Local Government	YakCo Fire Marshal	Andrea Ely	Fire Roads, etc	Ongoing
Local Government	YakCo Noxious Weed Control Board	Susan Bird	Weed Management	Ongoing

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Part 2 – Core Information

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2.A. Project Basics

2.A.1. Project Name

Goose Prairie Solar (the Facility)

2.A.2. Project Description

2.A.2.a. Introduction

Goose Prairie Solar is an 80 megawatt (MW) alternating current (AC) solar photovoltaic project with an optional battery storage system capable of storing up to 80 MW of energy located in Yakima County, Washington. Honoring former Supreme Court Justice William O. Douglas, the Facility takes its name from the Yakima-native's summer home located in northwestern Yakima County.

The Facility would be located approximately eight miles east of the City of Moxee along Washington State Route 24 (SR-24), between its intersections with Morris Lane and Desmarais Cutoff (see Figure 2-3). The Facility would interconnect to Bonneville Power Administration's (BPA) Midway-to-Moxee 115 kilovolt (kV) transmission line, which traverses the site.

The Facility would be sited on parcels zoned Agricultural (AG) under the Yakima County Code (YCC). The Facility meets the criteria of a "power generating facility" which is classified as a "Type 3" use in the YCC's Title 19, Unified Land Development Code, Allowable Land Use Table (YCC Table 19.14-010). Per YCC 19.14-010(2), a Type 3 use is subject to a Conditional Use Permit (CUP) as set forth in YCC 19.30.030. Therefore, the Facility is consistent with and in compliance with the county zoning ordinances. Please see the Land Use Consistency Review, Attachment A, for a complete review of the Facility's compliance with the Yakima County Comprehensive Plan and the Yakima County Code.

The Facility would have a number of benefits to the local community and Washington state. Construction of the Facility would support up to 300 jobs during peak construction. The Applicant estimates that up to 80% of the construction jobs can be hired locally and would advertise open positions at local job fairs and through other local advertising to enable as much local hiring as possible.

The Facility would provide Yakima County with additional property tax revenue and provide the local landowners with stable revenue to supplement their agricultural operations which are subject to market volatility. Finally, construction of this renewable energy resource would help Washington meet its goal of 100% clean electricity supply as set forth in the Clean Energy Transformation Act (CETA), passed by the Washington legislature in 2019.

2.A.2.b. Facility Siting Characteristics

The Applicant chose this location in Yakima County in consideration of many suitability characteristics, including but not limited to: the high solar energy resource, the underlying topography and land traits, access to electrical infrastructure, compatible zoning criteria, and low impacts to land use and habitat.

As shown in Figure 2-1, Yakima County has some of the highest solar energy resource areas in the State of Washington. This higher resource means that each solar panel can produce more electricity on an annual basis than one sited in a lower resource area. While the solar resource is superior east of the Cascade Mountains, there is limited existing electrical infrastructure with the available interconnection capacity to connect a project of this size. This electrical constraint creates a limiting factor for locations where solar energy projects are economically feasible in Washington.

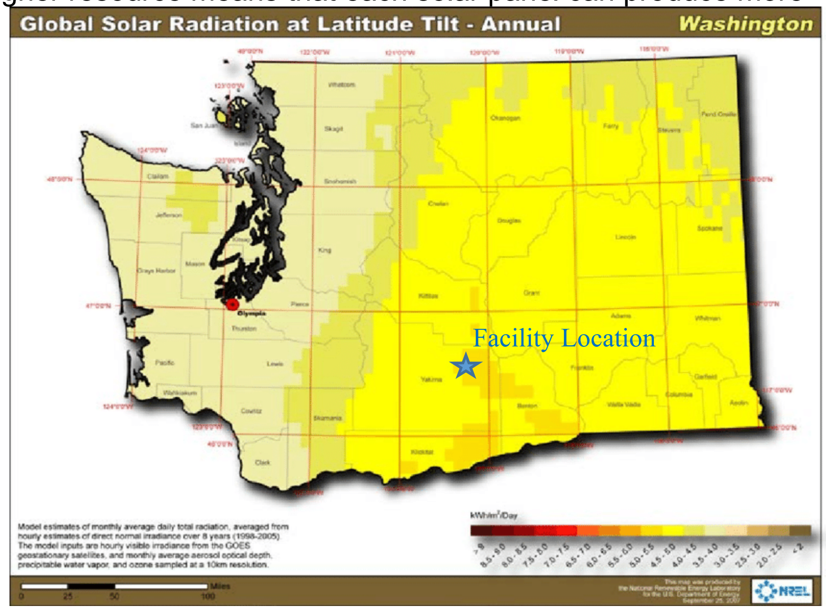

Figure 2-1: Solar Resource Map, National Renewable Energy Lab

BPA's existing Midway-to-Moxee 115 kV transmission line crosses Yakima County and has sufficient electrical capacity to support the addition of 80 MW of generation without significant or cost-prohibitive upgrades to the grid (more information on interconnection is provided below). This combination of a good solar resource and direct access to low-cost interconnection constitutes a unique resource upon which the Facility is dependent.

In selecting a location along the Midway-to-Moxee 115 kV line in Yakima County, the Applicant considered multiple locations and ultimately selected this site for several reasons. It has direct access to the existing electrical infrastructure that bisects the property. It is predominately located on disturbed habitat due to past farming, heavy grazing and the bisection of the area by the existing transmission line. The Applicant engaged in early-stage site selection consultation with Washington Department of Fish and Wildlife (WDFW) which led to this site being preferred over sites further east due to it having less ecologically-sensitive habitat. The site has robust access routes already built. The topography is flat to south facing which is ideal for solar photovoltaic projects. The landowners desire to develop their property for a higher and better use. And finally, the zoning criteria at the location allows a “power generating facility” as a conditional use in Yakima County.

2.A.2.c. Facility Location

The Facility would be located in Township 12 North, Range 21 East (see Figures 2-2 and 2-3 for a context map and a site map, respectively) just north of State Route 24, between its intersections with Morris Lane and Desmarais Cutoff. The coordinates for the center point of the Facility are 46°32'07.08" north latitude and 120°13'52.64" west longitude.

The Facility would be located across a portion of eight parcels which together constitute the "Facility Parcels"; the total acreage of the Facility Parcels is 1,568 acres. Three of the parcels are owned by the Estate of Willamae G Meacham and together are known herein as the "Meacham Property"; the Meacham Property consists of tax parcels 211218-11003, 211218-43004, and 211218-44003. The other five parcels are owned by S. Martinez Livestock, Inc. and together are known herein as the "Martinez Property"; the Martinez Property consists of tax parcels 211207-11001, 211207-21001, 211208-11001, 211208-32001, and 211217-21002. The Applicant has entered into long-term land lease agreements with the landowners for adequate acreage to accommodate the Facility. Both landowners have provided letters of support for the Facility, which are enclosed as Attachment C.

The majority of the Meacham Property parcels are currently enrolled in the Conservation Reserve Program (CRP) which is set to expire on September 30, 2022. The CRP area consists predominantly of non-native plant species such as downy brome, crested wheat, Russian thistle, mustard species and others. The remainder of the Meacham Property consists of a draw running east-west across the northern end of the property. This area is considered intact shrub-steppe habitat and would be avoided by the Facility. There is no current agricultural use, though a portion of the area was previously used for row crops. There are no existing buildings on the Meacham Property. The property is immediately adjacent to State Route 24.

The Martinez Property has two distinct areas: four of the parcels may be used for solar facilities and one parcel may be utilized for an aerial easement for the interconnection tie-line depending on BPA's final design of the interconnection facilities. The four parcels of the Martinez Property that may be utilized for solar facilities have a historic and current use of grazing and consist mainly of eastside grassland and shrub-steppe habitat with predominantly native vegetation. The shrub-steppe draw described above continues across the Martinez Property and would be avoided by the Facility to allow for terrestrial Outside of the Facility Area Extent (further described below), there is an agricultural building and two abandoned buildings previously used as residences on the property that are no longer in use. BPA's Midway-to-Moxee 115 kV transmission line, which the Facility directly relies on, crosses the Martinez Property.

The portion of the Martinez Property that would be used for the transmission easement is herein known as the "Aerial Transmission Easement Area," as shown in Figure 2-3 below. The interconnection design would be determined before the execution of an Interconnection Agreement; if the final design from BPA does not utilize this parcel, then the Aerial Transmission Easement Area would not be a part of the Facility. The parcel which may be utilized for an Aerial Transmission Easement Area is currently planted with an orchard and has a residence which is owner-occupied.

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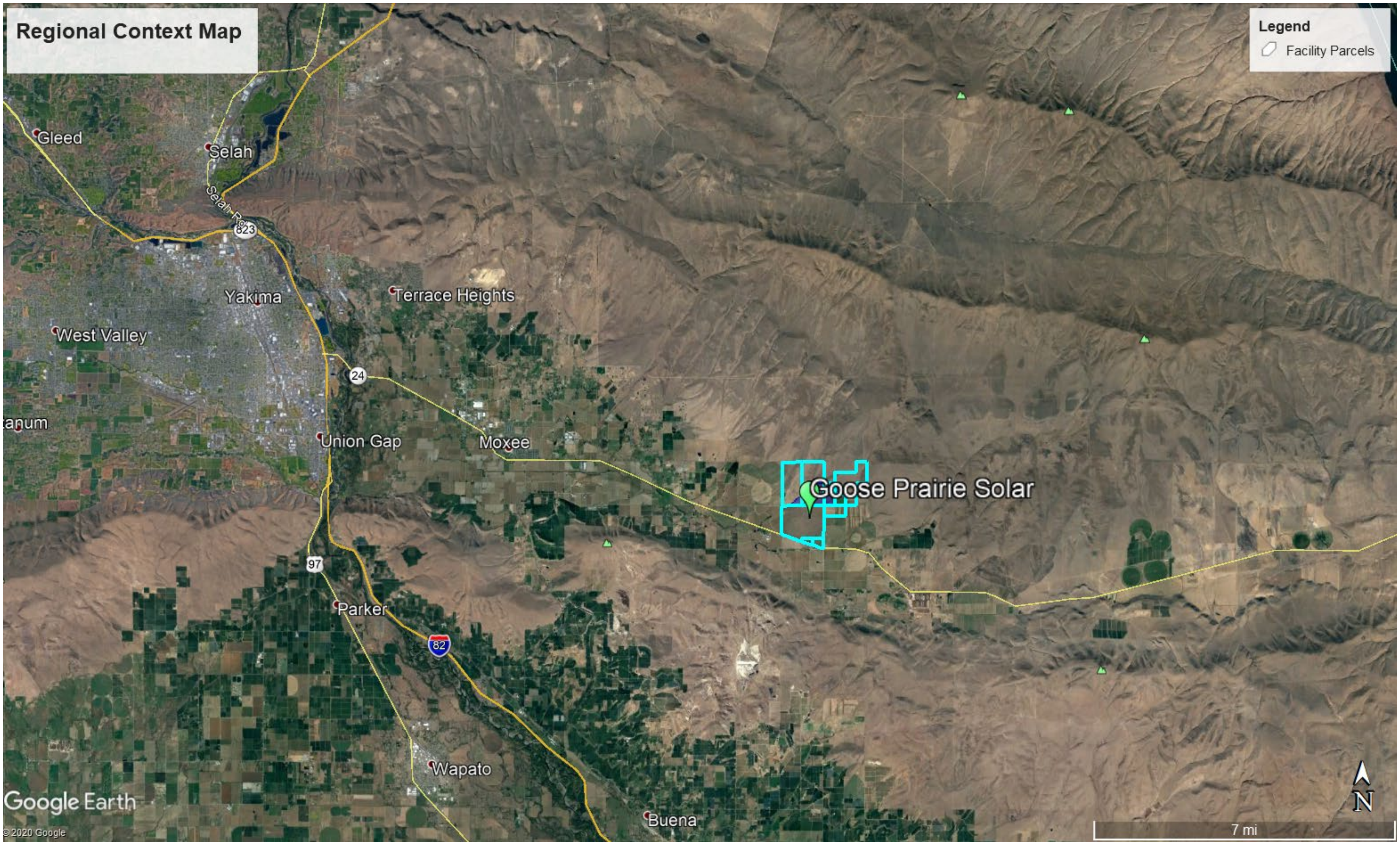

Figure 2-2: Regional Context Map

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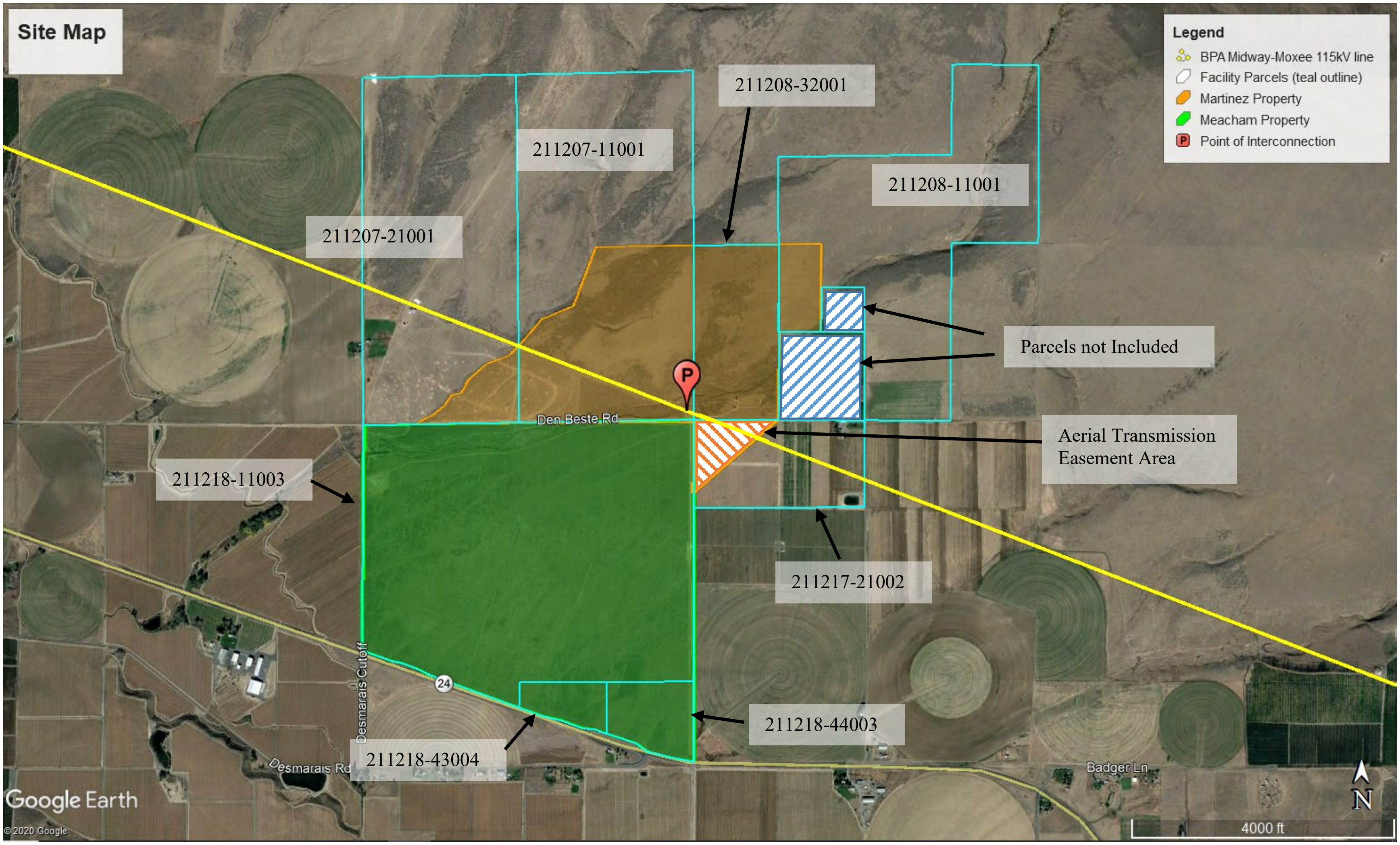

Figure 2-3: Site Map

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2.A.2.d. Facility Area Definitions

The Facility's footprint would not exceed 625 acres, defined as the Facility Area. The Facility Area would be located wholly within a broader micrositing boundary of 789 acres, defined as the Facility Area Extent. The Survey Area is the extent of the acreage that was surveyed for the wildlife, cultural and wetland surveys, which totals 808 acres and wholly encompasses the Facility Area Extent.

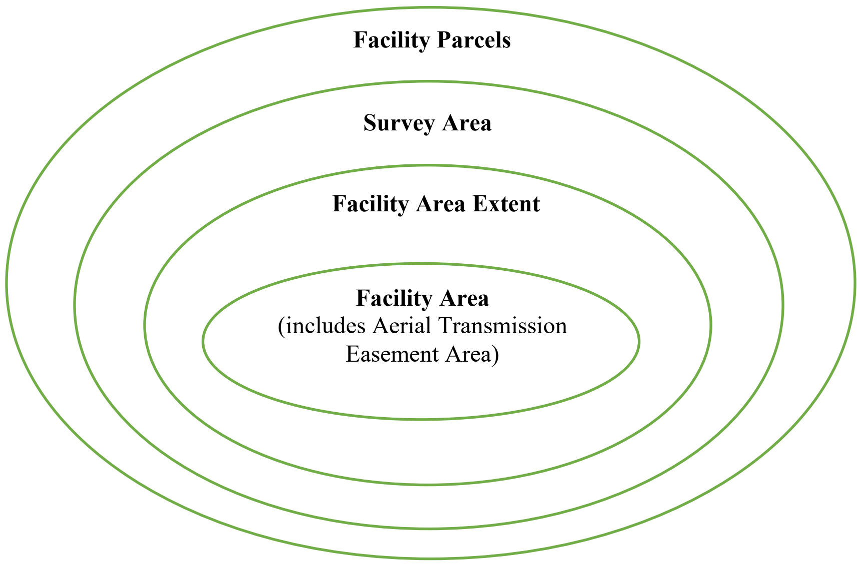

Figure 2-4: Area Definitions

The Facility Area Extent includes 517 acres of the Meacham Property and up to 272 acres of the Martinez Property. The 272 acres of the Martinez Property includes the Transmission Easement Area which is approximately 17.0 acres.

The Applicant requests that EFSEC allow the Applicant flexibility to microsite the precise location of Facility components within the Facility Area Extent and provide an updated site plan prior to construction. This gives the Applicant the ability to refine the spacing of solar modules, associated access roads, collector lines, staging areas and above-ground facilities within the Facility Area Extent as design is finalized. The requested flexibility to microsite the final Facility layout within the Facility Area Extent also allows the Applicant to minimize potential impacts and deliver the most effective and efficient Facility consistent with the landowners' needs. The maximum footprint of the Facility Area would not exceed 625 acres, located wholly within the Facility Area Extent.

2.A.2.e. Facility Components

As shown in the Preliminary Site Plan (see Attachment B), the Facility would consist of PV panels, inverters, mounting infrastructure, an electrical collection system, operation and maintenance building, access roads, interior roads, security fencing, a new collector substation and electrical interconnection infrastructure. The Applicant anticipates that the Facility would utilize a single-axis tracking system designed to optimize system output by slowly rotating the solar PV panels to follow the path of the sun. The Applicant proposes an optional battery storage system that would support the solar generation by balancing the resource and injecting energy onto the power grid during lower solar resource conditions.

The Facility would interconnect to the electrical grid at BPA's Midway-to-Moxee 115 kV transmission line via a line-tap to the existing line. A generation tie line (gen-tie line) from the Facility's substation to the transmission line line-tap would be constructed, estimated to be approximately 250 feet in length. The Midway-to-Moxee line bisects the Facility Area Extent and would require minimal new transmission lines to interconnect. As identified and confirmed through the BPA interconnection study process, the interconnection requires minimal new facilities at this location. The interconnection line-tap would be constructed, owned and operated by BPA.

The Applicant anticipates limited ground disturbance for the installation of the solar array, battery storage pad and electrical facilities. The Applicant would work with EFSEC and Yakima County officials to ensure all grading meets standard code for stormwater and sediment erosion control.

The Preliminary Site Plan (Attachment B) is based upon technical studies completed to-date and is subject to changes within the Facility Area Extent, but the Facility size would not exceed 80MW AC in size. The final locations of Facility components would depend upon results from outstanding technical studies and design (e.g. civil design and interconnection studies) and ongoing stakeholder consultations which may require changes to the Facility configuration to either minimize potential impacts to natural resources or to optimize Facility economics. Changes would be driven by Applicant's best management practices (BMPs), which are to site with the least disturbance necessary for the lowest impact feasible. A set of Construction Plans and Specifications would be provided to EFSEC for approval at least 60 days prior to the beginning of construction.

2.A.2.f. Major Equipment

Solar Modules. The photovoltaic solar modules, commonly known as solar panels, are the basic building blocks of the Facility. Each module is an assembly of photovoltaic cells, an electrical device that converts the energy of light directly into electricity by the photovoltaic effect. The Facility is currently designed to use a bifacial PV module, in which both sides of the module collect energy. This increases the output of each module by capturing additional energy from sunlight reflected off the ground to the back of the module.

Tracking System. The panels are mounted together into solar arrays on a steel racking system. The Facility would utilize a single-axis tracking system which turns slowly from east to west, tracking the sun throughout the day which increases electricity production. At maximum tilt, the panels may be up to thirteen feet above the ground.

Posts. The tracking system is secured to steel posts, also known as piles, which serve as the foundation. The piles are driven or screwed into the ground to a depth of approximately five to nine feet depending on soil conditions. The spacing of the piles can range dramatically depending on the system design and foundation installment methods. Generally, piles are expected to be placed between 10 and 30 feet apart. The final layout and number of posts would be greatly influenced by the geotechnical conditions and the choice of racking manufacturer.

Cabling. Throughout the Facility, electric cables transmit the electric current produced by the solar arrays to pad-mounted inverters and transformers. Depending on site conditions, the cables may be buried at a depth of at least three feet or strung above-ground along the tracking system in cable trays.

Inverters and Transformers. The electricity produced by the panels is in direct current (DC) form and is converted by inverters into alternating current (AC). Each inverter is coupled with a medium voltage step-up transformer to increase the voltage of the power to a medium voltage of 34.5 kV which minimizes losses for collection of the power to the Facility Substation. The inverters and step-up transformers are mounted on concrete pads throughout the Facility.

Collector Lines. The transformers would be linked throughout the Facility via 34.5 kV collector lines which transmit the power to the Facility Substation. The collector lines would be strung overhead or buried at a depth of approximately three feet, pending final design.

Facility Substation. The Facility Substation is the final stop for the power on its way to the electrical grid. The Facility Substation consists of the main step-up transformer to increase the voltage to 115 kV for interconnection to the grid and the control house which houses protective equipment including communications equipment, circuit breakers, disconnect switches and relays. As currently designed, the Facility Substation would be situated on approximately 0.5 acres.

Operations and Maintenance Building. The Facility may include an Operations and Maintenance (O&M) building which would consist of a single-story structure with office space, warehousing space, a bathroom and breakroom facilities. Water would be provided by a new well or stored in aboveground water tanks brought in from offsite. Wastewater would drain into an onsite septic system. Electric service would be provided by the Benton Rural Electric Association, the local service provider. A graveled parking area with at least three spaces for employees and visitors would be located adjacent to the building. Relevant building permits would be obtained for the O&M building, including for the well and septic system. This includes a Yakima County Water Resource System (YCWRS) domestic well permit, Yakima County Health District permit for an onsite septic system, and general County building permit for the O&M building structure (see Section 3.6 (Water Quantity – Water Use) and the Land Use Consistency Review (Attachment A) for additional permitting details).

Access and Service Roads. The Facility would be accessed via a private road off State Route 24. The private road heads north from SR-24 directly across from Morris Lane at approximately 46°31'13.37" N, 120°13'48.66" W. This access road would lead to the main point of entry to the Facility which is approximately 300 feet to the north of SR-24, as currently designed. From the entrance to the Facility, internal service roads would be built to provide access to the inverters and transformers and around the perimeter of the Facility.

All roads including the access road would be built to fire code standards as set by the Yakima County Fire Marshal's Office. Roads would be constructed of an all-weather road surface, have a minimum width of 20 feet and approved turning radii and turnarounds. The final layout would be provided to the Yakima County Fire Marshal's Office. The Applicant has consulted with the Yakima County Fire Marshal's Office, providing them with the Preliminary Site Layout and the commitments made in this ASC related to fire planning.

The existing approach off SR-24 would be upgraded to accommodate the Facility. The Applicant has consulted with the Washington Department of Transportation (WSDOT) regarding the preferred approach and the necessary permits required for upgrading it. The Applicant would obtain a General Permit from WSDOT prior to upgrading the approach.

Fences, Gates and Security Lighting. The Facility would be enclosed by a perimeter chain-link fence up to eight feet in height and raised four inches above grade, per WDFW recommendations. Access to the Facility would be gated and locked with gates 20 feet in width with accessible hardware per fire department requirements.

Lighting is needed for security and occasional after-hours work, however the Applicant would limit the amount of lighting and would shield lighting as needed.

Battery Energy Storage System. The Facility includes an optional battery energy storage system (BESS). The BESS would not exceed the nominal capacity of the Facility, which is 80 megawatts AC. BESS systems installed with generation facilities can be designed as an AC-coupled system or a direct current (DC)-coupled system for front-of-the-meter applications such as this Project. As currently designed, the BESS is DC-coupled, meaning it is located downstream of the solar inverters and the power output of the storage system would be limited by the individual inverters that the batteries are connected to, charging solely off power produced by the solar Facility.

While a BESS system offers a wide spectrum of critical grid services from energy power generation to energy capacity to accessory power functions to resiliency benefits, the benefit of a BESS system at Goose Prairie would be to store and smooth the renewable generation. Storing excess solar-generated electricity and supplying it back to the grid or to local loads when needed would offer a wide array of benefits, such as reducing renewable curtailments, avoiding negative wholesale power prices coincident with wind and solar over-generation, and limiting price spikes related to evening peak ramping needs. Co-locating batteries with solar allows system owners to more predictably manage the power supplied to the grid.

The Facility may use one of two options for battery technology: lithium-ion or flow batteries. The BESS system would hold power in a series of modular, self-contained containers (typically steel). The flow battery technology uses an electrolyte solution circulated through two tanks. While not considered a hazardous material, the electrolyte solution would be contained within the encased steel container in the unlikely case of a leak. The lithium-ion battery technology is composed of individual cells that are hermetically sealed and would not be opened onsite for any installation or maintenance purposes and do not have any wastewater discharges. Lithium-ion batteries contain flammable liquids that can become heated during operation. Accordingly, each lithium-ion BESS would contain a fire suppression system in accordance with Fire Code and National Fire Protection Association (NFPA) standards; specifically, NFPA 855 – "Standard for the Installation of Stationary Energy Storage Systems." The BESS would include monitoring equipment and alarm systems with remote shut-off capabilities. Installation, maintenance, and decommissioning of BESS components would be done in compliance with 49 CFR §173.185, which regulates the transportation of lithium-ion batteries. The Facility would use thoroughly proven, financeable batteries, inverters, and related equipment, including battery products that are listed or certified by Underwriters Laboratory (UL), the industry's foremost safety and sustainability third-party standard. See Section 4.13 (Environmental Health) for further discussion of emergency safety measures for the Facility.

The key driver for whether the BESS system would be included in the Facility final design is contingent upon pending commercial discussions with the Facility's long-term energy off-taker.

2.A.2.g. Construction

Facility construction is estimated to take nine to twelve months. At peak construction the Facility would employ up to 300 workers. All features would be designed in accordance with Washington State and Yakima County regulations, including those for erosion, sediment control and stormwater. Additionally, the Applicant will obtain an Electrical Construction Permit from the Washington Department of Labor and Industries.

During the first 30 days there would be clearing and grubbing activities and grading of access roads. Construction personnel would be limited to less than approximately 20 workers during this period. Once the facility construction begins, the onsite head count would begin to increase and peak at approximately 300 workers. During the final 30-day period, the electrical work would be completed, and the headcount would begin dropping back to approximately 30 workers. After construction there would be some additional onsite work for plant start-up and testing and would involve utility company personnel.

Vehicle traffic for onsite personnel is expected to be at a ratio of 0.5 vehicles per worker with arrival times being spread across a two-hour window in the mornings. The delivery of materials should not exceed twenty deliveries per day at peak and would taper off significantly once all the panels and trackers are onsite.

Fugitive dust emissions from the site would typically be generated only from the vehicular traffic on the access roads during the construction period. The Applicant would minimize fugitive dust emissions as described in Section 4.2 (Air Quality).

The Facility would require the typical equipment used in many construction projects. Because solar farms are low to the ground, there is very minimal work performed at great heights. The installation work would be performed utilizing the following equipment: skid steers, light dozers, excavators, pile drivers, reach fork lifts, light duty utility vehicles, heavy duty utility vehicles and delivery trucks.

The Applicant will develop a detailed Construction Management Plan addressing the primary site preparation and construction phases and based generally on mitigation measures as summarized in Section 2.A.5. The plan will be submitted to EFSEC at least 60 days prior to site preparation. The Applicant will also provide EFSEC with an overall construction schedule at least 30 days prior to site preparation. Finally, at least 60 days prior to construction, the Applicant will provide EFSEC with a set of construction plans, specifications, drawings and design documents that demonstrate the Facility is in compliance with conditions of the Site Certificate Agreement.

2.A.2.h. Operations and Maintenance

The expected life of the Facility is assumed to be 35 years. However, depending on the commercial market for renewable energy, the Facility could be updated with more efficient components over time which could extend its useful life. Minimal on-site maintenance would be required over the life of the Facility. Routine maintenance checks on the equipment would occur quarterly. Routine mowing and spot treatment for invasive grasses would occur in the spring and the fall and would follow the plan outlined in the Vegetation and Weed Management Plan (Attachment D). Additional maintenance would occur as needed, but it is not anticipated that any full-time staff would be employed by the Facility.

2.A.2.i. Site Restoration

Per WAC 463-72-040, the Applicant would develop an Initial Site Restoration Plan and submit this plan to EFSEC at least 90 days prior to the beginning of site preparation. The plan would identify, evaluate, and resolve all major environmental and public health and safety issues reasonably anticipated. The plan would describe the process used to evaluate the options and select measures that would be taken to restore or preserve the site or otherwise protect all segments of the public against risks or danger resulting from the site. The plan would include a discussion of economic factors regarding the costs and benefits of various restoration options versus the relative public risk and would address provisions for funding or bonding arrangements to meet the restoration or management costs. The objective of the plan would be to restore the site to approximate pre-Facility condition or better. The plan would include provisions for removal of the solar panels and racking system, foundations, cables, and other facilities to a depth of four feet below grade, and restoration of any disturbed soils to the pre-construction condition.

Due to the limited ground disturbance and anticipated benefits to local soil quality, the Facility Area would be returned to agricultural use following decommissioning of the Facility, at the landowner's discretion.

2.A.2.j. Socioeconomic Review

Per WAC 463-60-535 and instruction from EFSEC, the Applicant has prepared a Socioeconomic Review (Attachment P). The document contains information about population and labor force impacts and housing. Even at peak construction, the Facility will not require enough workers to significantly impact the overall unemployed labor force in Yakima County. There are sufficient laborers for Facility construction and operations within a reasonable commuting distance. Any non-local hires may commute from within Yakima County or the Tri-Cities area or they may relocate temporarily. There is sufficient capacity to house any temporary workers in hotels, motels or RV parks.

2.A.2.k. Project Schedule, Employees and Public Access

Phase	Proposed Timing	Duration	Employee numbers on site & frequency	Public Access (yes/no)
Site preparation	Mar 2022	30 days	<20	No
Construction	Apr-Dec 2022	270 days	Estimated max of 300	No
Operation/use	Dec 31, 2022	35 years	None full-time	No
Closure/reclamation	End of life	6-8 weeks	TBD	No

A detailed Construction Schedule would be submitted to EFSEC at least 30 days prior to start of site preparation.

2.A.3. Phased and Future Projects

Is this project an addition, continuation, or expansion of a previous proposal or are there other related actions planned?
☒ No ☐ Yes

2.A.4. Site Maps

Map #	Map Name	Purpose and Description	Status
Attachment B	Preliminary Site Plan	Shows layout of both existing structures and proposed Facility structures. This plan also includes a vicinity map, existing easements, adjacent land uses, proposed and required setbacks, the location of adjacent roadways and the access road, and the locations of water features.	Prelim
Attachment E, Map 1	Soil Map	Underlying soils per NRCS Soil Conservation Survey.	Yes
Attachment E, Map 2	Topographic Map	Shows the existing grade.	Yes
Attachment E, Map 3	Geological Hazards and Critical Aquifer Recharge Areas Map	County-provided data for geological hazards and Critical Aquifer Recharge Areas (CARA). Note that the data for these areas is not based on ground-truthed surveys. Please see the Geotechnical Site Investigation and Geohazards/Critical Areas Report (Attachment L) and Section 4.1 (Earth) for more information.	Yes
Attachment E, Map 4	Habitat Map	Habitat types identified in the Wildlife and Habitat Study Report (Attachment F).	Yes
N/A	Wildlife Map (Confidential)	Please see the Wildlife and Habitat Survey Report (Attachment F).	Yes
N/A	Cultural Resources (Confidential)	Please see the Cultural Resources Survey Report (Attachment H).	Yes

2.A.5. Mitigation Measure Summary

Mitigation Measure	**Description**	**Expert agency participation**
Earth		
Implementation of Geotechnical Recom-mendations	The Applicant would follow all geotechnical recommendations provided by GN Northern in section 14 of the Geotechnical Site Investigation and Critical Areas/Geohazards Report.	GN Northern, Inc.
Best Management Practices - Erosion	The Applicant would implement an Erosion and Sediment Control Plan (ESCP) and a Construction Phase SWPPP and Operations Phase SWPPP. These plans would address stormwater runoff, flooding, and erosion to assure compliance with state and federal water quality standards. The ESCP would include BMPs such as the appropriate use of silt fencing to avoid or eliminate runoff of contaminants. The SWPPP would include BMPs from the Department of Ecology's Stormwater Management Manual for Eastern Washington. The Vegetation and Weed Management Plan would be implemented to revegetate temporarily impacted areas and minimize erosion.	Ecology
Building Permits	The Applicant would obtain all necessary permits including a Building Permit and a Grading and Excavation Permit. The seismic design parameters to be considered are in the 2015 International Building Code (IBC) and American Society of Civil Engineers (ASCE) 7-10 and ASCE 7-16; these are in compliance with the Washington State Building Codes. The Facility would comply with the current codes at the time of construction, demonstrating compliance with WAC 463-62-020.	Yakima Planning Department and Washington State Building Code Council

<table>
<tr><th>Mitigation Measure</th><th>Description</th><th>Expert agency participation</th></tr>
<tr><td colspan="3">Air Quality</td></tr>
<tr><td>Best Management Practices - Air Quality</td><td>Washington Administrative Codes (WAC) addressing air quality include:
WAC 173-400-040(3) Fallout.
WAC 173-400-040(4–4a) Fugitive emissions.
WAC 173-400-040(5) Odors.
WAC 173-400-040(9)(a) Fugitive Dust.
To adhere to these codes, the Facility would implement BMPs and standard construction practices, including the following:
Graveling, watering or other fugitive dust-abatement measures would be used as needed to control fugitive dust generated during construction. When applied, Applicant would use water or a water-based environmentally safe dust palliative such as lignin for dust control.
Vehicles and equipment used during construction would be properly maintained to minimize exhaust emissions.
Operational measures such as limiting engine idling time and shutting down equipment when not in use would be implemented.
Construction materials that could be a source of fugitive dust would be covered when stored.
Traffic speeds on unpaved roads would be limited to 25 miles per hour to minimize generation of fugitive dust.
Truck beds would be covered when transporting dirt or soil.
Carpooling among construction workers would be encouraged to minimize construction-related traffic and associated emissions.
Erosion-control measures would be implemented to limit deposition of silt to roadways, to minimize a vector for fugitive dust.
Replanting or graveling disturbed areas would be conducted during and after construction to reduce wind-blown dust.</td><td>N/A</td></tr>
<tr><td colspan="3">Water Quality – Wetlands and Surface Waters</td></tr>
<tr><td>Avoidance</td><td>No wetland features exist within the Facility Area Extent. The stream features that are present are Type 5 streams which do not require a buffer per Yakima County Code. The Facility has been designed to maintain a 50-foot buffer from these streams in order to avoid, reduce or eliminate impacts to the delineated streams. The Facility has no impacts to wetlands and is consistent with WAC 463-62-050.</td><td>N/A</td></tr>
</table>

Mitigation Measure	Description	Expert agency participation
Stream Crossing Design	The stream crossing will be designed to minimize permanent impacts per YCC 16C.06.13, YCC 16C.06.17 and WAC 220-660-190, including: • Location and alignment of the proposed road crossing to minimize impacts to the stream corridor. • Excavated material not used to achieve the design grade shall be removed from the stream corridor. • Stream crossing structure (i.e., bridge or culvert) will be sized to accommodate ordinary high water or other design flow, sediment, and woody debris. • Site restoration and revegetation.	Ecology, WDFW
Best Management Practices - Stream Crossing Construction	The Applicant will implement BMPs during construction of the bridge or culvert as described at WAC 220-660-120 and in the Stormwater Management Manual for Eastern Washington. These measures include: • Stage materials and equipment to prevent contamination of Waters of the State • Develop and implement a Construction Phase Stormwater Pollution Prevention Plan (SWPPP), an Erosion and Sediment Control Plan (ESCP), and a Construction Phase Spill Prevention, Countermeasures, and Control (SPCC) Plan • Installation and maintenance of temporary erosion and sediment control measures including the appropriate use of silt fencing • Complete all work when no water is present	Ecology, WDFW
Hydraulic Project Approval	If deemed necessary following discussions with WDFW, the Applicant would obtain an HPA permit for the bridge or culvert from WDFW per WAC 20-660-050.	WDFW
Water Quality—Stormwater Runoff		
Construction Stormwater General Permit	In compliance with WAC 173-200, the Applicant would obtain a Construction Stormwater General Permit (CSWGP) from Ecology. The CSWGP requires an Erosion and Sediment Control Plan (ESCP) and a SWPPP. Additionally, the Applicant would provide Yakima County with a Stormwater Plan in compliance with YCC 12.10.210.	Ecology

Mitigation Measure	Description	Expert agency participation
Best Management Practices - Stormwater	The ESCP and SWPPPs would address stormwater runoff, flooding, and erosion to assure compliance with state and federal water quality standards. The ESCP would include BMPs such as the appropriate use of silt fencing to avoid or eliminate runoff of contaminants. The SWPPPs would include BMPs from the Department of Ecology's Stormwater Management Manual for Eastern Washington. The Vegetation and Weed Management Plan would be implemented to revegetate temporarily impacted areas and minimize erosion.	Ecology
Preventative procedures to avoid spills	Substantial quantities of oils, fuels, and other potential contaminants are not expected to be stored on-site during construction or operation. The Applicant would prepare a Construction Phase Spill Prevention, Control, and Countermeasures (SPCC) Plan, consistent with requirements of 40 CFR Part 112, to prevent spills during construction and to identify measures to expedite the response to a release if one were to occur. Preventative procedures and rapid response measures would address/prevent potential water quality issues. The Applicant would also prepare an Operations Phase SPCC Plan in consultation with Ecology and pursuant to the requirements of CFR Part 112, Sections 311 and 402 of the Clean Water Act, Section 402 (a)(1) of the Federal Water Pollution Control Act, and RCW 90.48.080.	N/A
Plants		
Habitat Restoration and Mitigation Plan	The Applicant would develop and implement a Habitat Restoration and Mitigation Plan in consultation with WDFW and EFSEC. The Plan would detail the implementation of mitigation measures for impacts to the shrub-steppe habitat, including identification of the seed mixes that will be used for revegetation.	WDFW

Mitigation Measure	**Description**	**Expert agency participation**
Best Management Practices - Special Status Plant	During construction, existing trees, vegetation, and wildlife habitat would be protected and preserved to the extent practical. The Applicant would implement the Vegetation and Weed Management Plan (Attachment D). Noxious weeds would be controlled in compliance with RCW 17.10.140. All herbicide and pesticide applications would be conducted in accordance with manufacturer instructions and all federal, state, and local laws and regulations; herbicides and pesticides would only be directly applied to localized spots and would not be applied by broadcasting techniques (RCW 17.21). Additionally, gravel for the Facility would be procured from a certified weed-free source. The Applicant would implement the Construction Stormwater Pollution Prevention Plan (SWPPP) and Operations SWPPP to reduce erosion.	WDFW

Mitigation Measure	Description	Expert agency participation
Wildlife		
Avoidance Measures	During siting and design, the Applicant took several measures to avoid and minimize impacts to wildlife and habitat. The Applicant has been in consultation with WDFW on this Facility since September 2017. Section 1b of the Habitat Mitigation Memo (Attachment R) includes a detailed history of this consultation. Avoidance measures include site selection screening focused on previously developed, or degraded sites such as the high-intensity agricultural region of the Moxee Valley, where the Facility is located. Based on WDFW feedback, the Applicant moved the site from one with greater potential impacts to Priority Habitat and Species to the current site. Siting the Facility immediately adjacent to the interconnecting transmission line avoids the construction of additional high-voltage transmission lines and accompanying habitat disturbance. Additionally, the Facility will avoid – and leave unfenced – the shrub-steppe sage draw located in between the northern and southern portions of the Facility (see Figure 4.9-3). The only Facility components in this area will be the collector electrical infrastructure and civil road infrastructure necessary to connect the Facility. Avoidance PV and fencing componentry in this approximately 62-acre area maintains higher-value habitat and leaves the corridor open for terrestrial movement and wildlife connectivity function.	WDFW
Minimization Measures	To minimize impacts to meso-carnivores and small mammals, the Facility has committed to raising the bottom of the fence by four inches above grade. To minimize impacts to birds and animals that attempt to jump the fence, razor wire will not be used with the fence. These fence specifications are in direct response to WDFW request. To minimize impacts to intact shrub-steppe, the proposed facilities north of the sage draw are intentionally located on areas of lower quality shrub-steppe habitat while avoiding other areas of intact shrub-steppe habitat to the extent practical. During construction, existing trees, vegetation, and wildlife habitat would be protected and preserved to the extent practical.	WDFW

Mitigation Measure	Description	Expert agency participation
Best Management Practices - Wildlife and Habitat	Unnecessary lighting would be turned off at night to limit attraction of migratory birds. This includes downward-directed lighting to minimize horizontal or skyward illumination, and avoidance of steady-burning, high-intensity lights. Where applicable, the Project's above-ground power lines are designed and constructed to minimize avian electrocution, according to guidelines outlined in Avian Power Line Interaction Committee standards (APLIC, 2012). Noxious weeds would be controlled in compliance with RCW 17.10.140 and the Vegetation and Weed Management Plan (Attachment D). All herbicide and pesticide applications would be conducted in accordance with manufacturer instructions and all federal, state, and local laws and regulations; herbicides and pesticides would only be directly applied to localized spots and would not be applied by broadcasting techniques (RCW 17.21). Construction activities would only occur between the hours of 7 am and 10 pm in accordance with WAC 173-60-050 which would limit the impacts of construction noise to wildlife. Prior to construction, all supervisory construction personnel would be instructed on wildlife resource protection measures, including: 1) applicable federal and state laws (e.g., those that prohibit animal collection or removal); and 2) the importance of these resources and the purpose and necessity of protecting the resources, and ensuring this information is disseminated to applicable contractor personnel, including the correct reporting procedures. Construction personnel would be trained in the following areas when appropriate: awareness of sensitive habitats and bird species, potential bird nesting areas, potential bat roosting/breeding habitat, and general wildlife issues. Appropriate stormwater management practices in accordance with the SWPPPs that do not create attractions for birds and bats would be implemented. The Applicant would prepare an Erosion and Sediment Control Plan (ESCP) which would include BMPs to minimize surface water runoff and soil erosion.	WDFW

Mitigation Measure	Description	Expert agency participation
	The Applicant would prepare Spill Prevention, Control and Countermeasures (SPCC) Plans to be implemented during construction and operation to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the release. Vehicle speeds would be limited to 25 mph to avoid wildlife collisions. Fire hazards from vehicles and human activities would be reduced (e.g., use of spark arrestors on power equipment, avoiding driving vehicles off roads, allowing smoking in designated areas only; WAC 463-60-352). The Applicant would prepare Fire Control Plans in consultation with the Yakima County Fire Marshal and the East Valley Fire Department. Following decommissioning, reclamation of the Facility Area shall begin as quickly as possible to reduce the likelihood of ecological resource impacts in disturbed areas.	
Compensatory Mitigation	In order to achieve “no net loss of habitat functions and values” as required by WAC 463-62-040, the Applicant proposes to coordinate with WDFW and EFSEC to determine an appropriate compensatory mitigation payment. The Applicant has prepared a Habitat Mitigation Memo (Attachment R), which provides context for determining the additional mitigation required to achieve “no net loss.” The Applicant proposes to begin meeting with WDFW and EFSEC within 15 business days of the submission of this ASC, aimed at conclusion of the discussion within 60 days of the first meeting and prior to completion of SEPA review. Once determined, the agreed-upon mitigation will be provided as supplemental information to this Section 4.9 to inform the SEPA determination and the EFSEC recommendation.	WDFW
Habitat Restoration and Mitigation Plan	The Applicant would prepare a Habitat Restoration and Mitigation Plan in consultation with EFSEC and WDFW. The plan would specify the mitigation obligations and implementation plans, including those for construction, operations and decommissioning. Additionally, the plan would include details for revegetation of temporarily disturbed areas, including identification of an appropriate native plant seed mixture for revegetation, the timing for restoration and a plan for monitoring the success of revegetation. The plan would address the requirements of	WDFW

Mitigation Measure	Description	Expert agency participation
	YCC 16C.11.070 and WAC 463-60-332(3). The plan would be finalized following issuance of the SCA and submitted to EFSEC for approval at least sixty days prior to site preparation.	
Environmental Health—Hazardous Materials		
Emergency Plans	The Applicant would develop a set of emergency plans including 1) a Construction Phase Emergency Plan, 2) a Construction Phase Fire Control Plan, 3) a Construction Phase Health and Safety Plan, 4) an Operations Phase Emergency Plan, 5) an Operations Phase Fire Control Plan, and 6) an Operations Phase Health and Safety Plan. More information on what each plan would contain and the submittal timeline is provided in Section 2.A.6. A copy of the plans would be maintained onsite in the operations and maintenance building and provided to local emergency services.	Yakima County Sheriff's Office East Valley Fire Department - Yakima County Fire District #4. Yakima County Fire Marshal's Office
Best Management Practices - Fire Prevention	To minimize the risk of fire or explosions, the Facility would implement Best Management Practices including: • Construction equipment would have spark-arresting mufflers, heat shields, and other protection measures to avoid starting fires. • Fire extinguishers would be available in vehicles and on equipment and work crews would be trained in fire avoidance and response measures. • During construction, water would be trucked on site and would be available for fire suppression should a fire occur. During operation, the Facility's proposed domestic water well would be accessible by standard firefighting equipment and provide adequate water for the potential need of the Facility. Additionally, the Applicant would provide training to fire responders and construction staff on a recurring basis during the life of the Facility. The intent of the training would be to familiarize both responders and workers with the codes, regulations, associated hazards, and mitigation processes related to solar electricity and battery storage systems. This training also would include techniques for fire suppression of photovoltaic (PV) and BESS technology.	East Valley Fire Department

Mitigation Measure	**Description**	**Expert agency participation**
Use of approved herbicides	In compliance with RCW 17.10.140, the Applicant would only use herbicides that are approved for use in the state of Washington by the EPA and WSDA.	YakCo Noxious Weed Control Board
Battery Energy Storage System design	The proposed BESS option would contain a fire suppression system in accordance with fire code and National Fire Protection Association (NFPA) Standards, specifically NFPA 855 “Standard for the Installation of Stationary Energy Storage Systems.” The system would include monitoring equipment and alarm systems with remote shut-off capabilities.	NFPA
Noise, Light, Glare and Aesthetics		
Best Management Practices - Noise	WAC 173.60.050 exempts temporary construction noise from the state noise limits; however, some BMPs were considered to reduce off-site construction noise impacts. Since construction equipment operates intermittently, and the types of machines in use at the Facility change with the stage of construction, noise emitted during construction would be mobile and highly variable, making it challenging to control. The construction management protocols would include the following noise mitigation measures to minimize noise impacts: • Maintain all construction tools and equipment in good operating order according to manufacturers’ specifications; • Limit use of major excavating and earth-moving machinery to daytime hours; • To the extent practicable, schedule construction activity during normal working hours on weekdays when higher sound levels are typically present and are found acceptable. Some limited activities, such as concrete pours, would be required to occur continuously until completion; • Equip any internal combustion engine used for any purpose on the job or related to the job with a properly operating muffler that is free from rust, holes, and leaks; • For construction devices that utilize internal combustion engines, ensure the engine’s housing doors are kept closed, and install noise-insulating material mounted on the engine housing consistent with manufacturers’ guidelines, if possible; • Limit possible evening shift work to low noise activities such as welding, wire pulling, and other	N/A

Mitigation Measure	Description	Expert agency participation
	similar activities, together with appropriate material handling equipment; and • Utilize a complaint resolution procedure to address any noise complaints received from residents.	
Best Management Practices – Light, Glare and Aesthetics	The Facility will implement BMPs including: • Downward-directed lighting to minimize horizontal or skyward illumination, and avoidance of steady-burning, high-intensity lights. • Utilizing solar panels with an anti-reflective coating to minimize glare. • Maintenance of revegetated surfaces until the vegetation has been established.	N/A
Archaeological and Historical Resources, Cultural Resources		
Avoidance of protected sites and/or DAHP permits	The Facility has been designed to avoid direct impacts to all cultural resources that are eligible for listing on the NRHP or protected by the WHR when feasible. As currently designed, the Facility has no direct impacts to such resources. However, as the design progresses, the Facility layout may be changed such that impacts to the resources that are protected by WHR are created. Site 45YA01808 in particular may be impacted by the Facility. The Applicant would continue to communicate with the Yakama Nation regarding the archaeological sites and the potential impacts of the Facility on these sites. If any WHR-protected site is impacted by the Facility, the Applicant would obtain a DAHP excavation permit and perform all necessary archaeological work in order to comply with RCW 27.53.	DAHP; Yakama Nation
Unanticipated Discovery Plan	In the event unrecorded archaeological resources are identified during Facility construction or operation, work within 30 meters (100 feet) of the find would be halted and directed away from the discovery until it can be assessed in accordance with steps in the Unanticipated Discovery Plan provided as Appendix G of King et al. (2020) (Attachment H). The plan is in accordance with RCW 27.53.060 and RCW 27.44.040 protecting archaeological resources and Indian graves.	DAHP; Yakama Nation
Ongoing Communication with Yakama Nation	The Applicant will continue to communicate with the Yakama Nation regarding tribal resources that may be affected by the Facility. Additionally, the Applicant would continue to coordinate with the Yakama Nation regarding final design in relation to pre-contact archaeological sites. Lines of communication would remain open to better	Yakama Nation

Mitigation Measure	Description	Expert agency participation
	facilitate any response to unanticipated discoveries during construction.	
Traffic and Transportation		
WSDOT Permits	Per WAC 468-51, the Applicant will obtain a General Permit from WSDOT to upgrade the portion of the approach off State Route 24 that is within the WSDOT Right-of-Way. A permit would be obtained for heavy or oversized loads in accordance with WSDOT regulations including RCW 46.44 and WAC 468-38.	WSDOT
Traffic Control Plan	A Traffic Control Plan would be prepared in consultation with WSDOT for traffic management during improvement of highway access. This plan would contain measures to facilitate safe movement of vehicles in the vicinity of the construction zone and would be in accordance with 23 CFR §655 Subpart F provides for the Federal Highway Administration to maintain the Manual on Uniform Traffic Control Devices for Streets and Highways, which defines standards for traffic control	WSDOT

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2.A.6. Project Plans and Submittals

Submittal Name	Description	Submittal Timing	Expert agency participation	ASC Section References
Vegetation and Weed Management Plan	The Vegetation and Weed Management Plan addresses vegetation management activities related to the Facility construction and operation and specifically methods that will be implemented for effective noxious weed control and revegetation.	With ASC	Consultation with Yakima County Noxious Weed Control Board	Sections 2.A.2, 2.B.1.b, 3.7, 4.1, 4.5, 4.8, 4.9 and 4.13
Initial Site Restoration Plan	Per WAC 463-72-040, the Applicant would develop an Initial Site Restoration Plan. The plan would identify, evaluate, and resolve all major environmental and public health and safety issues reasonably anticipated. The plan would describe the process used to evaluate the options and select measures that would be taken to restore or preserve the site or otherwise protect all segments of the public against risks or danger resulting from the site. The plan would include a discussion of economic factors regarding the costs and benefits of various restoration options versus the relative public risk and would address provisions for funding or bonding arrangements to meet the restoration or management costs. The objective of the plan would be to restore the site to approximate pre-Facility condition or better. The plan would include provisions for removal of the solar panels and racking system, foundations, cables, and other facilities to a depth of four feet below grade, and restoration of any disturbed soils to the pre-construction condition.	90 days prior to site prep	EFSEC and Department of Ecology	Sections 2.A.2.i and 3.11

Submittal Name	Description	Submittal Timing	Expert agency participation	ASC Section References
Construction Stormwater General Permit (CSWGP) Notice of Intent (NOI)	In compliance with WAC 173-200, the Applicant would obtain a Construction Stormwater General Permit (CSWGP) from Ecology. The CSWGP requires an Erosion and Sediment Control Plan (ESCP) and a SWPPP.	60 days prior to site preparation	N/A	Sections 3.7 and 4.5
Erosion and Sediment Control Plan (ESCP)	The ESCP would be prepared to control erosion and sediment discharges during construction and would include BMPs as the appropriate use of silt fencing to avoid or eliminate runoff of contaminants.	60 days prior to site preparation	Comment from Ecology	Sections 3.7, 4.1, 4.3, 4.5 and 4.9
Construction Phase Stormwater Pollution Prevention Plan (SWPPP)	The Construction Phase SWPPP would be based on Ecology's SWPPP template and would address stormwater runoff, flooding, and erosion to assure compliance with state and federal water quality standards. The SWPPP would include BMPs from the Department of Ecology's Stormwater Management Manual for Eastern Washington.	60 days prior to site preparation	Comment from Ecology	Sections 3.7, 4.1, 4.3, 4.5 and 4.9

Submittal Name	Description	Submittal Timing	Expert agency participation	ASC Section References
Construction Phase Spill Prevention, Control and Countermeasures (SPCC) Plan	The Construction Phase SPCC Plan would be prepared to prevent spills during construction and to identify measures to expedite the response to a release if one were to occur. Preventative procedures and rapid response measures would address/prevent potential water quality issues. The plan will be prepared pursuant to the requirements of CFR Part 112, Sections 311 and 402 of the Clean Water Act, Section 402 (a)(1) of the Federal Water Pollution Control Act, and RCW 90.48.080.	60 days prior to site preparation	Comment from Ecology	Sections 4.3, 4.5, 4.9 and 4.13
Construction Phase Emergency Plan	The Construction Phase Emergency Plan would include consideration of the following, in a level of detail that is commensurate with the nature and probability of risk: a) medical emergencies, b) construction emergencies, c) site evacuation, d) fire protection and prevention, e) flooding, f) extreme weather abnormalities, g) earthquakes, h) volcanic eruption, i) Facility blackout, j) Hazardous materials spills, k) terrorism, sabotage, or vandalism; and l) bomb threats.	60 days prior to site preparation	Consultation with Yakima County Sheriff's Office, the Yakima County Fire Marshal and the East Valley Fire Department	Sections 3.21 and 4.13
Construction Phase Fire Control Plan	The Construction Phase Fire Control Plan would help minimize the risk of accidental fire during construction and ensure an effective response to any fire that does occur.	60 days prior to site preparation	Consultation with Yakima County Sheriff's Office, the Yakima County Fire Marshal and the East Valley Fire Department	Sections 3.21 and 4.13

Submittal Name	Description	Submittal Timing	Expert agency participation	ASC Section References
Construction Phase Health and Safety Plan	The Construction Phase Health and Safety Plan would describe the health and safety hazards at the Facility during construction, preventative measures and procedures to take when accidents occur.	60 days prior to site preparation	Consultation with Yakima County Sheriff's Office, the Yakima County Fire Marshal and the East Valley Fire Department	Sections 3.21 and 4.13
Habitat Restoration and Mitigation Plan	The Habitat Restoration and Mitigation Plan would specify the mitigation obligations and implementation plans, including those for construction, operations and decommissioning. Additionally, the plan would include details for revegetation of temporarily disturbed areas, including identification of an appropriate native plant seed mixture for revegetation, the timing for restoration and a plan for monitoring the success of revegetation. The plan would address the requirements of YCC 16C.11.070 and WAC 463-60-332(3).	60 days prior to site preparation	Consultation with EFSEC staff and WDFW	Sections 4.8 and 4.9
Traffic Control Plan	A Traffic Control Plan would be prepared for traffic management during improvement of highway access. This plan would contain measures to facilitate safe movement of vehicles in the vicinity of the construction zone and would be in accordance with 23 CFR §655 Subpart F provides for the Federal Highway Administration to maintain the Manual on Uniform Traffic Control Devices for Streets and Highways, which defines standards for traffic control	60 days prior to site preparation	Consultation with WSDOT	Sections 2.B.10 and 4.20

Submittal Name	Description	Submittal Timing	Expert agency participation	ASC Section References
Construction Management Plan	The detailed Construction Management Plan addressing the primary site preparation and construction phases and based generally on mitigation measures as summarized in Section 2.A.5.	60 days prior to site preparation	Consultation with EFSEC	Section 2.A.2.g
Construction Schedule	Overall construction schedule	30 days prior to site preparation		Sections 2.A.2.g and 2.A.2.k
Construction Plans and Specification	A set of construction plans, specifications, drawings and design documents that demonstrate the Facility is in compliance with conditions of the Site Certificate Agreement	60 days prior to construction	Agency comment as requested by EFSEC	Section 2.A.2.g
Operations Phase SWPPP	The Operations Phase SWPPP would be based on Ecology's SWPPP template and would address stormwater runoff, flooding, and erosion to assure compliance with state and federal water quality standards. The SWPPP would include BMPs from the Department of Ecology's Stormwater Management Manual for Eastern Washington.	60 days prior to commercial operations	Comment from Ecology	Sections 3.7, 4.1, 4.3, 4.5 and 4.9
Operations Phase SPCC Plan	The Operations Phase SPCC Plan would be prepared to prevent spills during operations and to identify measures to expedite the response to a release if one were to occur. Preventative procedures and rapid response measures would address/prevent potential water quality issues. The plan will be prepared pursuant to the requirements of CFR Part 112, Sections 311 and 402 of the Clean Water Act, Section 402 (a)(1) of the Federal Water Pollution Control Act, and RCW 90.48.080.	60 days prior to commercial operations	Comment from Ecology	Sections 4.3, 4.5, 4.9 and 4.13

Submittal Name	**Description**	**Submittal Timing**	**Expert agency participation**	**ASC Section References**
Operations Phase Emergency Plan	The Operations Phase Emergency Plan would include consideration of the following, in a level of detail that is commensurate with the nature and probability of risk: a) medical emergencies, b) operations emergencies, c) site evacuation, d) fire protection and prevention, e) flooding, f) extreme weather abnormalities, g) earthquakes, h) volcanic eruption, i) Facility blackout, j) Hazardous materials spills, k) terrorism, sabotage, or vandalism; and l) bomb threats.	60 days prior to commercial operations	Consultation with Yakima County Sheriff's Office, the Yakima County Fire Marshal and the East Valley Fire Department	Sections 3.21 and 4.13
Operations Phase Fire Control Plan	The Operations Phase Fire Control Plan would help minimize the risk of accidental fire during operations and ensure an effective response to any fire that does occur.	60 days prior to commercial operations	Consultation with Yakima County Sheriff's Office, the Yakima County Fire Marshal and the East Valley Fire Department	Sections 3.21 and 4.13
Operations Phase Health and Safety Plan	The Construction Phase Health and Safety Plan would describe the health and safety hazards at the Facility during operations, preventative measures and procedures to take when accidents occur.	60 days prior to commercial operations	Consultation with Yakima County Sheriff's Office, the Yakima County Fire Marshal and the East Valley Fire Department	Sections 3.21 and 4.13

2.A.7. Federal and State Requirements

Per WAC 463-60-297, Table 2-1 below lists the federal and state statutes, rules and permits applicable to the Facility. The Land Use Consistency Review (Attachment A) addresses local statutes and requirements.

Table 2-1: List of Federal and State Permits and Regulations Potentially Applicable to the Goose Prairie Solar Facility

Permit or Requirement	**Agency** **Code, Ordinance, Statute, Rule, Regulation, or Permit**	**Application Section**
Federal		
Threatened or Endangered Species	U.S. Fish and Wildlife Service Endangered Species Act of 1973 (16 USC, Section 1531, et seq.) and implementing regulations. Designates and provides for protection of threatened and endangered plants and animals and their critical habitat. Section 7, 9, and 10 Consultation under the Endangered Species Act and BGEPA	Sections 4.8 and 4.9
Migratory Birds	U.S. Fish and Wildlife Service Migratory Bird Treaty Act (16 USC, 703-711)	Sections 4.8 and 4.9
Bald Eagles	U.S. Fish and Wildlife Service Bald and Golden Eagle Protection Act (16 CFR 668-668c) Eagle permit regulations (50 CFR 22)	Sections 4.8 and 4.9
Air Quality	U.S. Environmental Protection Agency (EPA) Clean Air Act (40CFR 111)	Section 4.2
Waters of the United States	U.S. Army Corps of Engineers, Seattle District Clean Water Act of 1972 (40 CFR 230) Section 404	Not Applicable to this Facility; Section 4.3
State of Washington		
Electrical Construction Permit	Washington Department of Labor and Industries WAC 296-746A, Washington Department of Labor and Industries Safety Standards—Installing Electrical Wires and Equipment—Administration Rules	Section 2.A.2
Noise Control	Washington Department of Ecology RCW 70.107, Noise Control; WAC 173-58, Sound Level Measurement Procedures WAC 173-60, Maximum Environmental Noise Levels; WAC 463-62-030, Noise Standards	Section 4.16
Water Quality Storm Water Discharge	Washington Department of Ecology RCW 90.48, Water Pollution Control Act, establishes general stormwater permits for the Washington Department of Ecology National Pollutant Discharge Elimination System Permit Program WAC 173-201A, Washington Department of Ecology Water Quality Standards for Surface Waters of the State of Washington, which regulates water quality of surface waters Federal statute(s) and regulations implemented by the above state statute(s) and regulations include: Federal Clean Water Act, 42 USC 1251; 15 CFR 923-930	Sections 3.3, 3.4, 3.7 and 4.5

	Construction Stormwater General Permit Section 401 Water Quality Certificate	
Air Quality	Yakima Regional Clean Air Agency (in partnership with Department of Ecology) Yakima Regional Clean Air Agency Regulations (and related WAC-173)	Not Applicable to this Facility; Section 4.2
Fish and Wildlife	Washington Department of Fish and Wildlife WAC 220-610, defines State species status and protections WAC 232-12, Washington Department of Fish and Wildlife Permanent Regulations, provides information on classification of wildlife species, including "Priority Habitats and Species" RCW 77.55, Hydraulic Code for in-water work; Hydraulic Project Approval	Section 4.8 *(for WAC 220-610 and WAC 232-12)* Section 4.3 *(for the RCW 77.55 and Hydraulic Project Approval)*
Shorelines of the State	Washington Department of Ecology WAC 173-18, Shoreline Management Act, Streams and Rivers Constituting Shorelines of the State (Note EFSEC energy facility exemptions from Shoreline Act permitting requirements, RCW 90.58.14[9]) WAC 173-22, Adoption of Designations of Shorelands and Wetlands Associated with Shorelines of the State JARPA and shoreline conditional use permit (CUP) for fill in wetlands associated with Shorelines of the State	Shoreline Management Act not applicable to this Facility; Section 4.14 Shorelines of the State/ Shoreline Conditional Use Permit Not applicable to this Facility; Section 4.3
State Environmental Policy Act (SEPA)	RCW 43.21C, Washington Environmental Policy Act WAC 197-11, Washington Department of Ecology SEPA Rules, which establish uniform requirements for compliance with SEPA	Sections 3 and 4
Archaeology and Historic Preservation	Washington State Departments of Archaeology and Historic Preservation RCW 27.53, Archaeological Sites and Resources	Section 4.18
Energy Site Certification	Energy Facility Site Evaluation Council RCW 80.50 Energy Facilities – Site Locations	Site Certification Agreement, which generally addresses state regulatory requirements and County permits and regulations.
Transportation	Washington State Department of Transportation (WSDOT) WSDOT General Permit Oversize and Overweight Permit	Sections 2.B.10 and 4.20

2.B. Project and Site Information

2.B.1. Earth and Ground Disturbance

2.B.1.a. Soils and Slopes

Soil types	Willis silt loam, Finley cobbly fine sandy loam, Kiona stony silt loam, Moxee silt loam See the Soil Map (Attachment E, Map 1), for the locations of these soils within the Facility Area Extent.
Steepest slope	20.71% is the max slope of areas within the Facility Area Extent as currently designed.
Range of Slopes	0.1% - 20.7% See the Topographic Map (Attachment E, Map 2).

2.B.1.b. Demolition, Grade and Fill

Would any demolition or renovation occur during construction?	
☒ **No**	☐ **Yes**
	Method: N/A
	Waste Use or Disposal site: N/A

Would any demolition or renovation occur during operation?	
☒ **No**	☐ **Yes**
	Method: N/A
	Waste Use or Disposal Site: N/A

Would any grade, fill, or excavation in upland areas occur during construction?		
☐ **No**	☒ **Yes**	
	☒ Grading	Cubic yards proposed: Approximately 50,000 cubic yards
	☒ Filling (import material to site)	Cubic yards proposed: Approximately 25,000 cubic yards
		Source of fill: Applicant would specify the source of fill in the Construction Plans and Specifications which would be provided to EFSEC for approval at least 60 days prior to site preparation. Per the Vegetation and Weed Management Plan (Attachment D), the source would be

		certified weed-free by the Yakima County Noxious Weed Control Board.
	☐ Excavating (Export material off site)	Cubic yards proposed: N/A
		Disposal site or use: N/A

Would any grade, fill, or excavation in upland areas occur during operation?		
☒ **No**	☐ **Yes**	
	☐ Grading	Cubic yards proposed: N/A
	☐ Filling (import material to site)	Cubic yards proposed: N/A
		Source of fill: N/A
	☐ Excavating (Export material off site)	Cubic yards proposed: N/A
		Disposal site or use: N/A

Is fill or excavation proposed within surface waters, wetlands, or frequently flooded areas?		
☒ **No**	☐ **Yes**	
	☐ Fill	Cubic yards: N/A
	☐ Excavation/ Dredging	Cubic yards: N/A
	Describe area(s) where this would occur: N/A	

2.B.2. Surface Types and Acreage

Please see the Habitat Map (Attachment E, Map 4).

		Acreage or Square Feet	
Project Site Areas		**Pre-Construction, within full Area of Extent**	**Post-Construction, as currently designed**
Roads, buildings, and other impervious surfaces		0 acres	29.5 acres
Wetlands	**Emergent wetland**	0 acres	0 acres
	Scrub Shrub wetland	0 acres	0 acres
	Forested wetland	0 acres	0 acres
	Open Water *do not include any area already listed in previous categories*	0 acres	0 acres
Vegetated Uplands	**Croplands**	16.9 acres	0 acres
	Shrub-steppe - Intact	144.2 acres	39.5 acres
	Shrub-steppe - Degraded	40.5 acres	33.0 acres
	Eastside Grasslands	88.6 acres	64.9 acres
	Pasture Mixed Environs	14.2 acres	3.0 acres
Unvegetated *such as rock, earth, or fill*			
Other	**Ephemeral Streams**	4.3 acres	Less than 0.01 acres (one stream crossing which will be either a bridge or culvert)
	Conservation Reserve Program	484.5 acres	455.0 acres
TOTAL:		789.0 acres	595.4 acres

2.B.3. Plants and Habitats

Are there any plants or habitats present on the site?			
☐ None	☒ Yes See the Wildlife and Habitat Survey Report (Attachment F) for a more detailed description of the plants and habitats found within the Facility Area Extent.		
	Deciduous trees: *such as alder, maple, aspen*		
	☐ No	☒ Yes	
		Specify: A few isolated, stunted deciduous trees are located on the Meacham Property.	
	Evergreen trees: *such as fir, cedar, pine:*		
	☒ No	☐ Yes	
		Specify:	
	Shrubs, grass, pasture		
	☐ No	☒ Yes	
		Specify: Downy brome, wheatgrass, fescue species, various mustards, salsify, hawksbeard, redstem filaree, annual Jacob's ladder and yarrow.	
	Shrub-steppe: *such as sage brush, native grasses*		
	☐ No	☒ Yes	
		Specify: Big sagebrush, threetip sagebrush, spingy hopsage, buchwheat shrubs and desert parsley.	
	Wet soil plants: *such as cattail, buttercup, bulrush, skunk cabbage*		
	☒ No	☐ Yes	
		Specify:	
	Water plants: *such as water lily, eelgrass, milfoil*		
	☒ No	☐ Yes	
		Specify:	
	Other vegetation types:		
	☐ No	☒ Yes	
		Specify: Some "Pasture and Mixed Environs" areas with vegetation that is heavily trampled and soils impacted from cattle and vehicle usage. Bare ground with patches of low bunchgass and scattered, degraded shrub cover characterized this area.	

	Other habitat types:			
	☒ **No**	☐ **Yes**		
		Specify:		
	Do you know of any at-risk plant species on the site: • *Threatened or endangered* • *Species of local importance* • *Federal or state listed* • *Federal or state priority* • *Tribal-specific plant resources present on the site where abundance is limited elsewhere*			
	☐ **None known**	☒ **Yes**		
		Species Name	**Listing Status**	
		Likely to occur: Columbia milkvetch, pauper milkvetch, bristle-flowered collomia, dwarf mooncup and Hoover's biscuitroot	Special status	
		Possible to occur: Cottonball cryptantha, desert cryptantha, bristly cryptantha, coyote tobacco and tufted evening-primrose	Special status	
	Name the sources that were checked, or work done to identify the at-risk species: Western Ecosystems Technology, Inc.(WEST) issued a memo titled "Review of Rare Plant Occurrence and Big Game Movement at the Goose Prairie Solar and Storage Project, Yakima County, Washington" (Attachment G). The plants listed here are special status plant species as listed by the Washington Natural Heritage Program.			

2.B.4. Forest Harvest

Is a forest practice or timber harvest proposed on any sites associated with the proposal?		
☒ **No**	☐ **Yes**	
	Acres proposed:	

2.B.5. Fish and Wildlife

Are there any animals that have been observed or are known to be on or near the site?		
☐ None known	☒ Yes	**List species that use the site as a travel corridor.**
	Birds: *such as hawk, heron, eagle, songbirds*	
	☐ No / ☒ Yes	Please see Section 4.9 (Animals) for a detailed discussion of migration routes.
	Specify: A complete list of the birds observed on-site can be found in the Wildlife and Habitat Survey, Attachment F.	
	Mammals: *such as deer, bear, elk, beaver*	
	☐ No / ☒ Yes	
	Specify: A complete list of the mammals observed on-site can be found in the Wildlife and Habitat Survey, Attachment F.	
	Fish: *such as bass, salmon, trout, herring, shellfish*	
	☒ No / ☐ Yes	
	Specify:	
	Other:	
	☒ No / ☐ Yes	
	Specify:	

Do you know of any at-risk animal species on or near the site?

- *Threatened or endangered*
- *Species of local importance*
- *Federal or state listed*
- *Federal or state priority*
- *Tribal-specific fish, plant, or wildlife resources present on the site where abundance is limited elsewhere*

☐ **None known** ☒ **Yes**

Species Name	Listing Status
Loggerhead Shrike	BCC, SC
Long-billed curlew	BCC
Sagebrush Sparrow	BCC, SC
Sandhill crane	SE
Townsend’s ground squirrel	SC

	BCC = Federal Birds of Conservation Concern Bird Conservation Region 9; SC = State Candidate; SE = State Endangered
	Name the sources that were checked, or work done to identify at-risk species: Wildlife and Habitat Survey performed by WEST (Attachment F).

2.B.6. Property/Site Designations

Provide information for these 7 items	
Comprehensive Plan (name, date, pertinent sections):	Yakima County Comprehensive Plan: Horizon 2040 Comprehensive Plan, effective Aug 29, 2017 The Facility's consistency with the applicable goals and policies of the Yakima County Comprehensive Plan is demonstrated in the Land Use Consistency Review (Attachment A), provided as a supplement to Section 4.14 (Land Use).
Current Zoning:	Agriculture (AG) District. The Facility is consistent with the County's definition of a "power generating facility" and would be a Type 3 conditional use in the AG zoning district (YCC Table 19.14-1). See the Land Use Consistency Review (Attachment A) for more detail.
Planning Area:	Agricultural Resource
Shoreline Master Plan:	N/A
Designation:	N/A
Closest Surface Water:	Ephemeral Streams within Facility Area Branch of the Roza Canal approximately 300 feet to the SW of Facility Parcels
Distance:	See above.
WRIA #:	37

Is the site within a mapped FEMA Flood Zone?	
☒ **No**	☐ **Yes**
	Zone name:

Is the site a designated Natural Resource Land? *Designated by the county or city*	
☒ **No** ☐ **Yes**	**Forest land**
☐ **No** ☒ **Yes**	**Agriculture**
☒ **No** ☐ **Yes**	**Mineral**

Is the site, or land within 300 feet of the site, in a designated Critical Area? *Designated by the county or city*	
☒ **No** ☐ **Yes**	**Wetland**
☒ **No** ☐ **Yes**	**Frequently flooded**
☐ **No** ☒ **Yes**	**Aquifer recharge**
☐ **No** ☒ **Yes**	**Geologic hazard**
☐ **No** ☒ **Yes**	**Fish/wildlife habitat conservation**
☒ **No** ☐ **Yes**	**Other** *provide Critical Area name(s):*

On a Local, State, or Federal Historic Register?		
☐ **No**	☒ **Yes**	The BPA Midway-to-Moxee 115 kV line that bisects the Facility Area is eligible for listing on the National Register of Historic Places (NRHP) and the Washington Historic Register (WHR). The Facility would involve tapping this line for interconnection but otherwise would be avoided by the Applicant. In order to accommodate interconnection of the Facility, BPA may make modifications to the line which are subject to its own NEPA review.
	☐ **Listed**	☐ **Proposed**

Identified as a Local, State, or Federal Cultural Site?		
☐ **No**	☒ **Yes**	
	☐ **Listed**	☒ **Proposed**

Are there tribes that may have or claim particular rights to all or part of the project area?		
☐ None known	☒ Yes	
	Tribe	**Contact Made or Attempted, Who/When/method of contact** **Outcome of Contact including Right Asserted (*if any*)**
	Yakama Nation	The Facility Area is within the ceded territory of the Yakama Nation. The Applicant has been in contact with the Yakama Nation since April 2019. The current contact is Jessica Lally. Additionally, the Applicant has reached out to the Governor's Office of Indian Affairs (GOIA) and the Department of Archaeology and Historic Preservation (DAHP), which helped identify the potentially affected tribes and identified the need for a cultural resources survey. The Applicant provided the draft Cultural Resources Report to the Yakama Nation for review and received comments which have been incorporated into the final report. The final report (Attachment H) was submitted to DAHP. Additional detail regarding consultation with the Yakama Nation is provided in Section 4.18 (Archaeological and Historical Resources) and Section 4.19 (Cultural Resources).

Other applicable plans or local/state/federal designations that apply to the site?		
☒ None known	☐ Yes	
	Names:	

2.B.7. Land Uses

Identify the following.

Existing Land Uses	Conservation Reserve Program (CRP) and Grazing	
Past Known Land Uses	Row crops on approximately 230 acres of the Meacham site.	
Existing Adjacent Uses	**North:**	Grazing
	South:	Washington State Route 24, Agriculture, Residences (2 residences approximately 250 feet from nearest Facility fence)
	West:	Agriculture, Grazing, Residence (1,200 feet from nearest Facility fence)
	East:	Agriculture, residence (0.27 miles from nearest Facility fence)

2.B.8. Utilities

2.B.8.a Stormwater Management – Construction

Would there be stormwater runoff during construction?

☒ **No**	☐ **Yes**			
	Source of runoff:	See Section 3.5		
	Quantity of runoff:			
	Method of collection:			
	Drain/ discharge to:	☐ **Onsite**	☐ **Overland flow**	
			☐ **Engineered infiltration**	
			Describe:	
		☐ **Offsite**	☐ **Utility**	**Name:**
			☐ **Other**	
			Describe:	
	Is a new facility, system, or line required?			
	☐ **No**	☐ **Yes**		
		Describe and locate on site map:		

2.B.8.b Stormwater Management - Operations

Would there be stormwater runoff during operations?

☒ **No**	☐ **Yes**			
	Source of runoff	See Section 3.5		
	Quantity of runoff			
	Method of collection			
	Drain/ discharge to:	☐ **Onsite**	☐ **Overland flow**	
			☐ **Engineered infiltration**	
			Describe:	
		☐ **Offsite**	☐ **Utility**	**Name:**
			☐ **Other**	
			Describe:	
	Is a new facility, system, or line required?			
	☐ **No**	☐ **Yes**		
		Describe and locate on site map:		

2.B.8.c Energy

Would there be energy consumption?

☐ **No**	☒ **Yes**	
	☒ **Electricity ⇒ Utility name:** Benton PUD	
	☐ **Natural gas ⇒ Utility name:**	
	☐ **Fuel ⇒ type:**	
	Is a new facility, generator, line, or connection required?	
	☐ **No**	☒ **Yes**
		Describe and locate on site map: New connection to Benton PUD for station service power at the Facility Substation.
Would there be energy production?		
☐ **No**	☒ **Yes**	
	☒ **Electricity ⇒ Receiving utility name:** Unknown at this time. Commercial discussions for delivery of the power from the Facility are in process.	
	Is a new facility, generator, line, or connection required?	
	☐ **No**	☒ **Yes**
		Describe and locate on site map: *length of new line, height of poles* Length of line: 250 feet Height of poles: four new poles, heights between 50 and 70 feet. Existing poles for 115kV line are 70 feet.

2.B.8.d Water Use - Construction

Would there be water use during construction?

☐ No	**☒ Yes**		
	Gallons per day proposed: 30,000-50,000 gallons/day Water would be primarily used during construction for fugitive dust suppression. A small amount would be used for drinking water and portable toilet facilities for construction workers. The amount of water required would depend on site and weather conditions and would range from 30,000-50,000 gallons per day. The water used for drinking and portable toilet facilities would be delivered in five-gallon drinking water containers and in portable toilets and hand-washing stations.		
	Water source: Likely trucked in and procured by the construction contractor. The City of Moxee has provided a letter verifying availability of water with sufficient existing water rights (see Attachment Q).		
	☐ Utility	**Name:**	
	☐ Surface water	**Name:**	
	☐ Private well		
	☐ Private water system	**Name:**	
	Is a new well, diversion, line, or connection required?		
	☒ No	**☐ Yes**	
		Describe and locate on site map:	

2.B.8.e Water Use - Operation

Would there be water use during operation?

☐ No	☒ Yes
	Gallons per day: 500,000-1.1 million gallons per year. Water would be used during operations for washing the PV panels and for domestic uses at the O&M building. It is estimated that the panels would be washed between two and four times per year and require 250,000 gallons per wash, resulting in 500,000 to 1 million gallons per year. For comparison, one hop plant requires 1-3 gallons of water per day during the irrigation season and one acre of land supports about 890 hop plants. Thus, 625 acres (the maximum footprint of the Facility Area) of hops requires approximately 500,000-1,500,000 gallons of water each day. The Facility is expected to use less than 73,000 gallons per year (200 gallons per day) for domestic use in the O&M building.
	Water source: Water used for panel washing would likely be trucked in and procured by the O&M contractor. Domestic water for the O&M building may be supplied by a new well or stored in aboveground water tanks brought in from offsite.
	☐ Utility — **Name:**
	☐ Surface water — **Name:**
	☐ Private well
	☐ Private water system — **Name:**
	Is a new well, diversion, line, or connection required?
	☐ No — **☒ Yes**
	Describe and locate on site map:

2.B.8.f. Sanitary Waste Management

Would there be a need for sanitary waste management?

☐ **No**	☒ **Yes**	
	Gallons per day: Estimated at 200 gallons per day.	
	Discharge to:	
	☐ **Utility**	**Name:**
	☒ **Septic system**	
	☐ **Other**	
	Is a new system, line, or connection required?	
	☐ **No**	☒ **Yes**
		Describe and locate on a site map: The O&M building may have a bathroom, kitchen, and utility sink which would drain into a new on-site septic system. Alternatively, the restroom facilities may be portable toilets. The Facility is estimated to produce no more than 200 gallons of wastewater per day, which is less water than typically used for a residential septic system.

2.B.9. Emergency Service Providers

Identify the providers for the following services for the project site:

Police Services:	Yakima County Sheriff
Fire Services:	East Valley Fire Department also known as Yakima County Fire District #4 and the Yakima County Fire Marshal
Other Emergency Services:	Emergency Medical Services provided by East Valley Fire Department

2.B.10. Transportation

Will transportation methods other than roads/motorized vehicles be used to access the site? (air, water, rail, pedestrians, bicycles, etc.)	
☒ **No**	☐ **Yes**
	Describe:

What are the arterial roads serving the area of the project site?	Washington State Route 24.

Vehicular traffic generated by project:				
	Round trips per day		**Peak hour trips/day**	**Timing of peak hours**
During:	**Vehicles**	**Heavy equipment/material deliveries**		
Construction	Estimated at 150 max	20 at max	~50	10am-3pm
Operation/use	1-2	0		

Are new public roads proposed?	
☒**No**	☐ **Yes**

Are any public road improvements proposed?	
☐ **No**	☒ **Yes**
	Location/description: The only public road improvement required for the Facility is the approach off State Route 24 onto the private road which accesses the Facility Area. Based on consultation with WSDOT, the Applicant would be required to obtain a General Permit from WSDOT to perform the upgrade work. The Applicant would continue to consult with WSDOT to ensure the approach meets all applicable codes and standards. Additionally, a Traffic Control Plan would be prepared and submitted to EFSEC at least sixty days prior to site preparation.
Parking	**Existing spaces:** 0
	Spaces after project: Minimum of 3 parking spaces provided in gravel lot next to O&M building.

Intentionally Blank

Part 3 – Screening Questions

Intentionally Blank

3.1. Earth – Screening

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.1.a. Screening Question – Earth

Will the project occur in an area that contains steep slopes, unstable soils, surface indications or history of unstable soils; or other geologic hazard with the potential of landslide, mass wasting erosion, faulting, subsidence, or liquefaction, or identified in local ordinance as a designated geologic hazard critical area?	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Explain below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

A portion of the Facility Area Extent is in an area designated by data provided by Yakima County as a geologically hazardous area. Most of the geologically hazardous area is designated as "Alluvial Fan, High Risk," and a very small area is designated as "Over-steepened Slopes, Intermediate Risk." Per YCC 16C.08.02, these maps indicate "approximate location and extent" of these features. The Applicant contracted with a geotechnical engineering firm to conduct a Geotechnical Site Investigation and Critical Areas/Geohazards Report (Attachment L), which includes an assessment of the actual geohazards present at the Survey Area.

No development associated with the Facility is planned within or within sufficiently close proximity to a high-risk area; therefore, the Facility would not be at risk from the area in its current condition. As identified in the Geotechnical Site Investigation and Critical Areas/Geohazards Report, "the proposed development at the site would not pose a threat to the health or safety of the citizens, or increase the risk from geologic hazards at the site or to surrounding properties, provided the recommendations [in said report] are followed in the design and construction of the project". All recommendations in the Geotechnical Site Investigation and Critical Areas/Geohazards Report would be followed.

Because the county data indicates the presence of critical areas, the Applicant has prepared a Section 4 analysis, which details potential issues and mitigation strategies related to the Earth category, including those related to geology, soils, and seismic hazards.

3.2. Air Quality

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.2.a. Screening Question – Air Quality

Will the project have:		
• Indoor or outdoor air pollution emissions including dust, during operation, other than those related to vehicle emissions • The potential to produce an odor nuisance • Dust during construction	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility would use heavy construction equipment and may have a temporary concrete batch plant on site, which would produce dust and minor odors during construction. Dust would be mitigated using standard dust control practices, including but not limited to spraying water or a binding agent, and/or applying gravel as necessary. The Facility would otherwise not produce air pollution emissions or long-term odors during construction or operations, other than those related to vehicle emissions.

The analysis in Section 4.2 addresses the anticipated air pollution emissions generated during construction/operation, as well as the measures that would be implemented to avoid or minimize these impacts.

3.3. Water Quality – Wetlands and Surface Waters (Buffers, Fill, Dredging, & Sedimentation)

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the pro-posed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	N/A

3.3.a. Screening Question – Water Quality (Wetlands and Surface Waters)

Will the proposal involve any activities on a steep slope, area of unstable soils, or within a surface water body, wetland, or within 300 feet of those areas, within a floodplain, or an area known to flood?	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Applicant contracted to have a Wetland Delineation Report (see Attachment O) which identified three non-wetland water features within the Survey Area. The features were determined to be ephemeral drainages that are classified as Type 5 streams under the Yakima County Code (YCC 16C.06.06). Per YCC 16C.06.16 ("Vegetative Buffers"), Type 5 streams do not require any buffer; however, the Facility would be designed to maintain a 50-foot buffer from the delineated streams.

Because the Facility's design (which includes the installation of a bridge or culvert over one of the ephemeral streams) would include work within 300 feet of a surface water body, a detailed analysis of surface waters and wetlands is provided in Section 4.3.

3.4. Water Quality – Wastewater Discharges

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	No	Yes	Yes	Yes	N/A

3.4.a. Screening Question – Water Quality (Wastewater Discharges)

Will the proposal discharge wastewater (septic systems, process waters, dairy waste, etc.) to onsite or offsite surface waters, wetlands, or the ground? (do not include discharges to utilities)	☒ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☐ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The operations and maintenance (O&M) building may have a bathroom, kitchen, and utility sink that would drain into a new on-site septic system, which would be permitted, installed by a licensed professional, and maintained through the Yakima County Health Department in compliance with applicable regulations including WAC 246-272A.

It is estimated that the on-site septic system would produce up to approximately 200 gallons per day and as such would be permitted as a small septic system/on-site sewage system (less than 3,500 gallons per day).

As identified in Section 4.14, Land Use, pursuant to YCC 12.05.150, a private sewage disposal system would be permitted with approval from the County. Prior to construction of the proposed on-site septic system serving the Facility's O&M building, the Applicant would obtain the required permit from the Yakima Health District and meet system recommendations from the Washington State Department of Health (DOH) if provided. Pursuant to YCC 12.05.190, the Applicant would operate and maintain the private sewage disposal facility in a sanitary manner at all times at no expense to the County. Because the septic system would manage wastewater flows of less than 3,500 gallons per day (i.e., currently estimated at approximately 200 gallons per day), it is not considered a large on-site sewage system and would not require a permit from the DOH (WAC 246-272B). Therefore, the Facility would comply with the applicable provisions under YCC 12.05.150 through 12.05.200. Furthermore, because of the reasons presented above, a Part 4 analysis is not warranted and no mitigation (beyond adhering to permit requirements) is proposed.

3.5. Water Quality - Stormwater Runoff

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.5.a. Screening Question – Water Quality (Stormwater Runoff)

Does the proposal involve any potential sources of stormwater contamination from: ☒ Drainage from impervious surfaces ☒ Erosion from disturbed soils, lost vegetation, etc. ☐ Animal wastes ☐ Fertilizers or decomposing organic material ☐ Pesticides or other chemical usage Other ______________	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:
The Facility would be designed and constructed to retain all stormwater on-site and maintain natural drainage patterns for conveyance of upland flow per YCC 12.10.250. While the Facility would create new impervious surfaces, most of the Facility Area would remain as pervious vegetation.

The analysis in Section 4.5 presents more detailed information regarding the type and extent of impervious surfaces that would be created, the infiltration rates of the soils at the site (based on the Geotechnical Site Investigation and Critical Areas/Geohazards Report), as well as mitigation tactics that would be implemented to minimize the effects of stormwater runoff.

3.6. Water Quantity – Water Use

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	No	Yes	Yes	Yes	N/A

3.6.a. Screening Question – Water Quantity (Water Use)

Will the proposal involve a new withdrawal, diversion, retention, or use for water not received from a utility?	☒ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☐ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

Water required for construction, for uses such as dust mitigation, domestic use and potentially for making concrete, and for washing panels during operation, would be trucked in and provided from off-site sources (i.e., municipal water source or a vendor with a valid water right) as is further addressed in Section 4.22. The City of Moxee has provided a letter verifying availability of water with sufficient existing water rights (see Attachment Q).

Water for domestic use at the O&M building during operations would be provided by drilling a new well or stored in aboveground water tanks brought in from offsite. Domestic water needs for the O&M building are expected to be less than 200 gallons per day. Because the new well would use less than 5,000 gallons per day, it is a groundwater permit-exempt water use under state code (RCW 90.44.050).

However, following the 2016 Washington State Supreme Court Decision *Whatcom County, Hirst (Eric) v: W Wash. Growth Mgmt. Hr'gs Bd., No.91475* (commonly known as the "Hirst decision"), which was concerned with the connection between groundwater and surface water supplies, Yakima County was required to implement a process for determining if water is both legally and physically available for all new domestic wells, regardless if less than 5,000 gallons per day would be used. This is because, in part, there are more existing water rights in the Yakima Basin than available water to fulfill those rights (Yakima County 2020). Therefore, the Applicant would follow the domestic well application process administered by the Yakima County Water Resource System (YCWRS) established under YCC Chapter 12.08 Water System (including but not limited to provisions per YCC 12.08.390 Applicability, 12.08.400 Property Eligibility Criteria, 12.08.410 Well Eligibility Criteria, 12.08.420 Well Depth Standards, and 12.08.440 Limitations on Use).

The result of this process would be to obtain a YCWRS domestic well permit, obtained prior to construction of the well with additional post-construction approvals and agreements required (Yakima County 2020). If YCWRS determines there is not sufficient water availability, or the Yakima Health District determines the water supply is either not potable or adequate quantity per YCC 12.08.050, the Applicant would secure an adequate water supply for the O&M building through an existing permitted source with on-site water tank storage (see Section 4.22). Based on early-stage conversations with Joel Freudenthal with the Water Resources division of Yakima County, it is anticipated that the Applicant would be able to drill a well via the YCWRS process for this low-consumption, domestic use.

Based on this analysis, it is anticipated that a well permit can be obtained and if not, that the Applicant will procure water from a vendor with adequate water rights to provide sufficient water for use at the O&M building. Therefore, no additional analysis is provided under Part 4 and no mitigation (beyond adhering to permit requirements) is proposed.

3.7. Water Quantity – Runoff, Stormwater & Point Discharges

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	No	Yes	Yes	Yes	Yes

3.7.a. Screening Question – Water Quantity (Runoff, Stormwater & Point Discharges

Is the project likely to result in changes in flow or volume in any water body or aquifer? Consider changes in vegetation, blocking of recharge by new impervious surfaces, grading, filling, discharges, water use, etc.	☒ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☐ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

Creation of new impervious surfaces and grading activities associated with the Facility would not result in changes to the flow or volume of water bodies or aquifers. Impervious surfaces would comprise only a small percentage of the Facility Area. Activities associated with the Facility would result in minor changes to existing surface-water runoff patterns but would maintain natural drainage pathways. Minor stormwater drainage changes would result due to the creation of new impervious surfaces developed as part of this Facility, including gravel roads, a potential culvert, inverter pads, battery storage container pads, and pads for substation components. As currently designed, the Facility would create 29.5 acres of impervious surfaces. However, stormwater would generally infiltrate through the gravel roads and vegetated surfaces at the Facility. No potential loss of groundwater recharge or change in seasonal stream flow is anticipated as a result of Facility construction or operation.

The Facility is not located in a FEMA designated flood area. As identified in the Geotechnical Site Investigation and Critical Areas/Geohazards Report, the site has a natural drainage pathway that flows through the site from the northeast to the southwest. The drainage pathway is lined with cobble and boulder deposits from wash and possible flooding events. The Facility components would not be located in any drainage areas, and therefore does not pose a flood risk. The Phase I Environmental Site Assessments completed for the subject parcels indicate no existing or potential conditions on the Facility Parcels that would contribute to water quality issues (EarthTouch, Inc. 2019 and 2020). The Geotechnical Site

Investigation and Critical Areas/Geohazards Report did not report any pollutants encountered during the subsurface investigation (GNN 2020).

Because construction and operation of the Facility would not change flow or volume of a water body or aquifer, a detailed analysis of water quality for surface waters and wetlands under Part 4 is not warranted. Mitigation actions would be implemented during construction and disturbed soils would be revegetated. Mitigation actions would include implementation of an ESCP, CSWGP, SWPPPs, Vegetation and Weed Management Plan, and associated BMPs. No grading would be done that would affect identified ephemeral stream drainages.

3.8. Plants

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.8.a Screening Question – Plants

Will the project occur in or near an area with special status plants, (e.g. DNR natural heritage program or WDFW Priority Habitats and Species (PHS))?	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility may partially be built on shrub-steppe habitat, which is considered by WDFW as a PHS habitat. However, approximately 46% of the shrub-steppe habitat impacted by the Facility as currently designed is degraded due to cattle grazing. The Applicant contracted with Western Ecosystems Technology (WEST) to complete a Wildlife and Habitat Survey Report (Attachment F) and a Review of Rare Plant Occurrence and Big Game Movement (Attachment G).

Section 4.8 is based on the information obtained during surveys and site-specific feedback from the WDFW.

3.9. Wildlife

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.9.a. Screening Question – Animals

Will the project occur in or near an area with migration areas, special status wildlife or habitats (e.g. WDFW Priority Habitats and Species (PHS)?	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility may partially be built on shrub-steppe habitat, a WDFW designated PHS habitat, and in areas with species which are listed on federal and state lists, as shown in Section 2.B.5. However, approximately 46% of the shrub-steppe habitat impacted by the Facility as currently designed is degraded due to cattle grazing. The Applicant contracted with Western Ecosystems Technology (WEST) to complete a Wildlife and Habitat Survey Report (Attachment F) and a Review of Rare Plant Occurrence and Big Game Movement (Attachment G).

The analysis in Section 4.9 is based on the information obtained during surveys and site-specific feedback from WDFW.

3.10. Energy and Other Natural Resources

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the pro-posed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	No	N/A	Yes	Yes	N/A

3.10.a. Screening Question – Energy and Other Natural Resources

Will the project, because of type, size, or design, require the consumption or removal of substantial quantities of natural resources including energy (electricity, petroleum, etc.), rock minerals, trees/wood, peat, etc. during either construction or operation?	☒ **No**	⇒ *Explain below why you believe “No” is the appropriate answer.*
	☐ **Yes**	⇒ *Explain below what aspect of the question triggered a “Yes” response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive “Yes” or “No” prior to the final submission on your application.*

Explanation:

The Facility would not require the consumption or removal of substantial quantities of renewable or non-renewable natural resources during construction or operation. Facility construction would require natural resource use for the installation of the solar array, battery storage pad, and associated electrical facilities. Gravel, a non-renewable resource, would be used to upgrade the existing public road approach to the Facility, to establish a surface within the substation and battery energy storage system area, and to establish access roads within the solar array. A temporary concrete batch plant may be used on site during construction. The solar array is largely made from non-renewable silicon components. Electricity obtained from the Benton Public Utility District would be required at the Facility to power construction and operational equipment/facilities. Fuel, from non-renewable fossil fuel sources, would also be required for construction vehicles and some equipment, as well as operational vehicles. Quantities consumed would be typical or less than commercial construction facilities of a similar size, and well within the availability of local service providers.

Because the Facility would not require the consumption or removal of substantial quantities of non-renewable or renewable natural resources, a detailed analysis of energy/natural resources under Part 4 is not warranted. Furthermore, no mitigation is anticipated to be required for this resource.

3.11. Waste Management

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	No	N/A	Yes	Yes	N/A

3.11.a. Screening Question – Waste Management

Will the project generate large quantities of waste during either construction or operation other than those listed as a discharge under D.3.WATER QUALITY or D.2.AIR QUALITY?	☒ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☐ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility would not generate large quantities of waste during either construction or operation. Typical construction wastes include discarded construction materials, packaging materials, and spent erosion control materials. Other discarded construction material could include wood forms for cast-in-place foundations, scrap metal, or unused wiring. Packaging and other materials would be recycled to the extent possible. Overall solid waste types and quantities from construction would be typical of any large-scale construction facility, and likely less than many commercial buildings relative to the total size of the Facility Area Extent.

A low volume of waste would be generated during the Facility's operations. Office waste, such as paper and food packaging and scraps, would be generated at the O&M building. Repair or replacement of the solar array and associated electrical equipment could generate incidental solid waste; however, a solar array typically lasts more than 30 years without significant loss of function, and components would be replaced infrequently, if at all. In addition, Washington State law (RCW 70.355) requires manufacturers of PV modules to provide a convenient and environmentally sound way to recycle all modules purchased after July 1, 2017. The battery storage system may also generate incidental waste from the repair or replacement of electrical equipment. Depending on the battery system technology selected for the Facility, batteries would need to be replaced every 5 to 20 years and would follow specific protocols for disposal of battery components at an approved facility for disposal or recycling. Wastes generated during construction and operation would be hauled away by an appropriate contractor, in accordance with applicable federal, state, and local regulations.

As further described in Section 2.A.2.i, the Applicant would develop an Initial Site Restoration Plan that would include provisions for removal of the solar panels and racking system, foundations, cables, and other facilities to a depth of four feet below grade.

Because the Facility would not generate large quantities of waste during either construction or operation, a detailed analysis of waste management under Part 4 is not warranted. Furthermore, no mitigation is anticipated to be required for this resource.

3.12. Environmental Health – Existing Site Contamination

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	No	Yes	Yes	Yes	N/A

3.12.a. Screening Question – Environmental Health (Existing Site Contamination)

Is there any evidence that the project site(s) contain(s) potentially hazardous materials including toxic chemicals, volatile gases or other poisonous or hazardous substances?	☒ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☐ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

A Phase I Environmental Site Assessment (ESA) has been completed for the Facility Parcels following ASTM Standard Practice E1527-05. Based on the review of readily available historical information, site inspection, interview with knowledgeable parties, and a regulatory records search, the assessment found no evidence of recognized environmental conditions in connection with the Facility Parcels. A "recognized environmental condition" is defined as "The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property (i) due to release to the environment; (ii) under conditions that are indicative of a release to the environment; or (iii) under conditions that pose a *material threat* of a future release to the environment. *De minimis* conditions are not *recognized environmental conditions*." No further investigation of environmental conditions within the Facility Parcels was found to be warranted.

Similar to most agricultural sites across Washington, historical agricultural use in this area may have included application of fertilizers, pesticides, or herbicides. However, such application would have been relatively uniform and generally consistent with manufacturer guidelines. The Phase I ESA concluded the possible past application of agricultural chemicals would pose a low concern of adverse environmental impact, particularly with respect to future commercial development of a solar energy facility.

As discussed above, there is no evidence that the Facility Area Extent contains "potentially hazardous materials." For this reason, further detailed analysis of existing site contamination under Part 4 is not warranted. No adverse impacts to public health and safety, environmental health, or planned land uses are anticipated; therefore, no mitigation is anticipated to be required for this resource.

3.13. Environmental Health – Hazardous Materials

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the pro-posed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.13.a. Screening Question – Environmental Health (Hazardous Materials

Will the project involve the removal, use, or disposal of hazardous materials that involve toxic chemicals, asbestos, risk of fire or explosion, and/or spill or danger to public health and the environment?	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility may include a BESS and, depending on the technology selected, the BESS may present a flammability hazard. Specifically, lithium-ion systems are susceptible to overheating and generally require cooling systems to mitigate the risk. Aligned with industry standards, each BESS would contain a fire suppression system that meets with International Fire Code and National Fire Protection Association (NFPA) Standards, specifically NFPA 855 "Standard for the Installation of Stationary Energy Storage Systems."

The analysis in Section 4.13 presents more detailed information regarding potential BESS technologies and their respective risks as well as the associated control measures that would be implemented to protect public health and the environment. The analysis also discloses the Facility's compliance with standard fire safety measures, spill control and response measures, as well as related guidelines and regulations for solar energy generation facilities. In addition to these environmental protection measures, the analysis discusses mitigation measures, such as providing technology-specific training to local emergency responders.

3.14. Land Use, Natural Resource Lands, & Shoreline Compatibility

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the pro-posed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	N/A

3.14.a. Screening Question – Land Use, Natural Resource Lands, & Shoreline Compatibility

Will the proposal involve or result in any of the following (include likely future proposals that will occur as a result of this action, such as increased development from newly created lots or extension of services, etc.) • Change in land use • Change in intensity of land use • Provide new or improved service to an area (e.g. transportation, utilities, entertainment, etc.)	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

As identified in Section 2.B.7 of this application, the Facility Area Extent is currently in agricultural use; specifically, grazing (rangeland) and land enrolled in the U.S. Department of Agriculture (USDA) Conservation Reserve Program (CRP). The Facility Area Extent is located within the agricultural zoning designation of Yakima County, and is considered designated natural resource land (agriculture) under RCW 36.70A.030. There are no shorelines designated under the Yakima County Shoreline Master Program within the Facility Area Extent. Implementation of the Facility would result in a change in the type and intensity of the existing land use; however, the change in use would comply with local land use planning and development regulations.

The analysis in Section 3.14 addresses the Facility's potential effects to land use as well as the Facility's compliance with relevant local land use regulations. In Yakima County, "power generating facilities" are a Type 3 use in the AG zoning district and may be authorized subject to the approval of a conditional use permit; however, outside of complying with County conditions, no land use mitigation requirements are anticipated for the Facility.

3.15. Housing

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	No	N/A	Yes	Yes	N/A

3.15.a. Screening Question – Housing

Will the project be likely to displace or otherwise affect existing or future housing, particularly housing for low and moderate-income households?	☒ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☐ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility will not displace existing or future housing, including housing for low- and moderate-income households. As noted in Section 2.A.2.c of this application, the parcel that may be utilized for an aerial easement currently contains a residence; however, implementation of such an easement would not displace the residence. Furthermore, local land use planning documents, including the Yakima County Comprehensive Plan, have not identified the Facility Area Extent as a site for future residential growth (Yakima County 2017a).

As shown in the attached Socioeconomic Review (Attachment P), any non-local hires may commute from within Yakima County or the Tri-Cities area or they may relocate temporarily. There is sufficient capacity to house any temporary workers in hotels, motels or RV parks. Since the Facility Area Extent is within a reasonable commute distance from the city of Yakima as well as the Tri-Cities area (ranging from approximately 20 to 80 minutes of commute time), there is likely sufficient temporary housing available to support the Facility (e.g., hotels, motels). During operation, the Facility will not employ any full-time staff. Approximately one to two part-time staff may be employed, hired locally and/or from outside the region, and would not noticeably affect the availability of housing in the area.

Because the Facility is not likely to displace or otherwise affect existing or future housing, particularly housing for low- and moderate-income households, a Part 4 detailed analysis of housing impacts is not warranted. Furthermore, no mitigation is anticipated to be required for this resource.

3.16. Noise, Light, Glare, and Aesthetics

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.16.a. Screening Question – Noise, Light, Glare, and Aesthetics

Will the project transmit light, glare, or noise onto adjacent areas or alter or obstruct any views in the immediate area?	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

During operation, minimal glare may be generated by the Facility, and noise will be generated by inverters, transformers, as well as potentially by HVAC (heating, ventilation, and air conditioning) equipment associated with battery storage. Noise will also be produced during the construction phase of the Project. Therefore a Part 4 analysis is provided and is split into two parts: 4.16a covers noise and 4.16b covers light, glare and aesthetics.

Due to the infrequent nature of loud construction activities at the site, the limited hours of construction and the implementation of noise mitigation measures, the temporary increase in noise due to construction would not be a significant impact. Tetra Tech has prepared an Acoustic Analysis (Attachment I) to support development of the detailed analysis in Section 4.16a.

Views of the Facility would be altered due to the change in land use, though these changes would not block scenic views or introduce visual elements that strongly contrast surrounding visual characteristics. Lighting would be designed to provide the minimum illumination needed to achieve safety and security. The potential reflection from solar photovoltaic modules is inherently low since they are designed with a non-reflective coating to capture and not to reflect sunlight. A Visual Impact Assessment Report (Attachment J) as well as Glare Reports (Attachment K) were prepared to support the analysis in Section 4.16b.

3.17. Recreation

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	No	N/A	Yes	Yes	N/A

3.17.a. Screening Question – Recreation

Will the project occur in an area or location that includes the following? ❑ Existing designated and informal recreation opportunities in the immediate vicinity ❑ Displace or otherwise affect any existing recreational uses during construction or operation	☒ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☐ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility Area Extent is on private land and does not include any designated or informal recreation opportunities. Recreation opportunities could include parks, campgrounds, trails, developed river access, wildlife viewing areas, hunting areas, or similar recreational uses. There are no designated recreation opportunities adjacent to, in the immediate vicinity of, or within an approximately 5-mile radius of the Facility Area Extent. The closest developed recreation site is the 13-acre Moxee City Park, located over 6 miles to the west (just north of Washington State Route 24). There may be informal recreation opportunities in the vicinity on state and federal land that are open to the public, though these areas are not specifically designated for recreation. These include parcels owned by the Washington Department of Natural Resources (i.e., state trust land; the closest parcel located approximately 1 mile east of the Facility Area Extent) and U.S. Bureau of Land Management (i.e., grazing allotments; the closest parcel located approximately 1 mile northeast of the Facility Area Extent) that are managed for mixed uses. If allowed by private landowners, there may also be informal recreation opportunities along small creeks in the immediate vicinity, such as undesignated swimming, fishing, or other day use. The types of limited informal recreation opportunities described above are common throughout eastern Yakima County.

Given the limited designated or informal recreation opportunities within or near the Facility Area Extent, the Facility would not displace or otherwise adversely affect existing recreational uses. Therefore, a detailed analysis of potential impacts to recreation opportunities under Part 4 is not warranted. Furthermore, no mitigation is anticipated to be required for this resource.

3.18. Archaeological and Historical Resources

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.18.a. Screening Question – Archaeological and Historical Resources

Will the project occur in an area or location that includes the following? *Note: to answer these questions with a definite "yes" or "no" requires a Desktop Survey that must be conducted by a consultant. See guidance for more information.* ❑ Archaeological Site or Built Environment Property over 50 years in agricultural resource site ❑ Any known landmarks or evidence of historic, archaeological, scientific or cultural importance ❑ Is listed or is eligible to be listed on a local, state, or federal historic register	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

A Cultural Resources Report has been prepared for the Survey Area by Tetra Tech (see confidential Attachment H). The Survey Area contains archaeological sites and historic properties, including five archaeological sites (i.e., 45YA01808, 45YA01809, 45YA01810, and 45YA01811) and two historic properties (i.e., Site 722140 and BPA Midway-Moxee Transmission Line). One of the historic properties (i.e., BPA Midway-Moxee Transmission Line) has been recommended as eligible for listing in the National Register of Historic Places (NRHP), while the remaining identified resources have been recommended as not eligible for listing in the NRHP. The BPA Midway-Moxee Transmission Line is also protected by the

Washington Heritage Register (WHR). Three of the NRHP-ineligible archaeological sites (i.e., 45YA01808, 45YA01809, and 45YA01811) are also protected by the WHR. The remaining resources (i.e., 45YA01810 and Site 722140) are not protected by the WHR.

The analysis in Section 4.18 relies, in part, on the information collected during cultural resources field survey (King et al. 2020). Pending final design, the Facility may disturb archaeological resources that are protected by the WHR, but the Applicant would obtain the necessary permits and licenses prior to any direct impacts. Additionally, an Unanticipated Discovery Plan would address the minimal potential that the Facility may encounter unidentified archaeological resources during construction.

3.19. Cultural Resources

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the pro-posed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.19.a. Screening Question – Cultural Resources

Will the project occur in an area or location that includes the following? • existing tribal hunting or fishing rights • existing tribal plant gathering • tribal cultural sites • a usual and accustomed area • material culture artifacts • activities on the site could impede views of tribal cultural sites	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility is within the ceded and usual and accustomed lands of the Yakama Nation; however, the Facility will be constructed on private lands that are currently inaccessible to tribes for hunting, fishing, or plant gathering. Three archaeological sites (i.e., 45YA01808, 45YA01809, and 45YA018115) with pre-contact material culture artifacts are within the Survey Area. Communications between the Applicant and Yakama Nation are ongoing to assess any tribal significance attributed to those resources. Continuing communications are also anticipated to assess whether Facility-related activities would impede views of or from tribal cultural sites.

The analysis found in Section 4.19 is based on the information and results of the consultation with the Yakama Nation, as applicable (noting that confidential and privileged information provided by the tribes is not included in these publicly disclosed documents). If deemed appropriate through communication with the Yakama Nation, additional mitigation measures may be developed.

3.20. Traffic and Transportation

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.20.a. Screening Question – Traffic and Transportation

Will the project be likely to cause any of the following in relationship to the local and regional transportation system during construction or operation? • Reduce the level of service (LOS) in an area • Restrict vehicular use • Potential to create or increase local safety hazards • Conflicts with local, state or federal requirements related to traffic and transportation	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

Facility construction would involve temporary increased truck traffic to the site for delivery of materials and worker transportation, and an improvement to the approach off State Route 24 to the Facility. During Facility operations, traffic would be limited to periodic maintenance visits as no full-time staff would be on site. The Facility would be unlikely to reduce the level of service on area roads, except potentially during brief periods during construction. The Facility would not restrict vehicular use or create or increase local safety hazards and would not conflict with local, state, or federal requirements related to traffic and transportation. However, due to potential truck traffic and potential transportation of oversize or overweight loads during construction, an analysis has been completed in Section 4.20.

Section 4.20 analyzes the existing level of service on transportation routes that will be used during the Facility's construction and an evaluation of potential impacts from Facility construction on the existing level of service for transportation routes. Mitigation for temporary traffic impacts during construction is discussed in Section 4.20.

3.21. Public Services and Facilities

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	No	N/A	Yes	Yes	N/A

3.21.a. Screening Question – Public Services and Facilities

Will the project be likely to directly or indirectly increase use of public services and facilities such as fire protection, law enforcement, schools, parks and recreation, public open space, social services or general government?	☒ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☐ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility is unlikely to directly or indirectly increase use of public services and facilities during construction or operation, largely because the Facility is a solar power generating facility and is located outside the Yakima County urban growth boundary, where many such public services and facilities are unavailable. Potential minor impacts to facilities and services would be limited to the period of construction, approximately 270 days, during which up to 300 workers would be employed. During operations, the Facility would be largely self-sufficient, and staffed by only one to two part-time personnel. Additionally, the Facility will generate significant tax revenue for Yakima, which would outweigh minor, temporary impacts to facilities and services. By implementing the mitigation measures outlined below, the Facility would not adversely affect public services and facilities during construction or operation.

The East Valley Fire Department, also known as Yakima County Fire District #4, would provide fire response and emergency medical services for the Facility. The Facility will maintain its own Construction Fire Control Plan and Operations Fire Control Plan and implement best practices for fire prevention. Additionally, the Facility will develop and implement a 1) Construction Emergency Plan, 2) Construction Phase Health and Safety Plan, 3) Operations Emergency Plan, and 4) Operations Health and Safety Plan. The Applicant has initiated consultation with the Yakima County Fire Marshal's Office and the East Valley Fire Department (also known as Yakima County Fire District #4), providing the Preliminary Site Plan and notifying them of these plans. The Applicant will continue to coordinate with these agencies to ensure compliance with the International Fire Code, provide site and equipment information pertinent to emergency response, and provide training as described in Section

4.13.D. To mitigate the need for fire protection services, the Facility would include its own fire suppression and cooling systems for its BESS.

The Yakima County Sheriff's Office has adequate equipment, personnel, and facilities to provide services, as outlined in the Yakima Capital Facilities Plan (Yakima County 2017b). An adequate Level of Service for Police in Yakima was deemed to be 1.8 police officers per every 100,000 people in Yakima (Yakima County 2017b). A temporary increase of 300 people during Facility construction would not effectively reduce the Level of Service. No adverse impacts to law enforcement services are anticipated as a result of the Facility. To mitigate the need for law enforcement services, the Facility will be secured by a fence, and access will be restricted. The Facility will not require special services from the Yakima County Police Department.

No adverse impacts to housing, schools, parks, or recreational facilities are anticipated as a result of the proposed Facility. During operations, the Facility would employ one to two part-time personnel, which would not create an adverse impact for schools, parks, or recreational facilities. Construction of the Facility would be about 270 days, during which period a peak of up to 300 workers would be employed. Because the construction period is short and far less than one year, few workers are likely to relocate their residences and families to Yakima County. Thus, no adverse impact on housing or schools would be observed. Temporary school and housing needs would be supported within the purview of Yakima County's current growth trajectory, which plans for significant population increases to Yakima County (Yakima 2017b). Use of parks and recreational facilities would be temporary and would not adversely affect the facilities.

No impacts to water, stormwater, sewer, or solid waste facilities are anticipated as a result of the proposed Facility (see discussion above for the respective resources). The Facility is outside the urban growth boundary service area where public water, stormwater, sewer, and solid waste facilities are provided, and will therefore not impact these services and facilities, as discussed in Section 4.22. The Facility will utilize a new well and/or on-site water storage system for less than 200 gallons per day domestic water use at the O&M building, as discussed in Sections 3.4, 3.6, and 3.22. Therefore, the Facility will not have an adverse effect on public water and sewer services. The Yakima County Wastewater Treatment Plant has a 21.5 million gallons per day capacity, which is adequate to receive septic system waste from the Facility, if necessary (Yakima County 2017b). Domestic waste produced during construction and operation of the Facility will be handled by a licensed waste hauler. At the end of the Facility's useful life, spent solar panels will be recycled by the manufacturer post-decommissioning. Therefore, the Facility will not adversely impact public solid waste disposal facilities. Yakima County requires new development to capture and treat stormwater on site to mitigate runoff (Yakima County 2017b). The Facility design will allow stormwater to be captured on site and returned to groundwater on site, and no municipal stormwater facilities will be utilized.

Because public services and facilities will not be adversely affected, a detailed analysis of potential impacts to public services and facilities under Part 4 is not warranted. Furthermore, no mitigation is anticipated to be required.

3.22. Utilities

SUMMARY	1. Does **screening** trigger a Part 4 analysis?	2. Is it clear what **analysis or study** is called for?	3. Is the analysis sufficiently complete for **SEPA determination**?	4. Is the analysis fully complete for **application review**?	5. Is the proposed **mitigation** (if any) adequate?
[Applicant only] No, Yes, Maybe/na / [EFSEC only] No, Yes, Maybe/na	Yes	Yes	Yes	Yes	Yes

3.22.a. Screening Question – Utilities

Will the project be likely to increase demand for public or privately-owned water, sewer, storm water, solid waste, communication, or energy utilities?	☐ **No**	⇒ *Explain below why you believe "No" is the appropriate answer.*
	☒ **Yes**	⇒ *Explain below what aspect of the question triggered a "Yes" response;* *AND* ⇒ *Complete Part 4 - Detailed Analysis*
	☐ **Maybe**	⇒ *Describe below how you plan to obtain the information needed to move to a definitive "Yes" or "No" prior to the final submission on your application.*

Explanation:

The Facility would require private utility facilities for water, on-site septic, stormwater capture, solid waste disposal, and communications. The Facility is a solar power generating facility and would supply its own energy which will be supplemented with a small amount of station service power from Benton Rural Electric Association when the Facility is not generating power. Impacts on public utilities would be minimal, largely because the Facility is a solar power generating facility that produces electricity and is located outside the Yakima County urban growth boundary, where most public utilities are unavailable. Utilities used during construction would be limited to a period of about 270 days. Utilities used during operations would be limited to domestic use from the O&M building. During operations, the Facility would be largely self-sufficient, generate electricity, and require staffing by only one to two part time personnel. However, overall water availability for use at the Facility requires further analysis, which is discussed in Section 4.22.

The Facility will utilize a new well and/or on-site water storage system for less than 200 gallons per day domestic water use at the O&M building, as discussed in Sections 3.4, 3.6, and 3.21. Wastewater would be collected in an on-site septic system, that could be disposed of at Yakima County Wastewater Treatment Plant, which at a 21.5 million gallon per day capacity, has adequate capacity to receive septic system waste from the Facility (Yakima County 2017b). Domestic waste produced during construction and operation of the Facility will be handled by a licensed waste hauler. At the end of the Facility's useful life, spent solar panels will be recycled by the manufacturer post- decommissioning. Yakima County requires new development to capture and treat stormwater on site to mitigate runoff (Yakima County 2017b). The Facility design will allow stormwater to be captured on site and returned to groundwater on site, and no municipal stormwater facilities will be utilized. The Facility would have its own supervisory control and data acquisition communications facility and would not require connection to public communications facilities.

Because public and private utilities will be utilized, a detailed analysis of potential impacts to utilities under Section 4.22 is warranted. Please see Section 4.22 for detailed analysis and mitigation measures including an analysis of water availability for construction and panel washing.

Part 3 References:

EarthTouch, 2019. Phase I Environmental Site Assessment, Goose Prairie Solar Project (Gordon Meacham/Estate of Willamae G. Meacham) Submitted to OneEnergy Renewables; EarthTouch, 2020. Phase I Environmental Site Assessment, Goose Prairie 2 Solar Project (S. Martinez Livestock, Inc.) Submitted to OneEnergy Renewables.

EarthTouch. 2020. Phase I Environmental Site Assessment. SITE: Goose Prairie 2 Solar Project. LOCATION: Near Yakima, Yakima County, Washington. S. Martinez Livestock, Inc. Prepared for OER WA Solar 1, LLC. February 7.

GNN (GN Northern, Inc.). 2020. Geotechnical Site Investigation and Critical Areas/Geohazards Report. Goose Prairie Photovoltaic (PV) Solar Array Project State Route 24 & Desmaris Cutoff, Moxee, Yakima County, Washington. GNN Project Number 220-1274. Prepared for OER WA Solar 1, LLC. November.

Google Earth Pro. 2020. Version 7.3.3.7786. Available online: http://www.earth.google.com. Accessed October 2020.

King, E, B. Berger, J. Mates, D. Huntley, and M. Connell. 2020. Cultural Resources Survey for the Goose Prairie Solar Project, Yakama County, Washington. Tetra Tech, Inc., Bothell, Washington. Submitted to OneEnergy Renewables.

Yakima County. 2017a. Horizon 2040 Yakima County Comprehensive Plan. Available online at: https://www.yakimacounty.us/846/Horizon-2040-Comprehensive-Plan

Yakima County. 2017b. We Are Yakima Comprehensive Plan 2040 – Capital Facilities Plan. Available online at: https://www.yakimawa.gov/services/planning/files/2014/12/Capital-Facilities-Plan.pdf

Yakima County. 2020. Yakima County Water Resource System (YCWRS). Water Availability – Adequate Water Supply – Well Permit. Available online at: https://www.yakimacounty.us/2095/YCWRS---Water-Availability---Well-Permit. Accessed October 19, 2020.

Part 4 – Detailed Analysis

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4.1. Earth

4.1.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	Expected completion date	Expert agency participation Name, Title, and Involvement	Completed Y/N
Geotechnical Site Investigation and Critical Areas/Geohazards Report, (Attachment L)	Complete	GN Northern, Inc., Consulting Geotechnical Engineers Meets requirements of WAC 463-60-302 and YCC 16C.03.18(4)	Y

☒ **Check this box when all proposed studies for this topic are completed**

4.1.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
General description of site	The Geotechnical Site Investigation and Critical Areas/Geohazards Report (Attachment L) states that the Survey Area is currently undeveloped and has a natural drainage pathway that flows through the site from the northeast to the southwest. The drainage pathway is lined with cobbles and boulders deposited from wash and possible flash flooding events. As seen on the Preliminary Site Plan (Attachment B), the site slopes down to the southwest, with surface elevations ranging from approximately 1,726 feet near the northeast corner of the site to approximately 1,386 feet near the southwestern corner of the site. Additional information about the geology of the Survey Area is found in Attachment L.
Geologic hazards	The Geotechnical Site Investigation and Critical Areas/Geohazards Report describes the geology, soils, topography, lack of unique physical features, and existing erosion patterns, meeting the requirements of Washington Administrative Code (WAC) 463-60-302(1) and (2). The Geotechnical Site Investigation and Critical Areas/Geohazards Report also provides information regarding geologic hazards that may affect the development including seismic hazards (e.g., ground shaking, surface fault rupture, soil liquefaction, and other secondary earthquake-related hazards), slope instability, flooding, ground subsidence, and erosion, meeting the requirements of WAC 463-60-265 and WAC 463-62-020.

	A portion of the Facility Area Extent is in an area designated by data provided by Yakima County as a geologically hazardous area. Most of the geologically hazardous area is designated as "Alluvial Fan, High Risk," and a very small area is designated as "Over-steepened Slopes, Intermediate Risk." Per YCC 16C.08.02, these maps indicate "approximate location and extent" of these features. The Geotechnical Site Investigation and Critical Areas/Geohazards Report addresses these two issues. It states that "there is no geologic hazard directly associated with the [Survey Area] situated on alluvial fan deposits," that the Facility is not "at risk from potential flooding events" and that the Facility "avoids any areas of significantly steep slopes." In addition, the Site Geotechnical Investigation and Critical Areas/Geohazards Report states: • Due to the lack of known active fault traces in the immediate site vicinity, surface fault rupture is unlikely to occur at the project site. • The site is mapped within an area of very low to low liquefaction susceptibility with a few areas mapped as bedrock. Based on the site-specific evaluation, the risk of liquefaction at the subject site is considered very low. • The site is inland far enough that the hazard from tsunamis is non-existent. The potential hazard from seiches in also nil due to the lack of nearby surface water bodies and the noted low magnitudes of potential seismic shaking. • Anticipated ground motions in the region due to seismic activity along faults in other parts of the Northwest are relatively low.
Soils	Silt loam soils were the primary underlying soil type accounting for 95.2% of the soil types, with only Finley cobbly fine sandy loam as the non-silt soil type. The primary soil type found in the Meacham Property was Willis silt loam, 2 to 5% slopes and is the same underlying soil type as that found in the intact shrub-steppe habitat differing only in the percent slope (Willis silt loam, 8 to 15% slopes). Silt loam soils are characterized by deep soil horizons that lack the basalt bedrock and shallow, rocky soil structure indicative of lithosols, an ecologically sensitive soil type. A Soil Map is included as Attachment E, Map 1.
Unique physical features	The Facility Area Extent is bisected by an erosional drainage gully or wash that extends from the northeast portion of the site and then drains approximately east to west through the site through the northern boundary of Section 18. The Wetland Delineation Report determined that the incised drainage is an ephemeral stream (flow only after significant precipitation). The drainage path incises through the alluvial fan deposits and Yakima County has mapped the area along the drainage as geologically hazardous that is susceptible to "alluvial fan/flash flooding".

4.1.C. Changes to and from Existing Condition

4.1.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ **Yes**	
	Topical Area/issue	**Changes**
	Critical Areas/ Geohazards	The Geotechnical Site Investigation and Critical Areas/Geohazards Report states that “the proposed development as depicted on the conceptual site layout plan …will not pose a threat to the public health, safety, or welfare of the citizens, or increase the risk from geologic hazards on the site or to the surrounding properties, provided the recommendations in [said report] are followed in the design and construction of the project.”
	Water flow	The Facility would not increase water flow over or through the Facility Area Extent. The majority of the Facility Area Extent would not be covered with impervious surfaces (see Section 2.B.2) and infiltration of precipitation would not differ significantly from current conditions. The Geotechnical Site Investigation and Critical Areas/Geohazards Report indicates that the infiltration rates range from 0.1 to 0.9 inches per hour. The average annual precipitation in nearby Moxee, Washington is approximately 9 inches per year.
	Topography	The Facility will require minimal grading on-site as shown in Section 2.B.1. The Applicant would obtain a Grading Permit prior to site preparation and will provide the grading site plan to EFSEC at the time of submittal for said permit. The Applicant would specify the source of fill in the Construction Plans and Specifications which would be provided to EFSEC for approval at least 60 days prior to site preparation. Per the Vegetation and Weed Management Plan (Attachment D), the source would be certified weed-free by the Yakima County Noxious Weed Control Board.

4.1.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	☐ Yes	
	Topical Area/issue	**Changes**
	Design around slope and geohazards	The Facility has been designed to avoid the steepest slopes, watercourse drainages and geo-hazardous areas in the Facility Area Extent to minimize risk due to erosion and flash flooding. No development is planned within or in sufficiently close proximity to the noted incised drainage to pose a risk from potential flooding events. Appropriate project design, construction, and maintenance would be necessary to mitigate the risk from site erosion.

4.1.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	☒ Yes		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Implementation of Geotechnical Recom-mendations	The Applicant would follow all geotechnical recommendations provided by GN Northern in section 14 of the Geotechnical Site Investigation and Critical Areas/Geohazards Report.	GN Northern, Inc.
	Best Management Practices - Erosion	The Applicant would implement an Erosion and Sediment Control Plan (ESCP) and a Construction Phase SWPPP and Operations Phase SWPPP in compliance with local stormwater regulations. These plans would address stormwater runoff, flooding, and erosion to assure compliance with state and federal water quality standards. The ESCP would include BMPs such as the appropriate use of silt fencing to avoid or eliminate runoff of contaminants. The SWPPP would include BMPs from the Department of Ecology's Stormwater Management Manual for Eastern Washington. The Vegetation and Weed Management Plan would be implemented to revegetate	Ecology

		temporarily impacted areas and minimize erosion.	
	Building Permits	The Applicant would obtain all necessary permits including a Building Permit and a Grading and Excavation Permit. The seismic design parameters to be considered are in the 2015 International Building Code (IBC) and American Society of Civil Engineers (ASCE) 7-10 and ASCE 7-16; these are in compliance with the Washington State Building Codes. The Facility would comply with the current codes at the time of construction, demonstrating compliance with WAC 463-62-020.	Yakima Planning Department and Washington State Building Code Council

4.1.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ No	**☐ Yes**	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

References

GNN (GN Northern, Inc.). 2020. Geotechnical Site Investigation and Critical Areas/Geohazards Report. Goose Prairie Photovoltaic (PV) Solar Array Project State Route 24 & Desmarais Cutoff, Moxee, Yakima County, Washington. GNN Project Number 220-1274. Prepared for OER WA Solar 1, LLC. November.

4.2. Air Quality

4.2.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	Expected completion date	Expert agency participation Name, Title, and Involvement	Completed Y/N
No studies relating to air quality in the Facility Area Extent have been conducted, nor are any studies planned.			

☒ **Check this box when all proposed studies for this topic are completed**

4.2.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
Regulatory	The Clean Air Act (CAA) is the primary federal statute governing air quality. The U.S. Environmental Protection Agency (EPA) has promulgated primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), two size categories of particulate matter (PM_{10} and $PM_{2.5}$), ozone (O_3), sulfur dioxide (SO_2), and lead. The primary standards are concentration levels of pollutants in ambient air, averaged over a specific time interval, designed to protect public health with an adequate margin of safety. The secondary standards are concentration levels judged necessary to protect public welfare and other resources from known or anticipated adverse effects of air pollution. Although states may promulgate more stringent ambient standards, the State of Washington has adopted standards identical to the federal levels (see WAC 173-476, Ambient Air Quality Standards). Local air quality is measured against these national and state standards, and areas that do not meet the standards are designated as “non-attainment” areas. A new emissions source must demonstrate compliance with all applicable federal and state air quality requirements, including emissions standards and ambient air quality standards (AAQS). The State of Washington has established rules through the Washington Department of Ecology (Ecology) for permitting new sources in both attainment and non-attainment areas of the state, and additional requirements may be imposed by local air authorities. WAC 463-62-070 requires that energy facilities meet all federal and state air quality laws and regulations mentioned above, and WAC 463-78 establishes adoption of these requirements by EFSEC. EFSEC issues authorizations for air emissions for sources under its jurisdiction. In general, if potential emissions from stationary sources exceed certain thresholds,

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approval from the applicable permitting authority is required before beginning construction. New sources of air emissions in non-attainment areas must undergo more rigorous permitting than equivalently sized sources in attainment areas, in an effort to bring the area back into compliance with air quality standards. However, the Project is not located within a non-attainment area for any criteria pollutants (EPA 2020a).
Under the CAA, new industrial sources of air pollution must receive an air quality permit prior to operation. The two most common permits associated with industrial activity emitting regulated air pollutants are Notice of Construction (NOC)/New Source Review approvals and Prevention of Significant Deterioration (PSD) permits. WAC 463-39 and 173-400 establish the requirements for review and issuance of notice of construction approvals for new sources of air emissions.
An NOC is not required for the Project because there would be no permanent source of regulated air emissions. If a portable concrete batch plant is installed, an NOC is not required under WAC 173-400. PSD regulations apply to proposed new or modified sources located in an attainment area that have the potential to emit criteria pollutants in excess of predetermined de minimus values (40 CFR Part 51). For new generation facilities, these values are 100 tons per year of criteria pollutants for 28 specific source categories, or 250 tons per year for sources not included in the 28 categories. A PSD permit would not be required for the Project because the generation of electricity by solar arrays does not produce air emissions.
Construction Emissions:
Although construction emissions are not included in permitting of stationary sources, mobile sources (such as construction equipment and maintenance pickups) are regulated separately under the federal CAA. Washington State regulates what are known as “fugitive” air emissions, which consist of pollutants that are not emitted through a chimney, smokestack, or similar facility. Blowing dust from construction sites, unpaved roads, and tilled agricultural fields are common sources of fugitive air emissions. Solar energy plants are not included among the facilities for which review and permitting of fugitive emissions are required (WAC 173-400-040). Nevertheless, WAC 173-400-040(9)(a) requires owners and operators of fugitive dust sources to take reasonable measures to prevent dust from becoming airborne and to minimize emissions.
Other Washington state regulations that apply to nuisance emissions, including fugitive dust, and various equipment used during construction include the following:

WAC 173-400-040(3) Fallout. No person shall cause or allow the emission of particulate matter from any source to be deposited beyond the property under direct control of the owner or operator of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.

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	• WAC 173-400-040(4–4a) Fugitive emissions. The owner or operator of any emissions unit engaging in materials handling, construction, demolition, or other operation which is a source of fugitive emissions, if located in an attainment area and not impacting any non-attainment area, shall take reasonable precautions to prevent the release of air contaminants from the operation. • WAC 173-400-040(5) Odors. Any person who shall cause or allow the generation of any odor from any source that may unreasonably interfere with any other property owner's use and enjoyment of his property must use recognized good practice and procedures to reduce these odors to a reasonable minimum. **Greenhouse Gases:** Greenhouse gases (GHG) play a critical role in determining the earth's surface temperature. A GHG is any gas in the atmosphere that absorbs infrared radiation. The infrared radiation is selectively absorbed or "trapped" by GHGs as heat and then reradiated back toward the earth's surface, warming the lower atmosphere and the earth's surface. As the atmospheric concentrations of GHGs rise, the average temperature of the lower atmosphere gradually increases, thereby increasing the potential for indirect effects such as a decrease in precipitation as snow, a rise in sea level, and changes to plant and animal species and habitat. Climate impacts are not attributable to any single action but are exacerbated by diverse individual sources of emissions that each make relatively small additions to GHG concentrations. GHGs are emitted by both natural processes and human activities. Human activities known to emit GHGs include industrial manufacturing, utilities, transportation, residential, and agricultural activities. The GHGs that enter the atmosphere because of human activities are CO_2, methane, nitrous oxide, and fluorinated carbons (i.e., hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). In Washington State, GHGs are regulated by RCW Chapter 80.80, which establishes goals for statewide reduction of GHG emissions. The statute aims to reduce overall GHG emissions to 1990 levels by 2020, and to 25 percent below 1990 levels by 2035. By 2050, the state intends to reduce overall emissions to 50 percent below 1990 levels. Goals also include fostering a clean energy economy by increasing the number of jobs in the clean energy sector to 25,000 by 2020, from just over 8,000 jobs in 2004. WAC 173-441 established an inventory of GHG emissions through a mandatory greenhouse reporting rule for certain operations. Because solar power would not emit GHGs during operations, these regulations would not apply to the Facility. In addition, the Facility could assist the State in achieving these goals.
Climate	The Facility is located in the Moxee Valley, 6 miles east of the town of Moxee and 12 miles east of the city of Yakima. It is located within a rain shadow created by the Cascade Mountains, which causes a decrease in precipitation to the east. In this region of Washington, the summers are

	short, hot, and mostly clear; winters are very cold and partly cloudy; and it is typically dry year-round (e.g., on average, there are nearly 200 days of sunshine). Average annual precipitation at Yakima, the city closest to the Facility, is 8.25 inches. The average seasonal snowfall at Yakima is 22.6 inches. In winter, temperatures in Yakima average a high of 40 degrees Fahrenheit (°F) and a low of 23.4°F, with extreme lows below 10°F. In summer, temperatures average a high of 84.8°F and a low of 51.2°F, with extreme highs above 95°F. Average relative humidity is 72 percent in the morning and 44 percent in the afternoon. Wind conditions near the Project can be characterized by Automated Surface Observing Systems (ASOS), which serves as the nation's primary surface weather observing network. The closest ASOS station to the Project is located at the Yakima Airport in Yakima, Washington (KYKM). Based on data collected over the period from January 1, 1990 to December 31, 2019, the prevailing winds most frequently blew from the west (approximately 32 percent of the time), from the northwest (approximately 13 percent of the time), from the southwest (approximately 9 percent of the time), with calm conditions (less than 2.0 miles per hour) occurring approximately 21 percent of the time. The average wind speed for the period was approximately 6.0 miles per hour (3.0 meters per second) (NOAA 2020).
Regional Air Quality	While the air quality in Yakima County is healthy most of the year, the county's sunny climate, pollution-trapping mountains, and growing population contribute to occasional air quality issues. Fugitive dust and wood smoke are two of the most prevalent existing sources of air pollution in the area. Wood-fueled home heating methods combined with weather inversions during cold winter months contribute to elevated levels of $PM_{2.5}$. Windblown fugitive dust is prevalent in non-irrigated agricultural areas, especially where traditional farming methods are used. Agricultural land uses and rural residences surround the Facility Area, with the nearest schools and parks located 6 miles to the west in the town of Moxee. The nearest air quality monitors to the Facility are located in Toppenish, Washington (approximately 11 miles to the south), which measures $PM_{2.5}$, and in Yakima, Washington (approximately 13 miles to the northwest), which measures PM_{10} and $PM_{2.5}$. The nearest ozone monitor is in Kennewick, Washington (approximately 52 miles southeast). The nearest SO_2 monitor is in Wenatchee, Washington (approximately 55 miles to the north). The nearest NO_2 monitors are in Tacoma, Washington (approximately 115 miles to the northwest) and Portland, Oregon (approximately 135 miles southwest). The nearest CO monitors are in Seattle, Washington (approximately 121 miles to the northwest) and Portland, Oregon (approximately 135 miles to the southwest).

4.2.C. Changes to and from Existing Condition

4.2.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Construction	The primary sources of air pollution generated by construction of the Facility would be vehicle exhaust emissions, fugitive dust particles from disturbed soils that become airborne, and operation of a concrete batch plant. Sources of vehicle exhaust emissions would include heavy construction equipment operating on the site, trucks delivering construction materials and Project components to the site, and vehicles used by construction workers to access the site. The amount of pollutants emitted from these sources would be relatively small, given the size of the construction workforce and equipment fleet, and similar to emissions from other equipment commonly used for agriculture, transportation, and construction in Yakima County. The emissions would generally be dispersed among multiple locations in and near the Facility site at any given time rather than concentrated in a specific location, and they likely would not reach significant concentrations at off-site locations. Construction activities that could create fugitive dust include transportation of materials; clearing and grading for roads, crane pads, solar array pads, and other Project infrastructure; and trenching or plowing for underground utility cables. Operation of the concrete batch plant during construction would result in emissions of particulate matter. These emissions come primarily from the transfer of cement, sand, and aggregate, truck and mixer loading, and blowing from piles. However, like other emissions associated with construction, impacts are expected to be temporary and minor. Construction activities for the Facility are scheduled to take approximately one year (see Section 2.A.2.k). Given the relatively low magnitude, localized extent, and temporary duration of construction-related emissions, air quality impacts associated with Facility construction would not be substantial. In addition, standard dust control practices would be applied. Consequently, there is no basis to assume that these emissions would contribute to an exceedance of any air quality standards.
	Operation	Operations and maintenance (O&M) impacts on air quality from the Facility would be minimal. Combustion emissions and fugitive dust generated by vehicles traveling on Facility access roads to

		perform O&M functions would be the only emissions expected. The volume of O&M vehicle traffic would be very low. Therefore, quantities of potential emissions generated by these vehicles would be very small, intermittent, and localized. Areas disturbed during construction and not occupied by permanent Project infrastructure would be revegetated to prevent the generation of dust. Facility operation would not produce visible plumes, fogging, misting, icing, impairment of visibility, changes in ambient levels of pollutants, or impacts on climate. The Facility is not expected to induce regional growth that would result in substantial changes to off-site air quality. Other pollutants, including GHGs, would be emitted from outside the immediate vicinity, as a result of the total fuel cycle of the Facility. These emissions would be generated from manufacturing and transporting Facility parts and equipment. However, the Facility itself would not directly emit GHGs, beyond the use of vehicles and transportation (as mentioned earlier). Furthermore, the Facility would support the state's goal of increasing use of renewable energy resources, which has been declared in part to protect Washington's clean air and water. Implementation of any weed control measures at the Facility (e.g., herbicide spraying) would be conducted in compliance with federal, state, and local regulations to ensure that adverse impacts to air quality do not occur.
	Odors	During Facility-related construction activities, exhaust from diesel-powered vehicles and equipment and painting of the O&M facilities and other structures could create minor odors. These odors are not likely to be noticeable beyond the immediate vicinity and would be temporary and short-lived. Long-term odors are associated typically with industrial projects involving use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills. The Facility involves no elements related to these types of uses. Therefore, no long-term odor impacts would occur with Facility operation.

4.2.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	☐ Yes	
	Topical Area/issue	**Changes**
	N/A	N/A

4.2.D. Proposed Mitigation and Monitoring

☐ **Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.**

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	☒ Yes		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Best Management Practices – Air Quality	Washington Administrative Codes (WAC) addressing air quality include: • WAC 173-400-040(3) Fallout. • WAC 173-400-040(4–4a) Fugitive emissions. • WAC 173-400-040(5) Odors. • WAC 173-400-040(9)(a) Fugitive Dust. To adhere to these codes, the Facility would implement BMPs and standard construction practices, including the following: • Graveling, watering or other fugitive dust-abatement measures would be used as needed to control fugitive dust generated during construction. When applied, Applicant would use water or a water-based environmentally safe dust palliative such as lignin for dust control. • Vehicles and equipment used during construction would be properly maintained to minimize exhaust emissions. • Operational measures such as limiting engine idling time and shutting down equipment when not in use would be implemented. • Construction materials that could be a source of fugitive dust would be covered when stored.	N/A

		• Traffic speeds on unpaved roads would be limited to 25 miles per hour to minimize generation of fugitive dust. • Truck beds would be covered when transporting dirt or soil. • Carpooling among construction workers would be encouraged to minimize construction-related traffic and associated emissions. • Erosion-control measures would be implemented to limit deposition of silt to roadways, to minimize a vector for fugitive dust. • Replanting or graveling disturbed areas would be conducted during and after construction to reduce wind-blown dust.	

4.2.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ **No**	☐ **Yes**	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

4.3. Water Quality – Wetlands and Surface Waters

4.3.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	Expected completion date	Expert agency participation Name, Title, and Involvement	Completed Y/N
Wetland Delineation Report (Attachment O)	Complete	Wetland Specialists at Tetra Tech, Inc. performed field surveys and completed the report which meets USACE and Department of Ecology specifications.	Y

☐ **Check this box when all proposed studies for this topic are completed**

4.3.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
Wetland Delineation	The Wetland Delineation Report (Attachment O) found that there are no wetlands (as defined in the Wetland Delineation Manual from the US Army Corps of Engineers) and five ephemeral stream segments within the Facility Area Extent that combine to form two main-stem ephemeral streams. The ephemeral stream drainages within the Facility Area Extent, identified as STR-1, STR-1a, STR-2, STR-2a and STR-3 in the delineation report, are classified as Type 5 streams under the Yakima County Code (YCC 16C.06.06). Per YCC 16C.06.16 (“Vegetative Buffers”), Type 5 streams do not require any buffer; however, the Facility will be designed to maintain a 50-foot buffer from the delineated streams with one exception. The current design calls for the installation of either a bridge or a culvert to connect the northern and southern portions of the Facility. The bridge or culvert will be designed to accommodate debris and water passage, disturbance would be limited to the temporary effects of construction, and construction activities will comply with applicable clearing and grading regulations. Within 300 feet, but outside of, the Facility Area Extent and Survey Area, there are potentially two wetlands: one riverine and one likely excavated pond (see Figure 4.3-1). The riverine wetland shows up on the National Wetland Inventory and, unlike other drainages in the Facility Area Extent, only appears in some years in the historical aerial imagery from 1994 to 2020. The field where it is mapped has been in agricultural use for at least that time period, if not longer. The pond feature appears to be human-made; it is built up with earthen berms, rectangular in appearance, and does not

	always have water present in the historical aerial imagery (Google Earth Pro 2020). Yakima County requires buffers on wetlands according to their classification (YCC 16C.06.16). The riverine wetland outside the Survey Area is likely to be a Type 4 wetland due to the amount of agricultural disturbance. Type 4 wetlands have a 50-foot buffer requirement. The closest ground disturbance to these wetlands outside of the Facility Area Extent is the proposed access road improvement from State Route 24, which is approximately 160 feet to the west. Thus, the riverine wetland and requisite buffer falls outside any disturbance from the Facility.
Regulatory	The State of Washington considers all water bodies to be “Waters of the State” and therefore has jurisdiction over the ephemeral streams found within the Facility Area Extent. The U.S. Environmental Protection Agency and the Department of the Army published the Navigable Waters Protection Rule on April 21, 2020, which states that “Ephemeral features that flow only in direct response to precipitation, including ephemeral streams, swales, gullies, rills, and pools” are not considered waters of the United States. Thus, the features are not subject to the jurisdiction of the Army Corps of Engineers. The installation of either a bridge or a culvert in a waterway may require a Hydraulic Project Approval (HPA) permit from the Washington Department of Fish and Wildlife (WDFW). Per WAC 220-660-010, the purpose of the HPA is to ensure that construction or performance of work is done in a manner that protects fish life. Because the on-site ephemeral streams are not fish-bearing, the Applicant will engage with WDFW to determine if an HPA is necessary in this case. As natural drainageways, the Type 5 streams are also reviewed by Yakima County as part of the Stormwater Plan, submitted in compliance with YCC 12.10.210.

4.3.C. Changes to and from Existing Condition

4.3.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ **No**	☒ **Yes**	
	Topical Area/issue	**Changes**
	Bridge/Culvert Installation	Current conceptual designs call for either a bridge or a culvert to be installed over/in an ephemeral drainage (STR-1 in the wetland delineation report). If a bridge is constructed, its abutments would be placed outside of the Ordinary High Water Mark (OHWM). Temporary impacts could include construction disturbances, including potential sediment, dust, and noise. Permanent impacts

		could include excavation (removal and fill) within the stream corridor and below the OHWM, construction of the roadway, and placement of the culvert or bridge.

4.3.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	☐ Yes	
	Topical Area/issue	**Changes**
	Stream Buffers	Within the Survey Area, the Wetland Delineation Report identified three ephemeral stream features, classified as Type 5 streams by Yakima County (YCC 16C.06.16). Though Type 5 streams do not have any required buffer, the Facility is designed to maintain a 50-foot buffer on both sides of delineated streams.

4.3.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	☒ Yes		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Avoidance	No wetland features exist within the Facility Area Extent. The stream features that are present are Type 5 streams which do not require a buffer per Yakima County Code. The Facility has been designed to maintain a 50-foot buffer from these streams in order to avoid, reduce or eliminate impacts to the delineated streams. The Facility has no impacts to wetlands and is consistent with WAC 463-62-050.	N/A
	Stream Crossing Design	The stream crossing will be designed to minimize permanent impacts per YCC 16C.06.13, YCC 16C.06.17 and WAC 220-660-190, including: • Location and alignment of the proposed road crossing to minimize impacts to the stream corridor. • Excavated material not used to achieve the design grade shall be removed from the stream corridor.	Ecology, WDFW

		• Stream crossing structure (i.e., bridge or culvert) will be sized to accommodate ordinary high water or other design flow, sediment, and woody debris. • Site restoration and revegetation.	
	Best Management Practices - Stream Crossing Construction	The Applicant will implement BMPs during construction of the bridge or culvert as described at WAC 220-660-120 and in the Stormwater Management Manual for Eastern Washington. These measures include: • Stage materials and equipment to prevent contamination of Waters of the State • Develop and implement a Construction Phase Stormwater Pollution Prevention Plan (SWPPP), an Erosion and Sediment Control Plan (ESCP), and a Construction Phase Spill Prevention, Countermeasures, and Control (SPCC) Plan • Installation and maintenance of temporary erosion and sediment control measures including the appropriate use of silt fencing • Complete all work when no water is present	Ecology, WDFW
	Hydraulic Project Approval	If deemed necessary following discussions with WDFW, the Applicant would obtain an HPA permit for the bridge or culvert from WDFW per WAC 20-660-050.	WDFW

4.3.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ **No**	☐ **Yes**	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

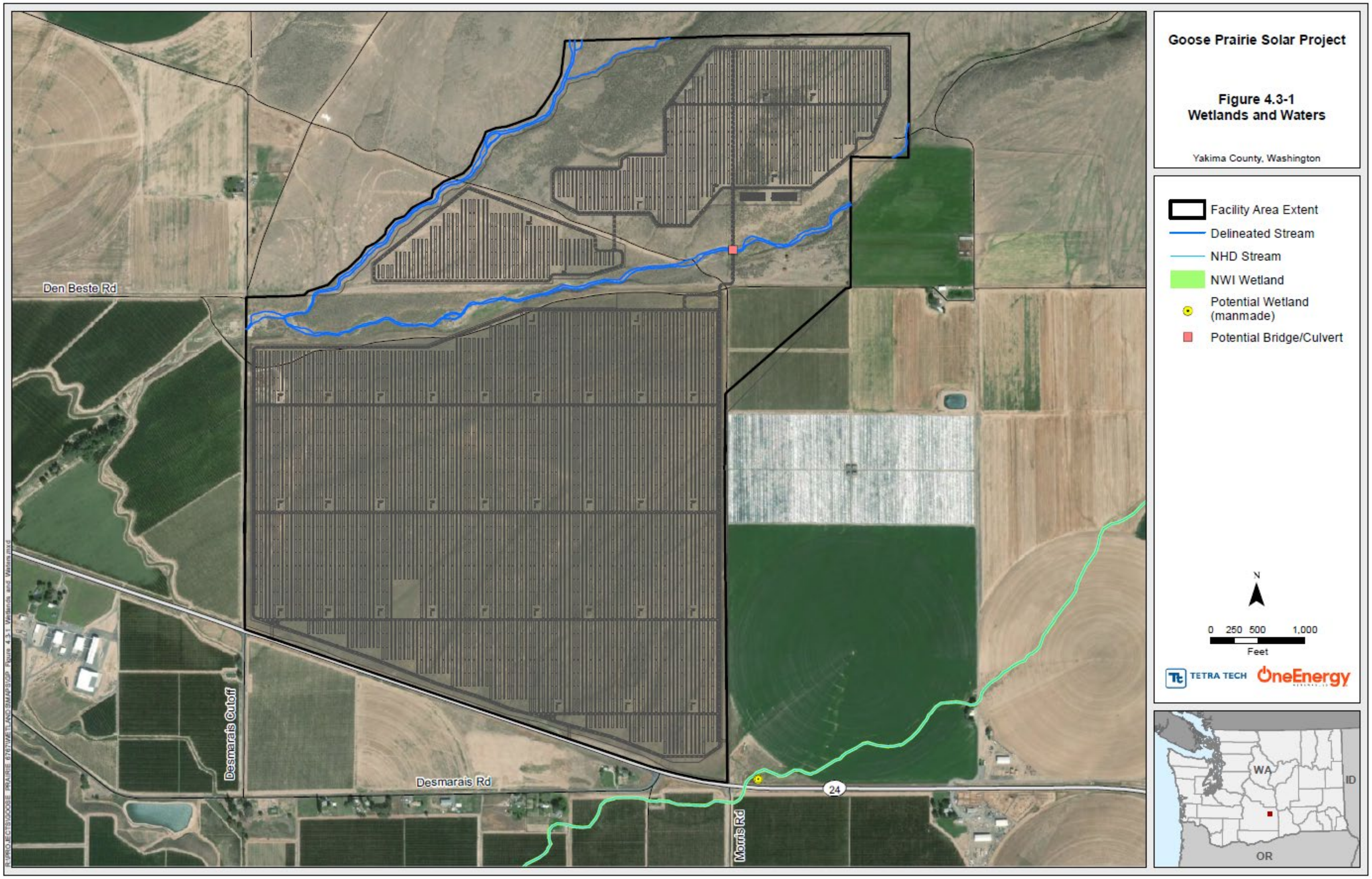

Figure 4.3-1. Wetlands and Waters

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4.4. Water Quality – Wastewater Discharges

No Part 4 Analysis required for this section.

4.5. Water Quality – Stormwater Runoff

4.5.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	**Expected completion date**	**Expert agency participation Name, Title, and Involvement**	**Completed Y/N**
Geotechnical Site Investigation and Critical Areas/Geohazards Report (Attachment L)	Complete	GN Northern, Inc., Consulting Geotechnical Engineers, Contractor	Y
Phase I Environmental Site Assessment - Estate of Willamae G. Meacham. December 19, 2019. (not included)	Complete	EarthTouch, Inc., Environmental Consultants, Contractor	Y
Phase I Environmental Site Assessment, S. Martinez Livestock, Inc.. February 7, 2020. (not included)	Complete	EarthTouch, Inc., Environmental Consultants, Contractor	Y

☒ **Check this box when all proposed studies for this topic are completed**

4.5.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
Surface-water runoff	The Geotechnical Site Investigation and Critical Areas/Geohazards Report (Attachment L) indicates the Survey Area is currently undeveloped and has a natural drainage pathway that flows through the site from the northeast to the southwest. The drainage pathway is lined with cobble and boulder deposits from wash and possible flash flooding events. Based on the topographic survey, the site slopes down to the southwest, with surface elevations ranging from approximately 1,726 feet near the northeast corner of the site to approximately 1,386 feet near the southwestern corner of the site. The Facility is not located in an area mapped by the Federal Emergency Management Agency regarding flooding concerns. The Geotechnical Site Investigation and Critical Areas/Geohazards Report indicates that the infiltration rates range from 0.1 to 0.9 inches per hour (limited to those locations tested). The average annual precipitation in nearby Moxee, Washington is approximately 9 inches per year. The report also indicates that near surface site soils are known to exhibit a moderate to severe potential for erosion and appropriate erosion and sediment control and drainage plans shall be prepared by the project civil engineer with the final construction drawings. Finally, the report identifies that groundwater was not encountered within the borings and test-pits at the time of exploration to a maximum depth of approximately 41 feet below ground surface.
Existing water quality issues	The Phase I Environmental Site Assessments indicate there are no existing/potential water quality issues identified on the Facility Parcels (EarthTouch, Inc. 2019 and 2020). In addition, the Geotechnical Site Investigation and Critical Areas/Geohazards Report (GNN 2020) did not report any pollutants encountered during the subsurface investigation.
Critical Aquifer Recharge Area	The Facility Area Extent is entirely within a mapped Critical Aquifer Recharge Area (CARA) identified by the County as “moderately susceptible to degradation or depletion” per YCC 16C.09.02(6). Note that almost the entire County is mapped as a CARA. No wellhead protection areas, sole source aquifers, susceptible groundwater management areas, special protection areas, or moderately or highly vulnerable aquifer recharge areas are identified within the Facility Area Extent.

4.5.C. Changes to and from Existing Condition

4.5.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Surface-water runoff and infiltration	The activities associated with the Facility would result in some minor changes to existing surface-water runoff patterns, though it would not increase water flow over or through the area. Stormwater drainage changes would result due to new impervious surfaces developed as part of this Facility. As currently designed, there will be 29.5 acres of new impervious surfaces including gravel roads, a potential culvert, steel support posts, inverter pads, battery storage container pads, and pads for substation components. However, the Facility would be designed and constructed in compliance with YCC 12.10.250 in retaining stormwater on-site and maintaining natural drainage patterns for conveyance of upland flow. Because of the deep groundwater level identified in Attachment L, the Facility is not expected to impact the groundwater.
	Loss of wetland/surface water functions and values	There would be no loss of wetland/surface water functions and values (see Section 3.3).
	Critical Aquifer Recharge Area	The Applicant will comply with YCC 16C.09 which deals with CARAs, as demonstrated in the Land Use Consistency Review (Attachment A). Furthermore, the Geotechnical Site Investigation and Critical Areas/Geohazards Report (Attachment L) found that due to the prevailing subsurface soil and rock conditions and significant depth to groundwater across the Facility Area Extent, there is no or negligible risk of groundwater contamination from development of the Facility provided stormwater management is incorporated into the design. Therefore, due to existing site conditions and to the SWPPP and SPCC procedures, the Facility is not expected to result in impacts to the CARA from hazardous spills. Existing laws and regulations would adequately mitigate any potential impact from hazardous materials involved for the Facility.

4.5.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Design considerations of stormwater runoff, flooding, and erosion.	The existing stormwater runoff and erosion patterns would inform the final design of the Facility and as a result, changes to drainage patterns would be minimized. The civil engineer would determine appropriate erosion and sediment control and drainage plans based on existing conditions and planned impervious surfaces (e.g. roads and other graveled areas).

4.5.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	☒ Yes		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Construction Stormwater General Permit	In compliance with WAC 173-200, the Applicant would obtain a Construction Stormwater General Permit (CSWGP) from Ecology. The CSWGP requires an Erosion and Sediment Control Plan (ESCP) and a SWPPP. Additionally, the Applicant would provide Yakima County with a Stormwater Plan in compliance with YCC 12.10.210.	Ecology
	Best Management Practices - Stormwater	The ESCP and SWPPPs (both for construction and operation) would address stormwater runoff, flooding, and erosion to assure compliance with state and federal water quality standards. The ESCP would include BMPs such as the appropriate use of silt fencing to avoid or eliminate runoff of contaminants. The SWPPPs would include BMPs from the Department of Ecology's Stormwater Management Manual for Eastern Washington. The Vegetation and Weed Management Plan would be implemented to revegetate temporarily impacted areas and minimize erosion.	Ecology

	Preventative procedures to avoid spills	Substantial quantities of oils, fuels, and other potential contaminants are not expected to be stored on-site during construction or operation. The Applicant would prepare a Construction Phase Spill Prevention, Control, and Countermeasures (SPCC) Plan, consistent with requirements of 40 CFR Part 112, to prevent spills during construction and to identify measures to expedite the response to a release if one were to occur. Preventative procedures and rapid response measures would address/prevent potential water quality issues. The Applicant would also prepare an Operations Phase SPCC Plan in consultation with Ecology and pursuant to the requirements of CFR Part 112, Sections 311 and 402 of the Clean Water Act, Section 402 (a)(1) of the Federal Water Pollution Control Act, and RCW 90.48.080.	N/A

4.5.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ No	☐ Yes	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

References

EarthTouch. 2019. Phase I Environmental Site Assessment. SITE: Goose Prairie Solar Project. LOCATION: (Yakima), Yakima County, Washington. Gordon Meacham / Estate of Willamae G. Meacham. Prepared for OER WA Solar 1, LLC. December 19.

EarthTouch. 2020. Phase I Environmental Site Assessment. SITE: Goose Prairie 2 Solar Project. LOCATION: Near Yakima, Yakima County, Washington. S. Martinez Livestock, Inc. Prepared for OER WA Solar 1, LLC. February 7.

GNN (GN Northern, Inc.). 2020. Geotechnical Site Investigation and Critical Areas/Geohazards Report. Goose Prairie Photovoltaic (PV) Solar Array Project State Route 24 & Desmaris Cutoff, Moxee, Yakima County, Washington. GNN Project Number 220-1274. Prepared

4.6. Water Quantity – Water Use

No Part 4 Analysis required for this section.

4.7. Water Quantity – Runoff, Stormwater & Point Discharges

No Part 4 Analysis required for this section.

4.8. Plants

4.8.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	**Expected completion date**	**Expert agency participation Name, Title, and Involvement**	**Completed Y/N**
Review of Rare Plant Occurrence and Big Game Movement (Attachment G)	Oct 2020	Prepared by Western Ecosystems Technology, Inc. (WEST)	Y
Wildlife and Habitat Survey Report (Attachment F)	Sep 2020	WDFW – Eric Bartrand and Scott Downes; site visits and feedback on protocols; Prepared by WEST	Y

☒ **Check this box when all proposed studies for this topic are completed**

4.8.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	**Existing Condition and Problems**
DNR Natural Heritage Program - Special Status Plants	Western Ecosystems Technology, Inc. (WEST) has completed a Review of Rare Plant Occurrence and Big Game Movement, which is included as Attachment G. The goal of the desktop survey was to determine the likelihood for special status plant species to occur within the Facility Area Extent. Of the 38 sensitive plant species known to occur with Yakima County, five species were classified as likely to occur and five were classified as possible to occur within the Facility Area Extent. See Table 4.8-1 below for a list of the species.

Common Name[2]	Species	Habitat	Distribution Pattern[3]	Elevation (ft asl)	Blooming / Fruiting Period
Likely to Occur					
Columbia milkvetch	*Astragalus columbianus*	Shrub-steppe habitat on sandy loams or gravelly loams	Local Endemic; Current records from NE corner of County	420 - 2,330	Mid-late April through Mid-June
Pauper milkvetch	*Astragalus misellus var. pauper*	Shrub-steppe habitat found on open ridgelines and gentle upper slopes	Regional Endemic; Current records from NE corner of County	500 - 3,280	April through Mid-May
Bristle-flowered collomia	*Collomia macrocalyx*	Shrub-steppe habitat in dry open places on talus, rock outcrops, and lithosols. Typically vegetation is sparse and species diversity is low	Regional Endemic; Current records from NE corner of County	870 - 2,130	Late May to Early June
Dwarf mooncup	*Eremothera pygmaea*	Shrub-steppe habitat on unstable soil or gravel in steep talus, dry washes, banks and road cuts	Regional Endemic; Current record from E edge of County	450 - 2,050	June to August
Hoover's biscuitroot	*Lomatium lithosolamans*	Shrub-steppe habitat with basalt lithosols that are flat and well-drained with prominent rocks and gravel but little soil	Local Endemic; Current records throughout County	1,300 - 4,000	Early to late March
Possible to Occur					
Cottonball cryptantha	*Cryptantha gracilis*	Shrub-steppe habitat on basalt talus rock in dry, rocky or silty seasonal drainages	Sparse; historic record from NE corner of County	1,250 - 2,680	May to June
Desert cryptantha	*Cryptantha scoparia*	Shrub-steppe habitat on south facing slopes with full sun and little competing vegetation; grows between canyons with fine dry silt and talus	Sparse; historic record from NE corner of County	1,200 - 2,100	April to June
Bristly cryptantha	*Cryptantha spiculifera*	Shrub-steppe habitat on dry, open, flat or sloping areas with stable or stoney soils with low vegetation cover	Sparse; current records from E edge of County	450 - 3,500	May to July
Coyote tobacco	*Nicotiana attenuata*	Shrub-steppe habitats with dry sandy bottomlands, rocky washes and other dry open places	Sparse; Current records throughout County	320 - 2,640	June through August
Tufted evening-primrose	*Oenothera cespitosa ssp. cespitosa*	Shrub-steppe habitats and dry deserts; on loose talus; steep sandy or gravelly slopes	Peripheral; Current records in NE corner of County	410 - 1,800	Late April through Mid-June

[1] All species are considered sensitive by WNHP except for the bristle-flowered collomia which is listed as State Threatened
[2] Common name from Camp and Gamon (2011)
[3] *Local Endemic* = global range of taxon is less than 16,500 km^2 or about 1 degree of latitude x 2 degrees of longitude (about the size of an average county)
Regional Endemic = global range of taxon is between 16,500 to 250,000 km^2 (or an area about the size of the state of Washington)
Peripheral = globally widespread but Washington population is at the margin of the main contiguous range of the taxon
Sparse = widely distributed across the state but with relatively few populations (less than 20)

Table 4.8-1: Special status plant species that are likely or possible to occur within the Facility Area Extent

WDFW Priority Habitats and Species

WEST completed a habitat survey for the Survey Area, which wholly contains the Facility Area Extent, and found that there are approximately 195 acres of shrub-steppe habitat. Please see the Wildlife and Habitat Survey Report (Attachment F) for additional information. Of that total, approximately 45 acres have been characterized as “degraded” shrub-steppe which has a lower habitat function due to reduced shrub height, herbaceous cover and compacted soils.

Please see section 4.3 of the Wildlife and Habitat Survey Report for additional information.

4.8.C. Changes to and from Existing Condition

4.8.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	DNR Natural Heritage Program - Special Status Plants	Special status plant species that were classified as possible or likely to occur at the Facility are associated with shrub-steppe habitat. Site and design measures that minimize development in shrub-steppe habitat and avoid development of high-quality shrub-steppe habitat in the draw have reduced the likelihood that construction and operation of the Facility would result in impacts to sensitive plant species.
	WDFW Priority Habitats and Species	Please see Section 4.9 of the ASC for information regarding impacts to habitat including those classified as Priority Habitat and Species by WDFW.

4.8.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	☐ Yes	
	Topical Area/issue	**Changes**
	WDFW Priority Habitats and Species	There are approximately 195 acres of shrub-steppe habitat within the macro-siting boundary of the Facility Area Extent. As further discussed in the Wildlife and Habitat Survey Report (Attachment F), the qualitative conditions of this shrub-steppe habitat function range have been assessed and assigned value as either “intact” or “degraded.” At present, WDFW does not consider habitat function and value in their mitigation framework, so while the underlying soil type for the “intact” shrub-steppe habitat is the same as the “degraded” shrub-steppe habitat, the “degraded” habitat has lower habitat function due to reduced shrub height, herbaceous cover and compacted soils. To limit impacts to intact shrub-steppe, the proposed facilities north of the sage draw area are intentionally located in areas of lower sage habitat quality, including in the area of “degraded” shrub-steppe habitat, while avoiding other areas of intact, higher-quality shrub-steppe habitat. Thus, the Facility has been designed to minimize and avoid impacts to this shrub-steppe habitat when possible, including the avoidance of intact, higher-value habitat.

		In addition, at the request of WDFW, the “big sage draw” that runs east-west through the Facility Area Extent has been avoided entirely except for a road and electrical line crossing. This area will remain unfenced leaving the corridor open for terrestrial movement and wildlife connectivity.

4.8.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	**☒ Yes**		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Habitat Restoration and Mitigation Plan	The Applicant would develop and implement a Habitat Restoration and Mitigation Plan in consultation with WDFW and EFSEC. The Plan would detail the implementation of mitigation measures for impacts to the shrub-steppe habitat, including identification of the seed mixes that will be used for revegetation.	WDFW
	Best Management Practices - Special Status Plant Species	During construction, existing trees, vegetation, and wildlife habitat would be protected and preserved to the extent practical. The Applicant would implement the Vegetation and Weed Management Plan (Attachment D). Noxious weeds would be controlled in compliance with RCW 17.10.140. All herbicide and pesticide applications would be conducted in accordance with manufacturer instructions and all federal, state, and local laws and regulations; herbicides and pesticides would only be directly applied to localized spots and would not be applied by broadcasting techniques (RCW 17.21). Additionally, gravel for the Facility would be procured from a certified weed-free source. The Applicant would implement the Construction Stormwater Pollution Prevention Plan (SWPPP) and Operations SWPPP to reduce erosion.	WDFW

4.8.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ No	☐ Yes	
	Environmental Element	**Additional changes or effects**
	N/A	**N/A**

4.9. Wildlife

4.9.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	Expected completion date	Expert agency participation Name, Title, and Involvement	Completed Y/N
Wildlife and Habitat Survey Report (Attachment F)	Sep 2020	WDFW – Eric Bartrand and Scott Downes; site visits and feedback on protocols; Prepared by Western Ecosystems, Inc. (WEST)	Y
Review of Rare Plant Occurrence and Big Game Movement (Attachment G)	Oct 2020	Prepared by WEST	Y

☒ **Check this box when all proposed studies for this topic are completed**

4.9.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

<table>
<tr><th>Topical area/issue</th><th>Existing Condition and Problems</th></tr>
<tr><td>Habitat Types</td><td>In consultation with WDFW and in compliance with WAC 463-60-332(1), the Applicant contracted with WEST to complete a Threatened Endangered and Sensitive Species (TESS) survey and habitat mapping for the Survey Area which wholly encompasses the Facility Area Extent, over 2019 and 2020. The results of these surveys are found in the Wildlife and Habitat Survey Report (Attachment F).

Please see Section 4.3 of the report for a detailed description of the habitat types found within the Facility Area Extent. Table 4.9-1 and Figure 4.9-1 below summarize the acreage and areas of each habitat type (Figures are found at the end of this Section).

<table>
<tr><th>Habitat Type</th><th>Area (ac)</th><th>% Composition</th></tr>
<tr><td>Conservation Reserve Program</td><td>487.3</td><td>60.3</td></tr>
<tr><td>Shrub-steppe - Intact</td><td>149.5</td><td>18.5</td></tr>
<tr><td>Shrub-steppe - Degraded</td><td>45.3</td><td>5.6</td></tr>
<tr><td>Eastside Grasslands</td><td>95.0</td><td>11.8</td></tr>
<tr><td>Croplands</td><td>16.9</td><td>1.8</td></tr>
<tr><td>Pasture Mixed Environs</td><td>14.5</td><td>2.1</td></tr>
<tr><td>Total</td><td>808.5</td><td>100</td></tr>
</table>
Table 4.9-2: Habitat types observed during surveys</td></tr>
</table>

<table>
<tr><td>Threatened Endangered and Sensitive Species</td><td>Please see Section 4.1 of the Wildlife and Habitat Survey Report for a detailed discussion of the TESS species observed within the Facility Area Extent. Table 4.9-2 below and Figure 2 in Attachment F summarize the sensitive species observed during the surveys.
<table>
<tr><th>Common Name</th><th>Number of Individuals Observed</th><th>Status[1]</th></tr>
<tr><td>2019 Surveys</td><td></td><td></td></tr>
<tr><td>loggerhead shrike</td><td>1</td><td>BCC, SC</td></tr>
<tr><td>long-billed curlew</td><td>5</td><td>BCC</td></tr>
<tr><td>sagebrush sparrow</td><td>12</td><td>BCC, SC</td></tr>
<tr><td>sandhill crane</td><td>17</td><td>SE</td></tr>
<tr><td>Townsend's ground squirrel</td><td>12 colonies</td><td>SC</td></tr>
<tr><td>2020 Surveys</td><td></td><td></td></tr>
<tr><td>loggerhead shrike</td><td>2</td><td>BCC, SC</td></tr>
<tr><td>sagebrush sparrow</td><td>12</td><td>BCC, SC</td></tr>
<tr><td>Townsend's ground squirrel</td><td>2 colonies</td><td>SC</td></tr>
</table>
[1] BCC = Federal Birds of Conservation Concern Bird Conservation Region 9; SC = State Candidate; SE = State Endangered
Table 4.9-3: Species of concern observed during TESS surveys</td></tr>
<tr><td>Raptor Nests</td><td>No active nests were identified within the Facility Area Extent during the surveys. One active red-tailed hawk nest was identified within the 0.4-km buffer of the Facility Area Extent. Please see Section 4.2 of the Wildlife and Habitat Survey Report for a detailed discussion of the raptor nests observed within the Survey Area. Table 4.9-3 below and Figure 3 in Attachment F summarize the raptor nests observed during the surveys.
<table>
<tr><th>Nest ID</th><th>Species</th><th>Status</th></tr>
<tr><td>2019 Surveys</td><td></td><td></td></tr>
<tr><td>1</td><td>red-tailed hawk</td><td>Occupied/Active</td></tr>
<tr><td>2</td><td>unknown</td><td>Unoccupied/Inactive</td></tr>
<tr><td>3</td><td>common raven</td><td>Occupied/Active</td></tr>
<tr><td>2020 Surveys</td><td></td><td></td></tr>
<tr><td>1</td><td>red-tailed hawk</td><td>Occupied/Active</td></tr>
<tr><td>2</td><td>N/A</td><td>Did not locate</td></tr>
<tr><td>3</td><td>unknown</td><td>Unoccupied/Inactive</td></tr>
<tr><td>4</td><td>unknown</td><td>Unoccupied/Inactive</td></tr>
<tr><td>5</td><td>unknown</td><td>Unoccupied/Inactive</td></tr>
</table>
Table 4.9-4: Raptor nests observed during surveys</td></tr>
<tr><td>Upland Wildlife Habitat Conservation Area</td><td>As shown in Figure 4.9-2 below, a northern portion of the Facility Area Extent is within an area mapped by Yakima County as an “Upland Wildlife Habitat Conservation Area” (UWHCA) which is subject to the management requirements described in Yakima County Code Chapter 16C.11.</td></tr>
<tr><td>Wildlife Migration Routes</td><td>The Applicant contracted with WEST to perform an analysis of big game movement and the results are presented in the “Review of Rare Plant Occurrence and Big Game Movement at the Goose Prairie Solar Project” memo (Attachment G).</td></tr>
</table>

	The memo concludes that "because of the [Facility's] location on the outside perimeter of a large, unfragmented [Habitat Conservation Area] (HCA), removal of higher quality habitat in the northern portion of the [Survey] Area would not substantially reduce available habitat on the landscape or within the HCA." Specific to movement corridors for mule deer, the memo states that "due to the intensity of existing development in the surrounding landscape, construction of the [Facility] would not interfere with potential movement corridors and linkages between HCAs." For Rocky Mountain Elk, the report states that "removal of habitat from [Facility] construction does not appear to substantially reduce the amount of habitat or connectivity within the elk range." (Attachment G at pages 10-11). The Facility Area is within the Pacific Flyway, a major north-south flyway for migratory birds in America, extending from Alaska to Patagonia. The Pacific Flyway is an extensive area that covers much of the state of Washington. While some migratory birds were observed at the site, such as sandhill cranes, they were observed flying approximately 400 meters above ground level and did not exhibit site use within the Facility Area or surrounding area. The Wildlife and Habitat Survey notes that no suitable foraging, loafing or roosting habitat (i.e., migratory stopover habitat) for sandhill cranes occurred within the Facility Area.
Noise, Light and Glare	The Facility is located in an area with agricultural and residential development and accompanying existing sources of noise, light and glare. The Facility is also located in close proximity to State Route 24 (SR-24), with the closest fence line approximately 150 feet from that thoroughfare. As noted in Section 4.16 of this ASC, existing ambient sound levels are expected to range between 40 and 55 A-weighted decibels (dBA) equivalent sound level (L_{eq}) during daytime hours and 30 and 45 dBA L_{eq} during nighttime hours throughout the Facility Area Extent. Please see Section 4.16 for a detailed analysis of noise, light and glare.

4.9.C. Changes to and from Existing Condition

4.9.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Habitat	Impacts for habitat are distinguished between permanent impacts and temporary impacts. In its Wind Power Guidelines, WDFW defines permanent impacts to habitat as those that are anticipated to persist and cannot be restored within the life of the project. In the context of solar development, permanent impacts would include new permanent roads, operations and maintenance facilities, posts, and concrete pads for electrical equipment. Temporary impacts to habitat are those that are anticipated to end when construction is complete and the impacts have been restored (WDFW 2009). Temporary impacts include trenching for placement of underground cables, construction staging areas, lay-down areas, and temporary construction access. Temporary impacts also include the portions of road corridors that are used during construction but that are re-vegetated at the end of construction, and do not include the portions of roads that continue to be used for project operations. The temporary and permanent impacts would be calculated in consultation with WDFW and EFSEC. Please see Section 4.9.D below and the Habitat Mitigation Memo (Attachment R) for more information regarding this consultation.
	Threatened Endangered and Sensitive Species	The Facility has been designed to avoid impacts to habitats associated with the TESS species that were observed during the pre-construction TESS surveys. Sandhill cranes were only observed flying over the Facility Area Extent at approximately 400 m above ground level. No suitable foraging, loafing or roosting habitat occurred within the Facility Area Extent. The Facility would have no impacts to sandhill cranes. Sagebrush sparrows were primarily associated with drainage bottoms that contained mature patches of shrub-steppe habitat both on the north-facing slopes of the Meacham Parcels and the ephemeral stream running east-west across the Facility Area Extent. Both of these areas are being avoided by the Facility. The Townsend's Ground Squirrel colonies exist primarily along Route 24, under the BPA transmission line and near the

		outbuildings. Most of these areas are being avoided by the Facility by their nature of being adjacent to the highway, within the BPA easement or proximate to outbuildings, which are avoided in Facility design. Long-billed curlews were observed only in the eastside grasslands at the far north and northeast corner of the Facility Area Extent, though evidence of foraging was found in the grasslands in the north central part of the Facility Area Extent. Despite thorough searches in areas where birds were flushed, no long-billed curlew nests were found within the Facility Area Extent. While two loggerhead shrikes were observed during the surveys, WEST concluded that their nesting habitat, which includes trees, hedgerows and windbreaks, is “mostly absent” from the Facility Area Extent. Federally listed wildlife and plant species are unlikely to occur within the Project, nor does the Project contain USFWS-designated critical habitat for these species.
	Upland Wildlife Habitat Conservation Area	As seen below in Figure 4.9-2, the Facility is located at the edge of the UWHCA which totals over 210,000 acres of contiguous area in Yakima County alone. The Facility Area Extent includes 260 acres of this UWHCA, approximately 0.12% of the total area. With the Facility being bordered on its other two sides by actively cultivated land and on its third by State Route 24, the Facility is not expected to have major impacts to the UWHCA.
	Water quality, stream hydrology and in-stream flows	As further described in Section 4.3, the Facility will include either a bridge or a culvert across an ephemeral stream within the Facility Area Extent which may require a Hydraulic Project Approval (HPA) permit from WDFW. If deemed necessary following discussions with WDFW, the Applicant will acquire the HPA permit. As further discussed in Section 4.3, construction activities will be conducted consistent with applicable regulations and site-specific stormwater, sediment, and spill plans to ensure protection of aquatic habitat.
	Wildlife Migration Routes	As noted above, WEST concluded that based on remotely-sensed data from the Washington Wildlife Habitat Connectivity Working Group, the Facility “would not interfere with potential movement corridors and linkages between HCAs.” Migration routes for mule deer were mapped north and south of the proposed Facility. State Route 24 which borders the Facility to the south and the high-intensity agricultural operations in the surrounding area reduces the likelihood that the Facility is part of a big game migration route.

	Noise, Light and Glare	As further described in Section 4.16, the Facility is not expected to have significant noise impacts during operations. Human activity and noise would be limited to occasional maintenance activities and is not expected to impact wildlife. Construction activities would only occur between the hours of 7 am and 10 pm in accordance with WAC 173-60-050 which would limit the impacts of construction noise to wildlife. Additional BMPs for noise are listed in Section 4.16. While wildlife species are susceptible to noise disturbances caused by humans and construction equipment, the BMPs will limit these impacts to the extent feasible. Lighting at the Facility would be limited to security lighting which is comparable to the lighting for residences in the surrounding area. Further, unnecessary lighting would be turned off at night to limit attraction of migratory birds. This includes using lights with timed shutoff, downward-directed lighting to minimize horizontal or skyward illumination, and avoidance of steady-burning, high-intensity lights. The Facility would be built with solar panels that are treated with an anti-reflective coating to minimize glare. Fatalities or injuries of aquatic habitat birds such as grebes, loons, herons, coots, and diving ducks at solar energy facilities has led some scientists to suggest that these species might interpret solar facilities as water (Kagan et al. 2014, Walston et al. 2015). Kosciuch et al. (2020) reviewed bird fatality data from 10 PV solar facilities in the southwestern U.S and stated the underlying mechanism responsible for bird fatalities at PV solar projects, especially water-obligate and water-associated birds, was not identified in any studies they reviewed. Kosciuch et al. (2020) found that the closer a PV solar facility was to a major bird migration stop-over site (Salton Sea), the higher the proportion of water bird fatalities. The Facility does not occur near a large waterbody that serves as a major migratory stop-over site; thus waterbird mortality, should it occur, is not expected to rise the level of that found at solar projects in California.
	Noxious or non-native species	The Applicant has developed a Vegetation and Weed Management Plan (Attachment D), which includes methods for effective noxious weed control and revegetation. The plan was created in consultation with the Yakima County Noxious Weed Control Board. The Facility would comply with RCW 17.10.140 in controlling the spread of noxious weeds.

	Risk of collision by avian species	The development of the Facility will convert the current landscape into a PV solar array field, which could pose a collision risk to birds during construction and operation. Predicting the number and species that could occur as fatalities at the Facility (or any project) is not possible at this time. From the review, Kosciuch et al. (2020) derived six key points: 1) three of the top four species detected as fatalities were common and abundant ground-dwelling birds; 2) most fatalities occurred in fall; 3) there has been no evidence of a large-scale fatality event of nocturnal migrating passerines; 4) approximately 53% of fatalities were of feather spots from an unknown source of fatality; 5) water-obligate birds (e.g., loons and grebes) occurred in 9 of 10 studies in the Sonoran and Mojave Deserts bird conservation region (BCR in a known migration route; and 6) the average annual fatality estimate across all species was 2.49 fatalities/MW/year. The 2020 Kosciuch review was based on findings from 10 solar facilities across California and Nevada, some of which were sited in areas similar to the Facility Area Extent (comprising mostly dry climates, some with shrub-steppe habitat). Although the Facility is located outside of the region where the studies summarized by Kosciuch et al. (2020) occurred, similarly low fatality rates of common ground dwelling birds may be expected at the Facility.
	Hazardous or toxic spills	As demonstrated in Section 4.13, the risk of hazardous or toxic spills at the Facility is low. The Applicant would prepare both a Construction Spill Prevention, Control and Countermeasures (SPCC) Plan and an Operations SPCC Plan. The SPCC Plans would be implemented during construction and operation to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the release.

4.9.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	**☐ Yes**	
	Topical Area/issue	**Changes**
	Habitat	The Facility has been designed to avoid higher value wildlife habitat, to the extent practical. At the request of WDFW, the shrub-steppe habitat that exists in the draw that runs east-west through the Facility Area Extent has been avoided entirely except for an access road and collector line crossing. This area would remain unfenced during operations, leaving the corridor open for terrestrial wildlife movement.

		At present, WDFW does not consider habitat function and value in their mitigation framework, so while the underlying soil type for the intact shrub-steppe habitat is the same as the degraded shrub-steppe habitat, the degraded habitat has lower habitat function due to reduced shrub height, herbaceous cover and compacted soils. To limit impacts to intact shrub-steppe, the proposed facilities north of the sage draw area are intentionally located on areas of lower sage habitat quality, including in the area of degraded shrub-steppe habitat, while avoiding other areas of intact shrub-steppe brush to the extent practical. Scientific data suggests residual habitat function in areas impacted by solar development. A study conducted at the Topaz Solar Farms in San Luis Obispo County, California documented higher vegetation productivity on site than in surrounding reference sites (Sinha et al. 2018). Numerous wildlife species were recorded using habitat within that project site, including 27 bird species, eight mammal species, and four reptile species (Sinha et al. 2018). As such, the potential impacts to birds will be partially dependent on site restoration.
	Threatened Endangered and Sensitive Species	The initial site was located approximately 12 miles east, as-the-crow-flies. of where the current site is today, in a more remote location that was closer to the Yakima Training Center (YTC). WDFW provided feedback regarding the preliminary site's proximity to sage grouse habitat and expressed concern about potential wildlife impacts. This early feedback led OneEnergy to initiate avoidance mitigation by moving the Project away from the area of WDFW concern. The new (and current) site is in a location that is largely comprised of previously disturbed agricultural land, bordered on three sides by land that is actively farmed for alfalfa, hops, and fruit and on the fourth side by land that is actively grazed, directly in-between proximally-located existing disturbances, including State Route 24 and the BPA Midway-to-Moxee 115 kilovolt transmission line.

4.9.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	**☒ Yes**		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Avoidance Measures	During siting and design, the Applicant took several measures to avoid and minimize impacts to wildlife and habitat. The Applicant has been in consultation with WDFW on this Facility since September 2017. Section 1b of the Habitat Mitigation Memo (Attachment R) includes a detailed history of this consultation. Avoidance measures include site selection screening focused on previously developed, or degraded sites such as the high-intensity agricultural region of the Moxee Valley, where the Facility is located. Based on WDFW feedback, the Applicant moved the site from one with greater potential impacts to Priority Habitat and Species to the current site. Siting the Facility immediately adjacent to the interconnecting transmission line avoids the construction of additional high-voltage transmission lines and accompanying habitat disturbance. Additionally, the Facility will avoid – and leave unfenced – the shrub-steppe sage draw located in between the northern and southern portions of the Facility (see Figure 4.9-3). The only Facility components in this area will be the collector electrical infrastructure and civil road infrastructure necessary to connect the Facility. Avoidance of this approximately 62-acre area maintains higher-value habitat and leaves the corridor open for terrestrial movement and wildlife connectivity function.	WDFW
	Minimization Measures	To minimize impacts to meso-carnivores and small mammals, the Facility has committed to raising the bottom of the fence by four inches above grade. To minimize impacts to birds and animals that attempt to jump the fence, razor wire will not be used with the fence. These fence specifications are in direct response to WDFW request.	WDFW

		To minimize impacts to intact shrub-steppe, the proposed facilities north of the sage draw are intentionally located on areas of lower quality shrub-steppe habitat while avoiding other areas of intact shrub-steppe habitat to the extent practical. During construction, existing trees, vegetation, and wildlife habitat would be protected and preserved to the extent practical.	
	Construction and Operations BMPs	Unnecessary lighting would be turned off at night to limit attraction of migratory birds. This includes using lights with timed shutoff, downward-directed lighting to minimize horizontal or skyward illumination, and avoidance of steady-burning, high-intensity lights. Where applicable, the Project's above-ground power lines are designed and constructed to minimize avian electrocution, according to guidelines outlined in Avian Power Line Interaction Committee standards (APLIC, 2012). Noxious weeds would be controlled in compliance with RCW 17.10.140 and the Vegetation and Weed Management Plan (Attachment D). All herbicide and pesticide applications would be conducted in accordance with manufacturer instructions and all federal, state, and local laws and regulations; herbicides and pesticides would only be directly applied to localized spots and would not be applied by broadcasting techniques (RCW 17.21). Construction activities would only occur between the hours of 7 am and 10 pm in accordance with WAC 173-60-050 which would limit the impacts of construction noise to wildlife. Prior to construction, all supervisory construction personnel would be instructed on wildlife resource protection measures, including: 1) applicable federal and state laws (e.g., those that prohibit animal collection or removal); and 2) the importance of these resources and the purpose and necessity of protecting the resources, and ensuring this information is disseminated to applicable contractor personnel, including the correct reporting procedures. Construction personnel would be trained in the following areas when appropriate: awareness of sensitive habitats and bird species,	WDFW

		potential bird nesting areas, potential bat roosting/breeding habitat, and general wildlife issues. Appropriate stormwater management practices in accordance with the SWPPPs that do not create attractions for birds and bats would be implemented. The Applicant would prepare an Erosion and Sediment Control Plan (ESCP) which would include BMPs to minimize surface water runoff and soil erosion. The Applicant would prepare Spill Prevention, Control and Countermeasures (SPCC) Plans to be implemented during construction and operation to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the release. Vehicle speeds would be limited to 25 mph to avoid wildlife collisions. Fire hazards from vehicles and human activities would be reduced (e.g., use of spark arrestors on power equipment, avoiding driving vehicles off roads, allowing smoking in designated areas only; WAC 463-60-352). The Applicant would prepare Fire Control Plans in consultation with the Yakima County Fire Marshal and the East Valley Fire Department. Following decommissioning, reclamation of the Facility Area shall begin as quickly as possible to reduce the likelihood of ecological resource impacts in disturbed areas.	
	Compensatory Mitigation	In order to achieve “no net loss of habitat functions and values” as required by WAC 463-62-040, the Applicant proposes to coordinate with WDFW and EFSEC to determine an appropriate compensatory mitigation payment. The Applicant has prepared a Habitat Mitigation Memo (Attachment R), which provides context for determining the additional mitigation required to achieve “no net loss.” The Applicant proposes to begin meeting with WDFW and EFSEC within 15 business days of the submission of this ASC, aimed at conclusion of the	WDFW

		discussion within 60 days of the first meeting and prior to completion of SEPA review. Once determined, the agreed-upon mitigation will be provided as supplemental information to this Section 4.9 to inform the SEPA determination and the EFSEC recommendation.	
	Habitat Restoration and Mitigation Plan	The Applicant would prepare a Habitat Restoration and Mitigation Plan in consultation with EFSEC and WDFW. The plan would specify the mitigation obligations and implementation plans, including those for construction, operations and decommissioning. Additionally, the plan would include details for revegetation of temporarily disturbed areas, including identification of an appropriate native plant seed mixture for revegetation, the timing for restoration and a plan for monitoring the success of revegetation. The plan would address the requirements of YCC 16C.11.070 and WAC 463-60-332(3). The plan would be finalized following issuance of the SCA and submitted to EFSEC for approval at least sixty days prior to site preparation.	WDFW

4.9.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ No	☐ Yes	
	Environmental Element	**Additional changes or effects**
	N/A	**N/A**

References

APLIC (Avian Power Line Interaction Committee). 2012. Reducing Avian Collisions with Power Lines. Edison Electric Institute and APLIC. Washington, D.C.

EPA (United States Environmental Protection Agency). 1971. Community Noise. NTID300.3 (N-96-01 IIA-231). Prepared by Wylie Laboratories.

Kagan, R. A., T. C. Viner, P. W. Trail, and E. O. Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics Laboratory, US Fish and Wildlife Service (USFWS), Ashland, Oregon. April 2014. Available online at: http://docketpublic.energy.ca.gov/publicdocuments/09-afc-07c/tn202538_20140623t154647_exh_3107_kagan_et_al_2014.pdf

Kosciuch, K., D. Riser-Espinoza, M. Gerringer, and W. Erickson. 2020. A Summary of Bird Mortality at Photovoltaic Utility Scale Solar Facilities in the Southwestern U.S. PLoS ONE 15(4): e0232034. doi: 10.1371/journal.pone.0232034.

Sinha, P., Hoffman, B., Sakers, J. and Althouse, L. 2018. Best Practices in Responsible Land Use for Improving Biodiversity at a Utility-Scale Solar Facility. Case Studies in the Environment, 2018, pps. 1–12. electronic ISSN 2473-9510. www.ucpress.edu/journals.php?p=reprints. DOI: https://doi.org/10.1525/cse.2018.0011231.

Walston, L. J., Jr., K. E. Rollins, K. P. SMith, K. E. LaGory, K. Sinclair, C. Turchi, T. Wendelin, and H. Souder. 2015. A Review of Avian Monitoring and Mitigation Information at Existing Utility-Scale Solar Facilities. ANL/EVS-15/2. Prepared by Argonne National Laboratory (Argonne). Prepared for US Department of Energy (USDOE), SunShot Initiative and Office of Energy Efficiency and Renewable Energy (EERE). April 2015. Available online at: http://www.evs.anl.gov/downloads/ANL-EVS_15-2.pdf

WDFW (Washington Department of Fish and Wildlife). 2009. Wind Power Guidelines. Olympia, WA. 30pp.

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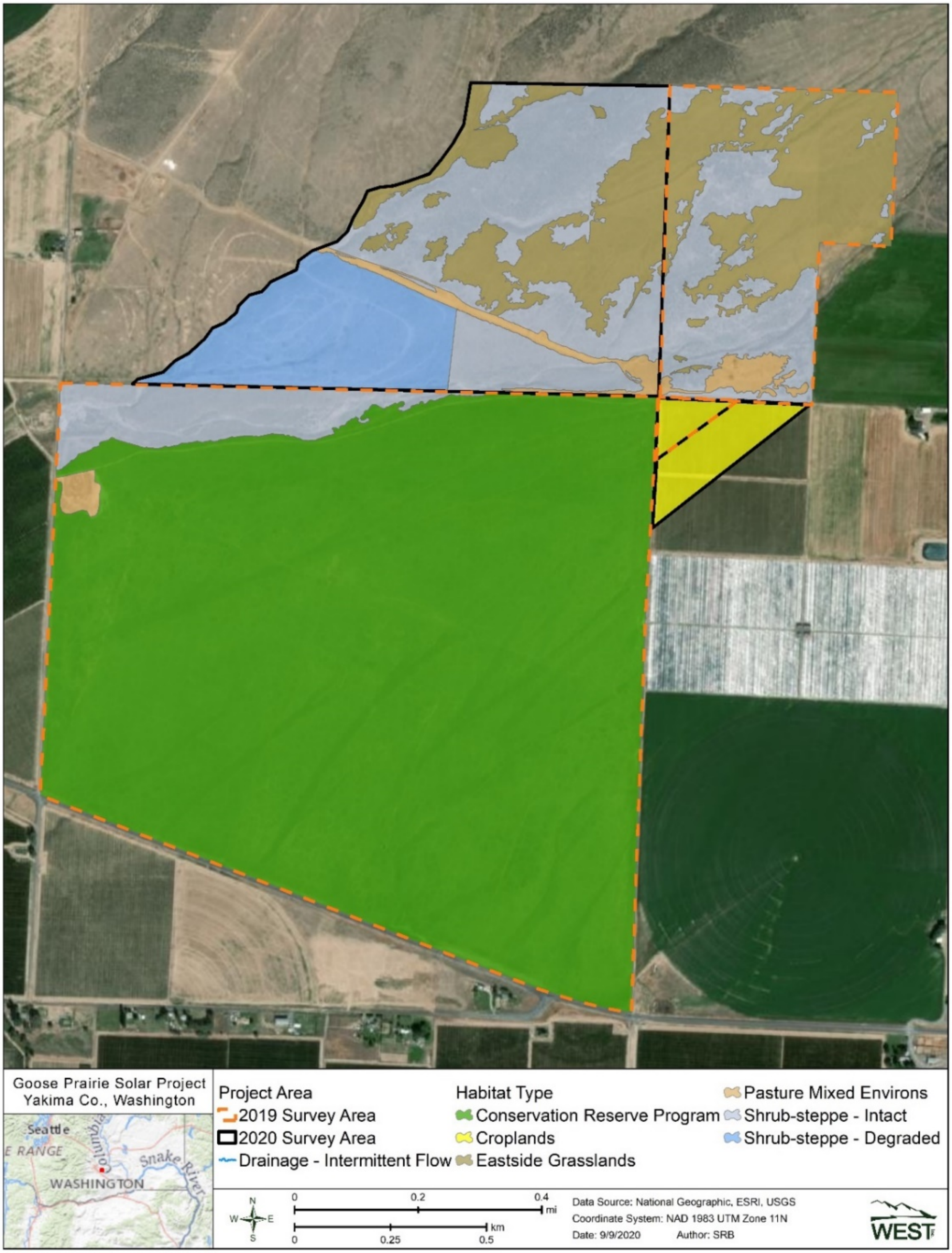

Figure 4.9-4: Habitat Type

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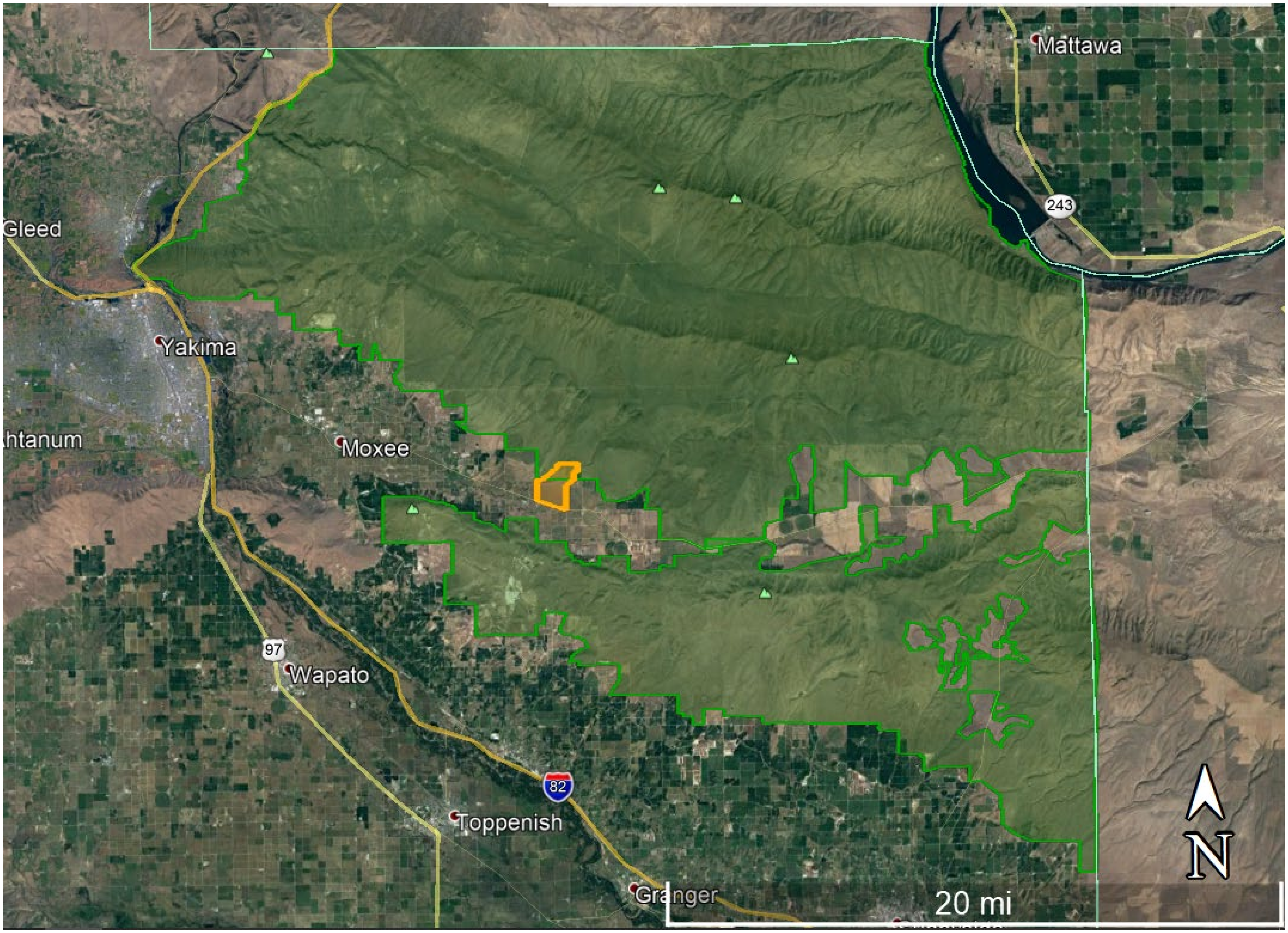

Figure 4.9-2: Upland Wildlife Habitat Critical Area in Yakima County

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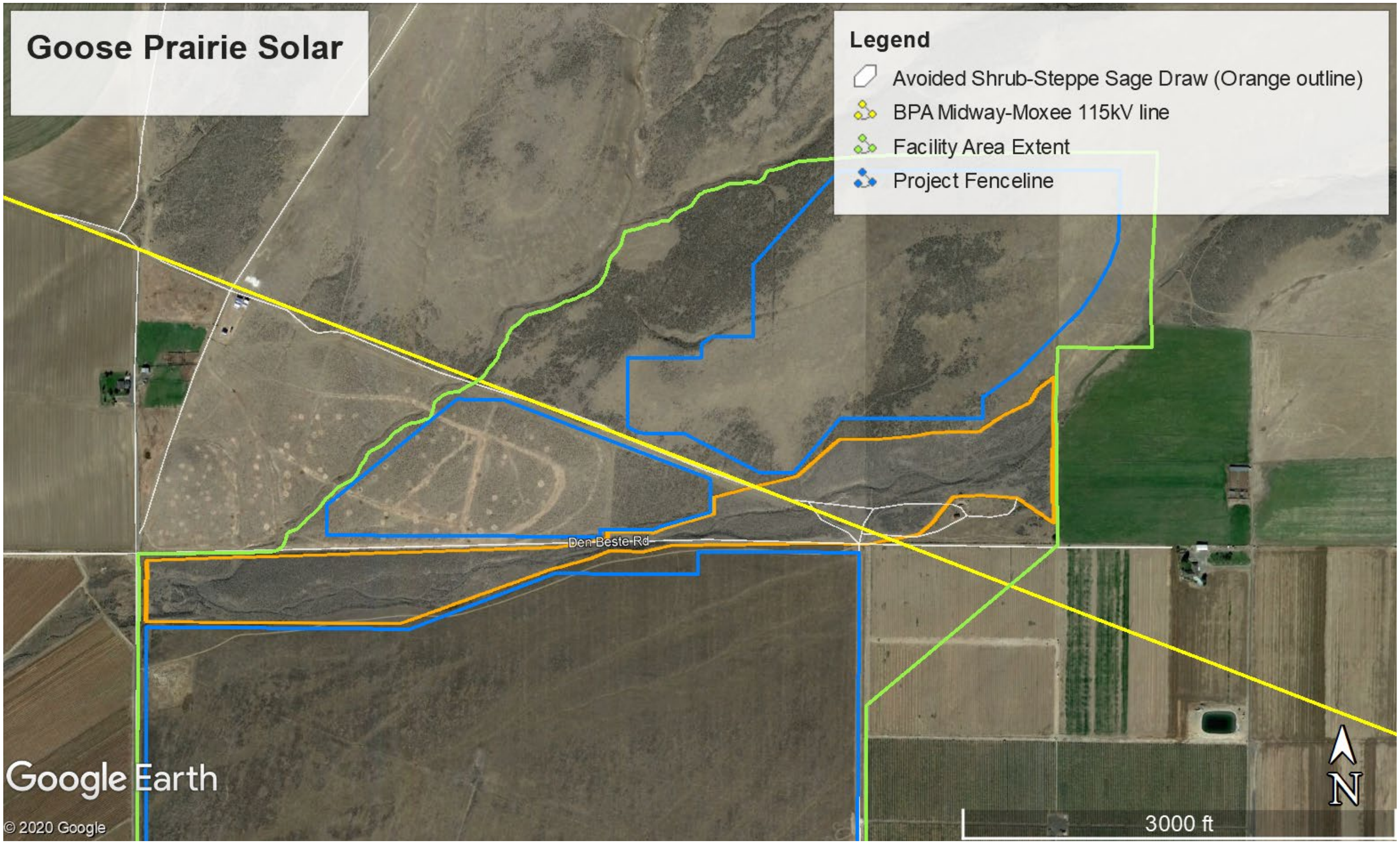

Figure 4.9-3: Location of Avoided Shrub-Steppe Sage Draw

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4.10. Energy and Other Natural Resources

No Part 4 Analysis required for this section.

4.11. Waste Management

No Part 4 Analysis required for this section.

4.12. Environmental Health – Existing Site Contamination

No Part 4 Analysis required for this section.

4.13. Environmental Health – Hazardous Materials

4.13.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	**Expected completion date**	**Expert agency participation Name, Title, and Involvement**	**Completed Y/N**
Phase I Environmental Site Assessment, SITE: Goose Prairie Solar Project, LOCATION: Yakima County, Washington (Gordon Meacham/Estate of Willamae G. Meacham). December 19, 2019.	Complete	EarthTouch, Inc., Environmental Consultants, Contractor	Y
Phase I Environmental Site Assessment, SITE: Goose Prairie Solar Project, LOCATION: Yakima County, Washington (S. Martinez Livestock, Inc.). February 7, 2020.	Complete	EarthTouch, Inc., Environmental Consultants, Contractor	Y

☒ **Check this box when all proposed studies for this topic are completed**

The Applicant completed Phase I Environmental Site Assessment (ESA) reports for the Facility Parcels consisting of the Meacham Property and Martinez Property in December 2019 and February 2020, respectively. The Phase I ESA reports are referenced in this section where appropriate to address existing site conditions.

4.13.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
Known or possible contamination	Known or possible contamination on the Facility Parcels from present or past uses is documented in the Phase 1 ESA reports (EarthTouch 2019, 2020). The Meacham Property currently consists of vacant undeveloped land with native vegetation. There are no vertical structures on the Meacham Property and no irrigation practices are performed on the property. There was remnant metal piping noted along the northern portion of the Meacham Property and timber noted on the east-central portion of the Property. Historic information indicates that the Meacham Property has been used primarily for agricultural purposes. The owner of the Meacham Property is unaware of the application of herbicides and pesticides on the property in the past. The Phase 1 ESA notes that while use cannot be ruled out, the application of fertilizers, pesticides, or herbicides in agricultural production areas would be assumed to be relatively uniform and generally consistent with manufacturer guidelines. The Martinez Property currently consists of vacant undeveloped land with native vegetation for cattle and sheep grazing, irrigated agricultural areas, and two developed areas including a small corralled area to the southwest and an unoccupied cabin and garage north of Den Beste Road. A representative of the owner of the Martinez Property stated that herbicides and pesticides may have been applied to the property in the past. The Phase 1 ESA notes that the application of fertilizers, pesticides, or herbicides in agricultural production areas would be assumed to be relatively uniform and generally consistent with manufacturer guidelines. The south and southeast portions of the Property outside the Facility Area Extent contain a residence, barn for equipment storage, and irrigated agricultural land. The irrigated areas contain wheel lines, grasses and hay, and a recently planted apple orchard. The residence and unoccupied cabin are serviced by septic systems. An empty approximately 500-gallon metal aboveground storage tank was identified near the unoccupied cabin and was historically used for water. Four 300-gallon totes of sulfuric acid used to neutralize water hardness are located on the southeast portion of the Martinez Property near the reservoir which is outside the Facility Area Extent and would not pose a risk to the Facility. The regulatory database records review completed for both Phase 1 ESA reports conclude that listed facilities, properties, and business operations within one mile of the Meacham and Martinez Properties pose a low or insignificant concern of adverse impact to the environmental condition of the properties.

Risk of fire or explosion	No petroleum products or potentially hazardous substances are stored within the Facility Area Extent on the Meacham and Martinez Properties. The Facility Area Extent occurs predominantly on vacant undeveloped land and land used for dryland agricultural and grazing. The greatest fire risk is associated with grass fires that could occur during the hot, dry summer season.
Hazardous material sources	Past agricultural uses within the Facility Area Extent generally included planting and harvesting of wheat or native crops. As described above, the potential historic use of organic and inorganic fertilizers, pesticides, or herbicides could have occurred in agricultural production areas within the Facility Area Extent. Possible past applications are assumed to be relatively uniform and generally consistent with manufacturer guidelines. There is no evidence that organic or inorganic herbicides and pesticides were stored, staged, mixed, applied through irrigation systems, or disposed of within the Facility Area Extent. Therefore, possible past applications of organic or inorganic herbicides and pesticides pose low concern of adverse environmental impact with respect to development of the Facility. The Phase 1 ESA reports (EarthTouch 2019, 2020) for the Meacham and Martinez Properties do not find current or historic evidence of contamination on the properties and did not identify other potentially hazardous substances within the Facility Area Extent. In addition, no underground hazardous liquid or natural gas transmission pipelines occur within the Meacham and Martinez Property boundaries or surrounding area.
Public safety standards	No safety plans such as preparedness and prevention plans, spill prevention, countermeasure and control (SPCC) plans, or other related plans exist for the Meacham and Martinez Properties.
Emergency plans and services	The Facility Area Extent is currently served by the East Valley Fire Department – Yakima County Fire District #4. No site-specific emergency plans are associated with the Meacham and Martinez Properties.

4.13.C. Changes to and from Existing Condition

4.13.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Risk of fire or explosion	Overall, the risk of fire at the Facility is low. Access roads at the Facility would be designed pursuant to the current International Fire Code adopted by the State of Washington to accommodate heavy-duty firefighting equipment. The Applicant has initiated consultation with the Yakima County Fire Marshal to ensure compliance with the International Fire Code, as well as coordinate with the East Valley Fire Department - Yakima County Fire District #4 to provide the Facility site and equipment information pertinent to emergency response. As described below, minimal amounts of petroleum fuels and lubricating oils would be transported, stored, or used to operate equipment during construction and operation of the Facility. These materials would be stored in compliance with applicable local, state, and federal environmental laws and regulations and would not pose an increased risk of fire or explosion. The Applicant is considering the development of an optional battery energy storage system (BESS) using lithium-ion or flow battery technology described in Section 2.A.2.f. These technologies are typically encased in steel containers. The flow battery technology uses an electrolyte solution circulated through two tanks. While not considered an extremely hazardous material, the electrolyte solution would be contained within the encased steel container in the unlikely case of a leak. The lithium-ion battery technology is composed of individual cells that are hermetically sealed and would not be opened onsite for any installation or maintenance purposes and do not have any wastewater discharges. Lithium-ion batteries contain flammable liquids that can become heated during operation. Accordingly, each lithium-ion BESS would contain a fire suppression system that meets with fire code and National Fire Protection Association (NFPA) Standards, specifically NFPA 855 “Standard for the Installation of Stationary Energy Storage Systems.” The system would include monitoring equipment and alarm systems with remote shut-off capabilities. Installation, maintenance, and decommissioning of BESS components would be done in compliance with 49 Code of Federal Regulations (CFR) §173.185, which regulates the transportation of lithium-ion batteries. The Facility would use thoroughly proven, financeable batteries, inverters, and related equipment, including battery products that are

		listed or certified by Underwriters Laboratories (UL), the industry's foremost safety and sustainability third-party standard. Hazardous materials may be involved at the Facility if lead-acid batteries are elected as a backup uninterruptible power supply system. Lead-acid batteries contain sulfuric acid within a maintenance-free sealed leakproof exterior. Sulfuric acid is considered an extremely hazardous material by the U.S. Environmental Protection Agency (EPA) under 40 CFR §355. As required by regulation, if lead-acid batteries are installed, secondary containment would be employed, and the Applicant would include sulfuric acid as part of its annual Emergency Planning and Community Right-to-Know Act report to local emergency responders. The lead-acid batteries would be replaced at least every 5 years, if not earlier, as indicated by system controls. Replacement of lead-acid batteries would be handled by a qualified contractor and adhere to applicable regulations for transport and disposal, including but not limited to 49 CFR §173.159.
	Hazardous material sources	During construction, if storage of small amounts of petroleum fuels and lubricating oils is required, it would occur in a work area that provides for secondary containment. Most fuel and lubricating oil or hydraulic fluids for construction equipment would be delivered to the construction yard by a licensed contractor on an as needed basis. Facility operation would not require substantial quantities of fuels, oils, or chemicals onsite except as required for the operation of Facility components such as the substation transformers and inverters and transformers associated with Facility Power Centers. The Applicant would comply with EPA rules, specifically the USEPA Amended Spill Prevention, Control, and Countermeasure Rule issued in 2006 (EPA-550-F-06-008) related to these components. The Applicant would implement methods for effective noxious weed control and revegetation during construction and operation of the Facility. These methods are described in the Vegetation and Weed Management Plan (Attachment D). The plan includes guidelines for the handling and application of herbicides. If herbicide treatment is necessary, the Applicant would only use herbicides that are approved for use in the state of Washington by the EPA and the Washington State Department of Agriculture (WSDA). Herbicides would be transported to the Facility as needed for the day's work and would not be stored onsite.
	Public safety standards	The Applicant would prepare both a Construction Spill Prevention, Control and Countermeasures (SPCC) Plan and an Operations SPCC Plan. The SPCC Plans would be implemented during construction and operation to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the

		release. The SPCC Plans would restrict the location of fuel storage, fueling activities, and equipment maintenance and provide procedures for these activities; identify training and lines of communication to facilitate the prevention, response, containment, and cleanup of spills; and identify the roles and responsibilities of key personnel and contractors. Due to these procedures, the Facility is not expected to result in impacts from hazardous spills. Furthermore, existing laws and regulations identified in Section 4.13.D. below would adequately mitigate any potential impact from hazardous materials involved for the Facility.

4.13.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	☐ Yes	
	Topical Area/issue	**Changes**
	N/A	N/A

The Phase I ESA reports conducted for the Facility demonstrate that the existing condition of the Facility Parcels would not affect construction, operation, or decommissioning of the proposed Facility (EarthTouch 2019, 2020). As described above, the ESAs did not find current or historic evidence of contamination on the Meacham and Martinez Properties and did not identify other potentially hazardous substances within the Facility Area Extent. No underground hazardous liquid or natural gas transmission pipelines occur within the Meacham and Martinez Property boundaries or surrounding area.

4.13.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	☒ Yes		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Emergency Plans	The Applicant would develop a set of emergency plans including 1) a Construction Phase Emergency Plan, 2) a Construction Phase Fire Control Plan, 3) a Construction Phase Health and Safety Plan, 4) an Operations Phase Emergency Plan, 5) an Operations Phase Fire Control Plan, and 6) an Operations Phase Health and Safety Plan. More information on what each plan would contain and the submittal timeline is provided in Section 2.A.6. A copy of the plans would be maintained onsite in the operations and maintenance building and provided to local emergency services.	Yakima County Sheriff’s Office East Valley Fire Department - Yakima County Fire District #4. Yakima County Fire Marshal’s Office
	Best Management Practices - Fire Prevention	To minimize the risk of fire or explosions, the Facility would implement Best Management Practices including: • Construction equipment would have spark-arresting mufflers, heat shields, and other protection measures to avoid starting fires.	East Valley Fire Department

		• Fire extinguishers would be available in vehicles and on equipment and work crews would be trained in fire avoidance and response measures. • During construction, water would be trucked on site and would be available for fire suppression should a fire occur. During operation, the Facility's proposed domestic water well would be accessible by standard firefighting equipment and provide adequate water for the potential need of the Facility. Additionally, the Applicant would provide training to fire responders and construction staff on a recurring basis during the life of the Facility. The intent of the training would be to familiarize both responders and workers with the codes, regulations, associated hazards, and mitigation processes related to solar electricity and battery storage systems. This training also would include techniques for fire suppression of photovoltaic (PV) and BESS technology.	
	Use of approved herbicides	In compliance with RCW 17.10.140, the Applicant would only use herbicides that are approved for use in the state of Washington by the EPA and WSDA.	Yakima County Noxious Weed Control Board
	Battery Energy Storage System design	The proposed BESS option would contain a fire suppression system in accordance with fire code and National Fire Protection Association (NFPA) Standards, specifically NFPA 855 "Standard for the Installation of Stationary Energy Storage Systems." The system would include monitoring equipment and alarm systems with remote shut-off capabilities.	NFPA

Consistent with WAC 463-60-352(2 through 4) and (6), the proposed mitigation described for the Facility complies with existing regulations and provides measures to reduce the risk of fire and explosion, reduce potential hazardous releases to the environment that could affect the public, comply with applicable local, state, and federal safety standards, and implement the Facility's proposed Fire Protection and Safety Plan and Communication and Emergency Response Plan. For the reasons provided, construction and operation of the Facility poses minimal risk to environmental health.

4.13.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ **No**	☐ **Yes**	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

References

EarthTouch. 2019. Phase I Environmental Site Assessment. SITE: Goose Prairie Solar Project. LOCATION: (Yakima), Yakima County, Washington. Gordon Meacham / Estate of Willamae G. Meacham. Prepared for OER WA Solar 1, LLC. December 19.

EarthTouch. 2020. Phase I Environmental Site Assessment. SITE: Goose Prairie 2 Solar Project. LOCATION: Near Yakima, Yakima County, Washington. S. Martinez Livestock, Inc. Prepared for OER WA Solar 1, LLC. February 7.

4.14. Land Use, Natural Resource Lands & Shoreline Compatibility

4.14.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	Expected completion date	Expert agency participation Name, Title, and Involvement	Completed Y/N
See Section 1.E (List of Studies)			

☒ **Check this box when all proposed studies for this topic are completed**

There are no studies of the Facility conducted solely for the purpose of land use; however, the studies listed in Section 1.E support findings of compliance in response to Yakima County's applicable land use regulations. The Land Use Consistency Review (Attachment A), provides cross-references to these studies where applicable for demonstrating local land use consistency and regulatory compliance.

4.14.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
Existing land use – Meacham Property	Three of the eight Facility Parcels (Tax Parcels 211218-11003, 211218-43004, and 211218-44003), which make up the southern portion of the Facility, are owned by the Estate of Willamae G Meacham and together are known herein as the "Meacham Property." Legal descriptions of the Meacham Property are provided in Section 1.A.4. The Meacham Property is currently in the Conservation Reserve Program (CRP), with enrollment set to expire on September 30, 2022. The CRP area consists predominantly of non-native species such as crested wheat, Russian thistle, mustard species, and others. There is no current agricultural use on the Meacham Property, though a portion of the area was historically used for row crops. Per the Yakima County Comprehensive Plan (YCCP) designation and zoning district (see below), the Meacham Property is within designated agricultural land[1/] where development of a solar energy generation facility is allowed as a conditionally permitted use. There are no existing residences or other structures on the Meacham Property. The property is adjacent to Washington State Route (SR) 24, agricultural land (cropland and rangeland), and related agricultural buildings. Residences are limited in the area and occur predominantly south of Desmarais Road. The nearest two residences occur between SR 24 and Desmarais Road approximately 225 feet south of the Facility Area Extent.

Topical area/issue	Existing Condition and Problems
Existing land use – Martinez Property	Five of the eight Facility Parcels (Tax Parcels 211207-11001, 211207-21001, 211208-32001, 211208-11001, and 211217-21002), which make up the northern portion of the Facility, are owned by S. Martinez Livestock, Inc. and together are known herein as the "Martinez Property." Legal descriptions of the Martinez Property are provided in Section 1.A.4. Four of the Martinez Property parcels are currently used for livestock grazing and consist predominantly of native vegetation (Tax Parcels 211207-11001, 211207-21001, 211208-32001, and 211208-11001). Per the YCCP designation and zoning district (see below), the Martinez Property is within designated agricultural land[1/] where development of a solar energy generation facility is allowed as a conditionally permitted use. There are two abandoned buildings within the Martinez Property to the northeast of the proposed substation, and one agricultural building located outside of the Facility Area Extent on the western edge of the Martinez Property. The fifth Martinez Property parcel (Tax Parcel 211217-21002) includes an active orchard and residence (see description of "Aerial Transmission Easement Area" in Section 2.A.2.c.). In addition, the Bonneville Power Administration (BPA) has a 100-foot easement for the existing Midway-to-Moxee 115-kilovolt (kV) transmission line that crosses the Martinez Property. The property is adjacent to agricultural land (cropland and rangeland) and related agricultural buildings. The nearest residence is located approximately 880 feet east of the Facility Area Extent near Den Beste Road.
Military buffer	The Facility is located within a military training route buffer associated with Naval Air Station Whidbey Island and the Yakima Training Center.
Electrical generation capacity/service	There is no current electrical generation service within the Facility Parcels. As noted above, the existing BPA 115-kV transmission line crosses the Martinez Property. The existing residence on the Martinez Property is connected to local utility service.
Yakima County Comprehensive Plan Designation	The Facility Parcels are within Yakima County's Agricultural Resource Area land use designation identified in the YCCP. Agricultural Resource Areas are "those lands primarily devoted to or important for the long-term commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by state law, or livestock" (Yakima County 2017).
Yakima County Zoning District	The Facility Parcels are within Yakima County's Agriculture (AG) zoning district defined under Yakima County Code (YCC) Section 19.11.010. Per YCC 19.11.010(b), the purpose of the AG district is to "preserve and maintain areas for the continued practice of agriculture by limiting the creation of small lots, permitting only those new uses that are compatible with agricultural activities, protection of agricultural lands of long-term commercial significance, and providing measures to notify and separate especially sensitive land uses from customary and innovative agricultural land management practices. The AG district implements the Comprehensive Plan that calls for the preservation of

Topical area/issue	Existing Condition and Problems
	agricultural lands."[1/] The AG zoning district allows solar energy generation facilities as a conditionally permitted use.
Yakima County Critical Areas	As listed in Section 2.B.6, the Facility Area Extent includes critical areas for aquifer recharge, geologic hazards, and wildlife habitat conservation. Further details regarding existing conditions for these critical areas are provided in Section 4.5 (Water Quality – Stormwater), Section 4.1 (Earth), and Section 4.9 (Animals), respectively.
Shoreline Master Program	No shorelines designated under the Yakima County Shoreline Master Program are within the Facility Area Extent.
Note: 1/ Agricultural land is defined by Washington State as "land primarily devoted to the commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products or of berries, grain, hay, straw, turf, seed, Christmas trees not subject to the excise tax imposed by *RCW 84.33.100 through 84.33.140, finfish in upland hatcheries, or livestock, and that has long-term commercial significance for agricultural production." (RCW 36.70A.030(3)). Per RCW 36.70A.170, counties shall designate where appropriate, "Agricultural lands that are not already characterized by urban growth and that have long-term significance for the commercial production of food or other agricultural products." Accordingly, the YCCP identifies Agricultural Resource Areas, and development regulations are adopted and implemented via YCC for the Agriculture zoning district. While the entire designated agricultural area is generally considered agricultural land of long-term commercial significance, the YCC also allows for non-agricultural uses, outright or conditionally, within the zoning district (see the Land Use Consistency Review (Attachment A) for detailed regulatory compliance discussion).	

4.14.C. Changes to and from Existing Condition

4.14.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Changes to land use – Meacham Property	The Meacham Property parcels total approximately 519 acres within Yakima County's AG zoning district. While the entire Meacham Property is within the Facility Area Extent for micrositing purposes, the fenced Facility Area would occupy less than the full Property, up to approximately 485 acres, for the solar array and supporting components (e.g., access roads, collector lines, security fence) as well as the proposed staging area, O&M facility, and substation (see Preliminary Site Plan, Attachment B). However, the precise distribution of the Facility Area between the Meacham and Martinez Properties may differ in the final design, within the maximum total footprint not to exceed 625 acres.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
		While the purpose of the AG zoning district is to preserve and maintain areas for agricultural practices on agricultural land of long-term commercial significance, the AG zoning district also allows for uses that are compatible with agricultural activities. The Meacham Property is not in active agricultural use, is not classified as prime farmland (NRCS 2020), and no irrigation infrastructure currently exists; thus, the property is not a likely source of commercially significant agricultural activity over the long-term and no agricultural activities would be displaced by the Facility. Long-term lease payments from the Applicant would effectively replace CRP payments as a valuable revenue source for the landowner. Though commercially viable agricultural use of the Meacham Property is limited based on the reasons described above, future agricultural use would be possible following decommissioning of the Facility. The Facility would not affect or be affected by land uses on nearby or adjacent properties, including normal business operations of working farmland (see the Land Use Consistency Review, Attachment A, for additional details). No structures would be demolished, no people would reside or work in the completed Facility, and no people would be displaced by the completed Facility.
	Changes to land use – Martinez Property	The Martinez Property parcels total approximately 1,048.7 acres. The Facility Area Extent includes 272 acres of the Martinez Property for micrositing purposes; however, the fenced Facility Area would occupy less than this total area, up to approximately 140 acres (13.5 percent) of the Property for a portion of the solar array and supporting components (e.g., access roads, collector lines, security fence), depending on final design. The remainder of the parcels would remain available for the landowner's continued grazing operations and related agricultural uses. As noted above, the precise distribution of the Facility Area between the Meacham and Martinez Properties may differ in the final design, within the maximum total footprint not to exceed 625 acres. As on the Meacham Property, the Facility would not affect or be affected by land uses on nearby or adjacent properties, including normal business operations of working farmland (see the Land Use Consistency Review, Attachment A, for additional details). No structures would be demolished due to the construction of the Facility, no people would reside or work in the completed Facility, and no people would be displaced by the completed Facility. Upon decommissioning of the Facility, the full extent of the Martinez Property would be available for future agricultural use. A portion of the Martinez Property is the proposed Aerial Transmission Easement Area (see Section 2.A.2.c.). Because the interconnection line within the Aerial Transmission Easement Area

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
		would span the property, the existing orchard would not be displaced or otherwise significantly impacted by the interconnection. The line would also be at least 0.25 mile to the west of the residence. The primary option for the BPA interconnection is west of the Aerial Transmission Easement Area on a portion of the Martinez Property used for open rangeland (see Preliminary Site Plan in Attachment B). The final interconnection design would be determined before the execution of an Interconnection Agreement; if the final design from BPA does not use this parcel, then the Aerial Transmission Easement Area would not be a part of the Facility.

4.14.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	☐ Yes	
	Topical Area/issue	**Changes**
	Military buffer and DoD, FAA consultation	Per the Applicant's consultation with the Department of Defense and review by the Federal Aviation Administration (FAA), the Facility would be compatible with Naval Air Station Whidbey Island and Yakima Training Center operations. The Facility would not reduce the military's ability to complete its mission or to undertake new missions or increase its cost of operating. The Department of Defense confirmed the Facility does not appear to pose a direct impact to military operations (see official correspondence provided in Attachment N and FAA Letters of Determination of No Hazard in Attachment M).
	Electrical generation capacity/service	The Facility would be a new source of clean, renewable energy supply for regional customers. The existing BPA Midway-to-Moxee 115-kV transmission line crosses Yakima County and has sufficient electrical capacity to support the addition of 80 MW of generating capacity without significant or cost-prohibitive upgrades. The Facility would support implementation of the Washington Clean Energy Transformation Act (2019), which made it current policy to transition the state's electricity supply to 100 percent carbon-neutral by 2030 and 100 percent carbon-free by 2045 (RCW 19.405.010).
	Yakima County Comprehensive Plan Designation Consistency	The Facility would be consistent with the YCCP. The Land Use Consistency Review, Attachment A, describes the Facility's consistency with applicable goals and policies of Yakima County's Agricultural Resource Area land use designation.

	Yakima County Zoning District Compliance	The total Facility Area footprint, up to 625 acres, would occupy a nominal portion of Yakima County's AG zoning district (less than 0.15 percent; Yakima County 2020) and would comply with applicable zoning standards and requirements for development of a solar energy generation facility. The Land Use Consistency Review, Attachment A, demonstrates the Facility's compliance with applicable provisions of Yakima County's AG zoning district.
	Yakima County Critical Areas	The Land Use Consistency Review, Attachment A, demonstrates that the Facility would comply with Yakima County's applicable critical area regulations.

The current land use does not affect the proposed Facility; the site was chosen specifically for its uniquely compatible qualities for a solar energy generation facility, including abundant solar exposure, previously disturbed land (i.e., not prime habitat), and proximity to existing electrical transmission infrastructure. Future land uses in the area are not anticipated to affect the proposed Facility. Setback requirements and other land use restrictions in the AG zoning district would make conflicting land uses, such as those that would block the Facility site's solar exposure, unlikely.

4.14.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☒ No	☐ Yes		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	N/A	N/A	N/A

Based on the information provided above in Section 4.14.C and in the Land Use Consistency Review, Attachment A, the Facility would have no significant adverse effects on land use. Therefore, no land use mitigation or monitoring measures are proposed. Mitigation measures specific to other topics, for example stormwater management or geological hazards, are listed in their respective resource sections in Part 3 and Part 4 of this application.

4.14.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ No	☐ Yes	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

References:

NRCS (Natural Resources Conservation Service). 2020. Web Soil Survey. Farmland Classification – Yakima County Area, Washington. Survey Area Data Version 20, Jun 4, 2020. Available online at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed August 27, 2020.

Yakima County. 2017. Horizon 2040. Yakima County, WA Comprehensive Plan. Yakima County Public Services, Planning Division. Originally adopted May 20, 1997. Update adopted June 27, 2017 (Ord. No. 4-2017). Available online at: https://www.yakimacounty.us/846/Horizon-2040-Comprehensive-Plan

Yakima County. 2020. Yakima County Zoning. Feature Layer by YakimaGIS. Data last updated October 21, 2020. Available via Yakima County, WA Open Data Portal: https://gis-yakimacounty.opendata.arcgis.com/. Accessed November 2, 2020.

4.15. Housing

No Part 4 Analysis required for this section.

4.16a. Noise

4.16a.AStudies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	**Expected completion date**	**Expert agency participation Name, Title, and Involvement**	**Completed Y/N**
Acoustic Assessment Report (Attachment I)	December 2020	Tetra Tech Inc. Environmental Consultants, Contractor	Y

☒ **Check this box when all proposed studies for this topic are completed**

4.16a.B Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	**Existing Condition and Problems**
Regulatory	There are no noise regulations at the federal or county level with numerical decibel limits applicable to the Facility; however, there are regulations at the state-level. Environmental noise limits have been established by the Washington Administrative Code (WAC 173-60). WAC 173-60 establishes limits on sounds crossing property boundaries based on the Environmental Designation for Noise Abatement of the sound source and the receiving properties. Daytime (7:00 a.m. – 10:00 p.m.) and nighttime (10:00 p.m. – 7:00 a.m.) limits are prescribed. The WAC regulatory limits are absolute and independent of the existing acoustic environment; therefore, a baseline noise survey is not requisite to determine conformance. The applicable WAC regulatory limits are further described in the Acoustic Assessment Report (Attachment I).

Existing Conditions	As mentioned above, a baseline noise survey is not needed to demonstrate compliance with the WAC noise regulations. The existing ambient acoustic environment in the vicinity of the Facility was estimated with a method published by the Federal Highway Administration in its Transit Noise and Vibration Impact Assessment (FHWA 2006). This document presents the general assessment of existing noise exposure based on the population density per square mile and proximity to area sound sources such as roadways and rail lines. The proposed Facility is 8 miles east of the city of Moxee, which has a population density of 1,751.4 per square mile according to the U.S. Census Bureau (2020); however, the population per square mile in blocks within 1 mile of Facility is much less. In addition, the Facility is located in close proximity to State Route 24 (SR-24), with the closest fence line within approximately 150 feet of that thoroughfare. Throughout the Facility Area Extent, ambient sound levels are expected to range between 40 and 55 A-weighted decibels (dBA) equivalent sound level (L_{eq}) during daytime hours and 30 and 45 dBA L_{eq} during nighttime hours.

4.16a.C. Changes to and from Existing Condition

4.16a.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ **No**	☒ **Yes**	
	Topical Area/issue	**Changes**
	Construction	Acoustic emission levels for activities associated with Facility construction were analyzed in Attachment I based upon typical ranges of energy equivalent noise levels at construction sites, as documented by the United States Environmental Protection Agency's (EPA) "Construction Noise Control Technology Initiatives" (EPA 1980). The EPA methodology distinguishes between type of construction and construction stage. Using those energy equivalent noise levels as input to a basic propagation model, construction noise levels were calculated at a series of set reference distances. Construction was organized in the following work stages: demolition, site preparation and grading, trenching and road construction, equipment installation, and commissioning. Expected noise levels generated during each of these work stages are provided in the Acoustic Assessment Report (Attachment I). The construction of the Facility may cause short-term, but unavoidable, noise impacts that could be loud enough at times to temporarily interfere with speech communication outdoors and indoors with windows open. Noise levels resulting from the construction activities would vary significantly depending on several factors such as the type and age of equipment, specific

		equipment manufacturer and model, the operations being performed, and the overall condition of the equipment and exhaust system mufflers. Facility construction would generally occur during the day, Monday through Saturday. Furthermore, all reasonable efforts would be made to minimize the impact of noise resulting from construction activities including implementation of standard noise reduction measures. Due to the infrequent nature of loud construction activities at the site, the limited hours of construction and the implementation of noise mitigation measures, the temporary increase in noise due to construction is considered to be a less than significant impact.
	Operation	Attachment I presents modeling results for sound levels that would be generated by the facility. Operational sound levels were analyzed using Cadna-A (Computer Aided Noise Abatement), which is an acoustic modeling software program that conforms with the International Organization for Standardization (ISO) 9613, Part 2: "Attenuation of Sound during Propagation Outdoors" (ISO 1989). The method described in this standard calculates sound attenuation under weather conditions that are favorable for sound propagation, such as for downwind propagation or atmospheric inversion, conditions which are typically considered worst-case. The Facility's general arrangement was reviewed and directly imported into the acoustic model so that on-site equipment could be easily identified, buildings and structures could be added, and sound emission data could be assigned to sources as appropriate. The primary noise sources during operations are the inverters, their integrated step-up transformers, battery energy storage system (BESS) units, and substation transformers. Electronic noise from inverters can be audible but is often reduced by a combination of shielding, noise cancellation, filtering, and noise suppression. The BESS would either be included as a consolidated area in the northeastern portion of the Facility Area Extent or in distributed units throughout the solar array. Both options for battery storage and their associated sound emissions, including contributions from cooling, were considered in the acoustic analysis. Reference sound power levels input to CadnaA were provided by equipment manufacturers, based on information contained in reference documents or developed using empirical methods. Broadband sound pressure levels were calculated for expected normal Facility operation assuming that all components identified previously are operating continuously and concurrently at the representative manufacturer-rated sound power level. It is expected that all sound-producing equipment would operate during both daytime and nighttime periods. After calculation, the sound energy was then summed to determine the equivalent continuous A-weighted downwind sound pressure level at a point of reception. Attachment I provides modeling results in both visual

		(i.e., sound contour) and tabular formats, providing received sound levels resulting from operation at discrete noise sensitive receptors (NSRs; i.e., residences) and at nearby property lines. Projected exterior sound levels resulting from full, normal operation of the Facility during both daytime and nighttime hours, at all nearby NSRs and property lines, using both centralized and distributed BESS would comply with the applicable WAC 173-6050 dBA daytime and nighttime limits.

4.16a.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	**☐ Yes**	
	Topical Area/issue	**Changes**
	N/A	N/A

4.16a.D Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	**☒ Yes**		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Noise - Best Management Practices	WAC 173.60.050 exempts temporary construction noise from the state noise limits; however, some BMPs would be implemented to reduce off-site construction noise impacts. Since construction equipment operates intermittently, and the types of machines in use at the Facility change with the stage of construction, noise emitted during construction would be mobile and highly variable, making it challenging to control. The construction management protocols would include the following noise mitigation measures to minimize noise impacts: • Maintain all construction tools and equipment in good operating order according to manufacturers' specifications; • Limit use of major excavating and earth-moving machinery to daytime hours; • To the extent practicable, schedule construction activity during normal working	N/A

		hours on weekdays when higher sound levels are typically present and are found acceptable. Some limited activities, such as concrete pours, would be required to occur continuously until completion; • Equip any internal combustion engine used for any purpose on the job or related to the job with a properly operating muffler that is free from rust, holes, and leaks; • For construction devices that utilize internal combustion engines, ensure the engine's housing doors are kept closed, and install noise-insulating material mounted on the engine housing consistent with manufacturers' guidelines, if possible; • Limit possible evening shift work to low noise activities such as welding, wire pulling, and other similar activities, together with appropriate material handling equipment; and • Utilize a complaint resolution procedure to address any noise complaints received from residents.	

4.16a.E Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ **No**	☐ **Yes**	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

References

EPA 1980. Construction Noise Control Technology Initiatives. Technical Report No. 1789. Prepared by ORI, Inc. Prepared for USEPA, Office of Noise Abatement and Control. September 1980. Available at: http://www.nonoise.org/epa/Roll5/roll5doc22.pdf.

FHWA (Federal Highway Administration). 2006. FHWA Roadway Construction Noise Model User's Guide, FHWA-HEP-05-054, January.

ISO (International Organization for Standardization). 1989. Standard ISO 9613-2 Acoustics – Attenuation of Sound during Propagation Outdoors. Part 2 General Method of Calculation. Geneva, Switzerland.

United States Census Bureau. 2020. Population and Housing Unit Estimates Datasets.

4.16b. Light, Glare, and Aesthetics

4.16b.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	Expected completion date	Expert agency participation Name, Title, and Involvement	Completed Y/N
Goose Prairie Solar Visual Impact Assessment (Attachment J)	Complete	Tetra Tech, Inc.	Y
Solar Glare Reports (Attachment K)	Complete	ForgeSolar, developed by Sandia National Laboratory and an industry-standard glare screening tool for photovoltaic solar energy projects across the country. The report meets the FAA's glare analysis requirements per 78 FR 63276.	Y
Federal Aviation Administration (FAA) 7460-1 Determination of No Hazard (Attachment M)	Complete	FAA process for evaluating aviation impacts from new construction. The process includes review by Department of Defense.	Y

☒ **Check this box when all proposed studies for this topic are completed**

4.16b.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
General description of site	As described in the Visual Impact Assessment Report (Attachment J), within the Facility Parcels, the southern portion comprises a relatively flat, fallow field with mostly non-native species such as cheatgrass (downy brome), crested wheat, Russian thistle, mustard species and others while the northern portion consists of rolling hills of shrub-steppe and grasslands with ephemeral creeks used for grazing. The site does not currently contain any sources of light or glare.
Visibility of the site	The Visual Impact Assessment Report (Attachment J) describes the site as most visible from viewpoints within one mile, while site visibility would diminish as distance increases and view angle decreases. From distances greater than one mile, the site would be barely visible, if at all, from viewpoints easily accessible to the

	public due to intervening terrain and/or structures. The site would potentially be visible at higher elevations and greater distances from either Yakima Ridge or Rattlesnake Hills; however, there is very limited public access to these locations.

4.16b.C. Changes to and from Existing Condition

4.16b.C.1. Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Views	Where visible, views of the Facility Area Extent in the foreground or middle-ground would shift from Conservation Reserve Program land and agricultural fields to an energy-producing facility. These views would be experienced by drivers traveling on local roadways and local residents. Background views of either Yakima Ridge or Rattlesnake Hills would not be obstructed. The Facility would contrast to a minor to moderate degree with the surrounding landscape with the addition of structural elements. The minor to moderate contrasts in the elements of the environment would generally be consistent with the characteristic landscape. Although the surrounding area is primarily agricultural in setting, there are numerous structural elements (e.g., roadways, hop trellises, fencing, overhead utility distribution lines, and residential and agricultural-related structures) visible surrounding the Facility Area Extent. The visible contrasts would not result in a strong or significant change to the characteristic views.
	Light	The Facility is not expected to create a substantial new source of nighttime lighting. The proposed Facility would provide external safety lighting for both normal and emergency conditions at the primary access points. Lighting would be designed to provide the minimum illumination needed to achieve safety and security and would be downward facing and shielded to focus illumination in the immediate area.
	Glare	The glare analysis conducted for this Facility analyzed potential glare hazards for aircraft as well potential impacts to residents and motorists in the area. Modeling inputs and results are provided in Attachment K. Modeling for the glare analysis was conducted for a single axis tracking system. The glare analysis conducted for this Facility analyzed potential glare hazards for aircraft traveling in the area and concluded, based on 11 flight

		paths, that no glare impact would be experienced by aircraft. In addition, analysis of potential glare hazards for area residences located around the Facility Area Extent including those near Washington State Route (SR) 24 and Desmarais Road concluded that no glare impact would be experienced by residences or motorists along SR-24, Desmarais Road, and Den Beste Road. Some glare would be experienced by motorists driving along Morris Lane (north of SR-24) and Desmarais Cutoff (north and south of SR-24). The intensity of glare that would be experienced would not be hazardous but would have the potential for temporary after-image. Motorists along Morris Lane (north of SR-24) could experience temporary after-image glare between 10 a.m. and 2 p.m. during the months of November, December, and January and very briefly at 7 a.m. and 4 p.m. during the months of June and July. Motorists along Desmarais Cutoff (north and south of SR-24) could experience temporary after-image glare between 12 p.m. and 2 p.m. during the months of November, December, and January and very briefly at 4 p.m. during the months of June and July. This amount of glare would not introduce a visual hazard, but would increase the visual contrast of the Facility Area Extent. Due to the relatively low intensity of Facility-caused glare and short duration of travel, the potential impact would not be significant. Therefore, operation and maintenance of the Facility would not introduce a source of light or glare that would significantly impact views in the area and impacts would be less than significant.
	Aviation Impacts	The Applicant consulted with Department of Defense (DoD) to seek an understanding of any potential risks associated with the Facility site and specifically, to confirm no impacts to DoD activities, including aircraft entering the nearby Yakima Training Center (YTC) airspace along a low-altitude military training route (MTR), as well as no impacts to low and high altitude within the weapons delivery range over/around YTC. This consultation took place in two rounds. First, on July 23, 2018 with a formal reply dated August 9, 2018 from the Naval Air Station (NAS) Whidbey Island staff, which found that the project, “does not appear to pose a direct impact to military operations.” Second, on February 10, 2020 with a slightly modified study area. DoD did not issue a second letter, but issued a “No Object” to FAA review for the supplemental 7460-1 FAA submittals, which are detailed below. Please see the correspondence with DoD in Attachment N. The Applicant conducted outreach to the FAA through its online Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) portal online. As demonstrated by the Letters of Determination of No Hazard (Attachment M), the Facility is not expected to impact aviation.

4.16b.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	☐ Yes	
	Topical Area/issue	**Changes**
	N/A	N/A

4.16b.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	☒ Yes		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Best Management Practices – Light, Glare and Aesthetics	The Facility will implement BMPs including: • Downward-directed lighting to minimize horizontal or skyward illumination, and avoidance of steady-burning, high-intensity lights. • Utilizing solar panels with an anti-reflective coating to minimize glare. • Maintenance of revegetated surfaces until the vegetation has been established.	N/A

4.16b.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ No	☐ Yes	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

4.17. Recreation

No Part 4 Analysis required for this section.

4.18. Archaeological and Historical Resources

4.18.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	**Expected completion date**	**Expert agency participation Name, Title, and Involvement**	**Completed Y/N**
Cultural Resources Survey (Attachment H)	Complete	Performed by Tetra Tech, with feedback from Jessica Lally, Archaeologist, Yakama Nation Review (see Table 4.18-1)	Y

☒ **Check this box when all proposed studies for this topic are completed**

4.18.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	**Existing Condition and Problems**
Site Conditions from Cultural Resources Survey	A total of four archaeological sites and two historic property sites were identified within the Survey Area. The recorded sites include two low-density pre-contact lithic scatters, one multicomponent site with a low-density historic refuse scatter and very low-density lithic scatter, one large historic refuse scatter, one set of associated and abandoned historic buildings, and one segment of historic transmission line. Of the two historic property sites evaluated for NRHP eligibility, only the Midway-Moxee transmission line segment (Site 676383) has been recommended eligible for listing on the NRHP, making it also protected by the WHR. Three of the archaeological sites (i.e., 45YA01808, 45YA01809, and 45YA01811) and the Midway-Moxee transmission line (Site 676383) are protected by the WHR. The remaining archaeological site (i.e., 45YA01810) is not protected by the WHR. The two historic buildings at Site 722140 are not recommended eligible for listing on the NRHP and are also not protected by the WHR.

4.18.C. Changes to and from Existing Condition

4.18.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Disturbance of archaeological and historic property sites.	The Facility has been designed to avoid direct impacts to all cultural resources that are eligible for listing on the NRHP or protected by the WHR when feasible. As currently designed, the Facility has no direct impacts to such resources. However, as the design progresses, the Facility layout may be changed such that impacts to the resources that are protected by WHR are created. Site 45YA01808 in particular may be impacted by the Facility. The Applicant would continue to consult the Yakama Nation regarding the archaeological sites and the potential impacts of the Facility on these sites (see Section 4.18.D below). If any WHR-protected site is impacted by the Facility, the Applicant would obtain a Department of Archaeology and Historic Preservation (DAHP) excavation permit and perform all necessary archaeological work in order to comply with Revised Code of Washington (RCW) 27.53.

4.18.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Avoidance of significant impacts to archaeological and historical resources.	As currently proposed, the Facility has been designed to avoid cultural sites, including avoidance of all resources that are eligible for the NRHP or protected by the WHR. The Applicant re-designed portions of the Facility to avoid cultural sites following completion of the survey.

4.18.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	**☒ Yes**		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	Avoidance of protected sites and/or DAHP permits	The Facility has been designed to avoid direct impacts to all cultural resources that are eligible for listing on the NRHP or protected by the WHR when feasible. As currently designed, the Facility has no direct impacts to such resources. However, as the design progresses, the Facility layout may be changed such that impacts to the resources that are protected by WHR are created. Site 45YA01808 in particular may be impacted by the Facility. The Applicant would continue to communicate with the Yakama Nation regarding the archaeological sites and the potential impacts of the Facility on these sites. If any WHR-protected site is impacted by the Facility, the Applicant would obtain a DAHP excavation permit and perform all necessary archaeological work in order to comply with RCW 27.53.	DAHP; Yakama Nation
	Unanticipated Discovery Plan	In the event unrecorded archaeological resources are identified during Facility construction or operation, work within 30 meters (100 feet) of the find would be halted and directed away from the discovery until it can be assessed in accordance with steps in the Unanticipated Discovery Plan provided as Appendix G of King et al. (2020) (Attachment H). The plan is in accordance with RCW 27.53.060 and RCW 27.44.040 protecting archaeological resources and Indian graves. This appendix does not contain any confidential information and can be shared with Facility personnel and contractors.	DAHP; Yakama Nation

	Ongoing Communication with Yakama Nation	The Applicant would continue to communicate with the Yakama Nation regarding tribal resources that may be affected by the Facility. Additionally, the Applicant would continue to coordinate with the Yakama Nation regarding final design in relation to pre-contact archaeological sites. Lines of communication would remain open to better facilitate any response to unanticipated discoveries during construction. Table 4.18-1 below details the communications to date between the Applicant and Yakama Nation.	Yakama Nation

Table 4.18-1: Applicant Communications with Yakama Nation

Date	Communication Type	Description
4/22/2019	E-mail and hard copy letter.	Project introduction. Request to consult.
5/10/2019	Letter	Tribe recommends archaeological survey. Requests to review survey report and SEPA documentation.
2/21/2020	E-mail and hard copy letter.	Project update. Invitation to participate in survey.
4/9/2020	E-mail	Tribe requests to review survey findings but declines invitation to participate in survey.
5/11/2020	E-mail and hard copy letter.	Provide preliminary survey results.
8/21/2020	Phone	Review of draft survey report.
10/28/2020	E-mail	Tribal cultural resource concerns to be disclosed directly and confidentially to EFSEC only.

4.18.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ **No**	☐ **Yes**	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

4.19. Cultural Resources

4.19.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	Expected completion date	Expert agency participation Name, Title, and Involvement	Completed Y/N
*Cultural Resources Survey (Attachment H)_*	Complete	Performed by Tetra Tech, with feedback from Jessica Lally, Archaeologist, Yakama Nation Review (see Table 4.18-1)	Y

☒ **Check this box when all proposed studies for this topic are completed**

4.19.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
Existing tribal hunting or fishing rights	The Facility Area Extent consists of private land owned by the Estate of Willamae G. Meacham ("Meacham Property") and S. Martinez Livestock, Inc. ("Martinez Property"). Each are non-tribal members. Therefore, tribal hunting and fishing do not occur within the Facility Area Extent.
Existing tribal plant gathering	As stated above, the Facility Area Extent consists of private land owned by non-tribal members. Therefore, tribal plant gathering does not occur within the project area.
Tribal cultural sites	Three of the archaeological sites (i.e., 45YA01808, 45YA01809, and 45YA01811) identified by the cultural resources survey within the Survey Area are pre-contact-era sites associated with Native American activities. However, no tribal cultural sites (i.e., traditional cultural properties, historic properties of religious and cultural significance to Indian tribes, or sacred sites) have been identified through the Applicant's communications with Yakama Nation to date.
A usual and accustomed area	The Facility Area Extent is within the usual and accustomed area of the Yakama Nation.
Material culture artifacts	Archaeological sites are representations of Native American material culture that contain artifacts. Three of the archaeological sites (i.e., 45YA01808, 45YA01809, and 45YA01811) identified by the cultural resources survey of the Facility Area Extent are pre-contact-era sites associated with Native American activities.

Activities on the site could impede views of tribal cultural sites	No tribal cultural sites (i.e., traditional cultural properties, historic properties of religious and cultural significance to Indian tribes, or sacred sites) have been identified as having impacts due to the Facility through the Applicant's communications with Yakama Nation to date.

4.19.C. Changes to and from Existing Condition

4.19.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Tribal cultural sites	The Facility has been designed to avoid direct impacts to all cultural resources that are eligible for listing on the NRHP or protected by the WHR when feasible. As currently designed, the Facility has no direct impacts to such resources. However, as the design progresses, the Facility layout may be changed such that impacts to the resources that are protected by WHR are created. Site 45YA01808 in particular may be impacted by the Facility. The Applicant would continue to consult the Yakama Nation regarding the archaeological sites and the potential impacts of the Facility on these sites (see Section 4.19.D below). If any WHR-protected site is impacted by the Facility, the Applicant would obtain a Department of Archaeology and Historic Preservation (DAHP) excavation permit and perform all necessary archaeological work in order to comply with Revised Code of Washington (RCW) 27.53

4.19.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	☒ Yes	
	Topical Area/issue	**Changes**
	Tribal cultural sites	As currently proposed, the Facility has been designed to avoid cultural sites, including avoidance of all resources that are eligible for the NRHP or protected by the WHR. The Applicant re-designed portions of the Facility to avoid cultural sites following completion of the survey.

4.19.D. Proposed Mitigation and Monitoring

☐ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	**☒ Yes**		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	See mitigation measures listed in 4.18.D.		

4.19.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ No	**☐ Yes**	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

References

King, Erin, Brady Berger, Julia Mates, Deborah Huntley, and Mary Connell. 2020. *Cultural Resources Survey for the Goose Prairie Solar Project, Yakima County, Washington*. Tetra Tech, Inc., Bothell, WA. Submitted to One Energy Renewables. Tetra Tech Project #194-6767 and 194-7240. DAHP Project #2018-06-04740.

4.20. Traffic and Transportation

4.20.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	Expected completion date	Expert agency participation Name, Title, and Involvement	Completed Y/N
No studies relating to traffic and transportation in the Facility Area Extent have been conducted, nor are any studies planned.			

☒ **Check this box when all proposed studies for this topic are completed**

4.20.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
Transportation Systems	Access to the Facility is via State Route (SR) 24, which is classified by the Washington State Department of Transportation (WSDOT) as a Rural Minor Arterial. Access to SR-24 would occur primarily from the west via I-82, but some vehicles could travel from the east, leaving Richland via SR-240 to SR-24 or leaving Sunnyside via SR-241 to SR-24. SR-24 would be the preferred route for the limited oversize deliveries for Facility construction, such as support poles for the transmission line or the main power transformers. SR-24 is a two-lane highway with approximately 2,700 average annual daily trips (AADT) in 2019, as measured at the intersection with Den Beste Road, approximately 2 miles west of the Facility (WSDOT 2020). Approximately 19 percent of vehicles currently using the road at this location are trucks (approximately 500 daily trips). Although hourly trip data at this location are not available, it is reasonable to assume that current truck traffic is spread throughout the day, and the majority of other trips in this rural area also are spread throughout the day, with relatively few extra trips focused during the morning and evening commute times. Spreading the average annual daily trips across a 10-hour period from 8 am to 6 pm suggests that on average, approximately 250 to 300 vehicles per hour may travel on SR-24 near the site. Traffic may be slightly higher during morning and evening commute times and some trips also would occur later in the evening or overnight. Information on seasonal fluctuations in existing traffic is not available from WSDOT from locations in the immediate vicinity of the Facility. A monitoring station approximately 35 miles east of the Facility, at the Vernita Bridge across the Columbia River in Mattawa, suggests the highest hourly averages, approximately 12 to 13 percent of total AADT, occur during evening commute times in July through October. This

	likely reflects a slight increase in traffic during the harvest season, consistent with the agricultural character of the area. West of the Facility, traffic numbers are higher passing through Moxee (AADT up to 8,000) and nearing the city of Yakima (AADT up to 23,000 on the off-ramp to I-82 north). Congestion on SR-24 occurs at the westbound off-ramp to I-82 (located approximately 15 miles west of the Facility) during afternoon peak times. WSDOT generically classifies state highways in rural areas with a level of service 'C', indicating speeds near free flow but restricted freedom to maneuver. Site-specific level of service information for SR-24 has not been developed by WSDOT, and Yakima County does not maintain information for state highways. However, it is anticipated that the actual level of service in the vicinity of the Facility is closer to 'B' or 'A', indicating relatively free flow of traffic most of the time. The road surface in this area is in good to very good condition, as defined by WSDOT (WSDOT 2018a). I-82 carries 48,000 to 52,000 average annual daily trips near the intersection with SR-24 and, according to WSDOT (WSDOT 2018b) the entire corridor performs above WSDOT's congestion threshold. SR-240 carries approximately 1,831 vehicles per day at the intersection with SR-24 (WSDOT 2018c). SR-241 carries an average of 1,900 annual daily trips and operates above WSDOT's congestion threshold (WSDOT 2018d). Other roads in the vicinity of the Facility are rural two-lane roads including Desmarais Cutoff and Den Beste Road, which carry local traffic only. These rural roads would not be used for access to the Facility.
Waterborne Air and Rail Traffic	The Burlington Northern Santa Fe Railroad has a track running through the city of Yakima, more than 5 miles to the west and south of the Facility. Union Pacific Railroad's network includes a track between Wallula and the city of Yakima, also to the west and south of the Facility. The Yakima Air Terminal in the city of Yakima provides air service to Seattle. No port service is present in the vicinity of the Facility.
Parking	No designated parking areas are currently present at the Facility location.
Movement of People or Goods	The existing conditions related to the movement of people and goods near the Facility is described above, under "Transportation Systems" and "Waterborne Air and Rail Traffic."
Traffic Hazards	Steep grades are present on the alternative route (i.e., SR-241).

4.20.C. Changes to and from Existing Condition

4.20.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Transportation Systems	**Approach** The Applicant has consulted with WSDOT regarding the approach off SR-24. The existing approach is a private gravel road which will be upgraded to accommodate the Facility. WSDOT has stated that the work will require a General Permit. The Applicant would obtain the General Permit and develop a Traffic Control Plan for traffic management during improvement of highway access. **Construction** Facility construction would add an average of 368 trips (i.e., 184 roundtrips), over a construction period lasting 9 to 12 months. The primary source of construction traffic would be worker commutes to the Facility, originating from nearby communities including Yakima, Sunnyside, and Richland. The trip estimate is based on the Project's estimated average workforce, with a carpool factor of 2 persons per vehicle for construction crews, an average of 20 heavy truck equipment deliveries, and up to 14 water truck deliveries. Construction traffic would include heavy-duty trucks, such as semi-trailer dump trucks and 40-foot container trucks, that would be carrying gravel and other materials required to improve or construct new access roadways. These heavy-duty trucks would also provide concrete for component foundations and materials for the solar module blocks themselves. In addition to concrete and gravel, single-unit water-tank trucks delivering water to the Facility would be required. Water would be needed for dust control during road construction and for the temporary concrete batch plant (see Section 2.B.8.d). Trucks would deliver water during construction. Semi-trailer flat beds carrying electrical equipment and materials required for solar panel construction and power transmission equipment also will be necessary. It is assumed construction crews will drive pick-up trucks to and from the Facility. During construction, traffic on SR-24 in the vicinity of the Facility would increase from an average of 2,700 trips per day to an average of 3,068 trips per day. Worker commutes would add

		approximately 150 vehicles to SR-24 during the morning commute and again in the evening, with some workers arriving from housing to the west (Moxee or Yakima area) and others arriving from the east (Sunnyside or Tri-Cities). Equipment deliveries are expected to be approximately 20 per day during the first five months of construction and would taper off to around ten per day for the second half of construction. This 368 trips conservatively considers 20 deliveries over the entirety of construction. Equipment and water deliveries would be spread throughout the day. The timing of peak construction activity on site may overlap with the harvest season; however, harvest vehicles will typically travel throughout the day and are not limited to prime commuting hours. Even if all traffic were to come via the primary route on I-82, a temporary increase of 368 trips per day compared to the current 48,000 to 52,000 trips per day on I-82 would not significantly impact current congestion on this roadway. If all workers arrive on site during one hour in the morning and leave during one hour in the evening, this would constitute a temporary increase over current traffic from the current estimated 250-300 hourly trips during peak commute hours in the vicinity of the Facility. However, the additional vehicles would not all arrive from the same direction and therefore would add only a portion of the total 150 commute trips to traffic from the west, with the remainder adding to traffic coming from the east. Conservatively assuming a relatively even distribution of construction trips leading to SR-24 between I-82, SR-240, and SR-241, the additional daily trips on SR-240 and SR-241 are anticipated to be less than 120 trips per day on either road (i.e., 50-60 worker commute trips in the morning, and 50-60 worker commute trips in the evening). This would constitute a temporary increase on SR-241 and SR-240 of less than 30 percent under the conservative assumption that all of these trips occur during a single peak morning or evening commute hour. These temporary increases would not significantly impact current traffic levels on these roadways. **Operations** Part-time operational staff are expected to occasionally commute to the Facility from nearby communities. Operational trips include maintenance employees traveling to work in their personal vehicles, as well as specialized personnel required for periodic inspections of Facility components who may travel in light-duty trucks. The occasional delivery truck may also access the Facility during operations.

		In addition, water will be delivered to the site approximately two to four times each year for panel washing during operations. Assuming 250,000 gallons are required each time the panels are washed, up to approximately 50 truck trips may be required to wash panels each time. Panel washing will occur over the span of approximately one week, resulting in approximately 10 truck trips per day. This would not result in a significant impact on level of service for area roadways because it would result in less than one percent increase in vehicle traffic on the days when it occurs.
	Waterborne Air and Rail Traffic	No changes will occur to waterborne, rail, or air traffic as a result of Facility construction or operation because construction and operation of the Facility will not rely on these modes of transportation. Furthermore, the glare analysis (see Section 4.16b) concluded that no glare hazard would exist for air traffic as a result of solar panel operation.
	Parking	During construction, workers would park in designated areas of the construction site, off of public roads. Construction would not adversely affect the availability of parking for other users because no parking is currently available. Parking needs during operations would be limited to occasional use by one or two employees at the operations and maintenance (O&M) building. The Facility's gravel parking area would be located less than 300 feet from the O&M building and will include at least three parking spots. As the O&M building is internal to the Facility Area Extent, no vehicular backing up or maneuvering would occur within a public right-of-way.
	Movement of People or Goods	Improvements to the Facility approach along SR-24 may temporarily increase traffic along that roadway. Therefore, a Traffic Control Plan will be prepared in concert with WSDOT.
	Traffic Hazards	Improvements to the Facility approach along SR-24 have a potential to cause traffic hazards if not marked and mitigated. Therefore, a Traffic Control Plan will be prepared and submitted to EFSEC at least sixty days prior to site preparation.

4.20.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ **No**	☐ **Yes**	
	Topical Area/issue	**Changes**
	N/A	N/A

4.20.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☐ No	☒ Yes		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**
	WSDOT Permits	Per WAC 468-51, the Applicant will obtain a General Permit from WSDOT to upgrade the portion of the approach off State Route 24 that is within the WSDOT Right-of-Way. A permit would be obtained for heavy or oversized loads in accordance with WSDOT regulations including RCW 46.44 and WAC 468-38.	WSDOT
	Traffic Control Plan	A Traffic Control Plan would be prepared in consultation with WSDOT for traffic management during improvement of highway access. This plan would contain measures to facilitate safe movement of vehicles in the vicinity of the construction zone and would be in accordance with 23 CFR §655 Subpart F provides for the Federal Highway Administration to maintain the Manual on Uniform Traffic Control Devices for Streets and Highways, which defines standards for traffic control	WSDOT

4.20.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ No	☐ Yes	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

References

WSDOT. 2018a. Corridor Sketch Summary. Corridor 367 - SR 24: I-82 Jct (Yakima) to SR 243 Jct Summary. Available online at: https://wsdot.wa.gov/sites/default/files/2018/04/23/CSS367-SR24-i82JctYakima-SR243Jct.pdf

WSDOT. 2018b. Corridor Sketch Summary. Corridor 512 - I-82: Selah Gap to Union Gap Summary. Available online at: https://wsdot.wa.gov/sites/default/files/2018/02/05/CSS512-i82-SelahGap-UnionGap.pdf

WSDOT. 2018c. Corridor Sketch Summary. Corridor 138 - SR 240: SR 24 (Vernita Vic) Jct to US 395 Jct (Kennewick) Summary. Available online at: https://wsdot.wa.gov/sites/default/files/2017/08/11/CSS138-SR240-SR24JctVernita-US395JctTri-Cities.pdf

WSDOT. 2018d. Corridor Sketch Summary. Corridor 426 - SR 241: I-82 Jct (Sunnyside) to SR 24 Jct Summary. Available online at: https://wsdot.wa.gov/sites/default/files/2018/04/23/CSS426-SR241-i82JctSunnyside-SR24Jct.pdf

WSDOT. 2020. Traffic GeoPortal. Available online at: https://www.wsdot.wa.gov/data/tools/geoportal/?config=traffic

4.21. Public Services and Facilities

No Part 4 Analysis required for this section.

4.22. Utilities

4.22.A. Studies

Describe any studies that have already been conducted or will be conducted related to this topic and provide the expected timing for the completion of studies to be completed.

Study name	Expected completion date	Expert agency participation Name, Title, and Involvement	Completed Y/N
N/A			

☒ **Check this box when all proposed studies for this topic are completed**

4.22.B. Existing Condition and Issues

Describe the existing condition for this topic, including any existing problems associated with the issue being discussed.

Topical area/issue	Existing Condition and Problems
Water	Yakima County water rights have been over-allocated. Yakima River Basin surface water has been fully adjudicated. Existing water rights exceed the amount of water available. Because groundwater and surface water availability are connected, withdrawal of water from a permit exempt well reduces the amount of water available in the Yakima River, thereby competing with senior water rights (Yakima County 2017). The Facility is located outside the City of Yakima's and the City of Moxee's water system area.
Sewer	Outside of the urban growth boundary, new development in Yakima County typically uses on-site sewage disposal systems which are not capital facilities under the Growth Management Act definition (Yakima County 2017). No developed sewer systems are present in the rural area surrounding the Facility. Therefore, no sewer systems would be impacted by construction or operation of the Facility. The Facility would be limited to an on-site septic system, typical of the surrounding rural area.
Storm Water	No developed stormwater systems are present in the rural area surrounding the Facility. Therefore, no stormwater systems would be impacted by construction or operation of the Facility. In Yakima County, developers are responsible for design and construction of stormwater collection, retention, conveyance, treatment, and disposal systems (Yakima County 2017a).
Solid Waste	Yakima County owns and operates landfills and transfer stations including the Terrace Heights Landfill and Transfer Station, Cheyne Road Landfill and Transfer Station, and Lower Valley Transfer

	Station. The Terrace Heights Landfill is nearing capacity and will be closed in 2027.
Energy	The area is served by the Benton Rural Electric Cooperative for electricity distribution, and by Cascade Natural Gas Corporation for residential natural gas supply. Electricity and gas are not currently supplied to the Facility location. The existing Bonneville Power Administration (BPA) Midway to Moxee 115-kilovolt (kV) transmission line crosses through the Facility Area Extent.

4.22.C. Changes to and from Existing Condition

4.22.C.1 Changes to the Existing Condition from the Proposal

Could the activities associated with the proposal result in changes to the existing condition for this topic.

☐ No	☒ Yes	
	Topical Area/issue	**Changes**
	Water	Water is required for construction and operation of the Facility. Water required for dust mitigation, domestic use during construction, and washing panels during operation would be trucked in and provided from off-site sources (i.e., municipal water source or a vendor with a valid water right) as is addressed in Section 3.6. Water for construction use is estimated to be up to 50,000 gallons per day. The City of Moxee has provided a letter verifying availability of water with sufficient existing water rights (see Attachment Q). Water for domestic use at the O&M building during operations, approximately 200 gallons per day, would be provided by drilling a new well, or through an existing permitted source with on-site water tank storage. The Applicant would follow the domestic well application process administered by the Yakima County Water Resource System (YCWRS) established under Yakima County Code (YCC) Chapter 12.08 Water System (including but not limited to provisions per YCC 12.08.390 Applicability, 12.08.400 Property Eligibility Criteria, 12.08.410 Well Eligibility Criteria, 12.08.420 Well Depth Standards, and 12.08.440 Limitations on Use). The Applicant would identify drinking and utility wells located within or near the Facility boundaries, and the permitting process would consider any impact on sanitary control areas around wells. Based on early-stage conversations with Joel Freudenthal with the Water Resources division of Yakima County, it is anticipated that the Applicant would be able to drill a well via the YCWRS process for this low-consumption, domestic use. However, if a well is not able to be

		drilled, then water trucked in from off-site would be stored in water tanks.
	Sewer	During construction, sanitary waste would be collected on-site in portable toilets, to be provided and maintained by a licensed subcontractor. During operations, sanitary waste would be limited to domestic wastewater from the Facility's O&M building, which would be discharged to a licensed on-site septic system. Due to the distance to the nearest developed sewer system from the O&M building, the Applicant does not anticipate that connection to sewers or sewage treatment facilities would be required. Therefore, impacts to community sewer systems are not anticipated. A private sewage disposal system would be permitted with approval from Yakima County. Prior to construction of the proposed on-site septic system serving the Facility's O&M building, the Applicant would obtain the required permit from the Yakima Health District. The Applicant would operate and maintain the private sewage disposal facility in a sanitary manner at no expense to the County. The on-site septic system would comply with all applicable Washington State Department of Health (DOH) requirements. Because the septic system would manage wastewater flows of approximately 200 gallons per day, it is not considered a large on-site sewage system.
	Storm Water	The Facility would not have an adverse impact on stormwater drainage services because construction, operation, and decommissioning would not require construction or expansion of public stormwater drainage facilities. The Facility would manage stormwater onsite. As described in Section 4.5 (Water Quality – Stormwater), the majority of the area would not be covered with impervious surfaces and infiltration of precipitation would not differ significantly from current conditions. The existing stormwater runoff and erosion patterns would inform the final design of the Facility and, as a result, changes to drainage patterns would be minimized. The civil engineer would determine appropriate erosion and sediment control and drainage plans based on existing conditions and planned impervious surfaces (e.g., roads and other graveled areas). Therefore, the Facility would not adversely impact public stormwater drainage facilities.
	Solid Waste	Domestic waste produced during construction and operation of the Facility would be handled by a licensed waste hauler. At the end of the Facility's useful life, spent solar panels would be recycled by the manufacturer. Construction and operation of the Facility would not have an adverse impact on solid waste management. Facility construction would generate a variety of non-hazardous solid wastes associated with construction debris. Wastes would consist of scrap metal (e.g., wire and rebar scraps), wood, concrete, concrete washout, and other debris. Much of this waste would be packing material such as crates, pallets, and paper wrapping to protect equipment during shipping. Grading would produce negligible amounts of spoils that would need disposal. Concrete waste would

		consist of washout from concrete truck chutes and other equipment following pouring for foundations and would typically be placed in a dedicated concrete washout area located within the foundation excavation. Excess soil from road construction and foundation excavation would be spread onsite to the extent practicable, or hauled offsite to be disposed of in accordance with applicable regulations. Waste such as packing material that is not suitable for on-site placement would be collected in a central location during construction, to be hauled away by a licensed waste disposal service for disposal or recycling. No full-time staff would be employed onsite during operation of the Facility. Periodic visits by maintenance staff would result in little generation of solid waste and this waste would be hauled away by a licensed waste disposal service for disposal or recycling.
	Energy	Siting the Facility in proximity to the existing BPA 115-kV Midway-Moxee transmission line takes advantage of Yakima County's existing infrastructure and serves to minimize environmental impacts that would otherwise result from siting the Facility in an area lacking existing transmission infrastructure. When not generating power, the Facility would require a small amount of station service power for running controls systems and lighting as needed. The Facility would connect to Benton Rural Electric Association's system for this nominal amount of power. No adverse impact to regional energy providers is anticipated.

4.22.C.2. Changes to the Proposal from the Existing Condition

Would the existing condition for this topic have the potential to affect the proposal now or in the future?

☒ No	**☐ Yes**	
	Topical Area/issue	**Changes**
	N/A	N/A

4.22.D. Proposed Mitigation and Monitoring

☒ Check this box when all final proposed mitigation is described here, or the location of the mitigation information is referenced here.

Are you proposing any mitigation, either required in rules or proposed for impacts?

☒ No	**☐ Yes**		
	Mitigation	**Applicable law and how well it addresses the impact**	**Expert agency participation**

	N/A	N/A	N/A

4.22.E. Effects on Other Environmental Elements not yet Discussed

Does any information provided for this topic affect other environmental elements (e.g. water, plants, animals, noise), that has not already been considered and discussed in this form?

☒ No	☐ Yes	
	Environmental Element	**Additional changes or effects**
	N/A	N/A

References

Yakima County. 2017. Horizon 2040 Yakima County Comprehensive Plan. Available online at: https://www.yakimacounty.us/846/Horizon-2040-Comprehensive-Plan

ATTACHMENT A

Land Use Consistency Review

Goose Prairie Solar

Land Use Consistency Review

December 2020

OneEnergy Renewables
2003 Western Ave, Suite 225
Seattle, Washington 98121

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ACRONYMS AND ABBREVIATIONS

AG	Agricultural
Applicant	OER WA Solar 1, LLC
BESS	battery energy storage system
BMP	best management practice
BPA	Bonneville Power Administration
CARA	Critical Aquifer Recharge Area
CFR	Code of Federal Regulations
County	Yakima County
CRP	Conservation Reserve Program
CSWGP	Construction Stormwater General Permit
CUP	conditional use permit
DAHP	Washington Department of Archaeology and Historic Preservation
DOH	Washington State Department of Health
Ecology	Washington State Department of Ecology
EFSEC	Energy Facility Site Evaluation Council
ESLU	especially sensitive land use
Facility	Goose Prairie Solar
FEMA	Federal Emergency Management Agency
gen-tie line	interconnection tie line
kV	kilovolt
MW	megawatt
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan
SR-24	State Route 24
SWOT	Strengths, Weaknesses, Opportunities, and Threats
SWPPP	Stormwater Pollution Prevention Plan

UL	Underwriters Laboratories
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
UWHCA	Upland Wildlife Habitat Conservation Area
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WISAARD	Washington Information System for Architectural and Archaeological Records Data
WSDOT	Washington State Department of Transportation
Yakama Nation	Confederated Tribes and Bands of the Yakama Nation
YCC	Yakima County Code
YCCP	Yakima County Comprehensive Plan
YCWRS	Yakima County Water Resource System

1.0 Introduction

Goose Prairie Solar (the Facility) is a proposed 80-megawatt (MW) solar photovoltaic project with an optional battery energy storage system (BESS) capable of storing up to 80 MW of energy located in Yakima County (County), Washington. The Facility site is approximately 8 miles east of the city of Moxee in Township 12 North, Range 21 East (see Part 2 of the Application for Site Certificate (ASC), Figures 2-2 and 2-3, for a context map and a site map). The Facility is located just north of Washington State Route 24 (SR-24), also known as Hanford Road, between its intersections with Morris Lane and Desmarais Cutoff.

The Facility Parcels are zoned Agricultural (AG) under the Yakima County Code (YCC). The Facility is consistent with the County's definition of an "energy resource facility" and meets the criteria of a "power generating facility," which is classified as a "Type 3" conditional use in the County's AG zoning district (YCC Table 19.14-010). Type 3 land uses would require a conditional use permit (CUP) from the County, with approval by the Hearing Examiner.

OER WA Solar 1, LLC (the Applicant) has elected to seek Facility approval under the jurisdiction of Washington State's Energy Facility Site Evaluation Council (EFSEC), and the EFSEC Site Certificate Agreement process takes the place of the County CUP permitting process. However, to support the land use analysis in Section 4.14 of the ASC, this attachment has been prepared to address applicable YCC provisions and Yakima County Comprehensive Plan (YCCP) goals and policies. Because demonstrating compliance often requires detailed information covered elsewhere in this application for a Site Certificate Agreement, the following review includes cross-references to other sections, reports, and supporting studies for further analysis and documentation. As discussed below in Section 2, the proposed Facility would further Yakima County's goals to strengthen and diversify its economy in a manner that is protective of natural resources and its agricultural base. Section 3 below demonstrates that construction and operation of the Facility would also comply with YCC requirements, including meeting or exceeding the decision criteria for conditional uses. Accordingly, the Facility would be consistent with local land use policies and regulations.

2.0 Yakima County Comprehensive Plan

The following section demonstrates that the proposed Facility is consistent with applicable YCCP (Yakima County 2017) goals and policies. Only goals and policies with direct relevance to the Facility are evaluated in this discussion, including but not limited to those goals and policies identified by the County in early consultation regarding the Facility in April 2020. Moreover, Yakima County is a county required to plan under Washington's Growth Management Act. Within that legal framework, the YCCP goals and policies are intended to inform and guide the later adoption of development regulations (RCW 36.70A.030, 36.70A.040 and 36.70A.170). A comprehensive plan is not a development regulation and cannot itself control land development. In contrast, development regulations are the controls "placed on development or land use activities" (RCW 36.70A.040(4) and (7)). These controls include the Yakima County Zoning Code addressed in Section 3 (Yakima County Code Provisions).

2.1 Chapter 2 Natural Settings

2.1.1 Visioning Goals – Environment

Goal 5.F. Consider energy supply alternatives and energy conservation opportunities.

Response:

The proposed Facility represents a new supply of alternative, clean, renewable energy generated from Yakima County's abundant solar resource. In selecting final solar array and BESS technology, the Applicant would choose the best available equipment for efficient, reliable, and environmentally sound energy production. Operation of the Facility would require relatively low use of electricity and fuel to power equipment and vehicles; quantities would be typical for or less than those of commercial facilities of a similar size, and well within the availability of local service providers. Therefore, the Facility is consistent with this goal of the YCCP.

2.1.2 Goal NS 3: Make steady improvement in the air quality of the Yakima Valley by reducing dust, odor, auto emissions, smoke, and other contaminants.

Policy NS 3.2 Require control of emissions to the air during land development and construction projects.

Response:

The proposed Facility would provide a new source of clean, renewable energy. The solar energy generation process does not create an ongoing source of emissions during operation. Construction of the Facility would include appropriate measures to control dust and ensure the efficient operation of construction equipment. See Section 4.2 of the ASC (Air Quality), for further information regarding the Facility's air quality control measures. Therefore, the Facility is consistent with this goal and policy of the YCCP.

2.1.3 Goal NS 4: Promote the identification and protection of archaeological and significant historical sites and structures.

Policy NS 4.2 Maintain a process to evaluate impacts of proposed land use actions on County-designated historic, cultural and archeological sites to help ensure that archeological and significant historic sites are not disturbed or destroyed through any action of the county, or through any action permitted by the county.

Policy NS 4.5 When available, utilize existing archaeological and cultural resource information from the Washington State Department of Archaeology and Historic Preservation and the Yakama Nation.

Response:

The entirety of the Facility Area Extent was surveyed for cultural resources in May 2019 and April 2020, including subsurface probing (see Cultural Resources Survey Report, Attachment H; this report was also submitted to the Washington Department of Archaeology and Historic Preservation [DAHP]). Prior to the field surveys, a record search of DAHP's online database, Washington Information System for Architectural and Archaeological Records Data (WISAARD) was conducted, as well as review of historic plats and aerial photographs. Please see the Cultural Resources Survey Report, Attachment H, for findings related to cultural resources.

Applicant consulted with the Governor's Office of Indian Affairs (GOIA) in February 2019. Based upon the Facility location, GOIA recommended the Applicant consult with only the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation). The Applicant is in ongoing discussion with the Yakama Nation regarding the Facility. If any archaeological sites cannot feasibly be avoided by the Facility, appropriate mitigation would be developed in consultation with DAHP and the Yakama Nation. An archaeological excavation permit would be obtained prior to any alteration to cultural resources within the Facility Area, in compliance with Revised Code of Washington (RCW) 27.44. See Section 4.19 of the ASC for further analysis as well as avoidance and mitigation measures for cultural resources. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.1.4 Goal NS 5: Promote an environment free from excessive noise that jeopardizes the public health, safety and welfare.

Policy NS 5.2 Enforce noise standards.

Policy NS 5.3 Enforce the use of standard construction industry practices to control noise, including the use of noise-muffling equipment and observance of normal hours of operation.

Policy NS 5.4 Evaluate specific projects for their effects on noise-sensitive uses, such as residences, schools, churches, libraries, and health care facilities, sensitive wildlife species, and establish mitigating conditions.

Response:

The Facility would implement standard construction industry practices to control noise (see also Section 3.1.1 below regarding compliance with YCC Chapter 6.28 Noise Control). The Noise Assessment Report provided along with Section 4.16 (Noise, Light, Glare, Aesthetics) of the ASC evaluates noise from the Facility, including the potential for any noise standard exceedances at noise-sensitive receptors such as nearby residences. Based on this analysis, which modeled noise generated from Facility equipment depicted on the Preliminary Site Plan (Attachment B), no noise standard violations would occur as a result of the proposed Facility. Acoustic modeling results indicate that received sound levels resulting from Facility operations using either BESS option would comply with the applicable WAC 173-6050 dBA daytime and nighttime limits. See Section 4.16 of the ASC for additional discussion and detail regarding proposed control measures for the Facility. Section 4.9 of the ASC addresses potential impacts to wildlife and control measures; in general, noise from the Facility is not expected to adversely affect any wildlife species. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.1.5 Goal NS 6: Protect property values by improving the appearance of the Yakima Valley.

Policy NS 6.1 Protect the natural, historic, and visual quality of remote areas.

Policy NS 6.3 Develop standards for light and glare appropriate to each land use designation to minimize incompatibilities.

Policy NS 6.6 Assure that lot coverage, height and setback regulations are appropriate to the purpose and intent of the zoning district.

Response:

The Facility is sited in an area that is not considered remote and has been previously disturbed from its natural and historic state by current and historic agricultural use, associated commercial and residential development, as well as state highway infrastructure (SR-24) and the existing electrical infrastructure—the Bonneville Power Administration (BPA) 115-kilovolt (kV) Midway-Moxee transmission line. The Facility's change to existing visual quality, or aesthetics, is analyzed in detail in Section 4.16 (Noise, Light, Glare, Aesthetics) of the ASC and Attachment J (Visual Impact Assessment Report). Based on this analysis, the Facility would have an impact on visual resources, introducing structural elements that would contrast in a minor to moderate degree with the surrounding landscape. From the east and west sides of the Facility, views would be partially obscured by existing hop trellises that are taller than the maximum height of the solar panels, and from the south by existing topography. For these reasons, the Facility would not result in a strong or significant change to the characteristic views of the area and would not obstruct views of either Yakima Ridge or Rattlesnake Hills.

In addition, the Facility would not generate light or glare that is incompatible with existing and neighboring land uses and is not expected to create a substantial new source of nighttime lighting. A detailed Solar Glare Report (Attachment K) was completed for the Facility and found no hazardous glare would occur as a result of the Facility, as further discussed in Section 4.16 (Noise, Light, Glare, Aesthetics) of the ASC.

The Applicant consulted with Department of Defense (DoD) to seek an understanding of any potential risks associated with the Facility site and specifically, to confirm no impacts to DoD activities, including aircraft entering the nearby Yakima Training Center (YTC) airspace along a low-altitude military training route (MTR), as well as no impacts to low and high altitude within the weapons delivery range over/around YTC. This consultation took place in two rounds. First, on July 23, 2018 with a formal reply dated August 9, 2018 from the Naval Air Station (NAS) Whidbey Island staff, which found that the project, "does not appear to pose a direct impact to military operations." Second, on February 10, 2020 with a slightly modified study area. DoD did not issue a second letter but issued a "No Object" to FAA review for the supplemental 7460-1 FAA submittals, which are detailed below. Please see the correspondence with DoD in Attachment N.

The Applicant conducted outreach to the FAA through its online Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) portal online. As demonstrated by the Letters of Determination of No Hazard (Attachment M), the Facility is not expected to impact aviation.

Section 3.7 below reviews how the Facility complies with applicable lighting, height, and setback regulations under YCC Title 19 Unified Land Development Code, including general requirements and those specific to the AG zoning district. Overall, development of the Facility would comply with applicable regulations of the YCC and is consistent with this goal and corresponding policies of the YCCP.

2.1.6 Goal NS 7.4: Shorelines areas should be classified into specific environmental designations. The designation system should be based on the existing and future land use pattern as well as the biological and physical character of the shoreline. These environments should include the Urban, Rural, Conservancy, Natural Floodway / Channel Migration Zone (CMZ), and Urban Conservancy environments. Land uses and activities should be limited to those that are consistent with the character of the environment designation.

Policy NS 7.23 New development or new uses, including the subdivision of land, should not be established when it would be reasonably foreseeable that the development or use would require structural flood hazard reduction measures within the channel migration zone or floodway.

Policy NS 7.29 Protect shoreline streams, lakes, ponds, and wetlands with a vegetative buffer as described in the Shoreline Master Program.

<u>Response</u>:

There are no floodplains present within the Facility Area Extent, nor any surface waters or wetlands designated under the Shoreline Master Program. Water resources in the Facility Area Extent were confirmed through a wetland delineation completed in July 2020 (see Wetland Delineation Report, Attachment O). On-site water features are ephemeral drainages that would be classified as Type 5 streams under YCC 16C.06.06. The Facility would maintain at least a 50-foot buffer from the delineated ephemeral streams for all Facility components except a stream crossing which may be in the form of a bridge or a culvert and overhead electrical line crossings as shown on the Preliminary Site Map, Attachment B. See Section 4.3 (Water Quality) of the ASC for further information. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.1.7 Goal NS 8: Establish critical areas protection measures to protect environmentally sensitive areas, and protect people and property from hazards.

Policy NS 8.1 Use the best available science to develop regulations to protect the functions and values of critical areas.

<u>Response</u>:

The Facility would comply with the County's critical area regulations pursuant to YCC Title 16C Critical Areas. See Section 3.5 below for detailed information regarding Facility compliance, including references to supporting information provided elsewhere in this application. Therefore, the Facility is consistent with this goal and policy of the YCCP.

2.1.8 Goal NS 13: Prevent increased flooding from stormwater runoff.

Policy NS 13.1 Require on-site retention of stormwater.

Policy NS 13.2 Preserve natural drainage courses.

Policy NS 13.3 Minimize adverse storm water impacts generated by the removal of vegetation and alteration of land forms.

Response:

No floodplains are present within the Facility Area Extent. Construction and operation of the Facility would include best management practices (BMPs) for stormwater control, including retaining stormwater onsite in compliance with County and state stormwater regulations. See Section 3.2.3 below for specific discussion of YCC Chapter 12.10 Stormwater and Drainage Authority and National Pollutant Discharge Elimination System (NPDES) compliance. As noted above, the Type 5 ephemeral streams, which are considered natural drainage courses, would be avoided by Facility construction with at least a 50-foot buffer except for possible road crossings. Any crossings of the ephemeral streams would follow BMPs developed for stormwater control. The Applicant anticipates overall limited ground disturbance for the installation of the Facility. See also Section 4.1 (Earth) and Section 4.5 (Water Quality – Stormwater Runoff) of the ASC for detailed analysis and mitigation measures to minimize potential impacts associated with stormwater runoff. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.1.9 Goal NS 14: Improve water quality through improved stormwater management.

Policy NS 14.2 Control stormwater in a manner that has positive or neutral impacts on the quality of both surface and groundwater.

Response:

Per the above response to Goal NS 13 and its applicable policies, the Facility would control stormwater such that only positive or neutral impacts on the quality of both surface and groundwater would occur. See Section 3.2.3 below for specific discussion of compliance with YCC Chapter 12.10 Stormwater and Drainage Authority. Therefore, the Facility is consistent with this goal and policy of the YCCP.

2.1.10 Goal NS 15: Provide for the maintenance and protection of habitat areas for fish and wildlife.

Policy NS 15.1 Encourage the protection of aquatic, riparian, upland and wetland fish and wildlife habitat. This can be approached from both a region-wide and site specific perspective to ensure that the best representation and distribution of habitats remains to protect the natural values and functions of those habitats. Fish and wildlife habitat protection considerations should include:

1. *The physical and hydrological connections between different habitat types to prevent isolation of those habitats;*
2. *Diversity of habitat types both on a local and regional scale;*

3. *Large tracts of fish and wildlife habitat;*
4. *Connectivity between tracts of habitat;*
5. *Areas of high species diversity;*
6. *Locally or regionally unique and rare habitats.*

<u>Response</u>:

The Facility would have no impact to wetland habitat, and negligible impacts to streams related to the potential ephemeral stream crossing. Any impacts to wildlife habitat would be avoided, minimized or mitigated. Portions of the Facility would be built on upland shrub-steppe habitat, a Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species habitat, and in areas with species that are listed on federal and state lists. The Applicant initiated early consultation with WDFW for guidance on site field investigations to inform impact analysis and appropriate minimization measures, as well as identify if mitigation is warranted. The Applicant originally consulted with WDFW in Fall 2017 on the original site for the Facility which was approximately twelve miles east of the current Facility location. WDFW provided feedback regarding the preliminary site's proximity to sage grouse habitat and expressed concern about potential wildlife impacts. This led OneEnergy to initiate avoidance mitigation by moving the Facility. The new (and current) site is in a location that is largely comprised of previously disturbed agricultural land, hemmed in on three sides by land that is actively farmed and on the fourth side by land that is actively grazed. The site is also proximally located to existing disturbances including Highway 24 and the BPA Midway-to-Moxee 115 kilovolt transmission line. Section 4.9 (Animals) of the ASC presents detailed analysis of the Facility's potential impact to wildlife. Section 3.5.7 below reviews the Facility's compliance with related YCC critical area protection for Upland Wildlife Habitat Conservation Areas (UWHCAs). Therefore, the Facility is consistent with this goal and policy of the YCCP.

2.1.11 Goal NS 19: Protect the public from personal injury, loss of life or property damage from geologic hazards.

Policy NS 19.1 Ensure that land use practices in geologically hazardous areas do not cause or exacerbate natural processes which endanger lives, property, or resources.

Policy NS 19.2 Locate development within the most environmentally suitable and naturally stable portions of the site.

Policy NS 19.4 Prevent the subdividing and development of known or suspected landslide hazard areas, side slopes of stream ravines, or slopes 40 percent or greater for development purposes.

<u>Response</u>:

While there are mapped geologically hazardous areas within the Facility Area Extent, the Facility would not cause or exacerbate hazardous natural processes and would be constructed on the most suitable and stable portions of the site. To inform final design of the Facility and appropriate construction methods, a Geotechnical Site Investigation and Critical Areas/Geohazards Report (Attachment L) has been completed, which concluded that the site is suitable for the proposed Facility. The Facility would not be constructed in any known or suspected landslide hazard areas, side slopes of stream ravines, or slopes 40 percent or greater. See Section 3.5.5 below for additional discussion of the Facility's compliance with geological hazards criteria under YCC 16C.08, and Section 4.1 (Earth) of the ASC for detailed analysis and mitigation measures to avoid adverse impacts associated with geological hazards. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.1.12 Goal NS 20: Protect life and property in rural Yakima County from fire hazards.

Policy NS 20.1 Encourage the development of adequate water supply/storage for new development which is not connected to a community water/hydrant system. A storage facility/fire well should be accessible by standard firefighting equipment and adequate for the needs of the structure(s) and people being protected.

Policy NS 20.2 Roofing used in the construction of residential development shall be of a Class "A" fire retardant material when located outside of 5 road miles of a full service fire station.

Policy NS 20.3 Encourage, where feasible, the undergrounding of electrical utilities to reduce their exposure to fire.

Policy NS 20.5 Require proposed developments to provide sufficient access for heavy-duty firefighting equipment.

Policy NS 20.7 Residences and driveways shall be clearly marked and visible with the appropriate address assigned by Yakima County.

Response:

The Facility's proposed domestic water well would be accessible by standard firefighting equipment and provide adequate water for the potential need of the Facility. The Facility is not a residential development and no people would reside onsite. Roofing on the operations and maintenance (O&M) building would nevertheless be of a Class "A" fire retardant material. Electrical collection system cables would be buried wherever feasible throughout the solar array. The approximately 300-foot-long interconnection line would be constructed overhead out of necessity to connect with the existing overhead BPA 115-kV transmission line and avoid existing agricultural operations associated with the orchard on the Martinez Property. Additional areas within the Facility Area may require overhead electrical lines in order to avoid sensitive wildlife areas. Fire access roads at the Facility would be designed pursuant to the current international fire code that supports heavy-duty firefighting equipment. This includes designing fire access roads to be 20 feet wide, with an inner turning radius of 30 feet and outer turning radius of 45 feet. The access road around the perimeter of the Facility would also function as a fire break in the event of a non-Facility fire approaching from surrounding lands. The Facility access would be clearly marked and visible with the appropriate address assigned by Yakima County.

Overall, the risk of fire at the Facility is low. The Applicant would consult with the Yakima County Fire Marshal to ensure compliance with fire code, as well as coordinate with the East Valley Fire Department - Yakima County Fire District #4 to provide the Facility site and equipment information pertinent to emergency response. The proposed BESS option would contain a fire suppression system in accordance with fire code and National Fire Protection Association (NFPA) Standards, specifically NFPA 855 "Standard for the Installation of Stationary Energy Storage Systems." The system would include monitoring equipment and alarm systems with remote shut-off capabilities. A Fire Control Plan would be developed and provided to EFSEC and County emergency responders as a condition of approval. A copy of the final Fire Control Plan would be maintained onsite in the O&M building and provided to EFSEC and County emergency responders. See Section 4.13 (Environmental Health) of the ASC for further discussion of emergency safety measures for the Facility. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.2 Chapter 3 Natural Hazards

2.2.1 Goal NH 1-2: Prevent increased flooding from stormwater runoff.

Policy NH 1-2.1 Require on-site retention of stormwater.

Policy NH 1-2.3 Minimize adverse storm water impacts generated by the removal of vegetation and alteration of land forms.

Policy NH 1-2.4 Encourage the use of Low-Impact Development and other best management practices for capturing and infiltrating stormwater.

Response:

As stated in the Applicant's response to Goal NS 13 and corresponding policies above, construction and operation of the Facility would include BMPs for stormwater control, including retaining stormwater onsite in compliance with County and state stormwater regulations. See Section 3.2.3 below for specific discussion of YCC Chapter 12.10 Stormwater and Drainage Authority and NPDES compliance. The Applicant anticipates limited ground disturbance for the installation of the Facility. See also Section 4.1 (Earth) and Section 4.5 (Water Quality – Stormwater Runoff) of the ASC for detailed analysis and mitigation measures to minimize potential impacts associated with stormwater runoff. The Applicant applies relevant BMPs, including those for low-impact development, per regulatory compliance as part of its standard construction and operations practices. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.2.2 Goal NH 2: Protect the public from personal injury, loss of life or property damage from geologic hazards.

Policy NH 2.1 Ensure that land use practices in geologically hazardous areas do not cause or exacerbate natural processes which endanger lives, property, or resources.

Policy NH 2.2 Locate development within the most environmentally suitable and naturally stable portions of the site.

Policy NH 2.5 Maintain the integrity and moisture regimes of oversteepened slopes and other areas at risk for landslides

Policy NH 2.6 Ensure that geologic hazard information is readily available to the public.

<u>Response</u>:

While there are mapped geologically hazardous areas within the Facility Area Extent, the Facility would not cause or exacerbate hazardous natural processes and would be constructed on the most suitable and stable portions of the site. To inform final design of the Facility and appropriate construction methods, a Geotechnical Site Investigation and Critical Areas/Geohazards Report (Attachment L) has been completed, which concluded that the site is suitable for the proposed Facility. The Facility would not be constructed in areas of over-steepened slopes or other areas at risk for landslides. See Section 3.5.5 below for additional discussion in relation to geological hazards compliance under YCC 16C.08, and Section 4.1 (Earth) of the ASC for detailed analysis and mitigation measures to avoid adverse impacts. This application and its supporting materials are public documents as part of the EFSEC review process. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.2.3 Goal NH 3: Protect life and property in rural Yakima County from fire hazards.

Policy NH 3.1 Encourage the development of an adequate water supply/storage for new development which is not connected to a community water/hydrant system. A storage facility/fire well should be accessible by standard firefighting equipment and adequate for the needs of the structure(s) and people being protected.

Policy NH 3.2 Reflect best practices in structural fire resistance design for new construction.

Policy NH 3.4 Encourage, where feasible, the undergrounding of electrical utilities to reduce their exposure to fire.

Policy NH 3.6 Require proposed developments to provide sufficient access for heavy-duty firefighting equipment.

Policy NH 3.8 Residences and driveways shall be clearly marked and visible with the appropriate address assigned by Yakima County.

<u>Response</u>:

As stated in the Applicant's response to Goal NS 20 and corresponding policies above, the Facility's proposed domestic water well would be accessible by standard firefighting equipment and provide adequate water for the potential need of the Facility. Design of the Facility reflects best practices in structural fire resistance, which would be further reviewed and detailed during the building permitting process pursuant to YCC Title 13. Electrical collection system cables would be buried wherever feasible throughout the solar array. The approximately 300-foot-long interconnection line would be constructed overhead out of necessity to connect with the existing overhead BPA 115-kV transmission line and avoid existing agricultural operations associated with the orchard on the Martinez Property. Additional areas within the Facility Area may require overhead electrical lines in order to avoid sensitive wildlife areas. Fire access roads at the Facility would be designed pursuant to current international fire code that supports heavy-duty firefighting equipment. This includes designing fire access roads to be 20 feet wide, with inner turning radius of 30 feet and outer turning radius of 45 feet. The access road around the perimeter of the Facility would also function as a fire break in the event of a non-Facility fire approaching from surrounding lands. The Facility access would be clearly marked and visible with the appropriate address assigned by Yakima County.

Overall, the risk of fire at the Facility is low. The Applicant would consult with the Yakima County Fire Marshal to ensure compliance with fire code, as well as coordinate with East Valley Fire Department - Yakima County Fire District #4 to provide the Facility site and equipment information pertinent to emergency response. The proposed BESS option would contain a fire suppression system in accordance with fire code and NFPA Standards, including NFPA 855 "Standard for the Installation of Stationary Energy Storage Systems." The system would include monitoring equipment and alarm systems with remote shut-off capabilities. A Fire Control Plan would be developed and provided to EFSEC and County emergency responders as a condition of approval.. A copy of the final Fire Control Plan would be maintained onsite in the O&M building and provided to EFSEC and County emergency responders. See Section 4.13 (Environmental Health) of the ASC for further discussion of emergency safety measures for the Facility. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.2.4 Goal NH 4: Limit the impact of drought on property and safety.

Policy NH 4.4 Promote design that captures and infiltrates stormwater, meltwater, and irrigation runoff.

Response:

The Facility would be designed to retain stormwater and meltwater on-site, per applicable regulations. No irrigation is proposed as part of Facility activities or currently exists within the Facility Area. As noted in Section 2.B.2 (Surface Types and Acreage) of the ASC, the Facility would introduce a limited amount of impervious surface, approximately 30 acres (4 percent) of the total Facility Area. See Section 3.2.3 below for specific discussion of YCC Chapter 12.10 Stormwater and Drainage Authority and NPDES compliance. Therefore, the Facility is consistent with this goal and policy of the YCCP.

2.3 Chapter 4 Economic Development

2.3.1 Goal ED 1: Promote economic growth while maintaining environmental quality.

Policy ED 1.2 Encourage economic opportunities that strengthen and diversify the County's economy while maintaining the integrity of the natural environment.

Response:

The proposed Facility represents a valuable economic opportunity for Yakima County to strengthen and diversify its local economy while maintaining the integrity of the natural environment. The Facility utilizes the natural solar energy resources of Yakima County that are some of the highest in Washington State. It is sited on previously disturbed land with an existing electrical transmission line that has the capacity to connect the Facility to BPA's regional energy grid. This combination of a good solar resource and direct access to low-cost interconnection constitutes a unique economic development opportunity. In turn, the Facility would provide a consistent new source of revenue to participating landowners through long-term lease agreements, create new construction and operational jobs, as well as contribute to the County's tax base. Further, as demonstrated throughout this application, the Facility would avoid and minimize impacts to the natural environment while helping achieve Washington State's targets for carbon-free energy infrastructure (RCW 19.405).

In the YCCP, Figure 4.4.1-1 presents a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis that was conducted as a joint effort between Kittitas and Yakima Counties for their Regional Comprehensive Economic Development Strategy. This analysis identified renewable and alternative energy as an economic strength for diversified industry makeup and developing renewable energy facilities as an economic opportunity. It also identified planning and zoning barriers to new investment and alternative energy as an economic threat. The proposed Facility would support the County in its effort to maximize economic strengths and opportunities, while complying with existing zoning regulations. See Section 3.7 below for detailed review and discussion of the Facility's compliance with YCC Title 19 Unified Land Development Code, including how the Facility complies with the decision criteria for conditional uses in the AG zoning district. Therefore, the Facility is consistent with this goal and policy of the YCCP.

2.3.2 Goal ED 2: Encourage economic growth within the capacity of the region's public services and public facilities.

Policy ED 2.2 Encourage the use of state-of-the-art technology and conservation techniques to minimize demands on scarce resources such as water, energy, and other natural and developed resources.

Response:

As discussed in Section 3.6 (Water Quantity – Water Use) and Section 3.10 (Energy and Other Natural Resources) of the ASC, the Facility would not require large quantities of water, energy, or other natural and developed resources. The Facility would generate clean, renewable energy using proven solar and BESS technology to support meeting the region's energy needs in a sustainable manner. As such, the Facility would contribute to economic growth while operating within the capacity of the region's public services and facilities. For these reasons, the Facility is consistent with this goal and policy of the YCCP.

2.3.3 Goal ED 4: Preserve and enhance the County's resource-based economy.

Policy ED 4.1 Encourage resource-based industries which are consistent with resource lands goals and policies.

Policy ED 4.4 Discourage incompatible development in resource areas.

Response:

The Facility Area would occupy a nominal portion of the County's AG zoning district (less than 0.15 percent; Yakima County 2020) and would comply with applicable zoning standards and requirements for development of a solar energy generation facility. No active cropland or land otherwise classified as prime farmland (NRCS 2020) would be displaced by Facility construction and operation. Existing grazing activities on the Martinez Property would be able to continue outside of the fenced Facility Area as well as on neighboring properties owned by the same landowner, S. Martinez Livestock, Inc. Ground disturbance within the Facility Area would be limited, and in accordance with the Initial Site Restoration Plan, which will describe the decommissioning and site restoration options and be submitted to EFSEC for review, the Facility Area could be restored for agricultural activities should that become the preferred use after the Facility's life. Overall, the Facility would not preclude, discourage, or otherwise interfere with ongoing or future agricultural operations on land surrounding the Facility Area and would be compatible with development allowed in the AG zoning district. The Facility's consistency with resource land goals and policies, as well as compatibility with the AG zoning district, is discussed further in Section 3.7 below in response to YCC Title 19, which sets out the applicable zoning and conditional use regulations and approval criteria. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.4 Chapter 5 Land Use

2.4.1 Visioning Goals – Land Use

1A: Promote the growth and development of business related to agriculture, together with other industries which are recognized as playing an important role in the regional economy which may assist and help maintain an economically viable agricultural base.

Response:

As stated in the Applicant's response to Goal ED 1 and corresponding policies above, the proposed Facility would support the growth and diversification of Yakima County's rural economy, which helps maintain an economically viable agricultural sector. Through long-term lease payments to landowners, the Applicant would provide a consistent source of revenue that keeps land as part of the current and future agricultural base. The Facility would also contribute to the County's tax base. Similar to agriculture, the Facility is utilizing a vital local natural resource—solar energy—to provide a benefit to the community and region. The availability of electricity from clean, renewable sources is of critical importance to the long-term sustainability of the regional economy, including agriculture. As such, the Facility aligns with the State's effort to balance conservation with resource development in its policies, including implementation of the Washington Clean Energy Transformation Act (2019), which seeks to transition the State's electricity supply to 100 percent carbon-neutral by 2030 and 100 percent carbon-free by 2045 (RCW 19.405.010).Therefore, the Facility is consistent with this goal of the YCCP.

2.4.2 Goal LU-ER-AG 1: Maintain and enhance productive agricultural lands and discourage uses that are incompatible with farming activities.

Policy LU-ER-AG 1.1 Encourage conservation of the County's high quality agricultural lands for productive agricultural use and protect the opportunity for these lands to support the widest variety of agricultural crops.

Policy LU-ER-AG 1.4 Non-agricultural uses shall not be allowed in agricultural resource areas without site-specific review subject to standards related to 1) protections needed for agricultural uses and 2) the nature of the proposed non-agricultural use.

Policy LU-ER-AG 1.5 Allow for accessory uses, including non-agricultural accessory uses that support, promote, or sustain agricultural operations and production. Such accessory uses may include bed & breakfasts, boarding houses, restaurants, event facilities and other amenities that are determined to support agriculturally related entrepreneurial efforts.

Policy LU-ER-AG 1.7 Non-farm residences and uses within or adjacent to agricultural lands of long term commercial significance shall be located, designed and subject to special setbacks and other appropriate buffers to minimize conflicts with agricultural practices and other activities associated with agricultural lands. A 150-foot setback from the adjoining agricultural activity shall be required for all non-farm related uses, except where it can be demonstrated that a smaller setback will not interfere with accepted farm practices. Considerations in reducing the setback may include the size or shape of the parcel, historic use, natural features, physical barriers, crop type and structures on the adjoining resource parcel, location of structures on adjoining properties, proposed site design, and use of screening, berms, barriers and landscaping.

Policy LU-ER-AG 1.8 Require as part of development approval a declarative covenant or plat note to disclose the presence of agricultural activities in the area when property is within 500 feet of an existing agricultural zone. The notification shall disclose that the property is nearby or adjacent to land where farm operations and generally accepted agricultural and management practices are present (as defined under YCC Chapter 6.22, Right-to-Farm) and will be subject to a variety of activities that may not be compatible with non-farm or residential development.

Response:

The proposed Facility would be a “power generating facility” identified as one of the non-agricultural conditional uses allowed in the AG zoning district pursuant to YCC Table 19.14-1 Allowable Land Use Table. Throughout this application, the Applicant demonstrates the Facility’s compliance with site-specific standards set forth under the YCC for the protection of agricultural uses. Construction and operation of the Facility would not take any active cropland out of agricultural use. Through lease payments, the Facility would create a diversified source of revenue for the landowners that helps support ongoing agricultural uses on their holdings outside of the direct Facility Area. Specific compliance with required setbacks in the AG zoning district is discussed in Sections 3.7.2 and 3.7.3 below pursuant to YCC 19.10.040 and 19.11.010. Yakima County did not codify a 150-foot setback from agricultural activity for all non-farm related uses; rather, the 150-foot setback requirement per YCC 19.18.205 only applies to “especially sensitive land uses (ESLU),” which are defined under YCC 19.01.070 to include “dwellings (excluding caretaker dwellings), schools, day care facilities, churches or other places of worship or assembly, medical facilities such as hospitals, clinics and convalescent care facilities, outdoor recreational facilities and similar uses.” The Facility does not meet the definition of an ESLU. The entire area within 500 feet from the outer boundary of the Facility Parcels occurs in the AG zoning district and the Facility would operate adjacent to existing and accepted agricultural practices; therefore, a declarative covenant or plat note to disclose the presence of agricultural activities is not required and Policy LU-ER-AG 1.8 does not apply to the Facility.

The Facility's compatibility with agricultural land use is further discussed in Section 3.7.10 below in response to the conditional use decision criteria per YCC 19.30.080(7). Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.4.3 Goal LU-G-1: Ensure that proposed changes to land uses or zoning regulations do not have a negative impact on the Yakima Training Center's primary mission.

Policy LU-G 1.5 All new land uses proposed to be located in proximity to the Yakima Training Center should be evaluated as to their potential impact to the Training Center.

Response:

Per the Applicant's consultation with the Department of Defense and the Federal Aviation Administration (see correspondence in Attachment N and Letters of Determination of No Hazard as Attachment M), the Facility would be compatible with the Yakima Training Center. The Facility would not reduce the ability of the center to complete its mission, undertake new missions, or to increase its cost of operating. Therefore, the Facility is consistent with this goal and policy of the YCCP.

2.5 Chapter 9 Utilities

2.5.1 Goal UT 2: Reasonably protect the physical and natural environment while providing utilities.

Policy UT 2.2 Encourage private utility structures (e.g., electric substations) to have design and screening that is compatible in bulk and scale with surrounding land uses.

Policy UT 2.4 Encourage energy resource development in locations within Yakima County that take advantage of the County's energy resources, existing infrastructure, and also are sited to minimize environmental impacts.

Response:

The Facility would be compatible in bulk and scale with surrounding land uses and meet applicable County development standards for a "power generating facility" in the AG zoning district, as detailed in Section 3.0. Siting the Facility in proximity to the existing BPA 115-kV Midway-Moxee transmission line takes advantage of the County's existing infrastructure and serves to minimize environmental impacts that would otherwise result from siting the Facility in an area lacking existing transmission infrastructure. Furthermore, the Facility is sited on previously disturbed land with minimal sensitive environmental resources. Where applicable, the Applicant provides measures to avoid, minimize, and mitigate for potential impacts to environmental resources in Part 4 of the ASC. The Facility's location also takes advantage of the County's abundant solar resources to generate clean, renewable energy. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.5.2 Goal UT 3: Ensure cost effective provision of utility services.

Policy UT 3.2 Solicit community input prior to county approval of private utility facilities which may significantly impact the surrounding community.

Response:

The EFSEC certification process includes an opportunity for community input prior to approval, including a land use consistency hearing. Therefore, the Facility is consistent with this goal and policy of the YCCP.

2.5.3 Goal UT 5: Ensure that future development does not exceed the available amount of raw water.

Policy UT 5.2 Develop specific guidelines for determining the adequacy of water supplies proposed to serve new parcels and new structures and uses on existing parcels.

Policy UT 5.5 Develop a water resource system that addresses the need for domestic water for development in unincorporated Yakima County that meets the water availability requirements of state law.

Response:

During construction, the Facility would obtain water through the construction contractor, with water trucked in from an existing municipal or other source with a valid water right. Operation of the Facility would have minimal water needs for domestic water use in the O&M building, anticipated to be less than 200 gallons per day. For this purpose, the proposed Facility would include a new domestic water well or bring in water from off-site and store it in aboveground water tanks. The Applicant would obtain the required County permit for a new domestic well, as described in Section 3.2.2 below per YCC Chapter 12.08 Water System. See also Section 3.6 and Section 4.22 of the ASC for additional discussion of the Facility's water supply. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

2.5.4 Goal UT 17: Promote the delivery of electrical services, on demand, within the County consistent with utility's public service obligations.

Policy UT 17.5 Work with electrical utility providers and neighboring jurisdictions to meet regional service needs and to accommodate future facility improvements.

Policy UT 17.6 Ensure there are sufficient electric utility facilities that are sufficient to support economic development. Foster cooperation among private enterprise, the County, and the utility provider.

Response:

The Facility would generate power for delivery to a utility service provider. Commercial discussions for purchase of power from the Facility are currently in process. In general, the Facility would contribute to the development of clean, renewable energy sources that are necessary for utilities to meet regional service needs and support economic development. Therefore, the Facility is consistent with this goal and corresponding policies of the YCCP.

3.0 Yakima County Code Provisions

This section provides the Applicant's responses demonstrating that the Facility would comply with applicable provisions of the YCC. The provisions addressed below are based on the Applicant's review of the YCC as well as input provided by Yakima County Public Services staff through early consultation in April 2020. The provisions as they appear in the YCC are copied below in italics, with some titles abbreviated. The provisions are followed by the Applicant's response and statement of compliance.

3.1 Title 6 Health, Welfare and Sanitation

3.1.1 Chapter 6.28 Noise Control

Section 6.28.030

(1) It is unlawful for any person to make, continue, or cause to be made or continued or any person in possession of property to make, continue, or cause to be made or continued or allow to originate from the property any sound which:

(a) Is plainly audible within any dwelling unit which is not the source of the sound or is generated within two hundred feet of any dwelling unit;

(b) Either annoys, disturbs, injures or endangers the comfort, repose, health, peace or safety of others.

(2) Sound which is "plainly audible" is sound that can be understood or identified.

Section 6.28.040 Exemptions

The following sounds are exempt from the provisions of this chapter:

(12) Sounds created by construction or refuse removal equipment; …

(18) Sounds created by lawfully established commercial and industrial uses.

Response:

Sounds generated by the Facility would be classified as exempt from the County's noise control provisions as they would be limited to sounds "created by construction or refuse removal equipment" (YCC 6.28.040(12)) and sounds "created by lawfully established commercial and industrial uses" (YCC 6.28.040(18)). No residences would be located within 200 feet of the Facility Area Extent. The nearest residences not included as participating landowners occur between SR-24 and Desmarais Road approximately 225 feet south of the Meacham Property and Facility Area Extent (see Preliminary Site Plan, Attachment B). The nearest proposed noise generating equipment are the inverters and transformers located approximately 700 feet or more from these residences and within the fenced Facility Area. The Facility is required to comply with Washington State noise regulations pursuant to Washington Administrative Code (WAC) 173-60, as discussed in Section 4.16 (Noise, Light, Glare and Aesthetics) of the ASC. Based on the analysis presented in Section 4.16 of the ASC, the Facility would be in compliance with state noise regulations consistent with a lawfully established commercial and industrial use, and operational noise would not exceed noise standards applicable to nearby residences as demonstrated in the Acoustic Assessment Report (Attachment I). Therefore, the Facility would comply with the County's applicable noise provisions under YCC 6.28.

3.2 Title 12 Water and Sewage

3.2.1 Chapter 12.05 Sewer System

Article IV – Private Sewage Disposal

YCC Sections 12.05.150 through 12.05.200 detail requirements for constructing and operating a private sewage system, such as an on-site septic system.

Response:

Pursuant to YCC 12.05.150, a private sewage disposal system is permitted with approval from the County. Prior to construction of the proposed on-site septic system serving the Facility's O&M building, the Applicant would obtain the required permit from the Yakima Health District and meet system recommendations from the Washington State Department of Health (DOH) if provided. Pursuant to YCC 12.05.190, the Applicant would operate and maintain the private sewage disposal facility in a sanitary manner at all times at no expense to the County. Because the septic system would manage wastewater flows of less than 3,500 gallons per day, currently estimated at approximately 200 gallons per day, it is not considered a large on-site sewage system and would not require a permit from the DOH (WAC 246-272B). Therefore, the Facility would comply with the applicable provisions under YCC 12.05.150 through 12.05.200.

3.2.2 Chapter 12.08 Water System

Article V – Yakima County Water Resource System Provisions

YCC Sections 12.08.390 through 12.08.440 detail requirements for permitting a state groundwater permit-exempt well with a Yakima County Water Resource System (YCWRS) domestic well permit.

Response:

Prior to construction, the Applicant would follow the domestic well application process to obtain a YCWRS domestic well permit for the proposed new well that would serve the Facility's O&M building. Given that less than 200 gallons per day would be drawn from the well, the Applicant anticipates this permit would be approved. However, depending on final Facility design considerations or in the event that YCWRS determines there is not sufficient water availability, or the Yakima Health District determines the water supply is either not potable or adequate in quantity per YCC 12.08.050, the Applicant would secure an alternate water supply for the O&M building through an existing source with adequate water rights, stored in an onsite, aboveground water tank. See Section 3.6 (Water Quantity) and Section 4.22 (Utilities) of the ASC for further information regarding water use. Therefore, the Facility would comply with the applicable provisions under YCC 12.08.390 through 12.08.440.

3.2.3 Chapter 12.10 Stormwater and Drainage Authority

Section 12.10.210 When a Stormwater Plan is Required

> *(1) General. The approval of applications for land development or redevelopment projects (projects) that are submitted pursuant to Yakima County Codes 12, 13, 19, 16C, and 16D that meet the following criteria shall be subject to the approval of a stormwater plan by the Public Services Director:*

(a) Projects that disturb a land area greater than one acre.

Response:

The Facility would disturb a land area greater than one acre and does not fall under any of the exemptions listed in YCC 12.10.210(2); therefore, a Stormwater Plan would be required. The County's design criteria and content requirements for a Stormwater Plan are listed in YCC 12.10.250 and 12.10.260, respectively. Prior to any ground disturbance[1], the Applicant would develop a Stormwater Plan, separately or in conjunction with the state-level requirement to provide a Stormwater Pollution Prevention Plan (SWPPP) as part of the NPDES Construction Stormwater General Permit (CSWGP) process that fulfills these requirements. The Stormwater Plan would be provided to EFSEC as a condition of approval. An approved Stormwater Plan is also required prior to the County's issuance of building permits (see Section 3.3 below). Per County requirements, in addition to retaining stormwater on site, the Applicant would not alter or impede conveyance of upland flow and would maintain natural drainageways, which include the Type 5 streams delineated within the Facility Area Extent. See Section 4.5 (Water Quality) of the ASC for additional information regarding stormwater management and proposed mitigation measures. Therefore, the Facility would comply with the County's applicable criteria for stormwater management.

Section 12.10.220 When a Stormwater Pollution Prevention Plan is Required

(1) General. A Stormwater Pollution Prevention Plan (SWPPP) is required to be submitted to the County for a completeness review for all land development or redevelopment projects that meet the stormwater plan requirements outlined in section 12.10.210 and are located within the County Stormwater Utility (YCC 12.09), as a condition of approval.

Response:

The Facility is not located within the County Stormwater Utility Boundary as mapped per Exhibit 1 of YCC 12.09.110; therefore, a SWPPP is not required for the Facility by the County. However, as noted above, pursuant to state NPDES regulations the Applicant would develop a SWPPP to obtain coverage under the CSWGP from the Washington State Department of Ecology (Ecology) and provide this to EFSEC as a condition of approval. Therefore, the Facility would comply with this criterion.

3.3 Title 13 Building and Construction

3.3.1 Chapter 13.04 Enforcement and Administration

Section 13.04.010 Authority Designated

The Manager of the Building and Fire Safety Division of the Yakima County Department of Public Services is hereby authorized and designated as the Official responsible for the enforcement and administration of this Title, and is appointed as

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[1] As advised by the County, ground disturbance includes grading, vegetation removal, internal road improvements, construction, and utility installation.

the public officer, as defined in RCW 35.80.020, with the authority to exercise such powers of enforcement as are authorized in RCW 35.80 and YCC 13.11. The Manager may designate employees within his division to act on his behalf. The use of the terms "Building Official," "Administrative Authority," "Code Official," "Authority Having Jurisdiction" and similar such terms as contained in this Title and in the codes and standards adopted by reference under this Title shall be construed as referring to the Manager of the Building and Fire Safety Division of the Yakima County Department of Public Services and his designees.

Section 13.04.020 Correlation with Zoning Ordinance

Prior to the issuance of any permit under this Title, the Building Official shall review the proposed work and use for compliance with Yakima County's Zoning Ordinances, YCC Title 19, as they now exist or as amended. Compliance with applicable zoning requirements shall be a condition precedent to the issuance of any permit subject to land use approval under this Title.

Section 13.04.030 Coordination Required with Other Officials

The Building Official in the enforcement and administration of this Title is authorized to coordinate with any other appropriate regulatory agency to confirm that the proposed work conforms to the applicable laws or regulations of that agency prior to the issuance of any permit under this Title.

Nothing within this section shall otherwise interfere with or limit the discretionary authority of the building official to confer with other departments and jurisdictions prior to the issuance of any permit required under this Title pursuant to applicable sections of the International Building Code, International Residential Code, International Existing Buildings Code, International Mechanical Code, International Fuel Gas Code, International Fire Code, Uniform Plumbing Code, International Wildland-Urban Interface Code, International Property Maintenance Code, ICC Performance Code for Buildings and Facilities, and International Swimming Pool and Spa Code, and International Energy Conservation Code adopted by reference in this Title.

Response:

As confirmed by the County in early consultation conducted in April 2020, building permits would be required for the Facility, including the solar array, security fence, O&M building, and any other structures exceeding 7 feet in height. The Applicant would work with EFSEC staff and the Building Official and follow the County's process to provide the information needed for building and grading/excavation permitting, including but not limited to two sets of building plans and structural calculations signed and sealed by an engineer licensed in Washington State, and site plans following the requirements of the County's grading and excavation permit application. Structures would be designed to meet applicable County criteria for snow load, wind load, and seismic category. Grading and excavation work would follow recommendations included in the Geotechnical Investigation and Critical Areas/Geohazards Report (Attachment L) as well as possible additional site-specific soils engineering information developed prior to final design. The Applicant would also develop a Stormwater Plan and obtain a State CSWGP, required prior to the issuance of building and grading permits. Compliance with the County's Zoning Ordinances, YCC Title 19, is demonstrated in Section 3.7 below. The Facility is designed consistent with applicable sections of international code standards, including but not limited to the current International Building Code and International Fire Code. As noted earlier, access roads are designed to meet or exceed minimum fire apparatus access road standards. The Applicant would provide approved building and grading permits to EFSEC prior to construction as a condition of approval. Therefore, the Facility would comply with applicable provisions of the County's building and construction code under YCC Title 13.

3.4 Title 16 Environment

3.4.1 Chapter 16.04 State Environmental Policy Act

Section 16.04.120 Environmental Checklist

> *(1) Except as provided in Subsection (5) below, a completed environmental checklist substantially in the form provided in WAC 197-11-960, shall be filed at the same time as an application for a permit, license, certificate, or other approval not specifically exempt in this Chapter; except, a checklist is not needed if the County and applicant agree an EIS is required, SEPA compliance has been completed, or SEPA compliance has been initiated by another agency. The Responsible Official shall use the environmental checklist to determine whether the County should be the lead agency and, if the County is the lead agency, for making the threshold determination.*

Response:

The Applicant has elected to site the Facility under EFSEC's jurisdiction, and therefore EFSEC serves as the lead agency for State Environmental Policy Act (SEPA) compliance. Information needed for a SEPA determination is incorporated in Part 3 and Part 4 of the ASC. EFSEC has advised the Applicant that they will prepare a SEPA checklist form per WAC 197-11-960 with reference to corresponding sections of Part 3 and Part 4 as appropriate. Therefore, the Facility would comply with the County's applicable criteria under YCC 16.04.120.

3.5 Title 16C Critical Areas

3.5.1 Chapter 16C.03 Application and Review Procedures

Section 16C.03.01 Critical Area Development Authorization Required

> *(1) No new development, construction or use shall occur within a designated critical area without obtaining a development authorization in accordance with the provisions of this title, except for those provided for in Section 16C.03.05 (Minor Activities Allowed Without a Permit).*
>
> *…*
>
> *(5) Coordination with Other Jurisdictions.*

(a) Where all or a portion of a standard development project site is within a designated critical area and the project is subject to another local, state or federal development permit or authorization, then the Administrative Official shall determine whether the provisions of this title can be processed in conjunction with, and as part of, that local, state or federal development permit or authorization, or whether a separate critical area development authorization application and review process is necessary. The decision of the Administrative Official shall be based upon the following criteria:

(i) The nature and scope of the project and the critical area features involved or potentially impacted;

(ii) The purpose or objective of the permit or authorization and its relationship to protection of the critical area;

(iii) The feasibility of coordinating the critical area development authorization with the permitting agency;

(iv) The timing of the permit or authorization.

(b) When a determination has been made that provisions of this title can be handled through another applicable development permit or authorization process, project proponents will be required to provide any additional site plans, data and other information necessary as part of that process to fully evaluate the critical area project and ensure its compliance with this title. The Administrative Official's decision on the critical area development authorization shall be coordinated to coincide with other permits and authorizations.

Response:

The Facility would be entirely or partially located within three designated critical area types, including a geologically hazardous area (YCC 16C.08), Critical Aquifer Recharge Area (CARA; YCC 16C.09), and UWHCA (YCC 16C.11). The Facility would not qualify as a minor activity allowed without a permit under YCC 16C.03.05; therefore, a Critical Area Standard Development Permit is required. However, as the Facility is under EFSEC jurisdiction for development authorization, per YCC 16C.03.01(5) the Applicant is demonstrating compliance with Title 16C through the EFSEC review process. The Applicant consulted with Yakima County in April 2020 regarding expectations for critical areas and the following subsections detail how the Facility complies with applicable requirements.

Section 16C.03.17 Critical Areas Report Requirements

(11) A critical area report may be supplemented by or composed, in whole or in part, of any reports or studies required by other laws and regulations or previously prepared for and applicable to the development proposal site, as approved by the Administrative Official.

(12) The Administrative Official may limit the required geographic area of the critical area report as appropriate.

Response:

The Facility would be partially or entirely located in areas designated as geologically hazardous, a CARA, and UWHCA. In lieu of providing a separate critical area report for each resource, these critical areas are addressed in Section 4.1 (Earth), Section 4.5 (Water Quality), and Section 4.9 (Animals) of the ASC, respectively. This Application includes applicable studies and reports as attachments listed in Section 1.E for review in conjunction with the analysis conducted for each respective Part 4 resource section. The Applicant has included the full geographic extent for the Facility in assessing potential impacts to critical areas or required buffer areas. Collectively, these reports and analysis sections provide the information needed to demonstrate critical areas compliance under Title 16C of the YCC.

(13) Compensatory Mitigation Plans. When compensatory mitigation, as described in Section 16C.03.10 (Mitigation Requirements), is required or proposed for wetland areas, stream channels, or upland habitat areas, the applicant shall submit for approval by Yakima County a mitigation plan as part of the critical area report, which includes:

(a) Environmental Goals and Objectives. The mitigation plan shall include a written report identifying environmental goals and objectives of the proposed compensation including:

(i) A description of the anticipated impacts to the critical areas, mitigating actions proposed, and the purposes of the compensation measures, including the site selection criteria, identification of compensation goals and objectives, identification of desired resource functions, dates for beginning and completion of site compensation construction activities, and an analysis of the likelihood of success of the compensation project. The goals and objectives shall be related to the functions and values of the impacted critical area;

(b) A review of the best available science supporting the proposed mitigation;

(c) A description of the report author's experience to date in restoring or creating the type of critical area proposed;

(d) Performance Standards. The mitigation plan shall include measurable specific criteria for evaluating whether or not the goals and objectives of the mitigation project have been successfully attained;

(e) Detailed Construction Documents. The mitigation documents shall include written specifications and plans describing the mitigation proposed, such as:

(i) The proposed construction sequence, timing, and duration;

(ii) Grading and excavation details;

(iii) Erosion and sediment control features;

(iv) A planting plan specifying plant species, quantities, locations, size, spacing, and density;

(v) Measures to protect and maintain plants until established; and

(vi) Documents should include scale drawings showing necessary information to convey both existing and proposed topographic data, slope, elevations, plants and project limits;

(f) Monitoring Program. The mitigation plan shall include a program for monitoring construction of the compensation project and for assessing a completed project. A protocol shall be included outlining the schedule for site monitoring (for example, monitoring shall occur in years 1, 3, 5, and 7 after site construction), and how the monitoring data will be evaluated to determine if the performance standards are being met. A monitoring report shall be submitted as needed to document milestones, successes, problems, and contingency actions of the compensation project. The compensation project shall be monitored for a period necessary to establish that performance standards have been met, but not for a period less than five (5) years.

(g) Contingency Plan. The mitigation plan shall include identification of potential courses of action, and any corrective measures to be taken if monitoring or evaluation indicates project performance standards are not being met.

(h) Financial Guarantees. The mitigation plan shall include financial guarantees, if necessary, to ensure that the mitigation plan is fully implemented. Financial guarantees ensuring fulfillment of the compensation project, monitoring program, and any contingency measures shall be posted in accordance with Section 16C.03.27(1) (Financial Guarantees).

(14) Innovative Mitigation.

(a) Yakima County encourages innovative mitigation projects that are based on the best available science. The mitigation plan shall be used to satisfy the requirements of this chapter and provide relief and/or deviation as appropriate from the specific standards and requirements thereof. Advance mitigation or mitigation banking are examples of alternative mitigation projects allowed under the provisions of this section wherein one or more applicants, or an organization with demonstrated capability, may undertake a mitigation project together if it is demonstrated that all of the following circumstances exist:

(i) Creation or enhancement of a larger system of critical areas and open space is preferable to the preservation of many individual habitat areas;

(ii) The group demonstrates the organizational and fiscal capability to act cooperatively;

(iii) The group demonstrates that long-term management of the habitat area will be provided;

(iv) There is a clear potential for success of the proposed mitigation at the identified mitigation site;

(v) There is a clear likelihood for success of the proposed plan based on supporting scientific information and demonstrated experience in implementing similar plans;

(vi) The proposed project results in equal or greater protection and conservation of critical areas than would be achieved using parcel-by-parcel regulations and/or traditional mitigation approaches;

(vii) The plan is consistent with the general purpose and intent of this chapter;

(viii) The plan shall contain relevant management strategies considered effective and within the scope of this chapter and shall document when, where, and how such strategies substitute for compliance with the specific standards herein; and

(ix) The plan shall contain clear and measurable standards for achieving compliance with the purposes of this chapter, a description of how such standards will be monitored and measured over the life of the plan, and a fully funded contingency plan if any element of the plan does not meet standards for compliance.

Response:

As described further in Section 3.5.7 below, a portion of the Facility would impact a UWHCA. The Applicant is currently working with WDFW to determine what mitigation may be necessary to compensate for construction and operation of the Facility. A mitigation plan would developed for the Facility and would be consistent with the criteria established above under YCC 16C.03.17(13) and (14) for mitigation plans. Section 4.9 (Animals) of the ASC discusses wildlife and mitigation impacts in more detail.

3.5.2 Chapter 16C.05.20 Flood Hazard Areas

Section 16C.05.20.010

The special flood hazard areas identified by the Federal Emergency Management Agency (FEMA), in a scientific and engineering report entitled "The Flood Insurance Study for Yakima County, Washington and Incorporated Areas" dated November 18, 2009, and any revisions thereto, with an accompanying Flood Insurance Rate Map (FIRM), and any revisions thereto, are hereby adopted by reference and declared to be part of Chapters 16C.05.20 through 16C.05.72 and are established as flood hazard areas. The Flood Insurance Study and maps are on file at the Yakima County Courthouse Building, Yakima, Washington. State defined frequently flooded areas are included within the flood hazard areas. The best available information for flood hazard area identification as outlined in 16C.05.44.060 shall be the basis for regulation until a new FIRM is issued that incorporates data utilized under 16C.05.44.060.

Response:

The Facility is entirely outside the 100-year floodplain identified by FEMA, and therefore there are no special flood hazard areas within the Facility Area Extent. Therefore, flood hazard and floodway criteria under YCC 16C.05.20, .28, .32, and .36 do not apply to the Facility, and no further analysis or compliance actions are required.

3.5.3 Chapter 16C.06 Fish and Wildlife Habitat and the Stream Corridor System

Section 16C.06.03 Hydrologically Related Critical Area Features

The stream corridor and other hydrologically related critical areas are designated critical areas and include one or more of the following features:

(1) Any floodway and floodplain identified as a special flood hazard area. Special flood hazard areas are those identified by the Federal Insurance Administration in the Flood Insurance Study for Yakima County which, together with accompanying Flood Insurance Rate Maps and frequently flooded areas are hereby adopted by reference and declared to be a part of this title as set forth in Chapters 16C.05.20 through 16C.05.72;

(2) Perennial and intermittent streams, excluding ephemeral streams, including the stream main channel and all secondary channels within the Ordinary High Water Mark;

(3) Naturally occurring ponds under twenty acres and their submerged aquatic beds; and man-made lakes and ponds created within a stream channel designated under (2) above;

(4) All wetlands, that meet the definition found in Section 16C.02.425, as required by WAC 365-190-080(1), and as designated in Section 16C.07.02(1) of the wetland chapter;

(5) Where specifically cited, any flood-prone area not included in a designated floodway and floodplain, but indicated as flood-prone (i.e. specific flood frequency, stream channel migration), by information observable in the field such as soils or geological evidence, or by materials such as flood studies, topographic surveys, photographic evidence or other data;

(6) A buffer area extending on a horizontal plane from the ordinary high water mark of a stream channel, lake, or pond, designated in this section or from the edge of a wetland designated in this section according to the distances set forth in Section 16C.06.16 (Vegetative Buffers).

Response:

Construction and operation of the Facility would not occur within a special flood hazard area, surface water body or wetland, or required vegetative buffers per YCC 16C.06.16. A Wetland Delineation Report (Attachment O) was completed in July 2020 for the entirety of the Facility Area Extent. The report confirms that no wetlands are within the Facility Area Extent and the only waters within the Facility Area Extent are ephemeral stream drainages. These stream drainages would be classified as Type 5 streams under YCC 16C.06.06. Per YCC 16.06.16, no vegetative buffers are required for Type 5 streams. However, the Facility design would maintain a voluntary 50-foot buffer from the delineated Type 5 streams with the exception of road crossings and overhead electrical lines. Therefore, the Facility would not impact surface water and wetland critical area features. See Section 4.3 of the ASC for additional information regarding wetlands and surface waters. Potentially flood-prone areas not in a designated floodplain are addressed as a geological hazard type (i.e., alluvial fan, high risk) pursuant to YCC 16C.08 and discussed in Section 3.5.5 below. Therefore, the Facility would comply with these criteria.

3.5.4 Chapter 16C.07 Wetlands

Section 16C.07.02 Designating and Mapping

> *(1) Wetlands are those areas that meet the definition found in Section 16C.02.425 as provided in RCW 36.70A.030(21). All areas within Yakima County meeting the wetland definition are hereby designated critical areas and are subject to the provisions of this title. The following clarifications guide the application of the wetland definition:*
>
> > *(a) Due to the inherent design of most irrigation systems, such systems are reasonably and foreseeably expected to result in some leakage or seepage. Such leakage or seepage is a normal result of utilization of irrigation systems and is deemed for the purposes of this title to be a nonregulated, artificial wetland.*
>
> *(2) The approximate location and extent of wetlands are shown on maps maintained by Yakima County, which may include information from the National Wetlands Inventory produced by the U.S. Fish and Wildlife Service and soil maps produced by United States Department of Agriculture National Resources Conservation Service that are useful in helping to identify potential wetland areas. These maps are to be used as a guide for Yakima County, project applicants and/or property owners, and may be continuously updated as wetlands are more accurately identified, located and delineated.*

Response:

As stated above in response to YCC 16C.06, Facility construction and operation would not occur within a wetland or required buffer. A Wetland Delineation Report (Attachment O) was completed in July 2020 for the entirety of the Facility Area Extent and confirms there are no wetlands in the Facility Area Extent; therefore, no impacts to wetlands or associated buffer areas would occur. See Section 4.3 of the ASC for additional information regarding wetlands. Therefore, the Facility would comply with these criteria.

3.5.5 Chapter 16C.08 Geologically Hazardous Areas

YCC Sections 16C.08.01 through 16C.08.05 designate geologically hazardous areas in the County and set out the protection approach, development review procedure, and general protection requirements. Geologically hazardous areas can include hazards from erosion, landslides, oversteepened slopes, alluvial fan/flash flooding, avalanches, stream undercutting, seismic events, and volcanic events (YCC 16C.08.02). In addition to the provisions of YCC

16C.08, when development occurs within a mapped geologically hazardous area, YCC Section 16C.03.18(4) details additional critical area reporting requirements.

Response:

A portion of the Facility Area Extent is in an area designated by the County as geologically hazardous. Most of the geologically hazardous area is designated as "Alluvial Fan, High Risk," and a very small area is designated as "Over-steepened Slopes, Intermediate Risk." While the Facility would avoid the area of steep slopes, the solar array would overlap the area identified as alluvial fan high risk . This is considered a potentially flood-prone area not in a designated floodplain, per YCC 16C.06.03(5).

In compliance with YCC 16C.08.04 and YCC 16C.03.18(4), as well as to inform design criteria and construction methods for the Facility, a Geotechnical Site Investigation and Critical Areas/Geohazards Report has been completed for the entirety of the Facility Area Extent (Attachment L). This report includes the results from a desktop review and field investigation of site features, geologic processes and hazards affecting the property, the potential vulnerability of the site, and potential hazards as a result of site development, pursuant to YCC 16C.03.18(4). The field investigation included subsurface testing across the Facility Area Extent. Based on the investigation, the report concludes that the site is suitable for the proposed Facility with implementation of geotechnical recommendations for design and construction. Regarding the specific area identified by the County as "Alluvial Fan, High Risk," the report finds that no geologic hazards are directly associated with the Facility site located on alluvial fan deposits; however, development within the drainage should be avoided. No Facility development is planned within or in proximity to the incised drainage that could pose a risk from potential flooding events. The Applicant would also follow all geotechnical recommendations in Facility design and construction (see Section 4.1 of the ASC and Attachment L).

As a result, the Applicant demonstrates that "the development is structurally safe from the potential hazard, and that the development would not increase the hazard risk onsite or off-site," pursuant to YCC 16C.08.05. In addition, the Applicant would meet any additional building requirements set by the County during the building permitting process, as noted in Section 3.3 below in response to YCC Title 13 Building and Construction. This would include but not be limited to implementing the appropriate sections of the International Building Code related to construction in alluvial fan areas (YCC 16C.08.03). For the above reasons, the Facility would comply with the County's critical area protections for geologically hazardous areas. See Section 4.1 (Earth) of the ASC for detailed analysis and mitigation measures related to potentially geologically hazardous areas. Therefore, the Facility would comply with the County's applicable criteria under YCC 16C.08.

3.5.6 Chapter 16C.09 Critical Aquifer Recharge Areas

Section 16C.09.02 Designation

> *Critical aquifer recharge areas (CARAs) are those areas with a critical recharging effect on aquifers used for potable water as defined by WAC 365-190-030(2). CARAs are designated as critical areas. CARAs have prevailing geologic conditions associated with infiltration rates that create a high potential for contamination of ground*

water resources or contribute significantly to the replenishment of ground water. The following areas have been identified based on local conditions.

(1) Wellhead Protection Areas. Wellhead protection areas shall be defined by the boundaries of the ten-year time of groundwater travel, or boundaries established using alternate criteria approved by the Department of Health in those settings where groundwater time of travel is not a reasonable delineation criterion, in accordance with WAC 246-290-135.

(2) Sole Source Aquifers. Sole source aquifers are areas that have been designated by the U.S. Environmental Protection Agency pursuant to the Federal Safe Drinking Water Act.

(3) Susceptible Groundwater Management Areas. Susceptible groundwater management areas are areas that have been designated as moderately or highly vulnerable or susceptible in an adopted groundwater management program developed pursuant to Chapter 173-100 WAC.

(4) Special Protection Areas. Special protection areas are those areas defined by WAC 173-200-090.

(5) Moderately or Highly Vulnerable Aquifer Recharge Areas. Aquifer recharge areas that are moderately or highly vulnerable to degradation or depletion because of hydrogeologic characteristics are those areas delineated by a hydrogeologic study prepared in accordance with the State Department of Ecology guidelines.

(6) Moderately or Highly Susceptible Aquifer Recharge Areas. Aquifer recharge areas moderately or highly susceptible to degradation or depletion because of hydrogeologic characteristics are those areas meeting the criteria established by the State Department of Ecology.

Response:

The Facility Area is entirely within a mapped CARA identified by the County as “moderately susceptible to degradation or depletion” per YCC 16C.09.02(6) above. No wellhead protection areas, sole source aquifers, susceptible groundwater management areas, special protection areas, or moderately or highly vulnerable aquifer recharge areas are identified within the Facility Area. See Section 4.5 (Water Quality – Stormwater) of the ASC for additional discussion related to the CARA.

Section 16C.09.04 Submittal Requirements

(1) Applications for any development activity or division of land which requires review by Yakima County and which is located within a mapped Critical Aquifer Recharge Area or Wellhead Protection Area shall be reviewed by the Administrative Official to determine whether hazardous materials (see definitions) will be used, stored, transported, or disposed of in connection with the proposed activity. If there is insufficient information to determine whether hazardous materials will be used, the Administrative Official may request additional information, in addition to the submittal requirements outlined in 16C.03.

(2) The Administrative Official shall make the following determination:

(a) No hazardous materials are involved.

(b) Hazardous materials are involved; however, existing laws or regulations adequately mitigate any potential impact, and documentation is provided to demonstrate compliance.

(c) Hazardous materials are involved and the proposal has the potential to significantly impact Critical Aquifer Recharge and Wellhead Protection Areas; however, sufficient information is not available to evaluate the potential impact of contamination. The County may require a Hydrogeologic Report to be prepared by a qualified groundwater scientist in order to determine the potential impacts of contamination on the aquifer.

Response:

As indicated by the County through early discussion regarding the Facility in April 2020, the County largely relies on measures contained in the SWPPP to ensure impacts to CARAs are avoided. The Applicant would prepare a SWPPP to obtain coverage under the CSWGP from Ecology prior to construction (see Section 3.2 above for additional stormwater discussion). In addition, the Applicant would prepare a construction Spill Prevention, Control, and Countermeasures Plan (SPCC Plan) which would be provided to EFSEC for approval as a condition of approval. The SPCC Plan would be implemented to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the release. The SPCC Plan would restrict the location of fuel storage, fueling activities, and equipment maintenance and provide procedures for these activities; identify training and lines of communication to facilitate the prevention, response, containment, and cleanup of spills; and identify the roles and responsibilities of key personnel and contractors. The Applicant would also prepare an operations SPCC Plan in consultation with Ecology and submit it to EFSEC for approval. The operations SPCC Plan would be prepared pursuant to the requirements of CFR Part 112, Sections 311 and 402 of the Clean Water Act, Section 402 (a)(1) of the Federal Water Pollution Control Act, and RCW 90.48.080.

Furthermore, the Geotechnical Site Investigation and Critical Areas/Geohazards Report (Attachment L) found that due to the prevailing subsurface soil and rock conditions and significant depth to groundwater across the Facility Area Extent, there is no or negligible risk of groundwater contamination from development of the Facility provided stormwater management is incorporated into the design. Therefore, due to existing site conditions and through implementation of the SWPPP and SPCC, the Facility is not expected to result in impacts to the CARA from hazardous spills. Existing laws and regulations would adequately mitigate any potential impact from hazardous materials involved for the Facility.

Hazardous materials may be involved at the Facility if lead-acid batteries are included as a backup uninterruptible power supply system. Lead-acid batteries contain sulfuric acid within a maintenance-free sealed leakproof exterior. Sulfuric acid is considered an extremely hazardous material by the U.S. Environmental Protection Agency (USEPA) under 40 Code of Federal

Regulations (CFR) §355. As required by regulation, if lead-acid batteries are installed, secondary containment would be employed, and the Applicant would include sulfuric acid as part of its annual Emergency Planning and Community Right-to-Know Act report to local emergency responders. The lead-acid batteries would be replaced at least every 5 years, if not earlier as indicated by system controls. Replacement of lead-acid batteries would be handled by a qualified contractor and adhere to applicable regulations for transport and disposal, including but not limited to 49 CFR §173.159.

Secondary containment is optional for the Facility transformers, as these are classified as qualified oil-filled operational equipment under the USEPA Amended Spill Prevention, Control, and Countermeasure Rule issued in 2006 (EPA-550-F-06-008). Per this amended rule, instead of providing secondary containment for qualified oil-filled operational equipment, an owner or operator may prepare an oil spill contingency plan and a written commitment of manpower, equipment, and materials to quickly control and remove discharged oil; the plan must include an inspection or monitoring program for the equipment to detect a failure and/or discharge. Alternatively, the transformers may be installed on foundations that provide secondary containment, or sorbent materials may be kept on-hand to capture minor leaks. The Facility would comply with this rule and the specific design would be determined prior to construction of the substation and solar array.

The Applicant is considering the development of an optional BESS using lithium-ion or flow battery technology. These technologies are typically encased in steel containers. The flow battery technology uses an electrolyte solution circulated through two tanks. The electrolyte solution would be nontoxic, nonflammable, and nonexplosive and is not considered a hazardous material. Nonetheless, the electrolyte solution would be contained within the encased steel container to avoid the risk of soil contamination in the unlikely case of a leak. The lithium-ion battery technology is composed of individual cells that are hermetically sealed and would not be opened onsite for any installation or maintenance purposes and do not have any wastewater discharges. Lithium-ion batteries contain flammable liquids that can become heated during operation. Accordingly, each lithium-ion BESS would contain a fire suppression system in accordance with fire code and NFPA standards. The system would include monitoring equipment and alarm systems with remote shut-off capabilities. Installation, maintenance, and decommissioning of BESS components would be done in compliance with 49 CFR §173.185, which regulates the transportation of lithium-ion batteries. The Facility would use thoroughly proven, financeable batteries, inverters, and related equipment, including battery products that are listed or certified by Underwriters Laboratories (UL), the industry's foremost safety and sustainability third-party standard. Therefore, the Facility would comply with these criteria by adhering to the existing laws and regulations addressed herein.

Section 16C.09.05 Performance Standards – General Requirements

> *(1) Activities may only be permitted in a critical aquifer recharge area if the applicant can show that the proposed activity will not cause contaminants to enter the aquifer and that the proposed activity will not adversely affect the recharging of the aquifer.*

(2) The proposed activity must comply with the water source protection requirements and recommendations of the U.S. Environmental Protection Agency, Washington State Department of Health, and the Yakima County Health District.

Response:

As described above in response to YCC 16C.09.04, given existing regulations and compliance actions by the Applicant, including but not limited to preparation and implementation of a SWPPP and SPCC Plan, the proposed Facility would not cause contaminants to enter the aquifer. Based on the results of the Geotechnical Site Investigation and Critical Areas/Geohazards Report (Attachment L), depth to groundwater at the Facility site is approximately 100 feet, which further reduces the potential for contamination as compared to more shallow groundwater levels. As described in Section 3.7 of the ASC, the Facility would not adversely affect the recharging of the aquifer. The Facility would comply with water source protection requirements of the USEPA, DOH, and Yakima County Health District. Therefore, the Facility would comply with these criteria.

Section 16C.09.06 Performance Standards – Specific Uses

(1) Storage Tanks. All storage tanks proposed to be located in a critical aquifer recharge area must comply with local building code requirements and must conform to the following requirements:

…

(2) Vehicle Repair and Servicing.

(a) Vehicle repair and servicing must be conducted over impermeable pads and within a covered structure capable of withstanding normally expected weather conditions. Chemicals used in the process of vehicle repair and servicing must be stored in a manner that protects them from weather and provides containment should leaks occur.

(b) No dry wells shall be allowed in critical aquifer recharge areas on sites used for vehicle repair and servicing. Dry wells existing on the site prior to facility establishment must be abandoned using techniques approved by the State Department of Ecology prior to commencement of the proposed activity.

(3) Residential Use of Pesticides and Nutrients. Application of household pesticides, herbicides, and fertilizers shall not exceed times and rates specified on the packaging.

(4) Use of Reclaimed Water for Surface Percolation or Direct Recharge. Water reuse projects for reclaimed water must be in accordance with the adopted water or sewer comprehensive plans that have been approved by the State Departments of Ecology and Health.

…

(5) Proposed new groundwater uses must provide evidence that the proposed water source is physically and legally available and meets drinking water standards.

Response:

The Facility would not include any storage tanks of hazardous materials. While the optional flow battery technology would use an electrolyte solution circulated through two tanks, the electrolyte solution is not considered a hazardous material as defined under YCC 16C.02.261 and would nevertheless include primary containment within the encased steel container. Vehicle repair and servicing would occur offsite at appropriate repair facilities. If minor repair is needed onsite, impermeable pads would be used to contain any leaks. No dry wells are proposed as part of the Facility. Herbicides would be used sparingly and would be applied following manufacturer label recommendations and warnings in accordance with the application and handling guidelines provided in the Applicant's Vegetation and Weed Management Plan (Attachment D). The Facility does not include use of reclaimed water for surface percolation or direct recharge. Lastly, the new domestic well for the O&M building would be permitted through the County's process per YCC 12.08 as discussed in Section 3.2 above.

The Facility does not entail any of the uses listed as prohibited from CARAs under YCC 16C.09.07. Therefore, the Facility would comply with these criteria.

3.5.7 Chapter 16C.11 Upland Wildlife Habitat Conservation Areas

Section 16C.11.040 Upland Wildlife Habitat Conservation Areas

> *(1) Upland Wildlife Habitat Conservation Areas are those areas within which state or federally designated endangered, threatened, or sensitive species have a primary association and are designated as critical areas. State listed species are those native fish and wildlife species legally designated as Endangered (WAC 232-12-014), Threatened (WAC 232-12-011) or Sensitive (WAC 232-12-011) by the Washington Fish and Wildlife Commission. Federal listed Threatened, Endangered or Sensitive species means all species of wildlife listed as such by the United States Secretary of the Interior or Commerce.*
>
> *(2) Upland Wildlife Habitat Conservation Areas include State Natural Area Preserves and Natural Resource Conservation Areas.*
>
> *(3) Upland Wildlife Habitat Conservation Areas include Species and Habitats of Local Importance. These are habitats or species that due to their declining population, sensitivity to habitat manipulation or other values make them important on a local level. Habitats of Local Importance may include a seasonal range or habitat element with which a given species has a primary association, and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term.*
>
> > *(a) Species and Habitats of Local Importance may be identified, for protection under this title. State or local agencies, individuals or organizations may identify and nominate for consideration specific species and habitats, or a general habitat type, including streams, ponds or other features. The WDFW Priority Habitat and Species list for Yakima County is included in this Title as Appendix B.*

Response:

Facility components within the Facility Area on the Martinez Property would be located within the County's mapped UWHCA (Figure 4.9-4). Within the UWHCA, the Facility may partially be built on shrub-steppe habitat, a WDFW Priority Habitat and Species habitat, and in areas with species that are listed on federal and state lists, which are considered UWHCAs under YCC 16C.11.040(1) and (3). The Facility would not be sited in a State Natural Area Preserve or Natural Resource Conservation Area. Compliance with associated UWHCA critical area requirements is discussed below.

Section 16C.11.060 Permit and Critical Areas Report Requirement

> *(1) Developments proposed within an upland wildlife habitat conservation area with which state or federally endangered, threatened, or sensitive species or a species of local importance has a primary association may be required to submit Critical Areas Identification Form and site plan as per 16C.03.02(1). The Administrative Official shall require a habitat assessment to be submitted if it is determined that the development proposal could impact the UWHCA. A habitat assessment is an investigation of the project area to evaluate the presence or absence of such species, and areas with which such species has a primary association.*
>
> *(2) In addition to the general critical area report requirements of Section 16C.03.17, habitat assessments and habitat management plans must be prepared by a qualified professional who is a biologist with experience preparing reports for the relevant species and habitat. Critical area reports for two or more types of critical areas must meet the report requirements for each relevant type of critical area.*
>
> *(3) If the habitat assessment determines that such species or habitat area is present on site, and are likely to be impacted by the development proposal, then a standard development permit and management plan are required.*
>
> *(4) If a standard development permit and management plan are required, as determined by the habitat assessment, it shall follow management recommendations published by federal or state agencies developed for species or habitats located on or adjacent to the project area. Management plans developed by an independent third party shall be provided for review by the Department of Fish and Wildlife or the responsible federal agency. The Administrative Official shall consult with the appropriate agency and consider their comments through the review process.*

Response:

The Applicant contracted with Western EcoSystems Technology, Inc. (WEST) to complete a Wildlife and Habitat Survey Report (Attachment F), which includes a habitat assessment and meets the requirements of YCC 16C.03.17. The Applicant has identified the impacts and mitigations related to wildlife in Section 4.9 of the ASC. Included in the list of mitigations is development of a Habitat Restoration and Mitigation Plan in consultation with WDFW.

Section 16C.11.070 Upland Wildlife Habitat Conservation Area Development Standards

> *Projects located within an Upland Wildlife Habitat Conservation Area as designated in Section 16C.11.040 shall meet the following standards listed below, rather than the*

development standards in Sections 16C.06.10 through 16C.06.23 for Hydrologically Related Critical Areas, unless review is also needed for Hydrologically Related Critical Areas.

Projects shall be designed using management recommendations established for the species or habitat by federal and state agencies, or those adopted for Species and Habitats of Local Importance by Yakima County. The department shall consider the extent such recommendations are used in its decision on the proposal, and may consider recommendations and advice from the agencies with expertise.

Response

The Applicant has consulted with WDFW on the Facility since September 2017. The consultation informed the Wildlife and Habitat Survey Report (Attachment XX) and has helped identify appropriate mitigation measures at the site including avoidance and minimization measures. Section 4.9 of the ASC describes these measures in more detail. The Applicant will also work with WDFW to develop a Habitat Restoration and Mitigation Plan.

3.6 Title 16D Shoreline Master Program

3.6.1 Section 16D.10.03 Shoreline Jurisdiction

Pursuant to the authority of RCW 90.58.030(2)(f) and WAC 173-22-040(2) and (3), the jurisdictional limits of the Shoreline Master Program within Yakima County for areas that are subject to these regulations, are listed below. Yakima County has developed maps to generally depict the extent of shoreline jurisdictional boundaries for all shorelines within the county. These maps are for informational and illustrative purposes only and are not regulatory in nature. Where such maps are not available or do not correspond with physical features on the ground, jurisdictional boundaries shall be controlled by the criteria listed below, WAC 173-22, and the Act itself. It is understood when the maps and the actual physical features do not correspond, the physical features will dictate the extent of the jurisdictional boundaries. It is understood that the actual physical features may change. The physical features will dictate the extent of the shoreline jurisdictional boundaries. Shoreline jurisdictional area shall include:

(1) Those Shoreline lakes, ponds and stream lengths identified in Appendices B and C of this title.

(2) Subject to Subsection 7 below, wherever the "floodway" has been established by a flood insurance study prepared by the Federal Emergency Management Agency (FEMA), shorelines jurisdiction shall be the floodway plus 200 feet, measured on a horizontal plane, or the 100-year floodplain, whichever is lesser.

(3) Subject to Subsection 7 below, whenever the 100-year floodplain has been identified by a flood insurance study prepared by the Federal Emergency Management Agency but where no "floodway" has been identified, shorelines jurisdiction shall be the 100-year floodplain boundary or 200 feet, measured in a horizontal plane, from the ordinary high water mark, whichever is greater.

(4) Whenever there are no detailed floodplain or floodway studies, shoreline jurisdiction shall be 200 feet, measured on a horizontal plane, from the ordinary high water mark.

(5) Where a Channel Migration Zone (CMZ) has been identified, and extends beyond the jurisdiction established by subsection (2) above, jurisdiction shall extend to the extent of the CMZ, but not beyond the limits of subsection (3).

(6) Those wetlands and river deltas which are in proximity to and either influence or are influenced by the shorelines. This influence includes, but is not limited to, one or more of the following: periodic inundation, location within a floodplain, or hydraulic continuity.

(7) Under no circumstances shall shoreline jurisdiction be less than 200 feet, measured on a horizontal plane, from the ordinary high water mark of the shoreline water body.

Response:

There are no shorelines or associated jurisdictional buffers designated under the Yakima County Shoreline Master Program within the Facility Area Extent. See Section 4.3 of the ASC and the Wetland Delineation Report (Attachment O), for additional information regarding wetlands and surface waters. Therefore, YCC Title 16D does not apply to the Facility and no further analysis or compliance actions are required.

3.7 Title 19 Unified Land Development Code

The Facility is located entirely within the County's AG zoning district. No overlay districts cross the Facility Area Extent. This section addresses the County's unified land development code requirements that are applicable to the Facility in the AG zoning district. The Applicant demonstrates compliance with the appliable criteria and requirements under the following chapters and sections of YCC Title 19 (Unified Land Development Code):

- Title 19 Unified Land Development Code
  - Chapter 19.01 General Provisions
  - Chapter 19.10 General Zoning Requirements
    - Section 19.10.040 General Development Regulations
  - Chapter 19.11 Resource and Rural Districts
    - Section 19.11.010 Forest Watershed and Agriculture Districts (FW, AG)
  - Chapter 19.14 Allowable Land Use Table
  - Chapter 19.18 Special Uses and Standards
    - Section 19.18.480 Temporary Use Permits
  - Chapter 19.20 Signs
    - Section 19.20.030 Development Authorization Required
  - Chapter 19.21 Sitescreening and Landscaping
    - Section 19.21.030 Specific Requirements
  - Chapter 19.22 Parking and Loading

  - Section 19.22.040 General Provisions
  - Section 19.22.050 Calculation of Parking Standards
  - Section 19.22.060 Location and Design of Parking and Loading Facilities
  - Section 19.22.070 Construction and Maintenance
- Chapter 19.25 Sewer and Water
  - Section 19.25.040 Satellite Utility Systems and Individual Systems
- Chapter 19.30 Applications
  - Section 19.30.030 Application and Use Categories
  - Section 19.30.060 Application Requirements
  - Section 19.30.070 Site Plans for Project Permits – Form and Contents
  - Section 19.30.080 Application Review Procedures
  - Section 19.30.100 Conditions of Approval of Type 2, 3, and 4 Applications

As described above, RCW 80.50.110 and WAC 463-28 allow EFSEC to permit and authorize an energy generation facility with appropriate consideration of the Facility's consistency with the Yakima County land use regulations.

3.7.1 Chapter 19.01 General Provisions

Section 19.01.070(5) "E" Definitions

> *"Energy resource facility" means those land uses involved in the production, distribution and sale of energy products by utilizing either renewable or nonrenewable energy resources such as: wind, solar, hydroelectric, geothermal, biomass, coal, oil or natural gas.*

Response:

As a land use involved in the production, distribution, and sale of renewable solar energy, the proposed Facility would be consistent with the above definition of an "energy resource facility."

3.7.2 Chapter 19.10 General Zoning Requirements

Section 19.10.040 General Development Regulations

> *(3) Access Required. All new development shall have a minimum of 20 feet of lot frontage upon a public road or be served by an access easement conforming to the dimensional requirements of Sections 19.23.040 and 19.23.050 to provide for access to the development. The approach location shall be reviewed by the County Engineer for compliance with YCC Chapter 10.08. Approach connections to other public roads are subject to review by the applicable agency. Verification of legal access and a valid road approach permit shall be required prior to final approval of any permit granted under this Title.*

Response:

The access gates to the Facility would be 20 feet wide. Access to the Facility would be via a private road off SR-24, and the Facility would not use or cross any public road right-of-way under County jurisdiction; therefore, YCC Chapter 10.08 and related road approach and right-of-way use permits do not apply. While no permits are required to utilize this access, the Applicant would obtain the necessary permits to upgrade the access off SR-24 from the Washington State

Department of Transportation (WSDOT) prior to construction. The Facility access roads and gates would be designed to comply with the applicable edition of the International Fire Code adopted by the State of Washington which is consistent with YCC 13.10.085 as well as standards set by the Yakima County Fire Marshal's Office. The final Facility layout would be provided to the Yakima County Fire Marshal's Office. Therefore, the Facility would comply with this criterion.

> *(4) Land Uses. Uses allowed within a zoning district are listed as permitted, administrative or conditional uses in the Allowable Land Use Table 19.14-1 within Chapter 19.14.*

Response:

The Facility is consistent with the County's definition of an "energy resource facility" and meets the criteria of a "power generating facility" which is classified as a "Type 3" conditional use in the County's AG zoning district (YCC Table 19.14-010). Absent EFSEC review, a Type 3 land use would require a CUP from the County, with approval by the Hearing Examiner.

> *(5) Building Permits Required. No building or other structure shall be erected, moved, added to or structurally altered without a permit issued by the Building Official under RCW 19.27 and YCC Title 13. No building permit shall be issued, except in conformity with this Title.*

Response

As discussed in Section 3.3 above in response to YCC Title 13, the Applicant would work with EFSEC staff and the County's Building Official and obtain required building/grading permits and necessary temporary permits prior to construction of the Facility. The Applicant would provide approved building permits to EFSEC prior to construction as a condition of approval. Therefore, the Facility would comply with this criterion.

> *(6) Setbacks, Easements and Right-of-Way.*
>
> *(a) Setbacks. Chapters 19.11 through 19.18 list standard minimum setbacks for buildings or other structures and uses. Exceptions to certain setbacks are listed in Subsection 19.10.040(6)(b) below.*
>
> *(i) Front and side setbacks from public roads other than alleys shall be measured from the planned centerline of a public road other than an alley, as designated by the County Engineer. However, where the planned or existing right-of-way exceeds 60 feet in width (as in the case of designated classified roads such as arterials and collectors shown on Tables 19.23.045-2 and 19.23.050-1), the minimum setback shall be 25 feet measured from the property line abutting the planned road right-of-way.*

Response:

The Facility is designed with an approximately 60-foot or greater setback from existing roads, and therefore complies with the above minimum 25-foot setback requirement. See the

Preliminary Site Plan for an illustration of incorporated setbacks in the Facility layout (Attachment B). Therefore, the Facility would comply with these criteria.

> *(ii) The front lot line shall be determined as described in the definitions in Section 19.01.070. Where the front lot line does not border a right-of-way or vehicular access easement, as is the case with flag lots the setback shall be 25 feet from the end of a driveway or the remainder of the front lot line, see Flag Lot definition 19.01.070.*
>
> *(iii) Front and side setbacks outside Urban Growth Areas shall be a minimum of 50 feet from the planned centerlines of private roads and ten feet from private, shared driveways and public alleys measured from the edge of the access easement or right-of-way of such a road, driveway or alley, except garage and carport entrances that face the front setback, which are a minimum of 20 feet from the edge of the right-of-way or easement. Front and side setbacks vary as listed in Chapters 19.12 and 19.13 for Urban Growth Areas.*
>
> *(iv) Rear setbacks from public and private roads shall be the same as the front yard setback requirement from public and private roads when the rear lot line abuts a right-of-way or vehicular access easement, provided the required rear setbacks shall not be less than the required setbacks from the property line.*
>
> *…*

Response:

The Facility is outside the County Urban Growth Area, and is designed with a minimum 50-foot setback from parcel boundaries to the Facility fence line across the entire Facility. Therefore, the Facility complies with the above front, side, and rear setback requirements, the largest of which is 50 feet. See the Preliminary Site Plan for an illustration of incorporated setbacks in the Facility layout (Attachment B). Therefore, the Facility would comply with these criteria.

> *(c) Access Easements and Right-of-way. No building, fence or structure, other than a gate permitted by the easement owner, shall be located within or encroach on any public or private access easement or road right-of-way.*
>
> *(d) Other Easements. The applicant shall provide the easement grantee or owner's written permission with the primary permit application for any structure proposed to be built or located on or in an easement other than an access easement.*

Response:

The Applicant is entitled to possession of the Facility site through its lease agreements with landowners Estate of Willamae G Meacham and S. Martinez Livestock, Inc. Facility use of BPA's easement for the Facility interconnection with the existing 115-kV Midway-Moxee transmission line would be covered by an executed Interconnection Agreement. The Applicant can provide memorandums of leases if requested by EFSEC prior to construction as a condition of approval. As stated earlier, the Applicant would obtain all needed permits from WSDOT for upgrading the access off SR-24. Therefore, the Facility would comply with these criteria.

(7) Vision Clearance Triangles at Intersections and Driveways.

(a) Intersections. All corner lots at controlled or uncontrolled public or private street intersections or railroads shall maintain for safety vision purposes a triangular area; one angle of the triangle shall be formed by the planned right-of-way edges adjacent to the street or railroad, under the planned right-of-way width required for the functional classification of the road, listed in Chapter 19.23. The sides of such triangle forming the corner angle shall be 30 feet in length measured along the sides of the aforementioned angle, as illustrated below. The third side of the triangle shall be a straight line connecting the last two mentioned points. Within the area comprising the triangle nothing shall be erected, placed, planted or allowed to grow in such a manner as to materially impede vision between the heights of two and one-half and ten feet above the centerline grades of intersecting streets and/or railroads. Landscaping meeting the height limits of this Section is encouraged within the vision clearance triangle. The Administrative Official may consider the landscaped triangle area as part of any landscape requirement if planted and continuously maintained by the property owner. The County Engineer may enforce the landscaping requirements and may require a larger area to be reserved for vision clearance at road intersections and railroad crossing where necessary to provide vision clearance.

(b) Driveways, Curbcuts and Alleys. This Subsection applies only to uses established under this Title. A vision clearance triangle shall be maintained at all driveways and curbcuts, and the intersection of an alley with a public street for vision and safety purposes. The vision clearance triangle shall measure 15 feet along the perpendicular street curb lines or pavement edge, or travel lane of the public street and 15 feet along the driveway or alley, as illustrated below. The third side of the triangle shall be a straight line connecting the 15 foot sides described above. No sign or associated landscaping shall be placed within this triangle so as to materially impede vision between the heights of two and one-half and ten feet above the centerline grade of the streets.

Response:

As illustrated on the Preliminary Site Plan (Attachment B), the Facility would include a minimum 50-foot setback from all external parcel boundaries and a minimum 60-foot setback from existing roadways. These setbacks, in combination with vegetation maintenance in cooperation with the current landowners, would ensure vision clearance triangles would be maintained during Facility construction and operation. Therefore, the Facility meets these criteria.

(8) Maximum Building Height.

(a) Maximum Building Height Determined by Zoning District. The maximum building height is intended to maintain building and structure heights compatible with the character and intent of the district. The height of buildings is measured in

the manner defined in Section 19.01.070. The height of other structures not containing a roof is the vertical distance from the base of the structure to its highest point. Chapters 19.11 through 19.18 list the maximum building and structure heights.

(b) Exceptions. Height limitations shall generally not apply to accessory projections located at least 20 feet from any adjoining lot line and that are not intended for human occupancy or storage, such as steeples or spires on places of religious assembly, elevator shaft housings, heating/cooling or mechanical systems, water towers, chimneys, belfries, cupolas, domes, smoke-stacks, flagpoles, asphalt/concrete batch plants, grain elevators, cooling towers, solar energy systems, monuments, fire house towers, elevator shafts, or outdoor theater screens, except as limited within the Airport Safety Overlay, by Section 19.18.490 Towers, by a condition of permit approval or by the Shoreline Master Program.

Response:

Per YCC Table 19.11.010-2 (see Section 3.7.3 below), there is no maximum building height specified in the AG zoning district, except as limited within the Airport Safety Overlay. The Facility is not located within the Airport Safety Overlay. Therefore, the Facility complies with applicable height limitations.

(9) Fences, Walls and Recreational Screens.

…

(a)(iii)(C) The maximum fence height is not specified for nonresidential uses in the RS districts, or for any use in the AG, FW, MIN, R/ELDP-40 and R-10/5 districts; and

(a)(iii)(D) No fence, hedge or wall exceeding two and one-half feet in height shall be placed in the vision clearance triangles established in this Section.

…

(a)(vi) No combination of a fence and retaining wall shall exceed a height of ten feet, measured from the lower elevation, except, existing retaining walls greater than ten feet in height at the time of adoption of this Title will be allowed a fence above the retaining wall consistent with Subsection (a)(iii) above.

Response:

The Facility would be enclosed by a security fence up to 8 feet in height. The Facility fence would not be placed in the vision clearance triangles and no retaining walls are proposed as part of the Facility. Accordingly, the Facility would comply with the above general development requirement for fences, walls, and screens.

(10) Exterior Lighting. Exterior lighting is regulated to minimize light pollution to neighboring properties and encourage true-color, full-spectrum light rendition in projects. Exterior lighting for all uses and signs shall be directed downward and

otherwise arranged, fully shaded, screened, shielded, and of a design that results in the light being directed onto the site and of an intensity or brightness that does not reflect or cause glare or light intrusion into any adjacent or nearby residential use or interfere with the safe operation of motor vehicles.

Response:

Lighting is needed for security and occasional after-hours work. However, the Applicant would limit the amount of lighting as much as possible, and instead of continuous lighting the Applicant would employ motion-detector-activated lighting. Lighting would be shielded and directed onto the site to avoid glare or light intrusion into any adjacent or nearby residential use, which would also avoid interference with the safe operation of motor vehicles. Therefore, the Facility would comply with this requirement.

(11) Floodplain Development. A pre-application meeting and a Flood Hazard Permit application is required for all new developments in floodplains in order to minimize and mitigate potential adverse impacts to property and infrastructure while reducing risks to public health and safety. Yakima County will utilize existing flood hazard data and mapping to assist applicants with the layout and design of their proposal. If the potential adverse impacts cannot be mitigated through the Flood Hazard Permit under YCC 16C.05 and 16D.05, a critical areas and shoreline permit will be required under Yakima County Critical Areas and Shoreline codes.

Response:

As noted earlier per YCC 16C.05.20 Flood Hazard Areas, there are no designated floodplains within the Facility Area Extent. Therefore, a Flood Hazard Permit is not required.

(12) Stormwater Requirements. This section is intended to ensure public and private development projects comply with the National Pollution Discharge Elimination System (NPDES) permit requirements under the Federal Clean Water Act (CWA) where applicable. Stormwater quality and quantity concerns for project permits shall be addressed through:

(a) YCC Chapter 12.10;

(b) The environmental review process established by RCW 43.21C and YCC Chapter 16.04; or

(c) The requirements of the Washington Department of Ecology.

Response:

As noted in response to YCC Chapter 12.10 in Section 3.2.3 above, the Applicant would develop a Stormwater Plan, separately or in conjunction with the SWPPP required to obtain a CSWGP from Ecology. Through the measures detailed in the SWPPP and required under the CSWGP, the Facility would follow all applicable stormwater control requirements. Therefore, the Facility would comply with these criteria.

3.7.3 Chapter 19.11 Resource and Rural Districts

Section 19.11.010 Forest Watershed and Agriculture Districts (FW, AG)

(1)(b) Agriculture District. The purpose of the Agriculture (AG) district is to preserve and maintain areas for the continued practice of agriculture by limiting the creation of small lots, permitting only those new uses that are compatible with agricultural activities, protection of agricultural lands of long-term commercial significance, and providing measures to notify and separate especially sensitive land uses from customary and innovative agricultural land management practices. The AG district implements the Comprehensive Plan that calls for the preservation of agricultural lands.

<u>Response</u>:

The proposed Facility would be a conditional use in the AG district, per YCC Table 19.14-1. Section 3.7.10 below provides a discussion of how the Facility would meet or exceed each of the decision criteria established for Type 3 conditional uses under YCC 19.30.080. The discussion includes how the Facility would meet the intent of the AG district as defined above. As noted earlier in Section 2.4, the Facility would not be considered an ESLU as defined under YCC 19.01.070. The Facility would comply with all development standards established by the AG zoning district, as discussed below.

(2) Development Standards Table 19.11.010-2

Table 19.11.010-2. Setbacks, Lot Coverage and Building Height

<table>
<tr><th colspan="3" rowspan="2">Subject</th><th colspan="2">Zone</th></tr>
<tr><th>AG</th><th>FW</th></tr>
<tr><td colspan="3">Maximum lot coverage</td><td colspan="2">Not specified, however sitescreening may be required under Subsection 19.21.030(2)(f) and (g)</td></tr>
<tr><td colspan="3">Maximum building height(1)</td><td>Not specified</td><td>35 feet</td></tr>
<tr><td colspan="3">Minimum vision clearance triangle at intersections, railroads, curbcuts and driveways</td><td colspan="2">See Subsection 19.10.040(7)</td></tr>
<tr><td colspan="5">Minimum setbacks</td></tr>
<tr><td rowspan="5">Front and street side setbacks(2)*</td><td colspan="2">Designated classified road (arterial or collector)*</td><td colspan="2" rowspan="3">25 feet from planned edge of right-of-way or easement</td></tr>
<tr><td colspan="2">Roads with a right-of-way or vehicular access easement more than 60 feet in width</td></tr>
<tr><td colspan="2">Turnaround or cul-de-sac bulb</td></tr>
<tr><td rowspan="2">Right-of-way or vehicular access easement 60 feet or less in width</td><td>Local access or private road(3)</td><td colspan="2">50 feet from centerline</td></tr>
<tr><td>Private, shared driveway or alley (3) (see Chapter 19.23)</td><td colspan="2">10 feet from edge of right-of-way or easement</td></tr>
<tr><td rowspan="2">Interior side setback</td><td colspan="2">Primary structure*</td><td colspan="2">10 feet from property line</td></tr>
<tr><td colspan="2">Accessory structure*</td><td colspan="2">5 feet from property line</td></tr>
<tr><td>Rear setback*</td><td colspan="2">Right-of-way or vehicular access easement</td><td colspan="2">Same as front setback</td></tr>
</table>

Table 19.11.010-2. Setbacks, Lot Coverage and Building Height

Subject		Zone	
		AG	FW
	Adjoining lot	10 feet from property line	
*Dwellings and other especially sensitive land uses (ESLU) adjacent to designated resource lands and/or activities are subject to additional setbacks		See Section 19.18.205	
Additional setback to accommodate required sitescreening		See Subsection 19.21.030(2)(f) and (g)	

Notes:
(1) Additional restrictions may apply within the Airport Safety Overlay (See Chapter 19.17) and Shoreline Jurisdiction (see YCC Title 16D).
(2) When there is no right-of-way, the front setback shall be 20 feet from the front property line.
(3) Gates restricting vehicular access, garage and carport entrances must be set back 20 feet from the edge of a right-of-way or easement other than an alley.

Response:

The Facility would comply with the setbacks and other parameters established in Table 19.11.010-2. As there is no specified building height in the AG zoning district and the Facility is not located within the Airport Safety Overlay, the height of the Facility would comply with develop standards for the AG zoning district. The Facility is designed with a minimum 50-foot setback from parcel boundaries and a 60-foot or greater setback from existing roadways, which exceed the required setbacks in Table 19.11.010-2 (see Preliminary Site Plan, Attachment B). As stated earlier, the Facility does not meet the definition of any ESLU covered in YCC 19.18.205; therefore, additional related provisions do not apply. Site screening is addressed below in Section 3.7.6 per the Table 19.11.010-2 cross-reference to YCC 19.21.030(2)(f) for the AG zoning district. Therefore, the Facility would comply with applicable development standards in the AG zoning district.

3.7.4 Chapter 19.14 Allowable Land Use Table

(1) The following Table 19.14-1 indicates those uses which may be permitted through Type 1, 2, 3 or 4 review in the various zoning districts defined in this title. In addition to Table 19.14-1, reference to the individual zoning districts and, where indicated, the notes following the table and definitions of 19.01.070, is necessary in order to determine if any specific requirements apply to the listed use.

(2) Uses. The uses set out in Table 19.14-1 are examples of uses allowed in the various zoning districts defined in this title. The appropriate review authority is mandatory. See YCC Title 16B for more explicit definitions of Type 1, 2, 3, and 4 uses/reviews.

"Type 3" Uses which may be authorized subject to the approval of a conditional use permit as set forth in Section 19.30.030. Type 3 conditional uses are not generally appropriate throughout the zoning district. Type 3 uses require Hearing

Examiner review of applications subject to a Type 3 review under the procedures of Section 19.30.100 and YCC Subsection 16B.03.030(1)(c).

Response:

The Facility would be considered a "power generating facility," which is identified as a "Type 3" use within the AG zoning district in Table 19.14-1. The definitions in YCC 19.01.070(1) includes "Energy resource facility", which means "those land uses involved in the production, distribution and sale of energy products by utilizing either renewable or nonrenewable energy resources such as: wind, solar, hydroelectric, geothermal, biomass, coal, oil or natural gas." The Allowable Land Use Table 19.14-1, however, does not list "energy resource facility" under any category, but does include "Power generating facilities." While the term "power generating facilities" is not defined in YCC 19.01.070(1), it can be assumed to cover the Facility as a solar power generating facility, as the YCC clarifies that "where terms are not defined, they shall have the ordinary accepted meaning within the context with which they are used," YCC 19.01.070. The short interconnection tie line (gen-tie line) would be approximately 300 feet in length and connect the Facility's substation to the point of interconnection at BPA's Midway-to-Moxee 115-kV transmission line. The gen-tie line would be 115 kV, which is less than the 150-kV threshold per YCC 19.01.070 for a "linear transmission facility." Therefore, the Facility's gen-tie line does not meet the definition of a linear transmission facility and YCC 19.18.260 (Linear Transmission Facilities) does not apply.

For the purpose of analysis under applicable provisions of the YCC, the Applicant evaluates the Facility and associated major equipment together as the solar power generating facility (Facility). The associated major equipment components described in Section 2.A.2 of the ASC include the following: solar modules, tracking system, posts, cabling, inverters and transformers, collector lines, Facility substation, O&M building, access and service roads, fences, gates, and security lighting, gen-tie line, and the optional BESS. These associated major equipment components are land uses involved in the production, distribution, and sale of the solar energy product and are therefore consistent with the ordinary accepted meaning of the Facility for which they are used. In addition, these components are included in the comprehensive analysis of potential environmental impacts conducted for the overall Facility in this application.

Section 3.7.10 below reviews the requirements for conditional uses in the AG zoning district and specifies how the overall Facility complies with the decision criteria for Type 3 applications per YCC 19.30.080(7). Therefore, the Facility with associated major equipment described in Section 2.A.2 of the ASC would be an allowable conditionally permitted use in the County's AG zoning district.

3.7.5 Chapter 19.18 Special Uses and Standards

Section 19.18.480 Temporary Use Permits

The Building Official may issue temporary use permits for the following uses:

(1) Major Construction Projects. Temporary structures and associated site improvements for housing equipment or containing supervisory offices for major construction projects may be erected and maintained during the progress of such construction projects. Provided, that such temporary structures may not be

maintained for a period exceeding one year. The Building Official may extend this period for one additional year if a valid active permit is maintained according to a firm schedule and the project does not constitute or cause a nuisance or violation of County code. A site plan showing the location, size and type of structure must be submitted at the time of application for a Temporary Use Permit.

Response:

During construction, the Applicant's construction contractor may maintain a temporary supervisory office or similar structure within the Facility Area. The construction contractor would obtain the necessary temporary use permit from Yakima County, and any other temporary permits determined necessary by the Building Official, prior to commencing construction. Therefore, the Facility would comply with this requirement.

3.7.6 Chapter 19.20 Signs

Section 19.20.030 Development Authorization Required

Signs governed by this Chapter shall receive a development authorization from the Reviewing Official before being erected, structurally altered, replaced, or relocated after the adoption of this Title.

(1) New Signs. All on-premises signs are accessory uses and shall be subject to the same procedural and review requirements as the principal use, except that new signs accessory to existing or approved uses may be reviewed as modifications to existing or approved uses under Section 19.35.030. Off-premises signs and billboards are permitted as shown in Section 19.20.130. New signs for legal nonconforming uses shall be approved under 19.33.

Response:

The Applicant does not currently propose to construct any signs that require review or development authorization under YCC 19.20. If any such signs are later determined to be needed for the Facility for commercial or other reasons, the Applicant would review and comply with relevant code provisions. As a condition of approval, prior to posting any signs covered under YCC Chapter 19.20, the Applicant would obtain review and approval from Yakima County and provide the related documentation to EFSEC.

3.7.7 Chapter 19.21 Sitescreening and Landscaping

Section 19.21.030 Specific Requirements

(2) Standards. Sites shall be planted under the following standards:

…

(f) Sitescreening for Other Projects. Sitescreening may be required in all zones as a condition of approval for the projects listed below. The function of such sitescreening is to mitigate the impacts of dust, odors, noise, glare, lights, buildings, parking lots, and traffic on especially sensitive land uses. The sitescreening and landscaping design guidelines authorized by Section

19.21.020(3) may include a list of preferred species and site layout recommendations for effective sitescreening for the following project types:

(i) Setback reductions from resource land for especially sensitive land uses (See Section 19.18.205);

(ii) Especially sensitive land uses, other than the first dwelling to be located on a lot in AG or FW zones (Section 19.18.205);

(iii) Clustered lots in rural and resource areas (Section 19.34.035);

(iv) Special exception lots (Section 19.11.010(3)); and

(v) Concentrated animal feeding operations.

Response:

No specific site screening and landscaping design guidelines apply to the Facility pursuant to YCC 19.21.030(2)(f). The Facility would not include a setback reduction (project type (i)), would not be an ESLU (project type (ii)), would not be a clustered lot (project type (iii)), would not be on a special exception lot (project type (iv)), or create a concentrated animal feeding operation (project type (v)). The Applicant would apply vegetation management BMPs consistent with the Vegetation and Weed Management Plan (Attachment D) following construction and decommissioning, and for on-site maintenance during Facility operations. The BMPs are intended to apply erosion control and minimize stormwater runoff, promote plant communities that are more resistant to non-native plant invasion, and control noxious weeds. Therefore, the Facility would comply with these criteria.

3.7.8 Chapter 19.22 Parking and Loading

Section 19.22.040 General Provisions

(1) The off-street parking and loading facilities required by this Section shall be established prior to any change in the use of land or structures and/or prior to the occupancy of any new or enlarged structure.

(2) Required off-street parking spaces shall provide vehicle parking only for residents, customers, patrons, and employees. Required parking during business hours shall not be used for the storage of vehicles or materials, the parking of company or business vehicles used in conducting the business, or for the sale, repair or servicing of any vehicle.

Response:

The Facility would accommodate construction vehicle parking within the approximately 2-acre temporary staging area identified on the Preliminary Site Plan (Attachment B). During operations, gravel parking would be available for employees within the O&M building area. Further details regarding parking are discussed in response to specific code requirements below. Therefore, the Facility would comply with these criteria.

Section 19.22.050 Calculation of Parking Standards

A site plan for every new or enlarged off-street parking lot or motor vehicle sales area shall be approved by the Reviewing Official prior to construction. The site plan shall *show the proposed development, locations, size, shape and design of the parking spaces, parking circulation plan, curb cuts, lighting, landscaping, irrigation and other features of the proposed parking lot. The site plan shall be filed under Chapter 19.30.*

(1) Table of Required Off-Street Parking. The parking standards in Table 19.22-1, Table of Off-Street Parking Standards are established as the parking standards for the uses indicated. These parking requirements are based on gross floor area. Gross floor area means the total square footage of all floors in a structure as measured from the interior surface of each exterior wall of the structure and including halls, lobbies, enclosed porches and fully enclosed recreation areas and balconies, but excluding stairways, elevator shafts, attic space, mechanical rooms, restrooms, uncovered steps and fire escapes, private garages, carports, and off-street parking and loading spaces. Storage areas are included in gross floor area. However, the required off-street parking for storage areas shall be calculated at the rate of one space per 500 square feet rather than the specific parking standard established in Table 19.22-2, except when the parking standard for the principal use would require fewer parking spaces (i.e., one space per 600 square feet). All required off-street parking shall be subject to the procedures of this Code and the standards of this Section.

(2) Land Uses Not Listed in Table 19.22-1. The Reviewing Official can make a determination to evaluate a proposed land use based closely on similar land uses listed in Table 19.22-1. If there is none the Reviewing Official will reference the Recommended Parking Ratio Requirements developed by the Institute of Transportation Engineers (ITE). The applicant can provide at time of application an alternative parking standard for consideration from an industry standard reference, such as ITE. The Reviewing Official will make a determination on the appropriate standard to use based on the context of local conditions, parking requirements, and other factors that may affect the actual number of parking and off-street loading spaces needed.

Response

The Applicant notes that Table 19.22-1 presents the "Minimum Queuing Spaces for Drive-Up, Drive-In and Drive-Through Services," and the above code sections appear to have been intended to reference Table 19.22-2 "Off-Street Parking Standards." The Facility would be a power generating facility, which is a land use not listed in Table 19.22-2. Parking needs during operations would be limited to one or two employees at the O&M building, with occasional visitors and deliveries by other vehicles. A gravel parking area of sufficient size to accommodate at least three vehicles would be included within the O&M building area. Additional temporary parking for deliveries would be possible as needed within the Facility Area along site access roads. Therefore, the Facility would comply with these criteria.

Section 19.22.060 Location and Design of Parking and Loading Facilities

(1) Off-Street Parking Facilities Location. Off-street parking facilities shall be located according to the following:

…

(c) Other Uses. For uses other than those specified above, parking facilities shall not be located over 300 feet from the buildings they are required to serve, unless they are part of an approved Master Plan or Campus Plan.

(d) Right-of-Way. Groups of three or more parking spaces shall be served by a driveway so no vehicular backing or maneuvering movement will occur within a public right-of-way other than an alley.

(e) No parking lot or driveway serving a nonresidential use in a resource, commercial or industrial zoning district shall be located in a residential zoning district.

(2) Off-Street Parking Facilities Design Standards. Off-street parking facilities shall be designed under Table 19.22-3.

Response:

The Facility's gravel parking area would be located less than 300 feet from the O&M building. As the O&M building is internal to the Facility Area, no vehicular backing or maneuvering would occur within a public right-of-way (see Attachment B, Preliminary Site Plan). The proposal does not create a parking lot or driveway serving the Facility in a residential zoning district. All Facility components would be within the AG zoning district. The size of parking spaces would meet or exceed the minimum dimensions provided in Table 19.22-3. The Applicant would develop a site plan at a scale specific to the O&M building that illustrates parking area dimensions as part of the building permit process pursuant to Title 13, discussed above in Section 3.3. Therefore, the Facility would comply with these criteria.

(3) Off-Street Loading Locations. Off-street loading and unloading spaces and parking for truck queuing shall be required for any commercial, industrial and public utility building, restaurant, office building, overnight lodging facility, hospital, institution, school, college, public building, recreation or entertainment facility, and any similar use requiring loading or unloading from trucks or other large vehicles. The off-street parking and loading spaces/berths required by this Chapter are based on minimum numbers and design guidelines published by the Institute of Transportation Engineers in the latest editions of Transportation and Land Development and Traffic Engineering Handbook.

Response:

During Facility construction, most loading and unloading would take place within the approximately 2-acre staging area. Once construction is complete, only occasional deliveries are anticipated during operations and would be accommodated within the O&M building area, or along site access roads within the Facility Area. Therefore, loading and unloading would be accommodated within the Facility Area and would not project into the right-of-way of any public or private road. Therefore, the Facility would comply with this criterion.

Section 19.22.070 Construction and Maintenance

All off-street parking lots, driveways, travel ways, parking aisles, vehicle storage and vehicle sales lots having a capacity of three or more vehicles, shall be constructed in the following manner:

(1) Surfacing. All parking and loading spaces and related access drives, maneuvering, and vehicle storage areas shall be built to standards approved by the Reviewing Official as follows:

…

(b) Rural Standards. Parking facilities within all other rural zones shall be surfaced with a minimum of screened gravel or crushed rock, or better, except that the Reviewing Official may require paving and/or landscaping of the parking facility when necessary to protect the public health or safety.

Response:

Space for parking by the O&M building and all site access roads would be surfaced with all-weather gravel and comply with drainage, load bearing, fire access, and other applicable standards identified by the County. Therefore, the Facility would comply with these criteria.

(2) Grading and Drainage. Parking areas shall be graded and drained so all surface water is disposed of on-site. Grading and drainage facilities shall be designed according to accepted engineering standards, YCC Title 12.10 and the Stormwater Management Manual for Eastern Washington, which will require review by the Public Services Director or designee.

Response:

Pursuant to YCC Chapter 12.10, grading and drainage throughout the Facility Area would be designed so that all surface water is disposed of on-site and following accepted engineering standards. The Applicant would prepare a Stormwater Plan separately or in conjunction with the SWPPP required to obtain a CSWGP from Ecology prior to construction. This would be provided to the County during the building permit process as noted above in Section 3.3 per YCC Title 13, as well as to EFSEC as a condition of approval. Therefore, the Facility would comply with this criterion.

(3) Wheel Stops and Curbs.

…

(b) The perimeter of a parking or loading area and access and maneuvering drives associated with them shall be improved with a curb, rail or equivalent so vehicles do not extend over a property line, sidewalk or public or private street.

Response:

As noted above, parking and loading associated with the Facility would be accommodated within the Facility Area and no vehicles would extend over a property line, sidewalk, public, or private street. Therefore, the Facility would comply with these criteria.

(4) Markings. All paved parking spaces (except motor vehicle sales areas) shall be marked by durable painted lines at least four inches wide and extending the length of the stall or by curbs or other means approved by the Reviewing Official to indicate individual parking stalls. Signs or markers located on the parking lot surface shall be used as necessary to ensure safe and efficient use of the parking lot. All accessible parking spaces shall be marked and signed in compliance with the currently adopted International Building Code. Wheel stops may be required by the Administrative Official as needed on graveled surfaces to designate spaces in parking and loading areas.

(5) Lighting. Lighting shall be provided to illuminate any off-street parking or loading space used at night. When provided, lighting shall be directed to reflect away from adjacent and abutting properties and comply with Subsection 19.10.040(10). Parking lots adjacent to residential districts or uses shall be designed with down-shielding and luminaries creating no lighting pollution upon those properties. A Photometric Lighting Plan may be required if the parking lot is located adjacent or abutting residential properties. Further requirements and restriction are required when the property is located within the Airport Safety Overlay District. See Chapter 19.17.

Response:

Given the minimal parking needs of the Facility, it is not anticipated wheel stops would be needed in the gravel parking area by the O&M building. However, they can be added if requested during the building permit process. Lighting would comply with YCC 19.10.040(10) as described above in Section 3.7.2. Facility parking would not be located adjacent to any residential properties. The Facility is not within the Airport Safety Overlay District. Therefore, the Facility would comply with these criteria.

(6) Landscaping of Parking Areas. Parking facilities must be landscaped under the standards listed in Chapter 19.21.

Response:

Landscaping of parking areas is not required in the AG zoning district pursuant to YCC Section 19.21.030(2)(e).

(7) Maintenance. The owner or lessee of a required parking area shall maintain the paved surface, drainage facilities, landscaping and irrigation facilities in conformance with the standards of this Chapter and the approved site plan.

Response:

The Applicant would maintain the gravel surface and drainage facilities in conformance with YCC Chapter 19.22 and approved site plan. Therefore, the Facility would comply with this criterion.

3.7.9 Chapter 19.25 Sewer and Water

Section 19.25.040 Satellite Utility Systems and Individual Systems

If regional sewer and/or area-wide public water service is not "available" to serve a proposed project the following satellite utility or individual systems may be used, provided that they meet the requirements of this Section and have been approved by the agency with jurisdiction. The systems authorized for such projects are listed in order of priority, as provided in Subsections (1) and (2) below and Tables 19.25-1 and 19.25-2:

(1) Sewage Disposal Systems.

…

(c) Individual On-Site Sewage Disposal System. An individual on-site storage disposal system shall be approved by the Yakima Health District. Each individual system shall be entirely contained on the same lot as the proposed dwelling that it is intended to serve or on another parcel on which the lot owner possesses an easement interest for that purpose.

Response:

As noted in response to YCC Chapter 12.05, the Applicant would obtain the required permit from the Yakima Health District. The septic system for the O&M building would be contained within the same parcel as that facility. Therefore, the Facility would comply with this criterion.

(2) Water Systems. RCW 58.17.110 requires applicants for land divisions provide documentation of adequate potable water supplies to the Reviewing Official prior to final development approval. RCW 19.27.097 requires each applicant for a building permit of a building necessitating potable water shall provide evidence of an adequate water supply for the intended use of the building. In Urban Growth Areas, the public water systems required under this Title shall be sited and designed to become incorporated into, and be accepted by, the associated area-wide public water supply system designated for that portion of the Urban Growth Area.

…

(d) Individual Well, as Defined in Section 19.01.070. An individual well is required when Group A or B public water systems or two-party shared water systems are not "available" or otherwise required; provided, that:

(i) Documentation. The applicant shall demonstrate prior to final development approval that:

(A) An authorization for a groundwater withdrawal from the appropriate agency with jurisdiction has been obtained;

(B) Each individual well will provide an adequate source of potable water for the proposed development including:

1. A water quality analysis report from the Yakima Health District or a State of Washington certified laboratory indicating compliance with the State Board of Health and locally adopted standards for domestic water; and

2. As required by local, state or federal agencies, a water quantity report from a well driller, pump supplier, or other qualified person. The report must be in the form of an industry standard pump test, bailer test or air test for wells or a flow test for springs. The test must assure that a minimum quantity of 350 gallons per day is available for each dwelling unit.

(C) The individual well has or will be designed in accordance with well siting and contamination standards as determined by the appropriate agency with jurisdiction.

…

(iii) Availability Criteria. Yakima County will consider an adequate source of potable water to be "available" at the time of a development when the applicant provides documentation showing that the individual well for the proposed development has been approved by the appropriate agency with jurisdiction.

Response:

A public water system connection is not available at the Facility site. Prior to construction and issuance of a County building permit, the Applicant would follow the domestic well application process to obtain a YCWRS permit for the well that would serve the O&M building. The O&M building would not be a dwelling unit, and anticipated water needs are less than 200 gallons per day. As noted earlier, as an alternative to a new domestic well, the Applicant may also bring in water from an off-site source with an existing water right and store it in aboveground water tanks. Therefore, the Facility would comply with these criteria.

3.7.10 Chapter 19.30 Applications

Section 19.30.030 Application and Use Categories

(3) Type 3 Applications.

(a) The Hearing Examiner reviews applications subject to Type 3 review under the procedures of Section 19.30.100 and YCC Subsection 16B.03.030(1)(c).

(b) Applications subject to Type 3 review include:

…

(vi) Uses shown on the Allowable Land Use Table 19.14-1 in Chapter 19.14, Type 3 Conditional Uses are not generally appropriate throughout the zoning district.

Response:

As described above in response to YCC 19.14, the Facility and associated major equipment described in Section 2.A.2 of the ASC are consistent with the County's definition of a "power generating facility" and would be a Type 3 conditional use in the AG zoning district (YCC Table 19.14-1). The Applicant has elected to site the Facility under EFSEC's jurisdiction; therefore, the

Applicant has prepared this application for site certificate agreement for review and approval by EFSEC. This process takes the place of the Type 3 review procedures under YCC 19.30.100 and YCC 16B.03.030(1)(c), which would typically establish decision-making authority with the Yakima County Hearing Examiner. The Applicant has prepared this attachment to Section 4.14 (Land Use) of the ASC to detail how the Facility would comply with County regulations if it were not under EFSEC jurisdiction. Specifically, this attachment demonstrates to EFSEC that the Facility would be consistent with applicable goals and policies of the YCCP and would comply with applicable code provisions of the YCC.

Section 19.30.060 Application Requirements

> *All of the following documents and elements must be submitted as requirements for a fully completed application for project permits where specified in the particular application form or as determined necessary by the Administrative Official due to applicability of the specific requirement to the proposal:*
>
> *General Information. The items required under YCC Section 16B.04.020.*

Response:

The Facility's complete EFSEC application provides the items or the functional equivalent to those required under YCC 16B.040.020 which include: 1) a completed permit application with letters of support from the owners of the property (see Attachment C); 2) a single contact person or entity (see Section 1.A.1 of the ASC); 3) a site plan showing all parcels containing the site in the application (see the Preliminary Site Plan, Attachment B); 4) the applicable fee (Applicant provided EFSEC's applicable review fee with application submittal); and 5) SEPA documents (SEPA checklist to be completed by EFSEC). In addition, YCC 16B.04.020 generally requires "all other items listed as application requirements in the relevant Sections of the ordinance requiring review." The Applicant has sought to address all such requirements in responses to applicable code provisions in this attachment. Therefore, the Facility would comply with this criterion.

> *(2) Site Plan. A site plan, in conformance with Section 19.30.070.*

Response:

The Preliminary Site Plan for the Facility is provided as Attachment B. See below for the Applicant's response to the site plan requirements under YCC 19.30.070. Therefore, the Facility would comply with this criterion.

> *(3) Optional Consolidated Permit Review. Under YCC Section 16B.03.060, two or more project permits relating to a proposed project action may be processed collectively under the highest numbered category of project permit required for any part of the proposal or processed individually under each of the procedures identified by the code. The applicable fee for each application will be required.*

Response:

The Applicant would coordinate with the County to consolidate required permit review to the extent practicable for those remaining approvals needed following EFSEC site certification, such as building permits. All required fees would be paid by the Applicant. Therefore, the Facility would comply with this criterion.

(4) Contents. Individual chapters of this Title and YCC Title 16B contain additional information required for a particular type of application review process.

…

(b) All applications shall include the following information:

(i) Yakima County taxation parcel number and, for land divisions, a legal description;

(ii) Description of proposed action;

(iii) Size of subject property;

(iv) Explanation of any administrative adjustment or design modification sought from the standards of this ordinance; and

(v) Draft of any proposed covenants, restrictions and easements.

Response:

Parts 1 and 2 of the ASC provide the Facility parcel numbers and legal description, a description of the proposed Facility, and the size of the subject properties. No administrative adjustment or design modification from YCC standards are being sought in this application. No other land covenants, restrictions, or easements are proposed for the Facility. Therefore, the Facility would comply with these criteria.

(c) All necessary documents, narratives, detailed project development schedule or special studies identified at the time of pre-application conference must be included with the site plan at the time of submittal;

Response:

This application provides the necessary documents, narratives, project schedule, and special studies identified as needed in pre-application review with EFSEC and as identified through early discussion with the County. This application also includes the Applicant's review of applicable YCC provisions as detailed in this attachment. Therefore, the Facility would comply with this criterion.

(d) A comprehensive sign plan meeting the requirements of Section 19.35.020(7), if an administrative adjustment or variance to the sign standards is requested;

Response:

As noted earlier, the current proposed Facility plans do not include signs covered under YCC 19.20. If signs are proposed in the future, the Applicant would follow applicable standards and procedures, including providing a comprehensive sign plan if an administrative adjustment or variance to the sign standards is requested at that time. Therefore, the Facility would comply with this criterion.

(e) Special studies, such as soil and geological analyses as determined necessary by the Administrative Official to address specific site constraints; and

Response:

Due to the presence of mapped geological hazards within the Facility Area Extent, a geotechnical investigation was completed for the Facility and the full report is provided in Attachment L. See Section 3.5.5 above for further discussion of geological hazards and the Facility's compliance with protection and safety standards. In addition, studies related to waters and wetlands, soils, plants and wildlife, cultural resources, solar glare, onsite environmental hazards, and airspace have been completed for the Facility (See Section 1.E of the ASC). Therefore, the Facility would comply with this criterion.

(f) Any other information specified by the Administrative Official, such as:

(i) Existing ownership pattern;

(ii) Operation and maintenance proposals (i.e. homeowner's association, condominium, co-op or other);

(iii) Solid waste disposal facilities;

(iv) Lighting;

(v) Water supply and fire hydrants;

(vi) Public transportation;

(vii) Community facilities;

(viii) Flood proofing or other measures to protect against flooding; or

(ix) Information on design methods to conserve energy.

Response:

All information specified by EFSEC during the pre-application review process and otherwise required by applicable state and local regulations has either been provided with this application or, when dependent on final Facility design or a later step in the local permitting process, would be provided prior to construction as a condition of EFSEC approval. Therefore, the Facility would comply with these criteria.

(5) Covenants, Conditions and Restrictions. A copy of any existing covenants, conditions and restrictions (CC&Rs) or deed restrictions pertaining to or affecting the property.

…

Response:

The Applicant has executed an Option to Lease with each landowner for the Facility parcels. The Applicant is not aware of any CC&Rs or deed restrictions that would impair development of the properties for a solar energy generation facility.

(7) Stormwater Site Plan. A stormwater site plan, if required by YCC Chapter 12.10.

Response:

As discussed above in Section 3.2.3, the Applicant would develop a Stormwater Plan separately or in conjunction with the SWPPP required to obtain a CSWGP from Ecology. This would be provided to EFSEC prior to construction, as well as to Yakima County as a prerequisite for issuing building permits. Therefore, the Facility would comply with this criterion.

(9) SEPA Environmental Checklist. Any application not exempt under YCC Section 16.04.110, WAC 197-11-800(6) or Chapter 43.21C RCW, State Environmental Policy Act, shall include an environmental checklist unless the SEPA Responsible Official determines one is not needed.

Response:

As noted above in Section 3.4 per YCC 16.04, a SEPA checklist form will be prepared by EFSEC with reference to corresponding sections of Part 3 and Part 4 of the ASC where needed for further analysis and proposed control measures. Therefore, the Facility would comply with this criterion.

(10) Written Narrative and Other Information.

(a) A written narrative shall be submitted that addresses the following:

(i) Project description including project phases and timeframes from project authorization to project completion;

(ii) How the application meets or exceeds each of the applicable approval criteria and standards;

(iii) How the issues identified in the pre-application conference have been addressed, and generally, how services will be provided to the site; and

(iv) Whether any development standards are proposed to be modified from the underlying zoning district requirements.

Response:

The Facility project description is provided in Part 2 of the ASC. This attachment describes how the Facility meets or exceeds each of the applicable approval criteria and standards pursuant to YCC 19.30.080(7) (see below). Information provided throughout this application addresses issues identified in pre-application review with EFSEC. No development standards of the AG zoning district are proposed to be modified for construction and operation of the Facility. Therefore, the Facility would comply with these criteria.

Section 19.30.070 Site Plans for Project Permits – Form and Contents

(1) Form. All site plans for project permits shall be drawn to scale and be legibly drawn, prepared, or printed on paper. The paper size shall be 8 ½" x 11" or 11" x 17" to show required improvement at an appropriate scale that can be read and reproduced. The County may also accept electronic submittals, as appropriate. The scale of the drawing shall be a standard engineering scale as further defined for

each application type, unless a different scale is authorized by the Administrative Official, and shall reasonably utilize the paper size. Site plans must include the items listed in Subsections (2) through (7) below for the specific application. The site plan may be on several sheets accompanied by an index sheet showing the entire site.

(2) Contents. The Administrative Official may require the following site plan contents in Table 19.30.070-1 as necessary to review applications for project permits. The contents in Table 19.30.070-1 are intentionally broad and inclusive in order to comply with RCW 36.70B.080 and disclose all submittal requirements. This Title is implemented through use of forms tailored to submittal information related to specific application or case types under consideration.

Table 19.30.070-1. Site Plan Submittal Requirements

(a)	*General Information.*	
	(i)	*The project boundaries of the site and of each affected lot, tract, or parcel, with all Assessor's tax parcel numbers for the subject property. (solid lines for existing lots, broken lines for proposed lots);*
	(ii)	*Engineer Scale, north arrow, legend and date;*
(b)	*Existing Conditions.*	
	(i)	*All major physiographic features, such as, critical areas and shorelines, on or abutting the site;*
	(ii)	*When ground slopes exceed ten percent, the site plan shall depict existing topographic contours at intervals of not more than five feet, extending one hundred feet beyond the boundaries of the site;*
(c)	*Existing and Proposed Development.*	
	(i)	*The location, shape, size, gross floor area, height and types of all existing and proposed structures, structures to be removed, minimum building setbacks, lot coverage, lot area, and the boundary lines of all proposed and existing lots, tracts, and easements;*
	(ii)	*Proposed location and dimension of community and other open space;*
	(iii)	*The location and dimensions of any existing and proposed utilities, streets, railroads, irrigation and drainage canals, easements and dedication of property within the subject property or adjacent to any affected lots;*
	(iv)	*The location, right-of-way widths, pavement widths, curbs, gutters, culverts and names of all existing or platted streets or roads, whether public or private, and other public ways within the subject property or adjacent to any affected lots;*
	(v)	*Location, dimension and design of off-street parking facilities, showing points of ingress to and egress from the site;*
	(vi)	*Existing and proposed land uses, including primary and accessory;*
	(vii)	*Existing and proposed pedestrian and vehicular circulation patterns, and where specified, sidewalks, trails and bicycle paths;*
	(viii)	*Existing and proposed landscaping, sitescreening and street trees, where required;*
	(ix)	*The proposed contours and grading as they affect lot layout, streets, and drainageways as set forth in YCC 12.10, 16C and 16D;*
	(x)	*Existing and proposed public and private utility infrastructure including sewer or other waste disposal facilities, water mains, irrigation, fire protection systems and other underground utilities;*

	(xi)	*The existing on-site sewage system components and reserve areas and the proposed location for on-site sewage systems and soil test pits for all affected lots not served by an on-site sewage system or other approved wastewater treatment system. The location of structures on the adjoining lots when within 100 feet of a well or on-site sewage disposal system;*
	(xii)	*The location of all existing and proposed storm drainage facilities;*
(d)	*Floodplain Development.*	
	A site plan for development in the 100-year floodplain shall also include the following information:	
	(i)	*Description of the extent to which any watercourse will be altered or relocated as a result of the proposed development.*
	(ii)	*The boundaries of the 100-year floodplain, the boundaries of floodways where floodways have been established, and the 100-year base flood elevations where base flood elevations have been established.*
	(iii)	*The boundaries of the 10 and 25-year floodplain using the flood risk maps provided by Yakima County as part the mandatory pre-application conference.*
	(iv)	*Other information as may be required by YCC Titles 13, 16C or 16D.*

Response:

The Facility's Preliminary Site Plan is provided as Attachment B. The Facility would not be developed in a 100-year floodplain. Additional figures showing the Facility layout in relation to designated critical areas have been provided in compliance with YCC Title 16C, discussed earlier in Section 3.5. While the Preliminary Site Plan and other resource figures provided with this application provide sufficient detail for EFSEC review and approval, the Applicant would provide additional site plan information based on final design if specified by EFSEC as a condition of approval. Additional site plan information may also be requested by Yakima County during the building permit process per Title 13, and the Applicant would provide such information at that time.

YCC subsections 19.30.071 through 19.30.075 do not apply to the Facility, because the Facility does not entail a boundary line adjustment, short plat, preliminary plat, binding site plan, or master planned resort. Therefore, the Facility would comply with applicable criteria under YCC 19.30.070.

Section 19.30.080 Application Review Procedures

> *(7) Decision Criteria. Decision criteria for Type 1 permits are listed below in Section 19.30.090. For all Type 2, 3 and 4 reviews, the Reviewing Official shall prepare written findings and conclusions stating the specific reasons, upon which the decision or recommendation to approve, approve with conditions or deny the application is based. The findings shall, at a minimum, address the following criteria:*
>
> > *(a) The present and future needs of the community will be adequately served by the proposed development and that the community as a whole will be benefited rather than injured;*

Response:

The Facility would provide a new source of clean, renewable energy, supporting Washington State's policy to transition the electricity supply to 100 percent carbon-neutral by 2030 and 100 percent carbon-free by 2045 (RCW 19.405.010). This supports the community's present and future need for sustainable energy generation. It also creates short- and long-term economic opportunities for the community to support construction and operation of the Facility. A peak of up to 300 workers would be employed during construction, with one to two part-time personnel during operation. As detailed in this application, the Facility would not cause any harm to the community's water supply or water quality (see Sections 3, 3.4, 3.6, 3.7, 4.3 and 4.5 of the ASC), pose a threat to environmental health (see Section 4.13 of the ASC), cause significant traffic (see Section 4.20 of the ASC) or create a burden for public services (see Section 3.21 of the ASC). The Facility would also be compatible with local land uses, further discussed below under criterion (b). No "injury" to the "community as a whole" is anticipated. Therefore, the community as a whole would benefit rather than be injured by the proposed Facility and this criterion is met.

> *(b) The proposed use is compatible with neighborhood land uses, the goals, objectives and policies of the Comprehensive Plan, and the legislative intent of the zoning district;*

Response:

In general, the Facility would be consistent with the legislative intent of the AG zoning district as defined in YCC 19.11.010 because of its minimal impact to active agricultural activities and compatibility with neighboring agricultural uses. According to the YCCP, lands within the AG district generally meet the criteria for lands of long-term commercial significance, which may also include "pockets" of non-agricultural land uses (Yakima County 2017). It is through the establishment of an AG zoning district that Yakima County implements protection for agricultural natural resource land as defined in RCW 36.70A.030. The Growth Management Act does not directly regulate non-agricultural use of agricultural resource lands. In its adoption of regulations for the AG zoning district, Yakima County has chosen to allow energy generation as a conditional use. . The Facility Area would disturb up to 625 acres of AG district land for the life of the Facility, following which the land would be restored for potential future agricultural use. The Facility Area represents less than 0.15 percent of the current AG zoning district in Yakima County (Yakima County 2020). Of the Facility Area, approximately 30 acres (4 percent) would include impervious surfaces post-construction.

During the site selection process for the Facility, the Applicant prioritized lands that are not productive farmland. None of the Facility's disturbance would entail the conversion of irrigated cropland. Approximately 272 acres of the Facility Area Extent, which is larger than the Facility Area disturbance footprint to allow for micrositing, is on land currently in active agricultural use; specifically, for livestock grazing (i.e., the Martinez Property). The Facility Area footprint of up to approximately 140 acres on the Martinez Property represents approximately 13.5 percent of the Martinez Property parcels' total area within the Facility Area Extent, the remainder of which would remain available for ongoing grazing operations. The Martinez family is a large landowner in Yakima County, managing roughly 12,000 acres overall. Thus, the Facility Area would represent a nominal portion, approximately 1.2 percent, of their total holdings.

The remaining 517 acres of the Facility Area Extent, the Meacham Property, is not in active agricultural use; instead, for over 15 years it has been voluntarily enrolled in the U.S. Department of Agriculture (USDA) Conservation Reserve Program (CRP). The CRP provides payment landowners to remove land from agricultural production and maintain vegetative land cover (USDA 2020). Currently, land cover within the Meacham Property consists predominantly of non-native plant species, and soils are not considered prime farmland (NRCS 2020). The Meacham Property's CRP enrollment is set to expire in September 2022, and the Facility lease payments would effectively replace CRP payments as a valuable revenue source for the landowner. This is also a more economically viable plan for the Meacham Property than active agriculture because, lacking irrigation infrastructure and prime soils, the land would not be readily convertible to commercially significant agricultural production.

In addition to its minimal on-site impact to active agricultural land, per WAC 463-72-040, the Applicant would develop an Initial Site Restoration Plan detailing how the site would be restored to pre-Facility condition or better at the end of the Facility's life, including provisions for removal of the solar panels and racking system, foundations, cables, and other facilities to a depth of four feet below grade, and restoration of any disturbed soils to the pre-construction condition. The Initial Site Restoration Plan would be submitted to EFSEC as a condition of approval. Thus, while the Facility would be a long-term land use, anticipated to be at least 35 years, it would not irreparably convert agricultural land to non-agricultural use, as future agricultural production would be possible upon decommissioning of the Facility.

Land adjacent to the Facility is also within the AG zoning district and includes a mix of rangeland and cropland. The parcels directly neighboring the west, north, and east side of the Facility Parcels within the Martinez Property, as well as directly east of the Meacham Property parcels, are also owned by S. Martinez Livestock, Inc. As a participating landowner, S. Martinez Livestock, Inc. supports the proposed Facility and has not expressed any concern regarding the compatibility of the Facility with their existing and planned agricultural activities adjacent to the Facility Parcels. The lease payments for the Facility help S. Martinez Livestock, Inc. diversify their revenue sources and support ongoing agricultural activities on their properties. The Applicant is also in consultation with the neighboring landowner west of the Meacham Property to address any potential concerns; to date, none have been raised by the landowner. The Applicant would continue to coordinate with participating and neighboring landowners during construction and operations to avoid any impacts to agricultural activities.

Furthermore, this application effectively evaluates compatibility with agricultural activities and associated rural residences in the vicinity by providing analysis of potential Facility impacts related to noise, light, glare, and aesthetics (see Section 4.16 of the ASC), air emissions (see Section 4.2 of the ASC), environmental health – hazardous waste (see Section 4.13 of the ASC), and traffic and transportation (see Section 4.20 of the ASC). Aside from short-term noise generated during construction, due to the inherently quiet nature of solar energy generation, minimal noise would be generated during operation; no noise exceedances would occur, as demonstrated by detailed noise modeling (Section 4.16 of the ASC). No significant adverse impacts from light and glare or visual characteristics of the Facility are expected (see the Visual Impact Assessment [Attachment J] and Solar Glare Report [Attachment K]). Importantly, the glare analysis confirmed no glare would be experienced by aircraft or motorists along SR-24.

Additionally, the Department of Defense has reviewed the project and confirmed no concern for their operations. Due to the clean energy nature of the Facility, no substantial air emissions or hazardous waste would be generated as a result of its operation. By implementing appropriate traffic control measures during construction, the Facility would not impede offsite agricultural activities, and the Facility would generate minimal traffic during operations. Overall, the Facility would not impede ongoing agricultural operations, would not disrupt farm-to-market transportation, and would not increase the cost of agricultural operations on neighboring properties. The Facility would not cause any negative impacts to any known, accepted surrounding agricultural practices, including the cultivation of specialty crops and other sensitive agricultural uses and practices. Moreover, based on the results of the environmental analysis, the Facility would be at least as compatible or more so with neighborhood land uses as other uses permitted in the AG zoning district, for example, a hazardous waste treatment facility or petroleum exploration and production, both of which are allowed in the AG district with generally less extensive review (Type 1 and Type 2, respectively, per YCC 19.14).

The Facility's consistency with the goals and policies of the YCCP is discussed in detail in Section 2.0 of this attachment. In summary, by providing a new source of clean, renewable energy, the Facility would help achieve Yakima County's goals for economic growth and diversity, including the continued success of its rural agricultural economy, while protecting natural resources and public health. For this reason, as well as the other reasons described above, this criterion is met.

> *(c) The site of the proposed use is adequate in size and shape to accommodate the proposed use;*

<u>Response</u>:

As shown on the Preliminary Site Plan (Attachment B), the site of the proposed use is adequate in size and shape to accommodate the proposed Facility, including setbacks and other features required pursuant to YCC Title 19 and addressed in response to YCC 19.30.080(7)(d) below. Therefore, this criterion is met.

> *(d) All setbacks, spaces, walls and fences, parking, loading, sitescreening, landscaping, and other features required by this Title;*

<u>Response</u>:

The Facility's compliance with setbacks, spaces, walls and fences, parking, loading, sitescreening and landscaping, as well as signs and sewer and water is described above in the preceding Sections 3.7.2 through 3.7.9 pursuant to the applicable provisions of YCC Chapter 19.10 General Zoning Requirements, YCC Chapter 19.11 Resource and Rural Districts, YCC Chapter 19.20 Signs, YCC Chapter 19.21 Sitescreening and Landscaping, YCC Chapter 19.22 Parking and Loading, and YCC Chapter 19.25 Sewer and Water. As described in this attachment and demonstrated throughout the full application, the Facility has been designed to comply with applicable County code provisions. The Applicant would continue to work with EFSEC and Yakima County to ensure local approvals subsequent to EFSEC site certification are obtained and conditions are met prior to construction of the Facility. Therefore, the Facility would comply with this criterion.

(e) The proposed use complies with other development and performance standards of the zoning district and this Title;

Response:

Per the above response to criterion (d), the proposed Facility would comply with applicable development and performance standards of the AG zoning district and YCC Title 19 generally. Specific standards are addressed above throughout Section 3.0 in response to additional code provisions that are related to the Facility and further demonstrate compliance with YCC Title 19. Therefore, the Facility would comply with this criterion.

(f) The site for the proposed use relates to streets and highways adequate in width and pavement type to carry the quantity and kind of traffic generated by the proposed use;

Response:

The Applicant is currently working with WSDOT to confirm design requirements and obtain approval for upgrading the Facility access from SR-24. The approach from SR-24 would include upgrading an existing private gravel road to accommodate Facility construction. Section 4.20 of the ASC provides further information regarding the quantity and kind of traffic generated by construction and operation of the Facility. Facility access roads would be constructed with all-weather road surface and designed in accordance with accepted engineering practices to support Facility traffic. While overall risk of fire is low at the Facility, access roads and gates would comply with the current version of the International Fire Code as adopted by Washington State, as well as standards set by the Yakima County Fire Marshal's Office. This includes gates that are 20 feet wide with accessible hardware per fire department requirements, as well as fire access roads that are 20 feet wide, with inner turning radius of 30 feet and outer turning radius of 45 feet to accommodate emergency vehicles. The Applicant would consult with the Yakima County Fire Marshal to ensure compliance with fire code, and provide the final layout to the Fire Marshal's Office. Therefore, the Facility would comply with this criterion.

(g) The proposed use will have no substantial adverse effect on abutting property or the permitted use thereof;

Response:

As noted above in response to criterion (b), except for one parcel, property abutting the Facility Parcels is owned by S. Martinez Livestock, Inc., one of the two participating landowners for the Facility. S. Martinez Livestock, Inc. is supportive of the Facility and has not expressed any concerns regarding adverse effects to their properties or permitted uses thereof. Regarding the remaining abutting property west of the Meacham Property, the Applicant has reached out to the landowner, who has expressed no concern with the proposed Facility. The Applicant would continue to coordinate with abutting landowners during construction and operations to avoid adverse impacts to their properties and land uses.

In addition to landowner coordination, as described above in response to criterion (a) and (b), the environmental analysis provided in this application in compliance with EFSEC and County requirements demonstrates that operation of the Facility would have no substantial adverse effect on abutting property or the permitted uses thereof. Any minor disturbance due to construction noise or traffic would be limited to the temporary construction period, and would not inhibit the ongoing use of abutting properties. Furthermore, the Facility's siting in proximity to the existing BPA 115-kV transmission line enables the Facility to avoid a lengthy transmission line to interconnect with the regional grid. In this way, the Facility avoids potential adverse effects to abutting properties that could be caused were it located further from existing electrical infrastructure serving the community. For the above reasons, this criterion is met.

> *(h) In the case of residential uses, the housing density of the development is consistent with the existing zoning densities, or the Comprehensive Plan, and that all other aspects of the development are consistent with the public health, safety, and general welfare for the development and for adjacent properties; and*

Response:

The Facility is not a residential use and no housing is proposed; therefore, this criterion does not apply.

> *(i) The development complies with all criteria in Chapter 19.18 applicable to the proposed use, unless otherwise administratively adjusted.*

Response:

The Facility does not meet the definition of any of the special uses identified in YCC Chapter 19.18. Pursuant to YCC 19.18.480, discussed in Section 3.7.5 above, the Applicant's construction contractor would obtain any needed temporary use permits. Therefore, this criterion is met.

Section 19.30.100 Conditions of Approval of Type 2, 3, and 4 Applications

> *(1) The Reviewing Official is authorized by development standards of this Title and other applicable Titles of County code to require conditions for approval of Type 2 Administrative, Type 3 Conditional or Type 4 Quasi-judicial Uses or Actions. The Reviewing Official may impose additional or greater requirements as conditions of approval on any use, development or modification being reviewed to ensure that the proposal meets the standards and criteria for approval.*
>
> *(2) Except, as otherwise expressly provided, a Reviewing Official may impose conditions to:*
>
> > *(a) Comply with any development standard or criteria for approval set forth in this Title or other relevant provisions of Yakima County Code;*
> >
> > *(b) Mitigate material impacts of the development, whether environmental or otherwise;*
> >
> > *(c) Ensure compatibility of the development with existing neighboring land uses; assure consistency with the intent and character of the zoning district involved;*
> >
> > *(d) Ensure that the structures and areas proposed are surfaced, arranged and screened in such a manner that they are compatible with and not detrimental to*

existing or reasonable expected future development of the neighborhood, or resource uses, consistent with the Comprehensive Plan; and

(e) Achieve and further the intent, goals, objectives, and policies of the Comprehensive Plan and this Title.

Response:

This Land Use Consistency Review Attachment (Attachment A) demonstrates that the Facility would comply with applicable development standards and criteria for approval in the YCC. Where items are needed for specific compliance with YCC that due to their nature cannot be provided with this application, for example when dependent on final Facility design or a permitting process step following site certification, the Applicant has committed to providing further information as a condition of EFSEC's approval. The Applicant would comply with all conditions set by EFSEC in the Site Certification Agreement for the Facility. Based on the resource analysis provided in Parts 3 and 4 of the ASC, with the implementation of identified control and mitigation measures, the Facility would not have a significant adverse effect on the environment. As discussed above, the Facility would be compatible with existing or reasonably expected future neighboring land uses and be consistent with the intent and character of the AG zoning district. The proposed Facility utilizes a vital local resource—solar energy—to provide a clean, renewable source of electricity and grow and diversify Yakima County's economy, while ensuring the long-term protection of natural resources. In this way, the Facility serves to further the intent, goals, objectives, and policies of the YCCP while complying with applicable provisions of YCC Title 19 Unified Land Development Code.

4.0 References

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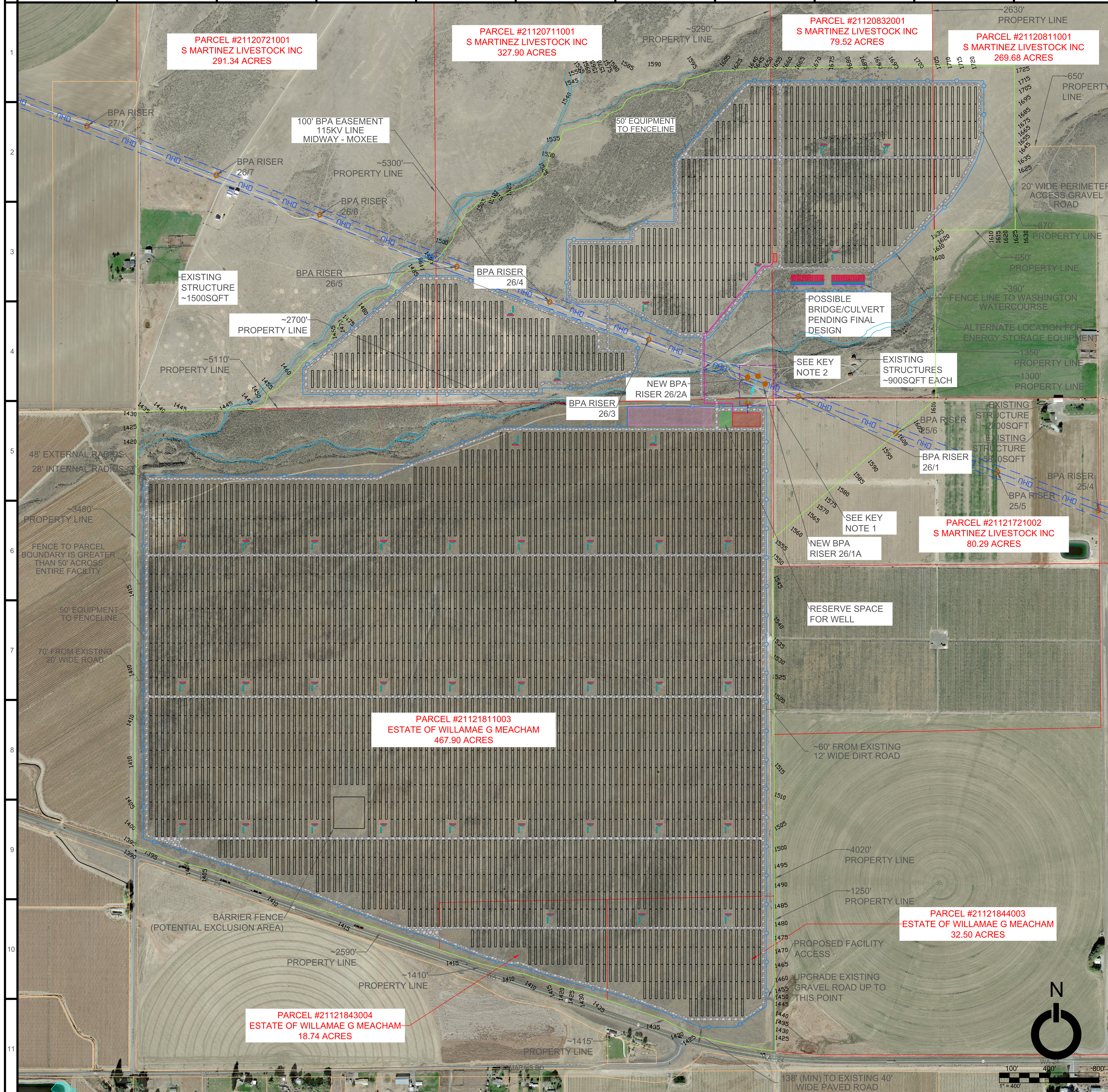
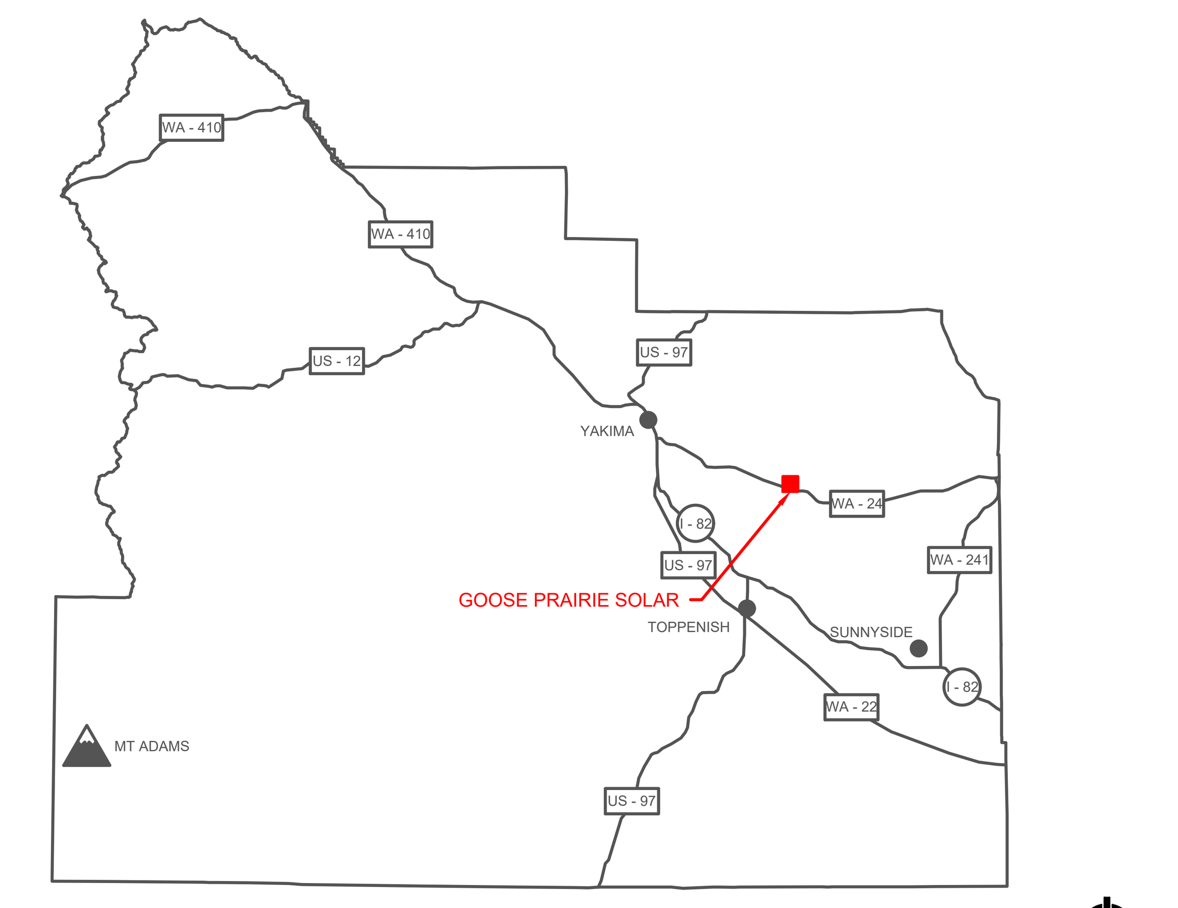
ATTACHMENT B

Preliminary Site Plan



GOOSE PRAIRIE SOLAR + STORAGE 80.00MWAC - CONCEPTUAL LAYOUT

SCALE: 1" = 400'



SCALE: 1" = 12 MILES

YAKIMA COUNTY VICINITY MAP

SITE DETAILS:

SITE LAT:	46.528557°
SITE LONG:	-120.240075°
PARCEL ID:	21121811003
OWNER:	ESTATE OF WILLIMAE G MEACHAM
ACREAGE:	467.90
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21121843004
OWNER:	ESTATE OF WILLIMAE G MEACHAM
ACREAGE:	18.74
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21121844003
OWNER:	ESTATE OF WILLIMAE G MEACHAM
ACREAGE:	32.50
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21120721001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	291.34
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21120711001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	327.9
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21120832001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	79.52
EXISTING ZONING:	AG
EXISTING USE:	81 AGRICULTURE NOT CURRENT USE
PARCEL ID:	21120811001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	269.68
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21121721002
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	80.29
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE

DESIGN SUMMARY:

MODULE POWER:	445W
MODULE COUNT:	260,550
ARRAY DC VOLTAGE:	1500V
SOLAR INVERTER SIZE:	2.105MW/2.500MVA @50C
SOLAR INVERTER QTY:	38 +/-
DC CAPACITY:	115.944MWdc @ STC (Front)
AC CAPACITY:	80.000MWac
DC/AC RATIO:	1.45
GROUND COVERGE RATIO:	33.25%
GROUND SNOW LOAD:	15 PSF
ASCE 7-10 WINDSPEED:	110 MPH

LAND USE SUMMARY:

TOTAL PARCEL AREA:	1567.87 ACRES
FACILITY AREA EXTENT:	791.39 ACRES
TOTAL FENCED AREA:	590.00 ACRES
TOTAL ACCESS ROAD:	23.09 ACRES
FACILITY STAGING AREA:	2.12 ACRES
O&M FACILITY AREA:	0.171 ACRES
FACILITY SUBSTATION:	0.556 ACRES

KEY NOTES:

1. PRELIMINARY LOCATION OF LINE TAP INTERCONNECTION TO BPA'S MIDWAY-MOXEE 115KV LINE. FINAL LOCATION OF EQUIPMENT IS SUBJECT TO CHANGE BASED ON BPA DESIGN.
2. MEDIUM VOLTAGE LINE TO CONNECT NORTHERN PROJECT AREA TO FACILITY SUBSTATION. EXACT LOCATION TO BE DETERMINED.
3. FACILITY SHALL MAINTAIN A MINIMUM 50' SETBACK FROM ALL DELINEATED STREAMS.

GENERAL NOTES:

1. PARCEL BOUNDARIES FOR FACILITY PARCELS BASED ON ALTA FIELD SURVEY.
2. EXACT LOCATION OF EQUIPMENT DETAILED IN THIS PRELIMINARY SITE PLAN IS SUBJECT TO CHANGE. HOWEVER THE MAXIMUM FACILITY AREA WILL NOT EXCEED 625 ACRES WITHIN THE 791 ACRE FACILITY AREA EXTENT. A FINAL SITE PLAN WILL BE PROVIDED TO THE PERMITTING AUTHORITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. THE FACILITY IS ENTIRELY OUTSIDE ALL FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD HAZARD ZONES.
4. STREAMS SHOWN AS DELINEATED BY TETRA TECH, "GOOSE PRAIRIE WETLAND DELINEATION REPORT," JULY 2020.
5. FACILITY LAYOUT INCLUDES AN OPTIONAL BATTERY STORAGE SYSTEM. APPLICANT SEEKS FLEXIBILITY BETWEEN AN AC-COUPLED AND DC-COUPLED SYSTEM. BOTH ARE SHOWN FOR ILLUSTRATIVE PURPOSES.
6. PROPOSED ACCESS POINT AS COORDINATED WITH WASHINGTON DEPARTMENT OF TRANSPORTATION.
7. THE FACILITY WILL COMPLY WITH ALL ZONING, COUNTY, AND STATE REQUIREMENTS.
8. PRELIMINARY COLLECTION LINE LOCATIONS ARE PENDING BASED ON FURTHER ENGINEERING ANALYSIS.
9. PROJECT IS IN YAKIMA COUNTY FIRE DISTRICT #4 AND WILL COMPLY WITH ALL REQUIREMENTS OF THE FIRE OFFICIAL. ACCESS ROADS AND GATES WILL COMPLY WITH THE APPLICABLE VERSION OF THE INTERNATIONAL FIRE CODE AS ADOPTED BY THE STATE OF WASHINGTON. GATES 20' IN WIDTH WITH ACCESSIBLE HARDWARE PER FIRE DEPARTMENT REQUIREMENTS SHALL BE INSTALLED. FIRE ACCESS ROADS SHALL BE 20' IN WIDTH, WITH INNER TURNING RADIUS OF 30' AND OUTER TURNING RADIUS OF 45'.

PROJECT

GOOSE PRAIRIE

ADDRESS

11900-12898 WA -24
MOXEE, WA 98936

DRAWING

TITLE:
CONCEPT LAYOUT
SHEET NUMBER:
A-001
SCALE:
1" = 400'
DRAWN BY:
CG
CHECKED BY:

DATE:
01/07/2021
REVISIONS:

DESCRIPTION

THIS FACILITY CONSISTS OF THE DESIGN AND INSTALLATION OF AN 80.00MWac SOLAR PHOTOVOLTAIC + OPTIONAL BATTERY SYSTEM. MODULES ARE TO BE MOUNTED IN SINGLE AXIS TRACKERS, WHICH FOLLOW THE SUN FROM EAST TO WEST THROUGHOUT THE DAY. INTERCONNECTION TO BE COORDINATED WITH THE LOCAL UTILITY.

LEGEND

- GRAVEL ACCESS ROAD
- FACILITY STAGING / PARKING AREA
- FACILITY O&M BUILDING
- FACILITY SUBSTATION
- PARCEL BOUNDARY
- PARCEL ZONING OFFSET
- NEIGHBOR PARCEL BOUNDARY
- FACILITY AREA EXTENT
- FACILITY SECURITY FENCE
- EXISTING UTILITY LINE
- GENERATION TIE LINE
- EXISTING UTILITY RISER
- PROPOSED NEW RISER

OneEnergy RENEWABLES

ATTACHMENT C

Landowner Support Letters

S Martinez Livestock, Inc.
13395 Highway 24
Moxee, WA 98936

December 15, 2020

Energy Facility Siting Evaluation Council
c/o Sonia Bumpus
621 Woodland Square Loop SE
PO Box 43172
Olympia, WA 98504-32172

RE: Goose Prairie Solar Project

Dear Ms. Bumpus,

The Goose Prairie Solar project is a proposed photovoltaic solar power generation facility in Yakima County on land owned by our family on tax parcels 211207-11001, 211207-21001, 211208-11001, 211208-32001, and 211217-21002 in Township 12 North, Range 21 East. As the landowner, we support the project and provide the following information in support of OER WA Solar 1 LLC's Application for Site Certificate.

Our family has worked in the Yakima Valley for over 100 years, starting with sheep and expanding into cattle, hops and apples. As it gets very dry in the summer, this land has low value to us as winter pasture for livestock.

Because the site has limited productivity, we have chosen to lease our land to construct the Goose Prairie Solar project at the proposed site, which will be a higher and better use of this portion of our land while we continue to farm and ranch our more productive farmland. The annual lease payments from the project will provide long-term, predictable revenue while diversifying the income generated by our landholdings. Moreover, the project will not adversely impact or increase the cost of farming practices near the project. We do not anticipate any changes to our ongoing operations nor those of our neighbors resulting from the construction or operation of the proposed project.

Sincerely,

Dan Martinez
S Martinez Livestock, Inc.

Ann E. Meacham
Personal Representative of the
Estate of Willamae G. Meacham
3918 77th Ave. Ct. NW
Gig Harbor, WA 98335

January 11, 2021

Energy Facility Siting Evaluation Council
c/o Sonia Bumpus
621 Woodland Square Loop SE
Olympia, WA 98504

Re: Goose Prairie Solar Project
Yakima County Tax Parcel Nos. 211218-11003, 211218-44003, and 211218-43004

Dear Ms. Bumpus:

The Goose Prairie Solar project is a proposed photovoltaic solar power generation facility in Yakima County on land owned by the Estate of Willamae G. Meacham on the above tax parcel numbers in Township 12 North, Range 21 East, W.M. As the landowner, the Estate supports the project and provide the following information in support of OER WA Solar 1, LLC's Application for Site Certificate to the Energy Facility Siting Evaluation Council (EFSEC).

The proposed site for the project has been owned by the Meacham family for more than 60 years. The property has no irrigation water rights and historically was dryland farmed. Because of the lack of irrigation water rights the land has always had very low production capacity. Additionally, it is very unlikely that irrigation water rights can be acquired for the property. Consequently, the land will always have a significantly lower production capacity than the surrounding neighboring farms, which have irrigation water rights. Sometime prior to 2000 the property was converted to CRP land.

The Meacham property is approximately 519 acres in size. The annual CRP payment is $12,000. That payment produces an annual return of only $23.12 per acre. That is a very low rate of return, especially when compared with the rate of return of the neighboring properties that have irrigation water rights. Because the site has limited productivity and is not irrigated, we have chosen to lease the land to construct the Goose Solar project at the proposed site. That use will be a higher and better use of this land. The annual lease payments from the project will provide long-term, predictable revenue, and will substantially increase the annual per-acre return on the property. Moreover, the project will not adversely impact or increase the cost of farming practices near the project. We do not anticipate any changes to the ongoing farming operations of our neighbors resulting from the construction or operation of the proposed project. The project will be a positive benefit to our family and to the community as a whole.

Sincerely,

Ann Meacham
Personal Representative of the
Estate of Willamae G. Meacham

Ann Meacham
Personal Representative of the
Estate of Willamae G. Meacham

ATTACHMENT D

Vegetation and Weed Management Plan

Goose Prairie Solar

Vegetation and Weed Management Plan

December 2020

OneEnergy Renewables
2003 Western Ave, Suite 225
Seattle, Washington 98121

oneenergy
renewables
.com

1. INTRODUCTION

OER WA Solar 1, LLC (the Applicant) proposes to construct and operate Goose Prairie Solar (the Facility), an 80 megawatt (MW) solar photovoltaic project with an optional battery storage system capable of storing up to 80 MW of energy located in Yakima County, Washington.

This document addresses vegetation management activities related to the Facility construction and operation and specifically methods that will be implemented for effective noxious weed control and revegetation. The Applicant has consulted with the Yakima County Noxious Weed Control Board to develop these methods.

2. VEGETATION MANAGEMENT

2.1 CURRENT VEGETATON

The Facility may be located on up to 625 acres (Facility Area). The Facility Area is comprised of land owned by two landowners: the Meacham Property consists of 519 acres and the Martinez Property consists of 280 acres (see Figure 1).

The Meacham Property has two distinct areas. The majority (487 acres) is enrolled in the Conservation Reserve Program which consists predominantly of non-native species such as cheatgrass (downy brome), crested wheat, Russian thistle, mustard species and others. The remainder of the property is made up of intact shrub-steppe in the northern draw that crosses the property east-west. Except for a road crossing and electrical line, this area will be avoided by the Facility and left as-is.

The portion of the Martinez Property that will be used for the Facility is comprised of eastside grassland and both intact and degraded shrub-steppe habitat. Grasslands contain native grass species such as squirreltail, wheatgrasses and bunchgrasses. Shrub-steppe is dominated by sagebrush with a minor component of spiny hopsage, saltbush, greasewood, and other wood shrubs, as well as native forbs such as twin amica, prairie star, arrowleaf balsamroot, and desert parsley. However, dense areas of cheatgrass (downy brome) cover much of the understory in the sage-steppe habitat. The portion considered “degraded” shrub-steppe consists of areas with active grazing resulting in reduced shrub heights or an absence of intact shrub altogether, herbaceous cover and compacted soils.

Figure 2 shows the distribution of habitat types, as defined by the Washington Department of Fish and Wildlife, “Wind Power Guidelines” (WDFW, 2009).

2.2 CONSTRUCTION IMPACTS TO VEGETATON

During construction, Applicant will employ Best Management Practices (BMPs) to avoid impacts to native plant species when possible. These include erosion control and temporary fencing protection. In addition, site preparation will consist of clearing the existing vegetation only in those areas where construction, grading, and road improvements will occur and leaving existing vegetation intact when feasible. Once the site is prepared, the installation of racking systems, modules and inverter pads will use internal access roads. Avoiding incidental impacts to vegetation during construction helps promote plant communities that are more resistant to non-native plant invasion. Shrubs, grass, and groundcover will, to the maximum extent practicable, remain between rows and under the solar modules. Reclamation measures will be implemented to restore the temporarily disturbed near-surface soils at the Facility site. Permanent impacts from project construction will be minimized whenever possible, enabling the land to return to agricultural uses at the end of its useful life.

2.3 REVEGETATION

Revegetation will be conducted following construction and decommissioning. At the conclusion of construction, disturbed areas will be re-seeded with a weed-free, low-growing native seed mix, selected in coordination with the Washington Department of Fish and Wildlife. The existing conditions will inform the selection of the appropriate seed mix. Applicant may replace lost topsoil in disturbed areas. The method and timing of planting will depend on the seed mix, site conditions and weather.

2.4 OPERATIONAL VEGETATON MANAGEMENT

Minimal on-site maintenance will be required over the life of the Facility. Once the Facility is operational, mechanical control (i.e. mowing) will be conducted on a monthly and/or bi-monthly basis, depending on the season and as-needed, over the entire lifespan of the Facility. The Facility is purposefully designed to allow inter-row spaces wide enough to allow more efficient and effective mower decks access to the majority of the Facility’s acreage.

2.5 MONITORING

Operations and maintenance staff will routinely monitor buffer areas for vegetation loss to ensure vegetation replacement occurs quickly. A grounds maintenance schedule will be put into place prior to the start of construction to document the mowing, watering, and vegetation monitoring schedules. The plan will also include approved vegetation management measures to control undesirable plant species, eliminate shading of panels, and maintain reliable access for operations, maintenance, and emergency response purposes should mowing be insufficient.

3. WEED MANAGEMENT

The primary species of concern are described in the Yakima County Noxious Weed List (attached as Appendix 1) which is jointly maintained by the Washington State Noxious Weed Control Board and the Yakima County Noxious Weed Control Board. The list contains the non-native weeds classified as Class A, Class B and Class C. As defined by the Washington State weed law, RCW 17.10 and the Washington State Noxious Weed Control Board, Class A weeds are generally new to the state and rare; landowners are required to completely eradicate these weeds, including their roots. Class B weeds are widespread in some parts of the state, but rare or absent in other parts; The goal with these weeds is to control their spread and reduce their population where found. Finally, Class C weeds are those that are common and widespread; these weeds are not required to be controlled, unless the County Weed Control Board believes they are a threat to agriculture or natural resources.

The Facility will comply with RCW 17.10.140 related to the landowner's duty to control the spread of noxious weeds. All Class A weeds found at the Facility site before or during construction and during operation will be eradicated. Additionally, Class B weeds will be eradicated. Class C weeds will be controlled, and the Facility will work with the Yakima County Noxious Weed Control Board to develop a plan for mitigating the risk of spreading those weeds.

The Applicant has consulted with Susan Bird, a maintenance and outreach specialist with Yakima County Noxious Weed Control. Rush skeleton weed, yellow star thistle and scotch thistle are of primary concern in this area. These weeds revegetate with mechanical treatment and will also be controlled using a broadleaf control herbicide when necessary. Additionally, Yakima County Noxious Weed Control expressed that the gravel used for the roads will be procured from a weed-free source. The Applicant will work with Yakima County Noxious Weed Control to manage these specific noxious weeds and ensure that gravel used for the project is certified weed-free.

Applicant will exercise the following combination of efforts for the most cost-effective and practical approach to managing noxious weed populations:

- Preventative Measures: Monitoring, detection, best management practices, preventative planning and training;
- Control Measures: Mechanical treatment, seed head clipping, and/or herbicide treatment, as appropriate.
- Herbicide Application and Handling Guidelines: Relevant application standards, methods, and transport guidelines.

3.1 PREVENTATIVE MEASURES

Soil preservation and preparation techniques represent the foundation of a successful noxious weed control as disturbed soils are the most common vector for noxious weeds to colonize an area. The likelihood of invasion by noxious weeds can be reduced by rehabilitating ground that is temporarily disturbed during construction. The Facility will minimize soil disturbance during construction, and will replant disturbed areas with low-growing native seed mixes.

Prior to construction, a survey of the existing conditions will be conducted to identify existing noxious weeds. These weeds will be removed during site preparation using a combination of mechanical control and herbicide application.

3.2 CONTROL MEASURES

Once the Facility is operational, mechanical control (i.e. mowing) will be conducted on a monthly and/or bi-monthly basis, depending on the season and as needed, over the entire lifespan of the Facility.

The Facility will retain a qualified landscaping contractor to provide regular weed control and eliminate the spread of new noxious weed presence resultant from construction and operations activity at the Facility site. If herbicide treatment is necessary, Applicant will only use herbicides that are approved for use in the state of Washington by the U.S. Environmental

Protection Agency (EPA) and the Washington State Department of Agriculture (WSDA). In such cases, Applicant will notify landowners of the herbicide proposed for use on their lands and obtain approval prior to application. Applicant will apply herbicides to identified treatable noxious weed populations as described below. If a weed population is deemed to be untreatable (e.g., too widespread and established in area to successfully control), Applicant will implement all the control measures discussed above except treatment with herbicides. Applicant will coordinate with the Yakima County Noxious Weed Control Board and reference the "Pacific Northwest Weed Management Handbook" in determining the appropriate application of herbicides.

The success of the combined targeted chemical control, mechanical control, and low-growing native seed mix will be documented and reported by the operation and maintenance team responsible for maintaining the site.

3.3 HERBICIDE APPLICATION AND HANDLING GUIDELINES

Herbicide application would adhere to EPA and WSDA standards. Only herbicides approved by the EPA and WSDA will be used. In general, application of herbicides would not occur when the following conditions exist:

- Wind velocity exceeds 15 miles per hour for granular application or 10 miles per hour for liquid applications;
- Snow or ice covers the foliage of target species; or
- Adverse weather conditions are forecasted in the next few days.

Hand application methods (e.g., backpack spraying) may be used in roadless areas or in rough terrain. Calibration checks of equipment would be conducted at the beginning of spraying and repeated periodically to ensure that proper application rates are achieved.

Herbicides would be transported to the Facility site with the following provisions:

- Only the quantity needed for that day's work would be transported.
- Concentrate would be transported in approved containers only, in a manner that prevents tipping or spilling, and in a compartment that is isolated from food, clothing, and safety equipment.
- Mixing would be done off site and at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive resources such as known Threatened and Endangered and sensitive species habitat. No herbicides would be applied at these areas unless authorized by the appropriate regulatory agencies.
- All herbicide equipment and containers would be inspected for leaks daily.
- Herbicide use would be in accordance with all manufacturer label recommendations and warnings.

During the operation of the Facility, chemical control measures shall be conducted on an as-needed basis in a frequency and intensity to be determined by trained professionals according to the guidelines set forth by the Pacific Northwest Weed Management Handbook (PEA, 2020).

4. ADAPTIVE MANAGEMENT

The plan outlined in this document will follow adaptive management practices, whereby management activities will be assessed on a continual basis and amendments to this plan may occur if specific site conditions warrant an alteration to this plan. The Applicant would coordinate any ammendments to this plan with the permitting authority and other parties involved in the management of the Facility.

5. SOURCES

Bird, S., Yakima County Noxious Weed Conrol Board, phone call, November 12, 2020.

Peachey, E., editor. 2020. Pacific Northwest Weed Management Handbook. Corvallis, OR: Oregon State University.

Washington Department of Fish and Wildlife. 2009. Wind Power Guidelines. Olympia, WA. 30pp.

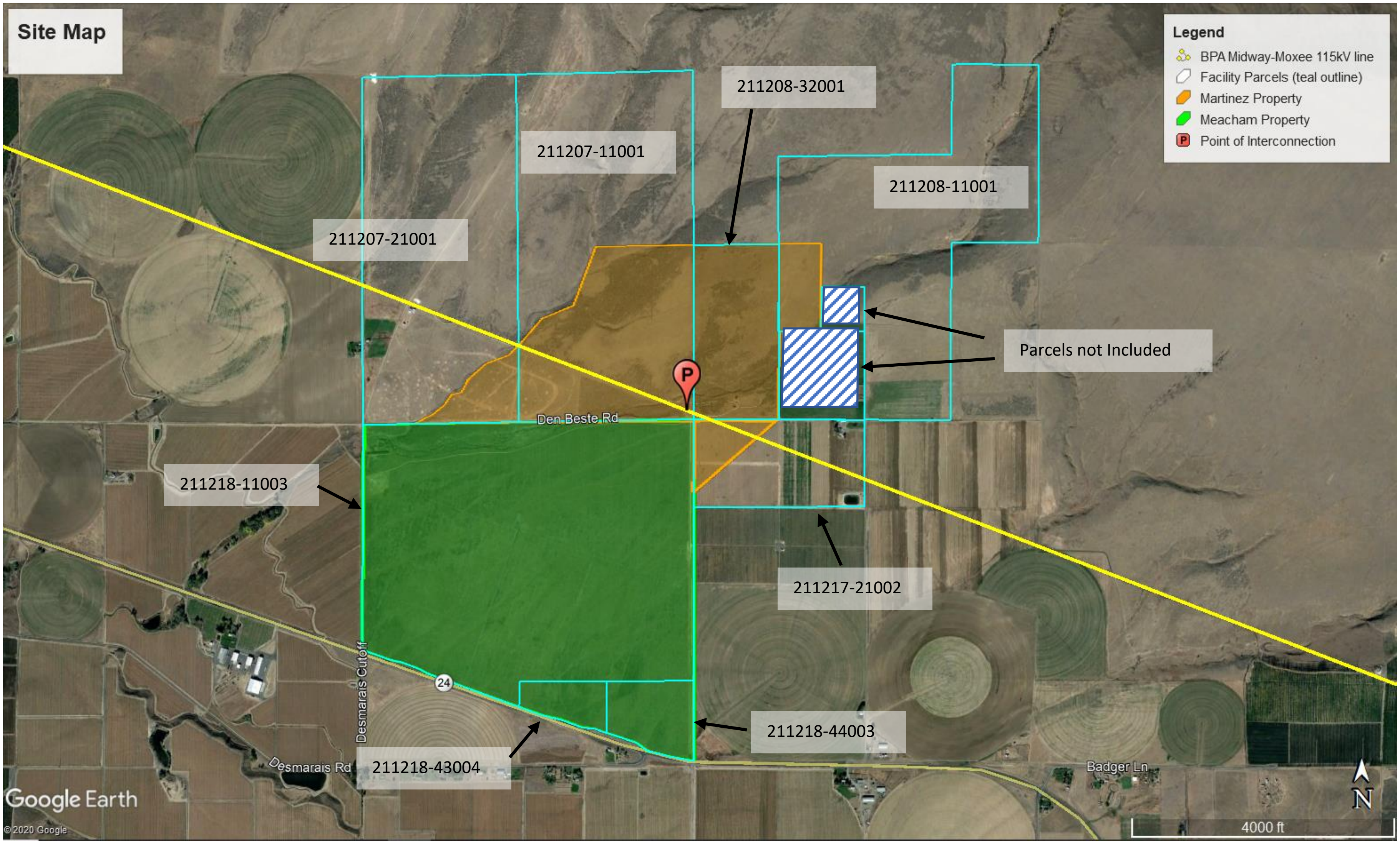


Figure 1: Site Map

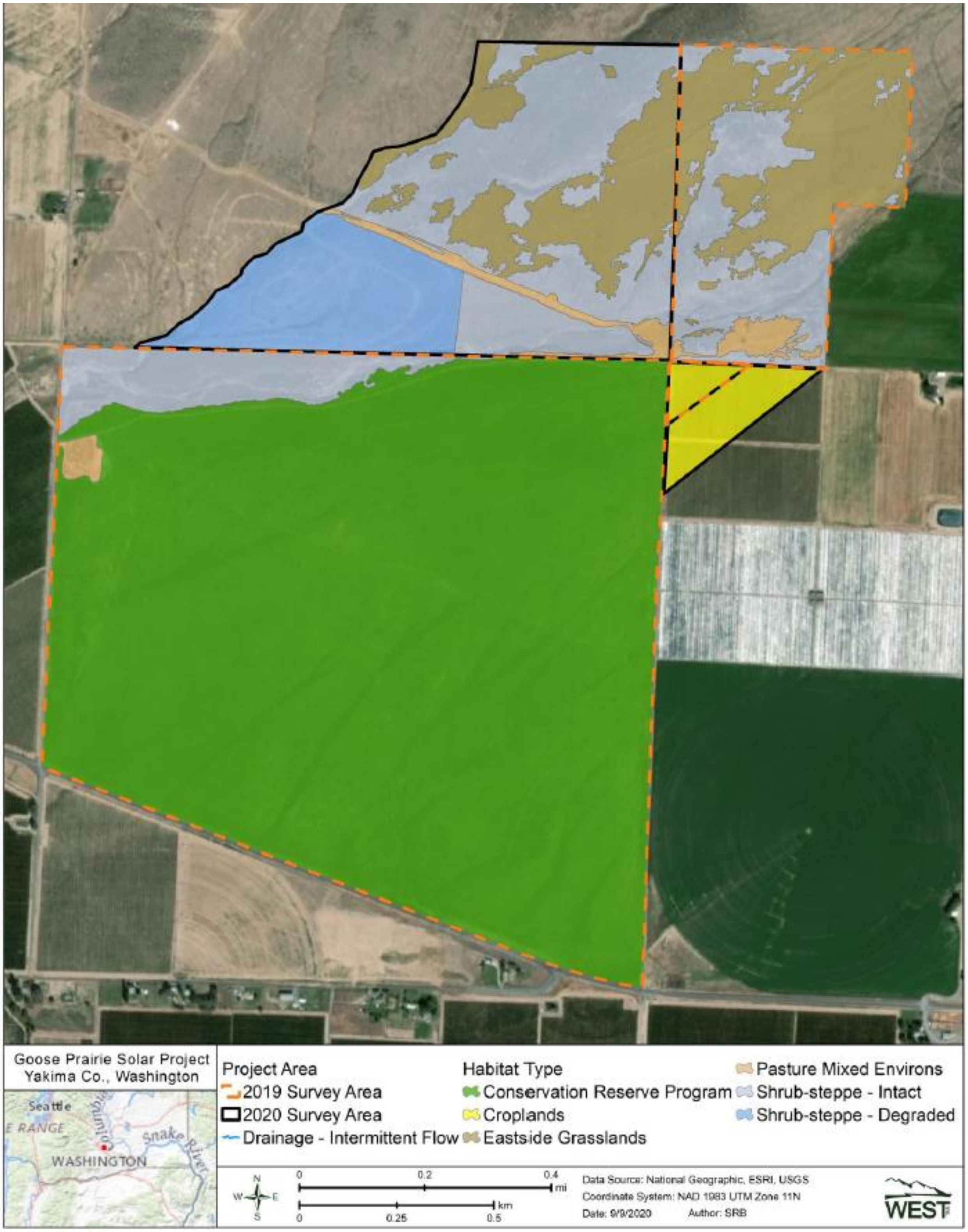


Figure 2: Habitat Types

APPENDIX 1: YAKIMA COUNTY NOXIOUS WEED LIST & CONTROL POLICY

2019
YAKIMA COUNTY NOXIOUS WEED LIST
& CONTROL POLICY

The YAKIMA COUNTY NOXIOUS WEED BOARD (here in after referred to as the BOARD) shall promote weed control by personal contact with LANDOWNERS and through public media. The BOARD will also promote weed control through public seminars, hearings, demonstrations, field tours, school lectures, and at regularly scheduled board meetings. LANDOWNERS are responsible for the control of noxious weeds on their property as per RCW 17.10.140 prior to blooming stage, seed maturity and the development of a root system that would enable said weeds to propagate and spread.

The BOARD shall encourage landowners to control noxious weeds on their own property through their own means, or by means commercially available. Control is defined as stopping all seed production, and containing the noxious weeds to the current infested locations. The Weed Board Coordinator and Inspectors will assist landowners in locating and identifying noxious weeds and encourage the landowner to report to the BOARD other noxious weed infestations. The BOARD, or AUTHORIZED STAFF, has the authority to enter all property within the jurisdiction of this BOARD for the purpose of administering the weed laws of the State of Washington under R.C.W. Chapter 17.10.160.

If the property owner does not promptly act to control the noxious weeds in accordance with R.C.W. 17.10 and this policy, the YAKIMA COUNTY NOXIOUS WEED BOARD may cause their being controlled at the expense of the landowner as per R.C.W. 17.10.170. Charges for regulatory work shall be incurred by the landowner based on the cost, including labor and materials and, if necessary, legal and administrative fees. Such expenses when necessary shall constitute a lien against the property after a hearing and determination has been made on such expense and approved by the BOARD.

The W.A.C. Chapter 16.750 constitutes the Washington State Noxious Weed List, which is classified as "A", "B", and "C" weeds. The following shall constitute Yakima County's Noxious Weed List and control is required within Yakima County.

All Class "A" Weeds
Class "B" Weeds, (All designated & those listed)
Class "C" Weeds, (listed)
All underlined weeds are educational only & no control is required

The Yakima County Noxious Weed Board will conduct regularly scheduled meetings and will encourage public attendance and participation.

Resolution #55: The following requirements will be the policy for placing a weed on the County's Noxious Weed List:

A. The Weed Board shall announce the noxious weed list within the guidelines set forth in R.C.W. 17.10.090.

B. The order in which a weed be submitted to the Board for consideration to be placed on the noxious weed list, the following information must be submitted to the Noxious Weed Board.

   1. Location of weed, with an estimation of acreage.
   2. Verification that adjacent property owners have been notified on the intent to have the weed placed on the Noxious Weed List.
   3. Characteristics of the weed in consideration.

C. The Weed Board has the right to place the weed in question on a review and study list for a set period of time not to exceed one year and, at that time, make a policy statement on the weed in question.

YAKIMA COUNTY NOXIOUS WEED LIST FOR 2019

In accordance with R.C.W. 17.10 a County Noxious Weed List comprising the names of the following plants, which have been declared noxious by the State of Washington Noxious Weed Board, and Yakima County Weed Control Board. Said Board finds these plants to be weedy; highly destructive, competitive, or difficult to control by cultural or chemical practices. Said weeds shall comprise the NOXIOUS WEED LIST for Yakima County for 2019 or until another list is adopted by this Board.

YAKIMA COUNTY lies in REGION 5

ALL CLASS "A" NOXIOUS WEEDS (Mandatory Control) (** Known to be in Yakima County)

COMMON NAME:	SCIENTIFIC NAME:
common crupina	*Crupina vulgaris*
cordgrass, common	*Spartina anglica*
cordgrass, dense flower	*Spartina densiflora*
cordgrass, salt meadow	*Spartina patens*
cordgrass, smooth	*Spartina alterniflora*
dyer's woad**	*Isatis tinctoria*
eggleaf spurge	*Euphorbia oblongata*
false brome	*Brachypodium sylvaticum*
floating primrose-willow	*Ludwigia peploides*
flowering rush	*Butomus umbellatus*
French broom**	*Genista monspessulan*
garlic mustard	*Alliaria petiolata*
giant hogweed	*Heracleum mantegazzianum*
goatsrue	*Galega officinalis*
hydrilla	*Hydrilla verticillata*
Johnsongrass**	*Sorghum halepense*
knapweed, bighead**	*Centaurea macrocephala*
knapweed, Vochin	*Centaurea nigrescens*
kudzu	*Pueraria montana* var. *lobata*

COMMON NAME:	SCIENTIFIC NAME:
meadow clary	*Salvia pratensis*
oriental clematis**	*Clematis orientalis*
purple starthistle	*Centaurea calcitrapa*
reed sweetgrass	*Glyceria maxima*
ricefield bulrush	*Schoenoplectus mucronatus*
sage, clary	*Salvia sclarea*
sage, Mediterranean**	*Salvia aethiopis*
silverleaf nightshade	*Solanum elaeagnifolium*
Small-flowered jewelweed	*Impatiens parviflora*
Spanish broom**	*Spartium junceum*
Syrian bean-caper	*Zygophyllum fabago*
Texas blueweed**	*Helianthus ciliaris*
thistle, Italian	*Carduus pycnocephalus*
thistle, milk**	*Silybum marianum*
thistle, slenderflower	*Carduus tenuiflorus*
variable-leaf milfoil	*Myriophyllum heterophyllum*
wild four o'clock**	*Mirabilis nyctaginea*

CLASS "B" NOXIOUS WEEDS (**Known to be in Yakima County) (Class B designate-bd require mandatory control) (All underlined weeds are educational only & no control is required)

COMMON NAME:	SCIENTIFIC NAME:
blueweed bd	*Echium vulgare*
Brazilian elodea bd	*Egeria densa*
bugloss, annual bd	*Anchusa arvensis*
bugloss, common bd	*Anchusa officinalis*
camelthorn bd	*Alhagi maurorum*
common fennel bd, (except bulbing fennel)	*Foeniculum vulgare* (except *F. vulgare* var. *azoricum*)
common reed** bd (nonnative genotypes only)	*Phragmites australis*
Dalmatian toadflax**	*Linaria dalmatica ssp. dalmatica*
European coltsfoot bd	*Tussilago farfara*
fanwort bd	*Cabomba caroliniana*
gorse bd	*Ulex europaeus*
grass-leaved arrowhead bd	*Sagittaria graminea*
hairy willow-herb** bd	*Epilobium hirsutum*
hawkweed oxtongue bd	*Picris hieracioides*
hawkweed, orange** bd	*Hieracium aurantiacum*
hawkweeds: All nonnative species and hybrids of the meadow subgenus	*Hieracium,* subgenus *Pilosella*
hawkweeds: All nonnative species and hybrids of the wall subgenus	*Hieracium,* subgenus *Hieracium*
herb-Robert bd	*Geranium robertianum*
hoary alyssum bd	*Berteroa incana*
houndstongue** bd	*Cynoglossum officinale*
indigobush bd	*Amorpha fruticosa*
knapweed, black bd	*Centaurea nigra*
knapweed, brown bd	*Centaurea jacea*
knapweed, diffuse **	*Centaurea diffusa*
Knapweed, spotted**bd	*Centaurea stoebe*
knapweed, meadow** bd	*Centaurea* x *moncktonii*
knapweed, Russian **	*Rhaponticum repens*
knotweed, Bohemian	*Polygonum x bohemicum*

COMMON NAME:	SCIENTIFIC NAME:
knotweed, giant **bd	*Polygonum sachalinense*
knotweed, Himalayan bd	*Persicaria wallichii*
kochia **	*Bassia scoparia*
knotweed, Japanese** bd	*Polygonum cuspidatum*
loosestrife, garden bd	*Lysimachia vulgaris*
loosestrife, purple** bd	*Lythrum salicaria*
loosestrife, wand bd	*Lythrum virgatum*
Malta starthistle bd	*Centaurea melitensis*
parrotfeather** bd	*Myriophyllum aquaticum*
perennial pepperweed**	*Lepidium latifolium*
poison hemlock **	*Conium maculatum*
policeman's helmet bd	*Impatiens glandulifera*
puncturevine **	*Tribulus terrestris*
ravenna grass**	*Saccharum ravennae*
rush skeletonweed** bd	*Chondrilla juncea*
saltcedar **bd (unless intentionally planted pre 2004)	*Tamarix ramosissima*
Scotch broom **bd	*Cytisus scoparius*
shiny geranium bd	*Geranium lucidum*
spurge flax bd	*Thymelaea passerine*
spurge laurel bd	*Daphne laureola*
spurge, leafy bd	*Euphorbia virgata*
spurge, myrtle** bd	*Euphorbia myrsinites*
sulfur cinquefoil **	*Potentilla recta*
tansy ragwort** bd	*Jacobaea vulgaris*
thistle, musk** bd	*Carduus nutans*
thistle, plumeless bd	*Carduus acanthoides*
thistle, Scotch** bd	*Onopordum acanthium*
water primrose bd	*Ludwigia hexapetala*
white bryony bd	*Bryonia alba*
wild chervil **bd	*Anthriscus sylvestris*
yellow archangel** bd	*Lamiastrum galeobdolon*
yellow floating heart** bd	*Nymphoides peltata*
yellow nutsedge **	*Cyperus esculentus*
yellow starthistle ** bd	*Centaurea solstitialis*

CLASS "C" NOXIOUS WEEDS (All underlined weeds are educational only & no control is required)

COMMON NAME:	SCIENTIFIC NAME:
absinth wormwood **	*Artemisia absinthium*
black henbane **	*Hyoscyamus niger*
cereal rye **	*Secale cereale*
common barberry	*Berberis vulgaris*
common catsear	*Hypochaeris radicata*
English ivy 4 cultivars only:	*Hedera helix* 'Baltica', 'Pittsburgh', and 'Star', *H. hibernica* 'Hibernica'
Eurasian watermilfoil hybrid	*Myriophyllum spicatum* x *M. sibiricum*
hairy whitetop **	*Lepidium appelianum*
hoary cress **	*Lepidium draba*
Italian arum**	*Arum italicum*
jointed goatgrass	*Aegilops cylindrica*
jubata grass**	*Cortaderia jubata*
old man's beard **	*Clematis vitalba*
oxeye daisy **	*Leucanthemum vulgare*

COMMON NAME:	SCIENTIFIC NAME:
pampas grass**	*Cortaderia selloana*
perennial sowthistle **	*Sonchus arvensis ssp. arvensis*
scentless mayweed **	*Matricaria perforata*
smoothseed alfalfa dodder **	*Cuscuta approximata*
spikeweed	*Hemizonia pungens*
spiny cocklebur **	*Xanthium spinosum*
spotted jewelweed	*Impatiens capensis*
Swainsonpea **	*Sphaerophysa salsula*
thistle, Canada **	*Cirsium arvense*
Control only in T7N R20, 21,22,23E	
tree-of-heaven **	*Ailanthus altissima*
white cockle	*Silene latifolia ssp. alba*
yellow flag iris **	*Iris pseudacorus*
yellow toadflax	*Linaria vulgaris*

For a complete listing of the State Weed List go to www. nwcb.wa.gov/ or stop by the Yakima County Weed Board Office for a copy of the State Weed List.

This 2019 Yakima County Noxious Weed List and Control Policy has been adopted by:

____________________________ ___________
Chairman of the Board *Date*

____________________________ ___________
Board Member *Date*

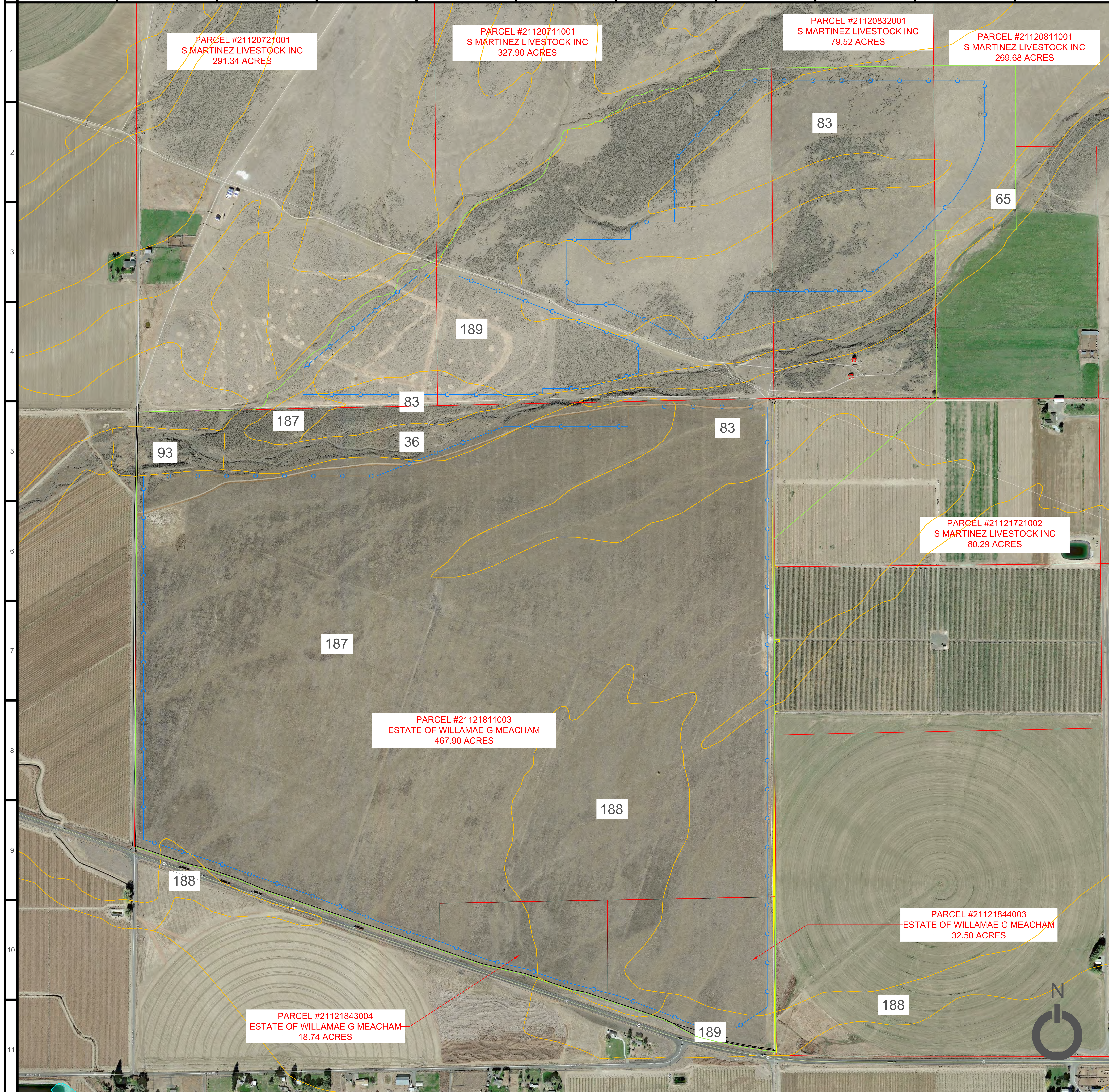
____________________________ ___________
Board Member *Date*

____________________________ ___________
Board Member *Date*

____________________________ ___________
Board Member *Date*

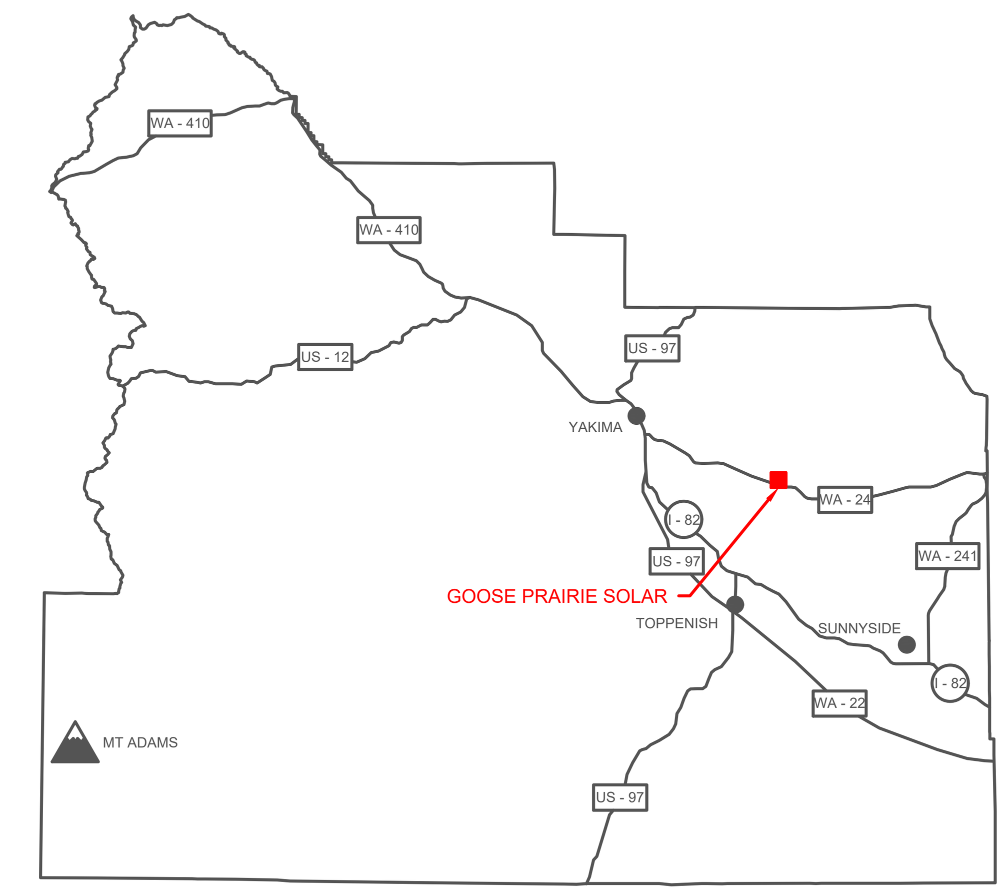
ATTACHMENT E

Additional Site Maps



GOOSE PRAIRIE SOLAR - SOIL MAP

SCALE: 1" = 400'



SCALE: 1" = 12 MILES

YAKIMA COUNTY VICINITY MAP

SITE SOIL DETAILS (NCSS):

SOIL CODE: 187
SOIL TYPE: WILLIS SILT LOAM
TYPICAL SLOPE: 2-5%

SOIL CODE: 188
SOIL TYPE: WILLIS SILT LOAM
TYPICAL SLOPE: 5-8%

SOIL CODE: 189
SOIL TYPE: WILLIS SILT LOAM
TYPICAL SLOPE: 8-15%

SOIL CODE: 36
SOIL TYPE: FINLEY COBBLY FINE SANDY LOAM
TYPICAL SLOPE: 0-5%

SOIL CODE: 65
SOIL TYPE: KIONA STONY SILT LOAM
TYPICAL SLOPE: 15-45%

SOIL CODE: 83
SOIL TYPE: MOXEE SILT LOAM
TYPICAL SLOPE: 2-15%

SOIL CODE: 93
SOIL TYPE: PITS

PROJECT

GOOSE PRAIRIE

ADDRESS

11900-12898 WA -24
MOXEE, WA 98936

DRAWING

TITLE:
ATTACHMENT E - MAP 1
SOIL MAP

SCALE:
1" = 400'
DRAWN BY:
CG
CHECKED BY:

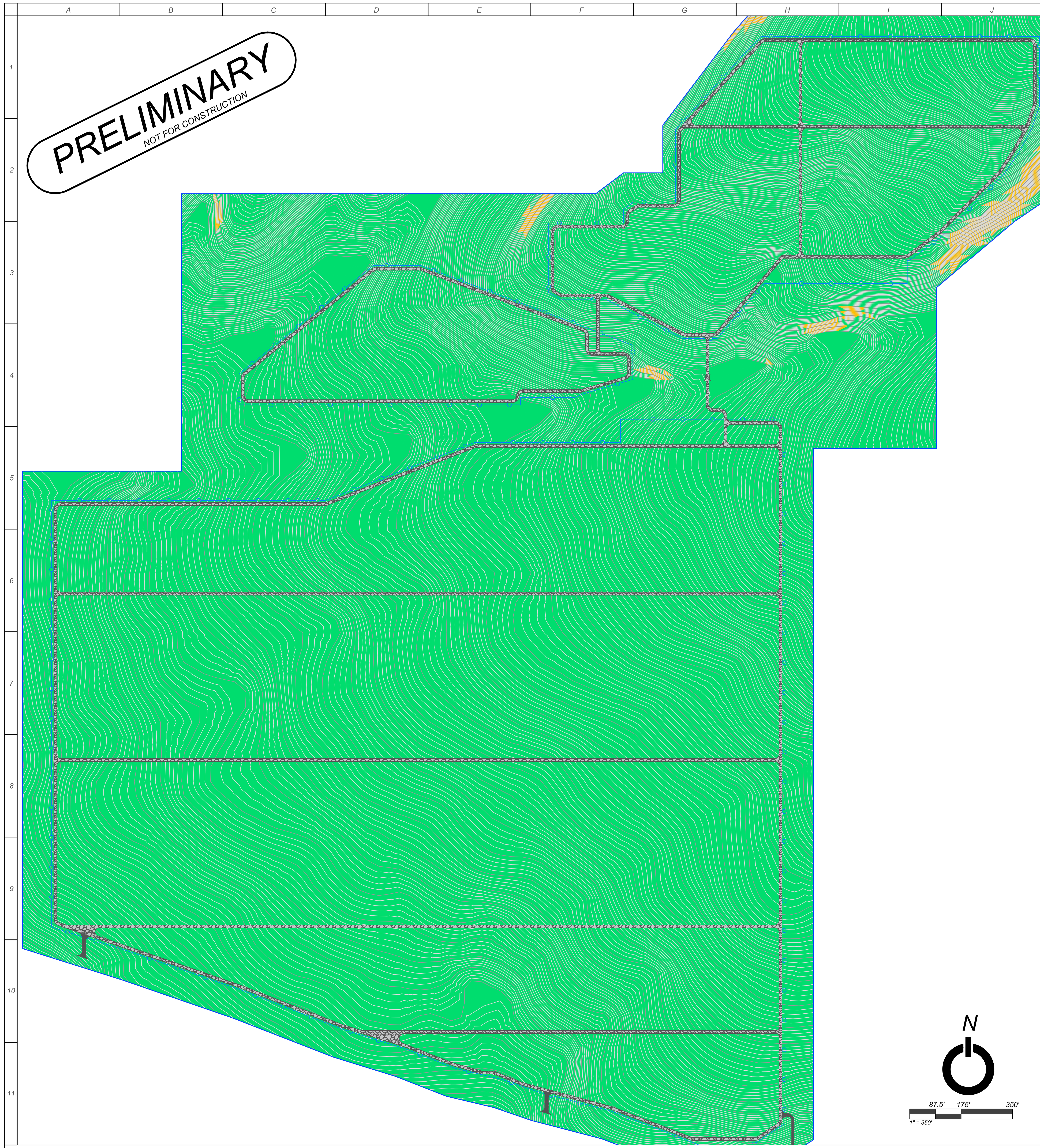
DATE:
01/07/2021
REVISIONS:

DESCRIPTION

THIS SITE MAP SHOWS THE SOIL TYPES BASED ON THE NRCS SOIL CONSERVATION SURVEY.

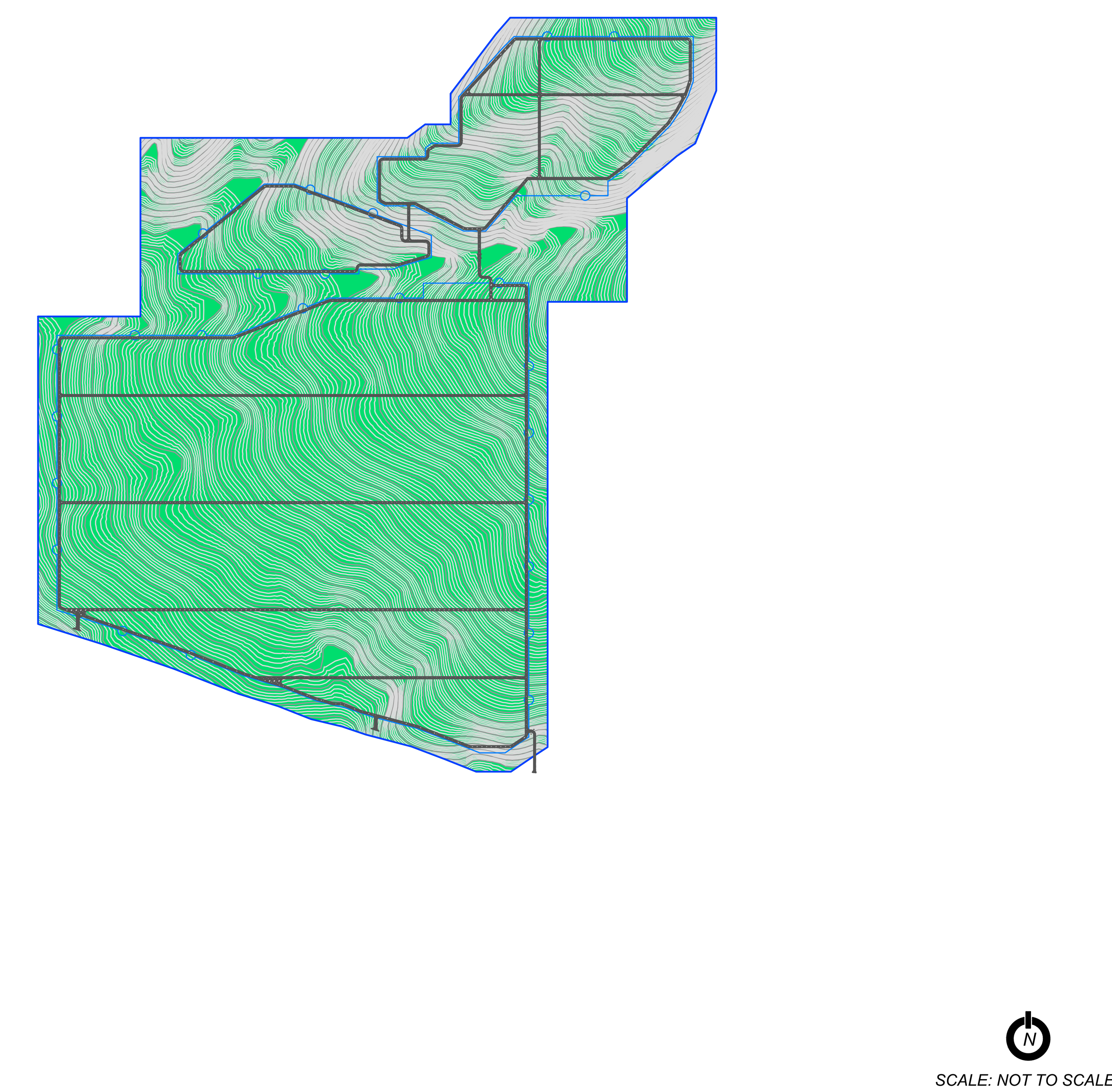
LEGEND

SOIL MAP
FACILITY AREA EXTENT
FACILITY SECURITY FENCE
PARCEL BOUNDARY



GOOSE PRAIRIE SOLAR - EXISTING GRADE

SCALE: 1" = 350'



GOOSE PRAIRIE OVERVIEW MAP

0.0% - 15.0% SLOPE

15.0% - 40.0% SLOPE

>40.0% SLOPE

PROJECT

GOOSE PRAIRIE SOLAR
ONE ENERGY RENEWABLES

ADDRESS

11900-12898 WA-24
MOXEE, WA 98936

DRAWING

TITLE:
ATTACHMENT E - MAP 2
TOPOGRAPHIC MAP

SCALE:
1" = 350'

DRAWN BY: CG

CHECKED BY:

DATE:
12/15/2020 REVISIONS:

DESCRIPTION

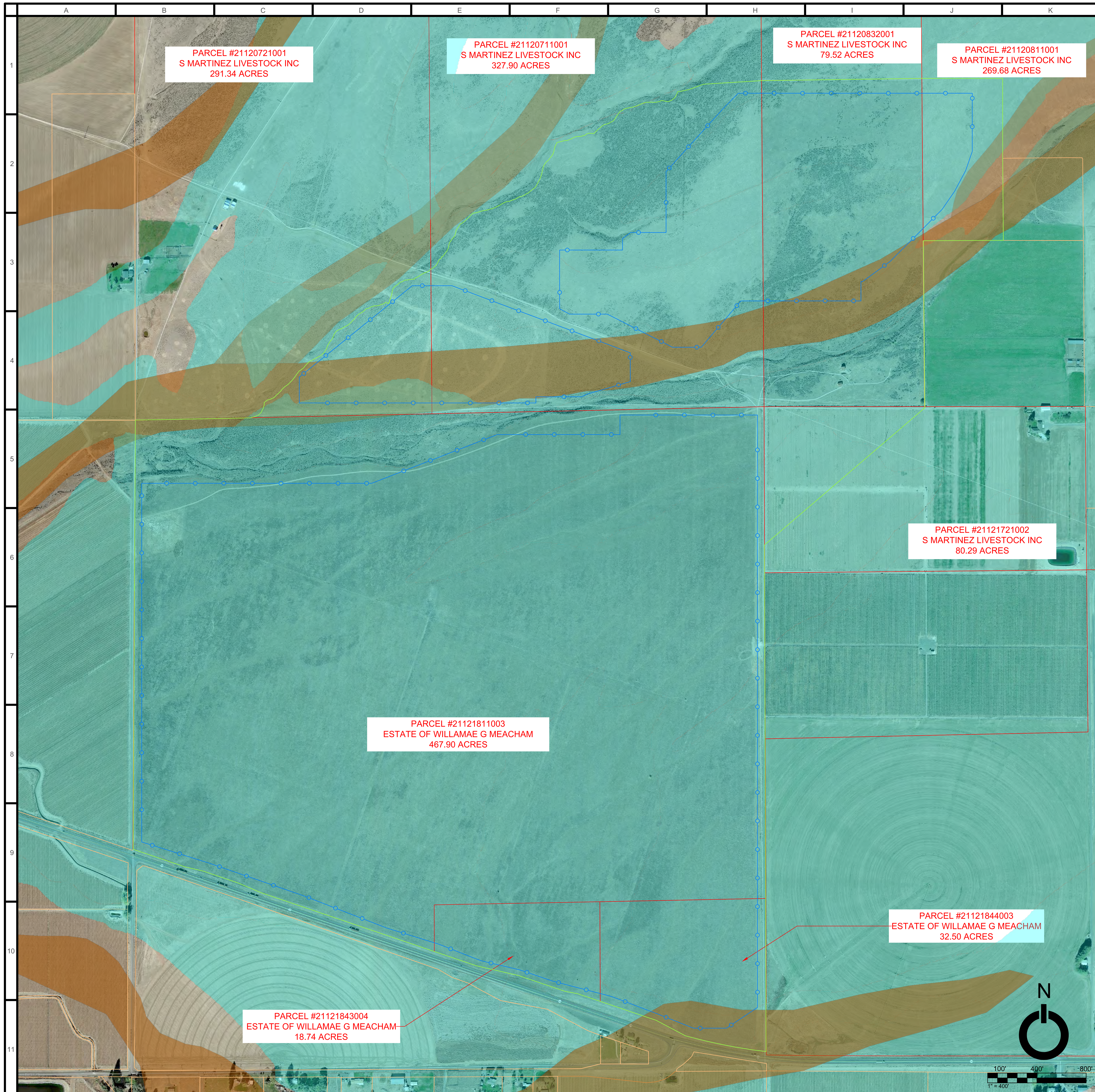
THIS MAP SHOWS THE EXISTING GRADE AT THE SITE.

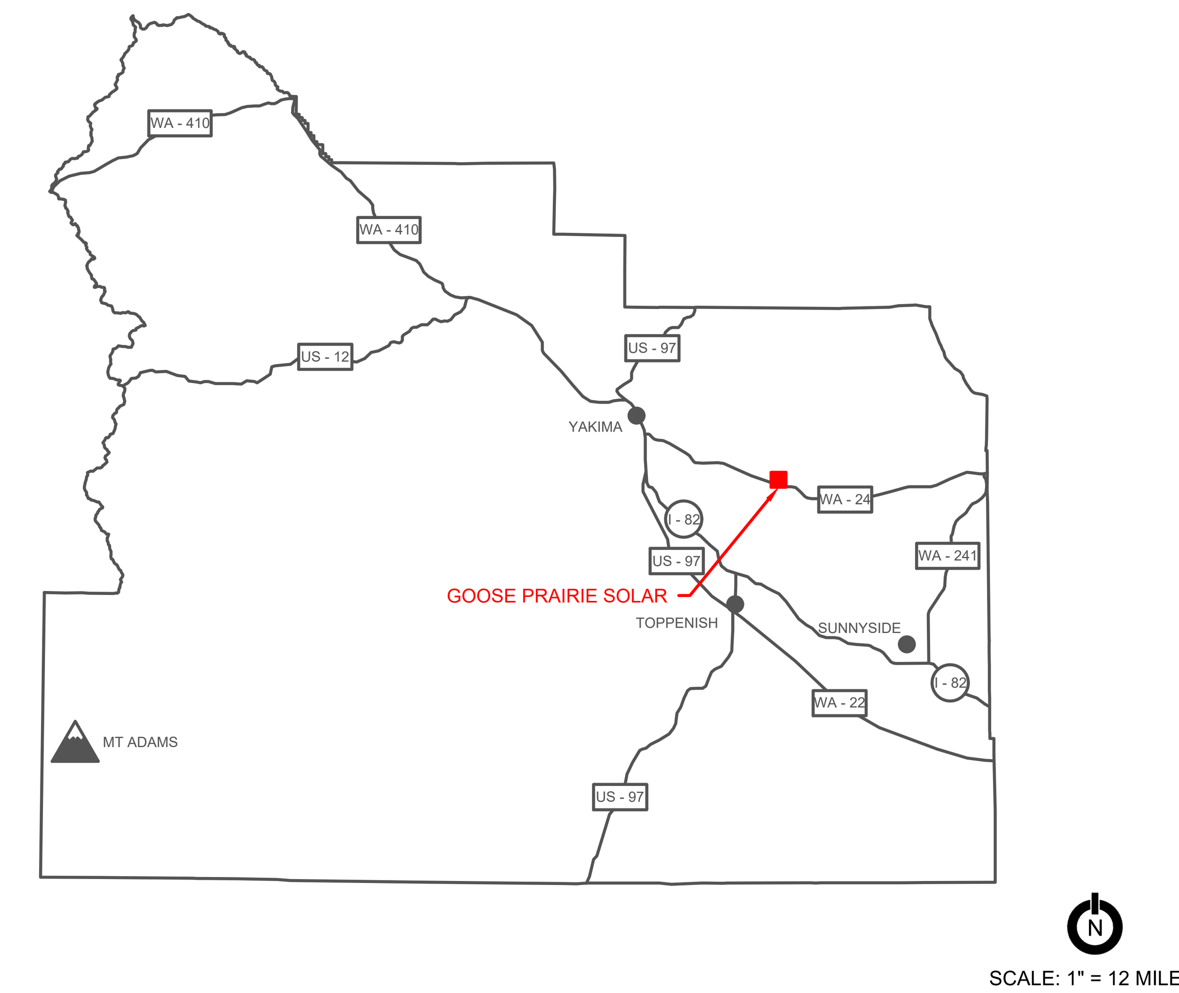
LEGEND

COMPACTED SITE ACCESS ROAD

PROJECT FENCELINE

OneEnergy RENEWABLES





YAKIMA COUNTY VICINITY MAP

SITE DETAILS:

SITE LAT:	46.528557°
SITE LONG:	-120.240075°
PARCEL ID:	21121811003
OWNER:	ESTATE OF WILLIMAE G MEACHAM
ACREAGE:	467.90
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21121843004
OWNER:	ESTATE OF WILLIMAE G MEACHAM
ACREAGE:	18.74
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21121844003
OWNER:	ESTATE OF WILLIMAE G MEACHAM
ACREAGE:	32.50
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21120721001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	291.34
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21120711001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	327.9
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21120832001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	79.52
EXISTING ZONING:	AG
EXISTING USE:	81 AGRICULTURE NOT CURRENT USE
PARCEL ID:	21120811001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	269.68
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21121721002
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	80.29
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE

GOOSE PRAIRIE SOLAR + STORAGE 80.00MWAC - GEOLOGICALLY HAZARDOUS AREAS

SCALE: 1" = 400'

PROJECT

GOOSE PRAIRIE

ADDRESS

11900-12898 WA -24
MOXEE, WA 98936

DRAWING

TITLE:
ATTACHMENT E - MAP 3
GEOLOGICAL HAZARDS AND CRITICAL AQUIFER RECHARGE AREAS MAP
SCALE:
1" = 400'

DRAWN BY:
CG
DATE:
01/07/2021
REVISIONS:

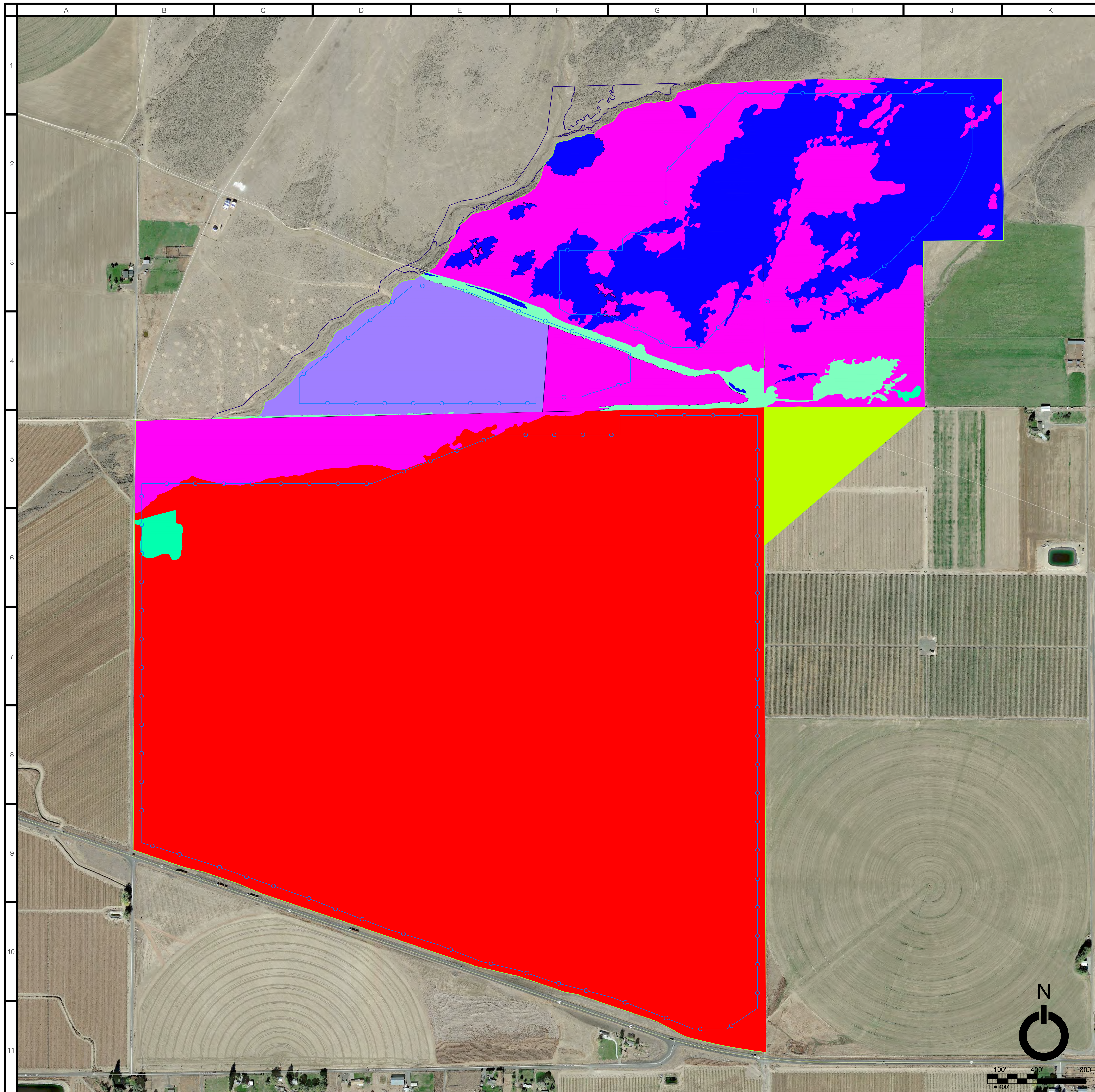
DESCRIPTION

THIS SITE MAP SHOWS THE GEOLOGICAL HAZARDS AND CRITICAL AQUIFER RECHARGE AREAS AS PROVIDED BY YAKIMA COUNTY. THE DATA IS NOT BASED ON ACTUAL SURVEYS. PLEASE SEE THE GEOTECHNICAL SITE INVESTIGATION AND GEOHAZARDS/CRITICAL AREAS REPORT FOR MORE INFORMATION.

LEGEND

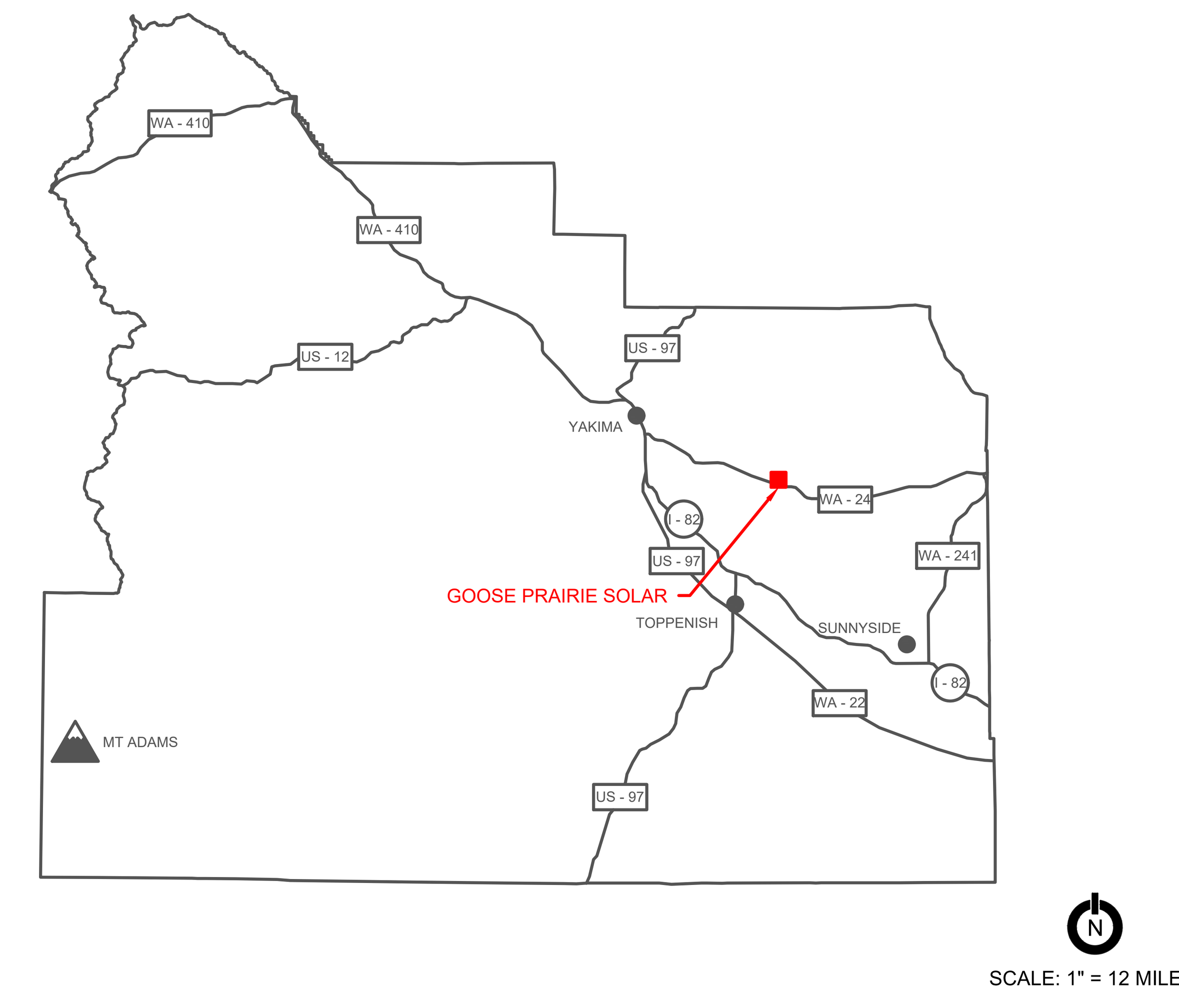
- GEOLOGICALLY HAZARDOUS AREAS
- CRITICAL AQUIFER RECHARGE AREAS
- FACILITY AREA EXTENT
- FACILITY SECURITY FENCE
- PARCEL BOUNDARY

OneEnergy RENEWABLES



GOOSE PRAIRIE HABITAT MAPPING

SCALE: 1" = 400'



YAKIMA COUNTY VICINITY MAP

SITE DETAILS:

SHRUB STEPPE:....................................144.167 ACRES
SHRUB STEPPE DEGRADED:.................40.514 ACRES
EASTSIDE GRASSLANDS:.......................88.624 ACRES
CROPLANDS:...16.859 ACRES
PASTURE MIXED ENVIRONMENTS:......14.247 ACRES
CRP LAND:...484.545 ACRES

PROJECT

GOOSE PRAIRIE

ADDRESS

11900-12898 WA -24
MOXEE, WA 98936

DRAWING

TITLE:
ATTACHMENT E - MAP 4
HABITAT MAP

SCALE:
1" = 400'
DRAWN BY: CG
CHECKED BY:

DATE:
01/07/2021
REVISIONS:

DESCRIPTION

THIS SITE MAP SHOWS THE EXISTING HABITAT AT THE SITE AS DESCRIBED IN THE WILDLIFE AND HABITAT SURVEY REPORT.

LEGEND

- SHRUB STEPPE
- SHRUB STEPPE DEGRADED
- EASTSIDE GRASSLANDS
- CROPLANDS
- PASTURE MIXED ENVIRONMENTS
- CRP LAND
- FACILITY AREA EXTENT
- FACILITY SECURITY FENCE

ATTACHMENT F

Wildlife and Habitat Survey Report

Redacted

Tier 3 Wildlife and Habitat Survey Report

Goose Prairie Solar Project

Yakima County, Washington

2019−2020

Final Draft

Prepared for:

OER WA Solar 1, LLC

2003 Western Ave, Suite 225
Seattle, Washington 98121

Prepared by:

Western EcoSystems Technology, Inc.

2725 NW Walnut Boulevard
Corvallis, Oregon 97330

September 11, 2020
Revised

STUDY PARTICIPANTS

Karl Kosciuch, PhD	Project Manager, Senior Reviewer
Samantha Brown	Report Writer, GIS, Field Biologist
Erik Jansen	Report Writer, GIS, Field Biologist
Joshua Parrot	Field Biologist
Adam Field	Field Biologist

REPORT REFERENCE

Western Ecosystems Technology, Inc (WEST). 2020. Tier 3 Wildlife Survey Report, Goose Prairie Solar Project, Yakima County, Washington. Final Draft. Prepared for OneEnergy Development LLC, Seattle, Washington. Prepared by WEST, Corvallis, Oregon. September. 21 pages + appendices.

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1 INTRODUCTION

OER WA Solar 1, LLC, a wholly-owned subsidiary of OneEnergy Development, LLC (OneEnergy) has proposed the development of the Goose Prairie Solar and Storage Project (Project) in Yakima County, Washington. During 2019 and 2020, OneEnergy contracted Western EcoSystems Technology, Inc. (WEST) to conduct surveys for wildlife species listed by federal and state agencies as threatened, endangered, and sensitive species (TESS); raptor nests; and to map habitat at the Project. In addition to listed species, TESS surveys included wildlife designated as Birds of Conservation Concern (BCC; United States Fish and Wildlife Service [USFWS] 2008) and Priority Habitats and Species (PHS; Washington Department of Fish and Wildlife [WDFW] 2008). In the absence of state or federal solar energy and wildlife guidelines, study objectives and protocols were designed to comply with Tier 3 studies described in the United USFWS *Land-based Wind Energy Guidelines* (USFWS 2012) and in the WDFW *Wind Power Guidelines* (WDFW 2009) per recommendations from WDFW staff (Bartrand 2019). This report summarizes TESS surveys and habitat mapping conducted in 2019 and 2020 at the Project.

2 PROJECT AREA

The Project is located in the Columbia Plateau Ecoregion, which encompasses a large portion of south-central Washington (Clarke et al. 1997). The landscape in this ecoregion is expansive sagebrush covering plains and valleys, with isolated mountain ranges and river systems (Clarke et al. 1997). The Project is located in the Moxee Valley on 808.4 acres (ac) of privately-owned land approximately 13 miles (mi) southeast of Yakima, Washington and is located directly north of State Route 24 within Yakima County, Washington (Figure 1). The Project Area was divided into two survey areas, the 623.2 ac 2019 Survey Area and the 185.3 ac 2020 Survey Area. Land use surrounding the Project consists primarily of hop (*Humulus lupulus*) cultivation and livestock grazing.

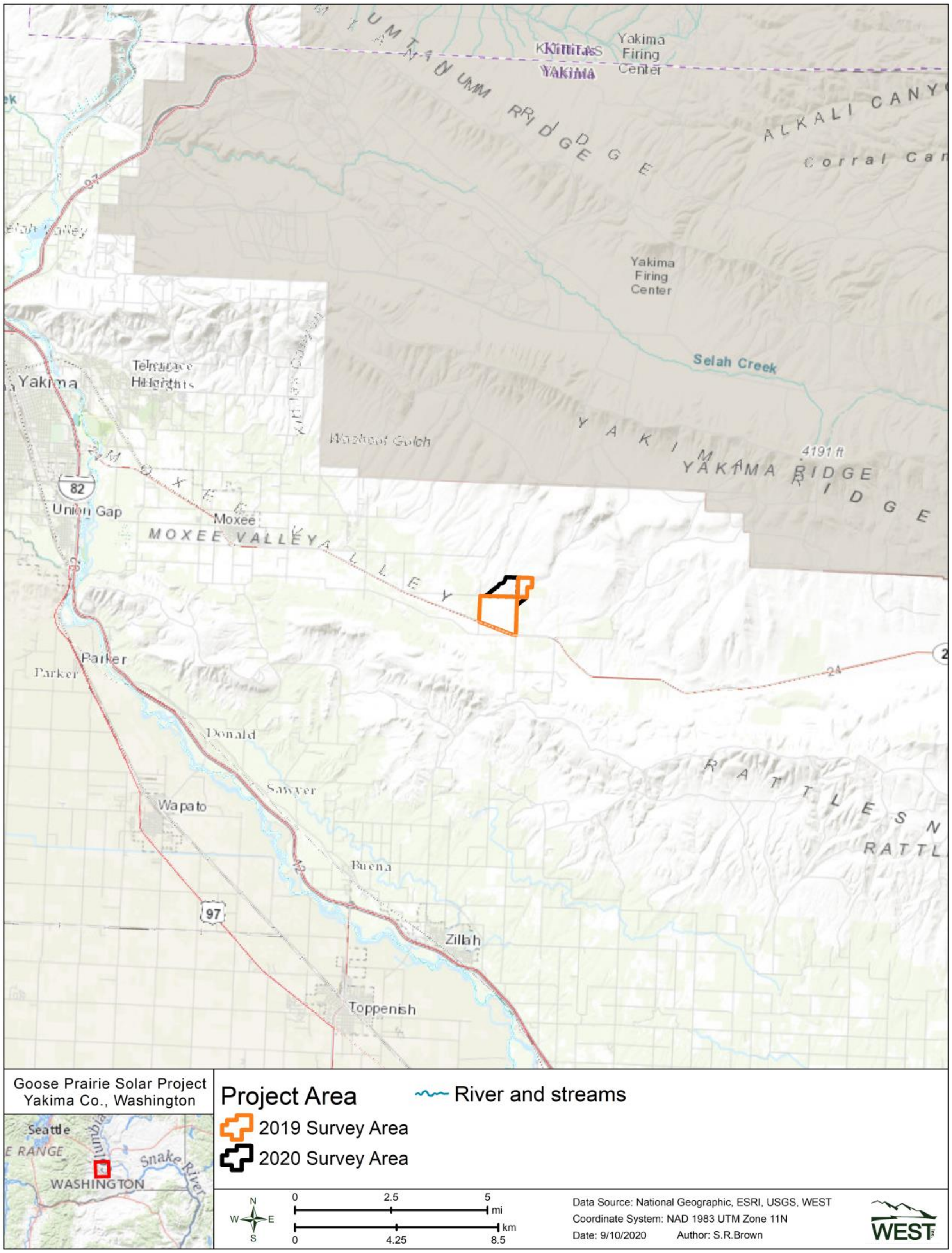

Figure 1. Location of the Goose Prairie Solar Project Area, Yakima County, Washington.

3 METHODS

Prior to 2019 field surveys, OneEnergy provided WEST a letter from WDFW and USFWS that contained a list of species of interest and recommended field survey methods, which was used to design the TESS surveys (Bartrand 2019, Thompson 2019). TESS surveys focused on Townsend's ground squirrel (*Urocitellus townsendii*), burrowing owl (*Athene cunicularia*), long-billed curlew (*Numenius americanus*), white-tailed jackrabbit (*Lepus townsendii*), and black-tailed jackrabbit (*Lepus californicus*). Other TESS wildlife species were recorded if observed and included species identified as a BCC (USFWS 2008) or as a PHS (WDFW 2008). The objective of the TESS surveys was to determine if any of the TESS species were present in the Project Area. Additionally, raptor nest surveys were conducted to determine territory occupancy and breeding status. Finally, habitat types were mapped to inform mitigation requirements for temporary and permanent impacts to habitat that may result from Project development (WDFW 2009).

3.1 Threatened Endangered and Sensitive Species Surveys

WEST conducted transect surveys to document TESS wildlife species within the Project Area in 2019 and in 2020. Surveys were conducted April 15 – 18, and May 18, 2019, and March 24 – 26 and May 5, 2020. Surveys were conducted between the early morning and mid-afternoon period. Surveys were conducted a minimum of two weeks apart to account for variation in seasonal activity, and surveys were conducted when wind speeds were less than 15 miles per hour (mph) to increase species detectability. A team of one to three biologists walked parallel transects spaced approximately 60 meters (m; 197 ft) apart (i.e., survey coverage of 30 m (99 ft) on either side of the surveyor). During the first survey in both years, transects were oriented north to south and were modified during the second survey to an east to west orientation. All survey transects were tracked on a Global Positioning System (GPS) to ensure adequate survey coverage. If a TESS species was detected, the location, number, and behavior of individuals were recorded. In addition, if a species of interest, as indicated by WDFW, was observed, the area was searched for possible nesting or burrow use. A list of all wildlife species observed during surveys was maintained, per WDFW recommendations. Below describes specific survey methods followed for Townsend's ground squirrel and burrowing owl.

3.1.1 Townsend's ground squirrels (State Candidate)

To identify the potential occurrence and map the extent of Townsend's ground squirrel colonies within the Project Area, survey protocols were based on WDFW-approved methods that have been used at other renewable energy projects in the region. The survey protocol followed methods outlined in Morgan and Nugent (1999), which describes sample techniques in areas where ground squirrel occupancy is unknown and Goodman (2003), which is used in areas of known historical colony sites for Washington ground squirrel (*Urocitellus washingtoni*) and is applicable to the Townsend's ground squirrel. The field protocol has been successfully implemented at multiple projects in Oregon and Washington (e.g., Tetra Tech 2011, Gerhardt and Kronner 2017).

WEST biologists scanned the ground for Townsend's ground squirrel sign and listened for vocalizations during transect surveys. If an active burrow or sign was detected, the area within a 30 m (98-ft) radius of the burrow or sign was searched for additional sign. Sign was defined as scat, appropriately sized burrow, tracks, or vocalizations. If no sign was detected within the 30-m radius area, radial transects spaced approximately 30 m apart from the initial burrow entrance would be surveyed out to 150 m (492 ft), marking all burrows detected. This process was continued until the outer-most burrows were identified, thus delineating the boundary of the colony. After documenting a colony, surveys continued along the same cardinal direction as before. In areas of higher habitat quality (e.g., deep loamy soils with intact vegetation), transect spacing was decreased from 60 m to approximately 30 m even if a burrow or sign had not been detected.

3.1.2 Burrowing owl (State Candidate)

Burrowing owl habitat occupancy was determined in the Project Area by an observation of at least one burrowing owl, or, alternatively, sign such as molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perching structures such as fence posts (California Burrowing Owl Consortium 1993). If sign was documented at a burrow entrance, then a radius of 150 m surrounding the burrow was searched for additional owl sign. All sign was documented and mapped. Surveys occurred during the spring breeding and summer nesting period (March – June) when owls are most active.

3.2 Raptor Nest Surveys

The objective of the raptor nest survey was to locate and document raptor nests and nest occupancy within 0.4 kilometer (km; 0.25 mile [mi]) of the Project Area as recommended by Bartrand (2019). WEST conducted one ground-based raptor nest survey prior to tree leaf out in conjunction with the first TESS survey in both survey years. Within the Project Area, biologists walked the 60-m spaced transects, scanning potential nesting substrate for nests with binoculars. Within the surrounding 0.4-km buffer, surveys were conducted from publicly accessible roads using spotting scopes and binoculars to scan the surrounding topography.

WEST categorized basic nesting territories and nest status using definitions originally proposed by Postupalsky (1974) and largely followed today (USFWS 2013). Territories were classified as occupied if any of the following were observed at the nest structure: (1) an adult in an incubating position; (2) eggs; (3) nestlings or fledglings; (4) presence of an adult (sometimes sub-adults); (5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor had been observed earlier in the breeding season; or (6) a recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath. Occupied nests were further classified as active if an egg or eggs were laid. Nests were classified as inactive if no eggs or chicks were present. Nests not meeting the above criteria for "Occupied" during at least two consecutive surveys were classified as "Unoccupied." Other nest characteristics such as nest size (e.g., small, medium, large), nest condition (e.g., poor, good, excellent), and nesting substrate (e.g., tree, structure, etc.) were recorded. A GPS location and photograph were taken for each nest.

3.3 Habitat Mapping

The objective of the habitat mapping was to characterize and map the general habitat types across the Project Area. Habitat types mapped were consistent with those described by the WDFW (2009) and included the following:

- Shrub-steppe – in an undisturbed condition, shrub cover varies between 10 to 30 percent and greater. Sagebrush (*Artemisia* spp.) is a common shrub species found within this habitat type. Shrub height typically is medium-tall (1.6-3.3 ft) and it may form mosaic landscapes with eastside grasslands;

- Eastside (Interior) Grassland – uncultivated areas with herbaceous vegetation including Conservation Reserve Program (CRP) grasslands; habitat is dominated by short to medium-tall grasses (<3.3 ft). Soil surface between perennial plants can be covered with a diverse cryptogamic or microbiotic layer of mosses, lichens, various soil bacteria, and algae. Native perennial bunchgrasses can be common, but degraded sites may have a residual native grass component dominated by annual non-native grasses and forbs;

    - CRP Grasslands – Administered by the Farm Service Agency (FSA), the CRP annually subsidizes farmers to remove environmentally sensitive land from agricultural production and planting species that will improve environmental quality. Contracts are typically 10-15 years in duration; Yakima county had approximately 41,000 acres enrolled in 2017 (FSA 2019)

- Cropland – lands farmed or cultivated by agricultural methods in growing cycles shorter than fifteen years and characterized by a homogenous, cultivated, and maintained stand or are considered croplands;

- Pasture and Mixed Environs – improved lands that produce grass seed or hay or unimproved lands that are predominantly non-native grassland sites, abandoned fields that have little or no active management such as irrigation, fertilization or herbicide applications. Sites may or may not be grazed by livestock. Outbuildings and barns are common.

WDFW (2009) does not distinguish between degraded habitat and intact functioning habitat; however, land use practices could result in habitat that no longer provides the function and value of the underlying habitat type to wildlife. To provide more resolution on the potential function and value of shrub-steppe habitat, we created two categories, degraded and intact. Shrub-steppe habitat can transition to a degraded state through several mechanisms including drought, poor grazing practices, or poor shrub management. The resulting habitat could have an appropriate shrub component but will be dominated by cheatgrass (downy brome; *Bromus tectorum*), medusahead (*Taeniatherum caput-medusae*) and other exotic annual grasses and forbs. Alternatively, the grass and forb component could be removed resulting in an excessive shrub understory (NRCS 2004). We did not measure vegetation or complete a botanical survey during the habitat mapping. Rather, we evaluated the shrub-steppe habitat patches against known stressors (NRCS 2004) and relative to each other to determine patches that were degraded and intact. Our results do not represent a continuum of shrub-steppe habitat function and value but allow us to distinguish degraded shrub-steppe habitat relative to intact habitat.

Habitat types were preliminary mapped using 2017 National Aerial Imagery (U.S. Department of Agriculture 2017), 2018 aerial imagery (Google Earth 2019), and remotely sensed data (2016 National Land Cover Dataset; Yang et al 2018), which were field-verified. Following field-verification, habitat types were digitized according to final habitat classifications in accordance to WDFW (2009), acreages of habitat types were calculated, and a habitat map of the Project was created.

3.4 Soil Mapping

WEST examined the underlying soil types using a custom soil resource report from the Natural Resource Conservation Service (NRCS 2020). The soil report characterizes soils within the Project area and is used to provide context for the habitat mapping results. To obtain results from NRCS, WEST submitted the entire Project area (2019 and 2020 survey areas combined), and we do not distinguish between the 2019 and 2020 survey areas when discussing soils.

4 RESULTS

4.1 Threatened Endangered and Sensitive Species Surveys

In 2019, 25 wildlife species were documented during TESS surveys, of which 21 were avian species and four were mammals (Appendix A1). In 2020, 32 wildlife species were documented during TESS surveys, of which 30 were avian species and two were mammals (Appendix A2).

4.1.1 2019 Surveys

Of the 25 species documented in 2019, five were designated as TESS, which included sandhill crane (*Antigone canadensis*; State Endangered), long-billed curlew (USFWS Birds of Conservation Concern (BCC)), sagebrush sparrows (*Artemisiospiza nevadensis*; State Candidate), loggerhead shrike (*Lanius ludovicianus*; State Candidate) and Townsend's ground squirrel (State Candidate; Table 1).

Seventeen total sandhill cranes were observed in two groups during the first survey period in April. Individuals were observed flying north at approximately 400 m above ground level and did not exhibit site use within the Project or surrounding area. April coincides with migration when cranes fly to their breeding grounds. A small population (approximately 100 individuals) of sandhill cranes breeds in Yakima County (Stinson 2017); however, no suitable foraging, loafing or roosting habitat (i.e., migratory stopover habitat) occurred within the Project Area. Stopover habitat typically includes a matrix of wetlands and grain waste from croplands (Stinson 2017).

Long-billed curlews were observed during both survey periods with observations primarily located in grasslands found north of Den Beste Rd in the Project Area (Figure 2). Observations consisted of one or two individuals that were observed calling from the ground or during other courtship displays, which represents attempts at pair formation (Sedgwick 2006). Despite thorough searches in areas where birds were flushed, no long-billed curlew nests were found during TESS surveys.

Sagebrush sparrows were observed during surveys and were primarily associated with drainage bottoms that contained mature patches of shrub-steppe habitat. Males were observed singing from nearby shrubs, a behavior indicative of territoriality and could indicate a pair with a nest (Martin and Carson 1988). Despite thorough searches in areas where birds were observed, no sagebrush sparrow nests were found during TESS surveys.

One loggerhead shrike was observed during the second survey period along the eastern edge of the 2019 Survey Area adjacent to the CRP lands where the individual was being chased by a pair of western kingbirds (*Tyrannus verticalis*). Suitable loggerhead shrike nesting habitat typically includes trees, hedgerows or windbreaks (Pruitt 2000) which is mostly absent from the Project Area.

Table 1. Species of concern observed during 2019 and 2020 TESS surveys at the Goose Prairie Solar Project, Yakima County, Washington.

Common Name	Number of Individuals Observed	Status[1]
2019 Surveys		
loggerhead shrike	1	BCC, SC
long-billed curlew	5	BCC
sagebrush sparrow	12	BCC, SC
sandhill crane	17	SE
Townsend's ground squirrel	12 colonies	SC
2020 Surveys		
loggerhead shrike	2	BCC, SC
sagebrush sparrow	12	BCC, SC
Townsend's ground squirrel	2 colonies	SC

[1] BCC = Federal Birds of Conservation Concern Bird Conservation Region 9; SC = State Candidate; SE = State Endangered

During 2019, a total of 12 Townsend's ground squirrel colonies were located during TESS surveys (Table 2; Appendix B). The majority of colonies [redacted] (Figure 2). The largest colony observed was Colony 9, which was [redacted] and was approximately 2 acres. The next largest colony was Colony 6, which was also located along the southern fence line and was approximately 1.2 acres (Table 2; Figure 2). The majority of Townsend's ground squirrel colonies were [redacted] (Figure 2). In several areas, the perimeter of Townsend's ground squirrel colonies extended beyond the 2019 Survey Area. The majority of these instances occurred [redacted]. Colony 2 extended beyond the western boundary of the 2019 Survey Area toward [redacted]. [redacted], the edge of Colony 11 straddled the boundaries of the 2019 and 2020 Survey Areas (Figure 2). Young squirrels were observed running between and standing on burrow entrances during the second survey period.

Table 2. Townsend's ground squirrel colony characteristics during 2019 and 2020 at the Goose Prairie Solar Project, Yakima County, Washington.

Colony ID	Area (ac)	Description
2019 Survey		
1	0.010	Isolated colony consisting of less than 5 burrow entrances.
2	0.004	Isolated colony consisting of less than 5 burrow entrances.
3	0.075	Small colony of less than 25 burrows
4	0.032	Small colony of less than 15 burrows
5	0.041	Small colony of less than 15 burrows
6	1.059	Narrow colony along fence line adjacent to highway right-of-way. Additional burrows [redacted].
7	0.186	Colony along fence line adjacent to highway right-of-way. Additional burrows [redacted]
8	0.169	Colony along fence line adjacent to highway right-of-way. Additional burrows [redacted].
9	1.963	Narrow colony along fence line adjacent to highway right-of-way. Additional burrows [redacted].
10	0.011	Isolated burrow that likely connects to a colony within the adjacent alfalfa field. Individuals observed running across road into cropland.
11	0.040	Partial area of colony that is associated with burrows located outside of 2019 Survey Area. Young observed.
12	0.084	Colony [redacted]
2020 Survey		
13	0.262	Partial area of colony that is associated with burrows located outside of 2020 Survey Area.
14	0.020	Small colony of less than 8 burrows. [redacted]

[REDACTED DUE TO SENSITIVE INFORMATION]

Figure 2. Threatened Endangered and Sensitive Species survey results for 2019 and 2020 at the Goose Prairie Solar Project Area, Yakima County, Washington.

4.1.2 2020 Survey

Of the 32 species documented in 2020, three were designated as TESS, which included sagebrush sparrow (State Candidate), loggerhead shrike (State Candidate) and Townsend's ground squirrel (State Candidate; Table 1).

Sagebrush sparrows were observed during surveys and were primarily associated with mature patches of shrub-steppe habitat that runs diagonally across the northern portion of the 2020 Survey Area. Males were observed singing from nearby shrubs, a behavior indicative of territoriality and could indicate a pair with a nest (Martin and Carson 1988). Despite thorough searches in areas where birds were observed, no sagebrush sparrow nests were found.

Two loggerhead shrikes were observed during the second survey period on May 5th, 2020 and were located along the southern edge of the 2020 Survey Area. Suitable loggerhead shrike nesting habitat typically includes trees, hedgerows or windbreaks (Pruitt 2000) which is mostly absent from the Project Area.

Two Townsend's ground squirrel colonies were located during the 2020 TESS surveys (Table 2). [redacted] The largest colony observed was Colony 13, which was approximately 0.3 acres, and extended beyond the 2020 Survey Area into the 2019 Survey Area where Colony 11 was detected. [redacted] the edge of Colony 11 and 13 are likely part of the same colony system given their proximity to each other (Figure 2). Squirrels were observed visually and audibly during the two survey rounds in 2020.

Although no long-billed curlew were observed during the two surveys, evidence of foraging within the Project Area was present throughout the patches of eastside grasslands within the 2020 Survey Area.

4.2 Raptor Nest Surveys

4.2.1 2019 Survey

Three nests were located within the 0.4-km buffer during the first TESS survey on April 15, 2019; one occupied common raven (*Corvus corax*) nest (Nest 3; Appendix B) was located in the Project Area and the remaining two nests, one occupied by a red-tailed hawk (*Buteo jamaicensis*; Nest 1; Appendix B) and another unoccupied nest (Nest 2), [redacted] The common raven nest was located in a stunted deciduous tree whereas the red-tailed hawk nest was located in a small stand of cottonwood trees (*Populus* spp.; Figure 3; Appendix B). The unoccupied nest was located adjacent to the red-tailed hawk nest in the same tree stand and did not show signs of occupancy or nesting activity.

During the second TESS survey on May 18, 2019, two adult common ravens were perched on the tree with Nest 3 and at least three nestlings were observed in the nest. A pair of red-tailed hawks were observed soaring and calling above the cottonwood stand that contained Nest 1 but nesting status (i.e., the number of nestlings) could not be determined.

Table 3. Raptor nests observed during 2019 and 2020 TESS surveys at the Goose Prairie Solar Project, Yakima County, Washington.

Nest ID	Species	Status
2019 Surveys		
1	red-tailed hawk	Occupied/Active
2	unknown	Unoccupied/Inactive
3	common raven	Occupied/Active
2020 Surveys		
1	red-tailed hawk	Occupied/Active
2	N/A	Did not locate
3	unknown	Unoccupied/Inactive
4	unknown	Unoccupied/Inactive
5	unknown	Unoccupied/Inactive

4.2.1 2020 Surveys

Four nests were documented within the 0.4-km buffer during the first TESS survey on March 24, 2020; one occupied active red-tailed hawk (*Buteo jamaicensis*; Nest 1; Appendix B) was located, and the remaining three nests were unoccupied inactive (Nest 3, 4, and 5) and were located within the Project Area (Figure 3). The red-tailed hawk nest was located in the same small stand of cottonwood trees (*Populus* spp.; Figure 3; Appendix B) from the 2019 survey year. In 2019, a second nest (Nest 2) was located in the cottonwood stand with Nest 1. Nest 2 was not located during the 2020 survey and was likely blown out of the tree. Nest 3 had been occupied by pair of common ravens during 2019 but was unoccupied inactive during the 2020 survey. Nest 4 and 5 were newly located nests during the 2020 survey [redacted]

During the second TESS survey on May 4, 2020, nest status remained the same for all four nests. A pair of red-tailed hawks were observed at the cottonwood stand that contained Nest 1 but nesting status (i.e., the number of nestlings) could not be determined.

[REDACTED DUE TO SENSITIVE INFORMATION]

Figure 3. Location of raptor nests within the Goose Prairie Solar Project Area and 0.4-km buffer in 2019 and 2020, Yakima County, Washington. Species, territory and nest status reflect 2020 survey period.

4.3 Habitat Mapping

4.3.1 2019 Survey

The dominant habitat type in the 2019 Survey Area was land enrolled in CRP (approximately 487 ac; Table 4; Appendix B). CRP was composed primarily of non-native species including downy brome, crested wheat (*Agropyron cristatum*), Russian thistle (*Salsola tragus*), blue mustard (*Choriospora tenella*), black mustard (*Brassica nigra*), western tansymustard (*Descurainia pinnata*), and yellow salsify (*Tragopogon dubious*). The extent of CRP was clearly defined and located entirely within the area north of State Route 24 and south of Den Beste Rd.

Shrub-steppe habitat was the second most abundant habitat type (approximately 72 ac; Table 4). Plant species within shrub-steppe was dominated by sagebrush (*Artemisia* spp.), with a minor component of spiny hopsage (*Grayia spinosa*), saltbush (*Atriplex* spp), greasewood (*Sarcobatus* spp.), and other woody shrubs. Native forbs such as twin arnica (*Arnica sororia*), prairie star (*Lithophragma parviflorum*), arrowleaf balsamroot (*Balsamorhiza sagitata*), and desert parsley (*Lomatium* spp.) were present; however, dense areas of downy brome covered much of the understory. All shrub-steppe habitat mapped in 2019 was considered intact although the understory consisted of non-native grass species. Areas of taller shrubs and higher shrub density was found in drainage bottoms south of Den Beste Rd (Figure 4; Appendix B).

Eastside grasslands composed approximately 52 ac and was interspersed between shrub-steppe north of Den Beste Rd (Figure 4). Although grazed by livestock, grasslands contained a minor component of native grass species such as squirreltail/wheatgrasses (*Elymus* spp.) and bunchgrasses, (*Grama* spp.). Grazing was evident within grasslands, which reduced grass cover and species diversity and was concentrated in the area north of Den Beste Rd.

Pasture mixed environs composed approximately 7.5 ac north of Den Beste Rd. The area was a former cattle corral and now contains several abandoned buildings and several vehicles; vegetation was heavily trampled and soils impacted. Shrub cover was absent from the area and shrub management around the southern fence line was apparent.

Croplands composed less than one percent of habitat within the 2019 Survey Area (approximately 4.5 ac). A newly planted orchard was located at the border adjacent to the south of Den Beste Rd.

4.3.2 2020 Survey

Plant species within shrub-steppe was dominated by sagebrush and had similar species composition that was observed during the 2019 survey. Dense areas of downy brome covered much of the understory. Degraded shrub-steppe habitat (45.3 acres) was found immediately north of Den Beste Rd where active cattle grazing reduced shrub height, herbaceous cover and compacted soils. Evidence of supplementary cattle forage (e.g., hay) was evident throughout the degraded shrub-steppe habitat. Intact shrub-steppe comprised the remainder of the shrub-steppe habitat in the 2020 survey area (77.9 acres).

Eastside grasslands composed approximately 43 ac and was interspersed between shrub-steppe north of Den Beste Rd (Figure 4). Grasslands contained a minor component of native grass species similar to what was observed in 2019. Grazing was evident within grasslands which reduced grass cover and species diversity.

Pasture mixed environs composed approximately 7 ac north of Den Beste Rd. This area is associated with a transmission line that runs through the Project Area; vegetation was heavily trampled and soils impacted from cattle and vehicle usage in the area. Shrub cover was absent from the area.

Croplands composed approximately 12.5 ac of habitat within the 2020 Survey Area (approximately 8.7 percent of the habitat). Vegetation within cropland habitat included a fruit orchard that was located south of the Den Beste Rd (Figure 4).

Table 4. Habitat types observed during 2019 and 2020 surveys at the Goose Prairie Solar Project, Yakima County, Washington.

Habitat Type	Area (ac)	% Composition
2019		
Conservation Reserve Program	487.3	78.2
Shrub-steppe - Intact	71.6	11.5
Eastside Grasslands	52.4	8.4
Pasture Mixed Environs	7.4	1.2
Croplands	4.5	0.7
Subtotal	623.2	100
2020		
Shrub-steppe - Intact	77.9	42.0
Shrub-steppe - Degraded	45.3	24.4
Eastside Grasslands	42.6	23.0
Croplands	12.4	6.7
Pasture Mixed Environs	7.1	3.8
Subtotal	185.3	100
Total	808.5	100

Table 5 below shows the total acreage for each habitat type for the entirety of the Project Area.

Table 5. Habitat types observed during combined surveys at the Goose Prairie Solar Project, Yakima County, Washington.

Habitat Type	Area (ac)	% Composition
Conservation Reserve Program	487.3	60.3
Shrub-steppe - Intact	149.5	18.5
Shrub-steppe - Degraded	45.3	5.6
Eastside Grasslands	95.0	11.8
Croplands	16.9	1.8
Pasture Mixed Environs	14.5	2.1
Total	808.5	100

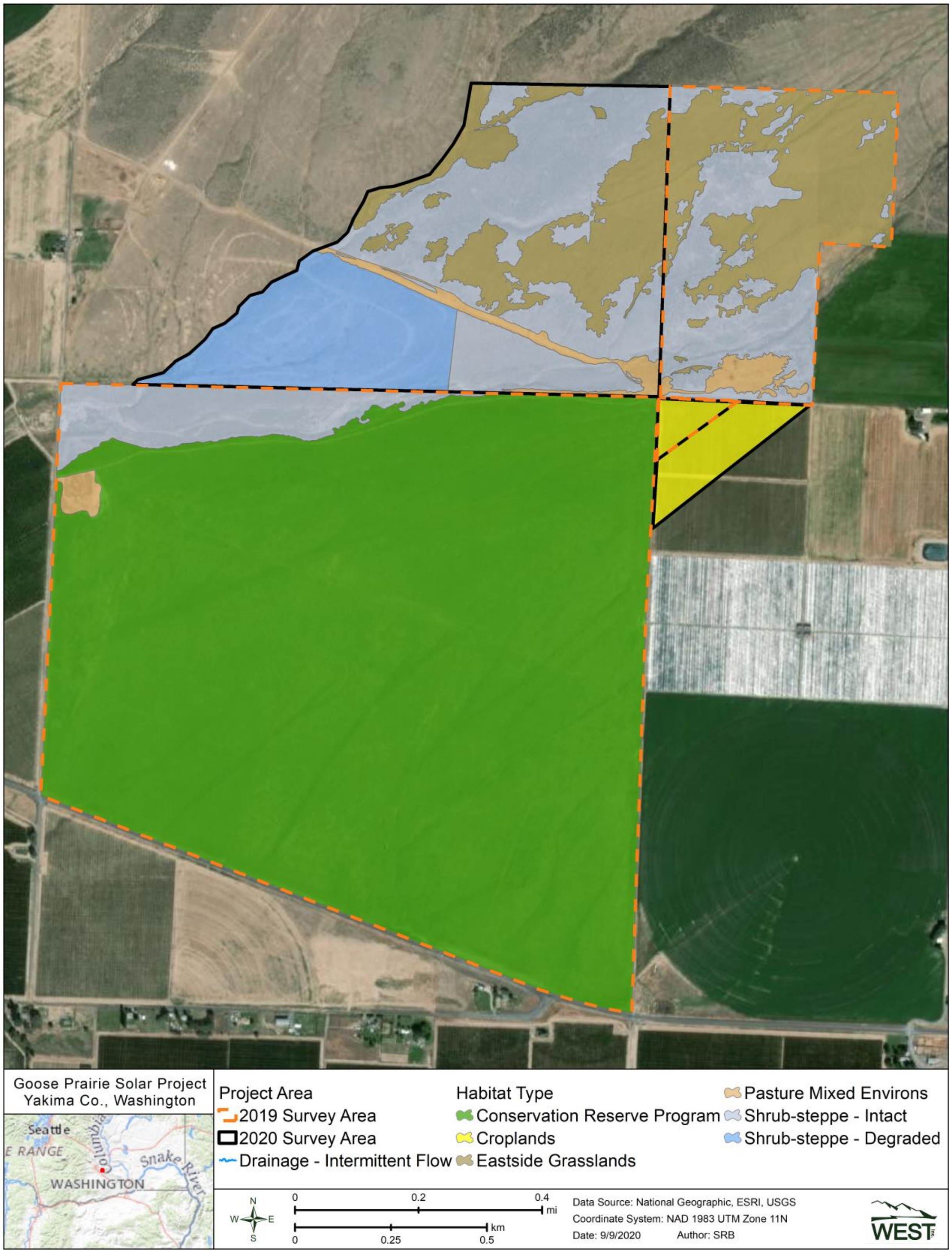

Figure 4. WDFW (2009) habitat types within the Goose Prairie Solar Project Area for 2019 and 2020, Yakima County, Washington.

4.3.3 Soil Mapping

Silt loam soils were the primary underlying soil type accounting for 95.2% of the soil types with only Finley cobbly fine sandy loam the non-silt soil type (Figure 5, Table 6). The primary soil type found in the CRP habitat was Willis silt loam, 2 to 5% slopes and is the same underlying soil type as that found in the intact shrub-steppe habitat differing only in the percent slope (Willis silt loam, 8 to 15% slopes).

Table 6. Soil types for the Goose Prairie Solar Project Area, Yakima County, Washington from NRCS custom soil report. Map symbols reflect the soil series ID shown in Figure 5.

Map Symbol	Soil Description	Acres
36	Finley cobbly fine sandy loam, 0 to 5 percent slopes	38.6
65	Kiona stony silt loam, 15 to 45 percent slopes	2.1
68	Lickskillet very stony silt loam, 5 to 45 percent slope	6.6
83	Moxee slit loam, 2 to 15 percent slopes	168.6
93	Pits	5.6
101	Ritzville slit loam, 8 to 15 percent slopes	1.4
187	Willis slit loam, 2 to 5 percent slopes	399.5
188	Willis slit loam, 5 to 8 percent slopes	65.8
189	Willis slit loam, 8 to 15 percent slopes	121.0
Total		809[1]

[1] Minor difference in total Project acreage due to NRCS mapping service and rounding

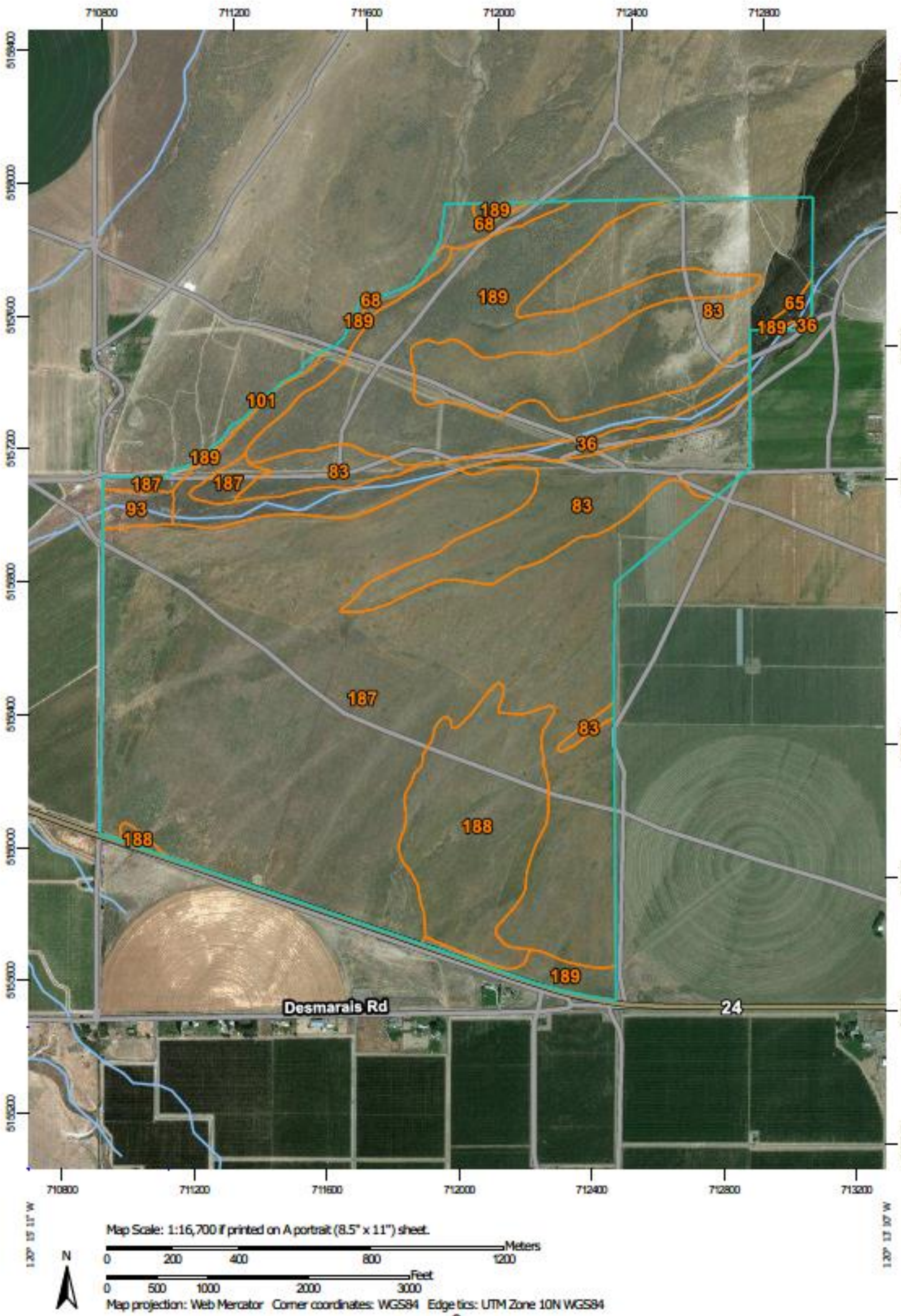

Figure 5. Soil types for the Goose Prairie Solar Project Area, Yakima County, Washington from NRCS custom soil report. The blue line represents the Project Area; soil types are identified in Table 6.

5 DISCUSSION

The Project Area contains suitable habitat for three shrub-steppe and grassland-associated bird and mammal species observed during TESS surveys and considered sensitive by USFWS or WDFW. Sagebrush sparrow nesting behavior was observed in shrub-steppe habitat in 2019 and 2020, nesting behavior for long-billed curlew was observed in 2019, and the majority of Townsend's ground squirrel colonies were documented along the Project boundary adjacent to State Route 24.

Sagebrush sparrow and long-billed curlew were observed in intact shrub-steppe habitat and not observed in degraded shrub-steppe habitat supporting the classification of degraded shrub-steppe habitat. Although the underlying soil type is the same in the degraded and intact shrub-steppe habitat (Willis silt loam, 8 to 15% slopes) the degraded shrub-steppe habitat has lower function and value to wildlife evidenced by the loss of herbaceous vegetation and compromised shrub cover due to overgrazing. In eastern Washington, sagebrush sparrow nest exclusively in shrub-steppe habitat dominated by sagebrush or mixed shrub communities, which occur in Project Area in intact shrub-steppe (Weins and Rotenberry 1981). Long-billed curlews typically use grasslands with tall grasses that provide nesting cover; however, habitats with greater shrub cover (greasewood or sagebrush) have been used in southeastern Washington (Pampush 1980) and similar habitat occurs the Project Area in intact shrub-steppe. The prevalence of cheatgrass throughout the grasslands and shrub-steppe habitat in the Project Area likely outcompetes the establishment of native shrubs (Pendleton et al. 2007).

Townsend's ground squirrel colonies were primarily located within the CRP field along the Project boundary adjacent to State Route 24 in the 2019 Survey Area. The species prefers well-drained, friable soils with high sand content suitable for burrow excavation (Rickart 1987). Previously disturbed habitat such as railroad embankments, abandoned farmlands, and canals have been documented as preferred habitat (Fifield 2013). Higher densities of ground squirrel burrows were documented in the 2019 Survey Area colonies at the edge of the Project Area where State Route 24 and road construction had disturbed soils. Similarly, the CRP field had previously been plowed, seeded and remains loosely packed soil, which may help facilitate colony establishment in the interior portions of the Project Area. Although the underlying soil type in the CRP is the same as that found in intact shrub-steppe habitat (Willis silt loam), the CRP has no current function and value as shrub-steppe habitat evidenced by the tilling and planting of grasses and absence of shrub cover and associated sagebrush sparrow and long-billed curlew observations.

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Appendix A. Wildlife Species Observed at the Goose Prairie Solar Project, Yakima County, Washington, April and May 2019 and March and May 2020.

Appendix A1. Wildlife Species Observed during the 2019 survey at the Goose Prairie Solar Project, Yakima County, Washington, April and May 2019.

Type/Species	Scientific Name
Birds	
Passerines	
cliff swallow	*Petrochelidon pyrrhonota*
European starling	*Sturnus vulgaris*
horned lark	*Eremophila alpestris*
lark sparrow	*Chondestes grammacus*
loggerhead shrike	*Lanius ludovicianus*
red-winged blackbird	*Agelaius phoeniceus*
savannah sparrow	*Passerculus sandwichensis*
western kingbird	*Tyrannus verticalis*
western meadowlark	*Sturnella neglecta*
Gamebirds	
California quail	*Callipepla californica*
Waterbirds	
sandhill crane	*Antigone canadensis*
Waterfowl	
Canada goose	*Branta canadensis*
mallard	*Anas platyrhynchos*
Shorebirds	
long-billed curlew	*Numenius americanus*
sandhill crane	*Antigone canadensis*
Diurnal Raptors	
Buteos	
red-tailed hawk	*Buteo jamaicensis*
Swainson's hawk	*Buteo swainsoni*
Falcons	
American kestrel	*Falco sparverius*
Northern Harrier	
northern harrier	*Circus hudsonius*
Large Corvids	
common raven	*Corvus corax*
black-billed magpie	*Pica hudsonia*
Mammals	
coyote	*Canis latrans*
northern pocket gopher	*Thomomys talpoides*
sagebrush vole	*Lemmiscus curtatus*
Townsend's ground squirrel	*Urocitellus townsendii townsendii*

Appendix A2. Wildlife Species Observed at the Goose Prairie Solar Project, Yakima County, Washington, March and May 2020.

Type/Species	Scientific Name
Birds	
Passerines	
American goldfinch	*Spinus tristis*
American robin	*Turdus migratorius*
brown-headed cowbird	*Molothrus ater*
dark-eyed junco	*Junco hyemalis*
European starling	*Sturnus vulgaris*
horned lark	*Eremophila alpestris*
house finch	*Haemorhous mexicanus*
loggerhead shrike	*Lanius ludovicianus*
lark sparrow	*Chondestes grammacus*
mourning dove	*Zenaida macroura*
northern flicker	*Caloaptes auratus*
rock pigeon	*Columba livia*
red-winged blackbird	*Agelaius phoeniceus*
Say's phoebe	*Sayornis saya*
sagebrush sparrow	*Artemisiospiza nevadensis*
savannah sparrow	*Passerculus sandwichensis*
unknown swallow	
vesper sparrow	*Pooecetes gramineus*
western kingbird	*Tyrannus verticalis*
western meadowlark	*Sturnella neglecta*
white-crowned sparrow	*Zonotrichia leucophrys*
Gamebirds	
California quail	*Callipepla californica*
Shorebirds	
killdeer	*Charadrius vociferus*
Diurnal Raptors	
Buteos	
red-tailed hawk	*Buteo jamaicensis*
Swainson's hawk	*Buteo swainsoni*
Falcons	
American kestrel	*Falco sparverius*
prairie falcon	*Falco mexicanus*
Northern Harrier	
northern harrier	*Circus hudsonius*
Large Corvids	
common raven	*Corvus corax*
black-billed magpie	*Pica hudsonia*
Mammals	
coyote	*Canis latrans*

Appendix A2. Wildlife Species Observed at the Goose Prairie Solar Project, Yakima County, Washington, March and May 2020.

Type/Species	Scientific Name
Townsend's ground squirrel	*Urocitellus townsendii townsendii*

Appendix B. Site Photos of Wildlife Observations and Habitat at the Goose Prairie Solar Project, Yakima County, Washington, April and May 2019 and March and May 2020.

[REDACTED DUE TO SENSITIVE INFORMATION]

Appendix B. Townsend's ground squirrel Colony 7(left) and adult with young at Colony 13 (right) at the Goose Prairie Solar Project. Photos taken on 4/17/2019 and 5/18/2019, respectively.

[REDACTED DUE TO SENSITIVE INFORMATION]

Appendix B. Occupied active red-tailed hawk Nest 1 (right) and unoccupied inactive Nest 2 (left) during the 2019 survey (left picture). Occupied active red-tailed hawk Nest 1 during the 2020 survey (right picture; nest circled in yellow) [redacted] Goose Prairie Solar Project. Photos taken 4/15/2019 and 03/25/2020.

[REDACTED DUE TO SENSITIVE INFORMATION]

Appendix B. Occupied active common raven Nest 3 during 2019 survey in the CRP land of the Project Area (left picture; Photo taken 4/18/2019). [redacted] (right picture; Photo taken 3/25/2020) during the 2020 surveys at the Goose Prairie Solar Project.

 

Appendix B. Example of shrub-steppe habitat in the Project Area along Den Beste Rd during the 2019 Survey Area (south of Den Beste Rd; left photo) and the 2020 Survey Area (north of Den Beste Rd; right photo) at the Goose Prairie Solar Project. Photo taken 4/15/2019 on left and photo taken 3/24/2020 on right.

 

Appendix B. CRP adjacent to shrub-steppe habitat located south of Den Beste Rd (left picture; photo taken 5/18/2019) and CRP land north of state highway 24 in the Project Area (right picture; photo taken 4/17/2019) at the Goose Prairie Solar Project.

ATTACHMENT G

Review of Rare Plant Occurrence and Big Game Assessment

WEST Inc.
ENVIRONMENTAL & STATISTICAL CONSULTANTS
2725 NW Walnut Blvd., Corvallis, OR 97330
Phone: 541-230-1790 ◆ www.west-inc.com ◆ Fax: 307-637-6981

DATE: October 8, 2020

TO: Blake Bjornson, OneEnergy Development, LLC.

FROM: Erik Jansen and Karl Kosciuch, Western EcoSystems Technology, Inc.

RE: Review of Rare Plant Occurrence and Big Game Movement at the Goose Prairie Solar and Storage Project, Yakima County, Washington.

Introduction

OER WA Solar 1, LLC, a wholly-owned subsidiary of OneEnergy Development, LLC (OneEnergy) has proposed the development of the Goose Prairie Solar and Storage Project (Project) in Yakima County, Washington and is considering permitting through the Washington Energy Facility Site Evaluation Council (EFSEC). The Project will consist of up to 809 acres (ac) of private land and include a range of permanent and temporary impacts from the access roads, photovoltaic solar arrays, and other Project infrastructure. In 2019 and 2020, field surveys for Priority Habitats and Species (PHS), as defined by the Washington Department of Fish and Wildlife (WDFW 2008), were conducted consistent with recommendations in WDFW's Wind Power Guidelines (WDFW 2009) and site-specific feedback provided by WDFW. To provide additional information to complete Screening Questions in Part 3, Sections 8 and 9 of the EFSEC checklist for site certification, Western EcoSystems Technology, Inc. (WEST) conducted an assessment of special status plant species[1] occurrence and the potential for the Project to obstruct big game movement or migration corridors for three native big game species. This memorandum summarizes the characteristics of the Project Area, methods, and results for the following two topics,

1. To determine the likelihood for special status plant species listed by the Washington Department of Natural Resources (WDNR) to occur at the Project.
2. To determine the potential for the Project to create an obstruction or barrier to big game habitat and movement corridors using information from WDFW.

Project Area

The Project is located in the Columbia Plateau Ecoregion, which encompasses a large portion of south central Washington and the eastern half of Yakima County (Clarke et al. 1997). The landscape in this ecoregion is a mixture of cultivated agricultural lands, grasslands, and

[1] As defined here, "special status plant species" includes any species tracked by the Washington Natural Heritage Program (WNHP 2019) and is either a) listed as an endangered, threatened or candidate species under the Endangered Species Act, subject to the Washington State Environmental Protection Act; b) is designated by federal or state law, regulation, or other formal process for protection and/or management by the relevant agency or other authority.

sagebrush covering plains and valleys, with isolated mountain ranges and river systems (Clarke et al. 1997). Much of the land use within the region is used for military training at the U.S. Army Yakima Training Center which is located approximately 2.5 mi north of the Project, at the nearest point (Figure 1). The Project is located in the Moxee Valley on 809 ac of privately-owned land approximately 13 miles (mi) southeast of Yakima, Washington and is located directly north of Highway 24 along the perimeter of a heavily-developed agricultural corridor (Figure 1). Land use surrounding the Project consists primarily of hop (*Humulus lupulus*) cultivation, orchards, and livestock grazing. Annual average precipitation in the area is 11.7 inches and an annual maximum temperature of 55.8° Fahrenheit (Natural Resources Conservation Service [NRCS] 2004).

The landscape differs between the area north and south of Den Beste Road where a rocky, ephemeral wash is found. The landscape is characterized by a low, sloping terrace south of the wash and steeper slopes north of the wash (Figure 2). Elevations range from 1,382 ft above sea level (asl) in the southwest corner of the Project Area to 1,782 ft asl in the northeast. Upland soils are generally characterized as deep silt loams from the Willis (65%) and Moxee (21%) soil series (NRCS 2020). Drainages and washes contain cobbley, sandy loams from the Finley soil series (5%) and stoney silt loams from the Lickskillit soil series (1%).

Habitat types were mapped during field surveys conducted during spring 2019 and 2020 and consistent with those described by WDFW (WDFW 2008, WDFW 2009, Azerrad et al. 2011). The dominant habitat type within the Project Area consisted of lands enrolled in the U.S. Department of Agriculture's Conservation Reserve Program (CRP; 487 ac, 60%), followed by shrub-steppe habitat (195 ac; 24%). Smaller patches of eastside (interior) grasslands, pasture mixed environs, and croplands were also documented in the Project Area. No surface waters are found within the Project Area. The following provides a brief summary of each habitat type.

A large contiguous patch of CRP was found in the southern portion of the Project Area and included cool-season grasses and forbs. Downy brome (*Bromus tectorum*) was uniformly distributed throughout the CRP patch, at densities so high other native vegetation was absent in some areas. Co-dominant grasses included wheatgrass (*Pseudoroegneria* spp.) and fescue species (*Fectuca* spp.). Common forb species included various mustards (*Brassica* spp.), salsify (*Tragopogon porrifolius*), hawksbeard (*Crepis* spp.), redstem filaree (*Eroduim cicutarium*), annual Jacob's ladder (*Polemonium micranthum*), and yarrow (*Achillea millefolium*).

Shrub-steppe habitat was found along the rocky wash adjacent to Den Beste Road and in the northern half of the Project Area. Plant species within shrub-steppe were dominated by big sagebrush (*Artemisia tridentata*), threetip sagebrush (*A. tripartita*), and spiny hopsage (*Grayia spinosa*). Understory shrubs included several buckwheat species (*Eriogonum* spp.) and desert parsley (*Lomatium spp.*). Many of the forbs found in CRP were also found in shrub-steppe and included bulbous woodlandstar (*Lithophragma glabrum*) and lilies (*Calochortus* spp.). Despite the species diversity, many areas between shrubs contained dense patches of downy brome which excluded native species. The extent of shrub-steppe habitat included all areas that contained a 10 to 30 percent or greater shrub cover (WDFW 2009), the extent of which was modified by previous management activities such as shrub removal to enhance livestock forage or deteriorated through livestock grazing. Low-quality, degraded shrub-steppe habitat was found immediately north and adjacent of Den Beste Road where active cattle grazing reduced shrub height, vegetative cover, vigor and compacted soils (Figure 2). Intact shrub-steppe was found along the rocky wash and northeast corner of the Project Area. Wildlife surveys conducted in 2019−2020 documented sensitive bird species in intact shrub-steppe habitat but not degraded shrub-steppe habitat, supporting the classification of degraded shrub-steppe habitat (WEST 2020). Although the underlying soil type is the same in the degraded and intact shrub-steppe habitat (Willis silt loam, 8 to 15% slopes) the degraded shrub-steppe habitat has lower function and value to wildlife evidenced by the loss of herbaceous vegetation and compromised shrub cover due to overgrazing. Compacted soils, cattle grazing, and competition with non-native grass species may also reduce the likelihood of special status plant species in degraded shrub steppe habitat.

Areas dominated by short to tall (<3.3 ft) grasses and absent of shrub cover were mapped as eastside (interior) grasslands which were found interspersed between patches of shrub-steppe north of Den Beste Road. Grasslands were comprised mostly of downy brome but contained a minor component of native grass species such as wheatgrasses and needleandthread (*Hesperostipa comate*). Grazing was evident within grasslands which reduced grass cover and species diversity.

Pasture and mixed environs bisected the Project Area north of Den Beste Road and a small patch was located within CRP. This habitat type included heavy ground disturbance associated with a transmission line, several abandoned buildings, a gravel quarry and manure stockpile. Vegetation within this habitat type was heavily trampled and soils impacted from cattle and vehicle usage. Bare ground with patches of low bunchgrass and scattered, degraded shrub cover characterized this habitat type.

Croplands were found in a small corner along the eastern edge of the Project Area and included a fruit orchard that was planted in 2019.

Table 1. WDFW (2009) habitat types delineated during 2019 and 2020 surveys at the Goose Prairie Solar Project, Yakima County, Washington.

Habitat Type	Area (ac)	% Composition
Conservation Reserve Program	487.3	60.3
Shrub-steppe - Intact	149.5	18.5
Eastside Grasslands	95.0	11.8
Shrub-steppe - Degraded	45.3	5.6
Croplands	16.9	1.8
Pasture Mixed Environs	14.5	2.1
Total	808.5	100

Methods

Special Status Plant Species

A list of special status plant species known to occur in Yakima County was obtained from the Washington Natural Heritage Program (WNHP 2019). A literature review and data-mining exercise was conducted for each of the plant species listed in Yakima County. Resources that contained the most spatially and temporally-relevant information was used, to the extent possible. The following primary resources were used:

- Field Guide to Rare Plants of Washington (Camp and Gamon 2011). Hardcopy and electronically (https://www.dnr.wa.gov/NHPfieldguide)
- Flora of the Pacific Northwest: an Illustrated Manual (Hitchcock and Cronquist 2018)
- Washington Department of Natural Resources Technical Reports (https://www.dnr.wa.gov/NHPspreports)
- Washington Department of Fish and Wildlife PHS on the Web (https://geodataservices.wdfw.wa.gov/hp/phs/)
- US Department of Agriculture, Natural Resources Conservation Service PLANTS Database (https://plants.usda.gov/java/)
- Washington Native Plant Society (https://www.wnps.org/)
- The Burk's Botany Collection at the University of Washington Herbarium (http://www.burkemuseum.org/research-and-collections/botany-and-herbarium)
- Natureserve (http://explorer.natureserve.org/)
- U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Yakima County (Lenfesty and Reedy 1985) and SSURGO GIS data for Yakima County (NRCS 2020; https://gdg.sc.egov.usda.gov/)

Using the resources listed above, we integrated site-specific habitat information from field surveys to help inform the likelihood of occurrence. The likelihood of a federal- and state-listed sensitive plant species to occur in the Project was determined by considering the species' range, habitat suitability, population size, and records of occurrence in the County. Based on these factors, the likelihood of occurrence was defined for each special status plant species using the following categories:

- Likely – Current records within the Columbia Plateau Ecoregion of Yakima County and considered a species with a widespread distribution[2] or a regional or local endemic species with suitable habitat in the Project Area.
- Possible – Current or multiple historic records[3] within the Columbia Plateau Ecoregion of Yakima County and is considered a species with sparse distribution with suitable habitat in the Project Area.
- Unlikely – Current or multiple historic records within the Columbia Plateau Ecoregion of Yakima County but is considered a disjunct or peripheral species and marginal suitable habitat is in the Project Area.
- None – Current or historic records within Yakima County and has a highly restricted distribution or niche habitat requirements that are not found in the Project Area.
- Unknown – No information found in resources available at the time of review.
- Presumed Extirpated – Not relocated since 1978 despite intensive searches and virtually no likelihood of rediscovery; considered extinct or extirpated in Washington.

For plant species with a likely or possible likelihood of occurrence, general information on the habitat where the species has been recorded, distribution patterns, and blooming period is provided to help inform the timing of future field surveys. For completeness, plant species that are unlikely to occur, have no likelihood, where the status of the species is unknown, or the species is presumed extirpated are reported in Appendix A.

Big Game Movement

Big game habitat and potential movement corridors within the Project and surrounding landscape were evaluated to determine potential affects from Project development. Varying levels of information on big game species occurrence and movement are available in Washington; the most comprehensive data are for mule deer and available through the Washington Connected Landscapes Project. The Washington Connected Landscapes Project modeled mule deer habitat, Habitat Concentration Areas (HCA) and movement corridors between habitats to illustrate habitat connectivity and inform wildlife conservation projects in the Columbia Plateau Ecoregion (Washington Wildlife Habitat Connectivity Working Group 2012). An HCA is defined as significant habitat areas that are expected or known to be important for mule deer based on actual survey information or habitat association modeling. Mule deer habitat was modeled using 22 variables

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[2] Distribution Pattern: Species rarity is often correlated with geographic distribution patterns. The following patterns are recognized in Washington, as defined by WNHP (2020)

Widespread = widely distributed globally and in Washington, with more than 20 populations in the state

Regional Endemic = global range of taxon is between 16,500 to 250,000 km2 (or an area about the size of the state of Washington)

Local Endemic = global range of taxon is less than 16,500 km2 or about 1 degree of latitude x 2 degrees of longitude (about the size of an average county)

Sparse = widely distributed across the state but with relatively few populations (less than 20)

Disjunct = globally widespread but state population is isolated from the main contiguous range by a gap or more than 500 km

Peripheral = globally widespread but Washington population is at the margin of the main contiguous range of the taxon

[3] Historic records are defined by WNHP as species recorded prior to 1978 but with a possibility of rediscovery

(e.g., land cover, slope, housing density, energy development, transportation networks, etc.) and was expressed as an index (0 = non-habitat to 1 = best possible habitat). Habitat with an index >0.89 and at least 19 square miles were designated as an HCA and were considered areas of high-quality habitat. The same variables were used to model mule deer movement corridors and connectivity between HCAs. Movement corridors and connectivity between HCA's used a combination of resistance models, which incorporated deer specific dispersal habitat and barriers such as housing and transportation systems, and cost-weighted distance models which identified continuous swaths of land expected to encompass the best route for mule deer to travel between HCAs (Washington Wildlife Habitat Connectivity Working Group 2010).

Within Washington, information on habitat connectivity and movement corridors for two additional big game species, Rocky Mountain elk (*Cervus elaphus nelsoni*) and pronghorn antelope (*Antilocapra americana*) are not as extensive as mule deer. Data on big game winter ranges were identified through the WDFW PHS on the Web and spatial data on the species' range and predicted habitat were obtained from the U.S. Geological Survey Gap Analysis Project (USGS 2018). Species range and predicted habitat models used remotely-sensed biological data such as landcover type, patch size, canopy cover as well as avoidance of human impacts, and are appropriate when interpreting habitat connectivity and potential movement corridors on a landscape scale.

The data sources used in this analysis provide a landscape context to interpret big game ranges and potential movement areas. However, it is possible that individual big game animals occur in the Project area and could be displaced due to development. This analysis uses the most robust available data to assess the value of the Project to big game in a landscape context and not an individual animal context.

Results and Conclusions

Special Status Plant Species

Of the 365 sensitive plant species listed in Washington, 51 species are listed in Yakima County and the majority of which have extant (i.e., existing) populations (38 species, 74 percent). A small number of species are known from historic records only (7 species, 14 percent) or are believed to be falsely reported or unsubstantiated (6 species, 12 percent). Of the 38 species with extant populations in Yakima County, 24 species are state-listed[4] as sensitive, 11 species are threatened, and 3 species are considered endangered.

Of the 38 species known to occur within Yakima County, five species were classified as likely to occur and five were classified as possible to occur (Table 2). The bristle-flowered collomia (*Collomia macrocalyx*) was classified as threatened by WNHP whereas all remaining species were classified as sensitive. All but one species (bristly cryptantha; *Cryptantha spiculifera*) has been documented on the adjacent Yakima Training Center. All species were associated with shrub-steppe habitat which is found in the northern half of the Project Area. In addition to habitat,

[4] Washington state status is assigned by WNHP. Factors considered include abundance, distribution patterns, number of extant occurrences, vulnerability, threats, existing protection, and taxonomic distinctness. Endangered = in danger of becoming extinct or extirpated from Washington; Threatened = likely to become Endangered in Washington; Sensitive = vulnerable or declining and could become Threatened or Endangered in Washington.

plants were also associated with soil characteristics similar to types found in the Project Area (e.g., silty to gravelly loams) and topographic or hydrologic features (south-facing open slopes or dry washes).

The survey period for plants likely or possible to occur ranges from early March through August (Table 2). Survey periods are based on times that Camp and Gamon (2011) delineated as periods when plants would be most identifiable. Diagnostic characteristics varies by species and can include when plants are typically in bloom (i.e., flowering) or when seed pods persist long enough that still enable positive identification as is the case with the two species of milkvetch. Survey periods are general guidelines and may fluctuate annually based on changes in temperatures and precipitation levels.

Table 2. Special status plant species[1] that are likely or possible to occur within the Goose Prairie Solar and Storage Project, Yakima County, Washington.

Common Name[2]	Species	Habitat	Distribution Pattern[3]	Elevation (ft asl)	Blooming / Fruiting Period
Likely to Occur					
Columbia milkvetch	*Astragalus columbianus*	Shrub-steppe habitat on sandy loams or gravelly loams	Local Endemic; Current records from NE corner of County	420 - 2,330	Mid-late April through Mid-June
Pauper milkvetch	*Astragalus misellus var. pauper*	Shrub-steppe habitat found on open ridgelines and gentle upper slopes	Regional Endemic; Current records from NE corner of County	500 - 3,280	April through Mid-May
Bristle-flowered collomia	*Collomia macrocalyx*	Shrub-steppe habitat in dry open places on talus, rock outcrops, and lithosols. Typically vegetation is sparse and species diversity is low	Regional Endemic; Current records from NE corner of County	870 - 2,130	Late May to Early June
Dwarf mooncup	*Eremothera pygmaea*	Shrub-steppe habitat on unstable soil or gravel in steep talus, dry washes, banks and road cuts	Regional Endemic; Current record from E edge of County	450 - 2,050	June to August
Hoover's biscuitroot	*Lomatium lithosolamans*	Shrub-steppe habitat with basalt lithosols that are flat and well-drained with prominent rocks and gravel but little soil	Local Endemic; Current records throughout County	1,300 - 4,000	Early to late March
Possible to Occur					
Cottonball cryptantha	*Cryptantha gracilis*	Shrub-steppe habitat on basalt talus rock in dry, rocky or silty seasonal drainages	Sparse; historic record from NE corner of County	1,250 - 2,680	May to June

Table 2. Special status plant species[1] that are likely or possible to occur within the Goose Prairie Solar and Storage Project, Yakima County, Washington.

Common Name[2]	Species	Habitat	Distribution Pattern[3]	Elevation (ft asl)	Blooming / Fruiting Period
Desert cryptantha	*Cryptantha scoparia*	Shrub-steppe habitat on south facing slopes with full sun and little competing vegetation; grows between canyons with fine dry silt and talus	Sparse; historic record from NE corner of County	1,200 - 2,100	April to June
Bristly cryptantha	*Cryptantha spiculifera*	Shrub-steppe habitat on dry, open, flat or sloping areas with stable or stoney soils with low vegetation cover	Sparse; current records from E edge of County	450 - 3,500	May to July
Coyote tobacco	*Nicotiana attenuata*	Shrub-steppe habitats with dry sandy bottomlands, rocky washes and other dry open places	Sparse; Current records throughout County	320 - 2,640	June through August
Tufted evening-primrose	*Oenothera cespitosa ssp. cespitosa*	Shrub-steppe habitats and dry deserts; on loose talus; steep sandy or gravelly slopes	Peripheral; Current records in NE corner of County	410 - 1,800	Late April through Mid-June

[1] All species are considered sensitive by WNHP except for the bristle-flowered collomia which is listed as State Threatened

[2] Common name from Camp and Gamon (2011)

[3] *Local Endemic* = global range of taxon is less than 16,500 km^2 or about 1 degree of latitude x 2 degrees of longitude (about the size of an average county)
Regional Endemic = global range of taxon is between 16,500 to 250,000 km^2 (or an area about the size of the state of Washington)
Peripheral = globally widespread but Washington population is at the margin of the main contiguous range of the taxon
Sparse = widely distributed across the state but with relatively few populations (less than 20)

Table 3. Survey periods for special plant species that are likely or possible to occur within the Goose Prairie Solar and Storage Project, Yakima County, Washington.

		Month					
Common Name	**Species**	**March**	**April**	**May**	**June**	**July**	**August**
Columbia milkvetch	*Astragalus columbianus*		----	----	----		
Pauper milkvetch	*Astragalus misellus var. pauper*		----	----			
Bristle-flowered collomia	*Collomia macrocalyx*			----	----		
Cottonball cryptantha	*Cryptantha gracilis*			----	----		
Desert cryptantha	*Cryptantha scoparia*						
Bristly cryptantha	*Cryptantha spiculifera*			----	----		
Dwarf mooncup	*Eremothera pygmaea*				----	----	----
Hoover's biscuitroot	*Lomatium lithosolamans*	----					
Coyote tobacco	*Nicotiana attenuata*				----	----	----
Tufted evening-primrose	*Oenothera cespitosa ssp. cespitosa*		----	----	----		

Big Game Movement

Mule Deer

Using the Washington Connected Landscapes Project HCA data Mule deer habitat was modeled as low-quality in the southern portion of the Project Area and followed a gradient to medium and high-quality (index >0.5) in the northern portion (Figure 3). Because of the lack of shrub cover and existing human disturbance from Highway 24 and the Bonneville Power Administration transmission line infrastructure that bisects the Project Area, CRP grasslands in the southern portion of the Project Area were modeled as lowest quality. In contrast, upland shrub-steppe habitat and croplands in the northern portion of the Project Area provides suitable foraging habitat while the drainages along the dry wash provides winter, fawning and fawn-rearing habitat (Myers 2012). No perennial waters were identified in previous habitat mapping surveys for the Project, however, cattle stock ponds and ephemeral stream drainages may provide water resources for mule deer. The effect of how exclusion to these water resources on mule deer from the development of the Project is unknown in context to resources present in the surrounding landscape. However, the Project will be designed such that the ephemeral streams are not fenced, allowing for movement of wildlife, including big game.

The northern portion of the Project Area is located along the edge of HCA (ID# 35) that extends north of the Project into the undeveloped landscape of the U.S. Army's Yakima training Center (Figure 3). The southern portion of the Project Area is outside of a HCA due to lower quality habitat and human disturbance in the surrounding Moxee Valley. Because of the Project's location on the outside perimeter of a large, unfragmented HCA, removal of higher quality habitat in the northern portion of the Project Area would not substantially reduce available habitat on the landscape or the within the HCA. Existing human disturbance from vehicle traffic, residential housing, and commercial/agricultural operations in the Moxee Valley fragment movement corridors between HCA 35 and 43 (Figure 4). The high level of human disturbance in the Moxee Valley and southern portion of the Project Area interrupts mule deer movement, creating resistance to natural movement patterns (Figure 4). Potential movement corridors between HCAs are located approximately 5 miles east of the Project where the Moxee Valley narrows and distance between the HCAs is the shortest and considered the most energetically efficient (e.g., least cost path; Figure 5). Due to the intensity of existing development in the surrounding landscape, construction of the Project would not interfere with potential movement corridors and linkages between HCAs.

Rocky Mountain Elk

The Project is located within the range of elk but on the edge of suitable habitat as modeled by Gap data (Figure 6). In Washington, low-elevation shrub-steppe habitat provides females with calving areas and important bedding areas during late summer months and thermoregulation in the winter (McCorquodale et al. 1986, McCorquodale 1987, McCorquodale 1993). Despite no tree cover and limited opportunities for shelter, shrub-steppe habitat is an important foraging resource for elk (Vander Haegen et al. 2001). Access to open water resources are an important determinant of habitat usage (McCorquodale et al. 1986). With a range that overlaps the Project Area, the Yakima elk herd is one of the largest in the state with over 8,000 individuals on nearly a million acres of public land (Bernatowicz 2019). WDFW considered the northern portion of the Project Area elk wintering habitat with approximately 130 individuals associated with the Department of Energy's Arid Lands Ecology Reserve (Appendix B). Pending final project design, development of the Project Area could exclude elk from approximately 300 acres of habitat along the edge of the highly fragmented Moxee Valley, as predicted by Gap data (Figure 6). The potential impact to elk habitat could be reduced though the preservation of a corridor through the intact shrub-steppe habitat. Construction of the Project would not remove nor limit access to open water resources. Removal of habitat from Project construction does not appear to substantially reduce the amount of habitat or connectivity within the elk range.

Pronghorn Antelope

The Project is not located within the range of pronghorn antelope, thus impacts from Project construction are highly unlikely (Figure 7). Starting in 2011, the Yakima tribe started reintroducing pronghorn onto the Yakima reservation and currently totals 225 individuals (Fidorra et al. 2019). Located approximately 8.5 miles southwest at the nearest point, dispersal of pronghorn from the reservation is likely over time; however, natural barriers such as the Yakima River and human-made barriers that include highways, fences and the Moxee Valley highly restrict animal dispersal and potential resulting impacts from Project construction.

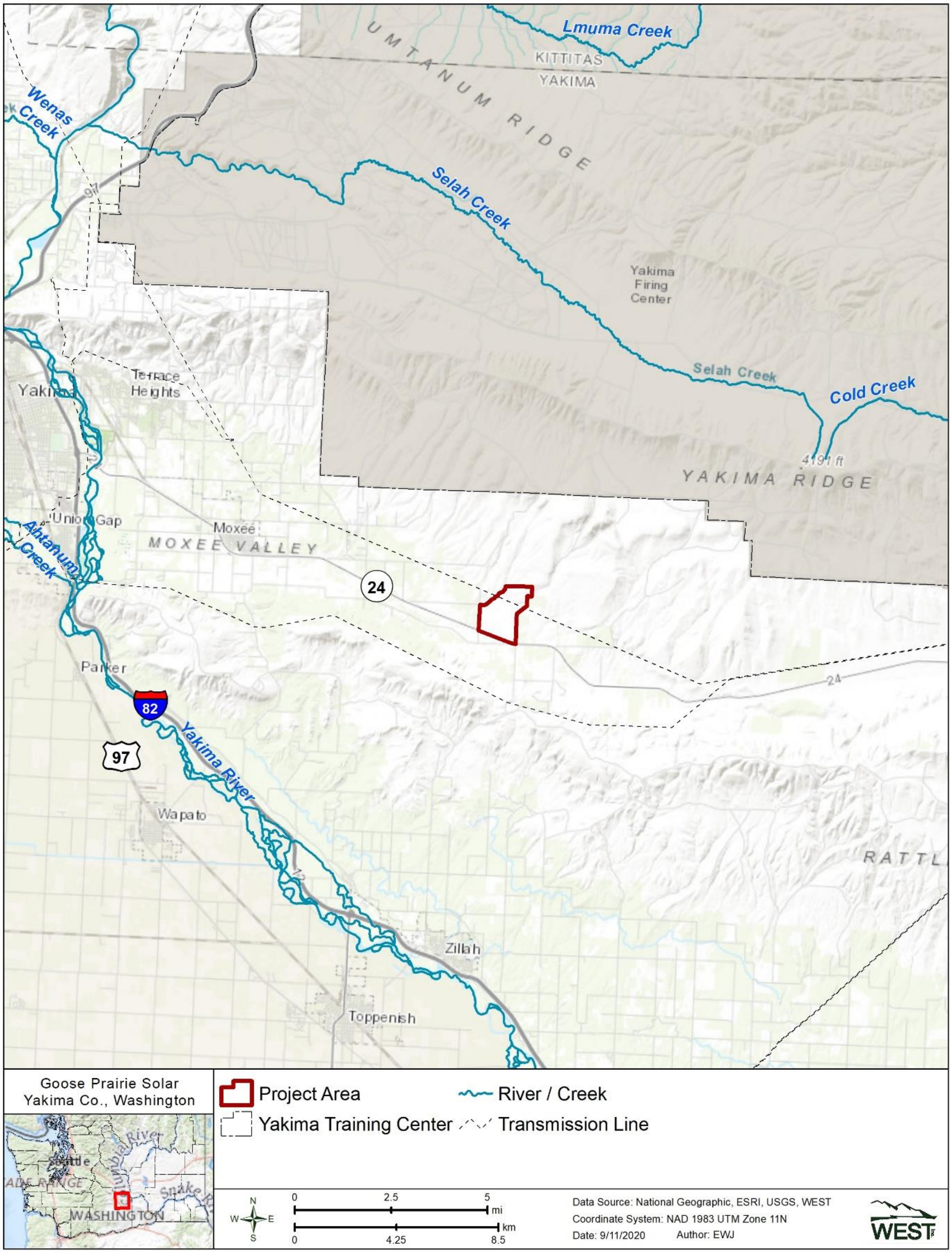

Figure 1. Vicinity map of the Goose Prairie Solar and Storage Project, Yakima County, Washington.

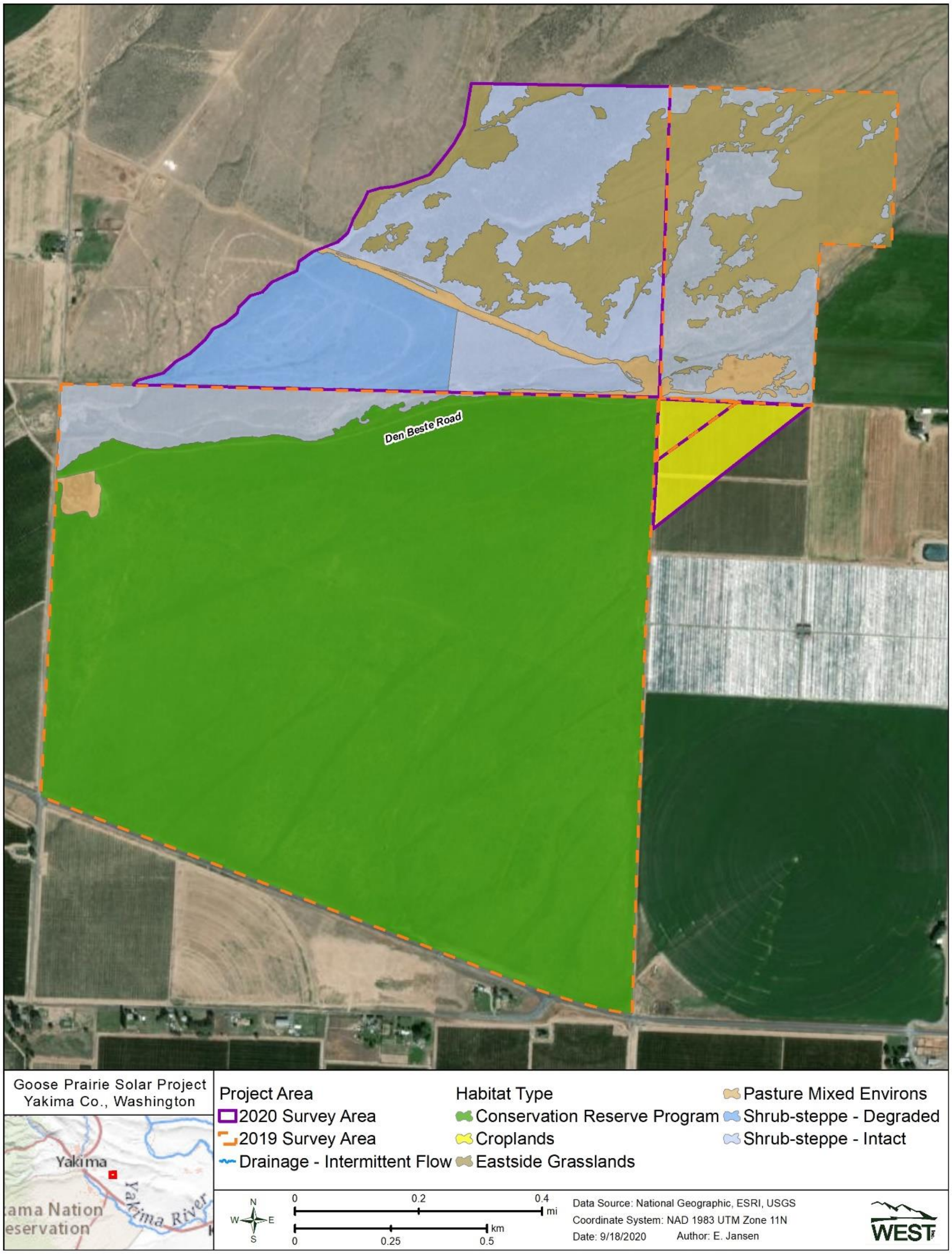

Figure 2. WDFW (2009) habitat types delineated in 2019 and 2020 within the Goose Prairie Solar and Storage Project Area, Yakima County, Washington.

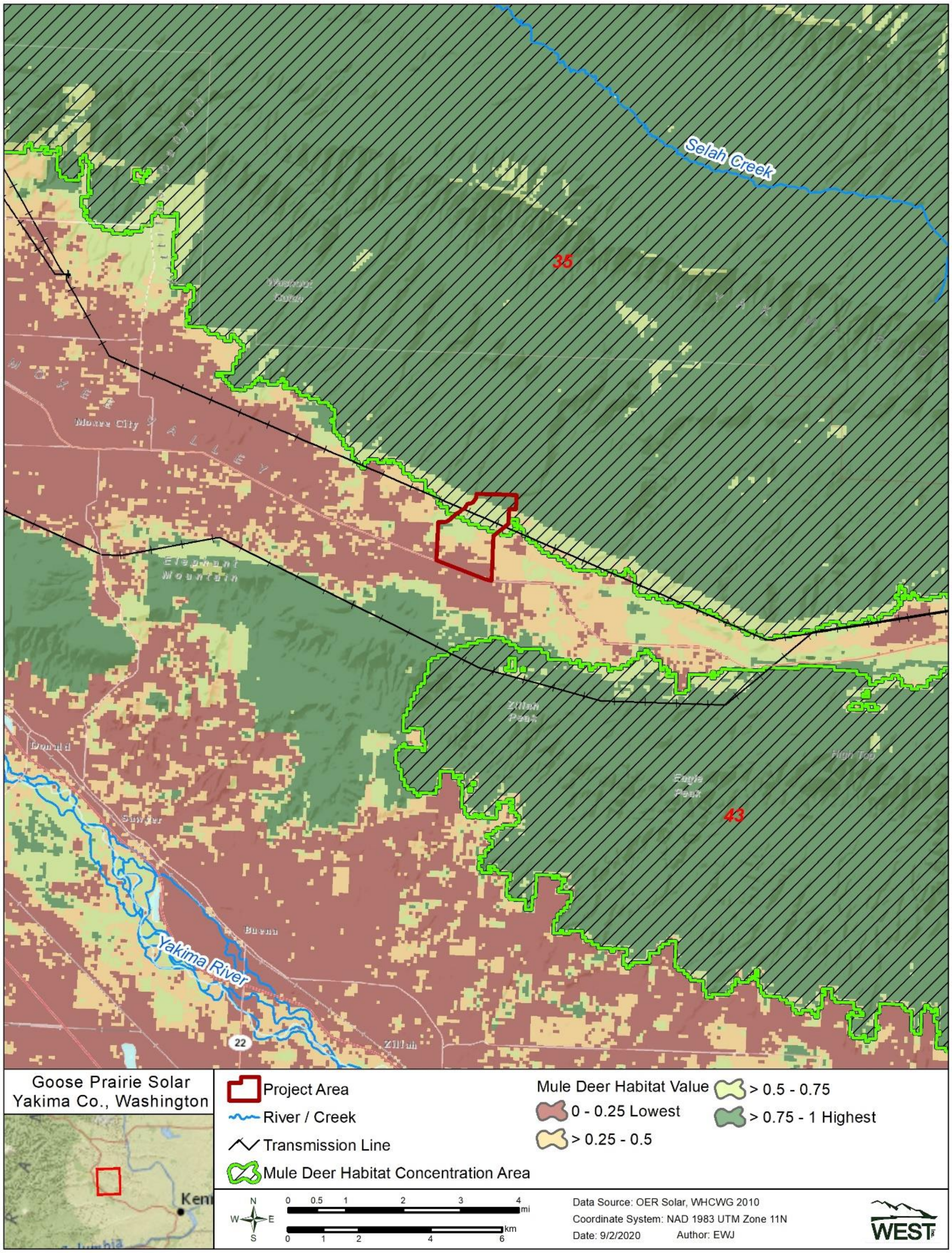

Figure 3. Mule deer habitat and Habitat Concentration Areas within and surrounding the Goose Prairie Solar and Storage Project, Yakima County, Washington.

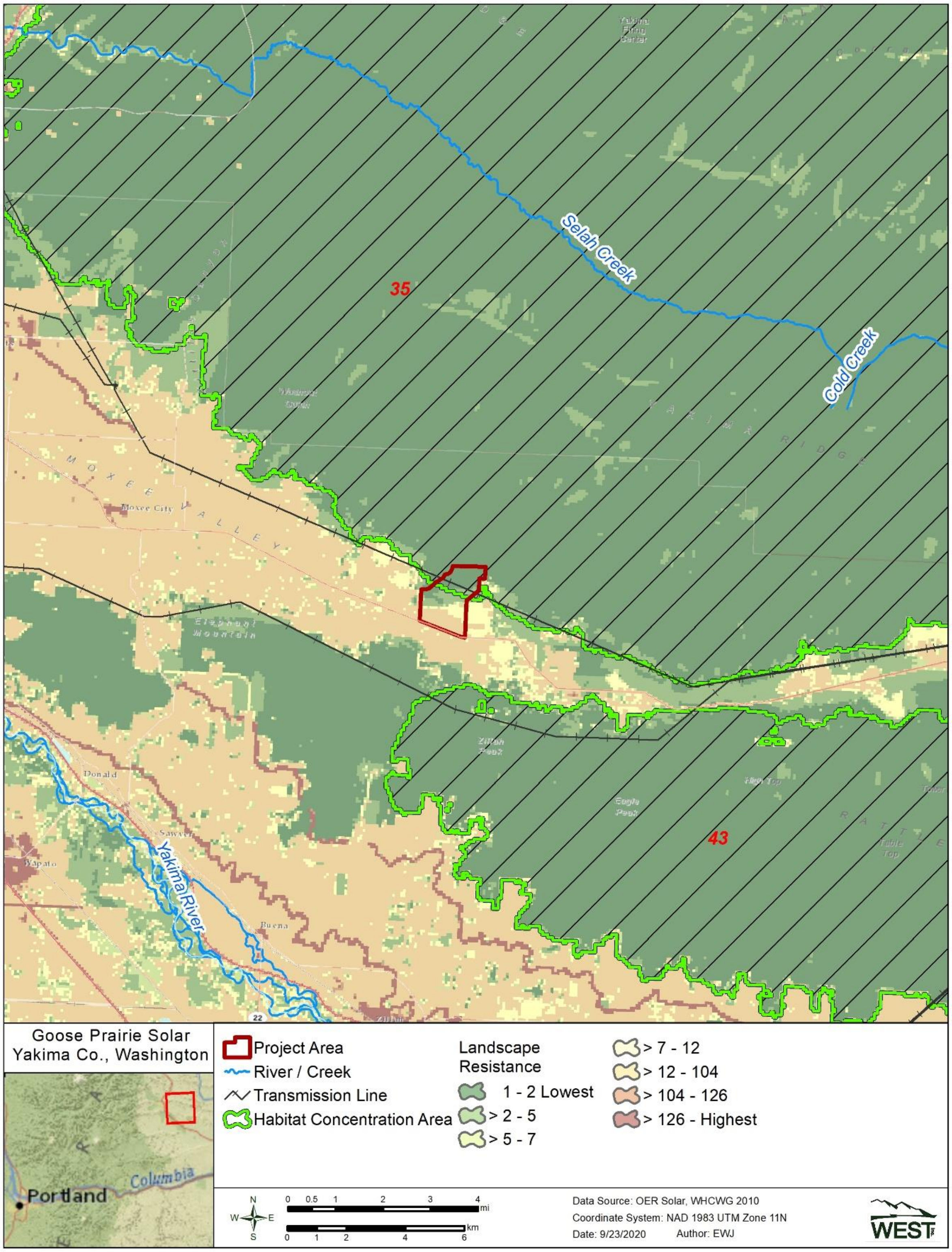

Figure 4. Landscape resistance and barriers to natural mule deer movement within and surrounding the Goose Prairie Solar and Storage Project, Yakima County, Washington.

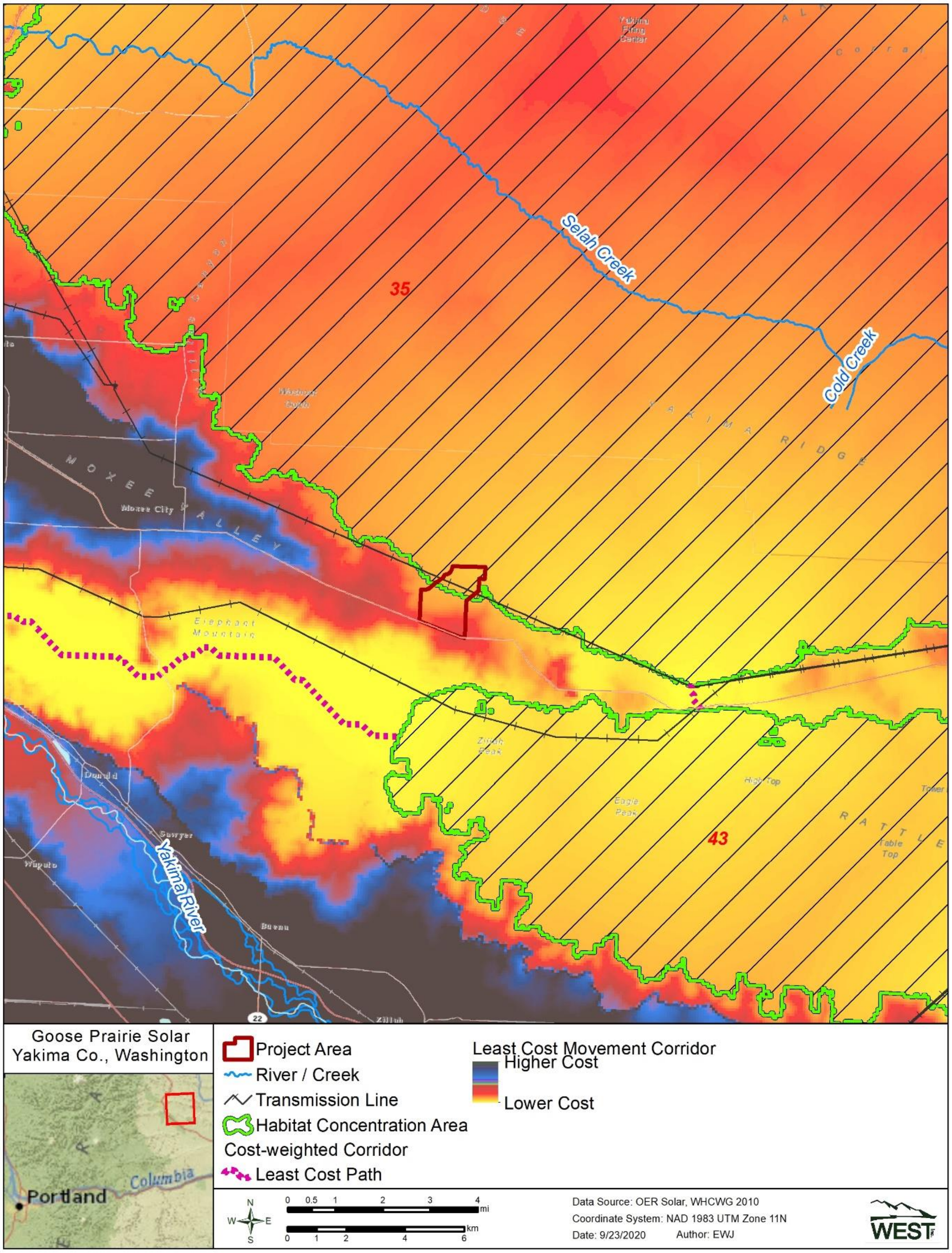

Figure 5. Habitat linkage network modeled for mule deer within and surrounding the Goose Prairie Solar and Storage Project, Yakima County, Washington.

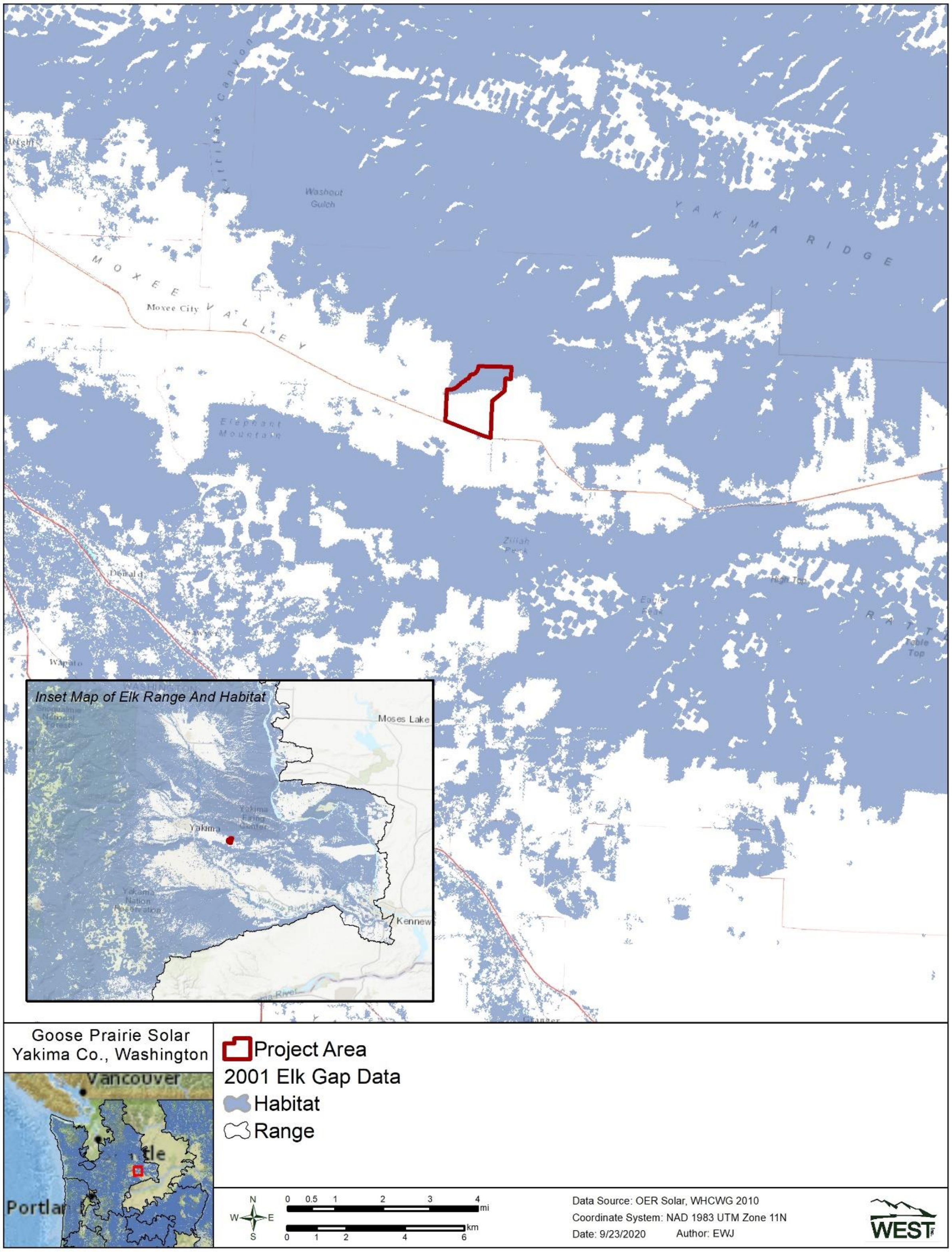

Figure 6. Elk habitat within and surrounding the Goose Prairie Solar and Storage Project, Yakima County, Washington.

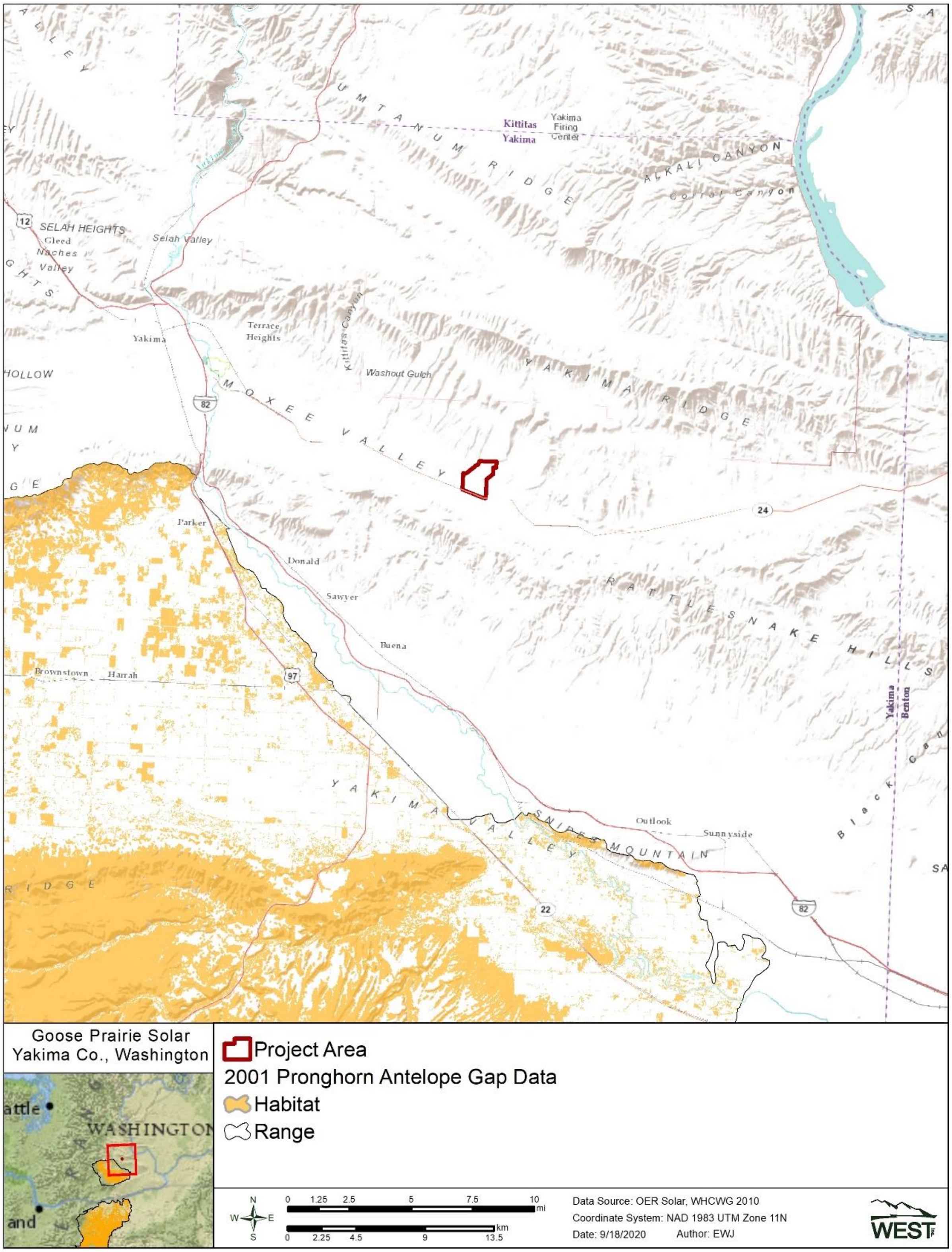

Figure 7. Pronghorn antelope habitat within and surrounding the Goose Prairie Solar and Storage Project, Yakima County, Washington.

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Appendix A. Special plant species listed in Yakima County and determined as unlikely or had no potential to occur at the Goose Prairie Solar and Storage Project.

Common Name	Species	Reason for Exclusion	State Status[1]
Tall agoseris	*Agoseris elata*	Limited range, habitat	S
Sierra onion	*Allium campanulatum*	Elevation	T
Gray's broomrape	*Aphyllon californicum ssp. grayanum*	Habitat	E
Long-bearded sego lily	*Calochortus longebarbatus var. longebarbatus*	Habitat	S
Davy's sedge	*Carex davyi*	Extirpated	X
Dense sedge	*Carex densa*	Habitat	S
Smooth-fruit sedge	*Carex heteroneura*	Habitat	S
Large-awn sedge	*Carex macrochaeta*	Unsubstantiated report	T
Obscure paintbrush	*Castilleja cryptantha*	Elevation, habitat	S
Pacific fringed thistle	*Cirsium remotifolium*	Historic records only	S
Idaho hawksbeard	*Crepis bakeri ssp. idahoensis*	Historic records of questionable source	E
Gray cryptantha	*Cryptantha leucophaea*	Habitat	T
Beaked cryptantha	*Cryptantha rostellata*	Limited range, habitat	T
Walking spike-rush	*Eleocharis rostellata*	Habitat	S
Smallflower mooncup	*Eremothera minor*	Elevation, habitat	S
Basalt daisy	*Erigeron basalticus*	Habitat	T
Spotted buckwheat	*Eriogonum maculatum*	Extirpated	X
Candelabrum monkeyflower	*Erythranthe pulsiferae*	Habitat	S
Suksdorf's monkeyflower	*Erythranthe suksdorfii*	Habitat	S
Diffuse stickseed	*Hackelia diffusa var. diffusa*	Habitat	T
Oregon goldenweed	*Heterotheca oregona*	Habitat	S
Dwarf rush	*Juncus hemiendytus var. hemiendytus*	Habitat	T
Kellogg's rush	*Juncus kelloggii*	Habitat	E
Awned halfchaff sedge	*Lipocarpha aristulata*	Habitat	T

Appendix A. Special plant species listed in Yakima County and determined as unlikely or had no potential to occur at the Goose Prairie Solar and Storage Project.

Common Name	Species	Reason for Exclusion	State Status[1]
Kalm's lobelia	*Lobelia kalmii*	Habitat	E
Basalt biscuitroot	*Lomatium laevigatum*	Unsubstantiated report	T
Snake River biscuitroot	*Lomatium serpentinum*	Unsubstantiated report	S
Leiberg's umbrellawort	*Lomatium tenuissimum*	Extirpated	X
Tuberous biscuitroot	*Lomatium tuberosum*	Habitat	S
Curved woodrush	*Luzula arcuata ssp. unalaschcensis*	Elevation, habitat	T
Tiny povertyweed	*Micromonolepis pusilla*	Historic records only	T
Downy false-monkeyflower	*Mimetanthe pilosa*	Habitat	S
Long-tubed evening-primrose	*Oenothera flava ssp. flava*	Extirpated	X
Rosy owl-clover	*Orthocarpus bracteosus*	Habitat	T
Mt. Rainier lousewort	*Pedicularis rainierensis*	Elevation, habitat	S
Dark-spine ball cactus	*Pediocactus nigrispinus*	Habitat	S
Brewer's cinquefoil	*Potentilla breweri*	Habitat	T
Scouler's catchfly	*Silene scouleri ssp. scouleri*	Elevation, habitat	S
Pale blue-eyed grass	*Sisyrinchium sarmentosum*	Falsely reported	T
Howell's thelypody	*Thelypodium howellii ssp. howellii*	Extirpated	X
Narrow-leaf mule's-ears	*Wyethia angustifolia*	Falsely reported	S

[1] E = Endangered, S = Sensitive, T = Threatened, X = Extirpated

Appendix B. Elk Winter Range (purple) within the Goose Prairie Solar and Storage Project, Yakima County, Washington.

9/1/2020 PHS Report

Priority Habitats and Species on the Web

Report Date: 09/01/2020

PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Generalized Location
Elk	N/A	N/A	No

Appendix B (con't). Elk Winter Range Report Within the Goose Prairie Solar and Storage Project, Yakima County, Washington.

9/1/2020 PHS Report

Elk	
Scientific Name	*Cervus elaphus*
Priority Area	Regular Concentration
Site Name	RATTLESNAKE
Accuracy	1/4 mile (Quarter Section)
Notes	ELK WINTERING AREA, 130 ANIMALS ARID LANDS ECOLOGY RESERVE
Source Record	901605
Source Dataset	PHSREGION
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00614
Geometry Type	Polygons

ATTACHMENT H

Cultural Resources Survey Report

Confidential, Redacted

Cultural Resources Survey for the Goose Prairie Solar Project

Yakima County, Washington

Prepared for:

OneEnergy Renewables

Prepared by:

Tetra Tech

Bothell, Washington

Project #194-6767 and 194-7240
DAHP Project #2018-06-04740

Authors:

Brady Berger, Julia Mates, Deborah Huntley, and Mary Connell

Principal Investigator: Erin King, MA, RPA

October 2020

This Document Contains Confidential Non-Public Historic and Archaeological Information

Not for Public Distribution

Abstract

The Goose Prairie Solar Project (Project) is a proposed solar energy facility located entirely on private lands in Yakima County, Washington. The Project area consists of approximately 809 acres in the Moxee Valley. The entirety of the Project area has been surveyed for cultural resources in May 2019 and April 2020, including subsurface probing. Over the course of the two field mobilizations, six cultural resources were identified. These include one large historic refuse scatter, two very low density pre-contact lithic scatters (including one that appears to be redeposited materials), one multicomponent site with historic refuse and minimal pre-contact debitage, two historic buildings (in one site), and one Bonneville Power Administration transmission line segment (Midway-Moxee No. 1 Transmission Line).

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Acronyms and Abbreviations

BPA	Bonneville Power Administration
cmbs	centimeters below surface
DAHP	Department of Archaeology and Historic Preservation
°C	degrees Celsius
°F	degrees Fahrenheit
GIS	geographic information systems
GLO	General Land Office
GPS	global positioning system
kV	kilovolt
MPDF	Multiple Property Documentation Form
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OneEnergy	OneEnergy Development, LLC
OSD	Official Soils Series Description
Project	Goose Prairie Solar Project
SEPA	State Environmental Protection Agency
Tetra Tech	Tetra Tech, Inc.
USGS	U.S. Geological Survey
WHR	Washington Heritage Register
WISSARD	Washington Information System for Architectural and Archaeological Records Data
Yakama Nation	Confederated Tribes and Bands of the Yakama Nation

1.0 Introduction

The Goose Prairie Solar Project (Project) is a solar development proposed by OER WA Solar 1, LLC, a wholly owned subsidiary of OneEnergy Development, LLC (OneEnergy). The Project is located entirely on private lands approximately 6 miles east of Moxee in Yakima County, Washington (Figure 1).

This report presents the methods and results for a cultural resources survey for the Project conducted by Tetra Tech, Inc. (Tetra Tech) in May 2019 and April 2020. The purpose of this survey was to document the presence of cultural resources within the Project area, and identify any significant potential impacts to such resources that would result from the construction, operation, and retirement of the proposed Project. In addition, the report provides a plan of protection for cultural resources within the Project area through management recommendations and procedures for inadvertent discoveries during construction.

OneEnergy is discussing the Project separately with the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation).

1.1 Project Description

The Project is a solar photovoltaic project, located in Yakima County, Washington. It is proposed within an 809-acre Project Area (Figure 2), covering tax parcels 211218-11003, 211218-43004, 211218-44003, 211208-32001, 211208-11001, 211207-11001, and 211207-21001. The Project parcels have mixed use, yet all are zoned as Agricultural use. Three of the parcels are currently in the Conservation Reserve Program and planted with native vegetation. The other parcels are currently used for grazing. The southern portion of the Project Area is comprised of a relatively flat fallow field while the northern portion is comprised of rolling hills with ephemeral creeks. Surrounding land uses include the Yakima Training Center to the north and active agricultural fields in all other directions, including an orchard to the east.

Although details of design have not yet been determined, the Project will be developed within the 809-acre Project Area and include single-axis tracking ground-mounted solar photovoltaic panels. Collector lines, access roads, related electrical infrastructure, and an optional battery energy storage system will be co-located within the Project Area. It is not anticipated that any Project-related activities will occur outside of the Project Area. The maximum depth of planned disturbance for the Project’s components is 13 feet below ground surface. The Project will connect to the grid via an on-site line-tap of Bonneville Power Administration’s (BPA) Midway to Moxee 115-kilovolt (kV) transmission line. (The interconnection will be addressed by BPA separately via Section 106 consultation.) As currently designed, an access driveway will extend north to the Project Area from Washington State Highway 24.

1.2 Project Background

1.2.1 Project and Survey Area

The Project Area occupies portions of the southern half of Section 7, southwest quarter of Section 8, the northwest-northwest quarter of Section 17, and almost the entirety of Section 18 in Township 12 North/Range 21 East. The survey area equates to the 809-acre Project Area as described above (Figure 2).

1.2.2 Regulatory Context

Development of the Project site must comply with the Washington State Environmental Protection Agency (SEPA). Enacted in 1971, SEPA is the process that identifies and analyzes environmental impacts associated with state governmental decisions. These decisions may be related to issuing permits for private projects, constructing public facilities, or adopting regulations, policies, and plans (DAHP 2019a).

Although the Project would interconnect with BPA's Midway to Moxee Transmission Line, it is anticipated that BPA will limit the area of potential effects under Section 106 of the National Historic Preservation Act to the point of interconnection. Further, it is understood that compliance with Section 106 will be conducted by BPA separately.

1.2.3 Survey Personnel

The survey was completed under the guidance of a Principal Investigator that meets the Secretary of the Interior's Professional Qualifications for Archaeology. Erin King, MA, RPA, acted as Principal Investigator. Mr. Doug Mitchell acted as Field Director for the May 2019 mobilization, while Mr. Brady Berger acted as Field Director for the April 2020 mobilization. The Field Directors directly supervised the Archaeology Technicians. Tetra Tech Historian/Architectural Historian Julia Mates conducted a desktop evaluation of the historic properties identified during the survey. Resumes for Ms. King, Mr. Mitchell, Mr. Berger, and Ms. Mates are included in Appendix A. The Archaeology Technicians during the May 2019 mobilization included Brady Berger, Matthew Neff, Aaron Toussaint, Matt Kinsey, and Madison Wood. Archaeology Technicians during the April 2020 mobilization included Matt Kinsey, Erin Flood, Rachel Channell, Jennifer Lemminger, and Andrew Lambert. Mr. Berger, Deborah Huntley, PhD, and Mary Connell contributed to this report. Ms. Wood and Sierra Marrs provided support with geographic information systems (GIS) and global positioning system (GPS) data and figures and maps for this report.

Original field data (forms and photographs), resource forms, and this report are located in Tetra Tech's Bothell, Washington office. This report will also be submitted to the Washington Department of Archaeology and Historic Preservation (DAHP) and OneEnergy. Additional recipients of the report may be identified by OneEnergy.

2.0 Environmental Setting

The Project is located in the Columbia Plateau geographic region. Covering portions of Washington, Oregon, Idaho, and British Columbia, the Columbia Plateau is the main geographic feature of the interior Columbia River Basin. The area is named for the massive basalt flows that underlie much of central and eastern Oregon, as well as southeastern Washington. In Washington, the Columbia Plateau covers roughly the southeastern one-third of the state, including all of Yakima County.

Throughout the pre-contact and historic periods, cultural adaptations and lifestyles were largely influenced by or dependent upon an area's environmental setting and the kinds of resources available within that setting. Consequently, understanding an area's environment and environmental changes allows for a better interpretation of the archaeological record, as well as an estimation of the nature and types of cultural resources that might be expected there. Characterizing natural environments can be accomplished by focusing on areas that share similar ecosystems and types, qualities, and quantities of environmental resources.

Cultural adaptations in the region have responded to an environment that has changed over time since the earliest archaeological evidence of human occupation. Following the last glacial maximum (24,000 to 20,000 years ago), humans entered the region and populations began to expand. At the same time, temperatures warmed during the Altithermal. This warming peaked around 8500 to 7500 before present (BP), cooled through 3000 BP (Little Ice Age), and then warmed again to today's climate (Aikens et al. 2011:152; Chatters 1998:42-46; Mehringer 1986; Neusius and Gross 2007:63-67). The floral and faunal resources of the region responded to these fluctuations, and so did human populations.

2.1 Physiography and Hydrology

The Columbia Plateau includes various physiographic features, including an alluvial plain along the Columbia River, basalt plateaus, and a transitional, dissected upland area. During the middle Miocene (17 to 15 million years ago), immense lava flows inundated much of the Columbia Plateau, forming the Columbia River Basalts. Later, the alluvial plain included vast lakes that formed as a result of flooding from Pleistocene-era glacial lakes Missoula and Columbia. During that time, glacial melt resulted in ice flows that blocked the Columbia River at The Dalles, causing it to flood from the eastern end of the Gorge upstream to Wallula Gap, forming ancient Lake Condon. "Channeled Scablands" are a notable feature of the Columbia Plateau in Washington. These are relics of Pleistocene glacial periods that are composed of soil patches surrounded by scoured, flat-topped buttes, terraced spurs, and steep-walled channels (Anderson et al. 1998; Bryce and Omernik 1997; Franklin and Dyrness 1973). The Scablands are a relatively hot and arid portion of the Columbia Plateau, receiving about 6 to 12 inches of precipitation per year, mainly from melted snowfall (Brown and Raymond 2016:7). The Project is in the Moxee Valley, situated between the east-west trending Yakima Ridge to the north and the Rattlesnake Hills to the south. Yakima Ridge and the Rattlesnake Hills are upfolded anticline basalt ridges (Lenfesty and Reedy 1985).

The Columbia and Snake rivers are the major drainages of the Project region. The area surrounding the Project Area has several irrigation ditches and small reservoirs, most siphoning water from the Yakima River. Several ephemeral streams within the Project Area and surrounding area channel episodic runoff.

2.2 Geology, Geomorphology, and Soils

Along the Columbia River, loess deposits can be more than 150 feet (46 meters) thick in the Columbia Plateau. Soils developed from the deposits are correspondingly complex. Sediment and soil deposits atop the plateaus and dissected uplands are relatively thin with extensive alluvial deposits limited to the floodplains of streams and fans at the foot of the mountains. Aridisols dominate basin and lowland areas while Mollisols are found at higher elevations. Dry lake beds are numerous (Anderson et al. 1998; Franklin and Dyrness 1973).

In the Project vicinity, deep gravel deposits were left behind as the Pleistocene glacial floodwaters spread out and slowed and alluvial sediments settled out (McKee 1972:283-289). These glacial lake outburst flood gravels are present on the ground surface or below a few centimeters of sediment throughout the Project region. After the flooding, wind-blown sands and silts were deposited over the landscape, creating dunes. In the region, thousands of low mounds, regionally known as mima mounds (Berg 1990), are composed of these wind-blown sediments.

Columbia Basin soils are generally classified as Andisols, which form in volcanic materials and from weathering processes, and Entisols, which form from actively eroding slopes, flood plains, and glacial outwash plains. The Natural Resources Conservation Service (NRCS) Web Soil Survey Map database (NRCS 2019) indicates that the Project Area is primarily constituted of Willis silt loam (72.5 percent), followed by Moxee silt loam (20.7 percent), Finley cobbly fine sandy loam (4.8 percent), Lickskillet very stony silt loam (0.8 percent), Kiona stony silt loam (0.3 percent), Ritzville silt loam (0.2 percent), and disturbed mechanically excavated pits (0.7 percent). In the Project Area, hardpan or other restrictive layer is typically reached in the Willis series at 34 inches below ground surface, at 18 inches below ground surface in the Moxee series, below 60 inches in the Finley series, between 3 and 20 inches in the Lickskillet series, and more than 80 inches in the Kiona and Ritzville series (NRCS 2019). The NRCS Official Soils Series Descriptions (OSDs) provide details of these soils series (NRCS 2020):

- Willis Series: Well-drained soils that are formed in loess containing minor amounts of volcanic ash. Found on uplands, alluvial fan terraces, and terraces with zero to 65 percent slopes. Used for production of small grains in a dryland winter wheat-summer fallow rotation and for grazing. Native vegetation is mainly bluebunch wheatgrass, Sandberg bluegrass, arrowleaf, balsamroot, yarrow, and big sagebrush.
- Moxee Series: Shallow, well drained soils that are formed in loess over a lime silica cemented duripan mantling old alluvium or basalt. Found on uplands with zero to 30 percent slopes. Used for irrigated crops and livestock grazing. Native vegetation is mainly bluebunch wheatgrass, Sandberg bluegrass, and sagebrush.

- Finley Series: Well-drained soils formed in gravelly alluvium mixed with loess in the upper strata. Found on alluvial fans and outwash terraces with zero to 50 percent slopes in valleys. Used for livestock grazing and irrigated crop production, including winter wheat, grapes, mint, corn, alfalfa hay, and pasture. Native vegetation includes bluebunch wheatgrass, needle and thread, Thurber needlegrass, Sandberg bluegrass, Cusick's bluegrass, and Wyoming big sagebrush.
- Lickskillet Series: Shallow, well-drained soils that form in stony colluvium with loess, rock fragments, and residuum weathered from basalt and rhyolite. Located on uplands with slopes of zero to 120 percent. Typically found on south-facing canyon and mountain side slopes. In eastern Washington, commonly on benches, shoulders of plateaus, canyon side slopes, hills, and ridgetops. Mostly used for livestock grazing, but uses may also include watershed, recreation, and wildlife habitat. Native vegetation includes bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, western yarrow, and Wyoming big sagebrush.
- Kiona Series: Very deep and well-drained mixed colluvium derived from basalt and loess. Forms on hill and canyon slopes with zero to 120 percent slopes in hills and canyons. Used mainly for livestock grazing. Native vegetation includes Wyoming big sagebrush, bluebunch wheatgrass, Sandberg bluegrass, mustard, needleandthread, and Thurber needlegrass.
- Ritzville Series: Well-drained deep silt loam formed in loess. Found on structural benches, canyons, and hillslopes with zero to 70 percent slope on structural benches, hillslopes, and canyons. Typically used for nonirrigated wheat production and some livestock grazing. Native vegetation includes bluebunch wheatgrass, Sandberg bluegrass, Wyoming big sagebrush, and yarrow.

Appendix B provides the NRCS Web Soil Survey Map data overlain on the Project Area.

2.3 Biotic Setting

2.3.1 Flora

Sagebrush steppe, a vegetative community composed of sagebrush (and other shrubs) mixed with short grasses, is characteristic of the Columbia Plateau. The native shrub component is dominated by big sagebrush (*Artemisia tridentata*), interspersed with occasional stands of bitterbrush (*Purshia tridentata*). Riparian corridors along streams support willows (*Salix* spp.), cottonwood (*Populus* spp.), cattails (*Typha* spp.), and tule (*Scirpus* spp.) (Chatters 1998:35). Native grassland vegetation has become highly fragmented in the region due to the agricultural economy. Native grasses include western needle-and-thread (*Stipa comata*), Indian ricegrass (*Oryzopsis hymenoides*), bluebunch wheatgrass (*Agropyron* spp.), and Sandberg bluegrass (*Poa secunda*). Great Basin wild rye (*Elymus glaucus*) is found in periodically moist areas. Edible-rooted forbs, including onions (*Allium* spp.), bitterroot (*Lewisia rediviva*), and several species of desert parsley (*Lomatium* spp.) occupy the driest portions of the region. Perennial and annual flowering plants include lupines (*Lupinus* spp.) and arrowleaf balsamroot (*Balsamorhiza saggitata*). Cheatgrass (*Bromus tectorum*), Medusa head

(*Taeniatherum caput-medusae*), Russian thistle (*Salsola iberica*), and other weed species cover more broad areas (Chatters 1998:35).

Vegetation in the Project Area is split by habitat types. The southern portion of the Project area consists mainly of non-native species including downy brome (*Bromus tectorum*), crested wheat (*Agropyron cristatum*), Russian thistle (*Salsola tragus*), blue mustard (*Choriospora tenella*), black mustard (*Brassica nigra*), western tansymustard (*Descurainia pinnata*), and yellow salsify (*Tragopogon dubious*). Further north are shrub-steppe habitats and eastside grasslands. Plant species within shrub-steppe was dominated by sagebrush (*Artemisia* spp.), with a minor component of spiny hopsage (*Grayia spinosa*), saltbush (*Atriplex* spp), greasewood (*Sarcobatus* spp.), and other woody shrubs. Native forbs such as twin arnica (*Arnica sororia*), prairie star (*Lithophragma parviflorum*), arrowleaf balsamroot (*Balsamorhiza sagitata*), and desert parsley (*Lomatium* spp.) were present; however, dense areas of downy brome covered much of the understory. Although grazed by livestock, grasslands contained a minor component of native grass species such as squirreltail/wheatgrasses (*Elymus* spp.) and bunchgrasses, (*Grama* spp.). Overall, the vegetation community attests to heavy, long-term stock grazing, which eradicates sagebrush and larger bunchgrasses and leads to an increase in hardy, low-growing native plants and exotic weeds.

2.3.2 Fauna

Prior to the arrival of Euro-Americans, the grasslands and shrub-steppe plains of the Columbia Plateau supported a variety of native terrestrial vertebrates. Resident large mammals included white-tail deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), and pronghorn antelope (*Antilocapra americana*). Elk (*Cervus canadensis*) were common in the dissected uplands, particularly during severe winters. Black bears (*Ursus americanus*) were probably rare on the alluvial plain, but were certainly present in the basalt plateaus and dissected uplands, as well as along the tributary streams of the Columbia River during salmon runs. Coyote (*Canis latrans),* wolf (*Canis lupus*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor)*, and several weasel species (*Mustela* spp.) rounded out the carnivores of the region (WDFW 2019). Beaver (*Castor canadensis*) and river otter (*Lontra canadensis*) were native to Columbia tributary rivers and streams, but were overexploited by local people by the mid-1800s (Ruby and Brown 1972:31). Muskrats (*Ondatra zibethicus*) persisted in wetlands. Black- and white-tailed jackrabbits (*Lepus* spp.), badgers (*Taxideinae* spp.), and marmots (*Marmota* spp.) found suitable habitat in rocky outcrops and loess soils, as did a variety of smaller mammals. Bison (*Bison*) were also present within the Columbia Plateau, as evidenced by remains found in at least 20 archaeological sites in the Columbia Basin (Schroedl 1973).

The North Columbia Basin State Wildlife Recreation Area, located 60 miles northeast of the Project area, is a refuge for migratory birds. Among the large number of species that can be found there are various geese (*Branta canadensis, Chen caerulescens*), swans (*Cygnus* spp.), ducks (*Aix sponsa*, *Anas* spp., *Aythya* spp., *Bucephala* spp., *Mergus* spp., and *Oxyura jamaicensis*), and Sandhill Cranes (*Grus canadensis*). Numerous raptor species, including bald (*Haliaeetus leucocephalus*) and golden eagles

(*Aquila chrysaetos*), several open-country hawks, and small falcons are native to the area. Great horned (*Bubo virginianus*), short-eared (*Asio flammeus*), and screech owls (*Otus kennicottii*) feed on birds, small mammals, and insects in the region. Burrowing owls (*Athene cunicularia*) are unique among North American owls in that they nest below ground. On the Columbia Plateau, they commonly make use of badger holes. Turkey vultures (*Cathartes aura*) are summer residents in the Columbia Basin, and it is possible that California condors (*Gymnogyps californianus*), known to have inhabited the Columbia Gorge, were also present prehistorically (Hansel-Kuehn 2003).

Amphibians are poorly represented in this semi-arid environment and include only the long-tailed salamander (*Eurycea longicauda)*, western toad (*Anaxyrus boreas*), tree frog (*Neobatrachia* spp.), northern leopard frog (*Rana pipiens*), and spadefoot toad (*Scaphiopodidae*). Reptiles include fence (*Sceloporus occidentalis)* and side-blotch lizard (*Uta* spp.), rubber boa (*Charina bottae*), racer (*Coluber* spp.), night snake (*Hypsiglena torquata*), garter (*Thamnophis* spp.), and western rattlesnake (*Crotalus viridis*) (Csuti et al. 1997).

Anadromous salmonid fish, including steelhead trout (*Oncorhyncus mykiss*) and several species of salmon (*Oncorhynchus* spp.), are the defining fauna of the Columbia River system. They were, and continue to be, a primary subsistence and cultural focus of the native peoples in the region. Prior to installation of the Bonneville, Dalles, John Day, and McNary dams, salmon were ubiquitous. Almost all tributaries supported spawning populations of one or more species (Chatters 1998:39). While runs were likely variable over time and depended on general moisture and levels of river aggradation, the main anadromous fish species of the lower- to mid-Columbia and adjacent rivers were and still are the Chinook (*Oncorhynchus tschawytscha*), sockeye (*O. nerka*), and coho (*O. kisutch*) salmon and the steelhead trout (Chatters 1998:39). Lamprey eels (*Lampetra* spp.) and sturgeon (*Acipenseridae* ssp.) are also native to the Columbia River drainage system.

2.4 Paleoenvironment

Between approximately 15,000 and 6,000 years ago, the Columbia Plateau experienced extreme seasonal climatic swings. Hot arid conditions prevailed during the summers. Glaciers receded from all but the highest mountains as summer temperature averages increased to as much as 34.2 degrees Fahrenheit (°F; 18.8 degrees Celsius [°C]) higher than today's averages. Conversely, winters were very cold, as indicated by extensive rock fall in caves caused by freeze-thaw occurrences (Chatters 1998:43). Glaciers in Montana melted, swelling glacial Lake Missoula to almost 3,000 square miles behind an immense ice dam on the Clark Fork River. Periodic breaches in the dam caused a series of flood events referred to as the Missoula Floods. These cataclysmic flood events inundated everything to the west as far as Portland and the Willamette Valley and scoured west-central Washington down to bedrock (Bishop 2003). The impressive topography of the Columbia Gorge is a legacy of the Missoula Floods.

Tephra from eruptions of both Mount Saint Helens and Glacier Peak blanketed much of the Plateau between 11,700 and 11,200 BP (Andrefsky 2004:25). After centuries of smaller eruptions, Mount Mazama, at modern-day Crater lake in southern Oregon, collapsed in a cataclysmic eruption that occurred approximately 6780 BP. Ash deposits from Mount Mazama spread over large portions of the Plateau, affecting the entire biosphere and consequently human settlement patterns across much of the region (Connolly 1999:26).

By roughly 11,000 to 10,000 BP, all but the highest and northernmost glaciers had retreated, resulting in warm and moist conditions during the spring and summer and cold and dry conditions during the winter. Grasses, sagebrush, and chenopods thrived in the steppe region surrounding the Project area (Chatters 1998:43–44). Precipitation increased in the Pacific Northwest as a whole after about 9500 BP, but the lower Columbia Basin became more arid. Former grasslands in the Project vicinity were gradually supplanted by drought-adapted sagebrush and other open-ground plants like ragweed (Mehringer 1991 in Chatters 1998:44).

Around 6000 BP, the arid continental climate with its seasonal extremes began to shift toward a more temperate maritime pattern. As precipitation increased, coniferous forests spread (Andrefsky 2004:25). Vegetation levels increased in areas surrounding the Columbia and Yakima Rivers, creating paleosols on the adjacent floodplains (Chatters 1998; Hammatt 1977). By 4500 BP, the Columbia Plateau was cooler and wetter than today's climatic conditions. Timber lines moved downslope, and paleosols began to develop on the floodplains. The reduced temperatures in the local rivers allowed salmon runs to extend far to the east and south in the respective systems (Chatters 1998:45).

By approximately 3000 BP, temperatures began once more to rise, and modern vegetative communities began to appear. Freshwater mussels increased, while salmon responded negatively to higher water temperatures and finer sediments on the streambed. There is little evidence that major environmental changes have occurred in the Columbia Plateau over the last 2,000 years (Chatters 1998).

Early Holocene fauna in the Project vicinity included elk (*Cervus elephus*), bison (*Bison bison*), mule deer (*Odocoileus hemionus*), white-tailed deer (*O. virginianus*), mountain sheep (*Ovis canadensis*), and pronghorn (*Antilocapra americana*). Bison were most common in grassland communities of the Project region from about 2400 to 1800 BP (Chatters 1998:46). Archaeological evidence suggests that regional riverbeds were sandy and meandering during the early Holocene. Although salmon and other migratory fish prefer gravel-bedded streams (Chatters 1998:42, 44), sandy streams support the western ridgemussel (*Gonidea angulata*), another potential subsistence resource. The Fivemile Rapids Site on the Columbia River at The Dalles, Oregon, has produced salmon from this early period (Cressman et al. 1960).

3.0 Cultural Setting and Cultural-Historical Context

This section provides a summary of the cultural, ethnographic, and historic contexts of the Columbia Plateau region wherein the Project is proposed. It provides an overview of the pre-contact period Columbia Plateau, as well as the associated diagnostic artifact types and cultural traits that define the regional sequence. This section also includes an account of the ethnographic record of the Columbia Plateau, as well as a historic narrative of major themes that apply to the Project area.

3.1 Pre-Contact Narrative

Cultural areas comprise large geographic areas where indigenous peoples shared broadly similar social, subsistence, and material cultures (Lohse and Sprague 1998). The Columbia Plateau culture area includes all of the area drained by the Columbia and Fraser rivers, with the exception of the portion of the Snake River that drains the northern Great Basin. Different areas of the Plateau developed individualized variations in cultural chronology, pointing to impacts from localized environmental and cultural factors (Ames et al. 1998; Chatters 1998; Leonhardy and Rice 1970; Sappington 1994). The Project area lies within the south-central Plateau subregion of the Columbia Plateau (Ames et al. 1998:Figure 1).

Understanding a region's cultural chronology is essential in answering questions related to site function, intensity of occupation, seasonality, and occupation date ranges. Chronology in the Columbia Plateau region is complex—a result of similarities in settlement patterns, cultural practices, and tool design between Columbia Plateau and Great Basin peoples (Andrefsky et al. 2003). Various established and professionally accepted chronologies from the southern Columbia Plateau are discussed below. However, for the purposes of cross-referencing chronologies, archaeological patterns, and cultural trends between culture areas, the simplified and accepted chronology proposed by Andrefsky (2004) for the Plateau, is used. Andrefsky (2004) synthesized several chronologies to achieve a simplified four-phase sequence for the Columbia Plateau, including the Paleoarchaic (pre-11,000 to 8000 BP), the Early Archaic (8000 to 5000 BP), the Middle Archaic (5000 to 2000 BP), and the Late Archaic (2000 to 500 BP).

3.1.1 Paleoarchaic Period

The Paleoarchaic period (referred to as Pre-Archaic period in the Great Basin), as defined by Andrefsky (2004), dates from prior to 11,000 to ca. 8000 BP and includes the earliest archaeological evidence of human occupation in the southern Columbia Plateau. Two traditions of artifacts characterize this initial time period on the Columbia Plateau: the fluted-point tradition (Clovis or Folsom) and the western stemmed-point tradition (Windust points). Both point types are thought to have been used for hunting of megafauna and other big game. Generally, the fluted-point tradition is thought to pre-date the western stemmed-point tradition. Various anomalous dates have led researchers to question this, however (Andrefsky 2004:26-27). Further, although a pre-Clovis occupation of North America is academically accepted today, evidence for this occupation on the Columbia Plateau is poor. Clovis points constitute the earliest, definitive evidence of human occupation in the region. Most have been found in the region as isolated surface finds. Elsewhere in the general region, such as in the Northern Great Basin and western valleys and coast of Oregon, these points have been found in archaeological deposits (Aikens et al. 2011:155; Andrefsky 2004:26-27; Neusius and Gross 2007:239). Paleoarchaic assemblages also commonly include bulky cobble tools, bifaces, scrapers, edge-ground cobbles, gravers, burins, and bola stones. Bone and antler tools are also typical, including bone points, needles, awls, beads, antler flakers, and antler wedges. Groundstone or milling implements are present but rare, suggesting a highly mobile society (Aikens et al. 2011; Ames et al. 1998; Neusius and Gross 2007:244).

Paleoarchaic sites in the greater Columbia Plateau region are found in many settings. Although many are open-air sites (Neusius and Gross 2007:242), occupations have also been found along the margins of pluvial lakes, in rock shelters and caves, and occasionally at high elevations (Aikens et al. 2011:155; Andrefsky 2004:28). These sites and their varied settings suggest the area was occupied during this time period by small groups of mobile hunter-gatherers that exploited a variety of subsistence resources, including riverine resources.

The Lind Coulee Site (45GR97) in southeastern Grant County demonstrates the antiquity of humans in the region (WSU N.D.a). It is one of the few early upland sites; riverine sites are more common. Several different lines of evidence show that the Lind Coulee Site was intermittently occupied for between 100 and 150 years between 8,000 and 9,000 years ago. The site's record of bison procurement and processing points to changes in the environmental history of the Columbia Plateau. Irwin and Moody (1978:247, 253) interpret materials found at the Lind Coulee Site to represent occupation by small family groups rather than hunting parties. Recovered faunal remains, as well as stone and bone projectile points, suggest that elk and bison, as well as small mammals and birds, were hunted nearby and certain portions of the carcasses were brought to the site for processing.

The now-flooded Marmes Rockshelter (45FR50) is located in Franklin County on the west side of the Palouse River Canyon (WSU N.D.b). The site was used continuously for habitation over a long time period. Hicks (2004) found differential use of the floodplain and rockshelter portions of this site during its early occupation. The rockshelter provided evidence of generalized subsistence activities, whereas specialized manufacturing activities apparently occurred on the floodplain. Floodplain hearth features, as well as intensive tool use and a large number of exhausted tools, suggests floodplain use as a mobile forager base camp. Consumption of large and medium-sized mammals, fish, and shellfish point to the site's function as a residential base camp in a mobile foraging system.

Sentinel Gap (45KT1362) is located in south-central Washington in the lower reaches of the Columbia River tributary. Five radiocarbon dates from this site yielded an average age of about 12,000 calibrated years BP (Chatters and Pokotylo 2002). Site features are 13 discrete lithic waste piles and the burned remains of two possible brush structures (Galm and Gough 2001, 2008). Artifacts recovered include projectile points, knives, bifaces, scrapers, ground stone tools, ochre-stained palettes, bone and antler tools, wedges, awls, needles, and bead preforms, as well as a large faunal assemblage. Fauna included large game (bison, elk, and mountain sheep), small/medium game (beaver, badger, marmot, and rabbit), and salmon (Litzkow 2011). The Sentinel Gap site has been interpreted as a temporary residence used over a single occupation episode (Galm and Gough 2008:209).

3.1.2 Archaic Period

Andrefsky (2004) divides the Archaic period on the Columbia Plateau into Early, Middle, and Late sub-periods. The overall Archaic period is characterized by substantial changes in subsistence, sedentism, and material culture. The climate changed from cool and wet to relatively hot and arid during the Altithermal period and then cooled again to modern conditions. As the type of large game being hunted changed, so did the hunting technology. Archaic people began manufacturing finely made lanceolate and leaf-shaped points, and eventually the atlatl replaces the spear as the weapon of choice, only to be replaced later by the bow and arrow.

3.1.2.1 Early Archaic Sub-Period

The Early Archaic sub-period of the Columbia Plateau dates from ca. 8000 to 5000 BP and is roughly coeval with the Altithermal. Generally speaking, the Early Archaic can be further divided into early and late sub-periods, the latter coinciding with the eruption of Mount Mazama at approximately 6700 BP.

Finely made lanceolate and leaf-shaped Cascade points mark the advent of the Early Archaic sub-period. The addition of large, side-notched projectile points (Northern Side-Notched or Cold Springs Side-Notched) occurs in the later sub-period, after the Mazama ashfall (Andrefsky 2004; Aikens 1993:95; Nelson 1969; Leonardy and Rice 1970). This pattern is seen throughout the Middle Columbia River area, where microblades are also added in the latter portion of the Early Archaic (Andrefsky 2004:28; Neusius and Gross 2007:245). A cobble tool complex, possibly related to salmon processing and/or plant food processing, is present throughout the sub-period (Andrefsky 2004:28-29; Aikens et al. 2011:168).

Early Archaic sites occur in settings similar to those of the Paleoarchaic. The size and configuration of the Cascade and side-notched projectile points of the Early Archaic indicate substantial reliance on hunting of mammalian prey. However, faunal assemblages suggest the exploitation of locally abundant resources, depending on a site's location, or the resources with greatest yield for effort (i.e., optimal foraging). Consumption of fish and roots apparently increases over the period, as evidenced by the occasional fishing tackle (Ames et al. 1998:103), pounding stones, and manos (Andrefsky 2004:28) found among archaeological assemblages of this sub-period. The presence of non-local obsidian at Early Archaic sites suggests an increase in widespread mobility and/or development of trade routes (Salo 1985). Although evidence of permanent storage facilities is lacking for this time period, an increase in sedentism at the transition into the Middle Archaic has been suggested (Chatters and Pokotylo 2004).

There are several significant Early Archaic sites in the Columbia Plateau region. Some of the Paleoarchaic sites described above, such as Marmes Rockshelter, continued to be utilized [redacted] Excavated in the late 1950s and early 1960s, the oldest components of the Sunset Creek Site were found to be small, seasonal camps. Other sites near the Sunset Creek Site include two other pit house sites and a number of storage shelters (Nelson 1969:5-6).

3.1.2.2 Middle Archaic Sub-Period

Semi-subterranean pithouses on the Columbia Plateau appeared around 5000 BP, marking the beginning of the Middle Archaic sub-period (ca. 5000 to 2000 BP). The use of such dwellings denotes a more sedentary or at least more structured settlement pattern (Andrefsky 2004:30;

Chatters and Pokotylo 2004:67). During this time, projectile point morphology developed into large, side-notched points with low notches along the blade margins, expanding stems, and short barbs. Two new projectile points styles also emerged on the Plateau during this transition and resemble points most often used by Great Basin hunters. The first of these points is similar to the Great Basin's Pinto style point, exhibiting a small size with shoulders and contracting stems. These may have been pre-cursors to the Snake River Corner-Notched projectile point, a large point with an expanding base similar to the Great Basin Elko series projectile points (Leonhardy and Rice 1970; Lohse 1995:6). Other hallmark artifacts of the Middle Archaic sub-period include small side and end scrapers, cobble scrapers, utilized cobble spalls, and pounding stones. Sinkers, net weights, hopper-mortar bases, and pestles are also present in some assemblages. Lithic technology is geared toward a generalized flake tool industry of basalt, which Leonhardy and Rice (1970:14) characterize as crude and impoverished. Large and small game were hunted, mussel gathering was emphasized, and fishing for salmonids continued. The ubiquitous introduction of hopper mortars and pestles suggests a change from seed processing with flat manos to processing of roots, meat, fish, and other materials across the southern Columbia Plateau. Salmon and other resident fish in conjunction with mussels and other riverine resources gain importance relative to big game hunting. However, salmon appear to have been of primary importance as indicated by high densities of salmon bone in site assemblages as well as isotopic analyses of human remains that identified more than half of protein in the individuals' diets was from marine resources (Chatters and Pokotylo 1998:76-77; Neusius and Gross 2007:249).

Middle Archaic groups appear to have remained relatively mobile with pithouses used seasonally and generally located near the lower elevation steppe-forest margins (Andrefsky 2004:30, 31; Neusius and Gross 2007:246). These appear first on the Middle Columbia River around 5200 BP and were throughout the Columbia Plateau by 4500 BP. Following a brief hiatus around 3900 BP, sedentism appears have increased and the regional economic strategy changed from forager to collector around 3500 BP. Evidence of this change is based on the addition of storage features, an increase in density of pithouses at occupation sites, and an intensification of root exploitation (Andrefsky 2004:30). Pithouses tend to be deeper and larger and commonly include earth ovens as well (Neusius and Gross 2007:249). Trade likely contributed to and partially allowed for sedentism, as evidenced by an increase in shell artifacts and obsidian during this time period, with a slight reduction during the late Middle Archaic (Neussius and Gross 2007:250). Although sedentary sites appear most common in low elevations, toward the end of the period it appears that use of high elevations for limited collection occurred (Chatters and Pokotylo 1998:76). Several Paleoarchaic and Early Archaic sites in the southern Columbia Plateau continued to be utilized during the Middle Archaic (Andrefsky 2004), including the Pilcher Creek Site in nearby Union County.

3.1.2.3 Late Archaic Sub-Period

The Late Archaic sub-period of the Columbia Plateau dates from ca. 2000 to 500 BP. Trends during this time period are essentially similar across the Columbia Plateau as populations increased significantly and occupations occurred along all major and minor river valleys, in upland areas, and in dry basin areas (Andrefsky 2004:32). Chatters and Pokotylo (2004:16) hypothesizes that the beginnings of the "winter village" or Plateau settlement pattern developed early during this sub-period. Aikens et al. (2011:178) indicate the Late Archaic established a "Plateau Pattern" of prosperous and socially complex fishing-hunting-gathering-trading society described in ethnohistoric accounts. By this time, the large pithouse villages of the Middle Archaic extended throughout the region along all the large rivers and tributary streams and in upland areas. Large winter villages were typically located in deep canyon bottoms and relied on stored foods supplemented by local hunting and fishing. Facilities for long-term, repeated storage were necessary outside of pithouses, in the form of talus pits, rockshelters, and caves (Ames et al. 1998:111; Endacott 1992). Populations would separate into smaller groups in the spring to collect seasonal resources (Andrefsky 2004:32). There is clear evidence for anadromous fish harvesting and processing during this time, evidenced by the presence of harpoons and net sinkers in artifact assemblages (Ames et al. 1998).

Some variability in pithouse structures is introduced during this time. Smaller pithouses appear to have been used as nonresidential structures, such as sweat houses, storage pits, and menstrual huts, with larger pithouses reserved for habitation (Andrefsky 2004:21). However, some suggest the variability may be a result of developing social hierarchy and inequality rather than strictly functionally differences (Neusius and Gross 2007:252). It is unclear when these pithouses transitioned to rectangular longhouses; however, this may have been a result of Chinook expansion into the region or simply a gradual replacement of construction techniques (Andrefsky 2004:32; Neusius and Gross 2007:253).

The Late Archaic is characterized by the appearance of small, corner-notched and basal-notched points by about 2400 BP, signaling the advent of bow and arrow technology. Within about 1,400 years, this technology had come to almost completely replace other hunting technologies on the Columbia Plateau. The prevalence of this new technology may have been related to an increase in warfare, which is supported by the above-described population density increase, settlement patterns with large village sites in deep canyons, and osteology analyses (Aikens et al. 2011:178; Andrefsky 2004:33; Neusius and Gross 2007:252). Other typical artifacts of the Late Archaic sub-period include large and small basal-notched and corner-notched projectile point types (Snake River Corner-Notched, Columbia Valley Corner-Notched, and Wallula Rectangular Stemmed), small end scrapers, lanceolate and pentagon-shaped knives, cobble implements, hopper mortars, pestles, and net weights. Assemblages suggest that large and small game were hunted, including bison and mountain sheep (Leonhardy and Rice 1970). Many of the sites previously mentioned continued to be occupied, while new ones were established.

3.1.3 Late Pre-Contact Period

The Late Pre-Contact Period (post-AD 1450) on the Columbia Plateau is characterized by a continuation of the "Plateau Pattern" described above. Diagnostic artifacts included variable forms of Columbia Valley corner-notched points, and camas and other roots were intensively used. Fishing, particularly for salmon, and the use of nets was ubiquitous, as was the use of pits and caves for storage. Basketry, fiber, and wood artifacts are also known from Late Prehistoric sites, as are small projectile points that suggest a further increase in the use of the bow and arrow (Leonhardy and Rice 1970). Small-stemmed points, often described as "pin-stemmed," are found along the Columbia River and to the north in the Palouse country (Nelson 1969:217). Small side-notched points analogous to Desert Side-Notched points of the Great Basin (Thomas 1981:18) are also present in the southern Columbia Plateau.

A well-known Late Prehistoric rockshelter storage site is Squirt Cave (45WW25), located on the lower Snake River to the southeast of the Project area (Endacott 1992; WSU N.D.c). This site produced a large number of perishable items that provide invaluable information on raw materials and finished products used for transport, storage, and the production of hunting, fishing, and food processing tools. Tule, known ethnographically to be an important matting material, was present in sufficient quantity at this site for species identification. Rare examples of basket starting points and selvage were also present. Fired and incised clay items found in Squirt Cave are the only known examples from the lower Snake River.

3.2 Protohistoric and Historic Ethnography

Ethnographic information for the Columbia Plateau has been summarized in a number of sources, including those by Ames et al. (1998), Ruby and Brown (1992), Stern (1998), and Suphan (1974), among others. The Wanapum, Yakama, Chamnapum, Palouse, Umatilla, Walla Walla, and Middle Columbia Salishan groups are thought to have utilized the Project region (Spier 1936:18; Stern 1998:396; Walker and Sprague 1998:2). Ethnographic accounts document the importance of the Lower Grand Coulee–Moses Lake area, in particular, in seasonal subsistence activities of Columbia, Southern Okanogan, Sanpoil, Nespelem, Palouse, and Wanapum groups (Chalfant 1974:298; Hunn 1990:105; Ray 1936, 1954, 1974; Teit 1928; Trafzer and Scheuerman 1986:7).

It should be noted that several treaties between tribes and the U.S. government were signed in the middle to late 1800s as part of an effort to end hostilities between Native Americans and Euro-Americans. Additionally, the U.S. government saw the treaties as a way to develop commerce, pay reparations, and establish reservations. Implementation of such measures was not always forthcoming or fair, however. Each tribe had its own unique experience and results from these experiences.

Most ethnographic groups that used the Project vicinity spoke various dialects of the Sahaptin language group. The Nez Perce and Molale-Cayuse form two of three Sahaptin language subgroups. The third subgroup, known as Northern Sahaptin, could be further broken down into Northwest Sahaptin (spoken by the Kittitas, Yakama, Wayampam, and Wanapum) and Umatilla Reservation Sahaptin (spoken by the Umatilla, Walula [or Walla Walla], and Palouse) (Ray 1936:108).

Prior to Euroamerican contact, the inhabitants of the region practiced an annual subsistence round wherein groups would move from their winter villages on the Columbia River in early spring to the uplands. In the uplands, people would collect root-foods such as camas and bitterroot, which were dug from the ground using digging sticks. Root-harvesting areas were typically shared by several different groups, facilitating socialization, ceremony, and trade (Anastasio 1972:154; Ray 1936:216–217). Camps were established near small springs or other water sources where the collected roots would be steamed in cooking pits. Roots were either eaten or taken back to winter villages for long-term storage (Relander 1986:112–113). Digging and processing root-foods was the responsibility of women; men participated in activities such as hunting, gambling, horse trading, and in the later historical period, gardening (Anglin 1995:30, 35, 239; Ray 1974:432; Ruby and Brown 1965:341).

Several species of anadromous fish were available in the Columbia River basin almost year-round. The most intense fishing occurred during the spring through fall seasons. First, group fishery structures such as weirs, which may have been damaged by winter water and ice flows, had to be examined and repaired. The runs of salmon included Chinook (mid-March to mid-June, then mid-September to mid-October), sockeye (July and August), blueback (July and August), silver (mid-September to mid-October, then mid-December to February), and steelhead (all year, beginning in February). Sturgeon were also available in the winter and were caught near modern-day Pasco with “gorges tied to braided hemp set lines” (Relander 1986:242–244). The fishing season entailed a division of labor, with individuals responsible for specific tasks such as catching and processing the fish, collecting wood for use in the drying fires, and transportation of the preserved fish for storage.

Tribes also hunted and trapped animals (e.g., ungulates and smaller mammals) and gathered autumn roots (e.g., camas and bitterroot), berries (e.g., huckleberry), and barks for food and medicines in the upland areas around the Columbia and Snake Rivers. Seasonal camps at resource-procurement locations were fairly ephemeral, consisting of tents or huts constructed of tule mats over cottonwood framework (Relander 1986:40; Stern 1998).

Activities in the uplands would cease as winter began to set in. People would relocate and congregate in larger family-groups at riverine villages to make winter preparations. This was a time of celebration and social events, including ceremonies and storytelling, and a time to make and repair equipment needed for the coming seasons of procuring and processing. Additional hunting and fishing forays supplemented the typical winter diet of mashed and dried roots, fish, and game (Anastasio 1972:137).

To date, the Yakama Nation has been the only tribe to express interest in the Project and traditional resources in the Project region. Prior to European settlement, the Yakama consisted of several smaller semi-autonomous bands (BLM 2016). In the winter months, the people would live in small villages on the valley floor near rivers that provided resources and protection from the cold. In the spring, the Yakama would move to the mountains to gather plants or along the rivers to fish. In the fall, they would move back to valley (Healy 2010). Villages maintained close kinship ties and social interactions with each other (BLM 2016). A Native American trail passed through the Moxee Valley, connecting the Kittitas Valley to a village site near Union Gap and then on to the White Bluffs and Priest Rapids area. The trail was referred to as Kewanumpt (likely a Wanapum name) and later referred to as Konnewock (also spelled Konnowak or Konnowac) Pass (Givens 2020; Relander 1986:132). The trail was subsequently used by later Euro-American settlers entering the area (Givens 2020).

The first Euro-Americans to establish contact with the Yakama were the Lewis and Clark expedition in 1805 (Jacob 2013). This was just the beginning of the expansion of non-native settlers into the region. As is well-documented, this Euro-American expansion brought conflict. In 1855, Washington Territorial Governor Isaac Stevens convened with representatives of the 14 tribes in Walla Walla, and the result was the Yakama Treaty of 1855 that ceded over 12 million acres of Yakama land and established the Yakama reservation (Healy 2010).

The treaty required tribes to make their way to the reservation within 2 years, but the ceded 12 million acres were opened to non-native settlers a mere 12 days after the treaty was signed. A Yakama chief, Kamiakin, called upon the tribes to oppose this. The opposition culminated in the Yakama War, which lasted until 1859 when the Yakama accepted their reservation (Healy 2010).

3.3 Historic Narrative

3.3.1 Early Exploration

Although horses and trade goods preceded the arrival of Euro-Americans in the inland Northwest by decades via upriver trade, members of the Corps of Discovery (1805–1806) were the first Caucasians to navigate the Columbia River (Walker and Sprague 1998:141). Lewis and Clark recorded 174 Sahaptin lodges along the Columbia River as they passed downstream in October 1805 (Hunn and French 1998:391). In April 1806, the expedition camped at the mouth of Rock Creek near The Dalles, Oregon. Journals recount camping near village sites and trading for dogs, wood, and a bread made from *Lomatium* (Moulton 1983:317). When word of the resources found by Lewis and Clark spread, trappers and traders quickly organized to exploit them.

3.3.1.1 The Fur Trade and Exploration

The fur trade followed closely on the heels of the early explorers, with the Hudson's Bay Company and Northwest Fur Companies vying for territory and the pelts of otter and beaver (Walker and Sprague 1998:142). Native people were drawn into the fur craze, trading beaver pelts for domestic goods, weapons, and ammunition (Stern 1998:412). Competition between Britain and America was intense: the Hudson's Bay Company's tactic to counter American competition in the Snake River country was to trap-out entire drainages, creating a "fur desert" (Wishart 1979). By the mid-1840s, the beaver had been extirpated from much of its range in the Plateau, Snake River Plain, and Great Basin.

The first Euro-Americans known to have traveled overland near the Project area were members of the Pacific Fur Company, led by W.P. Hunt, newly appointed agent of Astoria, in 1812 (Evans 1991:17). Hunt's route to Astoria followed the Snake River and then traversed the Blue Mountains and the Umatilla River to reach the Columbia River (Meinig 1968). Members of the Astoria party under Robert Stuart retraced the route in 1812 on a return trip to St. Louis. Stuart was one of the first Euro-Americans to record detailed accounts of the landscapes of eastern Oregon and western Idaho. The route travelled by the "Astorians" was soon followed by other expeditions, including trapping brigades led by Alexander Mackenzie, Peter Skene Ogden, and Nathaniel Wyeth. Wyeth would ultimately return to southeastern Idaho to establish a trading post at present-day Fort Hall, a strategic stop on the Oregon Trail, near present-day Pocatello. In 1821, the Pacific Fur Company was bought out by the Hudson's Bay Company, whose monopoly on the interior fur trade would last for another 15 years. Fur trappers working with the Hudson's Bay Company established trails between present-day Ontario, up the Burnt River, then overland through the Blue Mountains and on to the Columbia. Alexander Mackenzie, John Work, and Nathaniel Wyeth all passed through the area between 1824 and 1836. The first naturalists to record new flora and fauna from the interior of the Northwest, John Townsend and Thomas Nuttall, accompanied Wyeth on one of two trips he undertook through western Idaho and eastern Oregon (Evans 1991).

The land that is currently the City of Kennewick, Washington, located at the confluence of the Snake and Columbia rivers, has been historically abundant with fish, and its mild winters made it ideal for winter hunting and fur trapping camps. Prior to the fur trade era, the area was an important gathering spot for the Nez Perce, Yakama, Umatilla, Wallowa, and Wanapum tribes to hold celebrations and conduct trade. The European fur trade came to the area when David Thompson led a fur trading party down the Columbia in 1811, and Alexander Ross followed a year later (Kershner 2008). David Thompson would build the Nez Perce trading post about 15 miles southeast of Kennewick where the Walla Walla River meets the Columbia River. He had established other fur trading posts further up the Columbia River in Montana and Idaho (Elliott 1915). The Hudson Bay Company took over Fort Nez Perce and changed its name to Fort Walla Walla in 1821. Native Americans would bring in furs from the interior to trade for European made goods. These furs would be shipped down the Columbia to Fort Vancouver. Fort Walla Walla was closed in 1855 due to conflicts between settlers and Native Americans (History Link 2014). This was toward the end of the intense fur trade in the Pacific Northwest. The number of fur-bearing animals was in steep decline, and a change in fashion made the pelts less profitable (Northwest Power and Conservation Council 2020).

Nevertheless, the influx of Euro-American settlers, combined with the arrival of the horse and firearms, led to widespread conflicts as cultural lands and hunting territories were encroached upon by mobile aboriginals and newly introduced trappers and traders (Murphy and Murphy 1986:302).

3.3.2 Emigration and Trails

The first wave of migration to the Pacific Northwest came during the 1830s as Protestant missionaries moved west to convert the native populations (Hutchison and Jones 1993). Other explorers established other routes that were eventually incorporated into the well-known Oregon Trail. The first true emigrant wagon train, the Bidwell-Bartleson party, arrived at Soda Springs in southeastern Idaho in 1841. The party split there, one group turning south down the Bear River toward California, and the remaining 34 emigrants continuing west to the Columbia River and western Oregon. The Oregon group was guided by James Sinclair of the Hudson's Bay Company (Bagley 2010; Hill 1986:10–11). The following years saw increased emigration and numerous emigrant routes cross Oregon in all directions.

The Project is about 55 miles north of the Columbia River and about 66 miles northwest of the confluence of the Columbia and Snake rivers. While early emigrant trails followed these two rivers, no main trail passed through the Project vicinity. The early emigration trail system did bring the first European settlers to the larger region. In 1848, a group of Catholic missionaries were invited by two Yakama chiefs to establish a mission and in 1852 the missionaries established St. Joseph's Mission, approximately 38 miles to the northwest of the Project on the Ahtanum River. It was at this mission that the first irrigation ditch in the area was dug later that same year (Becker 2006).

3.3.3 Settlement

Cattle were an important economic and cultural part of what became Yakima County. Chief Kamiakin of the Yakama had brought a herd of cattle to the region in 1840, and within 20 years, ranchers were driving cattle through the area. The first non-missionary European settlers established themselves in what became Moxee in 1861 with 250 head of cattle. As the population grew so did the cattle culture. Alexander Graham Bell and M.L. Hubbard started the Moxee Company farming operation in 1886.

The Moxee Company was an experimental farm of 6,400 acres that tested various crops for viability in the area, raised livestock, and irrigated 7,000 acres of land. The company worked with the Northern Pacific Railroad to encourage settlement in the area and to sell parcels of land (Lynx and Wilbur 2009). The two major ethnic groups that settled in the area were the French-Canadian and Dutch, arriving in the late 1890s, attracted by the Northern Pacific Railroad and Moxee Company advertisements for land (Towner 2016). The Moxee Company was well known for their cattle and their innovations and experiments, such as growing tobacco. One of the biggest contributions the Moxee Company made in the Yakima Valley was the introduction of hops, used in brewing (Lynx and Wilbur 2009). The Yakima Valley now supplies 75 percent of the nation's hops (Jones 2017).

The Northern Pacific Railroad arrived in the Yakima Valley in 1884. It bypassed Yakima City by several miles, and instead built a depot at North Yakima, which is the present day city of Yakima. Over 100 buildings were moved wholesale to be closer to the depot. Within 5 years, the town had grown to nearly six times its size. In 1888, the railroad finished tracks from Yakima to Tacoma and Seattle, which greatly expanded the market for food grown and raised in the valley (Kershner 2009).

3.3.3.1 French-Canadian Immigration to the Yakima Valley

Beginning in 1870, a lack of opportunity in Quebec caused French-Canadians to move south to the United States, mostly to New England, Michigan, and Minnesota. However, in the mid- to late 1890s French-Canadians from Minnesota started moving west for a variety of reasons. The Northern Pacific Railroad's heavy advertising also contributed to immigration to the Pacific Northwest, including the Yakima region. A small population of Dutch also moved to the area. During the early years of their settlement in Washington, the different ethnic groups collaborated on community projects such as the Selah-Moxee Canal, but they mostly stayed within their own communities that had been built on a common language, religion, and ethnicity (Lewis 1994). While children of these immigrants assimilated fairly quickly they retained aspects of their European-based culture, and French was still being spoken as late as 1938 (Kroodsma 1938).

3.3.3.2 Japanese-Americans in the Yakima Valley

Japanese immigrants began arriving in the Yakima Valley in 1891, farming land they leased from the Yakama Reservation. Soon, Japanese-owned businesses were numerous, especially around the towns of Wapato and Toppenish. Yakima had a "Japantown" as well. They thrived despite laws being passed that outlawed first-generation immigrants and others from purchasing land. In 1942, President Roosevelt signed Executive Order 9066, which forced the internment of approximately 120,000 Japanese-Americans (Ayer 2017a). Most of the internees from Yakima Valley were interned at Heart Mountain, Wyoming (Ayer 2017b). After World War II, only 10 percent of the Japanese-American community returned to the area.

3.3.4 The Yakima Wars

In 1855, the U.S. government signed a treaty with 14 Yakama chiefs, ceding 12 million acres of lands and establishing the Yakama Reservation. The right to fish, hunt, and gather traditional foods on the reservation and on the ceded lands were retained. The tribes were to have 2 years to migrate to the reservation, but Territorial Governor Isaac Stevens opened the former Native lands to white settlers only 12 days after the treaty was signed. The Yakama Chief Kamiakin called upon the Native Americans to build their strength to oppose this declaration with force; shortly after, the Yakima Wars, a series of raids and counter raids, began. Fort Simcoe was established in 1856 approximately 40 miles to the west of the Project to house troops brought in to stop the uprising (Becker 2006). This period of conflict lasted until 1859, the same year the 1855 treaty was finally ratified (Yakama Nation 2019).

In 1972, President Nixon returned 21,000 acres to the reservation, resolving an 1859 survey error that cut sacred Mount Adams from the reservation (Landry 2017). In 1994, the tribe changed the spelling of their name from Yakima to Yakama (Yakama Nation).

3.3.5 Brief History of Sheepherding in Yakima Valley

The sheep industry east of the Cascade Mountains has its origins in 1838, when Marcus Whitman, a missionary living in present-day Walla Walla, imported three ewes from present-day Hawaii. When the interior of Washington Territory was opened by the U.S. military in 1858, settlers populated the area, claiming land to grow crops for ranching cattle and sheep. Sheep ranching soon became a thriving business (Rousso 2020). While well-known sheep ranchers in the area such as T.J. Drumheller and S.M. Wait became successful sheep ranchers in the 1880s, others soon came to the area from places like Oregon and California. Immigrants from France, Spain, England, Ireland, and Scotland also arrived on the Columbia Plateau to herd their sheep on the open range (Rousso 2020).

Between the 1860s and the 1880s, cattle and sheep ranching was the dominant agricultural industry east of the Cascade Mountains. At its peak in the 1880s, it is estimated there were 350,000 sheep in the Yakima valley (Drennan 2013). Despite the cold winters, ranchers in this area prospered until the early 1890s. The financial panic of 1893, however, resulted in a dramatic drop in wool and mutton prices nationwide, and many sheep ranchers were unable to retain their businesses. This, coupled with increased orchard establishment on the same open ranges, were challenges to ranchers (City of Yakima 2016).

In 1894, the Lester Brothers and Stanley Coffin, successful businessmen, moved from Oregon into what was then known as North Yakima (now the City of Yakima) and began raising sheep on large parcels of land they either leased or purchased. After visiting New Zealand and Australia to study sheep operations, the men brought 100 rams and ewes back to Washington and began breeding them in order to improve their stock in the Yakima Valley. The success of the Lesters and Coffin helped to make Yakima County the center of sheep farming in the state, with 138,222 sheep in the county by 1900, 30 percent of the state's total (Rousso 2020).

The state's population grew in 1900, bolstered by advances in irrigation in the region and the establishment of the North Yakima and Valley Railway Company (sold to the Northern Pacific Railway Company in 1914), which brought crops from farms into the cities for packing and then transfer on to distant places. While large herds of sheep grazed in the area, farming was also leading the state in production (Drennan 2013). Eventually, much of the available range used for sheep grazing was purchased as private land and used for the production of wheat and other crops. This resulted in little remaining open range land and tensions between sheep and cattle ranchers ensued, continuing through the 1930s in a period known as the range wars (Rousso 2020; Galbraith and Anderson 1971).

Between 1925 and 1930, the number of sheep in Yakima County more than doubled, then dropped to 101,218 animals in 1935 (Drennan 2013). These numbers continued to decline over the ensuing decades. Sheep farming in Yakima County began to dwindle for a combination of reasons, including ranchers' loss of access to federal forest reserve lands and increased wheat farming, which rendered less land available for sheep ranching. While the sheep industry had notable boom periods during the 1910s through World War I, the stock market crash of 1929 followed by the Great Depression dramatically dropped the price of wool and mutton. Sheep farming saw another spike in demand during World War II, but fell again after the war when the demand for meat dropped as American consumers began buying chicken, beef, and pork instead of lamb (Rousso 2020). The use of synthetic fabrics also contributed to the reduction of the need for sheep products, and by 1950, sheep ranchers in Washington were selling their stock and diversifying into other crops in order to stay afloat (Rousso 2020).

One of the largest ongoing range operations in Washington is S. Martinez Livestock Company. Based in Moxee, this family-owned operation continues to own and operate their business within the Project Area and surrounding area as it has for generations. The S. Martinez Livestock Corporation is the last remaining range-sheep operation in Washington (Trinidad 2013). The operation was started in 1920 when Simon Martinez, Senior moved to the United States from Spain, settling in Washington to raise and herd sheep. In 1970, Martinez's family business was running 12,000 sheep on private land as well as on allotments across public ground owned by several federal agencies. The operation currently uses nine allotments, on both private and public land, stretching from Mabton to Peshastin (Jaramillo 2017). The S. Martinez Corporation is the last permitted operation to graze on federal lands in the State of Washington (Jimenez 2018) The cycle of sheep grazing begins in Yakima in the spring, then heads north of Wenatchee for the summer months, and on to Dixon after the lambs are weaned. In the fall and winter, the last group of ewes graze on hay and sweet corn residue near Moxee (Trinidad 2013). As the value of wool and lamb declined over the years and available grazing land became less available, the S. Martinez Livestock Corporation was down to 5,000 head of sheep by 2019. The company diversified and began growing hops and apples and raising cattle (Jaramillo 2017; Rousso 2020), which enabled the company to continue operations and remain the last large-scale operation in Washington state. The company continues to graze their sheep on federally owned allotments as well as privately owned land.

3.3.6 Bonneville Power Administration (BPA) in the Region[1]

The BPA, created by Franklin Roosevelt's New Deal, by the Bonneville Project Act of 1937, was established as a temporary entity to transmit and market energy generated by the Bonneville Dam, operated by the U.S. Army Corps of Engineers. In 1940, BPA's authority was expanded to include transmission and marketing the generation capacity of the Grand Coulee Dam, operated by the U.S. Bureau of Reclamation. While the BPA system was being constructed, it played an important role in World War II, transmitting the energy generated by the Grand Coulee and Bonneville Dams, bringing large amounts of industrial development to Oregon, Washington, Idaho, western Montana, and extending into California, Nevada, Utah, and Wyoming (Kramer 2012). By the end of 1941, BPA had 1,748 miles of transmission lines and 37 substations in its system, including the Midway-Moxee line, within the Project area (Kramer 2012). After World War II, industries created to support the war effort were no longer needed or converted to peacetime uses after the war's end, and the BPA continued to support the development of industries including aluminum, agriculture, and timber in the Northwest through the transmission of electricity. BPA's original Master Grid was developed to supply World War II defense industries and continued to be used and continually expanded to meet the growing population regionally after the war. By law, the BPA system acts as a transmission line agency, transmitting electricity through its clients, other utilities, or large industrial users. The BPA system transmits and distributes its high-voltage energy to other regional utilities in the area (Kramer 2012).

The BPA is a network of systems that include transmission lines, substations, converters, and other structures that, together, comprise the system's operation and function.

As the BPA began to construct the Master Grid network of transmission lines and supporting structures, engineers used standardized construction for towers, including two or three vertical, wood, creosote coated poles, tied together by one or more horizontal beams, creating an "H" shape,

[1] The history of the Bonneville Power Administration (BPA) in the Pacific Northwest is detailed and well documented in many texts and sources. Only a brief history of BPA is included in this section of the report, only as it relates to this Project. Most of the text for this report was taken from the historic context found in the US Department of the Interior's National Park Service's *National Register of Historic Places Multiple Property Documentation Form for the Bonneville Power Administration Transmission System Pacific Northwest* 2012

therefore called "H-poles" (Kramer 2012). During the late 1930s into the 1940s during the development the Master Grid and its supporting structures, the BPA used architects and designers to plan for substations, administrative offices, buildings, and control houses. The BPA adopted standardized plans for these structures, resulting in many styled in what is currently called "Art Moderne" or "Streamlined Moderne," a popular style at the time (Kramer 2012).

3.3.7 Later Regional History

Washington Territory was created in 1853 when settlers in the northern part of what was Oregon Territory did not believe their needs were being met by the territorial government. Yakima County was established in 1865, 4 years after the first town, Yakima City, was established in 1861.

The City of Yakima is one of the oldest communities in Washington. The city began as a Euro-American agricultural community established by the presence of railroads, irrigation, roads, and agricultural-related industry (City of Yakima 2016). Federal irrigation projects of the 1900s helped to encourage and expand agriculture in the Yakima Valley and the city experienced its largest population growth in the first ten years of the twentieth century, resulting in an increase in businesses and residences. Its electric company joined with the water company to form Yakima Water, Light, and Power Company in 1891. The City of Yakima experienced economic and population growth again in the period of 1940 through 1949, due to the increased settlement of Mexican agricultural workers, the post-World War II baby boom, and people resettling from rural areas (City of Yakima 2016).

Moxee is a small town settled by Mortimer Thorp and several French-Canadian farmers in 1867. It is named after a warm spring that was located on the Thorp ranch. Thorp was the first permanent white settler in the area and he began a cattle business in the area. Other families moved to Moxee in the 1860s, including Levi Armsworthy Noble Saxon, A.J. Splawn, Alfred Henson, and Albert Haines, along with their respective families. By 1863, other settlers on their way to Puget Sound came across the small community and remained in Yakima. An increasing number of settlers began arriving soon after this. The first school in Yakima County was started on the second story of Thorp's house and the establishment of Yakima County was organized in 1865 by a special act of the territorial legislature. The new county could not afford a courthouse, so all county business was done at newly appointed Commissioner F.F. Thorp's house. Other appointments for the new county were as follows: Commissioners, F.M. Thorp, C. P. Cooke and Alfred Henson; sheriff, Charles A. Splawn; auditor, J.W. Grant; treasurer, E.W. Lyons (Torp 2020). The City of Moxee was incorporated in 1921 (Washington State Archives 2020).

4.0 Literature Review

Tetra Tech conducted a record search that focused on the Project Area and a 1-mile buffer (search area). The search was conducted on April 17, 2019, ahead of the May 2019 survey. The data were reaffirmed prior to conducting the April 2020 survey. Data were derived from DAHP's online database, Washington Information System for Architectural and Archaeological Records Data

(WISAARD), as well as historic U.S. General Land Office (GLO) plats, U.S. Geological Survey (USGS) quadrangles, and aerial photographs. Efforts focused on collecting information regarding previously recorded cultural resources within the search area. This research provided a summary of the type and frequency of cultural resources that may be encountered during the course of the subsequent surveys.

The Project Area had been only minimally surveyed previously. Although no cultural resources have been previously recorded there, several were recorded in the study area.

4.1 Previously Conducted Surveys

One prior cultural resource survey has been completed in the study area, consisting of one linear survey through the Project Area. The single survey completed within the Project Area was conducted by Applied Archaeological Research, Inc. in 2015 for the Midway-Moxee Transmission Line Rebuild and the Midway-Grandview Transmission Line Upgrade Project (Becker, et al. 2015). As part of that survey, the Midway-Moxee transmission line right-of-way that passes through the Project Area was subjected to pedestrian and subsurface archaeological survey with negative results. Additionally, the survey evaluated the National Register of Historic Places (NRHP) eligibility of the Midway-Moxee transmission line (as well as a separate transmission line and substation). Overall, the previous survey coverage of the study area is considered minimal.

4.2 Previously Recorded Resources

Three previously recorded cultural resources were identified in WISAARD as within the study area: 45YA97, 45YA98, and 45YA350 [redacted] Both 45YA97 and 45YA98 are described as seasonal pre-contact camps, while 45YA350 is comprised of pre-contact talus pits with associated stone cairns and a rock wall. Site 45YA97 includes a lithic scatter, bone, and fire-cracked rock, as well as historic-era sun-colored amethyst glass and coal slag (Hartmann 1977a). Site 45YA98 includes a lithic scatter, fire-cracked rock, and a millingstone (Hartmann 1977b). The site form for 45YA350 (Randolph 1982) notes that the site may be the same as those recorded as 45YA97 and 45YA98. Indeed, the sites are mapped as overlapping in WISAARD [redacted]

[redacted]

4.3 Review of Historic Maps and Aerial Photographs

Several historic maps and aerial photographs of the Project Area were reviewed prior to the surveys to identify historic activities and potential archaeological sites within the survey area. Maps and aerial photographs reviewed are listed below in Table 4-1 and compiled in Appendix C. Two possible historic-era cultural resources were depicted in the survey area on the reviewed maps or aerials.

Table 4-1 Reviewed Historic Maps and Aerial Photographs

Year	Publisher/Source	Title
1866	GLO	GLO Pat for Township 12 North/Range 21 East
1934	Chas. F. Metsker	Yakima County, Rattlesnake Ridge
1936	USGS	Hog Range Buttes Quadrangle, Washington (1:48,000)
1941	USGS	Black Rock Spring Quadrangle, Washington (1:62,500)
1941 (1948 ed.)	USGS	Black Rock Spring Quadrangle, Washington (1:62,500)
1950 (1951 ed.)	USGS	Yakima, Washington (1:250,000)
1953 (1957 ed.)	USGS	Black Rock Spring SW Quadrangle, Washington – Yakima County (1:24,000)
1953 (1974 ed.)	USGS	Black Rock Spring SW Quadrangle, Washington – Yakima County (1:24,000)
1953 (1986 ed.)	USGS	Black Rock Spring SW Quadrangle, Washington – Yakima County (1:24,000)
1955	USGS Earth Explorer	Aerial Photographs
1959	Chas. F. Metsker	Yakima County, Rattlesnake Ridge, Township 12 North/Range 21 East
1964	USGS Earth Explorer	Aerial Photographs
1980	USGS Earth Explorer	Aerial Photographs

The 1866 GLO plat covering the Project Area does not show notable built features in the vicinity. An unnamed trail is shown approximately 1.5 miles south of the Project Area and extending east for 4 miles. Generally speaking, it is extending east from the foot of the Rattlesnake Hills and to the valley floor. The trail may be a representation of the Konnewock Pass trail described in Section 3.2 above. The 1934 Metsker Map for Yakima County – Rattlesnake Ridge also does not show any features in the Project Area vicinity, but does show that the area had been parceled. Portions of the Project Area are indicated as being owned by H. W. Pac. Hypoth. Bk., N. J. Callahan, L. J. Hunter, W. J. Ashwell et al., Wm. H. Brown, Jr., Joaquin Frasu, and Yakima County. The 1936 USGS Hog Ranch Buttes 1:48,000 quadrangle is the first to depict varying two-track roads passing through the Project Area as well as "Yakima White Bluffs Road" (now State Route 24), indicating an increase in historic activity in the area. No other features are depicted in or near the Project Area. By 1955, historic aerial photographs of the Project Area show that the southern portion of the survey area was being subjected to agriculture. No buildings or other structural features are apparent in the photograph. While the Midway-Moxee transmission line structures are not distinguishable in this photograph, what appears to be a dirt road following the route of the line is visible. The 1959 Metsker Map for Township 12 N/Range 21E, Rattlesnake Ridge of Yakima County shows several of the same landowners for the Project Area, with some new landowners. The landowners include Merritt Meacham, L. J. Hunter, Leonard E. Ashwell, W. O. Klingle, Wm. H. Brown, Jr., Joaquin Frasu, and P. Meeboer. In the 1964 aerial photograph, two structures and evidence of grazing activity are visible in the northeast portion of the Project Area, on the southern edge of the unnamed drainage there. Two buildings are visible in modern aerial photographs near the same location; however, the structures in the 1964 photograph do not appear to be the same shape or size as the buildings in the modern photographs. Additionally, the structures in the 1964 photograph appear to be situated slightly west of the in the modern photographs. The historic map and photograph review suggest the buildings in the modern aerial photographs were constructed between 1964 and 1980 (although the 1980 aerial photographs are difficult to discern due to poor quality).

5.0 Research Design

5.1 Objectives and Expectations

The intent of the survey was to supplement the existing information collected as part of the records search and to identify unrecorded cultural resources in the Project Area.

Based on results of the records search and the limited past use of the Project Area, archaeological resources are considered likely to occur. Pre-contact lithic scatters and stacked rock features are considered the most likely to occur. These are more likely to occur in the northern portions of the Project Area and within the drainages of the Project Area. Additionally, the soils documented in the Project Area, particularly in the lower elevations of the Project Area, suggest a potential for shallow buried archaeological resources. Finally, based on the literature review, it is known that the Midway-Moxee Transmission Line is historic. Prior to the survey, it was unclear if the two buildings observed in modern aerial photographs, but not in the historic aerial photographs, were historic or not.

Any resources identified by the survey may add to the archaeological landscape and knowledge of the historical use of the region.

5.2 Methodology

A “non-collection” Phase I cultural resources survey of the Project Area was conducted in May 2019 and April 2020. The first mobilization was conducted on May 3, 2019, and consisted of a pedestrian survey of 619 acres of the Project Area only. Based on the poor ground surface visibility that was experienced during that survey and subsequent expansion of the Project Area by 190 acres, a second mobilization was conducted between April 20 and April 28, 2020. That mobilization included a pedestrian survey of the newly added 190 acres and systematic shovel probing across the entire 809-acre Project Area.

Acceptable ground surface visibility was considered 30 percent for the purposes of this Project. Digital photographs were taken of typical conditions of the survey area and features of notable interest. The Field Directors completed field notes, documenting the beginning and ending survey locations, crew members, environmental conditions, findings, and any issues concerning landowners and health and safety. No part of the Project Area was inaccessible.

5.2.1 Pedestrian Survey

During pedestrian survey, the survey personnel (as described in Section 1.2.3 above) walked and observed the ground, spread out in a line at 20-meter intervals (i.e., transects), working under the guidance of the Field Director. Survey control was maintained through the use of 1:24,000 scale maps and GPS units with sub-meter accuracy.

5.2.2 Subsurface Survey

Shovel probe locations for the April 2020 mobilization were designed systematically in GIS prior to fieldwork. Factors considered in their placement included soil deposition, history of land use, proximity to water, distribution patterns of cultural resources in the study area and surrounding area, and professional judgement. Shovel probes were designed in 24 strings of 10 probes spaced at 20-meter intervals along each string. Each string was assigned a letter and each probe within a string assigned a number, so that each probe has a unique identifier of a letter and number. Where probes had to be moved in the field due to obstruction, slope, disturbed soils, or professional judgement, the new location was mapped in the field using the sub-meter GPS unit. The probes consisted of 30-centimeter-diameter holes excavated in arbitrary 10-centimeter levels to 50 centimeters below surface (cmbs), C-horizon, or until two sterile levels after an observed resource (i.e., 20 centimeters). Each shovel probe was recorded on shovel probe forms including soil descriptions, disturbances, observed artifacts (if any), and any anomalies observed. Excavated materials were screened though ¼-inch mesh. Any recovered artifacts were returned to the bottom of the probe.

Where probes proved to be positive for artifacts, additional radial probes were placed in the cardinal directions around the positive probe and at 10-meter intervals. Where cultural resources were identified on the surface, site boundary probes were placed on the site boundary and 10 meters outside the site boundary similar to the method described for positive shovel probes. This approach is consistent with current accepted field methods in the region as well as recommendations from the Yakama Nation.

5.2.3 Archaeological Resource Recordation

When archaeological resources were located on the surface, crew members walked concentric and/or closely-spaced (5 meters) linear transects to determine the presence of any additional surface artifacts or features. Locations of artifacts or features were marked with pin flags to aid in determining the surface extent of artifact/feature distribution, the possible identification of sites, and to aid in mapping them.

Each newly identified site was given a unique temporary identification number in the format of GP-[Field Director Initials]-##. For the purposes of this survey, isolated finds were defined as resources consisting of single artifacts or a single retrofitted artifact. Archaeological sites were defined as resources consisting of two or more artifacts within 30 meters of each other or a loci with one or more features within 30 meters of each other. Historic sites and built environment resources ("historic properties" as defined by DAHP [2019b]) were defined as resources consisting of standing or in-use buildings or structures. Cultural resources were defined as resources 50 years of age or older.

A digital site datum was established at the approximate center of each newly identified resource using the GPS unit. All observed artifacts and features were recorded using the GPS unit. All features were given feature numbers and also mapped, photographed, described, and measured.

Identified cultural resources were documented in the field, to state standards, on paper field forms specific to Tetra Tech. Each site form included a detailed narrative describing the resource, environmental conditions, geologic conditions, and ground surface visibility. A separate feature form was completed for any features. These forms recorded detailed descriptions and measurements of the feature. In addition, a photograph log was completed for each resource. These forms are subsequently transferred to WISAARD.

Tetra Tech Historian/Architectural Historian Julia Mates conducted a desktop evaluation of the two historic-period buildings (a garage and residence) as well as the Moxee-Midway Transmission Line. During the pedestrian survey, Tetra Tech's archaeologists photographed and recorded these buildings and structures and noted form and materials. Photographs and background history of these resources were also included in the Phase I Environmental Site Assessment for the Project (EarthTouch 2020), conducted in February 2020. Ms. Mates reviewed field photographs and information contained in the site assessment.

5.2.2 Post-Field Data Management

Post-field data management included a quality assurance and control review of field forms and GPS data for accuracy and consistency. Site descriptions were written and are included in Section 6 of this report. A differential correction application based on multiple GIS base stations was used to ensure that field mapping efforts obtained sub-meter accuracy. After review of field forms, recorded site and isolate data were transferred to WISAARD.

6.0 Survey Results

6.1 Field Conditions

The initial mobilization limited to pedestrian survey of 619 acres took place on May 3, 2019. Weather conditions were warm and dry, with clear sky and little to no wind. Ground surface visibility was poor (less than 30 percent) in the southern part of the Project Area, which was subjected to agricultural activities historically. Elsewhere, ground surface visibility was fair to good (30 to 75 percent).

The second mobilization including pedestrian survey of an additional 190 acres in the northwest portion of the Project Area and systematic shovel probing of the entire 809-acre Project Area took place April 20 through 28, 2020. Ground surface visibility was similar to that experienced during the 2019 mobilization: poor in the southern portion of the Project Area and fair to good elsewhere. Weather conditions were mostly sunny and dry with little wind; however, rain and moderate winds did occur for one day.

6.2 Field Methods

Actual staffing and methodology employed during the surveys was as described in Sections 1.2.3 and 5.2. In the field, 20-meter spacing of transects and shovel probes was considered sufficient to identify archaeological sites and isolated finds within the survey area based on 1) the definition of sites and isolated finds described above, 2) the distribution and types of resources identified in the records search, 3) ground surface visibility experienced during the survey, and 4) soils deposition in the survey area.

Figure 3 depicts the location of completed transects and shovel probes within the survey area.

6.3 Results

6.3.1 Pedestrian Surveys

Four archaeological sites, two historic buildings (in one site), and one historic structure were recorded by Tetra Tech's surveys within the Project Area. Resources encountered and recorded in the survey area are listed below, with further detailed descriptions, Washington Heritage Register (WHR) eligibility recommendations, and management recommendations provided in Chapter 7.

The four archaeological sites include two pre-contact lithic scatters (45YA01808 and 45YA01811), one historic refuse scatter (45YA01810), and one multicomponent site of historic refuse and pre-contact debitage (45YA01809). The historic buildings (Site 722140) include a residence and garage with associated refuse. The historic structure consists of a segment of the BPA's Midway-Moxee Transmission Line (Site 676383). The identified resources are consistent with the expectations for the survey outlined above. Table 6-1 summarizes these resources, which are more fully described and evaluated below. Locations of all recorded resources are provided in Figure 4. Resource locations and shovel probe locations and results are shown in the maps provided in Appendix D. DAHP resource forms are provided in Appendix E.

6.3.2 Shovel Probes

In total, 269 shovel probes were completed as part of the survey, systematically placed across the Project Area. This included 29 probes completed to confirm the boundaries of archaeological sites 45YA01808, 45YA01810, 45YA01809, and 45YA01811. Only two of the 269 shovel probes were positive, including one of the boundary probes at 45YA01809 and the probe that identified 45YA01808.

The complete shovel probe results are listed in Appendix F, including maximum depth, soils descriptions, and results. The results of shovel probes have been used to infer the relative potential for subsurface archaeological deposits in the Project Area. The Holocene soils observed lacked significant stratigraphy. All consisted of a friable silty loam with variable, coloring, compaction, and inclusions. Rock impasses are responsible for the termination of any listed shovel probe that did not extend to 50 cmbs.

Table 6-1 Newly Recorded Resources in the Survey Area

Assigned Trinomial or Other DAHP ID	Temporary ID	Resource Type	Pre-Contact/ Historic	General Resource Description	NRHP Recommendation	WHR Recommendation	Management Recommendation
45YA01808	GP-BB-01	Archaeological Site	Pre-Contact	Lithic Scatter (two pieces of debitage identified in Shovel Probe T7)	N/A	Protected	Avoid. If avoidance infeasible, develop mitigation in consultation with DAHP and Yakama Nation.
45YA01810	GP-BB-02	Archaeological Site	Historic	Refuse Scatter	N/A	Not Protected	No further management.
45YA01809	GP-BB-03	Archaeological Site	Multicomponent	Refuse Scatter with Debitage (debitage recovered from one shovel probe)	N/A	Protected (pre-contact component only); Not Protected (historic component only)	Avoid. If avoidance infeasible, develop mitigation in consultation with DAHP and Yakama Nation.
45YA01811	GP-BB-05	Archaeological Site	Pre-Contact	Lithic Scatter (appears to be secondary deposit from upstream)	N/A	Protected	Avoid. If avoidance infeasible, develop mitigation in consultation with DAHP and Yakama Nation.
722140	GP-DM-01	Historic Property	Historic	Buildings	Not Eligible	Not Protected	No further management.
676383	GP-DM-02	Historic Property	Historic	Midway-Moxee Transmission Line (segment)	Eligible	Protected	Avoided by Project. No further management.
N/A = Not Applicable							

7.0 Analyses

The pedestrian survey was designed to identify cultural resources and make preliminary WHR assessments. Archaeological and historic themes associated with the region in which the Project is proposed include the original pre-contact peopling of the region, adaptation of lithic tools, trade of lithic materials and other goods, expansion of the aboriginal peoples, pre-reservation Native American lifeways, early Euro-American exploration and settlement, early agricultural and ranching development, and rural electrification. Three of the archaeological sites and the Midway-Moxee transmission line are protected by the WHR. The remaining resources are recommended as not protected by the WHR.

7.1 Evaluation Criteria

Since the Project is limited to SEPA regulatory review, register evaluations are limited to the WHR. The historic property sites are the only exception, as DAHP requires these be evaluated under the NRHP as well. Further, since BPA's Midway-Moxee No. 1 Transmission Line is owned and operated by BPA and the BPA's Pacific Northwest System is listed on the NRHP, it is evaluated under the system's Multiple Property Documentation Form (MPDF).

7.1.1 NRHP Eligibility Criteria

Preliminary recommendations for eligibility are based on the following criteria codified in Title 36 CFR Part 60.4 and specified below.

> *The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:*
>
> A. *that are associated with events that have made a significant contribution to the broad patterns of our history; or*
>
> B. *that are associated with the lives of persons significant in the past; or*
>
> C. *that embody the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possess high artistic value, or that represent a significant or distinguishable entity whose components may lack individual distinction; or*
>
> D. *that have yielded, or are likely to yield, information important in prehistory or history….*
>
> *Ordinarily, cemeteries, birthplaces, or graves of historical figures; property owned by religious institutions or used for religious purposes; structures that have been removed from their original location; reconstructed historic buildings; properties that are primarily commemorative in nature; and properties that have achieved significance within the last 50*

years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria, or if they fall within the following categories:

- *a religious property deriving primary significance from architectural or artistic distinction or historical importance; or*
- *a building or structure removed from its original location but which is significant primarily for its architecture, or which is the surviving structure most importantly associated with an historic person or event; or*
- *a birthplace or grave of an historical figure of outstanding importance if there is no other appropriate site or building directly associated with his or her productive life; or*
- *a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or*
- *a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan and when no building or structure with the same association has survived; or*
- *a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or*
- *a property achieving significance within the past 50 years if it is of exceptional importance.*

Cultural resources were evaluated based on the criteria listed above. Eligible sites are those that meet one or more of the criteria for eligibility. In addition, sites evaluated as eligible must retain physical integrity. Eroded or otherwise heavily disturbed sites are generally not considered eligible. Sites evaluated as needing data are those sites that may conform to the eligibility criteria but require further work to determine NRHP status. In most cases, these sites are pre-contact or historic sites with suspected buried materials, or historic sites where additional research is necessary to determine historical importance. Sites that are evaluated as not eligible do not meet any of the eligibility criteria and/or have lost physical integrity.

7.1.2 WHR Criteria

The WHR is maintained by DAHP and includes districts, sites, buildings, structures, and objects that have been identified and documented as being significant in local or state history, architecture, archaeology, engineering or culture. Listing offers no protection against alteration or demolition, although preservation is encouraged by DAHP. Private owners of WHR properties using private funds may alter or demolish these properties within existing local building regulations. Projects involving federal or state agency actions are reviewed by DAHP under SEPA, such as this project, with the goal of preserving historic resources whenever possible. SEPA requires that significant properties, specifically those listed in or eligible for the WHR, be given consideration when state undertakings (permits, grants, construction, etc.) affect historic and cultural values. If significant resources are identified, DAHP considers the effects of a proposed project on such resources and makes a professional recommendation for appropriate treatments or actions. A local governing authority may choose to uphold DAHP's recommendation and may require mitigation of adverse effects to significant properties.

The WHR has similar requirements for listing, including the age of 50 years or older; a high to medium level of integrity; and a documented historical importance at the local, state, or federal level under one or more of the following areas of significance (DAHP 2018):

- The property belongs to the early settlement, commercial development, or original native occupation of a community or region
- The property is directly connected to a movement, organization, institution, religion, or club that served as a focal point for a community or group
- The property is directly connected to specific activities or events that had a lasting impact on the community or region
- The property is associated with legends, spiritual or religious practices, or life ways that are uniquely related to a piece of land or to a natural feature
- The property displays strong patterns of land use or alterations of the environment that occurred during the historic period
- The property is directly associated with an individual who made an important contribution to a community or to a group of people
- The property has strong artistic, architectural, or engineering qualities, or displays unusual materials or craftwork belonging to a historic era
- The property was designed or built by an influential architect, or reflects the work of an important artisan
- Archaeological investigation of the property has or will increase our understanding of past cultures or life ways
- Architectural resources within the survey area that met the 50-year age limit were also evaluated for eligibility using the WHR criteria

7.1.3 Bonneville Power Administration (BPA) Multiple Property Documentation Form

Tetra Tech evaluated the Moxee-Midway Transmission Line, using the National Park Service's NRHP MPDF for the BPA Pacific Northwest System, prepared by George Kramer in 2012. The MPDF incorporates Kramer's historic context statement on the history and development of the BPA and provides two distinct important periods of the system's development: the Master Grid Development (1938-1945) and the System Expansion (1946-1974). The Midway-Moxee Transmission Line was constructed in 1940 and energized in 1941, and is therefore associated with the first period, Master Grid Development. A brief discussion of the Master Grid Development (1938-1945) period is included in the Multiple Property Documentation Form; it states:

> "This period encompasses the establishment of the BPA as a federal agency empowered with the marketing and transmission of electricity generated at the Bonneville Dam and then, after 140, from the Grand Coulee Dam. Resources [buildings and structures] relating to this period include the "Master Grid" transmission network that BPA built to transmit power between the generation facilities and the major load centers of the Pacific Northwest…via a 230-kV "loop" radiating 115-kV lines that served smaller loads. The high-voltage lines of the Master Grid, along with the numerous substations and related structures that allowed the system to function effectively played a significant role both directly as the backbone of the Northwest Power Pool, to support U.S. military preparedness and industrial capacity during World War II." (Kramer 2012).

The minimum requirements for eligibility and integrity for transmission lines is detailed in the MPDF and summarized below (Kramer 2012).

The MPDF outlines the following minimum requirements, all of which BPA-associated transmission lines must meet in order to be considered eligible for listing in the NRHP:

- Designed by or purchased at the direction of the BPA
- Owned and operated all or in part by the BPA
- Energization prior to 1975
- Continued original function (related to the transmission of energy)

The MPDF also includes the following specific integrity issues that transmission lines must meet to be eligible for listing:

- Location/Setting
  - The named line must connect to the same endpoints within the BPA system as originally intended.
  - The named line must remain substantially within the original construction corridor as it existed at the end of the period of significance.
  - Minor realignments that retain the same endpoints do not seriously diminish integrity.
  - Where the corridor/lines remain originally located, changes in surrounding uses do not impact integrity.
- Design/Materials/Workmanship
  - The named line must substantially retain its original design character. Changes made to improve the essential original function, the efficient transmission of energy, are a part of this functionality and may acquire significance in its own right, and such changes do not constitute a loss of integrity of design.

- Tower design must remain as built, in basic type and materials. Minor modifications in design do not adversely impact integrity. Entire replacement of one type of tower for another diminishes integrity depending upon visual impact (if changes are distant from public vantage points) and the percentage of the whole that is affected.
- Transmission voltage modifications do not seriously impact integrity.
- Minor additive features designed with general respect to historic character through the use of compatible materials, scale, and sensitive installation, do not adversely impact integrity. Especially when minor work is done in a uniform and repetitive manner across the line equally.
- Normal in-kind repair work such as the replacement of footings, conductors, insulators, spacers, guy wires, cross-arms, etc. is considered normal maintenance that is part of functionality and does not affect integrity.

- Feeling
  - Named lines retain feeling through uniformity, supported by largely repetitive elements (towers and attachments) set within a defined corridor that is identifiable as a separate built or constructed feature within a landscape.
  - Visible uniformity that surmounts landscape elements, as in corridors that rise over a hillside or are visible for great distance parallel to a public roadway, ridge, or traversing a valley, convey the feeling of scale and connectedness that supports association within the BPA system.
  - Multiple lines within a defined corridor, even where such lines include non-BPA features or lines that are not historic, combine to support historic feeling and system connectedness through repetition and visual complexity.
- Association
  - Transmission lines meeting the eligibility requirements, still owned and operated by the BPA, and that remain an integral and functioning part of the BPA transmission system, retain high integrity to the associations which make it significant under this context.
  - Lines otherwise meeting these requirements that are no longer part of the BPA system through sale or transfer may be eligible for the NRHP but must be evaluated independently.
  - Normal, in-kind repair and maintenance, and upgrades of transmission lines still owned and operated by BPA that are part of functionality do not necessarily affect integrity of their associations.

Criterion C Standards. Some transmission lines may gain additional significance under Criterion C for their specific design characteristics or their association with particular technological improvements related to the transmission of electrical energy during the period of significance. Such resources, in addition to meeting the requirements above, must demonstrate additional qualities such as early instance of a particular significant technology or construction method, or be an example of a typical line type, especially within the original 230-kV Master Grid, that retains a high level of integrity.

7.2 Newly Recorded Archaeological Sites

7.2.1 45YA01808 (GP-BB-01)

Site 45YA01808 consists of two pieces of pre-contact lithic debitage recovered in a shovel probe. [redacted] The debitage was recovered from the 20- to 30-cmbs level of Shovel Probe T7. An additional four radial shovel probes at 10-meter spacing in the cardinal directions around the positive shovel probe were excavated. All four of those probes were negative for additional artifacts. The debitage that comprise 45YA01808 were placed at the bottom of Shove Probe T7 at 50 cmbs (Photograph 1).

The debitage included two chalcedony tertiary flakes. One flake measured 20 millimeters long by 15 millimeters wide by 3 millimeters thick. The second flake measured 17 millimeters long by 15 millimeters wide by 2 millimeters thick.

Photograph 1. Positive Shovel Probe # T7 at 45YA01808. North wall.

7.2.1.1 WHR Eligibility Evaluation

The site appears to be related to the original native occupation of the region. OneEnergy's consultations with the Yakama Nation are ongoing and it is unclear if the site and/or location is associated with legends, spiritual or religious practices, or life ways which are uniquely related to a piece of land or to a natural feature. Therefore, the site is considered protected by the WHR, potentially meeting at least one of the areas of significance required for listing on that register.

7.2.1.2 Management Recommendation

Site 45YA01808 is protected by the WHR. Therefore, it is recommended that, if feasible, the site be avoided. Avoidance may be achieved through designing around the site (with a recommended buffer of 30 meters) or placing clean fill over the site area so that construction-related disturbance does not extend to the depth of the resource. A DAHP archaeological excavation permit will be required if fill is placed over the site in order to cap it. If avoidance is infeasible, DAHP and Yakama Nation should be consulted to develop appropriate mitigation, such as data recovery and curation of artifacts. Disturbance of pre-contact archaeological resources will require a DAHP archaeological excavation permit (RCW 27.44).

7.2.2 45YA01810 (GP-BB-02)

Site 45YA01810 is a large (1,171 feet by 329 feet) historic refuse scatter (Photograph 2). [redacted]

The refuse assemblage includes cans, glass, metal fragments, and miscellaneous items. The can assemblage included 49 deformed sanitary cans, 46 ice pick opened cans, 8 upright tobacco tins, 6 oil cans (including 4 fragments), 1 hole-in-cap can, 1 pry-open lid, and 6 vent hole cans. Other metal artifacts include 3 miscellaneous metal fragments, bailing wire, a pail, 2 stove burners, a flattened enamelware vessel with an 8-inch diameter base, a crushed tin cup, stove parts, and a 1921 Washington State license plate. Other miscellaneous artifacts included a crushed rattle and a milk jug lid. Hole-in-cap cans were produced between ca. 1810 to ca. 1930, while vent hole and sanitary cans are generally attributed to post-1900 (Rock 1987:12, 14; Waechter 2010). Upright pocket tobacco tins have been produced since the 1910s and continued to be popular into the 1950s (Rock 1987:63; Waechter 2010). The glass assemblage includes a sun-colored amethyst glass fragment, a complete amber glass bottle (no maker's mark), and an aqua glass bottle base with an Illinois Glass Company maker's mark (diamond with an I) indicating production between 1916 and 1929 (Toulouse 1971:264). Amber glass has been produced since the 1860s; aqua-colored glass between ca. 1800 and the 1920s; and sun-colored amethyst glass between ca. 1885 and 1920 (Horn 2005:11).

The historic refuse is varied and includes domestic and auto-related items that were likely deposited during the early twentieth century. As such, it does not appear related to the mid-1940s construction of the nearby BPA Midway-Moxee transmission line (Site 676383). Given a lack of mapped buildings or other features in the site vicinity during the attributed time period, the site also does not seem to be related to any nearby homesteads or other settlement. The site is interpreted as an opportunistic dumping locality, used during the early twentieth century.

Photograph 2. Overview of 45YA01810 with Midway-Moxee Transmission Line in background. View toward south.

7.2.2.1 WHR Evaluation

Although the site can generally be attributed to the early twentieth century, it cannot be attributed to a contemporaneous settlement, activity, or individual. It appears to represent an opportunistic dumping locale for a variety of activities. As a result, it cannot be placed in an appropriate historic context for WHR evaluation. Further, without an appropriate historic context within which to evaluate the site, its integrity of setting, materials, feeling, and association cannot be established. Six shovel probes excavated in one of the planned strings as well as site boundary probes that were excavated outside of the site boundary identified by the surface artifacts were negative. As such, the site appears to be limited to the surface area defined by the field investigation. The site is historic in nature; however, the artifact assemblage does not have documented historical importance that directly associates them with any relevant themes at the local, state, or federal level in any of the areas of significance for WHR eligibility. Therefore, Tetra Tech does not recommend 45YA01810 as protected by the WHR.

7.2.2.2 Management Recommendation

Site 45YA01810 is recommended not protected by the WHR; therefore, no further management of this resource is recommended.

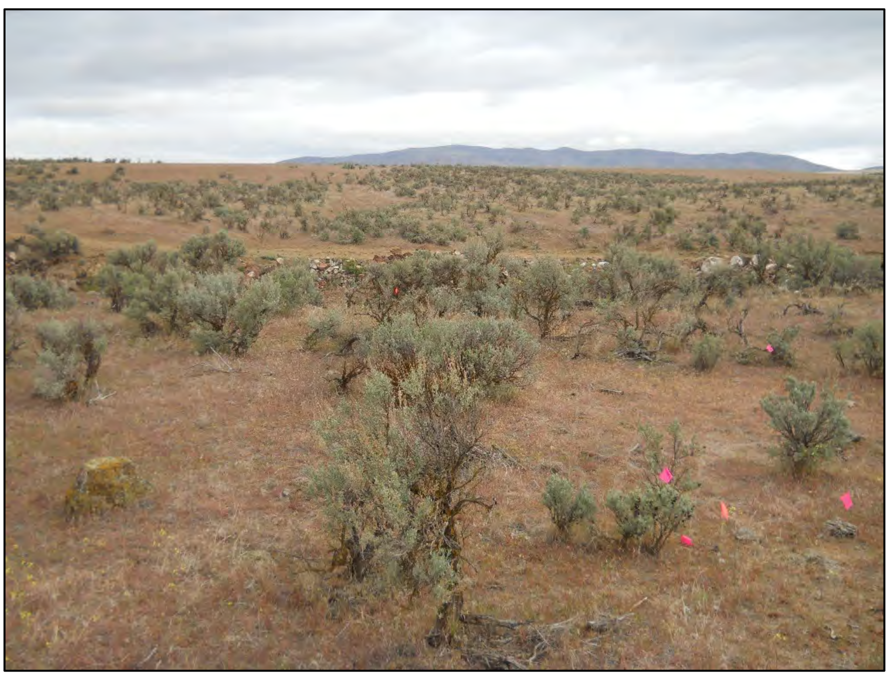
7.2.3 45YA01809 (GP-BB-03)

Site 45YA01809 is a multicomponent site with a historic refuse and limited amount of pre-contact lithic debitage (Photograph 3) [redacted]

The refuse scatter includes three sanitary cans, four church key cans, one amber glass fragment, one brown glass bottle (2.25 inches by 6.25 inches), and one Pepsi Cola bottle (2.4 inches by 9.5 inches). The Pepsi Cola bottle includes an Owens Illinois Glass Co. and Duraglas maker's mark indicating production ca. 1938-1940 (Toulouse 1971:402). Church key openers were introduced in 1935 according to Horn (2005:14).

The historic refuse is limited to domestic food-related items that were likely deposited during the late 1930s. As such, it does not appear related to the 1940s construction of the nearby BPA Midway-Moxee transmission line (Site 676383) or the structural features observed in the 1964 aerial photograph reviewed as part of the literature search. Given a lack of mapped buildings or other features in the site vicinity during the attributed time period, the site also does not seem to be related to any nearby homesteads or other settlement. The component is interpreted as a single-use opportunistic dumping locality, formed during the late 1930s.

The pre-contact component is limited to three tertiary flakes. Two of the flakes are chalcedony and were observed on the surface. The larger of these measures 28.91 millimeters long, 17.92 millimeters wide, and 9.89 millimeters thick, and the smaller measures 5 millimeters long, 3 millimeters wide, and 2 millimeters thick. The third flake is chert was observed at 30 cmbs within one of the site boundary probes, Shovel Probe 03-03, completed at the site. This flake measures 8.1 millimeters long, 5.02 millimeters wide, and 1.63 millimeters thick.



Photograph 3. Overview of Site 45YA01809. View to north.

7.2.3.1 WHR Evaluation

The individual components of the site are evaluated here separately because they do not appear to be related.

The pre-contact component of the site appears to be related to the original native occupation of the region. OneEnergy's consultations with the Yakama Nation are ongoing, and it is unclear if the site and/or location is associated with legends, spiritual or religious practices, or life ways which are uniquely related to a piece of land or to a natural feature. Therefore, the component is considered protected by the WHR, potentially meeting at least one of the areas of significance required for listing on that register.

The historic component of the site cannot be attributed to a contemporaneous settlement, activity, or individual. The component is a common type for the area and the recorded artifacts are unlikely to yield important information in prehistory or history. Eight of the nine shovel probes excavated to confirm the site boundary were negative. As such, the site appears to be limited to the surface area defined by the field investigation. The site is historic in nature; however the artifact assemblage does not have documented historical importance that directly associates them with any relevant themes at the local, state, or federal level in any of the areas of significance for WHR eligibility. Therefore, Tetra Tech does not recommend the historic component of the site as protected by the WHR.

7.2.3.2 Management Recommendation

One component of Site 45YA01809 is protected by the WHR. Therefore, it is recommended that, if feasible, the site be avoided. Avoidance may be achieved through designing around the site (with a recommended buffer of 30 meters) or placing clean fill over the site so that construction-related disturbance does not extend to the depth of the resource. A DAHP archaeological excavation permit will be required if fill is placed over the site in order to cap it. If avoidance is infeasible, DAHP and Yakama Nation should be consulted to develop appropriate mitigation, such as data recovery and curation of artifacts. Disturbance of pre-contact archaeological resources will require a DAHP archaeological excavation permit (RCW 27.44).

7.2.4 45YA01811 (GP-BB-05)

Site 45YA01811 is a low density pre-contact lithic scatter [redacted] The site assemblage consists of five pieces of lithic debitage including one chert biface with a utilized edge and hinge fracture (38.11 millimeters long, 28.10 millimeters wide, and 16.53 millimeters thick), one secondary chert flake, one tertiary chert flake, and two tertiary chalcedony flakes. [redacted] An adjacent string of shovel probes [redacted] were negative. [redacted]

[redacted]

7.2.4.1 WHR Evaluation

The pre-contact site is believed to consist of redeposited artifacts and does not have a high to medium level of integrity. However, based on input from the Yakama Nation, the site will be treated as protected by the WHR.

7.2.4.2 Management Recommendation

Site 45YA01811 is being treated as protected by the WHR. Therefore, it is recommended that, if feasible, the site be avoided. Avoidance may be achieved through designing around the site (with a recommended buffer of 30 meters) or placing clean fill over the site area so that construction-related disturbance does not extend to the depth of the resource. A DAHP archaeological excavation permit will be required if fill is placed over the site in order to cap it. If avoidance is infeasible, DAHP and Yakama Nation should be consulted to develop appropriate mitigation, such as data recovery and curation of artifacts. Disturbance of pre-contact archaeological resources will require a DAHP archaeological excavation permit (RCW 27.44).

7.3 Historic Property Sites

7.3.1 Site 722140 (GP-DM-01)

Site 722140 is located North of State Route 24 and East of Moxee on tax lot 21120832001, in the southwest corner of a broad northeast-southwest running coulee consisting of two relatively intact buildings: a residence and a three-bay garage. There was also diffuse historic-modern refuse scatter. The house (Building 1) and garage (Building 2) are situated near a broad east-to-west trending drainage at the base of a north-to-south sloping hillside, adjacent to Den Beste Road 60 meters to the north. Yakima County assessor records indicate the building was constructed in 1950; however, historic aerials dating from 1964 show neither of the buildings on the land. All photographs of the buildings and its surroundings were taken by Tetra Tech on May 3, 2019.

The historic-modern refuse scatter is dispersed across the site and primarily includes refuse: furniture, appliances, clothing, tires, steal barrels, paint cans, rope, steal cable, wood and lumber fragments, plastic fragments and miscellaneous paper products. Between Buildings 1 and 2 is an abandoned 1948-1953 Dodge truck.

Photograph 5. Building 1, West Elevation, residence at Site 722140. View to east.

The residence is two stories; it is missing all of its doors and all window glazing. It is topped with a moderately-pitched, side gable roof covered in composition shingles. The foundation and first story walls are concrete masonry units, the exterior walls of the second story are covered in horizontal wood, particle board, and plywood, siding. The west (main) façade features a single, machine/equipment-scale door opening (no door is present) adjacent to two square window openings, one of which is infilled with wood and the other having no glazing (Photograph 5). Fenestration at the second story of this façade was metal sliding and what was likely casement sashes, currently without glazing. The north façade (Photograph 6) contains a single, one-over-one hung, wood frame window at the first floor and two sliding sashes (missing glazing) at the second story. The east façade (Photograph 7) contained two square windows at the first floor and three wood-frame, sliding sashes at the second story. The south elevation (Photograph 8) has no window openings; the second story is now covered entirely in particle board. The second floor of the residence's interior has wood floors and appears to have had at least two large rooms.

On the south side of the structure is a large 20-by-50-foot trench and associated "push-pile."

Photograph 6. Building 1, North Elevation, residence at Site 722140. View to south.

Photograph 7. Building 1, east elevation, residence at Site 722140. View to west.

Photograph 8. Building 1, south elevation, residence at Site 722140. View to north.

Photograph 9. Building 1, west elevation, residence at Site 722140. View to east.

Photograph 10. Building 2, south elevation, garage/shop at Site 722140. View to north.

Building 2 is a single story three-bay garage topped with a low-pitched, side gable roof covered in composition shingles. The foundation and walls are constructed with concrete masonry units; plywood is in the gable ends. The main (south) façade features three bays: the center bay has a metal roll-up garage door and is flanked by two bays without doors, as shown in Photograph 9. The north elevation (Photograph 10) has a human-scale doorway (the door is now missing) and two square window openings, each without glazing. The east façade (Photograph 11) has one (currently) empty window frame. The west elevation (Photograph 12) features an identical (currently) empty window frame as on the east elevation; a plywood hatch is set in the gable end. The interior of the building has a dirt floor.

Photograph 11. Building 2, north elevation, garage/shop at Site 722140. View to south.

Photograph 12. Building 2, east elevation, garage/shop at Site 722140. View to south.

Photograph 13. Building 2, west elevation, garage/shop at Site 722140. View to east.

Historic maps and aerials show Buildings 1 and 2 on land predominately vacant with only a few unimproved roads until the 1950s, when these buildings were constructed. The land is owned by S. Martinez Livestock, Inc., who have been the owners since the 1980s. The S. Martinez Livestock, Inc. is the last remaining large-scale range-sheep operation in Washington (Trinidad 2013). The operation began in 1920 when Simon Martinez Senior moved to the United States from Spain, settling in Washington to raise and herd sheep. In 1970, Simon Martinez's family business was running 12,000 sheep on private land as well as on allotments across public ground managed by several federal agencies. The operation currently uses nine allotments, on both private and public land, stretching from Mabton to Peshastin (Jaramillo 2017). In recent years, the company diversified and began growing hops, apples and raising cattle (Jaramillo 2017; Rousoo 2020), which has enabled the company to continue operations and remain the last remaining large-scale operation in Washington state.

7.3.1.1 NRHP Eligibility Evaluation

Buildings 1 and 2 are associated with S. Martinez Livestock, Inc., the oldest livestock company in the Yakima Valley area still in operation. While the company has important associations with sheep ranching and agriculture in Yakima Valley, Buildings 1 and 2, a simple residence and garage, are not significantly associated with the S. Martinez Livestock company, as the operation acquired the property in the 1980s and research on S. Martinez Livestock, Inc. and ranching and farming in Yakima Valley did not reveal important associations with the buildings. As such, Buildings 1 and 2 do not demonstrate an association with the broad patterns of history or association with relevant historic contexts of farming and ranching in the Yakima Valley area. They are recommended not eligible for listing in the NRHP under Criterion A.

Under Criterion B, while the buildings are owned by S. Martinez Livestock, Inc., a historically important operation in the Yakima Valley, the historic record does not indicate that these buildings are importantly associated with the achievements of the S. Martinez Livestock, Inc. Furthermore, the length of time the Martinez family business has owned the buildings (since the 1980s) is relatively recent, and there is no historic evidence that the length of time and nature of the association between Buildings 1 and 2 and the Martinez Livestock, Inc. or any other individual owner or occupant is an important one under any relevant contexts. Therefore, the buildings are recommended not eligible under Criterion B.

Building 1, a modest residence, and Building 2, a garage, are simple in design, materials, and style, and are not significant examples of type, period, or method of construction. They are recommended not eligible under Criterion C.

Under Criterion D, in rare instances, buildings can serve as sources of valuable information about historic construction materials or technologies and be significant. However, Buildings 1 and 2 do not appear to be a principal source of important information in this regard and are not recommended eligible under this criterion.

7.3.1.2 WHR Evaluation

For reasons stated in the NRHP eligibility evaluation, Tetra Tech does not recommend Buildings 1 and 2 as eligible for listing in accordance with the WHR criteria. Buildings 1 and 2 are owned by S. Martinez Livestock, Inc. an important entity in the region; however, these specific buildings do not have documented historical importance that directly associates them with any relevant themes at the local, state, or federal level in any of the areas of significance for WHR eligibility.

7.3.1.3 Management Recommendation

Because Site 722140, Buildings 1 and 2 are not recommended eligible for listing in the NRHP or under the WHR criterion, with concurrence from DAHP with these recommendations, there are no management recommendations necessitated for these buildings.

7.3.2 Midway-Moxee No. 1 Transmission Line (Site 676383)

Constructed in 1940 and energized in 1941, the Midway-Moxee No. 1 (Midway-Moxee Transmission Line) Transmission Line (Site 676383) is 34 miles long. It originates at the BPA Midway Station in Benton County and terminates at the BPA Moxee Substation in Moxee, Yakima County. The transmission corridor is approximately 800 feet wide, and in some places, the line runs adjacent to multiple transmission lines including the Midway-Grandview Transmission Line, the Wine Country-Midway No. 1 Transmission Line, and the North Bonneville-Midway No. 1 Transmission Line. Only the Midway-Moxee Transmission Line (Site 676383) is the subject of this assessment. The transmission line corridor is on approximately 4.8 miles of public land, under the jurisdiction of several entities including the U.S. Department of Energy, BLM, and Washington State Department of Natural Resources (BPA 2016).

The Midway-Moxee Transmission Line serves the Benton Rural Electric Association. The line currently operates at 115 kV and is comprised of 229 two-pole wood structures and 15 three-pole wood structures (Photograph 13). The structure height range is 38 to 113 feet above ground, and the line consists of fiber optic cable 0.85 inch in diameter.

Photograph 13. Midway-Moxee Transmission Line (Site 676383) wood pole structure, conductors, and fiber optic cables.

From 2016 through 2018, the Midway-Moxee line was rebuilt due to deterioration of rot and aging wood pole structures. This deterioration is typical for wood poles between 55 and 60 years old. The line’s conductors had not been replaced in decades, and in order to ensure uninterrupted power service to customers in eastern Washington, the components of the line—the wood pole structures, fiber optic cable, and conductors—were replaced. The replacement components look similar to the original transmission line components in materials, design, and appearance; there was no increased load or change in voltage. The line remained in its original alignment and within the same transmission line corridor. The wood pole structures were raised 28 feet from the original wood poles, but they remained visually consistent in materials and design. Ground wire, counterpoise, and conductors were installed, and the overhead fiber optic cable was replaced. Five new pole structures were added to the line. Most replacement poles were constructed within 5 feet of their original location, while a few structures were placed more than 10 feet from their original location. Overhead ground wires and conductors were also removed and replaced (BPA 2016).

The MPDF for BPA's Transmission System in the Northwest (Kramer 2012) was prepared as a guide in identifying BPA transmission lines and their eligibility for listing in the NRHP. The Midway-Moxee Transmission Line was constructed in 1940 and energized in 1941. The line was designed by the BPA, is owned and operated by the BPA, was energized prior to 1975, and continues its original function (the transmission of energy).

7.3.2.1 NRHP Eligibility Evaluation

The Midway-Moxee Transmission Line No. 1 (Site 676383) meets all of the requirements for eligibility and integrity listed in the MPDF for transmission lines eligible for listing as contributing elements of the BPA Transmission Network constructed between 1938 and 1974 under Criterion A. The line is associated specifically with the Master Grid Development (1938-1945) of the network.

The Midway-Moxee Transmission Line has undergone alterations associated with the successful transmission of electricity. These alterations are considered normal, consisting of in-kind repair and maintenance, and upkeep of transmission lines, which the MPDF states is part of the functionality of transmission line systems and does not affect the integrity of their associations. This is especially the case if the appearance of the transmission line and its components are unchanged, as was the case in 2016-2018, when the line was rebuilt, with very minor alterations not noticeable from the public right-of-way.

The transmission line meets the eligibility requirements of the MPDF and retains all seven aspects of integrity, also outlined in the MPDF. As such, it is recommended eligible for listing in the NRHP as a contributing element to the BPA Transmission Network under Criterion A. It is not recommended that the transmission line is eligible under Criterion C because the historical record does not indicate it is significant for its design or technological aspects.

7.3.2.2 WHR Evaluation

The Midway-Moxee Transmission Line (Site 676383) is protected by the WHR under the following areas of significance:

- The property is directly connected to specific activities or events which had a lasting impact on the community or region
- The property displays strong patterns of land use or alterations of the environment which occurred during the historic period
- The property has strong artistic, architectural, or engineering qualities, or displays unusual materials or craftwork belonging to a historic era

7.3.2.3 Management Recommendation

The proposed Project, as described in this report, will avoid the Midway-Moxee Transmission Line (Site 676383), and no alterations to the line or its components are anticipated as part of the Project as described in Section 1. Therefore, the Project as assessed in this report will not affect the transmission line and no further management is necessary.

8.0 Conclusions and Recommendations

The entirety of the Project Area and survey area has been surveyed for cultural resources. A total of four archaeological sites and two historic property sites (by DAHP definition, not necessarily NRHP eligibility or listing) were identified within the Project Area. The recorded sites include two low density pre-contact lithic scatters, one multicomponent site with a low density historic refuse scatter and very low density lithic scatter, one large historic refuse scatter, one set of associated and abandoned historic buildings, and one segment of historic transmission line.

Of the two historic property sites evaluated for NRHP eligibility, only the Midway-Moxee transmission line segment (Site 676383) has been recommended eligible for listing on the NRHP. Three of the archaeological sites (45YA01808, 45YA01809, and 45YA01811) and the Midway-Moxee transmission line (Site 676383) are protected by the WHR. If the three archaeological sites cannot be avoided by the Project, it is recommended that appropriate mitigation, such as data recovery, be developed in consultation with DAHP and Yakama Nation. An archaeological excavation permit will be required prior to any alterations to the sites, in compliance with RCW 27.44. The remaining archaeological site, 45YA01810 is not protected by the WHR. The two historic buildings at Site 722140 are not recommended eligible for listing on the NRHP and are also not protected by the WHR. No further management of these resources is recommended.

Although the NRCS soil survey data suggest a potential for subsurface archaeological deposits, the subsurface shovel probing completed as part of the survey has demonstrated that encountering such resources is unlikely. As such, no monitoring of construction is recommended. However, it is recommended that an Unanticipated Discovery Plan be implemented during construction.

Recommendations to avoid significant impacts on cultural resources under SEPA are described below. This report will be distributed to the Yakama Nation, OneEnergy, DAHP, and to the appropriate land use permitting authority.

Avoidance of NRHP-Eligible and WHR-Protected Sites

Given the NRHP-eligibility and/or WHR protection of Sites 45YA01808, 45YA01809, and 45YA01811, and the Midway-Moxee transmission line (Site 676383), these resources should be avoided by Project construction and operations. A minimum avoidance buffer of 30 meters (100 feet) around archaeological sites 45YA01808, 45YA01809, and 45YA01811 is recommended. The entirety of the Midway-Moxee transmission line right-of-way is recommended for avoidance.

Unanticipated Discovery Plan

In the event unrecorded archaeological resources are identified during Project construction or operation, work within 30 meters (100 feet) of the find should be halted and directed away from the discovery until it can be assessed in accordance with steps in the Unanticipated Discovery Plan provided as Appendix G. This appendix does not contain any confidential information and can be shared with Project personnel and contractors.

<u>*Final Design Outside Surveyed Area*</u>

Finally, should additional actions that have the potential for additional surface or subsurface disturbance be proposed outside the survey area covered by the field investigations documented in this report, further cultural resource investigations may be required.

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FIGURES

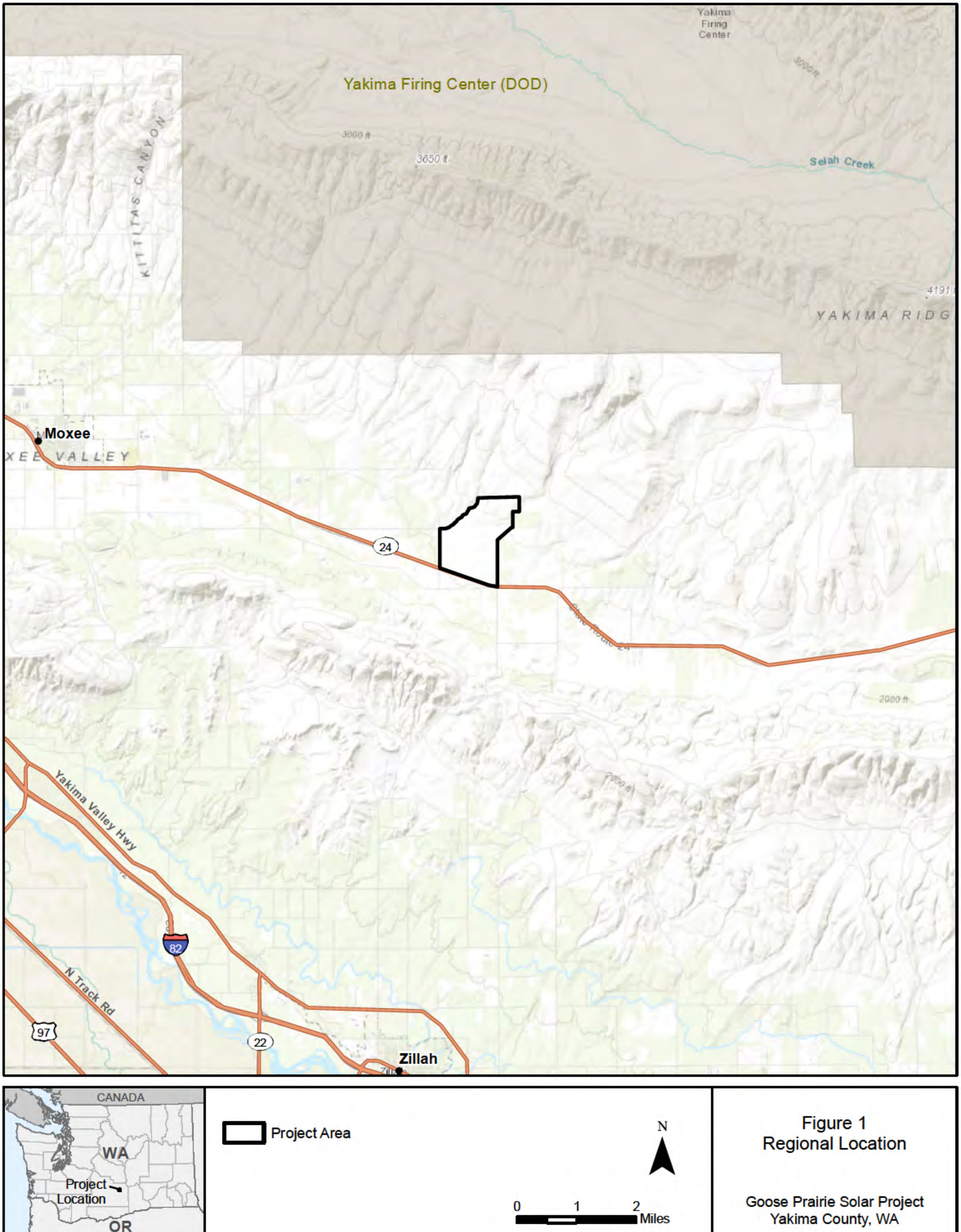

Figure 1
Regional Location

Goose Prairie Solar Project
Yakima County, WA

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Figure 2
Project and Survey Area

Goose Prairie Solar Project
Yakima County, WA

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Appendix A:

Resumes

Experience Summary

Ms. King has practiced in the fields of archaeology and cultural resource management since 2000 and meets the Secretary of the Interior's Professional Qualifications for Archaeology. She is a member of the Register of Professional Archaeologists (RPA) (since 2005). Her experience has been gained through work in the Pacific Northwest Coast, Plateau, Great Basin, northern Plains, and California regions. Specifically, she has conducted cultural resource studies in Oregon, Washington, Idaho, California, Minnesota, South Dakota, Nevada, Colorado, Utah, and Oklahoma. Her typical projects have included pipelines, transmission lines, solar farms, wind energy projects, resource management plans, and remediation projects. Her duties are primarily focused on regulatory compliance with Section 106 of the National Historic Preservation Act (NHPA) and state permitting requirements, including evaluation of cultural resources for listing on the National Register of Historic Places (NRHP). Additionally, she has experience with the National Environmental Policy Act (NEPA), Oregon Energy Facility Siting Council/Oregon Department of Energy (ODOE) Siting Standards, Washington State Environmental Policy Act (SEPA), California Environmental Quality Act (CEQA) (including evaluation of cultural resources for listing on the California Register of Historical Resources [CRHR]), the Native American Graves Protection and Repatriation Act (NAGPRA), the Archaeological Resources Protection Act (ARPA), and various other federal and state agency-specific cultural resources management directives. She has consultation experience with State Historic Preservation Offices (SHPOs), Native American tribes, and local cultural resources specialists. Ms. King has successfully led and assisted in the completion of Section 106 documents as well as the cultural resources aspects of NEPA, ODOE, SEPA, and CEQA documents for Federal, State, and local agencies. Her clients have also included third-party customers such as municipalities, energy companies, and Native American groups. Ms. King has extensive experience in cultural resource surveys, NRHP-eligibility testing and evaluations, sensitivity assessments, desktop studies, as well as NEPA and state environmental compliance impact analyses. Her specialties lie in archival research, archaeology, site formation processes, archaeological sensitivity assessments, historic preservation, Native American resources, and cultural resource law.

Education

MA, Cultural Anthropology (Emphasis: Public Archaeology), California State University, Northridge, 2005
BA, Cultural Anthropology (Emphasis: Archaeology), University of California, Santa Barbara, 2001

Registrations/Certifications

Registered Professional Archaeologist, Earned 9/27/05
Bureau of Land Management–California State Office
Bureau of Land Management–Nevada State Office Perm
Bureau of Land Management–Oregon State Office Perm
State of Colorado–Project Archaeologist
County of Riverside Cultural Resources Consultant, Earned 6/1/12
Certified Archaeologist for Unincorporated Orange, Earned 7/1/12

Training

Adult CPR; American Red Cross Bay Area; 2007
CEQA Basics Workshop Series; Association of Environmental Professionals; 2005
Certified Archaeologist; Unincorporated Orange County; 2012
Crew Chief; Eel Point Field School, San Clemente Island, California State University, Northridge; 2003
Cultural Resources and Climate Change; Society for American Archaeology; 2019
Cultural Resources Consultant List #367; County of Riverside; 2012

Cultural Resources Pro-Seminar & Orientation Class; Riverside County; 2011
Defensive Driving Training Course; U.S. Forest Service; 2007
Field School; University of California, Santa Barbara Region and Channel Islands; 2000
Fish Weir Identification Workshop; Association of Oregon Archaeologists; 2015
Geoarchaeology: Foundations, Research, and Practical Applications for Heritage Management-Online Seminar; Society for American Archaeology; 2019
Principal Investigator, California State Office Permit; Bureau of Land Management
Principal Investigator, Nevada State Office Permit; Bureau of Land Management
Principal Investigator, Oregon State Office Permit; Bureau of Land Management
Standard First Aid; American Red Cross Bay Area; 2007
The Section 106 Essentials; Advisory Council on Historic Preservation; 2006
Wilderness First Responder; Wilderness Medicine of Utah, Moab; 2014

Corporation Project Experience

Principal Investigator/Project Manager, June 2019–Present
sPower, Prevailing Wind Park Construction Monitoring, in Bon Homme, Charles Mix, Hutchinson, and Yankton Counties, SD
Ms. King is the Principal Investigator and Project Manager for cultural resource monitoring of construction activities for the Prevailing Wind Park in southeastern South Dakota. The project requires compliance with a number of state, local, and federal permits for construction and is subject to state cultural resource regulation as well as Section 106. Ms. King oversees two on-site full-time cultural resources monitors who 1) assist in coordinating the archaeological monitoring efforts of the Yankton Sioux Tribe – Tribal Historic Preservation Office (THPO), 2) conduct surveys of project areas as-needed, 3) assist in monitoring of known cultural resources on an as-needed and THPO-approved bases, and 4) ensure compliance with the project's cultural resource monitoring and unanticipated discovery plan (UDP). Additionally, Ms. King actively assists in these activities as needed. Survey addendums are prepared by Ms. King and the monitors to document the results of any additional cultural resource surveys for submittal to WAPA, South Dakota State Historic Preservation Office, and THPO. She has also drafted an addendum to the project's UDP in order to streamline the processes for additional survey and unanticipated discoveries.

Principal Investigator, April 2019–Present
One Energy Renewables, Goose Prairie Solar Project, Yakima County, WA
Ms. King is the Principal Investigator for cultural resources studies related to the Goose Prairie Solar Project, which requires a Conditional Use Permit from Yakima County. The project is proposed as an up to 80-MW solar facility. Ms. King directed a pedestrian cultural resources survey of the 626-acre area of interest as well subsequent shovel probing. In order to reduce field time and costs, and in consultation with the Department of Archaeology and Historic Preservation (DAHP), Ms. King designed the shovel probing survey to focus on areas of higher potential for archaeological resources. The design was based on areas of high soil deposition, proximity to freshwater, historic land use, site distribution patterns in the surrounding area, and within a preliminary design area where greater project-disturbance was anticipated. Results of the surveys were documented in a survey report that included documentation of the shovel probes, an assessment for potential to encounter additional cultural resources during project construction, and an assessment of potential project impacts under SEPA.

Principal Investigator, April 2019–Present
One Energy Renewables, Sunnyside Solar Project, Yakima County, WA

Ms. King is the Principal Investigator for cultural resources studies related to the Sunnyside Solar Project, which requires review and approval by the City of Sunnyside. The project is proposed as an up to 5-MW solar facility. Ms. King directed a pedestrian cultural resources survey of the 60-acre area of interest. Results of the survey were documented in a survey report that included an assessment for potential to encounter additional cultural resources during project construction and an assessment of potential project impacts under SEPA.

Principal Investigator, January 2019–Present
Invenergy Renewables, LLC, Othello Solar Energy Project, Adams County, WA

Ms. King is the Principal Investigator for cultural resources studies related to the proposed the development of the Othello Solar Energy Project. The project proposed to construct an up to 200-MW solar facility. Ms. King directed pedestrian cultural resources surveys of the 1,400-acre survey area and provided coordination with representatives of the Confederated Tribes of the Colville Reservation. She developed a survey report for the project, documenting and evaluating for NRHP-eligibility the 15 newly recorded archaeological sites within the survey area as well as input and opinions of the Colville Tribe regarding sensitive resources. Additionally, Ms. King will develop management and treatment recommendations for impacted resources and for the project in general. The report will be submitted to the Department of Archaeology and Historic Preservation (DAHP) and Adams County in support of a Conditional Use Permit application. The results of the survey will be applied by Ms. King to a SEPA checklist.

Principal Investigator, January 2019–Present
Invenergy Renewables, LLC, Quincy Solar Energy Project, Grant County, WA

Ms. King is the Principal Investigator for cultural resources studies related to the proposed the development of the Quincy Solar Energy Project. The project proposed to construct an up to 200 MW solar facility. Ms. King directed pedestrian cultural resources surveys of the 720-acre survey area and provided coordination with representatives of the Confederated Tribes of the Colville Reservation. The project also required acquisition of an Antiquities Permit from the U.S. Bureau of Reclamation for pedestrian survey and shovel probing of a 1-mile-long access road. She will develop a survey report for the project, documenting and evaluating for NRHP-eligibility the 2 newly recorded isolated finds recorded and shovel probes completed within the survey area as well as input and opinions of the Colville Tribe. Additionally, Ms. King will develop management recommendations for the project in general. The report will be submitted to the Department of Archaeology and Historic Preservation (DAHP) and Grant County in support of a Conditional Use Permit application. The results of the survey will be applied by Ms. King to a SEPA checklist.

Principal Investigator, April 2019-Present
Confidential Client, Environmental Support and Minnesota Public Utilities Commission Permitting for Repowering of the Mower Wind Energy Center, Mower County, MN

Ms. King conducted a cultural resources desktop study and pedestrian survey for the Mower Wind Energy Center Repowering Project. The project proposed to install larger turbine blades on existing wind turbines, requiring enlarging turn radii along access roads. As part of the desktop study and survey, Ms. King consulted the Minnesota SHPO and Office of State Archaeology (OSA) databases to determine the presence or absence of known cultural resources within the area of potential effect (i.e., ground disturbance) and to determine acceptable field survey methodology. Results of the desktop study were documented in a memo, including a map of potentially impacted resources. Results of the survey will be documented in a survey report meeting Minnesota guidelines for archaeological survey reporting.

Cultural Resources Specialist, November 2018-Present
Avangrid Renewables, LLC, Bakeoven Solar Project, Wasco County, OR
Ms. King prepared Exhibit S of Avangrid's Application for Site Certification for the Bakeoven Solar Project. The project proposed construction and operation of a photovoltaic (PV) solar energy facility with a nominal and average generating capacity of 303 megawatts (MW) within a 10,615-acre Site Boundary. It is subject to the Oregon Energy Facility Siting Council siting standards. Ms. King's tasks included review of a survey report and Native American consultations completed by a separate consultant and evaluating the project effects under Oregon Department of Energy requirements and standards in the application's Exhibit S.

Cultural Resources Specialist, November 2018-Present
Avangrid Renewables, LLC, Lund Hill Solar Energy Project, Klickitat County, WA
Ms. King prepared the cultural resources section of Avangrid's Washington State Environmental Impact Statement for the Lund Hill Solar Energy Project. The project proposed construction and operation of a 150-MW solar energy facility on approximately 1,871 acres, within a solar siting area of 4,513 acres. The project is subject to Washington State Environmental Policy Act. Ms. King's tasks included review of a survey report and Native American consultations completed by Avangrid and a separate consultant and evaluating the project effects under SEPA in the EIS.

Principal Investigator, July 2018–Present
Confidential Client, Wheatridge Wind and Solar Power Project, Morrow and Umatilla Counties, OR
Ms. King is the Principal Investigator for cultural resources studies related to the Wheatridge Wind and Solar Power Project. The project is subject to Oregon Energy Facilities Siting Commission (EFSC) requirements. It was approved as a 500-MW wind farm in 2015. In 2018, the project owner sought a request for amendment from EFSC to add 650 MW of solar arrays to the project. In support of the request, Ms. King has led cultural resources investigations, including review of existing cultural resources data from the 2015 application, and overseen two pedestrian surveys of the expanded project area. Ms. King provided preliminary NRHP eligibility recommendations for each resource in the survey reports based on surface findings during the survey. She utilized the survey reports to prepare Exhibit S of the project's request for amendment to EFSC.

Principal Investigator, May 2017–Present
Capital Power Corporation, Nolin Hills Wind Power Project, Umatilla County, OR
Ms. King is the Principal Investigator for cultural resources studies related to the Nolin Hills Wind Power Project, a proposed 350-MW wind farm near Echo and Pendleton, Oregon. The project is applying for a Site Certificate from the Oregon Energy Facilities Siting Commission (EFSC). Her tasks have included coordination with the Confederated Tribes of Umatilla Indian Reservation and Oregon SHPO, conducting a records search, oversight of multiple pedestrian cultural resources surveys of the project (including tribal representatives), drafting of a survey report that meets the Oregon SHPO reporting guidelines, and providing guidance to the client regarding next steps and tribal coordination. Surveys have so far identified 50 newly recorded cultural resource sites and 17 newly recorded isolated finds. Ms. King provided preliminary NRHP eligibility recommendations for each resource in the report based on surface findings during the survey. CTUIR provided a Traditional Use Study as well for the project. Ms. King utilized the survey report and the Traditional Use Study to prepare Exhibit S of the project's Application for Site Certification to EFSC.

Archaeologist, March 2017–2018
U.S. Department of Homeland Security, Federal Emergency Management Agency, Region IX, Hazard Mitigation Technical Assistance Program, Environmental and Historic Preservation Technical Assistance, CA

Ms. King provided environmental and historic preservation support to FEMA's Region IX Hazard Mitigation Branch in California. The office required technical assistance with subapplications for projects throughout California under the Hazard Mitigation Assistance programs. Ms. King reviewed materials provided by subapplicants and provided data requests for materials required to achieve Section 106 compliance on FEMA's behalf. This support enabled FEMA to expeditiously review and award program funds in accordance with federal environmental and historic preservation laws, regulations, and other requirements so that projects could be implemented by state and local governments (i.e., subapplicants).

Cultural Resources Specialist, 2014–2015
Principal Investigator/Project Manager, October 2015–January 2016
Pacific Power, Class III Cultural Resource Inventory and Visual Simulation for the NERC Clearance Project, Modoc County, CA

Ms. King managed and oversaw cultural resource studies related to a NERC clearance conflict of the Malin-Round Mountain 500-kilovolt transmission line over a bedrock outcrop on the Modoc National Forest. The clearance conflict and access to the conflict were within a previously recorded NRHP-eligible archaeological site and adjacent to an NRHP-listed historic landscape related to the Modoc War. Tetra Tech conducted an archaeological survey of the clearance conflict area and Pacific Power's proposed access route and created a visual simulation of Pacific Power's proposed exclusionary fencing from a future kiosk site associated with NRHP-listed Modoc War site. In addition, Ms. King assisted Pacific Power in providing the necessary information for the U.S. Forest Service to conduct Section 106 consultation for the project.

Archaeologist/Principal Investigator, September–January 2016
The Nature Conservancy, Winter Lake and China Camp Creek Restoration Project, Coos County, OR

Ms. King conducted a reconnaissance of this project, including a records search at Oregon SHPO, assessed the archaeological sensitivity of the Project area, and provided recommendations for compliance with Section 106 of the NHPA. In compliance with those recommendations, The Nature Conservancy and the U.S. Fish and Wildlife Service requested that Ms. King also documented a historic canal system within the Project area and evaluated it for NRHP eligibility. The project would provide enhancements to fish and wildlife habitat and restore fish access to approximately 400 acres of freshwater tidal floodplain adjacent to the Coquille River. The floodplain was used historically and in modern times as rangeland and in most winters the entire floodplain is inundated. The project is proposed by The Nature Conservancy in cooperation with the Oregon Department of Fish and Wildlife, the Beaver Slough Drainage District, and the China Camp Creek Gun Club, and required permits and approvals from the U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service.

Principal Investigator, December 2015-February 2017
U.S. Environmental Protection Agency, Section 106 Compliance Support, California and Nevada

Ms. King provided Section 106 compliance support for the EPA's Special Appropriation Act Projects Grant Funding. Under the program, local agencies requested EPA grant funds for various projects. The grant funding by EPA required Section 106 compliance. Ms. King's tasks for these projects included conducting records searches and drafting Section 106 consultation letters for EPA to send to the appropriate SHPO and, if applicable, federally recognized tribes. Ms. King also drafted contact letters for EPA to send to federally unrecognized tribes as part of the data collection effort.

Principal Investigator, September 2015-January 2018
Verizon Wireless, Section 106 Compliance Support, California and Nevada
Ms. King provides support for newly proposed and co-located cell tower and communications facilities in California and Nevada. Her work includes conducted records searches, assessing sensitivity of direct APEs, and potential for adversely affecting historic properties within the direct and visual APEs. Results and conclusions are provided in FCC Forms 620 and 621 for Section 106 consultation with SHPOs under the FCC's 2004 Nationwide Programmatic Agreement.

Archaeologist/Principal Investigator, April–November 2015
Clean Water Services, Gaston Force Main Improvements Project, Washington County, OR
Ms. King is currently acting as Principal Investigator for an archaeological resources survey and a reconnaissance for historic above-ground resources in support of Clean Water Services' Gaston Force Main Improvements Project in the town of Gaston in the Tualatin Valley. The project required a Section 404 permit from the U.S. Army Corps of Engineers. Therefore, the survey and reconnaissance were conducted in compliance with Section 106 of the National Historic Preservation Act. The project traverses a sensitive area within proximity to several ethnographic village sites and historic Wapato Lake.

Archaeologist/Co-Principal Investigator, February–March 2015
SunEdison, LLC, Granite Mountain Solar Farm Project, Iron County, UT
Ms. King acted as co-Principal Investigator for pedestrian survey, testing, and data recovery efforts associated with two potential solar farm sites (Granite Mountain East and West) near The Three Peaks, Cedar City in Iron County, Utah. The project included two photovoltaic (PV) solar power and generation facilities on private land: a 464-acre 50.4-megawatt (MW) facility and a 627-acre 80-MW facility. In total, approximately 1,530 acres were surveyed as well as a 1.2-mile long gen-tie line along Union Pacific Railroad tracks. Ms. King directed pedestrian survey and recording of 24 newly identified archaeological sites and 21 newly identified isolated occurrences. The newly identified sites included an open camp, prehistoric lithic and tool scatters, prehistoric rock art panels, a historic rock art panel, historic ranching-related sites, historic refuse scatters, and historic survey markers. Testing and data recovery (surface collection) were conducted at five of the prehistoric lithic and tool scatters. Ms. King also assisted with tribal consultation regarding the two prehistoric rock art sites that were identified. She also authored two survey reports and the testing/data recovery report, including NRHP-eligibility and management recommendations.

Archaeologist/Co-Field Director, March 2015
SunEdison, LLC, Iron Springs Solar Farm Project Gen-Tie Line, Iron County, UT
Ms. King acted as co-Field Director for testing and data recovery efforts associated with a proposed gen-tie line for the Iron Springs Solar Farm project near The Three Peaks, Cedar City in Iron County, Utah. Testing and data recovery (surface collection) were conducted at two large prehistoric lithic, tool, and ceramic scatters.

Archaeologist/Co-Principal Investigator, August 2014
EDF Renewable Energy and First Solar, Corcoran Irrigation District Solar Project, Kings County, CA
Ms. King acted as co-Principal Investigator for data recovery efforts associated with two unanticipated discoveries during construction of this solar farm on the northern shore of archaeologically sensitive Tulare Lake. In addition, she provided support for cultural resource monitoring services, including monitoring of construction herself for several days. The project included a 200-acre 20-megawatt photovoltaic solar power generation facility on private land in the Southern San Joaquin Valley of California's Central Valley. In response to the unanticipated discoveries, Ms. King assisted in drafting a data recovery plan and consultation with Santa Rosa Rancheria Tachi-Yokut Tribe. She also directed data

recovery excavations and site recording, including coordination with Tetra Tech's on-call Osteologist/Forensic Anthropologist regarding identification of human remains.

Archaeologist/Co-Principal Investigator, August 2014
EDF Renewable Energy and First Solar, Goose Lake Solar Project, Kern County, CA
Ms. King acted as co-Principal Investigator for Extended Phase 1 efforts ahead of construction for this solar farm on the northern shore of archaeologically sensitive Goose Lake. These efforts were aimed at determining the presence or absence of subsurface deposits within nine previously identified prehistoric archaeological sites within the project area. The project included a 158-acre 14-megawatt photovoltaic solar power generation facility on private land in the Southern San Joaquin Valley of California's Central Valley. In compliance with the project's Mitigation Monitoring and Reporting Program requirements, Ms. King drafted a subsurface testing plan, directed excavations, and documented the results in a post-field memo and technical report, which assessed the potential significance and California Register eligibility of the archaeological sites. In addition, Ms. King acted as the project's shell bead specialist, identifying 14 Olivella biplicata shell beads and artifacts and determining their typology.

Principal Investigator, March 2014–December 2016
U.S. Navy Base Realignment and Closure Program Office, Archaeological Monitoring for Biological Enhancements at Cistern Pond and UXO Removal at Southern Runway, Naval Weapons Station Seal Beach Detachment, Concord, Contra Costa County, CA
Ms. King is currently assisting with the U.S. Navy's remediation efforts at the Naval Weapons Station Seal Beach Detachment (NAWPNSTA) at Concord, California in anticipation of transferring the lands to the City of Concord under the Base Realignment and Closure (BRAC) Program. As part of this effort and the Navy's compliance with Section 106 of the NHPA, she has provided archaeological monitoring plans to be incorporated into the Work Plans for two Projects: Biological Enhancements at Cistern Pond (Cistern Pond Project) and removal of unexploded ordinance (UXO) and materials potentially presenting an explosive hazard (MPPEH) in the Southern Runway area (Southern Runway Project). In addition, Ms. King oversaw archaeological monitoring of the Cistern Pond Project and is anticipated to oversee monitoring of the Southern Runway Project in 2017. Both projects have presented NAGPRA-related concerns for the Navy.

Archaeologist, 2013–2016
Confidential Client, Critical Issues Analyses, Throughout U.S.
Ms. King conducted critical issues analyses (i.e. desktop studies) for the client's potential wind and solar farm sites throughout the U.S. Her efforts included conducting records searches through the appropriate SHPO, researching state-specific cultural resource law related to renewable energy development, and analyzing the potential and likelihood of significant impacts on cultural resources. This work was typically conducted with constrained deadlines and required close coordination with Program and Project Managers, GIS analysts, and, in some cases, subcontractors.

Principal Investigator, February–March 2013
U.S. Army Garrison Fort Hunter Liggett, NAGPRA Compliance Summary and Inventory Update for Fort Hunter Liggett, Monterey and Santa Clara Counties, CA
Ms. King completed a review of past NAGPRA compliance efforts by Fort Hunter Liggett Military Reservation and determined the reservation's compliance with the publication of a final rule regarding disposition of culturally unidentifiable human remains and AFOs (43CFR10.11). All FHL-managed human remains and associated funerary objects (AFO) from seven archaeological sites in Monterey and Santa Clara Counties were reviewed and compared to existing documentation. The review found that the collections include at least 30 individuals and 10 AFOs and all are considered culturally unidentifiable for the purposes of NAGPRA. However, it was determined that the newly published rule was not applicable

to the collections. Several recommendations were provided to FHL, including management of existing collections and identification of artifacts missing from collections; to notify the NAGPRA Review Committee regarding inventory completion for three sites and unreported inadvertent discoveries at two additional sites; and to request recommendations from the review committee regarding disposition of all FHL-managed human remains and AFOs. In addition to the inventory and analysis of NAGPRA compliance, Draft Notices of Inventory Completion, a Draft Notice of Inventory Completion Amendment, and a Draft Inadvertent Discovery Notification were provided.

Archaeologist, June 2011–Present
Idaho Power Corporation, Boardman to Hemingway 500-kV Transmission Line Phase III, Owyhee County, ID; Baker, Union, Morrow, Umatilla, and Malheur Counties, OR
Ms. King acts as assistant Field Director, Crew Chief, and Field Data Manager for this large Class III cultural resource study for a proposed transmission line project that is subject to both Section 106 of the NHPA and EFSC siting criteria. The project includes 430 miles of preferred and alternate transmission line routes and 600 miles of access roads across Bureau of Land Management, U.S. Forest Service, Bureau of Reclamation, and private lands. Ms. King provides assistance in directing field activities and coordinating land access, leads crews, and manages all field data (field forms and photos, GIS data, health and safety documentation). In addition, Ms. King authored multiple survey reports (Class II and Class III, addendums, planning action-specific reports) documenting the 480+ newly recorded sites, 500+ newly recorded isolates, and 50+ updated previously recorded sites that have so far been identified by surveys. The resources include prehistoric and historic resources, such as Late Paleoindian and Early Archaic open camps, prehistoric quarry sites, hunting blinds, and cairns, as well as historic mining and logging sites, Oregon Trail segments, homesteads, utility lines, and numerous historic water conveyance features. Ms. King also provides assistance to the project's historic trails and architectural resources team, including identifying and assessing the visual impact on previously recorded trail segments, historic buildings. She also incorporates identified Historic Properties of Religious and Cultural Significance to Indian Tribes into the project analyses. Additionally, Ms. King has assisted in review of proposed geotechnical boring locations to determine necessary actions to avoid adverse effects under Section 106. As part of the EFSC process, Ms. King has authored the Exhibit S analysis of the project, including in-person meetings with SHPO and the Oregon Department of Energy (ODOE).

Archaeologist/Field Director, April 2011–August 2012
Cogentrix Quail Brush Generation Project, San Diego, CA
Ms. King acted as Field Director for a cultural resources survey required by the California Energy Commission and City of San Diego as part of the CEQA process associated with the proposed construction of an approximately a 100-megawatt (MW) natural gas-fired peaking facility. Project facilities include the peaking plant, a transmission line, switchyard, and natural gas pipeline. Ms. King was responsible for completion of archival research, consultations with Native Americans and local historical societies, pedestrian and enhanced pedestrian surveys, coordination of Native American monitors, and development of a cultural resources technical report and impact analysis for the Application for Certification submitted to the California Energy Commission.

Archaeologist/Principal Investigator, October 2011–July 2012
BP Solar Energy North America, Inc., Joshua Tree Solar Project, San Bernardino County, CA
Acted as Principal Investigator for cultural resources studies related to BP's proposal to construct a 20-MW solar photovoltaic energy project. Studies assisted in the development of a CUP and subsequent permitting requirements as part of the CEQA process. Completed a desktop study of archival research and literature review; designed and oversaw pedestrian survey of 222-acre project area, and documented results, including 12 newly recorded historic and prehistoric sites and 11 isolated finds, in a survey report.

Archaeologist/Crew Chief, August–September 2011
Shell Wind Energy, Colorado Blue Wind Farm Project, Huerfano County, CO
Ms. King acted as crew chief for a cultural resource inventory of a 2,000-acre wind farm site on private lands. Survey of 62 linear miles of proposed access roads and turbine locations. The area was previously unsurveyed. Ms. King was responsible for crew safety, daily coordination with the Field Director, and detailed recordation of over 50 prehistoric and historic archaeological sites, including one town site, and 75 isolated finds dating from the Early Archaic prehistoric period (7,800 B.P.–1800 A.D.) to the historic period (mid-1800s to 1960 A.D.), field analysis of artifacts and features for inclusion in report, and determination of historic roads and railroad corridors.

Co-Principal Investigator/Project Manager, November 2010–April 2011
U.S. Army Corps of Engineers, Sacramento District and U.S. Air Force, Edwards AFB, Supplemental Range Evaluation: Damage V, NRHP Evaluation of 13 Historic-Era Homesites, Edwards Air Force Base, CA
This project was supplemental work performed under an existing USACE-Sacramento District contract to evaluate an additional 13 historic-era homesites as part of the Section 110, NHPA program at Edwards AFB. Ms. King acted as Project Manager and co-Principal Investigator for this project, coordinating with the Program Manager, the Base Historic Preservation Officer, and a subconsultant hired to conduct fieldwork. She provided oversight of all aspects of the evaluations, including leading a kick-off meeting, drafting a work plan and research design for approval by the BHPO, conducting all archival research, providing input for field efforts, quality review of site record forms, and evaluating the significance of each of the 13 sites in a standard Phase II Archaeological Resource Management Report.

Archaeologist/Lab Director, October 2010, January–February 2011; April–May 2011
Confidential Client, Phase II Site Testing, Survey Data Recovery, Archaeological Monitoring, and Artifact Processing for the Genesis Solar Energy Project, Colorado Desert, CA
Ms. King assisted with NRHP-eligibility testing of seven prehistoric archaeological sites within the footprint of the client's Genesis Solar Farm project on public land managed by the BLM near Blythe, California. Her work included excavation of shovel test pits, assisting the Principal Investigators with GPS mapping, and providing guidance to archaeological technicians. She also participated in data recovery of five additional prehistoric sites (surface collection and mapping) and two historic sites (detailed GPS mapping) and survey of approximately 120 acres, recording four newly discovered historic refuse deposits. Ms. King met stringent California Energy Commission requirements for an archaeological monitor for this project and monitored ground disturbance associated with desert tortoise fence installation and access road grading. She also provided direction to other project monitors while on site. Additionally, Ms. King conducted all lab and artifact processing activities, including cleaning, cataloging, and analyses.

Principal Investigator/Project Manager, July 2010–June 2011
U.S. Navy Base Realignment and Closure Program Office, Archaeological Monitoring Oversight and Reporting for the Crisp Road Pipeline Removal and Remedial Actions, Hunters Point Naval Shipyard, San Francisco, CA
Ms. King supervised archaeological monitors for sanitary and storm drain removal and remediation as part of the U.S. Navy's Base Realignment and Closure Program at the Former Hunters Point Shipyard (HPS). Monitoring was conducted in accordance with a Basewide Monitoring Plan Ms. King authored for HPS. She conducted weekly site inspections, ensured monitors completed daily logs of construction activities and observations, and inspected possible archaeological deposits when encountered. Ms. King authored the monitoring report documenting monitoring activities and findings, outlining implications

for archaeological sensitivity based on the monitoring results, and provided recommendations for future monitoring activities in the project area.

Principal Investigator/Project Manager, June 2010–February 2011
U.S. Navy Base Realignment and Closure Program Office, Archaeological Monitoring Oversight and Reporting for Remedial Actions at Installation Restoration Sites 07 and 18, Hunters Point Naval Shipyard, San Francisco, CA
Ms. King supervised archaeological monitors for remediation activities and shoreline reconstruction as part of the U.S. Navy's Base Realignment and Closure Program at the Former Hunters Point Shipyard (HPS). Monitoring was conducted in accordance with the Basewide Monitoring Plan Ms. King authored for HPS. She conducted weekly site inspections, ensured monitors completed daily logs of construction activities and observations, and inspected possible archaeological deposits when encountered. One historic refuse deposit was encountered during shoreline reconstruction and was recorded. Additionally, historic architectural debris within the original rip-rap was documented. Ms. King authored the monitoring report documenting monitoring activities and findings, outlining implications for archaeological sensitivity based on the monitoring results, and provided recommendations for future monitoring activities in the project area.

Principal Investigator, December 2009–January 2010
U.S. Postal Service, Cultural Resources Survey and Letter Report for Transfer of USPS Land, Lancaster, CA
Ms. King acted as Principal Investigator for a cultural resources survey of a 4.04-acre USPS property to be possibly transferred out of federal ownership. This review was requested to meet the requirements of the NHPA, Section 106 (36 CFR 800). The report relied on a prehistoric and historic site record and literature search as well as on historic maps. In addition, Ms. King directed a field technician who completed a pedestrian survey of the property to identify cultural resources on or next to the property. One historic-period archaeological resource was identified during the survey and recommended NRHP-ineligible. Results of the research and field effort were documented in a letter report to USPS.

Principal Investigator, November 2009–December 2010
San Francisco Department of Recreation and Parks and Planning Department, Archaeological Sensitivity Assessment in Support of the Significant Natural Resource Areas Management Plan EIR, San Francisco and San Mateo Counties, CA
Ms. King completed an archaeological sensitivity assessment of 32 natural resource areas included in the San Francisco Department of Recreation and Parks' controversial Significant Natural Resource Areas Management Plan (SNRAMP). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years. The archaeological sensitivity assessment was prepared to support the cultural resource impacts analysis in the associated EIR that addresses implementation of the SNRAMP, required by the San Francisco Major Environmental Analysis Division of the Planning Department. The assessment of each Natural Area was based on records searches, archival and literature research, and review of historic maps, environmental data, and geologic landforms of the San Francisco Peninsula. Her efforts required close coordination with SFDRP and the Planning Department's Archaeologist.

Principal Investigator, July 2009–March 2010
U.S. Army Corps of Engineers, Sacramento District and National Park Service, Golden Gate National Recreation Area, Archaeological Monitoring and Reporting for the FUDS Site Inspections at Former Forts Barry, Cronkhite, and Funston and Former San Francisco Nike Battery 59, Marin Headlands and San Francisco, CA
Ms. King provided archaeological monitoring services during USACE, Sacramento District's site inspections at three formerly used defense sites (FUDS) managed by the National Park Service, Golden Gate National Recreation Area. The monitored sites included selected areas at former Fort Barry and Fort Cronkhite in the Marin Headlands and at former Fort Funston and San Francisco Nike Battery 59 in San Francisco, California. Monitored locations at Fort Funston and Nike Battery 59 were selected based upon a letter report authored by Ms. King who assessed the likelihood for significant cultural resources within or near inspection sites. Ms. King conducted monitoring of ground disturbing activities associated with the removal of underground storage tanks and soil contamination testing, collected and processed artifacts, and authored a report documenting monitoring activities and results. Monitored areas were within the Golden Gate National Recreation Area and several historic districts, managed by the National Parks Service, requiring close coordination with the NPS Archaeologist.

Principal Investigator/Project Manager, April 2009–February 2010
U.S. Navy Base Realignment and Closure Program Office, Archaeological Monitoring Oversight and Reporting for the Fisher and Spear Avenues Pipeline Removal, Hunters Point Naval Shipyard, San Francisco, CA
Ms. King supervised archaeological monitors for sanitary and storm drain removal and remediation as part of the U.S. Navy's Base Realignment and Closure Program at the Former Hunters Point Shipyard (HPS). Monitoring was conducted in accordance with a Basewide Monitoring Plan Ms. King authored for HPS. She conducted weekly site inspections, ensured monitors completed daily logs of construction activities and observations, and inspected possible archaeological deposits when encountered. She also acted as the archaeological monitor on site, when necessary. No cultural resources were encountered or disturbed, and no historic properties were affected. No noncompliance incidents occurred. Ms. King authored the monitoring report documenting monitoring activities and findings, outlining implications for archaeological sensitivity based on the monitoring results, and provided recommendations for future monitoring activities in the project area.

Principal Investigator/Project Manager, March–April 2009
U.S. Navy Base Realignment and Closure Program Office, Basewide Archaeological Monitoring and Discovery Plan for Former Hunters Point Naval Shipyard, San Francisco, CA
As part of the Department of Defense's removal and remedial actions under the U.S. Navy's Base Realignment and Closure Program, the government determined that the Former Hunters Point Shipyard (HPS) would be closed. The Navy used it as a repair facility, but it also was the location of the Naval Radiological Defense Laboratory (NRDL) between 1948 and 1969. The NRDL decontaminated ships exposed to atomic weapons testing and to research and experiment with radiological decontamination, the effect of radiation on living organisms, and the effects of radiation on materials. The Navy closed HPS and placed it in reserve in 1974. Given the archaeological sensitivity of HPS, monitoring by a qualified archaeologist is required on a case-by-case basis, as determined by the Navy in consultation with the SHPO. Ms. King completed this AMDP for activities agreed upon between the Navy and the California SHPO that will occur at HPS under the 1998 BRAC program. It summarizes the environmental and cultural setting of HPS as well as the archaeological sensitivity (locations, site types) and provides instruction for the monitoring program, including roles, duties, communication protocols, a construction staff training program, the monitor's authorities, unanticipated discovery procedures and

treatments, and post-excavation activities and reporting. The AMDP is applicable to Navy and SHPO agreed-upon activities throughout HPS.

Principal Investigator, February–June 2009
U.S. Bureau of Land Management, Modified Class I of the BLM Bakersfield Field Office in Support of an RMP/EIS, Central California
This report presents the results of a modified Class I data inventory for the BLM Bakersfield Field Office (BKFO) in Central California. The document supports a resource management plan (RMP) and Environmental Impact Statement (EIS), the purpose of which is to guide management of public lands within the administrative boundary of the BKFO. This FO boundary encompasses about 17 million acres throughout Kings, San Luis Obispo, Santa Barbara, Tulare, Ventura, Madera, eastern Fresno, and western Kern Counties, of which 610,588 acres are public lands managed by BLM. Ms. King synthesized cultural resources overviews, studies, and surveys for each of three planning units within the BKFO. The documents used primarily focused on research themes and questions, as well as settlement patterns and predictive models for BKFO public lands. The site- or area-specific surveys and studies, as well as BLM documentation of areas of critical environmental concern with cultural resources, were used to broaden the understanding of each planning unit's prehistory and history. The Class I cultural resources inventory is an initial step in complying with the NHPA and will allow managers to assess potential compliance issues, develop methods and models to address future concerns, develop historic contexts for evaluating resources for listing on the NRHP, and propose a consistent regional resource management program in the RMP/EIS.

Archaeologist/Deputy Project Manager, January 2009–May 2010
U.S. Army Corps of Engineers, Sacramento District and U.S. Air Force, Edwards AFB, PIRA Infill Inventory Survey, Edwards Air Force Base, CA
Under contract to the USACE-Sacramento District, Ms. King acted as the technical specialist for this Phase 1 survey of selected "priority" areas of Edwards AFB where future activity or use is anticipated and in areas where significant sites are anticipated. This project required Phase 1 survey of up to 3,880 acres (dependent upon ground-truthing of site density) within several of these priority areas, one of which was in an active range. The survey recorded all identified cultural resources using Base site record forms and collected and curated all "at risk" (i.e., diagnostic) artifacts. In addition, survey summary forms were completed for each contiguous survey area. As the lead technical specialist for the project, Ms. King completed most project management tasks, coordinated with the project's subconsultant to ensure compliance with the contracted scope of work, and provided peer-review of all deliverables, including site and survey forms and curation.

Archaeologist/Peer-Reviewer, November 2008–March 2009
U.S. Bureau of Reclamation, New Melones Lake Cultural Resources Overview, Tuolumne and Calaveras Counties, CA
Ms. King provided peer-review and quality assurance of a subconsultant's cultural resources overview (similar to a Class I study) of the U.S. Bureau of Reclamation's New Melones Lake Area. The region is particularly sensitive for archaeological resources. Ms. King also completed the final revision of the overview based on comments from Reclamation's Project Archaeologist. The overview was utilized by Ms. King to complete the cultural resource analysis in a RMP/EIS.

Co-Principal Investigator/Project Manager, November 2008–January 2010
U.S. Army Corps of Engineers, Sacramento District and U.S. Air Force, Edwards AFB, Range Evaluation: Damage V, NRHP-Evaluation of 45 Prehistoric and Historic-Era Archaeological Sites, Edwards Air Force Base, CA
This project was part of an overall program to protect archaeological sites at Edwards AFB under Section 110 of the NHPA, via a USACE-Sacramento District contract. In order to better manage EAFB's archaeological resources and assess impacts from looting and vandalism at the most threatened sites on base, more information is needed; therefore, the goal of this project was to support site protection by evaluating 45 unevaluated prehistoric and historic archaeological sites for NRHP eligibility. Ms. King acted as Project Manager and Principal Investigator for this project, coordinating with the Program Manager, the Base Historic Preservation Officer, and a subconsultant hired to conduct fieldwork. She provided oversight of all aspects of the evaluations, including leading a kick-off meeting, drafting a work plan and research design for approval by the BHPO, conducting all archival research, providing guidance regarding site testing, quality review of site record forms and curation, and evaluating the significance of each of the 45 sites in a standard Phase II Archaeological Resource Management Report.

Field Director, October 2008
Vasco Wind, LLC and Florida Power and Light, Cultural Resource Survey of Proposed Vasco Wind Farm, Contra Costa County, CA
Vasco Wind, LLC proposed replacement of approximately 400 existing and aging turbines with a small number of new, larger turbines. The proposed project, located primarily along the Vasco Ridge within the Coast Ranges in Contra Costa County, California, would entail decommissioning old turbines and associated transmission lines and infrastructure, installing 40 new wind-generating turbines, and restoring portions of the land to its original natural character. The project would also include an interconnecting road system, underground and overhead electrical transmission lines to collect energy from the turbines, and a substation to transmit energy from the Project to the regional power grid. Ms. King acted as Field Director for this project, leading a crew of two in surveying the APE within a larger 2,900-acre study area. She ensured crew safety in a hazardous environment, coordinated on a daily basis with the Principal Investigator, and provided daily field notes, photographs, a photo log, and a survey coverage map to the Principal Investigator. Additionally, all previously recorded cultural resources were monitored during the survey and site record updates completed.

Archaeologist, August–September 2008
EM-Assist and U.S. Bureau of Land Management, Cultural Resources Re-Survey of Lower Hurricane Mesa UXO Cleanup Activities, Washington County, UT
Ms. King acted as an archaeologist for this resurvey of approximately 110 acres at the base of Hurricane Mesa near the town of Hurricane and the Virgin River in southern Utah. The resurvey was conducted under contract to EM-Assist to confirm the findings a previous survey, comply with Section 106 of the NHPA, and to determine if any cultural resources were damaged during detonations of unexploded ordinance. Ms. King was responsible for coordinating the survey and contributing to a survey report sufficient for Section 106 compliance and clearance by the BLM St. George Field Office.

Principal Investigator, June–December 2008
U.S. Forest Service, Data Inventory for Potential Geothermal Leasing Interests in the Alkali Valley, Steamboat Hills, and Whisky Flats Areas, Humboldt-Toiyabe National Forest, Bridgeport and Carson Ranger Districts, NV
Although no undertaking had yet been proposed, an interest in three study areas within the Humboldt-Toiyabe National Forest Bridgeport and Carson Ranger Districts had been expressed by potential

geothermal developers. These areas are in the Alkali Valley, Steamboat Hills, and Whisky Flats areas of western Nevada. The Alkali Valley and Whisky Flats study areas are within the Bridgeport District of the Humboldt-Toiyabe National Forest, and the Steamboat Hills area is in the Carson District. On behalf of the U.S. Forest Service, Ms. King conducted research and authored a data inventory report documenting known cultural resources and cultural resource studies within the three study areas. Data was obtained from HTNF District Archaeologists, NVCRIS, and publicly available sources. The report was intended to support NHPA Section 106 compliance.

Co-Principal Investigator, January–December 2008
San Francisco Public Utilities Commission and Planning Department, Historical Architecture Survey and Historic Context Archaeological Survey Report for the Proposed Seismic Upgrade of Bay Division Pipelines 3 and 4, Alameda County, CA
This report documents the cultural resources survey and inventory for San Francisco Public Utilities Commission's Seismic Upgrade of Bay Division Pipelines 3 and 4 at the Hayward Fault Project in Fremont, Alameda County, California. The pipelines are two of the SFPUC's four major transmission pipelines that deliver water from the Hetch Hetchy Reservoir to the San Francisco Bay Area. It would serve as the basis for an assessment of the potential effects on paleontological, archaeological, and historic architectural resources for the project environmental evaluation, with the assumption that identified historic resources or potential archeological resources are potentially eligible to be listed on the NRHP and the California Register of Historical Resources. Ms. King served as Principal Investigator for the archaeological resources portion of the report. Along with an architectural historian, she drafted a work plan for the project, conducted a records search, facilitated consultation for the client with California NAHC and local Native Americans, designed a pedestrian survey, and authored archaeological resource sections of the report. She also assessed the potential for intact subsurface deposits within a region known to contain human remains and a large archaeological site.

Principal Investigator, October 2007
San Francisco Public Utilities Commission and Planning Department, Archaeological Monitoring for Soil Sampling for the Bay Division Pipelines 3 and 4 Crossover Facilities Project, Santa Clara, CA
Ms. King acted as the archaeological monitor for San Francisco Public Utilities Commission (SFPUC) soil sampling activities at a location along the Bay-Division Pipelines 3 & 4 near the Guadalupe River in Santa Clara, California. The sampling locations were within meters of a poorly defined boundary of CA-SCL-6, an Ohlone village site that included burials. Ms. King maintained a monitoring log of each sample augur hole, noting stratigraphic changes and soil characteristics. No cultural resources were noted and it was determined that all augur samples were likely within an area of fill. Monitoring logs were provided to the SFPUC.

Field Director, June–August 2007
Eldorado National Forest, Placerville District, Cultural Resources Survey for the Marshall Mine Vegetation Treatment Project, Eldorado County, CA
The Eldorado National Forest, Placerville District proposed a vegetation treatment undertaking on approximately 7,000 non-contiguous acres with a high density of historic and prehistoric archaeological sites. Proposed treatments consisted of controlled burning and various levels of logging. As part of the Forest's compliance with Section 106 of the NHPA, Ms. King acted as Field Director leading her crew on surveys of previously unsurveyed areas of the project, recording new sites, and monitoring previously recorded sites to establish a baseline condition prior to project implementation. The majority of sites were related to historic logging, mining, and homesteading in the Sierra Nevada mountain range. Ms. King provided the District Archaeologist with daily field notes, the Forest version of California's DPR

site records, and Forest monitoring forms. Additionally, she was responsible for updating the Forest's GIS with survey coverage and locations of newly recorded sites.

Principal Investigator, April–June 2007
San Francisco Public Utilities Commission and Planning Department, Archaeological Survey for the Moccasin Penstocks Relining and Replacement Project, Tuolumne County, CA
The San Francisco Public Utilities Commission proposed to recoat, reline, and possibly replace portions of the Moccasin Penstocks located in Moccasin, California. The penstocks consist of a system of four pipes delivering water from Priest Reservoir to the Moccasin Powerhouse and are part of the Hetch Hetchy Water Delivery System. Ms. King made preliminary suggestions to the client regarding necessary cultural resources studies that would be needed to comply with CEQA. Ms. King conducted pedestrian archaeological survey of the project area and access routes, documented previously unidentified railroad ties associated with the historic Hetch Hetchy Railroad, and provided a supplemental site record form for the railroad. Additionally, she provided a survey report documenting the survey results to the San Francisco Public Utilities Commission and Hetchy Hetchy Water and Power.

Principal Investigator, March 2007–May 2008
San Francisco Public Utilities Commission and Planning Department, Historic Context and Archaeological Properties Assessment for the San Andreas Pipeline No. 3 Installation, San Francisco and San Mateo Counties, CA
Ms. King completed a Historic Context and Archaeological Properties Assessment (HCAPA) for the San Francisco Public Utilities Commission assessing the types of archaeological properties likely to occur within the fully developed project area and the likelihood of those resources to occur. Research involved understanding the historic environment of the San Francisco Peninsula, types of archaeological deposits on the Peninsula, distribution of sites, and preservation of sites given the historic development of the area. The HCAPA was used to assess the potential impacts and provide recommendations for project implementation in the project's IS and EIR.

Field Technician, January–February 2007
Oklahoma Department of Transportation, Historical Architecture Survey for the U.S. 70 Categorical Exclusion, Durant, OK
Ms. King assisted the staff Architectural Historian in recording and evaluating over 50 buildings along an Oklahoma Department of Transportation roadway improvement corridor in Durant, Bryan County, Oklahoma. She also assisted in the completion and production of a survey report as part of Section 106 compliance for the project.

Archaeologist/Peer-Reviewer, December 2006–April 2007
U.S. Army Corps of Engineers, Mobile District and U.S. Army Garrison – Hawai'i, Cultural Resources Survey for Military Housing and Privatization at Schofield Barracks, O'ahu, HI
Ms. King provided peer-review and quality assurance of a subconsultant's historic architectural building survey and Phase I cultural resource survey at Schofield Barracks Military Reservation, Hawai'i. Additionally, she provided support and guidance to U.S. Army Corps of Engineers, Mobile District and U.S. Army Garrison – Hawai'i in the Section 106 process and updated the cultural resources analysis of an associated EA based on the survey findings. Properties included in the survey area and addressed in the report may be brought into the Army's Residential Communities Initiative (RCI) program in Hawai'i. Eighteen historic buildings were inventoried and 40 acres surveyed for archaeological resources.

Archaeologist/Project Manager, August 2006–May2007
U.S. Army Corps of Engineers, Mobile District and California Army National Guard, Archaeological Survey and Test Excavations at Fort Hunter Liggett and Moffett Field in Support of BRAC Actions, Monterey and Santa Clara Counties, CA
Ms. King managed archaeological surveys and subsurface testing programs while participating as a crew member in an effort to determine the extent of possible impacts on cultural resources at Fort Hunter Liggett, Monterey County and Moffett Federal Airfield, Santa Clara County in support of Section 106 compliance for Base Realignment and Closure (BRAC) 2005 activities. She conducted pedestrian surface survey of archaeologically sensitive areas, subsurface testing via shovel test pits, monitoring mechanical excavation, and coordinating Native American monitoring. She also provided significant contribution to the field methods proposals, post-field letter reports, and the draft and final survey reports for each location. Ms. King also contributed to the Environmental Assessments for both locations.

Principal Investigator, November–December 2006
Brannan-Andrus Levee Maintenance District and U.S. Army Corps of Engineers, Sacramento District, Cultural Resources Survey for Levee Maintenance Activities on Brannan Island, Sacramento County, CA
Ms. King conducted a cultural resources survey of thirteen levee maintenance sites on Brannan Island in the San Joaquin-Sacramento River Delta on behalf of the Brannan-Andrus Levee Maintenance District and ACOE-Sacramento District. The proposed undertaking included stabilization and repair of erosional areas along the levees. The survey included a pre-field records search, research using archival and literature resources, and a pedestrian inspection of the thirteen sites. An unanticipated discovery of a submerged historic barge at one site required coordination with SHPO, recordation, and evaluation by Ms. King, with assistance from a staff Historian. For the purposes of this project, the levee system itself was considered a historic property.

Principal Investigator, 2004
Ventura County Watershed Protection District, Archaeological Survey for the Tapo Canyon Debris Basin, Ventura County, CA
The Ventura County Watershed Protection District proposed excavation and grading of a debris basin in Tapo Canyon near Simi Valley in anticipation of erosion debris from extensive fires that had occurred in the area. Ms. King conducted archival research, a site records search, Native American consultation, and a field survey of the APE. The survey also involved relocating previously recorded NRHP-ineligible historic structural remains within the APE.

Principal Investigator, 2004
Ventura County Watershed Protection District, Archaeological Survey of Proposed Canyon #2 and Castro-Williams Debris Basins, Ventura County, CA
This project proposed excavation and grading of two debris basins near Simi Valley, Ventura County, California in anticipation of erosion debris from extensive fires that had occurred in the area. Ms. King conducted archival research, a site records search, Native American consultation, and a field survey of the APE. Results were provided in a survey report as part of the project's Section 106 compliance.

Principal Investigator, 2004
Ventura County Waterworks District No. 16, Archaeological Survey for the Proposed Piru Wastewater Treatment Plant Expansion, Piru, CA
This project proposed expanding a wastewater treatment plant near Piru, Ventura County, California. Ms. King conducted archival research, a site records search, and Native American consultation for the project. Results were provided in a research report as part of the project's NHPA Section 106 compliance.

Archaeological Monitor, 2003
Chevron Texaco, CPL Atascadero to El Estero Pigging at Devil's Gap, San Luis Obispo County, CA
Ms. King conducted an archaeological records search for this pre-existing Chevron Texaco pipeline right-of-way along California Highway 46 in San Luis Obispo County. The project accessed three subsurface bundled pipelines for pigging operations at specific locations. One location, within feet of archaeological site CA-SLO-1891 and known to be a sensitive area for Native American concerns, was surveyed prior to project activities and monitored for subsurface cultural materials.

Archaeologist, 2003
Carpinteria Sanitary District, Archaeological Investigations for the Rincon Point Sanitary Sewer System Project, Ventura and Santa Barbara Counties, CA
Ms. King provided oversight of a cultural resources subcontractor and participated in presence/absence testing and NRHP-eligibility excavations at a large ethnohistoric village site (CA-SBA-1/CA-VEN-62) on Rincon Point in Santa Barbara and Ventura counties, California. Testing involved monitoring mechanical auguring and backhoe trenching as well as excavation of units in a particularly dense portion of the site. The proposed project, part of Carpinteria Sanitary District's larger South Coast Beach Communities Septic to Sewer Project, would provide sewer service to a gated community that had been using septic systems, possibly contributing to pollution of Rincon Creek. Ms. King also provided coordination with the community's Home Owners Association as well as contributions to the associated Initial Study and Environmental Impact Report.

Principal Investigator, 2003
Carpinteria Sanitary District, Archaeological Survey and Presence/Absence Testing for the Carpinteria Sanitation District's Proposed Beach Communities Septic to Sewer Project - Padaro Lane and Beach Club Road, Carpinteria, CA
The Carpinteria Sanitary District proposed construction of a sewage collection system and conveyance facilities that would connect the Padaro Lane and Beach Club Road communities with the District's sewer system as part of the larger South Coast Beach Communities Septic to Sewer Project in Santa Barbara County. Ms. King conducted an archaeological pedestrian survey of the Padaro Lane and Beach Club Road portion of the South Coast Beach Communities Septic to Sewer Project, including archival research, site records search, and Native American consultations. She also designed and conducted mechanical presence/absence testing to determine if archaeological site CA-SBA-13 extended into the subsurface of the project area. Results were provided in a survey report as part of the project's NHPA Section 106 compliance.

Principal Investigator, 2003
County of Ventura Public Works Agency, Archaeological Survey for Proposed Well No. 4, Ventura County, CA
Ms. King conducted archival research, a site records search, Native American consultations, and a Phase 1 archaeological survey of a small orchard and roadway for the proposed installation of a well in an unincorporated portion of Ventura County, California. Results were provided in a survey report as part of the project's CEQA compliance. The proposed project included drilling and operation of a replacement water well to be located partially on County of Ventura Waterworks District 19 property.

Principal Investigator, 2003
Santa Barbara County Flood Control and Water District, Archaeological Survey for the West Green Canyon Drainage Improvement Project, Santa Maria, CA
Ms. King conducted archival research, a records search, Native American consultation, and an archaeological survey of the West Green Canyon Drainage Improvement Project near several historical resources in the floodplain of the Santa Maria River in northern Santa Barbara County, California.

Results were provided in a survey report as part of the project's CEQA compliance. The project proposed various drainage improvements to be located in the Santa Maria Valley area, west of the City of Santa Maria.

Santa Barbara County Water Resources Agency, San Jose Creek Watershed Management Plan, Goleta, CA, 2003
This management plan was prepared to identify existing conditions and potential improvements in the San Jose Creek watershed, covering 9.5 square miles of urban, suburban, and rural land from the Santa Ynez Mountains to the Goleta Slough in Santa Barbara County, California. Information obtained regarding baseline conditions and opportunities to improve was utilized to develop goals and objectives intended to improve and protect the natural processes and resources of the watershed, while respecting private property and community values. The plan now serves as a reference document to assist the future planning efforts of the County of Santa Barbara and the City of Goleta within the San Jose Creek watershed. Ms. King conducted archival research for the cultural resource and land use analysis sections. She also analyzed GIS data for other members of the interdisciplinary team.

Principal Investigator, 2002
Cachuma Operations & Maintenance Board, South Coast Conduit Reconnaissance - Goleta Section, Santa Barbara County, CA
The purpose of this investigation was to identify any cultural resources within 50 feet of an existing South Coast Conduit pipeline leading from Lake Cachuma in the Santa Ynez Valley to the Goleta/Santa Barbara area; identify the potential for any fatal flaws; and determine the plausibility for the Cachuma Operations and Maintenance Board to install a second, parallel pipeline. Ms. King conducted a site records search, archival research, and a reconnaissance survey for the project. Results of the research and survey were provided in a letter report.

Archaeological Monitor/County Representative, 2001
San Luis Obispo County, Santa Ysabel Ranch Home Construction and Development, Paso Robles, CA
Ms. King represented San Luis Obispo County as an environmental and archaeological monitor for construction of a gated community in an environmentally and archaeologically sensitive area being developed by Weyrich Wineries. She documented the contractor's daily activities and environmental incidents and assisted a separate cultural resources consultant with documenting archaeological monitoring activities.

Previous Experience

U.S. Forest Service
Archaeological Technician, June 2007–August 2007
Archaeological Field Technician, April 2004–November 2004

Vandenberg AFB/Student Conservation Association
Archaeologist, August 2000–April 2004

Padre Associates, Inc.
Cultural Resource Specialist, 2002–2005

Publications & Presentations

King, Erin and Tia Cody. 2019. Supplemental Cultural Resources Pedestrian Survey Report - Wheatridge Solar Assessment, Morrow and Umatilla Counties, Oregon. Tetra Tech, Inc., Portland, Oregon

King, Erin, Douglas Mitchell, and Tia Cody. 2018. Cultural Resources Pedestrian Survey Report, Nolin Hills Wind Power Project, Umatilla County, Oregon. Tetra Tech, Inc., Portland, California. Submitted to Capital Power Corporation, Boston, Massachusetts. SHPO Case No. 17-1679. Tetra Tech Project #194-6029.

Anderson, Stephen R., Erin King, and Jenna Farrell. 2018. Boardman to Hemingway Transmission Line Project, Cultural Resources Technical Report, Morrow, Umatilla, Union, Baker, and Malheur Counties, Oregon. Tetra Tech, Inc., Golden, Colorado. Submitted to Idaho Power Company, Boise, Idaho. For Submission to Oregon Energy Facility Siting Council.

Anderson, Stephen R., Erin King, and Amanda D. Herron. 2013. Boardman to Hemingway Transmission Line Project: Literature Review and Inventory Report of a 15 Percent Random Sample Survey, Morrow, Umatilla, Union, Baker, and Malheur Counties, Oregon. Tetra Tech, Inc., Lakewood, Colorado. Submitted to Idaho Power Company, Boise, Idaho, and U.S. BLM Oregon, Vale District Office, Vale, Oregon.

King, Erin. 2013. NAGPRA Compliance Summary and Inventory Update for Fort Hunter Liggett, California. Tetra Tech, Inc., Oakland, California. Submitted to U.S. Army Garrison Fort Hunter Liggett Cultural Resources Program, Jolon, California.

King, Erin. 2010. Archaeological Sensitivity Assessment for the Significant Natural Resources Areas, San Francisco and San Mateo Counties, California. Tetra Tech, Inc., San Francisco, California. Submitted to City and County of San Francisco Planning Department, Major Environmental Analysis. Case No. 2005.0912E.

King, Erin. 2010. Archaeological Monitoring Summary Report – FUDS Site Inspections at Former Forts Barry, Cronkhite, and Funston and Former San Francisco Nike Battery 59, Marin Headlands and San Francisco, California. Tetra Tech, Inc., San Francisco, California. Submitted to Army Corps of Engineers, Sacramento District, Sacramento, California, and National Parks Service, Golden Gate National Recreation Area, San Francisco, California.

King, Erin. 2009. Basewide Archaeological Monitoring and Discovery Plan, Hunters Point Naval Shipyard, San Francisco County, California. Tetra Tech, Inc., San Francisco, California. Submitted to Tetra Tech, EC – Hunters Point Field Office, Hunters Point Shipyard, California, and U.S. Navy Base Realignment and Closure Program, San Diego, California.

King, Erin and Kevin Doyle. 2009. Modified Class I Cultural Resources Report for Bakersfield Field Office, California. Tetra Tech, Inc., San Francisco, California. Submitted to U.S. BLM, Bakersfield Field Office, Bakersfield, California.

King, Erin. 2005. 8,400 Years of Site Formation Processes at Eel Point. Poster presented at the 2005 Annual SCA Meeting in Sacramento, CA.

King, Erin. 2003. Preliminary Observations of the Site Formation Processes at Eel Point, San Clemente Island, California. Presented at the 2003 SCA Southern Data Sharing Meeting in San Diego, CA.

Paige, Peter, Richard Denniston, Diana Dyste, Erin King, John Otte, Jr., Kevin Scott, and Lisa Surynt. 2003. "The Development of Middle Period Food Procurement Practices of the Island Chumash." Grant proposal for Special Programs in Undergraduate Research Genesis Award.

Professional Affiliations

Member, Association of Oregon Archaeologists
Member, Oregon Archaeological Society
Member, Register of Professional Archaeologists
Member, Society for American Archaeology
Member, Society for California Archaeology

Experience Summary

Mr. Mitchell has 25 years of experience with responsibility for archaeological field work, laboratory analysis, artifact cataloging, communication with state (Wyoming and Montana) authorities, and report preparation/writing associated with a variety of projects. These include both research and compliance oriented inventory and testing projects in Yellowstone and Glacier National Parks, as well as multiple CRM focused projects throughout the western United States and Canada. Specifically, Mr. Mitchell has experience in the research, oil and gas, renewable energy, mining, forestry and power transmission sectors including projects in Washington State, Oregon, California, Idaho, Nevada, Colorado, Utah, Montana, Wyoming, New Mexico, Texas, Kansas, Illinois, West Virginia, Arkansas, British Columbia, Alberta and Saskatchewan. He is currently permitted as Field Director on BLM lands in Washington and Oregon.

Education

BA, Archaeology (Minor: Anthropology), University of Calgary, 1995

Training

Argo Land Operator Course Level 1; 2015
ATV Training; 2015
Avalanche Skills Training Level 1; 2015
Construction Safety Training; 2015
First Aid/CPR; 2016
Four Wheel Drive Safety Training; 2015
Petroleum Safety Training 2.0; 2015
Snowmobile Operators Course; 2015
Transportation of Dangerous Goods Training; 2015
UTV Training; 2015
Wildlife Awareness Training; 2015
Workplace Hazardous Materials Information System Training; 2015

Corporation Project Experience

Cultural Resource Monitor/THPO Liaison/Tribal Monitor Coordinator, June 2019
Prevailing Wind Park, South Dakota

Construction site monitoring, coordination with Yankton Sioux THPO, Tribal monitor coordination and logistical support.

Archaeologist, May 2019
Walcott to Trowbridge Transmission Line Cultural Resource Inventory, Wyoming

Pedestrian survey of transmission line and associated access roads.

Archaeologist, May 2019
Quincy Solar Project Cultural Resource Inventory, Washington State

Pedestrian survey and subsurface testing of a proposed 640 acre solar power generation facility and access road, site recording and artifact identification.

Archaeologist, May 2019
Othello Solar Project Cultural Resources Inventory, Washington State

Pedestrian survey of a proposed 1400 acre solar power generation facility and access road, site recording and artifact identification.

Archaeologist, May 2019
Goose Island Solar Project Cultural Resources Inventory, Washington State
Pedestrian survey of a proposed 720 acre solar power generation facility and site recording

Archaeologist, February 2019
Pretty Prairie Wind Energy Project Cultural Resources Inventory, Kansas
Pedestrian survey of turbine locations, collection lines and roads, site recording and artifact identification.

Archaeologist, April 2019
Lincoln Land Wind Energy Project Cultural Resources Inventory, Illinois
Pedestrian survey of turbine locations, Collector Lines and roads, site recording and artifact identification.

Archaeologist, December 2018
Mesquite Star Wind Energy Project Cultural Resource Inventory, Texas
Pedestrian survey of turbine locations, collector lines and roads, site recording and artifact identification.

Archaeologist, November 2018
Silver Lake Wind Energy Project Cultural Resource Inventory, Kansas
Pedestrian survey of turbine locations, collector lines and roads, site recording and artifact identification.

Archaeologist, October 2018
RES Canada, Otter Creek Wind Farm Project, Phase 1 Cultural Resource Survey, LaSalle County, Illinois
Pedestrian survey of turbine locations, collector lines and roads, site recording and artifact identification.

Archaeologist, September 2018
Roadrunner Solar Energy Project Cultural Resource Inventory, Texas
Pedestrian survey of solar panel locations and roads, site recording and artifact identification.

Archaeologist, September 2018
Bright Stalk Solar Energy Project Cultural Resource Inventory, Illinois
Pedestrian survey of solar panel locations and roads, site recording and artifact identification.

Archaeologist, August 2018
Wheatridge II Solar Energy Project Cultural Resource Inventory, Oregon
Pedestrian survey of solar panel locations and roads, site recording and artifact identification.

Archaeologist, August 2018
Nolin Hills Wind Energy Project Cultural Resource Inventory
Pedestrian survey of turbine locations, collector lines and roads, site recording, artifact identification and report preparation/production

Archaeologist, June 2018
FERC and EQT Mountain Valley Pipeline Project Phase III Excavations, Monroe County, West Virginia
Site excavation, recording and artifact identification.

Archaeologist, June 2018
Apex Clean Energy, Sugar Creek Wind Farm Project, Phase I Cultural Resource Survey, Logan County, Illinois
Pedestrian survey of 2000 acres of turbine locations, collector lines and roads, site recording and artifact identification.

Archaeologist, April 2018
Entergy, Confidential Client, Arkansas Solar Project, Phase I Cultural Resource Survey, Phillips County, Arkansas
Pedestrian survey of 1,400 acres for the Helena-West Helena Port Authority and Arkansas Solar Project.

Archaeologist, March 2018
Lockridge Pipeline Extension Phase I Cultural Resource Inventory, New Mexico/Texas
Pedestrian survey of a twelve mile section of a proposed oil pipeline.

Archaeologist, January 2018
FERC and EQT Mountain Valley Pipeline Project Phase I Survey and Phase II Testing, Monroe County, West Virginia
Subsurface testing of identified archaeological sites and artifact identification.

Archaeologist, January 2018
Tri-State Generation and Transmission Association, Inc Solar Farm Transmission Line Corridor Cultural Resource Inventory, New Mexico
Pedestrian survey of transmission line corridor.

Operations Manager, September/October 2017
Hurricane Irma Relief Effort, Volusia County, Florida
Responsible for managing debris clean up, vehicle logistics and contractor truck certification.

Archaeologist, June 2017
Nolin Hills Wind Energy Project Cultural Resource Inventory, Oregon
Pedestrian survey of turbine locations, collector lines and roads, site recording, artifact identification and report preparation/production.

Field Director/Senior Science Technician, November 2017-March 2013
Various Clients.
Archaeological site inventory, testing and recording for various projects in California, Oregon and Idaho

Field Director/Archaeologist, 2011-2012
Boardman to Hemingway (B2H) Power Transmission Corridor Cultural Resources Survey, Idaho and Oregon
Cultural resource inventory, site recording, artifact analysis, crew coordination and logistics.

Previous Experience

Archaeologist, March 2015-March 2016
Environmental Resource Management (ERM) Canada Inc. for Highland Valley Copper Archaeological Impact Assessment, Logan Lake, British Columbia
Pedestrian survey, sub surface testing and First Nations facilitation for proposed mine expansion areas and subsurface testing of previously identified archaeological sites.

Senior Archaeologist/Environmental Scientist, March 2013-March 2015
Tera Environmental Consultants, A CH2M HILL Company for TransCanada Pipeline Coastal GasLink Liquified Natural Gas pipeline project.
Pedestrian survey, subsurface testing and coordination with Traditional Ecological Knowledge Facilitators/First Nations participants for a 670 km pipeline corridor between Chetwynd and Kitimat B.C.

Field Director/Senior Science Technician, November 2017-March 2013
Tetra Tech EC, Inc.
Archaeological site inventory, testing and recording for various projects in California, Oregon and Idaho

Field Technician, May 2010-November 2010
Cultural Resource Consultants Inc.
FERC mandated NRHP testing, analysis, artifact cataloging and report preparation and production for numerous previously recorded sites in Grant Count, Washington.

Field Technician, April 2008-November 2008
Western Cultural Resource Management Inc.
Pedestrian survey, site recording, artifact analysis and construction monitoring for a variety of projects in northern Nevada.

Senior Archaeologist, May 1994-October 2007
Lifeways of Canada Limited
Responsible for archaeological fieldwork, laboratory analysis, artifact cataloging, communication with state (Wyoming and Montana) authorities, and report preparation/writing associated with a variety of projects. These include both research and compliance oriented inventory and testing projects in Glacier and Yellowstone National Parks as well as numerous CRM focused projects throughout Alberta, Saskatchewan and British Columbia

Sample Projects

1996-2007
Yellowstone National Park, WY
Multiple yearly projects concerned with federal highways improvements, (FHWA), park infrastructure improvements, specifically hiking trail and campsite relocation/maintenance (Section 106 compliance), and research based inventories, excavations and analysis (lithic and faunal) on Yellowstone Lake and the Yellowstone River.

2007
Oilsands Quest Inc., Impact Assessment Survey, Northwestern Saskatchewan
Large scale archaeological survey in support of an Environmental Impact Assessment prior to oil sands exploration and development.

2006
Hinton Wood Products, Archeological Site Survey, Hinton, Alberta
Site potential modelling, forestry cut block survey in advance of harvesting.

2005
Syncrude, East Athabasca Access Corridor Survey, Fort McMurray, Alberta
Inventory and assessment of multiple sites in advance of transmission corridor expansion, post assessment lithic analysis.

2003–2004
Qualico Homes, Site Mitigation, Calgary, Alberta
Multiple site mitigation in advance of subdivision development. Post mitigation faunal analysis.

2001
Weldwood of Canada, Historical Resources Impact Assessment, Hinton, Alberta
Site potential modelling, impact assessment and conservation excavations of multiple sites prior to road development and subsequent forestry activities.

2000

Cougar Ridge, Historical Resources Impact Assessment and Conservation Excavations, Calgary, Alberta

Excavation of a large bison kill site in advance of a water/sewer line development and post excavation faunal analysis.

2000

Calpine, Historical Resources Impact Assessment and Conservation Excavations, Calgary, Alberta

Excavation of a single deeply buried tipi ring in anticipation of a power plant installation.

1997–1998

Syncrude, North Aurora Mine Project, Fort McMurray, Alberta

Multi-year inventory and mitigation project in advance of a large petroleum (oil sands) mining project, post excavation lithic analysis.

1996

Transalta Utilities, Historical Resources Impact Assessment, Crowsnest Pass, Alberta

Impact assessment of multiple sites in advance of development of an electrical transmission corridor.

1994–1998

Glacier National Park, West Glacier, MT

Yearly, research oriented inventories and excavations as well as lithic and faunal analysis culminating in a synthesis of park archaeology.

Publications & Presentations

Reeves, Brian, with contributions by Dr. Richard Hughes, Doug Mitchell, Dr. Margaret Newman, Kevin Thorson, Mack Shortt, and Dr. Dale Walde. 2000. Mistakis: The People and Their Land the Past 10,000 Years, Glacier National Park Archeological Inventory and Assessment Program: 1993-1996 Final Technical Report. Report on File, Branch of Cultural Resources, Glacier National Park, West Glacier, Montana.

Shortt, Mack W., and Doug Mitchell. 2000. The Archaeological Assessment of Site 24YE89, Yellowstone National Park: 1999 Field Season Final Report. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming.

Shortt, Mack W., and Doug Mitchell. 2000. Y ellowstone National Park FHWA Archaeological Site Inventory-Four Tower Junction to Canyon Junction Road Segments: 1999 Field Season Final Report. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming.

Shortt, Mack W., and Doug Mitchell. 2000. Yellowstone National Park: Trails Relocation Archaeological Site Inventory: 1999 Field Season Final Report. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming.

Shortt, Mack W., and Doug Mitchell. 2000. The Archaeological Site Inventory of Lower Gneiss and Campanula Creeks, Yellowstone National Park: 1999 Field Season Final Report. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming.

Shortt, Mack W., and Doug Mitchell. 2000. Yellowstone National Park Trails Relocation Archaeological Site Inventory: 2000 Field Season Final Report. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming.

Shortt, Mack W., with contributions by Doug Mitchell. 2000. The Archaeological Inventory of Site 24YE252, Yellowstone National Park: the 2000 Field Season Final Report. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming.

Shortt, Mack W., with contributions by Doug Mitchell. 2002. Yellowstone National Park Trails Relocation Archaeological Site Inventory: 2001 Field Season Final Report. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming.

Vivian, Brian C., and Doug Mitchell. 2005. An Archaeological Inventory on the Eastern Edge of the Gallatin Range, Yellowstone National Park, Wyoming Final Report. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming.

Reeves, Brian, with contributions by Doug Mitchell, Kevin Thorson and Visti Kjar. Lifeways of Canada Limited. 2005. 1999-2002 Archaeological Inventory of the Yellowstone River Tower Falls-Gardiner and Hellroaring Creek. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming

Reeves, Brian, with contributions by Doug Mitchell, Kevin Thorson and Visti Kjar. Lifeways of Canada Limited. 2006. 1998 Archaeological Inventory of the East side of the Yellowstone River Fishing Bridge-Grand Canyon. Report on File, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming

Vivian, Brian C., Doug Mitchell and Kevin Thorson. Lifeways of Canada Limited 2005. An Archaeological Inventory of the South Shore of Yellowstone Lake, Yellowstone National Park, Wyoming. Report in Preparation, Branch of Cultural Resources, Yellowstone National Park, Mammoth Hot Springs, Wyoming.

King, Erin., Doug Mitchell and Tia Cody. Tetra Tech Inc. 2018. Cultural Resources Pedestrian Survey Report. Nolin Hills Wind Power Project Umatilla County, Oregon for Capitol Power Corporation, Boston Massachusetts.

Experience Summary

Mr. Berger practiced field archaeology and cultural resource management for 9 years with field experience in multiple states including; Oregon, Washington, California, North Dakota, West Virginia, Illinois, Idaho, Texas, Colorado and Utah. Extensive experience in all phases of cultural resource management from initial pedestrian survey to final report writing. Mr. Berger has experience in compliance with Section 106 of the National Historic Preservation Act (NHPA), including evaluation of cultural resources for listing on the National Register of Historic Places (NRHP). Additionally, he has experience with the National Environmental Policy Act (NEPA), Oregon Energy Facility Siting Council/Oregon Department of Energy (ODOE) Siting Standards, Washington State Environmental Policy Act (SEPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the Archaeological Resources Protection Act (ARPA), and various other federal and state agency-specific cultural resources management directives. Primary Experience in Great Basin and Pacific Northwest Coastal archaeological complexes, with exposure to Plains an Eastern Woodland archaeology as well. His specialties include archaeology, geomorphology, lithic analysis, site formation processes, and historic preservation. Mr. Berger is a United States Department of the Interior permitted archaeologist in Oregon and Washington.

Education

BS, Anthropology (emphasis: Physical Anthropology & Archaeology), Portland State University, 2010

Training

Construction Safety Training; 2018
First Aid/CPR; 2019
Fort Vancouver Field School; 2010
Four-Wheel Drive Safety Training; 2015
Wildlife Awareness Training; 2014

Corporation Project Experience

Field Director, January 2020–Present
USCG, TRACEN Cultural Resource Survey, Sonoma County, CA

Mr. Berger is a Field Director for cultural resources assisting the Principal Investigator and executing cultural resource investigation. Mr. Berger is responsible for organizing field equipment and personal, field logistics, and GIS data and maps. Scope of work included pedestrian survey, pre-recorded site inventories, and historic property updates.

Field Director, December 2019–Present
CalRecycle, Cultural Resource Avoidance and Monitoring Plan, Lake County, CA

Mr. Berger is a Field Director for cultural resources assisting the Principal Investigator and executing cultural resources avoidance and minimization of potential impacts to cultural resources. Mr. Berger is responsible for organizing field equipment, daily meetings, field logistics, daily reports, and data management, and GIS data and maps. Scope of work included monitoring and avoiding cultural resources during access road restoration.

Field Director, November 2019–Present
Avangrid Renewables, Trimont Crane Path Cultural Survey, Martin County, MN

Mr. Berger is a Field Director for cultural resources assisting the Principal Investigator an executing cultural resources investigation. Mr. Berger is responsible for organizing field equipment and personal, planning daily field work, providing daily meetings and reports, reviewing GIS data and maps, field logistics, post-fieldwork data organization, and report writing. Scope of work included pedestrian survey.

Field Director, September 2019–Present
Portland General Electric, Mount Hood National Forest Survey, Clackamas and Hood River Counties, OR
Mr. Berger is a Field Director for cultural resources assisting the Principal Investigator an executing cultural resource investigation. Mr. Berger is responsible for organizing field equipment and personal, utility locates, planning daily field work, providing daily meetings and reports, reviewing GIS data and maps, field logistics, post-fieldwork data organization, and final report writing. Scope of work included sub-surface survey and pre-recorded site inventories.

Field Director, May 2018–Present
Capital Power Corporation, Nolin Hills Wind Farm Project, Umatilla County, OR
Mr. Berger is a Field Director for cultural resources assisting the Principal Investigator an executing cultural resource investigation. Mr. Berger is responsible for organizing field equipment and personal, planning daily field work, providing daily meetings and reports, reviewing GIS data and maps, field logistics and report writing post field-work. Scope of work included pedestrian survey, pre-recorded site inventories, and historic property updates.

Archaeologist & Field Director, May 2019–Present
Confidential Client, Wheat Ridge Solar Project, Morrow & Umatilla Counties, OR
Mr. Berger is a crew leader for cultural resources assisting the Principal Investigator an executing cultural resource investigation. Mr. Berger is responsible for organizing field equipment and personal, planning daily field work, providing daily meetings and reports, reviewing GIS data and maps, field logistics and report writing post field-work. Scope of work included pedestrian survey, pre-recorded site inventories, and historic property updates.

Archaeologist & Crew Leader, May 2011–Present
Idaho Power, Boardman to Hemmingway Transmission Line Project, ID and OR
Mr. Berger is a crew leader to field archaeologists, assisting the Principal Investigator and Field Director in executing cultural resource investigations. Mr. Berger is responsible for guiding fieldwork, organizing field equipment, reviewing GIS data and maps, field logistics and daily field reports. Scope of work included pedestrian survey and pre-recorded site inventories.

Archaeologist, April 2019–Present
One Energy Renewables, Goose Prairie Solar Project, Yakima County, WA
Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for organizing field equipment, reviewing GIS data and maps, field logistics and report writing post field-work. Scope of work included pedestrian survey and final report submittal.

Archaeologist, April 2019–Present
One Energy Renewables, Sunnyside Solar Project, Yakima County, WA
Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for leading crews, reviewing GIS data and maps, field logistics and report writing post field-work. Scope of work included pedestrian survey and final report submittal.

Archaeologist, April 2019–Present
Invenergy Renewables, LLC, Quincy Solar Energy Project, Grant County, WA
Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for leading crews, reviewing GIS data and maps, field logistics and report writing post field-work. Scope of work included pedestrian survey and shovel testing probing access roads and isolated finds.

Archaeologist, April 2019–Present
Invenergy Renewables, LLC, Othello Solar Energy Project, Adams County, WA
Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for leading crews, reviewing GIS data and maps, field logistics and report writing post field-work. Scope of work included pedestrian survey or project APE and final report submittal.

Archaeologist, November 2018–February 2019
Clearway Energy Group, Mesquite Star Wind Farm Project, Fisher County, TX
Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for recording sites, reviewing GIS data and maps and field logistics. Scope of work included pedestrian survey of project APE.

Archaeologist, April 2018–May 2018
Pattern Energy, Hatchet Ridge Wind Farm Project, Shasta County, CA
Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator in monitoring the construction of supplemental transmission line. Mr. Berger is responsible for communication with client and construction crew, assessing cultural resources within APE, daily report writing, and logistical planning of field work. Scope of work included monitoring construction during ground disturbance activities, i.e. excavation of transmission like pole footings.

Archaeologist, October 2018–March 2019
Enel Green Power, Road Runner Solar Project, Upton County, TX
Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator in executing cultural resource investigations. Mr. Berger is responsible leading crews, reviewing GIS data and maps and field logistics. Scope of work included pedestrian survey and shovel test probing.

Archaeologist, June 2018–July 2018
Xcel Energy, Arnold Substation Project, Weld County, CO
Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for organizing field equipment, reviewing GIS data and maps, field logistics and report writing post field-work. Scope of work included pedestrian survey and project APE location reconnaissance.

Archaeologist, June 2018–August 2018
Equitrans, Mountain Valley Pipeline Project, Monroe County, WV
Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger assisted in Phase III data recovery with excavation, excavation form preparation, artifact analysis, totaling station measurements and supervision of excavation units. Scope of work included Phase III data recovery of paleo and archaic village sites.

Archaeologist, April 2018–June 2018
Sugar Creek Wind Farm Project, Logan County, IL

Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for organizing field equipment, reviewing GIS data and maps and field logistics. Scope of work included pedestrian survey or turbine and collector line locations.

Archaeologist, April 2018–June 2018
Otter Creek Windfarm Project, Lasalle County, IL

Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for organizing field equipment, reviewing GIS data and maps and field logistics. Scope of work included pedestrian survey or turbine and collector line locations.

Archaeologist, January 2016–April 2016
Dickenson Wind Farm Survey, Stark County, ND

Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for leading crews, organizing field equipment, reviewing GIS data and maps, field logistics and reviewing field forms. Scope of work included pedestrian survey and shovel testing at proposed turbine locations.

Archaeologist & Crew Leader, September 2015–November 2015
Gaston Expansion Survey, Washington County, OR

Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator in executing cultural resource investigations. Mr. Berger is responsible for organizing field equipment, reviewing GIS data and maps, field logistics and report writing post field-work. Scope of work included pedestrian survey and shovel tests in low visibility areas.

Archaeologist, August 2015–September 2015
Agua Caliente & Raft River Project, Carbon & Duchesne Counties, UT

Mr. Berger is the field archaeologist for cultural resources assisting the Principal in executing cultural resource investigations. Mr. Berger is responsible for organizing field equipment, reviewing GIS data and maps, field logistics and field forms. Scope of work included pedestrian survey of high probability areas within project APE.

Archaeologist, July 2014–August 2014
Corcoran Solar Facility Expansion, King County, CA

Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for organizing field equipment, reviewing GIS data and maps, field logistics and field form review. Scope of work included shovel testing and monitoring highly sensitive cultural areas within project APE.

Archaeologist, January 2012–February 2012
Quail Brush Cultural Resources Survey, San Diego County, CA

Mr. Berger is the field archaeologist for cultural resources assisting the Principal Investigator an Field Director in executing cultural resource investigations. Mr. Berger is responsible for organizing field equipment, reviewing GIS data and maps, field logistics and field forms. Scope of work included surveying high probability areas within the APE and examining survey sample areas.

Previous Experience

Consultant/Archaeologist, 2013–2017
Historical Research Associates, Inc.
Crew lead responsible for archaeological survey, testing, data recovery, crew logistics and crew safety in Washington, Oregon, and Northern California. Phase II & III field work of significant NRHP eligible sites around the Pacific Northwest

Archaeologist, 2011–2015
Archaeological Investigations Northwest, Inc.
Field Technician and Crew leader for archaeological survey, testing, and data recovery on large linear development projects.

Archaeologist, 2015
POWERS ENG, Inc.
Archaeological Field Technician, Phase III excavation and data recovery at Swan Falls Idaho Village site

Archaeologist 2014
Archaeological Services, LLC
Archaeological Field Technician, pedestrian survey and shovel testing at localities in Washington and Oregon.

Julia Mates
Historian/Architectural Historian

TETRA TECH

EXPERIENCE SUMMARY

Ms. Mates has practiced the fields of history/architectural history and cultural resource management since 1999. She has served as a consulting historian on historical research investigations for federal, state and local governments. Her experience includes the inventory, recordation, and evaluation of historic resources using National Register of Historic Places and California Register of Historic Resources guidelines. Her environmental planning experience includes preparing reports for and making recommendations to federal, state, municipal and private entities regarding Section 106 review and compliance, including consultation with various State Historic Preservation Officers. She has experience with Section 106 of the National Historic Preservation Act, National Environmental Policy Act (NEPA), and the California Environmental Quality Act (CEQA).

As a cultural resources project manager at Tetra Tech, she has served as a consulting historian, principal investigator, and resource author. Ms. Mates has conducted architectural surveys and cultural resources management projects in Alaska, Arizona, California, Colorado, Florida, Hawaii, Louisiana, Massachusetts, Michigan, Minnesota, Nevada, New York, New Jersey, North Carolina, Puerto Rico, South Carolina, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and West Virginia. She has evaluated various types of historical resources for eligibility for National and State Registers, including those for dams, pipelines, culverts, bridges, roads, military structures, water conveyance systems, navigational aids, residences, and commercial and industrial buildings. Ms. Mates has written numerous technical reports and compliance documents, such as historic survey reports, findings of effect, determinations of eligibility and Historic American Buildings Survey / Historic Architectural and Engineering Record documentation. In addition to research, writing, and architectural recordation, Ms. Mates also has experience in conducting oral histories. Based on her level of education and experience, Ms. Mates exceeds the United States Secretary of the Interior's Professional Qualification Standards for Historian and Architectural Historian (as defined in 36 CFR, Part 61).

EDUCATION

BA, History, University of California, Los Angeles

MA, Public History, California State University, Sacramento, 2001

AREAS OF EXPERTISE

Exceeds US Secretary of the Interior's Professional Qualifications Standards for Historian & Architectural Historian

Section 106 of National Historic Preservation Act

California Environmental Quality Act (CEQA)

National Environmental Policy Act (NEPA)

US Secretary of the Interior's Guidelines for Historic Preservation

Recreation, Land Use, and Aesthetics Author for CEQA/NEPA

OFFICE

Oakland, California

YEARS OF EXPERIENCE

19

CONTACT

510-302-6300

julia.mates@tetratech.com

RELEVANT EXPERIENCE

Environmental Services for the Harris County Community Services Department, Harris County, Texas, 2019 – present. Serving as the Cultural Resources Lead for environmental impact analysis of Community Development Block Grant – Disaster Recovery projects pursuant to the U.S. Department of Housing and Urban Development National Environmental Policy Act regulations (24 CFR Part 58). Role includes coordinating cultural resoruces teams to review above ground (architectural) evlautions for all buildings and structures 45 years of age and older for historic significance and eligibility for the National Register of Historic Places, under Section 106 of the National Historic Preservation Act. Across the 13 buyout project areas, over 500 structures were reviewed and over 350 were documented in consultation forms submitted to the Texas Historical Commission. Tetra Tech is preparing 13 Environmental Assessments for the buyout program and 7 Environmental Assessments for the infrastructure program.

Baldwin Lake Shoreline Rehabilitation Project Los Angeles County Arboretum and Botanical Garden Arcadia, California, 2018. Architectural Historian. The Arboretum was rehabilitating Baldwin Lake, located within the Arboretum and listed in the National Register of Historic Places. The existing retaining walls at Baldwin Lake were in a state of disrepair, some having collapsed entirely. The rehabilitation plan replaced these walls with permanent structures that will preserve the historical look of the original Baldwin stone retaining wall. Ms. Mates worked with the project engineers and architects to ensure the repairs, design, and stabilization activities maintained the historic visual integrity of the wall. She also conducted research and provided background information on the original appearance of the wall for this effort..

Bellflower Water Capture Project at Caruthers Park, Phase I and II, 2019. Lead Historian. This project consists of the design and construction of a regional stormwater Project at the City of Bellflower's Caruthers Park. The project consists of a storm drain diversion structure, 7.5 acre-foot underground infiltration and storage facility, and pump station to the sewer and return flow to the storm drain. Ms. Mates prepared evaluation of the existing facility for its eligibility for the National Register of Historic Places under Criteria A though D in order for the project to complete the 404 permitting process. The project is intended to address the City of Bellflower's water quality actions stated under the Los Cerritos Channel Watershed and the Upper San Gabriel River Enhanced Watershed Management Programs.

City of Los Angeles, Bureau of Sanitation, TOS SN-61 Specialized Services for the Generation of CIMP Data, 2019. Lead Historian. Ms. Mates assisted the US Army Corps of Engineers Los Angeles District in consultation under Section 106 of the National Historic Preservation Act with the California State Office of Historic Preservation (SHPO) for this project to design and implement the installation of automated sampling equipment for 25 stations within the 4 major watersheds. Ms. Mates determined there would be No Adverse Effect on historic properties.

DR-4301 and DR-4305 Environmental and Historic Preservation Compliance Support, California (2018 – present). Serving as historic preservation cultural resources lead supporting the Federal Emergency Management Agency's analysis of 11 projects throughout California under declared disasters DR-4301 and DR-4305. The support services include documentation and agency consultation under Section 106 of the National Historic Preservation Act. The projects include structure elevation projects, flood control projects, generator projects, soil stabilization projects, and tsunami evacuation structure and damage prevention projects. Coordinating the cultural resources teams, evaluating buildings for eligibility for listing in the National Register, applying Programmatic Agreement Allowances, and preparing determination of effects consultation with the State Historic Preservation Office.

DR-4240 Environmental and Historic Preservation Compliance Support, California (2017 – present). Serving as the historic preservation historian cultural resources lead supporting the Federal Emergency Management Agency's analysis of 25 projects throughout California under declared disaster DR-4240. The support services include National Environmental Policy Act documentation and agency consultation under Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act. The projects include structure elevation projects, flood control projects, generator projects, soil stabilization projects, and tsunami evacuation structure and damage prevention projects. Coordinating the cultural resources teams, evaluating buildings for eligibility for listing in the National Register, applying Programmatic Agreement Allowances, and preparing determination of effects consultation with the State Historic Preservation Office.

Environmental Review Records for the Rebuild Texas Program, Texas (2018 – present). Cultural Resources lead for environmental reviews being prepared in support of the Rebuild Texas program. These reviews are being conducted in accordance with the U.S. Department of Housing and Urban Development National Environmental Policy Act regulations (24 CFR Part 58) and include Section 106 compliance. Tetra Tech's expected assignment is over 500 Tier 2 site-specific reviews.

Environmental Review Records for the Rebuild Florida, Florida (2018 – present). Cultural Resources for environmental reviews being prepared in support of the Rebuild Florida program. These reviews are being conducted in accordance with the U.S. Department of Housing and Urban Development National Environmental Policy Act regulations (24 CFR Part 58) and include Section 106 compliance. Tetra Tech's anticipated assignment is over 6,000 Tier 2 site-specific reviews.

Environmental Review Records for the ReBuild NC: Single Family Housing Recovery Program (1-4 Units), North Carolina (2018 – present). Cultural Resources lead for environmental reviews being prepared in support of the Rebuild NC: Single Family Housing Recovery Program (1-4 Units). These reviews are being conducted in accordance with the U.S. Department of Housing and Urban Development National Environmental Policy Act regulations (24 CFR Part 58) and include Section 106 compliance. Tetra Tech's assignments include 29 Tier 1 broad reviews, over 600 Tier 2 site-specific reviews, 2 Environmental Assessments, and 3 Categorical Exclusions.

Environmental Review Records for the Restore Louisiana (2016 Unnamed Storms) Homeowner Rehabilitation, Reconstruction, and Reimbursement Program, Louisiana. Cultural Resources lead for environmental reviews being prepared in support of the Restore Louisiana (2016 Unnamed Storms) Homeowner

Rehabilitation, Reconstruction, and Reimbursement Program. These reviews are being conducted in accordance with the U.S. Department of Housing and Urban Development National Environmental Policy Act regulations (24 CFR Part 58) and require Section 106 compliance. Tetra Tech has prepared over 26,000 Tier 2 environmental review records.

Discretionary Well Permitting and Management Program EIR, Stanislaus County, California. Served as the lead historian for a Program Environmental Impact Report for Stanislaus County's implementation of a discretionary well permitting and management program pursuant to its Groundwater Ordinance, which was adopted in November 2014 to promote sustainable groundwater management in the unincorporated areas of the county. The purpose of the PEIR is to streamline the environmental review process for subsequent individual well permit applications, and to help refine the program and make it more robust through environmental analysis and assignment of program level mitigation.

U.S. Coast Guard Housing, 1309 SW Bay Street Historical Evaluation, Newport, Oregon (ongoing). On behalf of the General Services Administration, evaluated the residence's historic significance and eligibility for listing under Section 106 of the NHPA, using all four criteria. The evaluation and report included research, fieldwork, identification of historic properties within the area, preparation of historic context, and consultation with the Oregon State Historic Preservation Office.

U.S. Coast Guard Housing, 2731 Chestnut Sreet Historical Evaluation, New Orleans, Louisiana (2017-2019). On behalf of the Genearl Services Administration, assessed whether the residence retains sufficient integrity to continue to serve as a contributor to the Garden National Historic Landmark and National Register of Historic Places Garden District. The evaluation and report included fieldwork, identification of historic properties in the area, and an assessment of its historic character defining features.

Force Main Replacement Project Environmental Information Document, Vallejo, California. Served as the lead historian for a U.S. Environmental Protection Agency Environmental Information Document for a sanitary sewer system improvement project. This Special Appropriations Act Project involves installing a new sewer force main to span the 2,800-foot-wide crossing beneath the Mare Island Strait to replace the existing force main. Coordinated the project team and reviewed and edited the draft deliverable and the Finding of No Significant Impact.

U.S. Army, Rock Island Arsenal, Structure 57, National Register of Historic Places Nomination Form Addendum, Rock Island, Illinois (2017). Ms. Mates re-evaluated the stone bridge, constructed in the late 1880s, to assess its integrity for continued lisiting as a contributor to the Rock Island Arsenal Historic District. She prepared the addendum that detailed the historic character defining features and assessed whether modifications to the bridge impacted its historic significance and integrity, documenting the alterations on the appropriate U.S. Secretary of the Interior National Park Service Forms.

California Federal Emergency Management Agency Environmental (FEMA) and Historic Preservation Technical Assistance, northern and southern California. Serves as the Historian and Lead Cultural Resources Coordinator, providing historic preservation compliance support for 22 projects in northern and southern California, submitted to the FEMA Region IX Hazard Mitigation Branch. Duties include development of Section 106 protocol to ensure Section 106 compliance and streamline projects, recordation and evaluation of buildings and structures 45 years and older on Department of Parks and Recreation (DPR) 523 forms, State Historic Preservation Office (SHPO) Section 106 of the National Historic Preservation Act consultation including preparation of SHPO packages, tribal consultation, and project coordination between FEMA and cultural resources specialists. Project areas in California include San Bernardino, Riverside County, Napa, Humboldt, Amador, Lake, and Santa Rosa Counties.

Environmental Reviews for the Restore Louisiana Disaster Recovery Program, Louisiana, 2017 – present. Serving as the lead cultural resources specialist for Louisiana's disaster recovery programs funded by CDBG-DR grants awarded for the unnamed storms of 2016. These reviews are being conducted for the Louisiana Office of Community Development, Disaster Recovery Unit pursuant to the HUD NEPA Regulations (24 CFR Parts 50 and 58). Tetra Tech's work to date in support of this program has been nearly 11,000 Tier 2 environmental reviews. This process includes identification of historic properties for inclusion in the National Register of Historic Places, communication and consultation with the Louisiana State Historic Preservation Office, and application of the Programmatic Agreement.

Environmental Review Records for the Single Family Homeowner and Small Rental Rehabilitation Programs, Richland County, South Carolina, 2017 – present. Serving as the lead cultural resoruces specialist for environmental reviews being prepared in support of the Single Family Homeowner and Small Rental

Rehabilitation Programs for owners of manufactured housing units and single-family homes in Richland County, South Carolina. These reviews are being conducted in accordance with the HUD NEPA Regulations (24 CFR Part 58). Tasks include identification of historic properties inclusion in the National Register of Historic Places, communication and consultation with the South Carolina State Historic Preservation Office, and application of the Programmatic Agreement.

Historic Preservation Reviews for Hurricane Sandy Relief, Tier 2, ProSource and New York State Homes and Community Renewal, NY. Ms. Mates served as an architectural historian for the Tier 2 reviews of the rehabilitation of historic-age properties to meet requirements under Section 106 of the National Historic Preservation Act. Ms. Mates evaluated the project activities to determine if they met the allowances under the Programmatic Agreement of 2013 and evaluated properties for their eligibility for listing in the NRHP. Her team evaluated over 3,500 properties. The properties were located in several New York counties, including Nassau County, Bronx County, Queens County, Broome County, and Schoharie County. 2013-2014

Historic Preservation Reviews for New Jersey's CDBG-DR Grant Program, New Jersey. Ms. Mates serves as an architectural historian for historic preservation and Section 106 reviews being prepared in support of disaster recovery programs in New Jersey funded by CDBG-DR grants awarded under the Disaster Relief Appropriations Act, 2013 (Pub. L. 113-2, enacted January 29, 2013) for Hurricane Sandy, Hurricane Irene, and Tropical Storm Lee. These reviews are being conducted for New Jersey Department of Environmental Protection in accordance with the HUD NEPA Regulations (24 CFR Parts 50 and 58). 2014-2015

United States Postal Service, Determinations of Eligibility, Various Locations. Lead Historian/Architectural Historian. Ms. Mates has evaluated post office buildings for listing in the appropriate National Parks Service documentation forms for submission to the Keeper. Ms. Mates has also re-evaluated historic post office buildings already listed in the NRHP and prepared addendums that detail exterior and interior historic character defining features when existing documentation does not include this detail. Ms. Mates has prepared determinations of eligibility or addendums to the NRHP nominations for the following post offices:

- Morgan North Post Office, New York
- Morgan Annex, New York
- Red Bluff Main Post Office, California
- Santa Barbara Main Post Office, California
- Lihue Main Post Office, Hawaii
- Napa Franklin Station, California
- Broadway-Manchester Post Office, California
- Burbank-Glen Oaks Post Office, California
- College Station, New York
- Provo Main Post Office, Utah

Section 106 Consultation Regarding the U.S. Environmental Protection Agency Special Appropriation Act Projects Grant Funding of the Vallejo Sanitation and Flood Control District's Mare Island Force Main Replacement Project, Vallejo, Solano County, California (2016). Lead Historian/Architectural Historian. Ms. Mates prepared the Section 106 consultation materials and conducted research to determine if any historic properties were located within the APE for this project that involved drilling a bore for installation of utilities beneath Mare Island Strait and in River Park and vacant City-owned property on Mare Island. As part of the project, Ms. Mates evaluated historic-age tracks associated with the Navy's activities on Mare Island to determine if they would be adversely effected by the project.

Architectural History Effects Investigation for 912 Baltimore Avenue, Kansas City, Jackson County, MO. Lead Architectural Historian. Verizon proposed to replace two antennas on an existing telecommunications two antenna arrays on the south side of the rooftop of the Carbide and Carbon Building. The project required a license from the Federal Communications Commission (FCC) and compliance with the National Historic Preservation Act (NHPA) of 1966. Ms. Mates conducted an investigation to assess the presence of NRHP eligible or listed APE for direct visual effects using the Nationwide Programmatic Agreement for Colocation of Wireless Antennas, effective March 2001 and the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission, effective March 2005.

Architectural History Effects Investigation for 600 Broadway Boulevard Kansas City, Jackson County, MO. Lead Architectural Historian (2016). Ms. Mates conducted an effects to architectural resources study for the proposed KCYC 7th and Broadway cellular antenna project located at the Montgomery Ward & Company Building, a 70-foot tall building at 600 Broadway Boulevard, in Kansas City. Verizon Wireless proposed to replace five antennas on an existing telecommunications antenna array located on the southeast corner of the building's rooftop and add six antennas to a proposed second array located on the northwest side of the roof. Ms. Mates assessed project impacts on historic properties in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, the Nationwide Programmatic Agreement for Colocation of Wireless Antennas, effective March 2001 and the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission, effective March 2005. This report assessed whether or not the proposed undertaking would result in direct or visual effects to historic properties APE, including the Project site at 600 Broadway, the Wholesale Historic District listed on the National Register of Historic Places (NRHP), and five individual historic properties.

Carpenter's Church, 1309 Broadway Avenue, Seaside, CA, Historical Evaluation (2016). Lead Historian/ Architectural Historian. Ms. Mates evaluated the church, constructed in 1952, for eligibility for listing in the NRHP as part of a Verizon Wireless to construct and operate a new wireless cellular facility consisting of wireless antennas and associated equipment installed on the rooftop of the existing building. Ms. Mates evaluated the historic significance of the historic-age building as part of the project's National Environmental Protection Act compliance.

Bret Harte Apartments, 3535 Coolidge Avenue, Oakland, CA, Historical Evaluation (2016). Lead Historian/ Architectural Historian. Ms. Mates evaluated the post-World War II constructed apartment building for eligibility for listing in the NRHP as part of a Verizon Wireless to construct and operate a new wireless cellular facility consisting of wireless antennas and associated equipment installed on the rooftop of the existing building. Ms. Mates evaluated the historic significance of the historic-age building as part of the project's National Environmental Protection Act compliance.

1304 Echo Park Avenue, Echo Park Neighborhood, Los Angeles, CA, Historical Evaluation (2016). Lead Historian/ Architectural Historian. Ms. Mates evaluated the 1915 constructed apartment building for eligibility for listing in the NRHP as part of a Verizon Wireless to construct and operate a new wireless cellular facility consisting of wireless antennas and associated equipment installed on the rooftop of the existing building. Ms. Mates evaluated the historic significance of the historic-age building as part of the project's National Environmental Protection Act compliance.

809 Donohoe, East Palo Alto, CA, Historical Evaluation, City of East Palo Alto (2016). Lead Historian/ Architectural Historian. On behalf of the Planning Department of East Palo Alto, for which Tetra Tech is a consultant, Ms. Mates evaluated this single-family residence for eligibility for listing in the NRHP.

Historic Preservation Reviews for Hurricane Sandy Relief, Tier 2, ProSource and New York State Homes and Community Renewal, NY. Ms. Mates served as an architectural historian for the Tier 2 reviews of the rehabilitation of historic-age properties to meet requirements under Section 106 of the National Historic Preservation Act. Ms. Mates evaluated the project activities to determine if they met the allowances under the Programmatic Agreement of 2013 and evaluated properties for their eligibility for listing in the NRHP. Her team evaluated over 3,500 properties. The properties were located in several New York counties, including Nassau County, Bronx County, Queens County, Broome County, and Schoharie County. 2013-2014

Historic Preservation Reviews for New Jersey's CDBG-DR Grant Program, New Jersey (2014-2015). Ms. Mates serves as an architectural historian for historic preservation and Section 106 reviews being prepared in support of disaster recovery programs in New Jersey funded by CDBG-DR grants awarded under the Disaster Relief Appropriations Act, 2013 (Pub. L. 113-2, enacted January 29, 2013) for Hurricane Sandy, Hurricane Irene, and Tropical Storm Lee. These reviews are being conducted for New Jersey Department of Environmental Protection in accordance with the HUD NEPA Regulations (24 CFR Parts 50 and 58).

Cultural Resources Services, Fort Hunter Liggett, Jolon, California (2012 – 2013).. Lead Historian. Ms. Mates conducted a Historic Buildings and Structures inventory and evaluation of 20 buildings and structures on base that were constructed between 1922 and 1970 for eligibility for inclusion in the National Register of Historic Places. Ms. Mates and her team conducted archival research to prepare historic context under which to evaluate the buildings and structures and documented and evaluated the buildings on California State eligibility forms (DPR 523) and prepared a report detailing the analysis and findings.

Maintenance Dredging of Honolulu Harbor Environmental Assessment. Lead Historian. The U.S. Army Corps of Engineers, Honolulu District (POH) is proposing to conduct maintenance dredging and subsequent offshore disposal of the dredged materials within federally-managed areas of five commercial harbors in the state of Hawaii. The five harbors include Honolulu and Kalaeloa/Barber's Point Harbors, Island of O'ahu, Nawiliwili Harbor, Island of Kaua'i, Kahului Harbor, Island of Maui, and Hilo Harbor, Island of Hawai'i where the federally managed areas are the entrance channels and turning basins. Ms. Mates was the lead historian and prepared the Section 106 consultation between the USACE and The State of Hawaii Historic Preservation Division, which included identifying cultural resources studies and surveys within and adjacent to the five harbors, as well as determining the level of impacts to historic buildings, structures, and known archaeological sites within the project area. 2015

Historic Resource Survey Report of NASA Goldstone Deep Space Communications Complex, Fort Irwin, CA. Lead Historian/Architectural Historian. The Historic Resource Survey was conducted for the National Aeronautics and Space Administration (NASA) Jet Propulsion Laboratory's Goldstone Deep Space Communications Complex (GDSCC or "Goldstone") at Fort Irwin in Southern California. The study's purpose was twofold: 1) to inventory and assesses whether any of the buildings and structures that have turned historic-age (using a 45 year cut-off date of 1970) are eligible individually for listing in the National Register of Historic Places (NRHP) and 2) to assesses the previously individually evaluated historic-age buildings and structures at the facility in surveys conducted in 2009 to determine if a historic district or districts are present at the Goldstone facility. Ms. Mates was the lead Historian/Architectural Historian for the project, conducted background research, recorded the buildings and structures at Goldstone, and evaluated them for eligibility for listing in the NRHP. The report was prepared for the Environmental Affairs Program Office of NASA/JPL. 2015

Historic Resources Survey, NASA/Jet Propulsion Laboratory, Pasadena, California. Lead Historian/Architectural Historian. The historic resource survey was conducted for the National Aeronautics and Space Administration's (NASA's) Jet Propulsion Laboratory (JPL) Pasadena facility Ms. Mates conducted the survey on behalf of NASA's JPL in order to determine if the buildings and structures that are historic-age (using a 45 year cut-off date), and not previously inventoried and evaluated, are eligible individually for listing in the National Register of Historic Places (NRHP). In addition, Ms. Mates analyzed whether the seven previously determined eligible buildings and structures at the JPL facility (and the 20 buildings and structures that are the subject of this survey) possess a linkage historically or aesthetically and retain their historic significance and integrity to merit listing in the NRHP as a historic district. 2015

1033 Polk Street Historic Resources Evaluation. Lead Historian/Architectural Historian. This project is to demolish the existing historic building (eligible for listing in the CRHR) and construct a new mixed-use residential building with ground-floor retail space with frontages along Polk and Cedar Streets. Ms. Mates worked with the City and County of San Francisco Planning Department and the project applicant in preparing the required documents for demolition of a historic property under CEQA. Ms. Mates prepared a Historic Resource Evaluation, which included conducting an inventory and historic district evaluation of the areas surrounding 1033 Polk Street. Ms. Mates also determined whether there are any cohesive or significant patterns in the neighborhood and provided an evaluation of whether a historic district is present. 2013-2015

Historic Resources Survey for (Intensive) Cultural Resource Investigations, Mountain Valley Pipeline Project, EQT Midstream Partners, LP. West Virginia. Architectural Historian. The project was an architectural and historical resources survey for the Mountain Valley Pipeline. Approximately 195 miles of the 294.1 - mile pipeline will be constructed in West Virginia. The cultural surveys were designed to identify resources within the direct and indirect APE that are potentially eligible for listing in the NRHP. Ms. Mates conducted fieldwork, surveyed, recorded and evaluated over 250 architectural resources within the APE, including farmsteads, bridges, railroad segments, and cemeteries for eligibility for listing in the NRHP. Prepared state forms for West Virginia SHPO. 2014-2016

Brady I and Brady II Wind Energy Centers, Confidential Client, Hettinger, Slope, and Stark Counties, ND. Architectural Historian. Performed evaluations for eligibility in the NRHP for a Class III (Intensive) Survey of historic properties located within 2 miles of related wind farms in central ND. The combined APE for the Project included 224 square miles. Resources included buildings, farmsteads, and cemeteries related to an important immigrant group in the area. 2015-2016

Dickinson Wind Energy Centers, Confidential Client, Hettinger, Slope, and Stark Counties, ND. Architectural Historian. Evaluated architectural resources for a Class III (Intensive) Survey of historic properties located within 2 miles of a proposed wind farms in central ND. The combined Area of Potential Effect (APE) for the Project included 115 square miles. Architectural resources included historic buildings, farmsteads, and cemeteries within the APE. These were documented on state site forms. 2014-2015

Principal Historian, Cultural Resources Inventory, Lassen Lodge Hydroelectric Project, South Fork Battle Creek, Tehama County, California. Tetra Tech, Inc. (Tetra Tech) conducted a cultural resource inventory in support of the construction of Rugraw Incorporated's Lassen Lodge Hydroelectric Project. The project would construct a small hydroelectric project on private. Ms. Mates authored the architectural portion of the inventory and report needed for the final license application and comply with the requirements of Section 106 of the National Historic Preservation Act (NHPA) of 1966. Ms. Mates identified cultural architectural resources located within the project Area of Potential Effect (APE); provided a cultural context for the APE; identified any adverse effects to historic properties or historic resources that may occur as a result of the proposed project; and developed recommendations to mitigate any adverse effects. 2013 - 2014

Preparation of Historic Properties Inventory, Portions of the Richmond Field Station, UC Berkeley, Richmond, California, Principal Historian. Ms. Mates served as the Principal Historian for this project which entailed the inventory, recordation, and evaluation of 25 buildings on the Richmond Field Station to determine eligibility of the buildings for listing in the CRHR and the NRHP. Many of the buildings date to the early twentieth century when the area was the California Cap Company. Ms. Mates served as the Project Manager, author, and evaluator of the report. 2013-2015

Preparation of United States Postal Service Postal Historic Structure Reports, Principal Historian. Tetra Tech was tasked by the United States Postal Service to conduct historic research and site documentation of over twenty main post offices that the Postal Service was going to sell to private buyers. These historic properties were located in California, New York, and Massachusetts. Preparation of each of these reports included conducting a site visit and documenting historic features, completing Part 1 of the Historic Structures Report as outlined in *National Register Brief 43: The Preparation and Use of Historic Structure Report,* Documenting the USPS delineation of the Area of Potential Effect (APE) for future undertakings, preparing the Department of Parks and Recreation Form (DPR) Form 523A for the post office property; and developing a proposed List of Interested Parties. Ms. Mates conducted the fieldwork for all eleven post offices, conducted research, and coordinated with the Postal Service for these highly visible projects. Ms. Mates worked with the Tetra Tech historians to produce these eleven reports in a very short time frame.

Preparation of Integrated Cultural Resources Management Plan for Joint Base Fort Lewis McChord, Architectural Historian. The Integrated Cultural Resource Management Plan (ICRMP) synthesized and updated the 2004 McChord Air Force Base Cultural Resources Management Plan and the 2005 ICRMP for Fort Lewis into a comprehensive ICRMP for Joint Base Lewis McChord (JBLM), located in south- central Washington State. Ms. Mates updated the ICRMP with the most current information pertaining to historic properties and ensured that the ICRMP was consistent with Army regulation (AR) 200 43 and Department of Defense Instruction 4715.3, and that the ICRMP is tailored to the specific requirements of what is now a joint base. The plan also presented updated goals and targets for cultural resource management that reference anticipated base project and mission needs.

Architectural Historian, Historical Resources Study for Buildings 46, 55, 63, and 64 at the Lawrence Berkeley National Laboratory. Ms. Mates was the Principal Historian for this Historical Resources Study which documented the evaluation of Buildings 46, 55, 63, and 64 at the Lawrence Berkeley National Laboratory (LBNL) for eligibility for listing in the NRHP and the CRHR. Tetra Tech concluded that Buildings 46, 55, 63, and 64 are not eligible for listing in the CRHR or the NRHP individually nor as a historic district. Ms. Mates served as Project Manager and oversaw the inventory, evaluation, and analysis process.

Preparation of Integrated Cultural Resources Management Plan for Parks Reserve Forces Training Area, Architectural Historian. Ms. Mates served as the architectural historian updating the five-year plan of the ICRMP for this Army installation in Dublin, California. Ms. Mates was responsible for updating information that pertained to the management and current regulations of historic properties consistent with Army regulation (AR) 200-43 and Department of Defense Instruction 4715.3**.**

Principal Historian, Determination of Eligibility, Preparation of Inventory and Evaluation Forms, and Memorandums of Agreement for Loran-C System, US Coast Guard, Continental US - Present. Ms. Mates is the principal historian and project manager for this project which assists the US Coast Guard in fulfilling its Section 106 responsibility as it discontinues use of the Loran-C System of navigation. For this project, Ms. Mates prepared a Multiple Property Documentation Form for the Loran-C system within the continental US. She also prepared National Register of Historic Places nomination forms for Loran-C Stations that were determined to be eligible for listing in the NRHP as historic districts. The project continues as Ms. Mates works with the US Coast Guard and several State Historic Preservation Officers to determine appropriate mitigation measures to lessen the adverse effect of closing those stations determined eligible for listing. These mitigation measures will be included in Memorandums of Agreement, which Ms. Mates is assisting with in cooperation with individual SHPOs, the Coast Guard, and the Advisory Council on Historic Preservation.

Historian, Willamette Falls Locks Interim Engineering Design Report, United States Army Corps of Engineers, 2013. An engineering evaluation of these historic locks, listed on the National Register of Historic Places, resulted in the discovery affecting public safety, the severe corrosion of portions of the lock. Ms. Mates served as the architectural historian, authoring a section of a report that describes various interim alternatives and evaluating the associated benefits, impacts, risks and costs to the lock. Ms. Mates analyzed each alternative and its potential adverse impact on the historic property.

Cultural Resources Monitor, Formerly Used Defense Sites (FUDS), US Army Corps of Engineers, Fort Barry, Sausalito, California, 2010. This former Department of Defense site, Fort Barry, was found eligible for funding under the DERP-FUDS program of the US Army Corps of Engineers, and the remediation of specific areas of interest was required. Ms. Mates conducted monitoring to ensure preservation of cultural resources during boring and exploratory excavation. She was the report author which was given to the US National Parks Service, and detailed the monitoring activities.

Resource Author, Environmental Assessment for Privatization of Army Lodging (PAL), US Army Corps of Engineers, Fort Huachuca, Fort Huachuca, Arizona, 2010. Tetra Tech is preparing an Environmental Assessment in compliance with the National Environmental Policy Act to address the privatization of Army lodging facilities at Fort Huachuca. The property includes multiple historical buildings and a new build site. Ms. Mates is the cultural resources author for the Environmental Assessment. Present.

Resource Author, Alice Griffith Environmental Impact Statement, Mayor's Office of Housing, San Francisco, California, 2010. Tetra Tech is preparing an Environmental Impact Statement for redevelopment of the Alice Griffith public housing site. Ms. Mates is analyzing the project activities on cultural resources within the project area and is authoring the cultural resources section of the EIS. The project is in compliance with the NEPA regulation and the Department of Housing and Urban Development.

Resource Author, Camp Berryessa EA/IS at Lake Berryessa, Napa County Regional Park and Open Space District 2010. Ms. Mates analyzed the projects impacts on architectural resources section and the Visual/Aesthetics and authored each section of the Environmental Assessment/Initial Study. She evaluated the potential impacts of creating a multi - use recreational facility to these resources on Bureau of Reclamation-managed lands at Lake Berryessa.

Principal Architectural Historian, Gray's Reef Light Station, Emmett County, Michigan 2010. Gray's Reef Light Station is located in Lake Michigan, owned by the US Coast Guard, and listed on the National Register of Historic Places. The US Coast Guard wished to remove the radio beacon tower, located on the cupola of the light station. This Undertaking was considered an adverse effect on the historic property. Ms. Mates served as the architectural historian, overseeing the removal of the radio beacon tower and advising the removal contractors in order to ensure preservation of the structure. After successful completion of the removal, Ms. Mates authored a report detailing the removal and the Section 106 process and submitted it to the US Coast Guard and Michigan State Historic Preservation Office.

Lost Isle Cultural Resources Research Investigation, Acker Island, Stockton, California, 2010. Serving as research investigator for background historical land use of the project area, Ms. Mates conducted records searches and interpreted historic maps to determine the potential for the presence of cultural resources within a one-mile radius of the Lost Isle construction project on Acker Island. Ms. Mates' research investigation memorandum was delivered to the Army Corps of Engineers, Sacramento District.

Resource Author, Supplemental Environmental Assessment for Construction of Combat Alert Cell at Hickam Air Force Base, US Air Force/HQ AFCEE, Oahu, Hawaii, 2010. Ms. Mates assisted with the impacts analysis of architectural resources to prepare a Supplemental Environmental Assessment for the United State Air Force and Headquarters Air Force Center for Engineering and the Environment. The Environmental Assessment will evaluate the environmental impacts of the proposed demolition of the existing Homeland Defense Fighter Alert Facility and construction of a New Homeland Defense Fighter Alert Facility at Hickam Air Force Base. Ms. Mates also authored the consultation communication from the base to the Hawaii SHPO.

Cultural Resources Author, Booker T. Washington Recreational Center, San Francisco Mayor's Office of Housing, San Francisco, California, 2010. Ms. Mates serves as the author for the cultural resources section of this Environmental Assessment for this project which involves demolition of the current building and construction of a new recreational center in its place. The building is eligible for the California Register of Historical Resources and the National Register of Historic Places under Criteria 2 and B, respectively. Ms. Mates analyzed the project activities on this historic resource, developed mitigation measures, conducted State Historic Preservation Office consultation as well as Native American and tribal consultation. The project is in compliance with the NEPA regulation and the Department of Housing and Urban Development.

Cultural Resources Author, Phelan Loop, Environmental Assessment, San Francisco Mayor's Office of Housing, San Francisco, California, 2010. Ms. Mates was the author for the cultural resources section of this

Environmental Assessment for this project which entailed construction of a housing development at Phelan Loop. The project was in compliance with the NEPA regulation and the Department of Housing and Urban Development. Ms. Mates also conducted consultations with the State Historic Preservation Officer in compliance with Section 106 of the National Historic Preservation Act.

City and County of San Francisco Planning Department, As-Needed Historical Resources Consultant, San Francisco, California, 2008 - Present. Ms. Mates has been selected twice to be listed as a historical resources expert on the San Francisco Planning Department's list of historical specialists. The Planning Department provides this list to project proponents who require Historical Resources Evaluations and other historical resource documents to be completed in order to fulfill their environmental compliance requirements under CEQA. Ms. Mates has served as principal author and historian on large and small projects, authoring Historical Resources Evaluations and contributing to Environmental Impact as a result of her inclusion in this pool.

Supplemental Historic Information Reports, the San Francisco Planning Department, As-Needed Historical Consultant 2008 - Present. The San Francisco Planning Department's CEQA Review Procedures for Historic Resources require that supplemental historical information on a building be supplied by the applicant before any substantial exterior alteration are done to the exterior if the building is 50 years old or greater. Ms. Mates has completed the Planning Department's Supplemental Information Form for Historical Resource Evaluation. Some recent Supplemental Information Reports include 463 Eureka Street and 671--673 26th Avenue.

Principal Historian/Architectural Historian, 20 Hoffman Avenue, Impacts Analysis, San Francisco, California, 2010. The owner of the residence at 20 Hoffman Avenue requested that Ms. Mates analyze the impacts of proposed alterations on his house, a historic resource under CEQA and eligible for listing on the California Register of Historical Resources. The house is also listed on local historical registers. Ms. Mates conducted an impacts analysis of the proposed project using California Register of Historical Resources guidelines. Her report was submitted to the City and County of San Francisco Planning Department who concurred with her findings.

Principal Historian/Architectural Historian, 2660 Harrison Street, Historical Resources Evaluation, San Francisco, California, 2010. Ms. Mates determined the eligibility of this industrial building in the Mission District of San Francisco for listing on the California Register of Historical Resources under CEQA as an individual resource and a contributor to an existing historic district. She authored a report discussing her findings of eligibility and analyzed impacts of the proposed project on the building. The report and determination were submitted by the owners of the building to the City and Planning Department of San Francisco, who concurred with Ms. Mates' findings.

Historian, Natural Areas Management Plan EIR, City and County of San Francisco Recreation and Park Department, San Francisco, California, 2010 - 2012. Ms. Mates is preparing a Historic Resources Evaluation Report for the City and County of San Francisco Planning Department's Major Environmental Analysis department. Ms. Mates recorded and evaluated the Sharp Park Golf Course in Pacifica and the Works Progress Administration-era walls and staircases at Mount Davidson. These features are within two of the Natural Areas owned by the City of San Francisco. She prepared a Historical Resources Evaluation, and recorded the resources on Department of Parks and Recreation DPR 523 forms, discussing the findings of historic significance for these resources under CEQA. Ms. analyzed the impacts of the project on these historic resources. Ms. Mates will also prepare mitigation measures to lessen the impacts, if any, on the WPA features and golf course.

Lead Historian and Project Manager, Preparation of Memorandums of Agreement for two United States Postal Service Disposals, US Postal Service, Culver City, and Santa Barbara, California, 2009 and 2010. Ms. Mates prepared two separate Memorandums of Agreement between the US Postal Service and the California State Historic Preservation Office. The Postal Service is selling its NRHP-eligible post office in Culver City and its NRHP listed post office in Santa Barbara to private entities. These actions are considered adverse effects under Section 106 of the National Historic Preservation Act (36 CFR, Part 800). Ms. Mates prepared the draft documents on behalf of the Postal Service and assisted the Postal Service and its legal department with negotiations, finalization, execution, and implementation of the Memorandums of Agreement.

Cultural Resources Author, San Francisco Mayor's Office of Housing, Hunters View Redevelopment Project Environmental Assessment, San Francisco, California, 2009 - 2010. Ms. Mates analyzed the impacts on cultural resources on the proposed project—the demolition and construction of a multi- building affordable housing development in Hunters Point in San Francisco—under NEPA guidelines. The EA was also written to address requirements of the California Environmental Quality Act. Ms. Mates wrote the Cultural Resources section of the document and assisted with tribal consultations.

Historian, California Environmental Quality Act Services for the Emergency Response and Earthquake Safety Bond Program, City and County of San Francisco, Department of Public Works, San Francisco, California, 2009 - 2010. Ms. Mates was the principal investigator and historian for a project involving the seismic retrofitting of the City and County of San Francisco's Auxiliary Water Supply System (AWSS), constructed from 1909 to 1913, and the significance evaluation of one of the first fire stations constructed in Mission Bay. Ms. Mates conducted an inventory and evaluation for the components of the AWSS and prepared a Historic Resources Evaluation Report for the 100 year - old AWSS system, evaluating it for its historical significance for listing on the National Register of Historic Places, on the California Register of Historic Resources, and on local registers. Ms. Mates also assessed impacts of the proposed project on the AWSS and recommended mitigation measures to avoid significant impacts. She prepared a Memorandum of Agreement for this project because one of the AWSS properties is listed on the National Register of Historic Places and is located on federal land. The AWSS is San Francisco's high pressure water supply system dedicated to fire protection. It consists of a 135-mile pipeline network, high elevation reservoir and tanks, saltwater pumping stations, fireboats, underground water tanks, and bay water intakes. For the second element of the project, Ms. Mates evaluated the historical significance of a 1928 fire station as an individual resource for inclusion on the California Register of Historical Resources.

San Francisco Mayor's Office of Community Investment, Ongoing Consultant Contract, Historian, San Francisco, California, 2007 - 2011. Ms. Mates is the lead historian for architectural modifications and improvements to historic housing developments and complexes for the Mayor's Office of Housing, Office of Community Investment. Tetra Tech has an ongoing consultant services contract with the Mayor's Office of Housing and Mayor's Office of Community Development. Ms. Mates reviews the proposed alterations and their compatibility with the 2007 Programmatic Agreement between the City and County of San Francisco, the State Office of Historic Preservation in California and the American Council on Historic Preservation. Ms. Mates follows the standard Statutory Worksheet guidelines for historic preservation.

High Water Bridge EA and Permitting, Cultural Resources Author, US Army Corps of Engineers, Mobile District, Camp Roberts, California, 2009. The project entailed the preparation of an Environmental Assessment for replacing a historic bridge for the California Army National Guard at the Camp Roberts High Water Bridge. The EA was also written to address requirements of the California Environmental Quality Act. Ms. Mates analyzed the impact of project activities on cultural resources and wrote the cultural resources section.

Historian/Monitor, Formerly Used Defense Sites (FUDS), US Army Corps of Engineers, Fort Funston, San Francisco, California, 2011. This former Department of Defense site, Fort Funston, was found eligible for funding under the DERP-FUDS program of the US Army Corps of Engineers, and the remediation of specific areas of interest was required. Ms. Mates conducted monitoring to ensure preservation of former Nike Hercules Missile magazines, which are historic properties, during boring and exploratory excavation.

Historian, Environmental Assessment of Military Housing Privatization, Fort Richardson, Alaska, 2009 - 2010. Ms. Mates was the historian and cultural resources section author for the EA for this project, which would provide military family housing to meet Air Force housing standards and the ongoing and projected housing requirements for the installation. The project was needed to provide modern and efficient housing for military personnel and their dependents stationed at Fort Richardson, in accordance with Air Force guidelines for quality of life and floor space requirements. Ms. Mates wrote the cultural resources section of the EA, which identified, described, and evaluated the potential environmental impacts that were associated with MFH privatization.

Environmental Assessment Update for Equipment Removal at the Over - the - Horizon - Backscatter Radar Tulelake Station, Modoc County, California, 2009. Ms. Mates worked as the Cultural Resource Specialist, working with the US Air Force, Air Combat Command in Modoc County, California. This EA provided updated and additional information for removal of the Air Force's Cold War- era OTHB- R Tulelake facility within the Doublehead Ranger District of the Modoc National Forest. The previous EA could not achieve National Historic Preservation Act Section 106 concurrence by the California SHPO due to concerns regarding ground disturbance in an archaeologically sensitive area. Aspects regarding the Cold War-era facility itself were previously successfully documented through HABS/HAER. Ms. Mates conducted additional research and a reconnaissance of the previously recorded site locations within the 717-acre APE. Ms. Mates also assisted with Native American consultation and coordination with the Modoc National Forest Heritage Program Manager and Tribal Liaison to provide additional information regarding cultural resources and the potential of equipment removal to disturb those resources.

Historian, Phase I Cultural Resources Survey, Community Redevelopment Agency, Los Angeles (CRA/LA) Los Angeles, California, 2009. Ms. Mates was the historian on this project to identify, inventory, and evaluate historic buildings and structures next to the proposed project. Ms. Mates evaluated the historical significance of buildings within the proposed project area under CEQA guidelines and prepared the historic context under which to evaluate the historical architectural resources. Ms. Mates also prepared a Historic Resources Evaluation Report, which included an impacts assessment of the proposed project on historic resources. The project entailed the redevelopment of a 2.5-acre parcel by the City of Los Angeles, approximately ten miles from downtown and required archaeological and architectural surveys.

Historian, Genesis Solar Energy Project, Riverside County, California, 2009. Genesis Solar, LLC proposed to develop a 250-megawatt solar thermal power generation project on an 1,800-acre site between Desert Center and Blythe, California, on land managed by the Bureau of Land Management. Ms. Mates was the historian for the project, conducting a survey for built- environment resources within the proposed project area and inventorying on DPR 523 forms the historic-era resources, a road, and a transmission line. Ms. Mates also conducted research and wrote the historical context within which to evaluate these potential resources.

Historian and Project Manager, Thematic Study of Historic Homestead Sites, Edwards Air Force Base, California, 2008 - 2010. Ms. Mates was the historian and project manager for a thematic study of ten historic homestead sites and associated refuse deposits on Edwards AFB, California. The project was conducted in compliance with Section 100 of the National Historic Preservation Act, and its goal was to expand on the regional understanding of homesteading in the western Mojave Desert by studying homesites on neighboring military installations. A secondary aspect of the project was to address the spatial and material relationship between the historic refuse deposits and historic homesites. Aside from conducting the research and writing the report, Ms. Mates' responsibilities included coordinating with the program manager and the Base Historic Preservation Officer. She oversaw all aspects of the project, including coordinating project meetings, drafting a work plan for approval by the BHPO, and coordinating evaluation of the homesites and refuse deposits.

Historian and Project Manager, Cultural Resources Evaluation of Selected Buildings and Structures, Edwards Air Force Base, California, 2008 - 2010. Ms. Mates was the project manager for the cultural resources evaluation of selected buildings and structures for the Base Historic Preservation Officer at Edwards Air Force Base. The project included recording and evaluating 61 buildings and facilities, preparing inventory and evaluation documents (Department of Parks and Recreation 523 forms), and preparing the HABS/HAER recordation form. For over five years, Tetra Tech has been overseeing the inventory of main base buildings as new building's turn historic-age (50 years or older) under NEPA.

Historian, Natural Areas Management Plan EIR, City and County of San Francisco Recreation and Park Department, San Francisco, California, 2008 - 2012. Ms. Mates was the project historian/architectural historian for an EIR analyzing the effects of implementing a management plan for 31 natural areas in San Francisco and Pacifica. Ms. Mates also inventoried and evaluated two of the Natural Areas, the Sharp Park Golf Course in Pacifica and Mount Davidson's Work Progress Administration features, evaluating each for their historic significance and eligibility for listing on the California Register of Historical Resources. She assessed impacts of the proposed project on these two natural areas and recommended mitigation measures to avoid significant impacts. These natural areas encompass 1,105 acres and represent remnant native habitats within these urban areas. Both an Initial Study and EIR were prepared as part of the impact analysis process, and cultural resources were key issues.

Historian/Architectural Historian, Los Angeles Unified School District (LAUSD) Historical Resources Survey and Evaluation Report South Los Angeles, California, 2008. Ms. Mates was principal investigator for the project to construct a new school in a historic-era neighborhood of South Los Angeles. She conducted the historical resources inventory and survey to determine if the proposed project would impact historic resources under CEQA. Ms. Mates established the proposed project's area of direct and indirect impacts, inventoried and evaluated over 63 historic-age buildings for historical significance and integrity on DPR 523 forms, as individual resources and as a potential historic district under CEQA. Ms. Mates also wrote a stand-alone Historical Resources Evaluation Report to be submitted with the EIR.

Historian/Architectural Historian, LAUSD Historical Resources Survey and Evaluation Report for EIR, MacArthur Park Project, Los Angeles, California, 2008. Ms. Mates was principal investigator for this project to construct a new school in a historic-era neighborhood of South Los Angeles. Ms. Mates conducted the historical resources inventory and survey to determine if the proposed project would impact historic resources under CEQA. She determined the proposed project's area of direct and indirect impacts and inventoried and evaluated historical resources for significance and integrity on Department of Parks and Recreation forms for inclusion on the state and national registers. Ms. Mates also wrote the cultural resources section of the EIR and analyzed proposed impacts on historic-age resources under CEQA.

Cultural Resources Specialist, Residential Communities Initiatives Environmental Assessment, Forts Wainwright and Greely, Fairbanks and Delta Junction, AK 2007. Ms. Mates conducted archival research and prepared the cultural report for environmental analysis. She assessed proposed activities at both installations and determined the effect on historical resources for the proposed action as well as its alternatives. Ms. Mates conducted field investigations and worked closely with installation historians to gather background information for analyzing the impacts of the proposed project on the Historic District and Historic Landmark at Fort Wainwright.

Consultant Historian/Architectural Historian, City and County of San Francisco Planning Department, Historical Evaluations of Residences San Francisco, California, 2007 - Present. Ms. Mates researches, inventories, and evaluates residences for the City and County of San Francisco (CCSF) Planning Department for significance and integrity under CEQA. She inventories and evaluates historic-era resources and makes eligibility recommendations to the City and County of San Francisco's Planning Department for the resource's inclusion on the California Register of Historical Resources, individually and as a historic district. Each historical inventory and evaluation entails close communication with Planning Department personnel and homeowners seeking construction approval.

City and County of San Francisco, Historian, Mayor's Office of Housing Environmental Review Services, Housing and Community Development Programs, San Francisco, California, 2007 - 2009. Ms. Mates analyzes historic preservation matters for the Mayor's Office of Housing (MOH) and the Mayor's Office of Community Development (MOCD) under NEPA and other federal regulations. She prepares historical architectural evaluations and reports, historic preservation consultations, correspondence, and program summaries as a part of the City's compliance with historic preservation laws and regulations. Ms. Mates attends meetings with MOH and MOCD staff, US Department of Housing and Urban Development, the State Historic Preservation Office (SHPO), other city agencies, and project sponsors to ensure that the potential impacts of proposed activities are fully investigated and that appropriate mitigations are incorporated into project design and implementation.

Cultural Resources Author, Aliso Viejo Incoming Mail Facility Environmental Impact Statement, Aliso Viejo, California, 2007 - 2008. Ms. Mates wrote the cultural resources section of the EIS for the proposed development of a US Postal Service regional mail sorting facility. She analyzed the impacts of the proposed project and its alternatives on cultural resources. She consulted the State Historic Preservation Office and assisted with Native American Heritage consultations for the project's alternatives and assisted with QA/QC for the final document.

Historian/Oral Historian, Cheyenne Mountain Oral History Project, Cheyenne Mountain Air Force Station, Colorado Springs, CO 2007 - 2008. Ms. Mates was the principal historian for this project, the objective of which was to interview Air Force and civilian personnel associated with Cheyenne Mountain Air Force Base, NORAD operations, and the transfer of the mission to private contractors. Ms. Mates identified relevant narrators to interview, conducted oral histories of each person, and wrote a written document chronicling the history of the Air Force on Cheyenne Mountain. The oral history document relied heavily on information gathered from the oral histories to be used as a unique historical perspective for future researchers

Historian, National Geothermal Programmatic Environmental Impact Statement, US Bureau of Land Management, US Department of the Interior, and US Forest Service 2007. As the historian for this project, Ms. Mates researched and wrote historic context for the National Programmatic Environmental Impact Statement for leasing specific lands with geothermal resources on Bureau of Land Management and Forest Service administered lands in the western United States, including Alaska.

Historian, Newlands Project Resource Management Plan and Environmental Impact Statement, US Bureau of Reclamation, Lahontan Basin Area Office, Various Locations, NV 2007 - 2008. Ms. Mates was the project historian and co-authored the cultural resources section of the EIS, which will guide management of approximately 442,000 acres of Reclamation- administered land in Nevada, predominantly in the Fallon and Fernley areas. No management plan existed for the Newlands Project lands that the Lahontan Basin Area Office administers, so an EIS was prepared for the RMP. Newlands is one of Reclamation's first projects and is primarily an irrigation project as set forth in legislation. The Newlands Project, constructed in 1903, provides irrigation water from the Truckee and Carson Rivers for about 55,000 acres of cropland in the Lahontan Valley near Fallon and bench lands near Fernley, Nevada. The purposes of the Newlands Project were expanded in 1990 under Section 209 of Public Law 101- 618. Ms. Mates researched cultural resources and historical archives and evaluated the effect on cultural and historical resources from the proposed project.

Cultural Resources Specialist, Bay Division Pipelines 3 and 4 Crossover Facilities CEQA Compliance, San Francisco Public Utilities Commission, South San Francisco Bay, California, 2007 - 2008. Ms. Mates was the principal investigator and historian for this project, which proposed additional crossover facilities at three locations in the South Bay to improve seismic reliability of the system and reduce the impact on customer deliveries in the event of a pipe break. Ms. Mates conducted research and field investigations and wrote the cultural resources report and the CEQA Initial Study document. She inventoried and evaluated Bay Division Pipeline No. 3 for significance under CEQA and assessed the proposed project activities' effect on historic and cultural resources in and near the project area.

Historian/Architectural Historian, Bay Division Pipelines 3 and 4 Seismic Upgrade CEQA Compliance, SFPUC, Fremont, California, 2008. Ms. Mates was the historian for this project, the goals of which were to seismically upgrade the Bay Division Pipelines 3 and 4 along the Hayward Fault to improve reliability of the system and reduce the impact on customer deliveries in the event of a pipe break. Ms. Mates determined the area of potential direct and indirect impacts the project may have on historic resources, conducted an inventory and survey of historic-age resources, and evaluated historical resources within the project area for their historical significance under CEQA. Ms. Mates also assessed the proposed project's effect on historical resources in and near the project area.

Author, Historic Context and Archaeological Properties Assessment, San Andreas Pipeline Number 3, Installation, San Francisco and San Mateo Counties, California, San Francisco Public Utilities Commission, San Francisco and San Mateo Counties, California, 2008. Ms. Mates researched and wrote the historic context section for the Historic Context and Archaeological Properties Assessment (HCAPA) for the SFPUC, assessing the types of historical archaeological properties likely to occur within the fully developed project area and the likelihood of those resources to occur. Research involved understanding the historic environment of the San Francisco Peninsula, types of historical archaeological deposits on the Peninsula, distribution of sites, and preservation of sites given the historic development of the area. The HCAPA was used to assess the potential impacts and provide recommendations for project implementation in the project's IS and EIR.

Principal Investigator/Historian, Historic Resources Survey for the US Highway, Oklahoma Department of Transportation County Improvement Roads and Bridges, OK 2008. Ms. Mates was the historian for the project, which satisfied NEPA compliance for six categorical exclusions prepared concurrently on a compressed schedule for the reconstruction of 12 bridges and over 30 miles of roadway overlays and improvements. Ms. Mates conducted all historical architectural surveys for historic-era bridges and roads and prepared documentation and evaluations for Oklahoma State Historic Preservation review.

Principal Investigator, Historic Resources Survey for the US Highway, Oklahoma Department of Transportation, Choctaw, OK 2008. Ms. Mates was the principal historian on the project, which consisted of reconstructing a three - mile portion of Interstate 40 in eastern Oklahoma City. Ms. Mates researched archives, conducted all historical architectural surveys on historic-age buildings and structures (bridges, residences, and commercial buildings) within the project area, and prepared structure record identification forms and the report. Ms. Mates also assessed impacts on cultural and Section 4(f) resources and advised the client on possible resource impacts and mitigations.

Oklahoma Department of Transportation US Highway 70 Categorical Exclusion, Principal Investigator/Historian, Oklahoma Department of Transportation, Durant, OK 2008. ODOT proposed replacing the 432- foot- long, 36- foot-wide, US Highway 70 bridge spanning the Union Pacific Railroad and making necessary roadway and intersection improvements nearby. Ms. Mates inventoried and recorded all historic-age architectural resources, researched historic records at the Oklahoma Archaeological Survey and State Historic Preservation Office, researched archives and literature, reviewed national and state registers, examined historic maps, conduct a field survey, documented structures older than 45 years that retained historic integrity, and evaluated those structures for National Register eligibility.

Historian, National Geothermal Programmatic Environmental Impact Statement, Bureau of Land Management and Forest Service, US Department of the Interior 2008. Ms. Mates researched and wrote historic context for a document to produce a National Programmatic Environmental Impact Statement for leasing specific lands with geothermal resources on BLM and Forest Service administered lands in the western United States, including Alaska.

Peer Reviewer/Cultural Resources Specialist, Moccasin Penstocks Relining and Replacement Project, San Francisco Public Utilities Commission, Moccasin, California, 2007. The San Francisco PUC proposed to recoat, reline, and possibly replace portions of the Moccasin Penstocks, which consist of four pipes delivering water from Priest Reservoir to the Moccasin Powerhouse (part of the Hetch Hetchy Water Delivery System). Ms. Mates assisted the subconsulting historian in the architectural survey of the penstocks and the project area and peer reviewed the subsequent findings report to the SFPUC. Ms. Mates also assisted in the pedestrian archaeological survey of the project area and access routes and relocated historic railroad ties associated with the historic Hetch Hetchy Railroad. She made preliminary suggestions to the client on necessary cultural resources studies that would be needed to comply with CEQA.

Historian, Levee Maintenance on Brannan Island, Brannan - Andrus Levee Maintenance District/ACOE Sacramento, California, 2007. Ms. Mates surveyed and evaluated a sunken barge, an unexpected discovery, at Brannan - Andrus Levee. The purpose of this project was to restore the levee to the original level of protection of lives and property along Highway 160. The emergency levee repair work is necessary to prevent or reduce risks and to prevent possible severe economic losses. Ms. Mates researched maritime activities in the area and prepared all documentation for SHPO, which concurred with her findings.

Other CEQA/NEPA Experience

Deputy Project Manager, Winnemucca District Office Resource Management Plan and EIS, US Bureau of Land Management, Winnemucca DO Planning Area, NV 2008. Ms. Mates serves as Deputy Project manager for an RMP/EIS for 7.3 million acres of land administered by the Winnemucca District Office in northern Nevada. Authored Public Comment Summary Report. Issues of special concern included fragmented land ownership, access to public lands, and outdated visual resource management classes.

Resource Author, Alice Griffith Environmental Impact Statement, Mayor's Office of Housing, San Francisco, California, 2010 - 2012. Tetra Tech is preparing an Environmental Impact Statement for redevelopment of the Alice Griffith public housing site. Ms. Mates is analyzing the project activities on visual and aesthetic resources within the project area and is authoring the visual resources section of the EIS. The project is in compliance with the NEPA regulation and the Department of Housing and Urban Development.

Recreation Author, Desert Sunlight Solar Farm EIS, First Solar, Riverside County, California, 2010. Ms. Mates provided recreation analysis for the recreation activities section of the EIS that addresses the effects of construction and operation of a 550-megawatt solar farm on over 4,000 acres in the Chuckwalla Valley managed by the Bureau of Land Management-Palm Springs South Coast Field Office. The project also includes a 12-mile transmission line and an electrical substation, to be operated by Southern California Edison. The EIS is being written to also address requirements of the California Environmental Quality Act, with the California Public Utilities Commission as the CEQA lead agency.

Visual Resources/Aesthetics Author and Contributor, Nimbus Hatchery Fish Passage Project EIS/EIR, Bureau of Reclamation, Folsom, California, 2009 - 2010. Tetra Tech is preparing an Environmental Impact Study/Environmental Impact Report for the Nimbus Hatchery Fish Passage Project. This facility is on the American River, approximately a quarter mile downstream of Nimbus Dam. The hatchery was built to compensate for Chinook salmon and Central Valley steelhead spawning areas inundated by the construction of Nimbus Dam. Ms. Mates analyzed the proposed project and the many alternatives on the aesthetics and visual character of the project area and its surroundings and is preparing the aesthetics section of the joint document.

Land Use History Author, Pier 80 Soil Investigation Work Plan, San Francisco, California. Tetra Tech prepared a Subsurface Investigation Work Plan on behalf of the City and County of San Francisco Department of Public Works and the Port of San Francisco for the proposed Pier 80 Security Lighting project. Ms. Mates researched and wrote the site usage history to address the requirements of Article 22A of the San Francisco Public Health Code (Maher Ordinance). Under this ordinance, proponents must assess, investigate, and if necessary, remediate environmental conditions at a proposed development site to protect construction worker safety 2008.

Contributing Author, Altamont Windfarm, Environmental Impact Report, California, Vasco Wind LLC/Florida Power and Light, Contra Costa County, California, 2008. Vasco Wind, LLC, proposed replacing approximately 400 aging turbines with a small number of larger turbines. The proposed project, primarily along the Vasco Ridge within the Coast Ranges, would entail decommissioning old turbines and associated transmission lines and infrastructure, installing 40 new wind-generating turbines, and restoring portions of the land to its original natural character. The project would also include an interconnecting road system, underground and overhead electrical transmission lines to collect energy from the turbines, and a substation to transmit energy from the project to the regional power grid. Ms. Mates conducted research and wrote the recreation section of the EIR.

Principal Investigator, United States Postal Service Site Disposals Phase I Environmental Assessment, Saratoga, California, 2008. Ms. Mates was the principal investigator and project manager for a property that the US Postal Service was selling. The land was considered a disposal site and had to be assessed for the possibility of environmental contaminants. Ms. Mates performed the facilities environmental checklist survey and the real estate disposal survey required by the USPS. In addition, she searched environmental databases and wrote the final deliverable on both disposal sites.

ADDITIONAL EXPERIENCE

Historical Resources Inventory and Evaluation, Santa Clara Valley Water District Historic Dams, Santa Clara Valley Water District, Santa Clara County. California. Ms. Mates inventoried and evaluated eleven dams for inclusion on the California Register of Historical Resources. She evaluated dams and their appurtenances as a historic district and for their individual significance. (JRP Historical Consulting, LLC, 2006.)

Historical Resource Evaluation Report: Highway 101/Brisco Road Interchange, San Luis Obispo County. California, 2005-2006. Historian on project to construct interchange. Inventoried and evaluated historic-era resources, including a motel court, residences, commercial buildings, and a cemetery,

Peninsula Corridor Joint Powers Board 4-Track Project, Staff Historian, Peninsula Corridor Joint Powers Board, San Mateo County. California. Historian on project upgrading tracks and local train stations. Inventoried and evaluated historic-era resources. (JRP Historical, LLC, 2005.)

Caltrans Statewide Bridge Inventory, Staff Historian, Caltrans. California. Statewide Inventory of all pre-1960 metal truss concrete arch, suspension and timber truss bridges as part of an update to statewide historic bridge inventory. (JRP Historical Consulting, LLC, 2003.)

Historic American Buildings Survey Documentation for the Family Service Laundry/Peninsula Creamery Building, Palo Alto. California. Lead historian and author for report and HABS documentation to fulfill historic preservation mitigation requirements imposed by City of Palo Alto for loss of historic building at 800 High Street. (JRP Historical Consulting, LLC.)

Historical Architectural Evaluation of Camp Swig, Saratoga. California. Inventory and evaluation of 22 buildings on Camp Swig, a summer camp and retreat in Saratoga. Evaluated the resources under the National Register, California Register, and Santa Clara County Historic Resources Inventory criteria. (JRP Historical Consulting, LLC.)

Historic Context Report, Roadway Bridges in California, 1936-1959, and Statewide Inventory and Evaluation of all pre-1960 Metal Truss, Moveable, and Steel Arch Bridges, Caltrans. California. Historic context author and contributor for statewide historic bridge inventory. (JRP Historical Consulting, LLC.)

Other projects with JRP Historical Consulting, LLC:

- Historic Architectural Survey Report and Finding of Effect, Caltrain Extension to Transbay Terminal, Staff Historian, Peninsula Corridor Joint Powers Board, San Francisco. California;
- Historic Architectural Survey Report: Highway 25 Alternatives, Hollister, Staff Historian, Caltrans, Hollister. California;
- Historic Resources Evaluation Report for Proposed Improvements to Interstate 680-State Route 4 Interchange, Staff Historian, Caltrans, Contra Costa County. California;
- Historic Architectural Survey Report for Highway 4 Widening Project, Contra Costa County, Research Assistant, Caltrans, Antioch. California; and
- Historic Architectural Survey Report for Silicon Valley Rapid Transit Corridor MIS/EIS/EIR; Staff Historian, Silicon Valley Rapid Transit, San Jose. California.

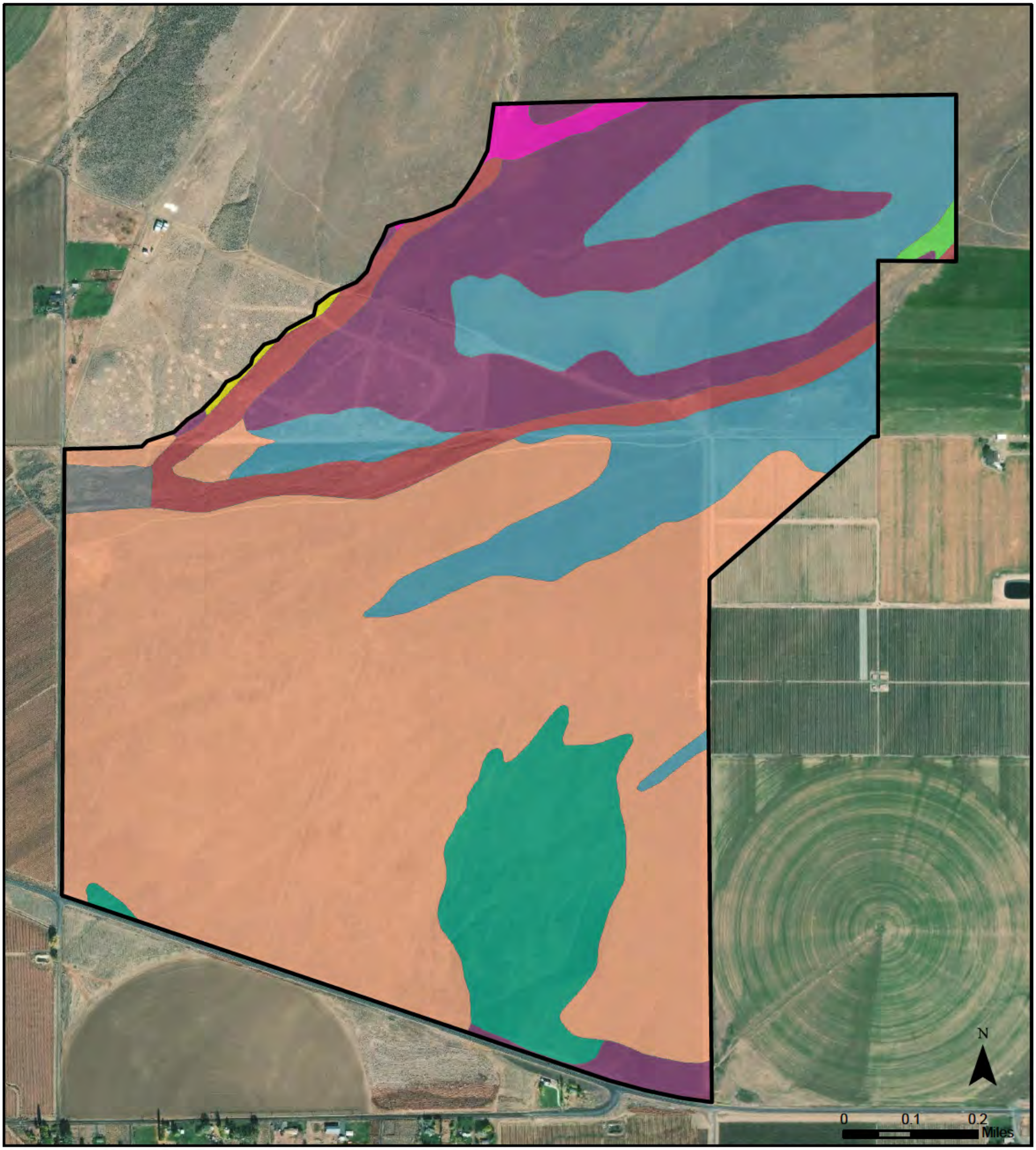
MS Excel, MS Word, MS Outlook, MS Access, MS Publisher

EMPLOYMENT HISTORY

2007 – Present	Historian/Architectural Historian, Tetra Tech, Inc., Oakland, California
2001-2006	Staff Historian, JRP Historical Consulting, LLC, Davis, California

Appendix B:

NRCS Web Soil Survey Data



Survey Area

Soil Unit: Soil Name

36: Finley cobbly fine sandy loam, 0-5% slopes

65: Kiona stony silt loam, 15-45% slopes

68: Lickskillet very stony silt loam, 5-45% slopes

83: Moxee silt loam, 2-15% slopes

93: Pits

101: Ritzville silt loam, 8-15% slopes

187: Willis silt loam, 2-5% slopes

188: Willis silt loam, 5-8% slopes

189: Willis silt loam, 8-15% slopes

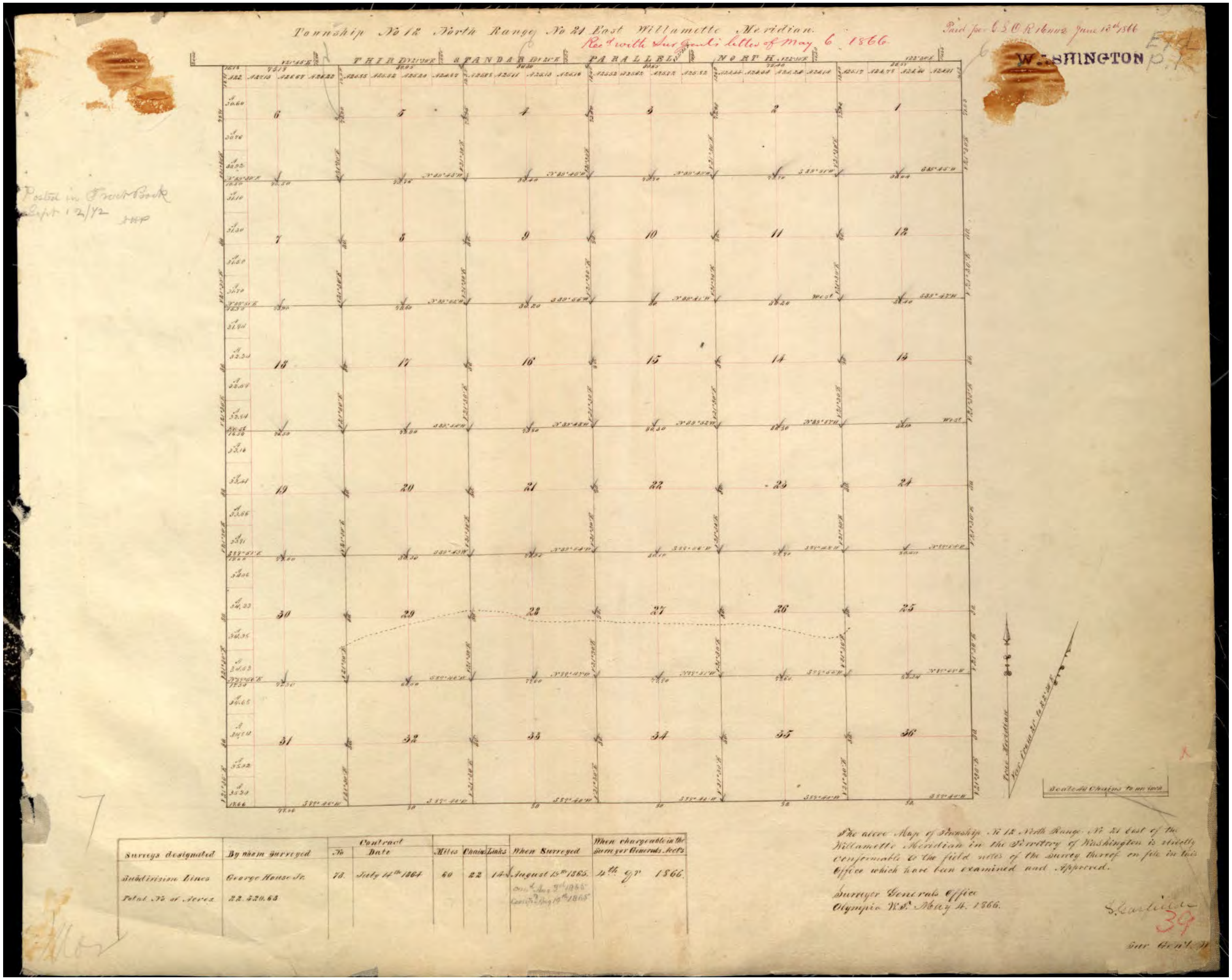
Appendix B
NRCS Soils Survey Map

Goose Prairie Solar Project
Yakima County, WA

R:\PROJECTS\GOOSE_PRA RIE_6767\CULTURAL\MAPS\GP_App_B_Soils.mxd

Appendix C:

Historic Maps and Aerial Photographs



Township No 12 North Range No 21 East Willamette Meridian.
Recd with Sur Genls letter of May 6 1866
Paid for C S O R Rinns June 13th 1866
WASHINGTON
THIRD STANDARD PARALLEL NORTH
Posted in Tract Book Sept 12/72
Surveys designated | By whom Surveyed | Contract No | Contract Date | Miles | Chains | Links | When Surveyed | When chargeable in the Surveyor Generals Accts
Subdivision Lines | George House Jr. | 78. | July 14th 1864 | 60 | 22 | 14 | August 15th 1865. | 4th qr 1866.
Total No of Acres | 22.520.63
Scale 40 Chains to an inch
The above Map of Township No 12 North Range No 21 East of the Willamette Meridian in the Territory of Washington is strictly conformable to the field notes of the Survey thereof on file in this Office which have been examined and Approved.
Surveyor Generals Office
Olympia W.T. May 4. 1866.
Sur Genl. W.T.
39

Search Browse Help About Cart Google Custom Search

ITEM #US36663

Index Map

From **Yakima County 1934**, Washington

Published by Chas F. Metsker in 1934

View all the images in Yakima County 1934

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Map Information

Search Browse Help About Cart

Google Custom Search

ITEM #US36750

Page 086, Rattlesnake Ridge

From **Yakima County 1934**, Washington

Published by Chas F. Metsker in 1934

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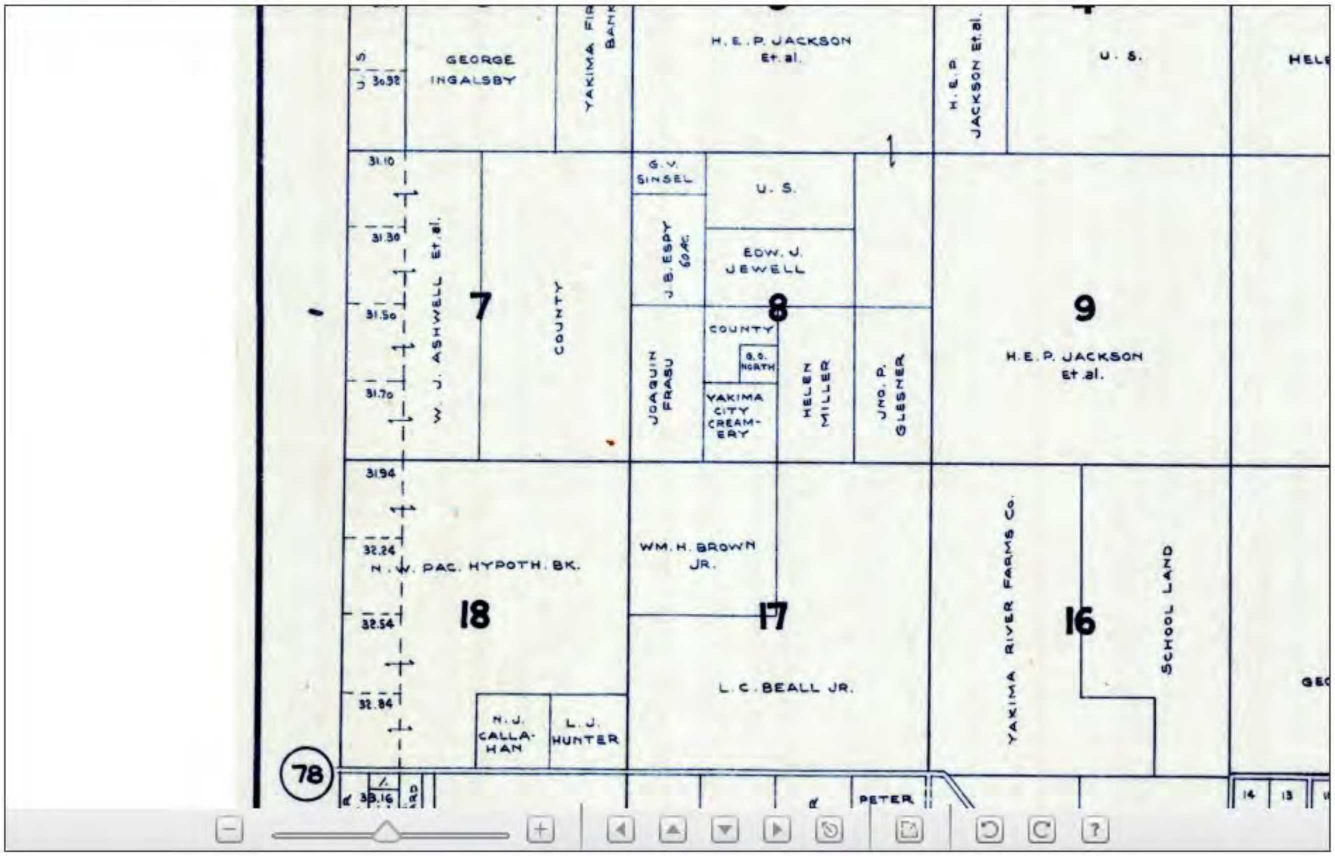

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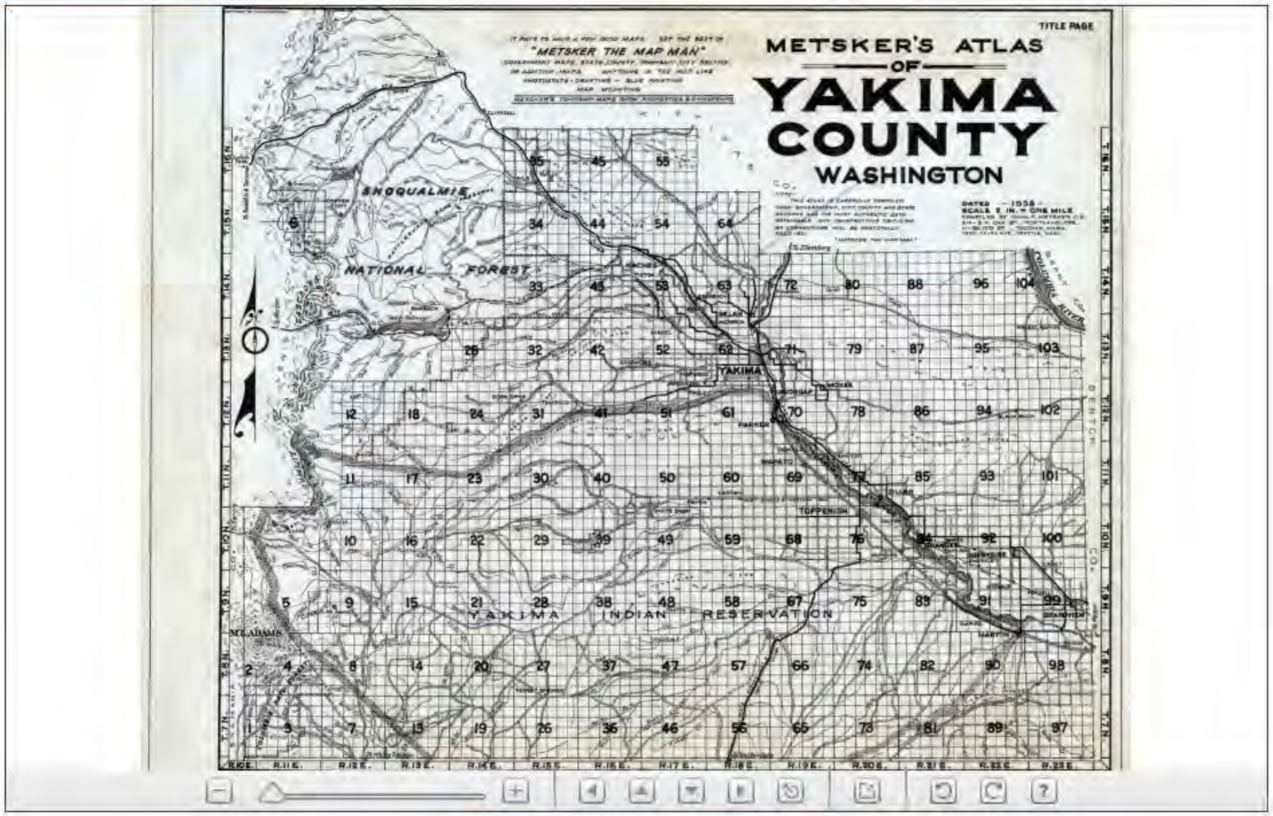
HISTORIC MAP WORKS
Residential Genealogy™

username
password
Register LOGIN

Search Browse Help About Cart Custom Search

ITEM #US1333885
Index Map, Title Page
From **Yakima County 1959**, Washington
Published by Metsker Maps in 1959
View all the images in Yakima County 1959

Buy this Map »



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ITEM #US1333974
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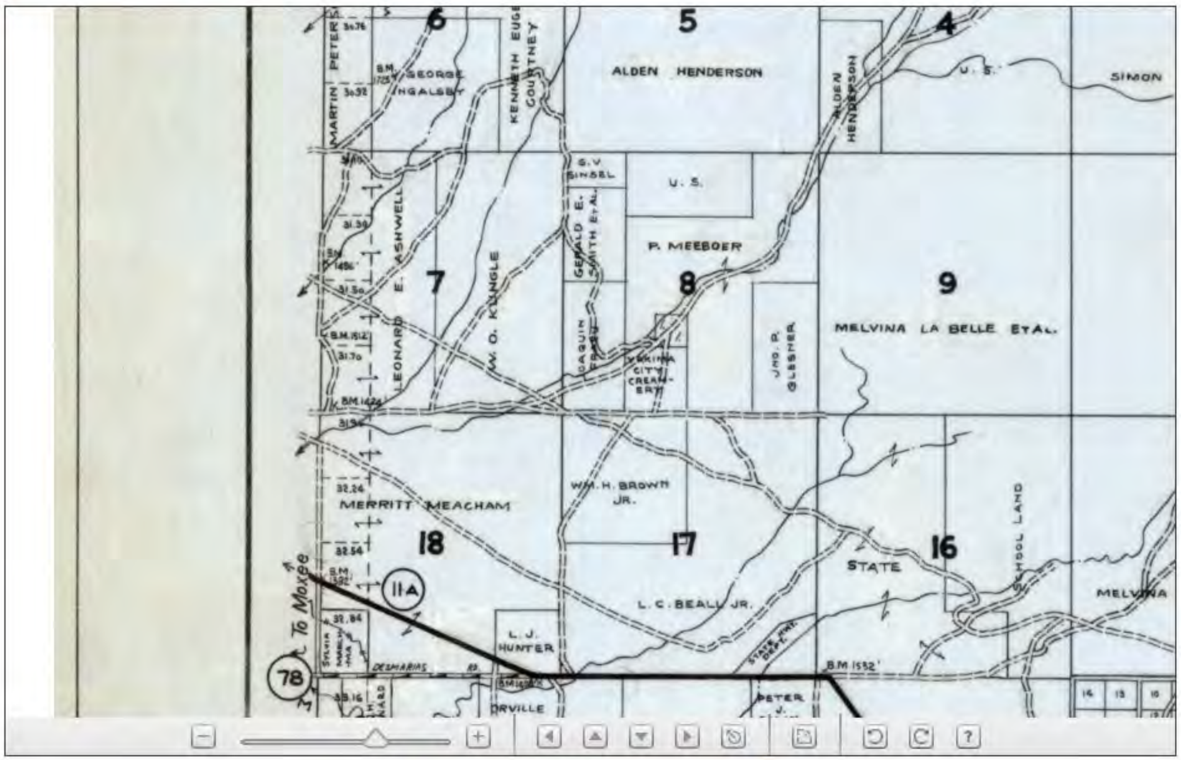
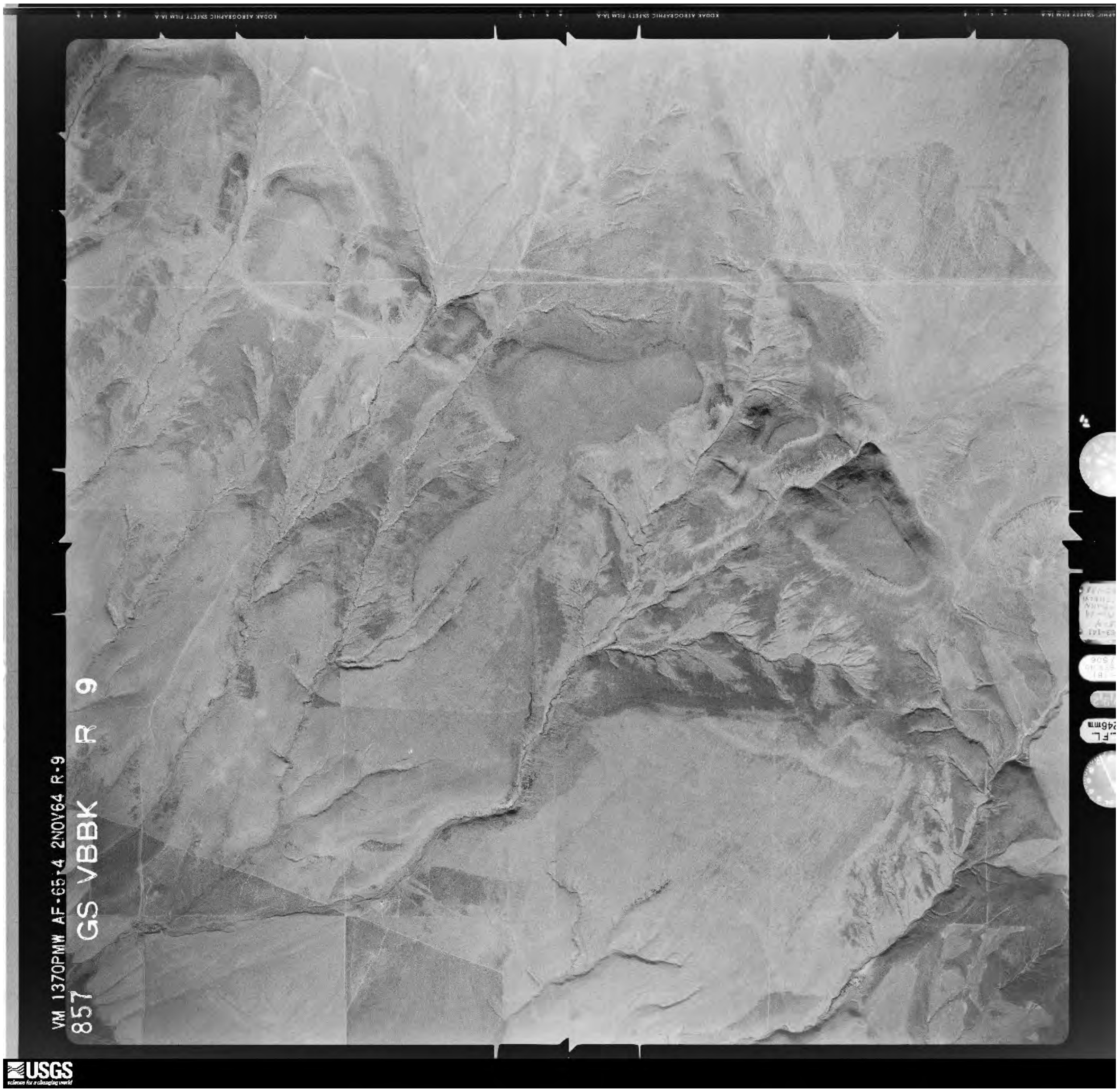
From **Yakima County 1959**, Washington
Published by Metsker Maps in 1959
View all the images in Yakima County 1959

Buy this Map »




USGS
science for a changing world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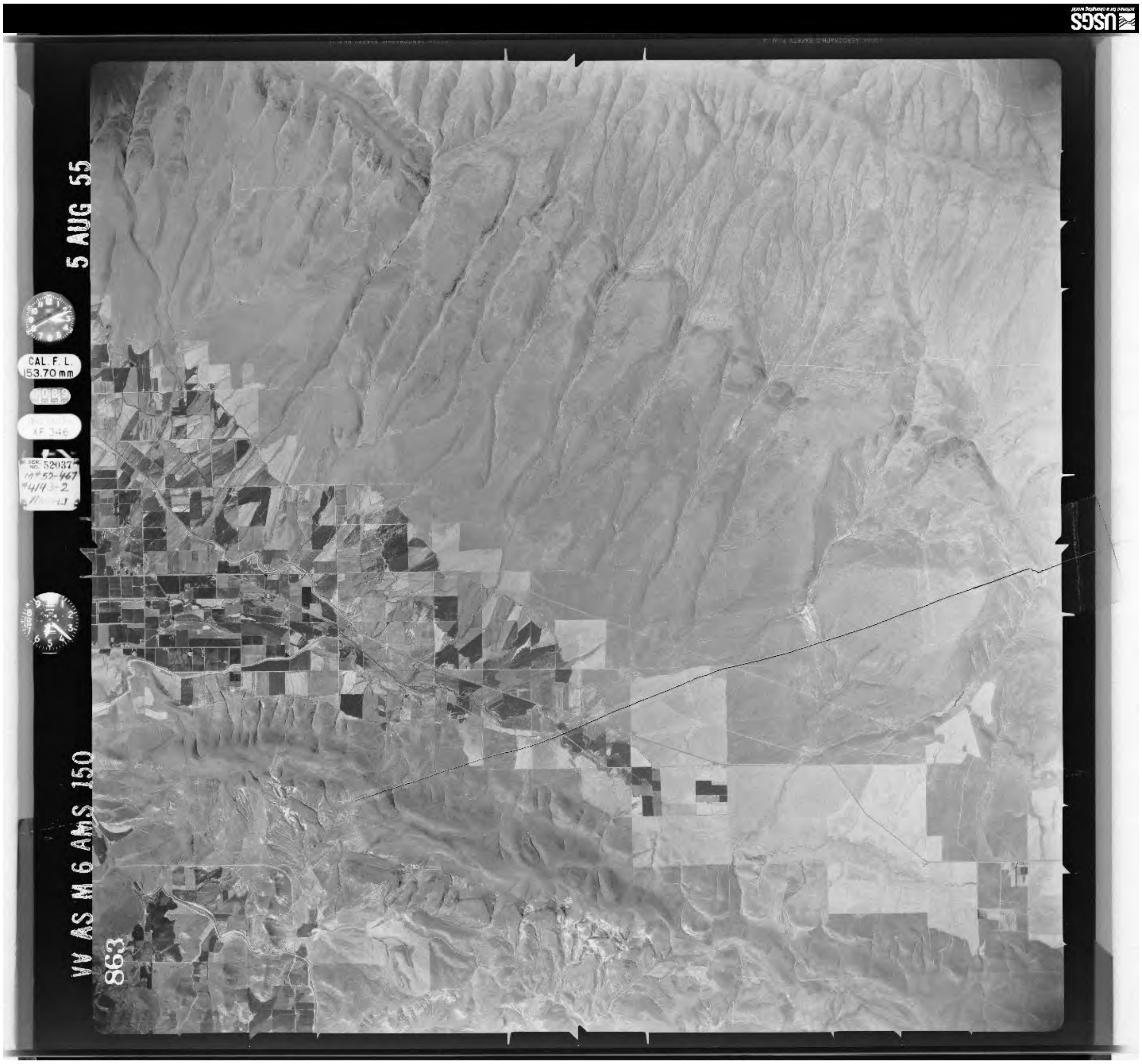
857 GS VBBK R 9
USGS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153.70 mm
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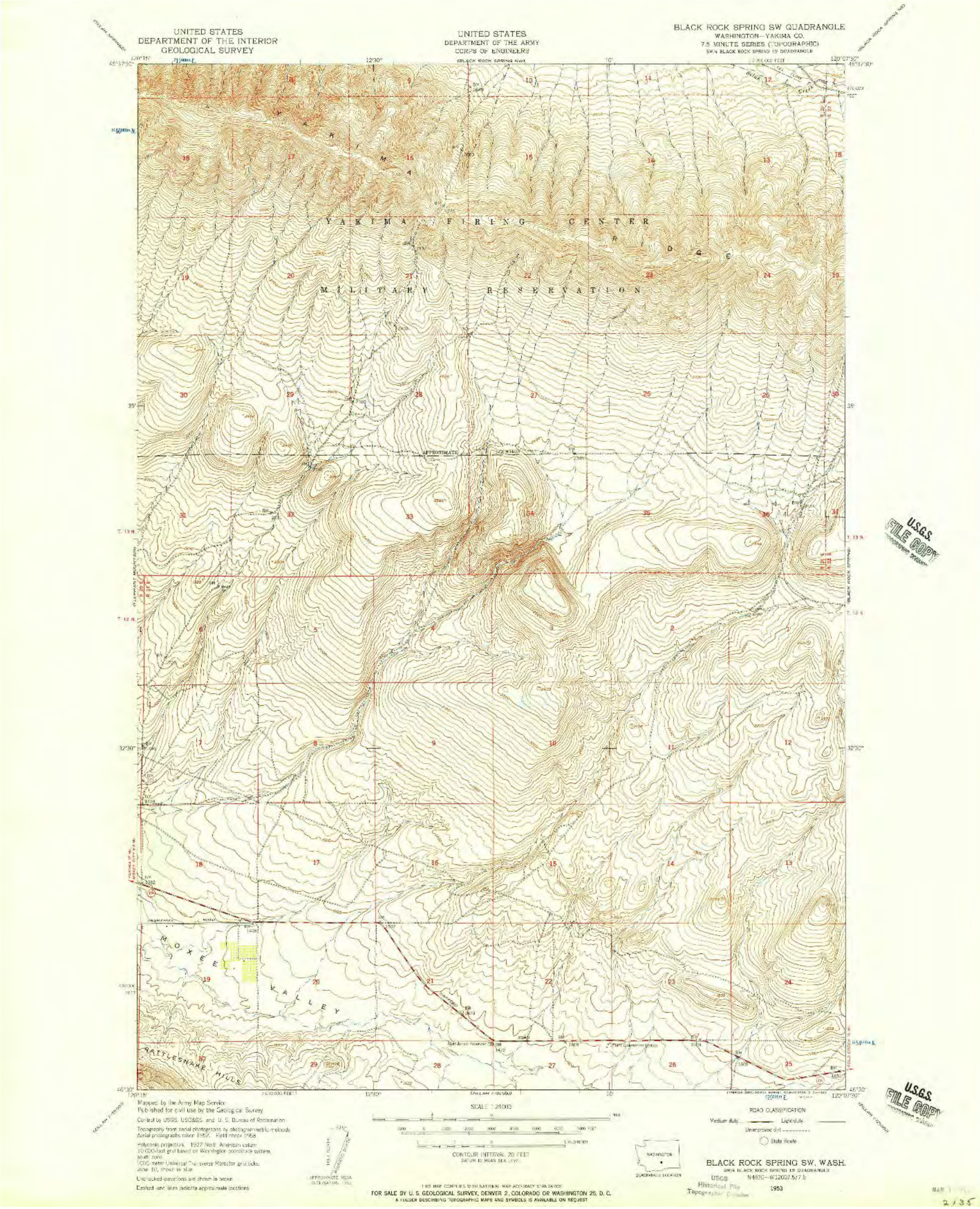
863


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
UNITED STATES
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
BLACK ROCK SPRING SW QUADRANGLE
WASHINGTON YAKIMA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
YAKIMA FIRING CENTER
MILITARY RESERVATION
RIDGE
MOXEE
VALLEY
RATTLESNAKE HILLS
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
BLACK ROCK SPRING SW, WASH.
1954
PHOTOINSPECTED 1975
USGS HISTORICAL MAP
REC'D FILE COPY


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
UNITED STATES
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
BLACK ROCK SPRING SW QUADRANGLE
WASHINGTON—YAKIMA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW/4 BLACK ROCK SPRING 15' QUADRANGLE
YAKIMA RIDGE
YAKIMA FIRING CENTER
MILITARY RESERVATION
MOXEE VALLEY
RATTLESNAKE HILLS
Mapped by the Army Map Service
Published for civil use by the Geological Survey
Control by USGS, USC&GS, and U. S. Bureau of Reclamation
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1952. Field check 1958
Polyconic projection. 1927 North American datum
10,000-foot grid based on Washington coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 10, shown in blue
Unchecked elevations are shown in brown
Dashed land lines indicate approximate locations
APPROXIMATE MEAN DECLINATION, 1953
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 2, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
Medium duty
Light-duty
Unimproved dirt
State Route
WASHINGTON
QUADRANGLE LOCATION
BLACK ROCK SPRING SW, WASH.
SW/4 BLACK ROCK SPRING 15' QUADRANGLE
N4630—W12007.5/7.5
1953
USGS
Historical File
Topographic Division
U.S.G.S.
FILE COPY
2/35


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
UNITED STATES
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
BLACK ROCK SPRING SW QUADRANGLE
WASHINGTON—YAKIMA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
YAKIMA FIRING CENTER
RIDGE
MILITARY RESERVATION
MOXEE VALLEY
RATTLESNAKE HILLS
Mapped by the Army Map Service
Published for civil use by the Geological Survey
Control by USGS, USC&GS, and U. S. Bureau of Reclamation
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1952. Field check 1958
Polyconic projection. 1927 North American datum
10,000-foot grid based on Washington coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 10, shown in blue
Unchecked elevations are shown in brown
Dashed land lines indicate approximate locations
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 2, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
Medium duty
Light-duty
Unimproved dirt
State Route
WASHINGTON
QUADRANGLE LOCATION
BLACK ROCK SPRING SW, WASH.
SW/4 BLACK ROCK SPRING 15' QUADRANGLE
N4630—W12007.5/7.5
1953
USGS
Historical File
Topographic Division
U.S.G.S.
FILE COPY

Appendix D:

Survey Results Maps

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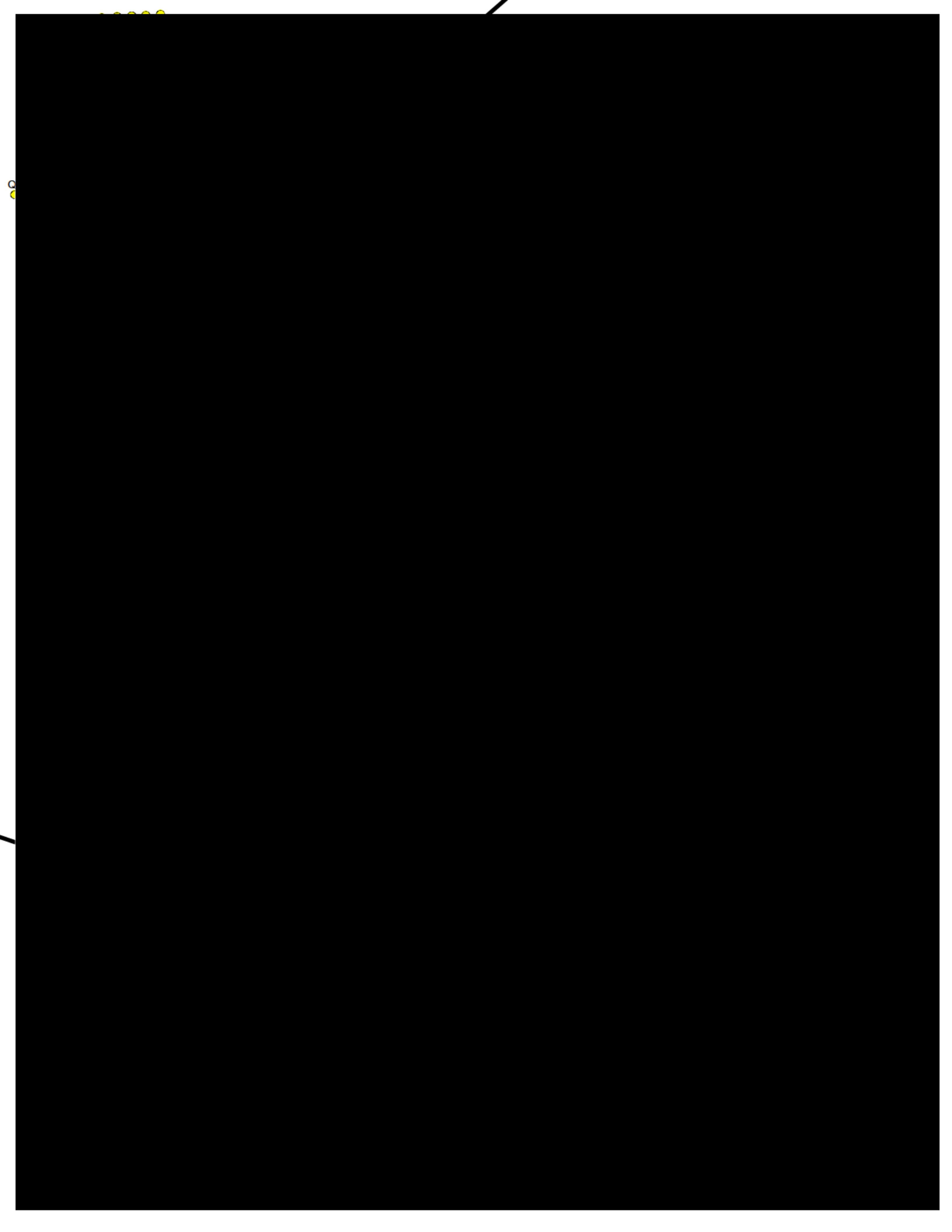

Appendix E:

DAHP Resource Forms

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[redacted]

Thursday, September 3, 2020

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Historic Property Report

Resource Name: GP-DM-01 Property ID: 722140

Location

Address:	WA-24, Moxee, Washington, 98936
Tax No/Parcel No:	21120832001
Geographic Areas:	BLACK ROCK SPRING SW Quadrangle, Yakima County, YAKIMA EAST Quadrangle, T12R21E08, T12R19E01

Information

Number of stories: N/A

Construction Dates:

Construction Type	Year	Circa
Built Date	1950	

Historic Use:

Category	Subcategory
Domestic	Domestic - Single Family House
Domestic	Domestic - Single Family House

Historic Context:

Category
Agriculture

Architect/Engineer:

Category	Name or Company

Historic Property Report

Resource Name: GP-DM-01 Property ID: 722140

Thematics:

Local Registers and Districts

Name	Date Listed	Notes

Project History

Project Number, Organization, Project Name	Resource Inventory	SHPO Determination	SHPO Determined By, Determined Date
2018-06-04740, , OneEnergy Renewable Goose Prairie Solar Project	5/23/2019	Survey/Inventory	

Photos

Overview of residence (Building 1 to right) and garage (Building 2 to left). May 3, 2019.

Sketch Map

Building 2, west elevation, garage/shop. May 3, 2019.

Building 2, north elevation, garage/shop. May 3, 2019.

Building 2, east elevation, garage/shop. May 3, 2019.

Building 2, south elevation, garage/shop. May 3, 2019.

Interior of Building 1, residence. May 3, 2019.

Building 1, West Elevation, residence. May 3, 2019.

Building 1, North Elevation, residence. May 3, 2019.

Building 1, east elevation, residence. May 3, 2019.

Building 1, south elevation, residence. May 3, 2019.

Historic Property Report

Resource Name: GP-DM-01 Property ID: 722140

Inventory Details - 5/23/2019

Common name:	S. Martinez Livestock, Inc. Residence & Garage
Date recorded:	5/23/2019
Field Recorder:	Julia Mates, Doug Mitchell (Tetra Tech, Inc.)
Field Site number:	GP-DM-01
SHPO Determination	

Detail Information

Characteristics:

Category	Item
Foundation	Concrete - Block
Form Type	Single Dwelling
Roof Type	Gable - Side
Roof Material	Asphalt/Composition - Shingle
Cladding	Wood - Plywood
Structural System	Wood - Prefabricated
Plan	Rectangle

Surveyor Opinion

Property appears to meet criteria for the National Register of Historic Places:	No
Property is located in a potential historic district (National and/or local):	No
Property potentially contributes to a historic district (National and/or local):	No

Significance narrative:

Buildings 1 and 2 are associated with S. Martinez Livestock, Inc., the oldest livestock company in the Yakima Valley area still in operation. While the company has important associations with sheep ranching and agriculture in Yakima Valley, Buildings 1 and 2, a simple residence and garage, are not significantly associated with the S. Martinez Livestock company, as the operation acquired the property in the 1980s and research on S. Martinez Livestock, Inc. and ranching and farming in Yakima Valley did not reveal important associations with the buildings. As such, Buildings 1 and 2 do not demonstrate an association with the broad patterns of history or association with relevant historic contexts of farming and ranching in the Yakima Valley area. They are recommended not eligible for listing in the NRHP under Criterion A.

Under Criterion B, while the buildings are owned by S. Martinez Livestock, Inc., a historically important operation in the Yakima Valley, the historic record does not indicate that these buildings are importantly associated with the achievements of the S. Martinez Livestock, Inc. Furthermore, the length of time the Martinez family business has owned the buildings (since the 1980s) is relatively recent, and there is no historic evidence that the length of time and nature of the association between Buildings 1 and 2 and the Martinez Livestock, Inc. or any other individual owner or occupant is an important one under any relevant contexts. Therefore, the buildings are recommended not eligible under Criterion B.

Building 1, a modest residence, and Building 2, a garage, are simple in design, materials, and style, and are not significant examples of type, period, or method of construction. They are recommended not eligible under Criterion C.

Under Criterion D, in rare instances, buildings can serve as sources of valuable information about historic construction materials or technologies and be significant. However, Buildings 1 and 2 do not appear to be a principal source of important information in this regard and are not recommended eligible under this criterion.

For reasons stated in the NRHP eligibility evaluation, Tetra Tech does not recommend Buildings 1 and 2 as eligible for listing in accordance with the WHR criteria. Buildings 1 and 2 are owned by S. Martinez Livestock, Inc. an important entity in the region; however, these specific buildings do not have documented historical importance that directly associates them with any relevant themes at the local, state, or federal level in any of the areas of significance for WHR eligibility.

Physical description:

GP-DM-01 is located North of State Route 24 and East of Moxee on tax lot 21120832001, in the southwest corner of a broad northeast-southwest running coulee consisting of two relatively intact buildings: a residence and a three-bay garage. There was also diffuse historic-modern refuse scatter. The house (Building 1) and garage (Building 2) are situated near a broad east-to-west trending drainage at the base of a north-to-south sloping hillside, adjacent to Den Beste Road 60 meters to the north. Yakima County assessor records indicate the building was constructed in 1950; however, historic aerials dating from 1964 show neither of the buildings on the land. All photographs of the buildings and its surroundings were taken by Tetra Tech on May3, 2019.

The historic-modern refuse scatter is dispersed across the site and primarily includes refuse: furniture, appliances, clothing, tires, steal barrels, paint cans, rope, steal cable, wood and lumber fragments, plastic fragments and miscellaneous paper products. Between Buildings 1 and 2 is an abandoned 1948-1953 Dodge truck.

The residence is two stories; it is missing all of its doors and all window glazing. It is topped with a moderately-pitched, side gable roof covered in composition shingles. The foundation and first story walls are concrete masonry units, the exterior walls of the second story are covered in horizontal wood, particle board, and plywood, siding. The west (main) façade features a single, machine/equipment-scale door opening (no door is present) adjacent to two square window openings, one of which is infilled with wood and the other having no glazing (Photograph 5). Fenestration at the second story of this façade was metal sliding and what was likely casement sashes, currently without glazing. The north façade (Photograph 6) contains a single, one-over-one hung, wood frame window at the first floor and two sliding sashes (missing glazing) at the second story. The east façade (Photograph 7) contained two square windows at the first floor and three wood-frame, sliding sashes at the second story. The south elevation (Photograph 8) has no window openings; the second story is now covered entirely in particle board. The second floor of the residence's interior has wood floors and appears to have had at least two large rooms.

On the south side of the structure is a large 20-by-50-foot trench and associated "push-pile."

Building 2 is a single story three-bay garage topped with a low-pitched, side gable roof covered in composition shingles. The foundation and walls are constructed with concrete masonry units; plywood is in the gable ends. The main (south) façade features three bays: the center bay has a metal roll-up garage door and is flanked by two bays without doors, as shown in Photograph 9. The north elevation (Photograph 10) has a human-scale doorway (the door is now missing) and two square window openings, each without glazing. The east façade (Photograph 11) has one (currently) empty window frame. The west elevation (Photograph 12) features an identical (currently) empty window frame as on the east elevation; a plywood hatch is set in the gable end. The interior of the building has a dirt floor.

Historic maps and aerials show Buildings 1 and 2 on land predominately vacant with only a few unimproved roads until the 1950s, when these buildings were constructed. The land is owned by S. Martinez Livestock, Inc., who have been the owners since the 1980s. The S. Martinez Livestock, Inc. is the last remaining large-scale range-sheep operation in Washington (Trinidad 2013). The operation began in 1920 when Simon Martinez Senior moved to the United States from Spain, settling in Washington to raise and herd sheep. In 1970, Simon Martinez's family business was running 12,000 sheep on private land as well as on allotments across public ground managed by several federal agencies. The operation currently uses nine allotments, on both private and public land, stretching from Mabton to Peshastin (Jaramillo 2017). In recent years, the company diversified and began growing hops, apples and raising cattle (Jaramillo 2017; Rousoo 2020), which has enabled the company to continue operations and remain the last remaining large-scale operation in Washington state.

Bibliography:

Jaramillo, Sofia. 2017. Martinez Family Preserves Sheepherding Tradition. Yakima Herald.

Rousso, Nick. 2020. Sheep Farming in Washington. Historylink.org Essay 21012. Available at: file:///P:/TtCES_Goose%20Prarie%20Architectural%20Survey/References/Sheep%20Farming%20in%20Washington%20-%20HistoryLink.org.pdf.

Trinidad, Amy. 2013. Washington Producers Continue Generational Businesses. Sheep Industry News.

Historic Property Report

Resource Name: Midway-Moxee No. 1 Transmission Line   Property ID: 676383

Location

Address: 8531 Bittner Rd, Moxee, WA 98901

Geographic Areas: Yakima County, YAKIMA EAST Quadrangle, YAKIMA EAST Quadrangle, T13R19E24, Yakima County

Information

Number of stories: N/A

Construction Dates:

Construction Type	Year	Circa
Built Date	1941	

Historic Use:

Category	Subcategory
Industry/Processing/Extraction	Industry/Processing/Extraction - Energy Facility
Industry/Processing/Extraction	
Industry/Processing/Extraction	Industry/Processing/Extraction - Energy Facility
Industry/Processing/Extraction	

Historic Context:

Category
Industry/Manufacturing

Architect/Engineer:

Category	Name or Company
Builder	Bonneville Power Administrator

Thematics:

Local Registers and Districts

Name	Date Listed	Notes

Project History

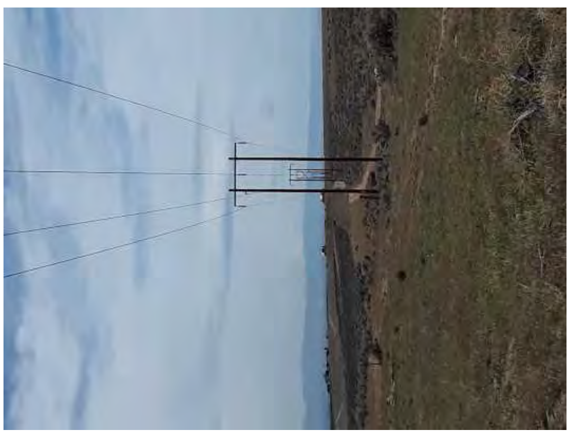
Project Number, Organization, Project Name	Resource Inventory	SHPO Determination	SHPO Determined By, Determined Date
2015-01-00016, , 2014 BPA Midway-Moxee	6/1/2014	Not Determined	
2018-06-04740, , OneEnergy Renewable Goose Prairie Solar Project	4/28/2020	Survey/Inventory	

Historic Property Report

Resource Name: Midway-Moxee No. 1 Transmission Line Property ID: 676383

Photos

Midway-Moxee No. 1 Transmission Line Sketch Map (Goose Prairie Solar Project)



Midway-Moxee No. 1 Transmission Line. April 28, 2020.

Midway-Moxee No. 1 Transmission Line at Pole 26. May 3, 2019.

Midway-Moxee No. 1 Transmission Line. May 3, 2019.

Midway-Moxee No. 1 Transmission Line. May 3, 2019.

Historic Property Report

Resource Name: Midway-Moxee No. 1 Transmission Line Property ID: 676383

Midway-Moxee No. 1 Transmission Line. Detail of structure foundation. April 28, 2020.

Midway-Moxee No. 1 Transmission Line. Detail of structure type. April 28, 2020.

Midway-Moxee No. 1 Transmission Line. Detail of structure type. April 28, 2020.

Midway-Moxee No. 1 Transmission Line. April 28, 2020.

Historic Property Report

Resource Name: Midway-Moxee No. 1 Transmission Line Property ID: 676383

Inventory Details - 6/1/2014

Common name: Midway-Moxee No. 1 115-kV Transmission Line

Date recorded: 6/1/2014

Field Recorder: Aimee Finley

Field Site number:

SHPO Determination

Detail Information

Characteristics:

Category	Item
Structural System	Mixed

Styles:

Period	Style Details
Other	Industrial

Surveyor Opinion

Property appears to meet criteria for the National Register of Historic Places: Yes

Property is located in a potential historic district (National and/or local): No

Property potentially contributes to a historic district (National and/or local): No

Significance narrative: Four studies have focused on the NRHP-eligibility of BPA's electrical grid. In 1987, an NRHP nomination form was completed for BPA's original Master Grid, a system of substations, transmission lines, and transmission support structures built between 1939 and 1945 (Holstine and Lenz 1987). A more detailed historic context for BPA's original Master Grid was developed in a 1998 master's thesis (Curran 1998). These documents provide a wealth of information and analysis on the NRHP-eligibility of BPA properties, but both limit their scope to those properties constructed by 1945. A third study updates and expands the previous two and provides a historic context for BPA facilities built between 1939 and 1974 (Kramer 2010). These three have been superseded by Kramer's 2012 Multiple Property Submission for BPA's transmission system, which identifies the group of related significant properties that comprise BPA's system, presents its historic context, and defines the types of properties that represent that context (Kramer 2012).

Kramer's Multiple Property Submission sets parameters for the evaluation of the NRHP-eligibility of BPA's transmission system properties and defines a period of significance (1939-1974) that is split into two phases. The first phase, from 1939 to 1945, represents the construction of the Master Grid, while the second phase, from 1946 to 1974, represents the post-war expansion of the system (Kramer 2012:2-3). Kramer identifies seven property types, including substations and transmission lines, which may be NRHP-eligible as part of the system. He posits that "the built resources of the Bonneville Power Administration Transmission System, as constructed and modified between 1938 and 1974 and retaining sufficient elements and integrity" are eligible for listing on the NRHP under Criterion A (Kramer 2012:37). Kramer further recommends that facilities that are part of the original 230-kV Master Grid and the Pacific Northwest-Pacific Southwest

HVDC Intertie are additionally eligible under Criterion C (Kramer 2012:38).

According to Kramer (2012:45), at a minimum, eligible transmission lines must meet four standards: they must have been designed or purchased by BPA; they must be owned and operated by BPA; their construction must have been initiated prior to 1975; and they must continue their original function. He cautions that, because of the interconnectedness of the system, modifications and ongoing maintenance would not diminish the integrity of BPA Transmission Network properties significant under Criterion A to the degree expected for more traditional, individual properties (Kramer 2010:112). In addition to meeting these standards, each property must also retain integrity of location, setting, design, materials, workmanship, feeling, and association (Kramer 2012:45-48). To retain integrity, a transmission line should remain in its original corridor as it existed at the end of the period of significance (Kramer 2012:46), it should retain its original support structures or the design of its original structures (Kramer 2012:46-47), and it should maintain its visible uniformity (Kramer 2012:47). A transmission line can retain integrity of location even it its original route has been interrupted by construction of an intermediate substation, as long as it has remained an integral part of the BPA Network (Kramer 2012:46). As defined by Kramer, BPA transmission lines that meet these criteria would clearly convey their significant associations with the overall transmission system and would meet the registration requirements for listing in the NRHP.

The transmission line is considered significant for its association with the development, design, and construction of the technologically advanced BPA Transmission Network. It was designed by BPA; it is owned and operated by BPA; its construction was initiated prior to 1975; and it continues its original function. Furthermore, it appears to retain sufficient integrity to relate that association effectively. Modifications to the line, mainly related to replacing old or deteriorated wood poles or cross-arms, were required to ensure the continued streamlined operation of the BPA system. In assessing the integrity of BPA facilities, it has been found repeatedly that the retention of form and function is more important than the retention of original materials and designs (Curran 1998:174-175; Holstine and Lenz 1987:7-3, 7-4; Kramer 2009:112).

Physical description:

The Midway-Moxee No. 1 transmission line is 33.98 miles long and connects the Midway Substation located on the Hanford Site with the Moxee Substation, located about 2.75 miles north of Moxee, Washington. The address provided in this form is for the Moxee Substation, the western terminus of this transmission line. In general, the transmission line corridor runs parallel to and north of Highway 24.

The line was energized in 1941 and is comprised of 224 wood structures which support the 115-kV conductor. Most of the structures have a two-pole configuration but10 of them are three-pole structures. The three-pole structures are usually located where the transmission line ROW changes angles or enters or exits a substation. Maintenance of the transmission line has been ongoing. Of the 224 structures, 138 (62%) have had one or more poles replaced and most have had cross arms added or replaced. In 2002-2003, a 12-mile-long section of the transmission line, comprised of 92 structures between mile 8 and 20, was almost entirely replaced. Wood poles are expected to have a service life of 55 to 60 years and the remaining original wood structures on the line are at the end of their service life.

Bibliography:

Curran, Christine
1998 A Historic Context for the Transmission of Hydroelectricity by the Bonneville Power Administration, 1939-1945. Unpublished master’s thesis for the Interdisciplinary Studies Program, University of Oregon, Eugene.

Holstine, Craig, and Gloria J. J. Lenz
1987 National Register of Historic Places Registration Form for the Bonneville Power Administration Master Grid. Submitted to the Washington Department of Archaeology and Historic Preservation, Olympia.

Kramer, George
2009 Corridors of Power: The Bonneville Power Administration Transmission Network Historic Context Statement (Draft). Prepared for the Bonneville Power Administration, Portland, OR.
2010 Bonneville Power Administration Transmission System National Register Multiple Property Submittal (Draft). Prepared for the Bonneville Power Administration, Portland, OR.

Historic Property Report

Resource Name: Midway-Moxee No. 1 Transmission Line Property ID: 676383

Inventory Details - 4/28/2020

Common name: Midway-Moxee No. 1 Transmission Line

Date recorded: 4/28/2020

Field Recorder: Julia Mates, Brady Berger (Tetra Tech, Inc.)

Field Site number: Midway-Moxee Transmission Line

SHPO Determination

Detail Information

Surveyor Opinion

Property appears to meet criteria for the National Register of Historic Places: Yes

Property is located in a potential historic district (National and/or local): No

Property potentially contributes to a historic district (National and/or local): No

Significance narrative: This recording is specifically for the segment of the Midway-Moxee Transmission Line within the Goose Prairie Solar Project (DAHP Project #2018-06-04740).
The Midway-Moxee Transmission Line No.1 meets all of the requirements for eligibility and integrity listed in the MPDF for transmission lines eligible for listing as contributing elements of the BPA Transmission Network constructed between 1938 and 1974 under Criterion A. The line is associated specifically with the Master Grid Development (1938-1945) of the network.
The Midway-Moxee Transmission Line has undergone alterations associated with the successful transmission of electricity. These alterations are considered normal, consisting of in-kind repair and maintenance, and upkeep of transmission lines, which the MPDF states is part of the functionality of transmission line systems and does not affect the integrity of their associations. This is especially the case if the appearance of the transmission line and its components are unchanged, as was the case in 2016-2018, when the line was rebuilt, with very minor alterations not noticeable from the public right-of-way.
The transmission line meets the eligibility requirements of the MPDF and retains all seven aspects of integrity, also outlined in the MPDF. As such, it is recommended eligible for listing in the NRHP as a contributing element to the BPA Transmission Network under Criterion A. It is not recommended that the transmission line is eligible under Criterion C because the historical record does not indicate it is significant for its design or technological aspects.
The Midway-Moxee Transmission Line is recommended eligible for listing in the WHR under the following areas of significance:
• The property is directly connected to specific activities or events which had a lasting impact on the community or region
• The property displays strong patterns of land use or alterations of the environment which occurred during the historic period
• The property has strong artistic, architectural, or engineering qualities, or displays unusual materials or craftwork belonging to a historic era

Physical description:

This recording is specifically for the segment of the Midway-Moxee Transmission Line within the Goose Prairie Solar Project (DAHP Project #2018-06-04740).

Constructed in 1940 and energized in 1941, the Midway-Moxee No. 1 (Midway-Moxee Transmission Line) Transmission Line is 34 miles long. It originates at the BPA Midway Station in Benton County and terminates at the BPA Moxee Substation in Moxee, Yakima County. The transmission corridor is approximately 800 feet wide, and in some places, the line runs adjacent to multiple transmission lines including the Midway-Grandview Transmission Line, the Wine Country-Midway No. 1 Transmission Line, and the North Bonneville-Midway No. 1 Transmission Line. Only the Midway-Moxee Transmission Line is the subject of this assessment. The transmission line corridor is on approximately 4.8 miles of public land, under the jurisdiction of several entities including the U.S. Department of Energy, BLM, and Washington State Department of Natural Resources (BPA 2016).

The Midway-Moxee Transmission Line serves the Benton Rural Electric Association. The line currently operates at 115 kV and is comprised of 229 two-pole wood structures and 15 three-pole wood structures. The structure height range is 38 to 113 feet above ground, and the line consists of fiber optic cable 0.85 inch in diameter.

From 2016 through 2018, the Midway-Moxee line was rebuilt due to deterioration of rot and aging wood pole structures. This deterioration is typical for wood poles between 55 and 60 years old. The line's conductors had not been replaced in decades, and in order to ensure uninterrupted power service to customers in eastern Washington, the components of the line—the wood pole structures, fiber optic cable, and conductors—were replaced. The replacement components look similar to the original transmission line components in materials, design, and appearance; there was no increased load or change in voltage. The line remained in its original alignment and within the same transmission line corridor. The wood pole structures were raised 28 feet from the original wood poles, but they remained visually consistent in materials and design. Ground wire, counterpoise, and conductors were installed, and the overhead fiber optic cable was replaced. Five new pole structures were added to the line. Most replacement poles were constructed within 5 feet of their original location, while a few structures were placed more than 10 feet from their original location. Overhead ground wires and conductors were also removed and replaced (BPA 2016).

The MPDF for BPA's Transmission System in the Northwest (Kramer 2012) was prepared as a guide in identifying BPA transmission lines and their eligibility for listing in the NRHP. The Midway-Moxee Transmission Line was constructed in 1940 and energized in 1941. The Midway-Moxee Transmission line was designed by the BPA, is owned and operated by the BPA, was energized prior to 1975, and continues its original function (the transmission of energy).

Bibliography:

BPA (Bonneville Power Administration). 2016. Midway-Moxee Rebuild and Midway-Grandview Upgrade Transmission Line Project: Final Environmental Assessment. Bonneville Power Administration. Electronic document, https://www.energy.gov/sites/prod/files/2016/03/f30/EA-1951%20Midway-Moxee-Grand_FEA_2016-03.pdf, accessed May 2, 2020.

Kramer, George. 2012. Bonneville Power Administration [BPA]Pacific Northwest Transmission System. U.S. Department of the Interior. National Parks Service. National Register of Historic Places Multiple Property Documentation Form.

Appendix F:

Shovel Probe Results Table

STP	STP#	Result	Depth	Notes
A	A1	Negative	49cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels
A	A2	Negative	52cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels
A	A3	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels
A	A4	Negative	56cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels
A	A5	Negative	40cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels, rock impasse
A	A6	Negative	56cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels, few and fine rootlets
A	A7	Negative	38cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels, few and fine rootlets , rock impasse
A	A8	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels, few and fine rootlets
A	A9	Negative	45cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels, few and fine rootlets, rock impasse
A	A10	Negative	54cmbs	10 YR 5/4 yellowish brown, silt loam, friable, non-plastic, moderate to loose compaction. X<10% sub-rounded to sub-angular pebbles and gravels
B	B1	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles
B	B2	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles
B	B3	Negative	42cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
B	B4	Negative	40cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
B	B5	Negative	40cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
B	B6	Negative	40cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, moved due to location in small drainage, rock impasse
B	B7	Negative	37cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
B	B8	Negative	41cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
B	B9	Negative	33cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
B	B10	Negative	40cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C1	Negative	42cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C2	Negative	42cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C3	Negative	34cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C4	Negative	32cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C5	Negative	44cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C6	Negative	29cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C7	Negative	34cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C8	Negative	32cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C9	Negative	38cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
C	C10	Negative	36cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction. X<15% sub-rounded to sub-angular pebbles and cobbles, rock impasse
D	D1	Negative	41cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<15% sub-rounded to sub-angular gravels, pebbles and cobbles, rock impasse
D	D2	Negative	44cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<15% sub-rounded to sub-angular gravels, pebbles and cobbles rock impasse
D	D3	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<20% sub-rounded to sub-angular gravels, pebbles and cobbles
D	D4	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<20% sub-rounded to sub-angular gravels, pebbles and cobbles. strat II change at 38cmbs 10YR 6/3
D	D5	Negative	59cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<20% sub-rounded to sub-angular gravels, pebbles and cobbles
D	D6	Negative	55cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<15% sub-rounded to sub-angular gravels, pebbles and cobbles
D	D7	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<15% sub-rounded to sub-angular gravels, pebbles and cobbles
D	D8	Negative	43cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<15% sub-rounded to sub-angular gravels, pebbles and cobbles, rock impasse
D	D9	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<15% sub-rounded to sub-angular gravels, pebbles and cobbles
D	D10	Negative	45cmbs	10 YR 5/3 brown, silt loam, friable, non-plastic, moderate compaction, fine & Few rootlets, X<15% sub-rounded to sub-angular gravels, pebbles and cobbles, rock impasse
E	E1	Negative	60cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction. X<10% angular to sub-angular pebbles
E	E2	Negative	53cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction. X<10% angular to sub-angular pebbles

STP	STP#	Result	Depth	Notes
E	E3	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction. X<10% angular to sub-angular pebbles
E	E4	Negative	62cmbs	10 YR 5/3 brown, silt loam, friable, medium compaction. X<10% angular to sub-angular pebbles
E	E5	Negative	51cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction. X<10% angular to sub-angular pebbles
E	E6	Negative	31cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction. X<10% angular to sub-angular pebbles, rock impasse
E	E7	Negative	46cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction. X<25% angular to sub-angular pebbles, rock impasse
E	E8	Negative	30cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction. X<5% angular to sub-angular pebbles, rock impasse
E	E9	Negative	36cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction. X<10% angular to sub-angular pebbles, rock impasse
E	E10	Negative	36cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction. X<10% angular to sub-angular pebbles, rock impasse
F	F1	Negative	41cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles, rock impasse
F	F2	Negative	46cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles, rock impasse
F	F3	Negative	56cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
F	F4	Negative	54cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles, calcium carbonate inclusions
F	F5	Negative	51cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
F	F6	Negative	54cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
F	F7	Negative	47cmbs	10 YR 5/4 yellowish brown, silt loam, friable, medium compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles, rock impasse
F	F8	Negative	60cmbs	10 YR 5/4 yellowish brown, silt loam, friable, loose compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
F	F9	Negative	60cmbs	10 YR 5/4 yellowish brown, silt loam, friable, loose compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
F	F10	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, loose compaction, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
G	G1	Negative	55cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
G	G2	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
G	G3	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
G	G4	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
G	G5	Negative	57cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
G	G6	Negative	51cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
G	G7	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
G	G8	Negative	53cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
G	G9	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, loose compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
G	G10	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, loose compaction, few & fine rootlets, X<5% sub-rounded to sub-angular pebbles & cobbles
H	H1	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular gravels
H	H2	Negative	43cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular gravels, rock impasse
H	H3	Negative	43cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular gravels, rock impasse
H	H4	Negative	33cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular gravels, rock impasse
H	H5	Negative	53cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular gravels
H	H6	Negative	34cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular gravels, rock impasse
H	H7	Negative	31cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular gravels, rock impasse
H	H8	Negative	48cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular gravels, rock impasse
H	H9	Negative	52cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular pebbles & cobbles
H	H10	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<10% angular to sub-angular gravels
I	I1	Negative	46cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles, rock impasse
I	I2	Negative	46cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles, rock impasse
I	I3	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles
I	I4	Negative	42cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles, rock impasse
I	I5	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles
I	I6	Negative	38cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles, rock impasse
I	I7	Negative	50cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles
I	I8	Negative	57cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles

STP	STP#	Result	Depth	Notes
I	I9	Negative	52cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles
I	I10	Negative	45cmbs	10 YR 5/4 yellowish brown, silt loam, friable, moderate compaction, few & fine rootlets, X<15% sub-rounded to sub-angular pebbles & cobbles, rock impasse
J	J1	Negative	37cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles, rock impasse
J	J2	Negative	32cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles, rock impasse
J	J3	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
J	J4	Negative	52cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles,
J	J5	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles. Strat II 10YR 7/2 light gray, silt loam, moderately compact, well sorted, calcium carbonate inclusions, X<15% gravels
J	J6	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
J	J7	Negative	55cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
J	J8	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
J	J9	Negative	60cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
J	J10	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
K	K1	Negative	54cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
K	K2	Negative	57cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
K	K3	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
K	K4	Negative	52cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
K	K5	Negative	48cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles. Strat II 10YR 6/3 pale brown, well sorted, compact, X<10% sub-rounded pebbles, rock impasse
K	K6	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
K	K7	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
K	K8	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
K	K9	Negative	65cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
K	K10	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
L	L1	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
L	L2	Negative	55cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
L	L3	Negative	44cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles, rock impasse
L	L4	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
L	L5	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
L	L6	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
L	L7	Negative	44cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles, rock impasse
L	L8	Negative	44cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles, rock impasse
L	L9	Negative	55cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
L	L10	Negative	50cmbs	10 YR 5/3 brown, silt loam, friable, moderate compaction, well sorted, few & fine rootlets, X<10% sub-rounded to sub-angular pebbles & cobbles
M	M1	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles
M	M2	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles
M	M3	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles
M	M4	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles
M	M5	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles
M	M6	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles
M	M7	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles
M	M8	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles
M	M9	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles
M	M10	Negative	50cmbs	5YR 5/4 light reddish brown, silt loam, moderate compaction, friable, nonplastic, X<10% sub-rounded pebbles. Ash layer at 30cmbs
N	N1	Negative	50cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles
N	N2	Negative	45cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles, rock impasse

STP	STP#	Result	Depth	Notes
N	N3	Negative	45cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles, rock impasse
N	N4	Negative	50cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles
N	N5	Negative	50cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles, calcium carbonate inclusions
N	N6	Negative	50cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles, calcium carbonate inclusions
N	N7	Negative	42cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles, calcium carbonate inclusions, rock impasse
N	N8	Negative	30cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles, calcium carbonate inclusions, rock impasse
N	N9	Negative	40cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles, rock impasse
N	N10	Negative	48cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, loose-moderate compaction, X<15% sub-rounded to sub-angular pebbles & cobbles, rock impasse
O	O1	Negative	50cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
O	O2	Negative	60cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
O	O3	Negative	50cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
O	O4	Negative	50cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
O	O5	Negative	55cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
O	O6	Negative	55cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
O	O7	Negative	50cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
O	O8	Negative	50cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
O	O9	Negative	50cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
O	O10	Negative	50cmbs	5YR 5/2 reddish gray, silt loam, friable, non-plastic, well sorted, X<10% sub-rounded pebbles and gravels
P	P1	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles
P	P2	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles
P	P3	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles
P	P4	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles
P	P5	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles
P	P6	Negative	55cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
P	P7	Negative	37cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions, rock impasse
P	P8	Negative	39cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions, rock impasse
P	P9	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles
P	P10	Negative	40cmbs	10YR 5/4 yellowish brown, silt loam, loose-moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions, rock impasse
Q	Q1	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
Q	Q2	Negative	55cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
Q	Q3	Negative	55cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
Q	Q4	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
Q	Q5	Negative	57cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
Q	Q6	Negative	53cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
Q	Q7	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
Q	Q8	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
Q	Q9	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
Q	Q10	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, moderate compaction, friable, non-plastic, X<10% sub-rounded pebbles, calcium carbonate inclusions
R	R1	Negative	50cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions
R	R2	Negative	55cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions
R	R3	Negative	50cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions
R	R4	Negative	50cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions
R	R5	Negative	50cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions
R	R6	Negative	50cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions
R	R7	Negative	50cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions
R	R8	Negative	50cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions

STP	STP#	Result	Depth	Notes
R	R9	Negative	50cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions
R	R10	Negative	40cmbs	5YR 4/3 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% pebbles and gravels, calcium carbonate inclusions, rock impasse
S	S1	Negative	50cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels
S	S2	Negative	50cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels
S	S3	Negative	50cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels
S	S4	Negative	55cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels, calcium carbonate inclusions
S	S5	Negative	32cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels, calcium carbonate inclusions, rock impasse
S	S6	Negative	51cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels
S	S7	Negative	50cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels, calcium carbonate inclusions
S	S8	Negative	52cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels, calcium carbonate inclusions
S	S9	Negative	52cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels, calcium carbonate inclusions
S	S10	Negative	55 cmbs	10YR 5/4 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-angular to sub-rounded pebbles and gravels, calcium carbonate inclusions
T	T1	Negative	55cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles
T	T2	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles
T	T3	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles
T	T4	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles
T	T5	Negative	45cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles, rock impasse
T	T6	Negative	35cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles, rock impasse
T	T7	Positive	60cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles. 2 chalcedony tertiary flakes level 3, 20-30cmbs (radials listed at bottom of table)
T	T8	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles
T	T9	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles
T	T10	Negative	55cmbs	5YR 5/4 reddish brown, silt loam, moderate compaction, well sorted, friable, few and fine rootlets, X<10% sub-rounded pebbles
U	U1	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, well sorted, friable, non-plastic, X<10% subangular pebbles. Strat II 10YR 5/3 brown, silt loam, non-plastic, increase in compaction, X<15% subangular pebbles
U	U2	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, well sorted, moderately compact friable, non-plastic, X<10% subangular pebbles
U	U3	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, well sorted, moderately compact friable, non-plastic, X<10% subangular pebbles
U	U4	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, well sorted, moderately compact friable, non-plastic, X<10% subangular pebbles
U	U5	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, well sorted, moderately compact friable, non-plastic, X<10% subangular pebbles
U	U6	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, well sorted, moderately compact friable, non-plastic, X<10% subangular pebbles
U	U7	Negative	55cmbs	5YR 5/4 reddish brown, silt loam, well sorted, moderately compact friable, non-plastic, X<10% subangular pebbles
U	U8	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, well sorted, moderately compact friable, non-plastic, X<10% subangular pebbles
U	U9	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, well sorted, moderately compact friable, non-plastic, X<10% subangular pebbles
U	U10	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, well sorted, moderately compact friable, non-plastic, X<10% subangular pebbles
V	V1	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions
V	V2	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions
V	V3	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions
V	V4	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions
V	V5	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions
V	V6	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions

STP	STP#	Result	Depth	Notes
V	V7	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions
V	V8	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions
V	V9	Negative	35cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions, rock impasse
V	V10	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable peds, non-plastic, X<10% sub-rounded pebbles and gravels, calcium carbonate inclusions
W	W1	Negative	55cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions
W	W2	Negative	50cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions
W	W3	Negative	53cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions
W	W4	Negative	55cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions
W	W5	Negative	50cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions
W	W6	Negative	37cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions, rock impasse
W	W7	Negative	37cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions, rock impasse
W	W8	Negative	50cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions
W	W9	Negative	52cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions
W	W10	Negative	55cmbs	10YR 5/3 brown, silt loam, friable, non-plastic, few and fine rootlets, loose-moderate compaction, X<10% sub-rounded pebbles, few calcium carbonate inclusions
X	X1	Negative	26cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions, rock impasse
X	X2	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions
X	X3	Negative	54cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions
X	X4	Negative	55cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions
X	X5	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions
X	X6	Negative	55cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions
X	X7	Negative	45cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions, rock impasse
X	X8	Negative	55cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions
X	X9	Negative	50cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions
X	X10	Negative	37cmbs	10YR 5/4 yellowish brown, silt loam, friable, non-plastic, few and fine rootlets, X<15% sub-rounded to sub-angular pebbles and cobbles, calcium carbonate inclusions, rock impasse
T7 radial	T7-1N	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% sub-rounded pebbles and gravels
T7 radial	T7-7S	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% sub-rounded pebbles and gravels
T7 radial	T7-1E	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% sub-rounded pebbles and gravels
T7 radial	T7-1W	Negative	50cmbs	5YR 5/4 reddish brown, silt loam, moderately compact, friable, non-plastic, X<10% sub-rounded pebbles and gravels
GP-BB-02 E	02-02	Negative	60cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels. Strat II 10YR 6/3 pale brown, silt loam, well sorted, moderate compaction, X<15% fine gravels
GP-BB-02 E	02-01	Negative	43cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-02 E	02-03	Negative	55cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels
GP-BB-02 E	02-04	Negative	56cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels
GP-BB-02 E	02-05	Negative	50cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels
GP-BB-02 E	02-06	Negative	40cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-02 E	02-07	Negative	42cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-02 E	02-08	Negative	50cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels
GP-BB-02 E	02-09	Negative	45cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-02 E	02-10	Negative	54cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels
GP-BB-02 E	02-11	Negative	45cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-02 E	02-12	Negative	53cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels
GP-BB-03 E	03-01	Negative	53cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels
GP-BB-03 E	03-02	Negative	31cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse

STP	STP#	Result	Depth	Notes
GP-BB-03 E	03-03	Positive	50cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels. chert flake at 30cmbs
GP-BB-03 E	03-04	Negative	30cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-03 E	03-05	Negative	35cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-03 E	03-06	Negative	60cmbs	10YR 5/3 brown, silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels. Strat II 10YR 4/3 brown, coarse sand, well sorted, loose compaction. Strat III 10YR 5/3
GP-BB-03 E	03-07	Negative	19cmbs	10YR 5/3 silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-03 E	03-08	Negative	33cmbs	10YR 5/3 silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-05 F	ISO1-1	Negative	30cmbs	10YR 5/3 silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-05 F	ISO1-02	Negative	21cmbs	10YR 5/3 silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels, rock impasse
GP-BB-05 F	ISO1-03	Negative	52cmbs	10YR 5/3 silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels
GP-BB-05 F	ISO1-04	Negative	54cmbs	10YR 5/3 silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels
GP-BB-03 E	03-09	Negative	50cmbs	10YR 5/3 silt loam, friable, well sorted, loose to moderate compaction, X<15% sub-rounded gravels

Appendix G:

Unanticipated Discovery Plan

Unanticipated Discovery Plan for the Goose Prairie Solar Energy Project

In the event unrecorded archaeological resources are identified during Project construction or operation, work within 30 meters (100 feet) of the find shall be halted and directed away from the discovery until a Secretary of the Interior-qualified archaeologist assesses the resource and its significance (i.e., NRHP and WHR eligibility). The archaeologist, in consultation with the lead state or local agency, DAHP, Project personnel, any interested tribes, and any other responsible public agency, shall make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible for listing on the NRHP or WHR.

If human remains and/or associated grave goods are inadvertently encountered during Project activities, the Washington State protocol for inadvertent discovery of human remains per RCW 68.50, RCW 27.44, and RCW 68.60 must be immediately initiated. All activity that may cause further disturbance to the remains shall cease and the area secured and protected from further disturbance. The presence of skeletal remains will be immediately reported to the County Coroner and local law enforcement. The remains will not be touched, moved, or further disturbed. The County Coroner will assume jurisdiction over the human skeletal remains and determine whether those remains are forensic or non-forensic. If the County Medical Examiner or Coroner determines the remains are non-forensic, then they will report that finding to DAHP who will then take jurisdiction over the remains. DAHP will notify any appropriate cemeteries and all affected tribes of the find. The State Physical Anthropologist will decide whether the remains are Native American and report that finding to any appropriate cemeteries and the affected tribes. DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains.

Although excavation work in the immediate area of a human remains find will not resume until assessment has been completed, excavation work may continue in other parts of the Project that have been surveyed for cultural resources. Due to the sensitive nature of such a find, human remains should never be left unattended. No work will resume in the area of a human remains discovery until written authorization has been received from DAHP.

ATTACHMENT I

Acoustic Assessment Report

Goose Prairie Solar Project
Acoustic Assessment Report

Prepared for:

OER WA Solar 1 LLC

Prepared by:

TETRA TECH

January 2020

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Acronyms and abbreviations

µPa	microPascal
Applicant	OER WA Solar 1, LLC
BPA	Bonneville Power Administration
CRP	Conservation Reserve Program
dB	decibel
dBA	A-weighted decibel
dBL	linear decibel
EDNA	Environmental Designation for Noise Abatement
EFSEC	Energy Facility Site Evaluation Council
EPA	United States Environmental Protection Agency
Facility	Goose Prairie Solar Project
FHWA	Federal Highway Administration
Hz	hertz
ISO	International Organization for Standardization
L_{dn}	day-night average sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_P	sound pressure level
L_w	sound power level
kV	kilovolt
MW	megawatt
NSR	noise sensitive receptor
POI	point of interconnection
SR-24	State Route 24
Tetra Tech	Tetra Tech, Inc.
WAC	Washington Administrative Code

1.0 Introduction

OER WA Solar 1, LLC (the Applicant) proposes to construct and operate the Goose Prairie Solar Project (the Facility), an 80-megawatt (MW) solar photovoltaic project with an optional battery storage system capable of storing up to 80 MW of energy located in Yakima County, Washington. The Facility will be located approximately 8 miles east of the city of Moxee along Washington State Route 24 (SR-24), also known as Hanford Road, between its intersections with Morris Lane and Desmaris Cutoff. The Facility will consist of solar arrays and associated infrastructure including solar field of photovoltaic panels, inverters with integrated transformers, optional battery storage and an on-site substation. The Facility is currently designed to utilize lithium-ion battery energy technology; however, pending commercial interest, the Facility could be designed to utilize flow battery technology. Lithium-ion battery technology would be distributed throughout the Facility Area while the flow battery technology would be installed in a centralized location within the Facility Area. The Facility will have one point of interconnection (POI) with the electric grid with the Bonneville Power Administration's (BPA) Midway to Moxee 115-kilovolt (kV) transmission line, which bisects the Facility.

Tetra Tech, Inc. (Tetra Tech) has prepared this acoustic assessment for the Facility, evaluating potential sound impacts relative to the applicable noise regulations prescribed in the Washington Administrative Code (WAC). The existing ambient acoustic environment was characterized based on land use, population density, and proximity to major roadways. An acoustic modeling analysis was conducted simulating sound produced during both construction and operation. Operational sound sources consisted primarily of the inverters, step-up transformers, battery storage, and transformer at the on-site substation. Modeled sound levels from Facility operation were evaluated against the WAC noise regulations. The overall objectives of this assessment were to: 1) identify Facility sound sources and estimate sound propagation characteristics; 2) computer-simulate sound levels using internationally accepted calculation standards; and 3) confirm that the Facility will operate in compliance with the applicable noise regulations. Acoustic modeling results demonstrate that the Facility will successfully comply with all applicable WAC noise regulations at the closest property lines and nearby noise sensitive receptors (NSRs; i.e., residences).

1.1 Facility Area

The Facility will be located across a portion of eight parcels which together constitute the "Facility Parcels." Three of the parcels are owned by the Estate of Willamae G Meacham and together are known herein as the "Meacham Property," and the other five parcels are owned by S. Martinez Livestock, Inc. and together are known herein as the "Martinez Property". The Applicant has entered into long-term land leases with the landowners for adequate acreage to accommodate the Facility. All the parcels in the Facility area are zoned agricultural (AG). In Yakima County, "power generating facilities" are a Type 3 use in the AG zoning district and may be authorized subject to the approval of a conditional use permit.

The Meacham Property is currently in the Conservation Reserve Program (CRP) which is set to expire on 9/30/2022. The habitat type within the portion that will be utilized for the Facility is mainly CRP with a small component of Pasture Mixed Environs and the vegetation consists primarily of non-native species such as downy brome, crested wheat, Russian thistle, mustard species, and others. There is no current agricultural use, though a portion of the area was previously used for row crops. No existing buildings are present on the Meacham Property.

The Martinez Property has two distinct areas: four of the parcels may be used for solar facilities and one parcel may be utilized for an aerial easement for the interconnection tie-line depending on the final design of the interconnection with BPA. The area that may be utilized for solar facilities has a historic and current use of grazing and has habitat types categorized as a mix of Eastside Grasslands, Shrub-steppe and Pasture Mixed Environs with predominantly native vegetation including sagebrush and wheatgrass; much of the shrub-steppe area is degraded in its quality due to heavy grazing. The area which may be utilized for an aerial easement is currently planted with an orchard. BPA's Midway-to-Moxee 115-kV transmission line, which the Facility directly relies on, crosses the Martinez Property. A few agricultural buildings exist on the Martinez Property, but none are within the Facility Area Extent.

Figure 1 provides an overview of the Facility Area and provides the locations of nearby residences, which are considered NSRs.

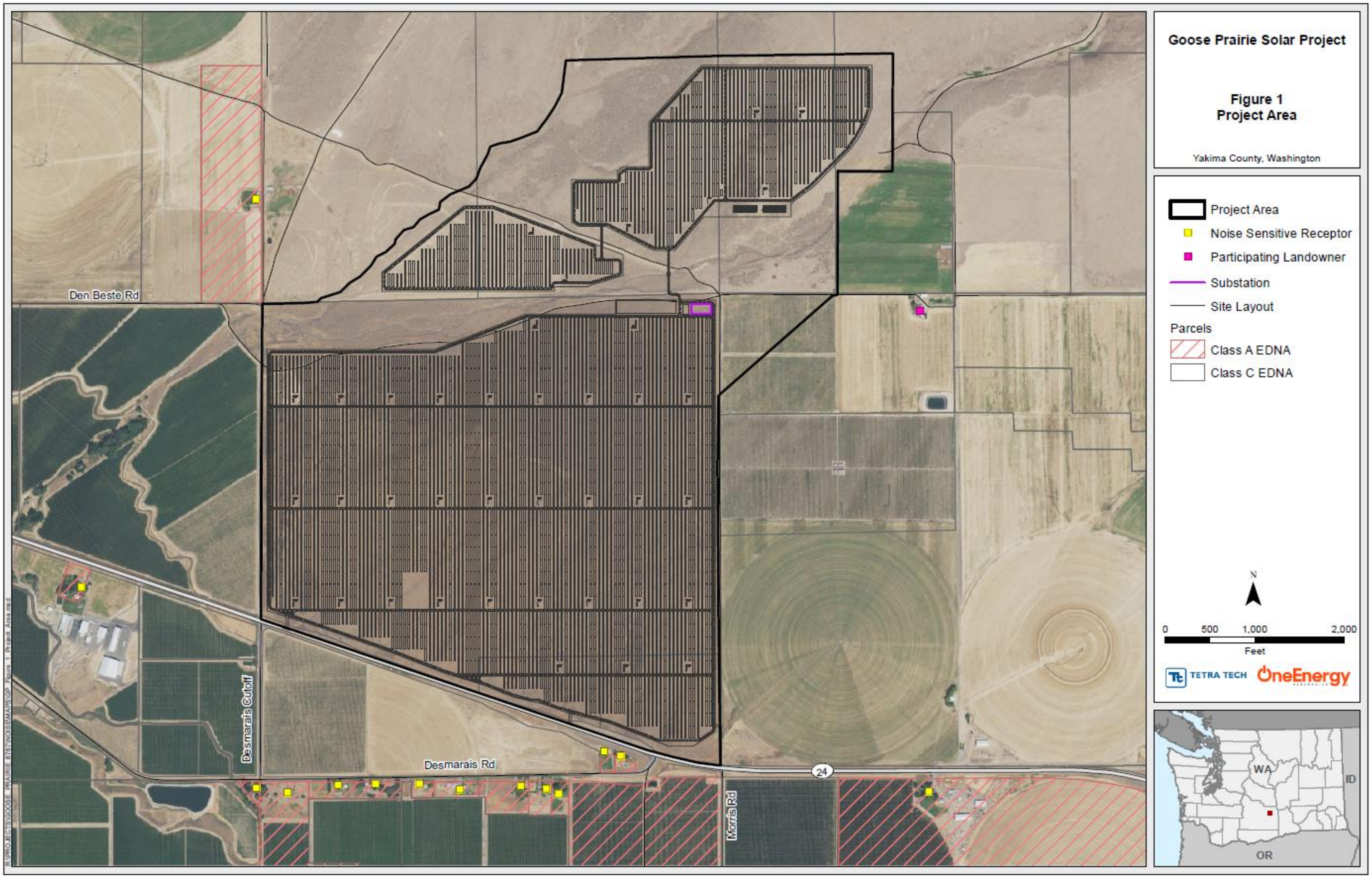

Figure 1. Facility Area Extent

1.2 Acoustic Metrics and Terminology

All sounds originate with a source, whether it is a human voice, motor vehicles on a roadway, or a combustion turbine. Energy is required to produce sound and this sound energy is transmitted through the air in the form of sound waves – tiny, quick oscillations of pressure just above and just below atmospheric pressure. These oscillations, or sound pressures, impinge on the ear, creating the sound we hear. A sound source is defined by a sound power level (L_W), which is independent of any external factors. By definition, sound power is the rate at which acoustical energy is radiated outward and is expressed in units of watts.

A source sound power level cannot be measured directly. It is calculated from measurements of sound intensity or sound pressure at a given distance from the source outside the acoustic and geometric near- field. A sound pressure level (L_P) is a measure of the sound wave fluctuation at a given receiver location and can be obtained through the use of a microphone or calculated from information about the source sound power level and the surrounding environment. The sound pressure level in decibels (dB) is the logarithm of the ratio of the sound pressure of the source to the reference sound pressure of 20 microPascals (μPa), multiplied by 20.1. The range of sound pressures that can be detected by a person with normal hearing is very wide, ranging from about 20 μPa for very faint sounds at the threshold of hearing, to nearly 10 million μPa for extremely loud sounds such as a jet during take-off at a distance of 300 feet.

Broadband sound includes sound energy summed across the entire audible frequency spectrum. In addition to broadband sound pressure levels, analysis of the various frequency components of the sound spectrum can be completed to determine tonal characteristics. The unit of frequency is hertz (Hz), measuring the cycles per second of the sound pressure waves. Typically, the frequency analysis examines 11 octave bands ranging from 16 Hz (low) to 16,000 Hz (high). Since the human ear does not perceive every frequency with equal loudness, spectrally-varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system and is represented in A-weighted decibels (dBA).

Sound can be measured, modeled, and presented in various formats, with the most common metric being the equivalent sound level (L_{eq}). The L_{eq} has been shown to provide both an effective and uniform method for comparing time-varying sound levels and is widely used in acoustic assessments in the State of Washington. Estimates of noise sources and outdoor acoustic environments, and the comparison of relative loudness are presented in Table 1. Table 2 presents additional reference information on terminology used in the report.

Table 1. Sound Pressure Levels and Relative Loudness of Typical Noise Sources and Acoustic Environments

Noise Source or Activity	Sound Level (dBA)	Subjective Impression
Vacuum cleaner (10 feet)	70	Moderate
Passenger car at 65 miles per hour (25 feet)	65	
Large store air-conditioning unit (20 feet)	60	
Light auto traffic (100 feet)	50	Quiet
Quiet rural residential area with no activity	45	
Bedroom or quiet living room; Bird calls	40	Faint
Typical wilderness area	35	
Quiet library, soft whisper (15 feet)	30	Very quiet
Wilderness with no wind or animal activity	25	Extremely quiet
High-quality recording studio	20	
Acoustic test chamber	10	Just audible
	0	Threshold of hearing

Adapted from: Kurze and Beranek (1988) and EPA (1971a)

Table 2. Acoustic Terms and Definitions

Term	Definition
Noise	Typically defined as unwanted sound. This word adds the subjective response of humans to the physical phenomenon of sound. It is commonly used when negative effects on people are known to occur.
Sound Pressure Level (LP)	Pressure fluctuations in a medium. Sound pressure is measured in dB referenced to 20 μPa, the approximate threshold of human perception to sound at 1,000 Hz.
Sound Power Level (LW)	The total acoustic power of a noise source measured in dB referenced to picowatts (one trillionth of a watt). Noise specifications are provided by equipment manufacturers as sound power as it is independent of the environment in which it is located. A sound level meter does not directly measure sound power.
Equivalent Sound Level (L_{eq})	The L_{eq} is the continuous equivalent sound level, defined as the single sound pressure level that, if constant over the stated measurement period, would contain the same sound energy as the actual monitored sound that is fluctuating in level over the measurement period.
A-Weighted Decibel (dBA)	Environmental sound is typically composed of acoustic energy across all frequencies. To compensate for the auditory frequency response of the human ear, an A-weighting filter is commonly used for describing environmental sound levels. Sound levels that are A-weighted are presented as dBA in this report.
Unweighted Decibels (dBL)	Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL in this report.
Propagation and Attenuation	Propagation is the decrease in amplitude of an acoustic signal due to geometric spreading losses with increased distance from the source. Additional sound attenuation factors include air absorption, terrain effects, sound interaction with the ground, diffraction of sound around objects and topographical features, foliage, and meteorological conditions including wind velocity, temperature, humidity, and atmospheric conditions.

1.3 Noise Regulations and Guidelines

1.3.1 Federal Regulations

There are no federal noise regulations applicable to the Facility.

1.3.2 Washington Administrative Code State Regulations

Environmental noise limits have been established by the Washington Administrative Code (WAC 173-60). WAC 173-60 establishes limits on sounds crossing property boundaries based on the Environmental Designation for Noise Abatement (EDNA) of the sound source and the receiving properties.

- Class A EDNA – Lands where people reside and sleep. They typically include residential property; multiple family living accommodations; recreational facilities with overnight accommodations such as camps, parks, camping facilities, and resorts; and community service facilities including orphanages, homes for the aged, hospitals, and health and correctional facilities.
- Class B EDNA – Lands involving uses requiring protection against noise interference with speech. These typically will include commercial living accommodations; commercial dining establishments; motor vehicle services; retail services; banks and office buildings; recreation and entertainment property not used for human habitation such as theaters, stadiums, fairgrounds, and amusement parks; and community service facilities not used for human habitation (e.g., educational, religious, governmental, cultural and recreational facilities).
- Class C EDNA –Lands involving economic activities of a nature that noise levels higher than those experienced in other areas are normally to be anticipated. Typical Class A EDNA uses generally are not permitted in such areas. Typically, Class C EDNA include storage, warehouse, and distribution facilities; industrial property used for the production and fabrication of durable and nondurable man-made goods; and agricultural and silvicultural property used for the production of crops, wood products, or livestock.

Land use that is considered agricultural is defined as Class C receiving properties. Conversely, agricultural properties where their principal use is for residential purposes with no clearly visible farming or ranching activities, are identified as Class A receiving properties. The WAC does maintain flexibility for interpretation in the classification of the appropriate EDNA on both the State and local level. For example, the Washington Energy Facility Site Evaluation Council (EFSEC) in previous siting decisions has identified and defined different land use types within single contiguous properties, dissecting properties into separate EDNAs. For instance, on a single contiguous property, residences, structures and immediate yards were classified as Class A receivers, whereas agricultural portions of the land surrounding the residences, structures and immediate yards were considered Class C receivers. Between the hours of 10:00 p.m. and 7:00 a.m.

the noise limitations are reduced by 10 dBA for receiving property within Class A EDNAs. WAC 173.60.050 exempts temporary construction noise from the State noise limits.

The noise level limits by EDNA classifications are presented in Table 3. The WAC allows these limits to be exceeded for certain periods of time: 5 dBA for no more than 15 minutes in any hour, 10 dBA for no more than 5 minutes of any hour, and 15 dBA for no more than 1.5 minutes of any hour and are commonly presented as L_n statistical sound levels as well as maximum sound levels (L_{max}) as shown in Table 4.

Table 3. Washington State Environmental Noise Limits

EDNA of Source Property	EDNA of Receiving Property		
	Class A Land Day/Night	Class B Land	Class C Land
Class A Land	**55/45**	57	60
Class B Land	**57/47**	60	65
Class C Land	**60/50**	65	70

Source: WAC 173-60-040.

Table 4. L_n Environmental Noise Limits for Class C Sources

EDNA of Source Property	Statistical Sound Level Limits			
	LN_{25}	$LN_{8.3}$	$LN_{2.5}$	L_{MAX}
Class A Land	**60/50**	**65/55**	**70/60**	**75/65**
Class B Land	65	70	75	80
Class C Land	70	75	80	85

Source: WAC 173-60-040 (b) and (c).

Table 4 shows a maximum noise limit of 60 dBA for a Class C noise source and a Class A receiving property, which is subject to a further reduction of 10 dBA during nighttime hours. The WAC regulatory limits are absolute and independent of the existing acoustic environment; therefore, a baseline noise survey is not requisite to determine conformance.

1.3.3 Yakima County Code

Chapter 6.28 of the Yakima County Code provides language pertaining to public disturbance and nuisance noise; however, no numerical decibel limits are given. There are no quantitative county noise regulations applicable to the Facility.

2.0 Existing Sound Environment

The degree of audibility of a new or modified sound source is dependent in a large part upon the relative level of the ambient noise. A wide range of noise settings occurs within the Facility Area Extent. Variations in acoustic environment are due in part to existing land uses, population density, and proximity to transportation corridors. Elevated existing ambient sound levels in the region occur near major transportation corridors such as interstate highways and in areas with higher population densities. Several nearby rural airstrips and airports, including the Yakima Air Terminal, also contribute to ambient noise levels in both surrounding urban and rural areas. Portions of the communities traversed by the proposed transmission lines are open land or rural in nature, and will have comparatively lower ambient sound levels, possibly 30 dBA or less during nighttime. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, rail movements, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise dominates in warmer seasons.

The analysis area is inclusive of all areas that could be potentially affected by construction or operational noise resulting from the Facility. The analysis area for noise around the Facility was defined as the area bounded by a perimeter extending approximately 1 mile from its fence line. In the absence of ambient measurement data, the existing sound level environment in the vicinity of Facility was estimated with a method published by the Federal Highway Administration (FHWA) in its Transit Noise and Vibration Impact Assessment (FHWA 2006). This document presents the general assessment of existing noise exposure based on the population density per square mile and proximity to area sound sources such as roadways and rail lines. The proposed Facility is 8 miles east of the city of Moxee, which has a population density of 1,751.4 per square mile according to the U.S. Census Bureau (2020); however, the population per square mile in blocks within 1 mile of Facility is much less. In addition, the Facility is located in close proximity to Washington State Route 24 (SR-24), with the closest fence line within approximately 150 feet of that thoroughfare. Table 5 indicates the estimated baseline sound levels based on population density and distance to SR-24 for daytime, evening, and nighttime L_{eq} as well as the day-night average sound level (L_{dn}). The L_{dn} is the average equivalent sound level over a 24-hour period, with a penalty added for noise during the nighttime hours of 10:00 p.m. – 7:00 a.m. During the nighttime period, 10 dB is added to reflect the impact of the noise

Table 5. Estimated Baseline Sound Levels in Proximity to Goose Prairie Solar

Average Sound Level (dBA)	L_{eq} (Day)	L_{eq} (Evening)	L_{eq} (Night)	L_{dn}
	40-55	35-50	30-45	40-55

3.0 Facility Construction

Construction of the Facility is expected to be typical of other solar power generating facilities in terms of schedule, equipment, and activities. Construction is anticipated to occur over approximately 9 months and would require a variety of equipment and vehicles.

3.1 Noise Calculation Methodology

Acoustic emission levels for activities associated with Facility construction were based upon typical ranges of energy equivalent noise levels at construction sites, as documented by the United States Environmental Protection Agency (EPA; 1971b) and the EPA's "Construction Noise Control Technology Initiatives" (EPA 1980). The EPA methodology distinguishes between type of construction and construction stage. Using those energy equivalent noise levels as input to a basic propagation model, construction noise levels were calculated at a series of set reference distances.

The basic model assumed spherical wave divergence from a point source located at the closest point of the Facility site. Furthermore, the model conservatively assumed that all pieces of construction equipment associated with an activity would operate simultaneously for the duration of that activity. An additional level of conservatism was built into the construction noise model by excluding potential shielding effects due to intervening structures and buildings along the propagation path from the site to receiver locations.

3.2 Projected Noise Levels During Construction

Table 6 summarizes the projected noise levels due to Facility construction, organized into the following work stages: demolition, site preparation and grading, trenching and road construction, equipment installation, and commissioning. Periodically, sound levels may be higher or lower than those presented in Table 6; however, the overall sound levels should generally be lower due to excess attenuation and the trend toward quieter construction equipment in the intervening decades since the EPA data were developed.

The construction of the Facility may cause short-term, but unavoidable, noise impacts that could be loud enough at times to temporarily interfere with speech communication outdoors and indoors with windows open. Noise levels resulting from the construction activities would vary significantly depending on several factors such as the type and age of equipment, specific equipment manufacturer and model, the operations being performed, and the overall condition of the equipment and exhaust system mufflers.

Facility construction would generally occur during the day, Monday through Friday. Furthermore, all reasonable efforts would be made to minimize the impact of noise resulting from construction activities including implementation of standard noise reduction measures. Due to the infrequent nature of loud construction activities at the site, the limited hours of construction and the implementation of noise mitigation measures, the temporary increase in noise due to construction is considered to be a less than significant impact.

Table 6. Projected Construction Noise Levels by Phase

Phase No.	Construction Phase	Construction Equipment	Usage Factor %	Maximum (L_{max}) Equipment Noise Level at 50 ft	Composite L_{eq} Noise Level				
					100 ft	200 ft	500 ft	1,000 ft	2,000 ft
1	Demolition	(1) Excavators (168 horsepower [hp]) (1) Tractors/Loaders/Backhoes (108 hp) (1) Rough Terrain Forklifts (93 hp) (1) Dump Truck	57 55 60 40	88	80	72	61	53	45
2	Site Preparation and Grading	(2) Graders (174 hp) (1) Rubber Tired Loaders (164 hp) (1) Scrapers (313 hp) (2) Water Trucks (189 hp) (2) Generator Sets	57 59 72 50 74	90	82	74	63	55	47
3	Trenching and Road Construction	(5) Excavators (168 hp) (2) Graders (174 hp) (2) Water Trucks (189 hp) (1) Trencher (63 hp) (2) Rubber Tired Loaders (164 hp) (2) Generator Sets	57 57 50 75 54 74	90	82	74	63	55	47
4	Equipment Installation	(1) Crane (399 hp) (1) Concrete Batch Plant (5) Forklifts (145 hp) (8) Pile drivers (15) Pickup Trucks/ATVs (2) Water Trucks (189 hp) (2) Generator Sets	43 15 30 20 40 50 74	86	78	70	59	51	43
5	Commissioning	(5) Pickup Trucks/ATVs	40	51	43	35	24	16	8

3.3 Construction Noise Mitigation

Since construction equipment operates intermittently, and the types of machines in use at the Facility site change with the stage of construction, noise emitted during construction would be mobile and highly variable, making it challenging to control. The construction management protocols would include the following noise mitigation measures to minimize noise impacts:

- Maintain all construction tools and equipment in good operating order according to manufacturers' specifications;
- Limit use of major excavating and earth-moving machinery to daytime hours;
- To the extent practicable, schedule construction activity during normal working hours on weekdays when higher sound levels are typically present and are found acceptable. Some limited activities, such as concrete pours, would be required to occur continuously until completion;
- Equip any internal combustion engine used for any purpose on the job or related to the job with a properly operating muffler that is free from rust, holes, and leaks;
- For construction devices that utilize internal combustion engines, ensure the engine's housing doors are kept closed, and install noise-insulating material mounted on the engine housing consistent with manufacturers' guidelines, if possible;
- Limit possible evening shift work to low noise activities such as welding, wire pulling, and other similar activities, together with appropriate material handling equipment; and
- Utilize a complaint resolution procedure to address any noise complaints received from residents.

4.0 Operational Noise

This section describes the model used for the assessment, input assumptions used to calculate noise levels due to the Facility's normal operation, a conceptual noise mitigation strategy, and the results of the noise impact analysis.

4.1 Noise Prediction Model

The Cadna-A® (Computer-Aided Noise Abatement) computer noise model was used to calculate sound pressure levels from the operation of the Facility equipment in the vicinity of the Facility site. An industry standard, Cadna-A® was developed by DataKustik GmbH to provide an estimate of sound levels at distances from sources of known emission. It is used by acousticians and acoustic engineers due to the capability to accurately describe noise emission and propagation from complex facilities consisting of various equipment types like the Facility and in most cases, yields conservative results of operational noise levels in the surrounding community.

The outdoor noise propagation model is based on the International Organization for Standardization (ISO) 9613, Part 2: "Attenuation of Sound during Propagation Outdoors" (1996). The method described in this standard calculates sound attenuation under weather conditions that are favorable for sound propagation, such as for downwind propagation or atmospheric inversion, conditions which are typically considered worst-case. The calculation of sound propagation from source to receiver locations consists of full octave band sound frequency algorithms, which incorporate the following physical effects:

- Geometric spreading wave divergence;
- Reflection from surfaces;
- Atmospheric absorption at 10 degrees Celsius and 70 percent relative humidity;
- Screening by topography and obstacles;
- The effects of terrain features including relative elevations of noise sources;
- Sound power levels from stationary and mobile sources;
- The locations of noise-sensitive land use types;
- Intervening objects including buildings and barrier walls, to the extent included in the design;
- Ground effects due to areas of pavement and unpaved ground;
- Sound power at multiple frequencies;
- Source directivity factors;
- Multiple noise sources and source type (point, area, and/or line); and
- Averaging predicted sound levels over a given time.

Cadna-A allows for three basic types of sound sources to be introduced into the model: point, line, and area sources. Each noise-radiating element was modeled based on its noise emission pattern. Larger dimensional sources such as the transformers and inverters were modeled as area sources.

Off-site topography was obtained using the publicly available United States Geological Survey digital elevation data. A default ground attenuation factor of 0.5 was assumed for off-site sound propagation over acoustically “mixed” ground. A conservative ground attenuation factor of 0.25 for a reflective surface was assumed onsite.

The output from Cadna-A includes tabular sound level results at selected receiver locations and colored noise contour maps (isopleths) that show areas of equal and similar sound levels.

4.2 Input to the Noise Prediction Model

The Facility’s general arrangement was reviewed and directly imported into the acoustic model so that on-site equipment could be easily identified, buildings and structures could be added, and sound emission data could be assigned to sources as appropriate. The primary noise sources during operations are the inverters, their integrated step-up transformers, battery energy storage system (BESS) units, and substation transformers. Electronic noise from inverters can be audible but is often reduced by a combination of shielding, noise cancellation, filtering, and noise suppression. The BESS will either be included as a consolidated area in the northeastern portion of the Facility Area or in distributed units throughout the solar array. Both options for battery storage and their associated sound emissions, including contributions from cooling, were considered in the acoustic analysis.

Substations have switching, protection, and control equipment, as well as a main power transformer, which generate the sound generally described as a low humming. There are three chief noise sources associated with a transformer: core noise, load noise, and noise generated by the operation of the cooling equipment. The core is the principal noise source and does not vary significantly with electrical load. The load noise is primarily caused by the load current in the transformer’s conducting coils (or windings) and consequently the main frequency of this sound is twice the supply frequency: 120 Hz for 60 Hz transformers. The cooling equipment (fans and pumps) may also be an important noise component, depending on fan design. During air forced cooling method, cooling fan noise is produced in addition to the core noise. The resulting audible sound is a combination of hum and the broadband fan noise. Breaker noise is a sound event of very short duration, expected to occur only a few times throughout the year. Just as horsepower ratings designate the power capacity of an electric motor, a transformer’s megavolt amperes rating indicates its maximum power output capacity.

Reference sound power levels input to Cadna-A were provided by equipment manufacturers, based on information contained in reference documents or developed using empirical methods. The source levels used in the predictive modeling are based on estimated sound power levels that are generally deemed to be conservative. The projected operational noise levels are based on Applicant-supplied sound power level data for the major sources of equipment. Table 7 summarizes the equipment sound power level data used as inputs to the acoustic modeling analysis. For the purpose of the analysis, it was assumed that all equipment would operate consistently during both daytime and nighttime periods.

Table 7. Modeled Octave Band Sound Power Level for Major Pieces of Facility Equipment

Sound Source	Sound Power Level (L_W) by Octave Band Frequency dBL									Broadband Level
	31.5	63	125	250	500	1k	2k	4k	8k	dBA
Integrated Inverter/Transformer	78	86	93	94	93	90	85	78	71	99
BESS	54	64	71	77	80	79	78	73	64	85
Substation Transformer	63	83	95	97	103	100	96	91	82	106

4.3 Noise Prediction Model Results

Broadband (dBA) sound pressure levels were calculated for expected normal Facility operation assuming that all components identified previously are operating continuously and concurrently at the representative manufacturer-rated sound power level. It is expected that all sound-producing equipment would operate during both daytime and nighttime periods. After calculation, the sound energy was then summed to determine the equivalent continuous A-weighted downwind sound pressure level at a point of reception. Sound contour plots displaying broadband (dBA) sound levels presented as color-coded isopleths are provided in Figures 2 and 3 for potential 24-hour operation. Figure 2 displays operational sound levels assuming centralized BESS while Figure 3 displays operational sound levels assuming distributed BESS. The sound contours are graphical representations of the cumulative noise associated with full operation of the equipment and show how operational noise would be distributed over the surrounding area of the Facility site. The contour lines shown are analogous to elevation contours on a topographic map (i.e., the sound contours are continuous lines of equal noise level around some source, or sources, of sound).

Table 8 shows the projected exterior sound levels resulting from full, normal operation of the Facility during both daytime and nighttime hours, at all nearby NSRs using both centralized and distributed BESS. The Facility is located on Class C land while the adjacent properties consist of a mix of both Class A land, which has a daytime limit of 60 dBA and nighttime limit of 50 dBA, and Class C land, which has a daytime and nighttime limit of 70 dBA. The Project successfully demonstrates compliance with the applicable 50 dBA nighttime limit at NSRs (i.e., residential structures), using either BESS option. In addition, compliance was evaluated at the property lines closest to the Facility Area Extent. As displayed in Figures 2 and 3, the Facility is expected to successfully comply with the applicable WAC regulatory limits at the closest property lines as well.

Table 8. Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (meters) NAD83 UTM Zone 10		Received Sound Level (dBA)	
		Easting	Northing	Centralized BESS	Distributed BESS
1	Non-participant	712709	5154029	32	32
2	Participant	713090	5157167	42	41
3	Participant	710818	5157477	40	40
4	Non-participant	710267	5156137	38	38
5	Non-participant	712549	5154011	32	32
6	Non-participant	712119	5155621	43	43
7	Non-participant	712062	5155635	45	45
8	Non-participant	712625	5153988	32	32
9	Non-participant	711914	5155486	41	42
10	Non-participant	711870	5155502	42	42
11	Non-participant	711784	5155507	42	42
12	Non-participant	711439	5155505	40	40
13	Non-participant	711289	5155499	40	40
14	Non-participant	712761	5154003	32	32
15	Non-participant	711161	5155492	40	40
16	Non-participant	710991	5155462	39	39
17	Non-participant	710883	5155472	39	39
18	Non-participant	713172	5155534	34	34
19	Non-participant	712280	5155071	38	38
20	Non-participant	711577	5155491	41	41
21	Non-participant	711480	5153842	32	32
22	Non-participant	712966	5153997	32	32
23	Non-participant	714139	5155448	30	30
24	Non-participant	714216	5155578	29	29
25	Non-participant	713187	5154040	31	31
26	Non-participant	713369	5153873	31	31
27	Non-participant	713506	5153881	30	30
28	Non-participant	713946	5154008	29	29

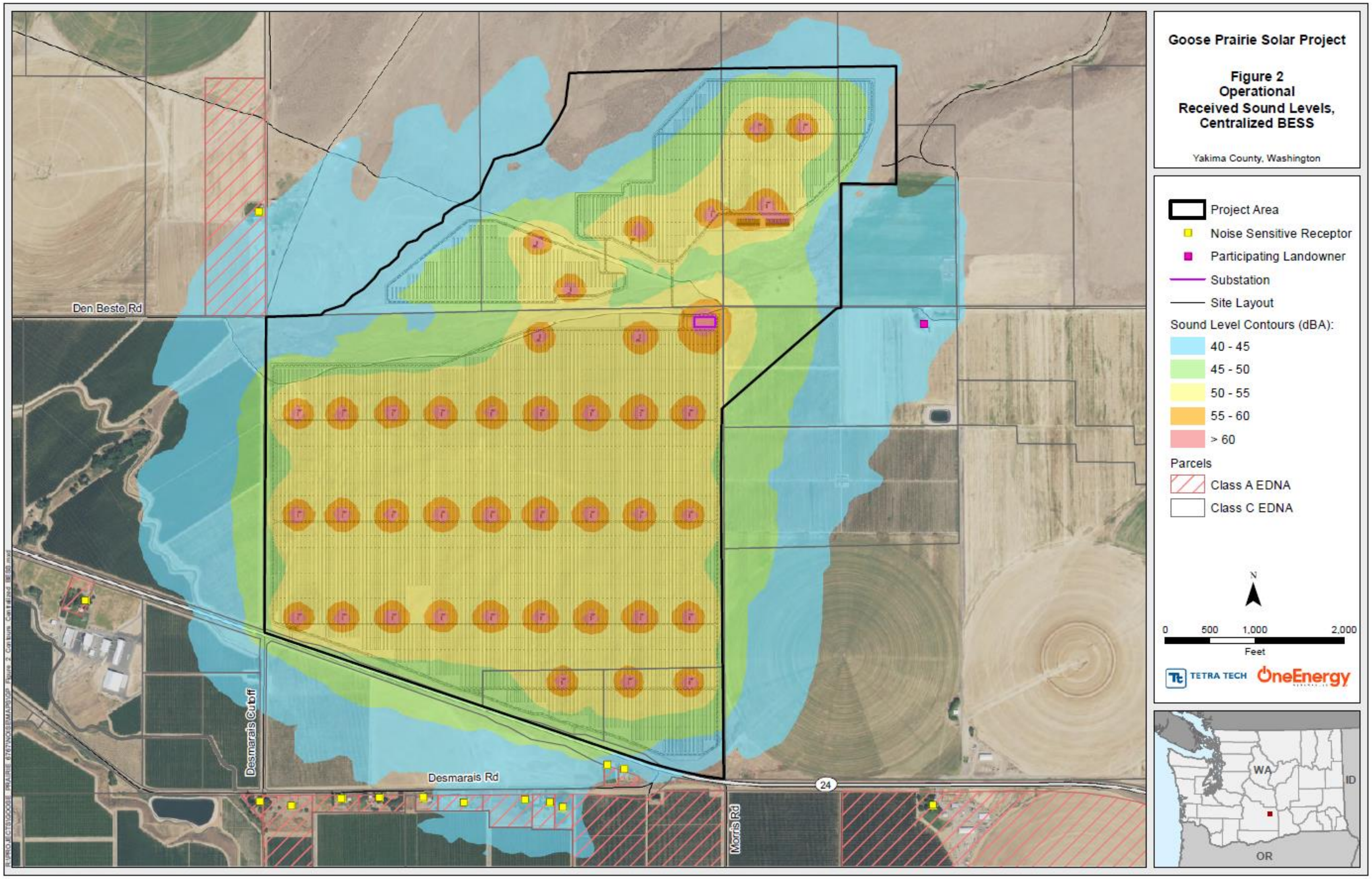

Figure 2. Operational Received Sound Levels, Centralized BESS

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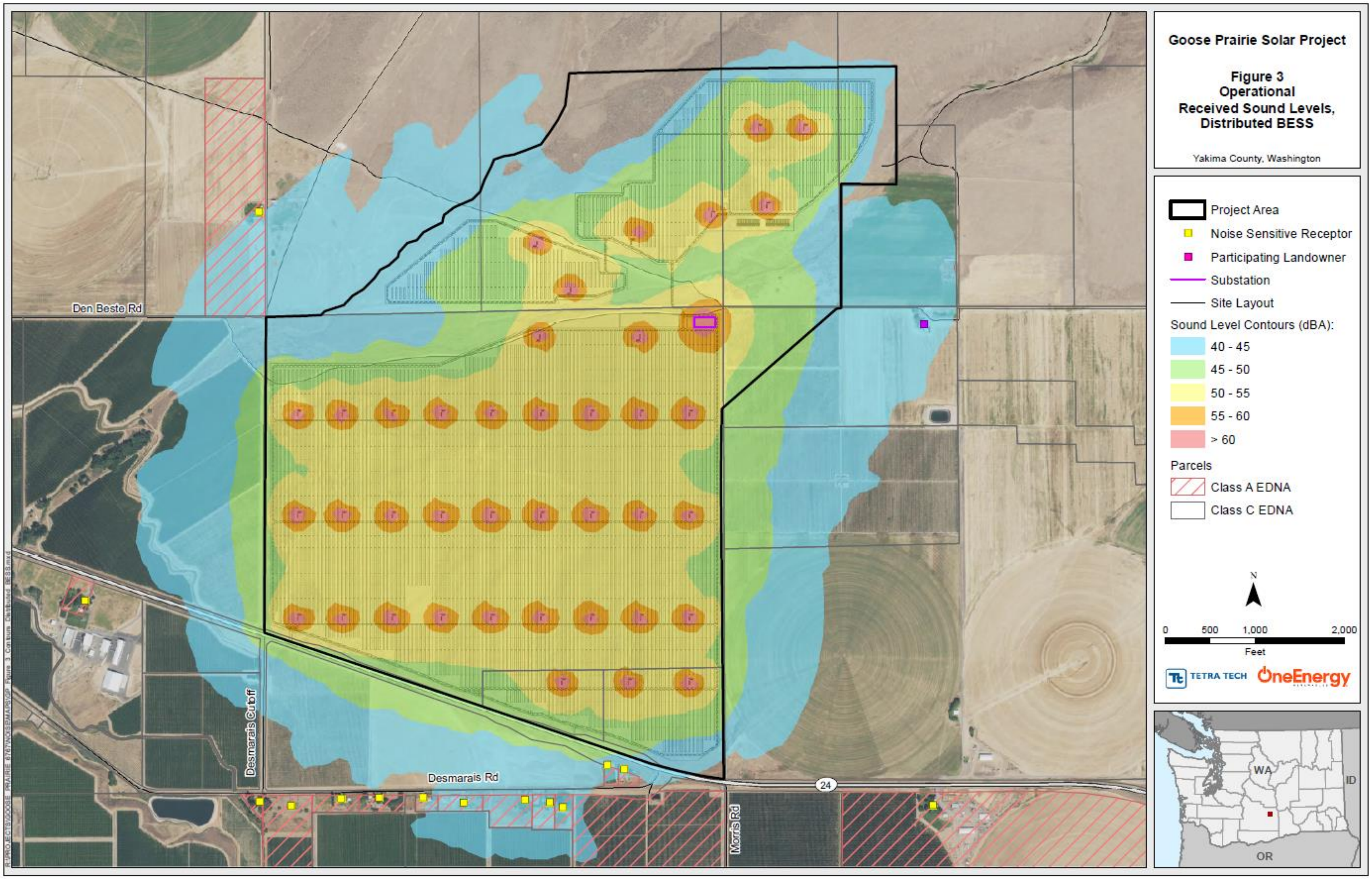

Figure 3. Operational Received Sound Levels, Distributed BESS

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5.0 Conclusion

Tetra Tech completed a detailed acoustic assessment of the Facility, proposed in Yakima County, Washington. The assessment included an evaluation of potential Facility sound level impacts during construction and operation phases. The Applicant is considering implementing a BESS for the Facility in both centralized and distributed configurations.

The construction noise assessment indicated that construction noise would be periodically audible at off-site locations; however, that noise would be temporary and minimized to the extent practicable through implementation of best management practices and noise mitigation measures as identified in Section 3.3. Traffic noise generated during construction onsite and offsite would also add to overall sound levels but would be intermittent and short-term.

Operational sound levels were modeled and evaluated at nearby NSRs and property lines. Anticipated Facility sound sources consist of the collector substation main power transformer, integrated inverter/transformers, and BESS units. Incorporating a number of conservative assumptions, acoustic modeling results indicate that received sound levels resulting from Facility operations using either BESS option would comply with the applicable WAC 173-6050 dBA daytime and nighttime limits at nearby NSRs and property lines. All NSRs would be at or below the applicable 50 dBA nighttime limit, which is similar to the sound level expected by “light auto traffic at 100 feet” as described in Table 1. In addition, sound generated from existing sound sources in the Facility Area such as traffic on SR-24 and/or the operation of agricultural equipment would be expected to be relatively higher than Facility operations. Overall, sound emissions associated with the Project are expected to remain at a low level, consistent with other solar energy facilities of similar size and design.

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ATTACHMENT J

Visual Impact Assessment

Goose Prairie Solar Project
Visual Impact Assessment

Prepared for:

OER WA Solar 1 LLC

Prepared by:

TETRA TECH

December 2020

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Acronyms and Abbreviations

AC	alternating current
Applicant	OER WA Solar 1, LLC
BESS	battery energy storage system
BLM	U.S. Bureau of Land Management
BPA	Bonneville Power Administration
CRP	Conservation Reserve Program
EFSEC	Washington Energy Facility Site Evaluation Council
Facility	Goose Prairie Solar Project
FHWA	Federal Highway Administration
KOP	key observation point
kV	kilovolt
PV	photovoltaic
SEPA	State Environmental Policy Act
SR	State Route
WAC	Washington Administrative Code
ZVI	Zone of Visual Influence

1.0 Overview

OER WA Solar 1, LLC (the Applicant) proposes to construct and operate Goose Prairie Solar Project (the Facility), an 80-megawatt (MW) alternating current (AC) solar photovoltaic (PV) project with an optional battery storage system capable of storing up to 80 MW of energy located in Yakima County, Washington. The Facility will utilize solar PV panels to convert energy from the sun into electric power, which is then delivered to the electric power grid. The Facility will interconnect with a new point of interconnection to Bonneville Power Administration's (BPA) Midway to Moxee 115-kilovolt (kV) transmission line, which bisects the Facility. BPA will build, own, and operate the structures that constitute the point of interconnection.

Tetra Tech, Inc. was retained by the Applicant to perform a Visual Impact Assessment for the Facility. This Visual Impact Assessment was prepared to identify and evaluate the potential visual and aesthetic impacts associated with construction and operation of this Facility.

2.0 Facility Location and Site History

2.1 Location

The Facility is an 80 MW AC solar PV project with an optional battery storage system capable of storing up to 80 MW of energy located in Yakima County, Washington. Honoring Supreme Court Justice William O. Douglas, the Facility takes its name from the Yakima native's summer home located in northwestern Yakima County.

The Facility will be located approximately 8 miles east of the city of Moxee in Township 12 North, Range 21 East (see Figures 1 and 2 for a context map and a preliminary site plan map; figures are located at the back of this report). The Facility is located just north of Washington State Route (SR) 24, also known as Hanford Road, between its intersections with Morris Lane and Desmaris Cutoff.

2.2 Site History

The Facility will be located across a portion of eight parcels that together constitute the "Facility Parcels"; the total acreage of the Facility Parcels is 1,568 acres. Three of the parcels are owned by Gordon Meacham and together are referred to herein as the "Meacham Property"; the Meacham Property consists of tax parcels 211218-11003, 211218-43004, and 211218-44003. The other five parcels are owned by S. Martinez Livestock, Inc. and together are referred to herein as the "Martinez Property"; the Martinez Property consists of tax parcels 211207-11001, 211207-21001, 211208-11001, 211208-32001, and 211217-21002. The Applicant has entered into long-term land leases with the landowners for adequate acreage to accommodate the Facility.

The Meacham Property parcels are currently in the Conservation Reserve Program (CRP), under a contract that is set to expire on September 30, 2022. The CRP area consists predominantly of non-native species such as crested wheat, Russian thistle, mustard species and others. There is no current agricultural use, though a portion of the area was previously used for row crops. There are no existing buildings on the Meacham Property. The property is adjacent to SR-24.

The Martinez Property has two distinct areas: four of the parcels may be used for solar facilities and one parcel (parcel number 211217-21002) may be utilized for an aerial easement for the interconnection tie-line depending on the final design of the interconnection with BPA. The portion of the Martinez Property that will be used for the transmission easement is herein known as the “Aerial Transmission Easement Area.” The interconnection design will be determined before the execution of an Interconnection Agreement; if the final design from BPA does not utilize this parcel, then the Aerial Transmission Easement Area will not be a part of the Facility.

The four parcels that may be utilized for solar facilities have a historic and current use of grazing and consist predominantly of native vegetation. There are two abandoned buildings previously used as residences on the property that are no longer in use. Outside of the Facility Area Extent (further described below), there is an agricultural building. The parcel which may be utilized for an aerial easement is currently planted with an orchard and has a residence. BPA’s Midway-to-Moxee 115-kV transmission line, which the Facility directly relies on, crosses the Martinez Property.

2.3 Facility Size

The Facility’s limit of disturbance will not exceed 625 acres (the Facility Area), located wholly within a broader micrositing boundary of 789 acres (the Facility Area Extent) as shown on Figure 2.

The Facility Area Extent includes 517 acres of the Meacham Property and 272 acres of the Martinez Property. The 272 acres of the Martinez Property includes the Transmission Easement Area, which is approximately 17.0 acres.

The Applicant is requesting that the Site Certification Agreement allow the Applicant flexibility to microsite the precise location of Facility infrastructure within the Facility Area Extent and provide a final site plan prior to construction to confirm that the Facility satisfies the County’s conditions of approval. This gives the Applicant the ability to refine the spacing of solar modules, associated access roads, collector lines, staging areas, and aboveground facilities within the Facility Area Extent as the design is finalized. The requested flexibility to microsite the final Facility layout within the Facility Area Extent also allows the Applicant to minimize potential impacts and deliver the most effective and efficient Facility consistent with the landowners’ needs. The maximum footprint of the Facility Area will not exceed 625 acres, located wholly within the Facility Area Extent.

3.0 Detailed Project Description

3.1 Facilities and Design

3.1.1 Facility Infrastructure

The Facility will consist of PV panels, inverters, mounting infrastructure, an electrical collection system, operations and maintenance building, access roads, interior roads, security fencing, a new collector substation, and electrical interconnection infrastructure. The Applicant anticipates that the Facility will utilize a single-axis tracking system designed to optimize system output by slowly rotating the solar PV panels to follow the path of the sun. The Applicant proposes an optional battery storage system that would support the solar generation by balancing the resource and injecting energy onto the power grid during lower solar resource conditions.

The Facility will interconnect to the electrical grid at BPA's Midway-to-Moxee 115-kV transmission line via a line tap and an interconnection tie line (gen-tie line) from the Facility's substation to the transmission line, estimated to be approximately 300 feet in length. The Midway-to-Moxee line bisects the Facility Area.

The Facility will be enclosed by a security fence up to 8 feet in height. The only infrastructure located outside of the perimeter fence will be the electrical infrastructure that will be constructed, owned, and operated by BPA. This infrastructure will include poles to support the overhead electrical transmission line from the substation to the line-tap and communications and interconnection infrastructure and the Facility road access. Energy from the Facility will be transmitted through the transmission system to the energy customer.

The Preliminary Site Plan is based upon technical studies completed to date and is subject to changes. The final locations of Facility infrastructure will depend upon results from outstanding technical studies (i.e., geotechnical investigation, interconnection studies), which may require changes to the Facility configuration to either minimize potential impacts to natural resources or to optimize Facility economics consistent with landowner needs. Changes to the Preliminary Site Plan are not expected to increase the visual impact from the Facility as described in this analysis.

3.1.2 Facility Life and Site Restoration

The expected life of the Facility is assumed to be 35 years. However, depending on the commercial market for renewable energy, the Facility could be updated with more efficient infrastructure over time, which could extend its useful life.

Per Washington Administrative Code (WAC) 463-72-040, the Applicant will develop an Initial Site Restoration Plan and submit this plan to the Washington Energy Facility Site Evaluation Council (EFSEC) at least 90 days prior to the beginning of site preparation. The plan will identify, evaluate, and resolve all major environmental and public health and safety issues reasonably anticipated. The plan will describe the process used to evaluate the options and select measures that will be taken to restore or preserve the site or otherwise protect all segments of the public against risks or danger resulting from the site. The objective of the plan will be to restore the site to approximate pre-Facility condition or better at the end of its useful life. The plan will include provisions for removal of the solar panels and racking system, foundations, cables, and other facilities to a depth of 4 feet below grade, and restoration of any disturbed soils to the pre-construction condition.

3.1.3 Battery Energy Storage System

The Facility includes an optional battery energy storage system (BESS). The BESS portion of the Facility is currently designed utilizing lithium-ion battery technology to hold power in a series of modular, self-contained containers co-located with the solar generators.

3.2 Construction Access Routes and Laydown Areas

Construction vehicles would access the Facility Area by an existing approach from Washington State Route (SR)-24. The Facility will be secured with a fence up to 8 feet in height with access gates for authorized personnel. Internal gravel roads built to the applicable fire code will be used to maintain the Facility. During construction, a temporary lay-down area will be utilized for delivery of major equipment. This area will convert to parking during operations.

4.0 Visual Assessment Methodology

4.1 Visual Impact Criteria

4.1.1 Visual Impact Criteria

The purpose of preparing this Visual Impact Assessment for the Facility is to provide information to meet the EFSEC Application for Site Certification and State Environmental Policy Act (SEPA) Environmental Checklist requirements for aesthetics (visual) (WAC 197-11-960).

4.1.2 Visual Change Criteria

Visual impacts are generally defined in terms of a project's physical characteristics and potential visibility, as well as the extent to which the project's presence would change the perceived visual character and quality of the environment in which it would be located. Tetra Tech followed the contrast rating system used by the U.S. Bureau of Land Management (BLM) to objectively measure potential changes to the visual environment (BLM 1986). The BLM's contrast rating system is commonly used by federal agencies to assess potential visual resource impacts from proposed projects.

Potential visual impacts were characterized by determining the level of visual contrast introduced by the Facility based on comparing existing conditions and photo simulations. Visual contrast is a means to evaluate the level of modification to existing landscape features. Existing landscape is defined by the visual characteristics (form, line, color, and texture) associated with the landform (including water), vegetation, and existing development. The level of visual contrast introduced by a project can be measured by changes in the visual characteristics that would occur as a result of project implementation. The greater the difference between the character elements found within the existing landscape and with a proposed project, the more apparent the level of visual contrast. The following general criteria[1] were used when evaluating the degree of contrast:

- *None* – The contrast is not visible or perceived.
- *Weak* – The contrast can be seen but does not attract attention.

[1] These criteria are based on the BLM Visual Resource Management system, a process using the concept of "contrast" to objectively measure potential changes to the landscape features.

- *Moderate* – The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- *Strong* – The element contrast demands attention, would not be overlooked, and is dominant in the landscape.

4.2 Key Observation Points/Viewshed

4.2.1 Key Observation Points Criteria

Key Observation Points (KOPs) were identified based on locations from which the Facility infrastructure would potentially be visible and noticeable to the casual observer. The "casual observer" is considered an observer who is not actively looking or searching for the Facility, but who is engaged in activities at locations with potential views of the Facility, such as hiking or driving along a scenic road. If the Facility infrastructure is not noticeable to the casual observer, visual impacts can be considered minor to negligible.

4.2.2 Viewshed

The viewshed is generally the area that is visible from an observer's viewpoint and includes the screening effects of intervening vegetation and/or physical structures. An initial assessment of the geographic extent of potential Facility views was conducted through a viewshed analysis, which evaluated potential visibility of the solar photovoltaic modules at distances up to 10 miles from the Facility Area.

A viewshed analysis was conducted to identify potential Facility visibility within the visual study area or Zone of Visual Influence (ZVI). A viewshed analysis is a graphic representation of the seen and unseen areas adjacent to the Facility based on topography within the Facility ZVI. The viewshed analysis was conducted using Esri ArcGIS Geographic Information System software with the Spatial Analyst extension to process 10-meter Digital Elevation Models and the height of the solar arrays above ground surface (up to 13.5 feet with the panels of the solar array slightly tilted). The viewshed assumed "bare earth" conditions and was run from the Facility Area looking out to determine areas with potential visibility. The assumed "bare earth" conditions mean identification of areas with potential views of the Facility were based on topography only (Figure 3). As a result, the analysis is conservative as it does not account for screening by intervening structures, vegetation or other features. The ZVI was used to assist with the identification of potential KOPs.

4.2.3 Field Assessment

Based on the ZVI and the identification of publicly accessible routes and viewpoints, potential KOPs were identified and further assessed during the field assessment. During the field assessment, it was determined that, from distances greater than 1 mile, the Facility Area would be barely visible, if at all, from viewpoints easily accessible to the public due to intervening terrain and/or structures. The Facility Area would potentially be visible at higher elevations and greater distances from either Yakima Ridge or Rattlesnake Hills; however, no publicly accessible locations were identified for KOP section.

A field assessment was conducted at each of the KOPs that followed the protocols and methods for contrast rating evaluation (BLM 1986). The following information was collected at each of the KOPs:

- GPS location,
- Digital photographs for use for visual simulations,
- Data required for the BLM's Visual Contrast Rating Worksheet,
- Time of day and atmospheric conditions, and
- Existing structures and roads in the viewshed.

The visual resources at each KOP were documented in a Visual Contrast Rating Worksheet (Attachment 1).

4.2.4 Key Observation Points

Six KOPs were selected as representative vantage points in the landscape that offer motorists traveling on area roadways and local residents views of the proposed Facility Area (Figure 4). These KOPs provide views of each side of the Facility Area from publicly accessible areas.

Factors considered in the selection of KOPs included locations with sensitive viewers (e.g., local residences, motorists on Washington SR-24) and potential for the Facility Area to be visible (e.g., distance and view angle). The KOPs were selected to capture representative vantages from east- and west-bound Washington SR-24, local roadways, and residences.

Digital photographs were taken from the selected KOP locations to support the discussion on existing visual setting and the analysis of potential visual impacts associated with the proposed Facility (Figures 5 through 10). Photographs of existing conditions were taken on November 14, 2020 using a digital single-lens reflex Canon 5D Mark III camera.

4.2.5 Visual Simulations

Three-dimensional visual simulations from two representative KOPs were rendered to approximate the visual conditions resulting with Facility implementation. Using the photographs acquired at KOP 1 and KOP 6, a three-dimensional physical massing model was created that incorporated the PV scale model, placed in array configurations as shown in Figure 2. The model was then georeferenced and placed on global positioning system (GPS)–controlled site-specific photographs to create simulations that demonstrate visual changes from the Facility. Figures 11 and 12 present simulated views of Facility features.

5.0 Environmental Setting

5.1 Regional Character

The Facility Area is located in the Columbia Plateau geographic region. Covering portions of Washington, Oregon, Idaho, and British Columbia, the Columbia Plateau is the main geographic feature of the interior Columbia River Basin. The area is named for the massive basalt flows that underlie much of central and eastern Oregon, as well as southeastern Washington. In Washington, the Columbia Plateau covers roughly the southeastern one-third of the state, including all of Yakima County.

The Columbia Plateau includes various physiographic features, including an alluvial plain along the Columbia River, basalt plateaus, and a transitional, dissected upland area. The Facility Area is in the Moxee Valley, situated between the east-west trending Yakima Ridge to the north and the Rattlesnake Hills to the south. Yakima Ridge and the Rattlesnake Hills are upfolded anticline basalt ridges (Lenfesty and Reedy 1985).

The Facility Area is in an unincorporated area of Yakima County, approximately 8 miles east of the city of Moxee on parcels located just north of SR-24, between its intersections with Morris Lane and Desmarais Cutoff. Land use in the area is mostly agricultural interspersed with rural residential development.

SR-24 is the only major transportation route near the site. SR-24 runs east to west connecting the city of Yakima and Interstate 82/U.S. Route 12 with SR-241 and SR-240.

5.2 Local Setting

The Facility Parcels are zoned as Agricultural use but contain mixed uses. Three of the parcels are currently in the CRP and include a mix of sagebrush-steppe and grassland vegetation. The other parcels are currently used for grazing. The southern portion of the Facility Parcels comprises a relatively flat fallow field while the northern portion consists of rolling hills with ephemeral creeks. Surrounding land uses include grazing to the north (with the Yakima Training Center beyond neighboring agricultural land approximately 2.5 miles north of the Facility) and active agricultural fields in all other directions, including an orchard to the east. The nearest rural residences are located approximately 0.06 mile to the south, 0.31 mile to the west, and 0.27 mile east of the nearest Facility fence. Other than SR-24, most roadways in the immediate Facility Area vicinity are unimproved or paved without curb or sidewalk improvements.

5.3 Visual Resources

The Yakima County Comprehensive Plan Horizon 2040 describes the ridges and basins as forming the visual perspective of Yakima County and provide community definition. In addition, agricultural and forest lands make up a large share of the County's open space (Yakima County 2017).

The State of Washington contains two All-American Roads and five National Scenic Byways (FHWA 2020). The closest of these scenic drives to the Facility Area is the Mountains to Sound Greenway – I-90 National Scenic Byway. This Scenic Byway is the portion of Interstate 90 that runs from Seattle for 100 miles to the east. At its eastern terminus, it is approximately 35 miles to the northwest of the Facility Area. Due to the distance and the intervening terrain, the Facility Area would not be visible from this Scenic Byway.

The State of Washington also contains 21 State Scenic Byways (WSDOT 2020). The closest of these scenic drives to the Facility Area is the Yakama Scenic Byway. This Scenic Byway is the portion of Interstate 97 that runs south from the city of Yakima to where the highway meets SR-24. At its northern terminus, it is approximately 11 miles to the west of the Facility Area. Due to the distance and the intervening terrain, the Facility Area would not be visible from this Scenic Byway.

5.4 Existing Visual Character

Six KOPs were selected to assess the level of visual change resulting, based on the BLM's contrast rating system (Section 4.1.2), from the construction of the Facility as described in Section 3 on the existing environment. The location of the six KOPs and site photograph locations are presented in Figure 4. The KOPs were selected to capture representative vantages from Washington State Route 24, local residences and streets around the Facility Area. Photographs from each KOP are presented in Figures 5 through 10.

5.4.1 Key Observation Point 1

KOP 1 is located at the southwest corner of SR-24 and Desmaris Road. The southern end of the Facility Area is located approximately 300 feet northwest of this viewpoint at a slightly lower elevation to KOP 1.

As shown on Figure 5, the existing visual setting of this location is characterized by generally flat terrain with berms adjacent to paved SR-24, highway signage, fencing, agricultural fields, and fields of grass are visible in the foreground, with small clusters of trees and approximately 30-foot-high overhead utility distribution lines in the middle-ground. The Facility Area, currently consisting of CRP land and agricultural fields, is visible in the foreground and middle-ground. Yakima Ridge is visible in the background.

Dominant colors for the landscape are tan and green while the structures (e.g., highway, fencing, sign) are gray, brown, and yellow. The distant hills are brown and white. The grasses have varying textures of fine and coarse and are continuous with irregular clumps. The linear and horizontal lines associated with the structural features of the highway, fencing, and highway sign are prominent from this viewpoint.

This KOP provides a typical view for drivers traveling west on SR-24, likely traveling at a high rate of speed based on the posted speed limit. Considering the short duration of viewing, viewers would have a low viewer sensitivity to the visual changes in the area. This KOP also provides a typical view for the occupants of the residences at the southwest corner of SR-24 and Desmarais Road. Considering the frequent viewing by local residents, viewers would have a moderate sensitivity to the visual changes in the area.

5.4.2 Key Observation Point 2

KOP 2 is located south of the Facility Area, about halfway between the intersection of Desmarais Cutoff and Desmarais Road and the intersection of Desmarais Road and SR-24. The existing visual setting of this location is characterized by generally flat terrain, agricultural-related structures, agricultural fields, and approximately 30-foot-high overhead utility distribution lines. The southern end of the Facility Area is located approximately 0.19 mile north of this viewpoint at a slightly higher elevation to KOP 2.

As shown on Figure 6, the existing visual setting of this location is characterized by generally flat terrain, agricultural fields, agricultural equipment, approximately 15- to 20-foot-high hop trellises, fencing, and approximately 30-foot-high overhead utility distribution lines in the foreground. The Facility Area, currently consisting of CRP land and agricultural fields, is visible in the foreground and middleground as it rises in elevation to the north. Yakima Ridge is visible in the background.

Dominant colors for the landscape are tan, brown and green while the structures (e.g., fencing, agricultural equipment, hop trellises) are gray and brown. The distant hills are tan, brown, and white. The grasses have varying textures of fine and coarse and are continuous with irregular clumps. The linear and horizontal lines associated with the agricultural fields with structural features of agricultural equipment, approximately 15- to 20-foot-high hop trellises, fencing, and approximately 30-foot high overhead utility distribution lines are prominent from this viewpoint.

This KOP provides a typical view for drivers traveling east or west on Desmarais Road. Considering the short duration of viewing, drivers would have a low viewer sensitivity to the visual changes in the area. This KOP also provides a typical view for the occupants of the residences along Desmaris Road. Considering the frequent viewing by local residents, viewers would have a moderate sensitivity to the visual changes in the area.

5.4.3 Key Observation Point 3

KOP 3 is located west of the Facility Area, on the southside of SR-24, approximately 0.5 mile west of Desmarais Cutoff. The southern end of the Facility Area is located approximately 0.28 mile east of this viewpoint at a slightly higher elevation than KOP 3.

As shown on Figure 7, views of approximately 15- to 20-foot-high hop trellises, agricultural fields, paved SR-24, and approximately 30-foot-high local electrical distribution lines are visible in the foreground. The Facility Area CRP land and the white fencing for the adjacent field is somewhat is visible in the foreground and middle-ground. Yakima Ridge is barely visible in the background.

Dominant colors for the landscape are tan while the structures (e.g., hop trellises, paved SR-24, fencing, and local electrical distribution lines) are gray, tan, and brown. The distant hills are tan and brown. The grasses have varying textures of fine and coarse with irregular clumps. The linear and horizontal lines associated with the agricultural fields with structural features of hop trellises and fencing, SR-24, and overhead utility distribution lines are prominent from this viewpoint.

This KOP provides a typical view for drivers traveling east on SR-24, likely traveling at a high rate of speed based on the posted speed limit. Considering the short duration of viewing, viewers would have a low viewer sensitivity to the visual changes in the area.

5.4.4 Key Observation Point 4

KOP 4 is located northwest of the Facility Area, approximately 0.8 mile north of SR-24. The northwest corner of the Facility Area is located approximately 0.28 mile south of this viewpoint at a lower elevation than KOP 4.

As shown on Figure 8, views of a dirt road, fencing, agricultural fields, and local electrical distribution lines are visible in the foreground. The Facility Area, currently consisting of CRP land and agricultural fields, is visible in the foreground and middle-ground. The Rattlesnake Hills are visible in the background.

Dominant colors for the landscape are tan and green while the structures (e.g., dirt road, fencing, and transmission lines) are tan and gray. The Rattlesnake Hills in the background are brown. The grasses have varying textures of fine, medium, and coarse.

This KOP provides a typical view for the occupants of the residence located by this KOP. Considering the frequent viewing by local residents, viewers would have a moderate sensitivity to the visual changes in the area.

5.4.5 Key Observation Point 5

KOP 5 is located east of the Facility Area, on the southside of SR-24, approximately 0.4 mile east of Morris Lane. The southern end of the Facility Area is located approximately 0.43 mile west of this viewpoint at a slightly lower elevation than KOP 5.

As shown on Figure 9, views of agricultural fields, paved SR-24, and local electrical distribution lines are visible in the foreground. The Facility Area CRP land is visible in the foreground and middle-ground. The Rattlesnake Hills are visible in the background.

Dominant colors for the landscape are tan and green while the structures (e.g., highway, hop trellises, transmission line, and fencing) are tan, brown, and gray. The grasses have varying textures of fine, medium, and coarse.

This KOP provides a typical view for drivers traveling west on SR-24, likely traveling at a high rate of speed based on the posted speed limit. Considering the short duration of viewing, viewers would have a low viewer sensitivity to the visual changes in the area.

5.4.6 Key Observation Point 6

KOP 6 is located south of the Facility Area, approximately 0.9 mile south of SR-24, at the intersection of Morris Lane and Newkirk Drive. The southern end of Facility Area is located approximately 1 mile north of this viewpoint at slightly lower elevation than KOP 6.

As shown on Figure 10, views of Morris Lane, approximately 15- to 20-foot-high hop trellises, and agricultural structures, are visible in the foreground. The Facility Area, currently consisting of CRP land and agricultural fields, is visible in the foreground and middle-ground. Yakima Ridge is visible in the background.

Dominant colors for the landscape are tan and green while the structures (e.g., hop trellises, roadway, agricultural structures) are tan and gray. Yakima Ridge is brown and white (from snow). The grasses have varying textures of fine, medium, and coarse.

This KOP provides a typical view for drivers traveling north on Morris Lane. Considering the short duration of viewing, viewers would have a low viewer sensitivity to the visual changes in the area. This KOP also provides a typical view for the occupants of the residences located by this KOP. Considering the frequent viewing by local residents, viewers would have a moderate sensitivity to the visual changes in the area.

6.0 Regulatory Setting

6.1 Federal

6.1.1 National Scenic Byways Program

The National Scenic Byways Program, a part of the Federal Highway Administration (FHWA), recognizes, preserves, and enhances selected roads throughout the United States as All-American Roads or National Scenic Byways based on one or more archaeological, cultural, historic, natural, recreational, and scenic qualities. According to the FHWA's America's Byways website, there are no officially designated National Scenic Byways in the vicinity of the Facility Area (FHWA 2020).

6.2 State

6.2.1 Washington State Scenic Byways Program

Washington State was one of the first states in the country to establish a system of scenic highways. Scenic highways pass through the varied terrain of Washington reflecting the depth of its scenic, cultural and historic landscapes. According to the Washington State Department of Transportation Scenic Byways website, there are no officially designated State Scenic Byways in the vicinity of the Facility Area (WSDOT 2020).

6.3 Local

6.3.1 Yakima County

Relevant policies from the Yakima County Comprehensive Plan Horizon 2040 are summarized below by element/section (Yakima County 2017).

Parks and Open Space Element

Goal POS 1 *Encourage the retention of open space and development of recreational opportunities.*

Policy POS 1.1 *Include hazardous critical areas, ecological critical areas, long-term commercially significant resource lands, lands which shape urban form, aesthetic value lands, selected cultural resources (archaeological sites, historic landscapes, and traditional cultural properties) and urban reserve lands in the County's definition of open space lands.*

7.0 Impact Analysis

7.1 Potential Visual Effects

During construction and operation, where visible and noticeable, the Facility may introduce visual contrast and have the potential to create visual effects within the surrounding areas. The potential visual effects anticipated as a result of construction and operation of the Facility are discussed below.

If the Facility infrastructure is not visible or perceived, no visual impact would occur. If the Facility infrastructure introduces contrast to the view but do not attract the attention of casual observer, the contrast is considered weak and the visual impacts could be considered minor to negligible. If the visual contrast introduced by the Facility begins to attract attention and begins to dominate the view, the contrast is considered moderate and the impact could be considered moderate. If the Facility infrastructure introduces contrast that demands attention, would not be overlooked, and is dominant in the view, the contrast is considered strong and the impact could be considered significant.

Construction activities will involve the clearing and grubbing of existing vegetation and grading of access roads. A temporary lay-down area will be established for storage of major equipment and materials. Construction of the Facility is expected take place over approximately 9 to 12 months. These visual changes would be transient and short-term in nature.

Completion of the Facility will introduce many new visual elements onto the Facility Area. These will include solar panels, tracking system and posts, substation, operations and maintenance building, BESS, access and service roads, fencing, gates, and security lighting.

7.1.1 KOP 1

KOP 1 represents a view of the proposed Facility from the southwest corner of SR-24 and Desmarais Road, oriented northwest. This KOP reflects the views of drivers traveling west on SR-24 and occupants of the residences at this location.

The photograph was taken from a berm on the southside of SR-24. The Facility fence line and nearest solar panels would be located approximately 300 feet northwest of this viewpoint. With the Facility at a slightly lower elevation than KOP 1, Facility infrastructure would not block views of

Yakima Ridge visible in the existing viewshed. Views of the Facility are obscured by the berm on the northside of SR-24. Where the Facility is visible, it would attract attention to the casual observer and would co-dominate the landscape with the adjacent highway and agricultural land. See Figure 11.

The Facility would introduce dark blue and gray colors, geometric shapes, and horizontal lines into the Facility Area. The colors, regular geometric forms and horizontal lines associated with the solar arrays and associated infrastructure would result in a visual contrast with the irregular, organic forms and colors of the existing landform and vegetation. However, other structures in the vicinity, the existing highway, fencing, residential structures, agricultural-related structures, and approximately 30-foot-high overhead utility distribution lines, also possess horizontal and vertical lines.

Contrast and visual impact are anticipated to be moderate. These impacts would be short term for travelers because they would only be approaching and parallel to the Facility for a limited time and their focus would be on the road ahead. In addition, the Facility would be obscured for some of the time by the roadside berm. For views from residences, while appearing as new and highly visible features, the Facility infrastructure would be consistent with other horizontal and vertical lines and geometric shapes visible throughout the landscape.

7.1.2 KOP 2

KOP 2 represents a view of the proposed Facility from south of the Facility Area, about halfway between the intersection of Desmarais Cutoff and Desmarais Road and the intersection of Desmarais Road and SR-24. This KOP reflects the views of drivers traveling east or west on Desmarais Road and occupants of the residences at this location.

The photograph was taken from the northside of Desmarais Road. The Facility fence line and nearest solar panels would be located approximately 1,100 feet north of this viewpoint. While KOP 2 is at a slightly lower elevation to the southern end of the Facility, with the Facility rising in elevation to the north, Facility infrastructure would not block views of Yakima Ridge visible in the existing viewshed. The Facility would attract attention to the casual observer but the portion of the Facility that would be visible would be a subordinate feature and would not dominate the landscape.

The Facility would introduce dark blue and gray colors, geometric shapes, and horizontal lines into the Facility Area. The colors of the Facility would visually contrast with the existing browns, tans, and greens. However, horizontal lines associated with the agricultural fields, dominate the foreground, and other structures in the vicinity, the existing highway, fencing, residential structures, agricultural related structures, and approximately 30-foot-high overhead utility distribution lines, also possess horizontal and vertical lines.

As the contrast is anticipated to be weak, the visual impacts are considered minor. These impacts would be short term for travelers because they would only be parallel to the Facility for a limited time and their focus would be on the road ahead. For views from residences, while appearing as new and highly visible features, the Facility infrastructure would be consistent with other horizontal and vertical lines and geometric shapes visible throughout the landscape.

7.1.3 KOP 3

KOP 3 represents a view of the proposed Facility from the southside of SR-24, approximately 0.5 miles west of Desmarais Cutoff. This KOP reflects the views of drivers traveling east on SR-24.

The photograph was taken from the southside of SR-24 looking northeast. The Facility fence line and nearest solar panels would be located approximately 1,500 feet northeast of this viewpoint. While KOP 3 is at a slightly lower elevation than the Facility, Facility infrastructure would not block uninterrupted views of Yakima Ridge where currently visible in the existing viewshed.

Views toward the Facility Area from this viewpoint would be partially screened by the approximately 15- to 20-foot-high hop trellises between the viewer and the Facility's perimeter fence. The Facility would attract attention to the casual observer but the portion of the Facility Area that would be visible would be a subordinate feature and would not dominate the landscape. During the growing season, it is expected that the approximately 15- to 20-foot-high hop bines and trellises would fully obscure the views of the Facility Area.

The Facility would introduce dark blue and gray colors, geometric shapes, and horizontal lines into the Facility Area. However, gray color associated with SR-24 and horizontal lines associated with the highway, hop trellises, fencing and overhead utility distribution lines are dominate the foreground. Other structures in the vicinity, residential and agricultural-related structures, also possess horizontal and vertical lines and geometric shapes.

As the contrast is anticipated to be weak, the visual impacts are considered minor. These impacts would be short term for travelers because they would only be parallel to the Facility for a limited time and their focus would be on the road ahead. For views from residences, while appearing as new and highly visible features during the seasons between harvest and the next growing season, the Facility infrastructure would be consistent with other horizontal and vertical lines and geometric shapes visible throughout the landscape.

7.1.4 KOP 4

KOP 4 represents a view of the proposed Facility from northwest of the Facility Area, approximately 0.8 mile north of SR-24. This KOP provides typical views of drivers traveling south on this private roadway and views for the occupants of the residence located by this KOP.

The photograph was oriented southeast toward the Facility Area, approximately 1,500 feet northwest of the proposed Facility fence line and nearest solar panels. With KOP 4 at a higher elevation than the Facility, Facility infrastructure would not block views of the Rattlesnake Hills visible in the existing viewshed. The Facility would attract attention to the casual observer and the Facility would co-dominate the landscape with the agricultural fields.

The Facility would introduce dark blue and gray colors, geometric shapes, and horizontal lines into the Facility Area. However, gray color associated with roadway and horizontal lines associated with the highway, agricultural fields, fencing and overhead utility distribution lines are dominate the foreground. Other structures in the vicinity, residential and agricultural-related structures, also possess horizontal and vertical lines and geometric shapes

Contrast and visual impact are anticipated to be moderate. These impacts would be short term for travelers because they would only be approaching and parallel to the Facility for a limited time and their focus would be on the road ahead. For views from residences, while appearing as new and highly visible features, the Facility infrastructure would be consistent with other horizontal and vertical lines and geometric shapes visible throughout the landscape.

7.1.5 KOP 5

KOP 5 represents a view of the proposed Facility from the southside of SR-24 approximately 0.4 miles east of Morris Lane. This KOP reflects the views of drivers traveling west on SR-24 and views from the residence at this location.

The photograph was taken from the southside of SR-24. The Facility fence line and nearest solar panels would be located approximately 2,300 feet northwest of this viewpoint. With KOP 5 at a slightly higher elevation than the Facility, Facility infrastructure would not block views of the Rattlesnake Hills visible in the existing viewshed. The Facility would attract attention to the casual observer and the Facility would co-dominate the landscape with the adjacent highway and agricultural land.

The Facility would introduce dark blue and gray colors, geometric shapes, and horizontal lines into the Facility Area. However, gray color associated with SR-24 and horizontal lines associated with the highway, hop trellises, fencing, and overhead utility distribution lines dominate the foreground. Other structures in the vicinity, residential and agricultural-related structures, also possess horizontal and vertical lines and geometric shapes.

Contrast and visual impact are anticipated to be moderate. These impacts would be short term for travelers because they would only be approaching and parallel to the Facility for a limited time and their focus would be on the road ahead. For views where available from residence, while appearing as new and highly visible features, the Facility infrastructure would be consistent with other horizontal and vertical lines and geometric shapes visible throughout the landscape.

7.1.6 KOP 6

KOP 6 represents a view of the proposed Facility from south of the Facility Area, approximately 0.9 mile south of SR-24, at the intersection of Morris Lane and Newkirk Drive. This KOP reflects the views of drivers traveling north on Morris Lane and occupants of the residences at this location.

The photograph was taken from the eastside of Morris Lane. The Facility fence line and nearest solar panels would be located approximately 5,200 feet north of this viewpoint. With KOP 6 at a slightly higher elevation than the southern end of the Facility, with the Facility rising in elevation to the north, Facility infrastructure would not block views of Yakima Ridge visible in the existing viewshed. The Facility would attract the attention of the casual observer but the portion of the Facility that would be visible would be a subordinate feature and would not dominate the landscape. See Figure 12.

The Facility would introduce dark blue and gray colors, geometric shapes, and horizontal lines into the Facility Area. However, gray color associated with Morris Lane and horizontal lines associated with the highway and hop trellises dominate the foreground. Other structures in the vicinity, residential and agricultural related structures, also possess horizontal and vertical lines and geometric shapes.

Contrast and visual impact are anticipated to be moderate. These impacts would be short term for travelers because they would only be parallel to the Facility for a limited time and their focus would be on the road ahead. For views from residences, while appearing as new and highly visible features, the Facility infrastructure would be consistent with other horizontal and vertical lines and geometric shapes visible throughout the landscape.

8.0 References

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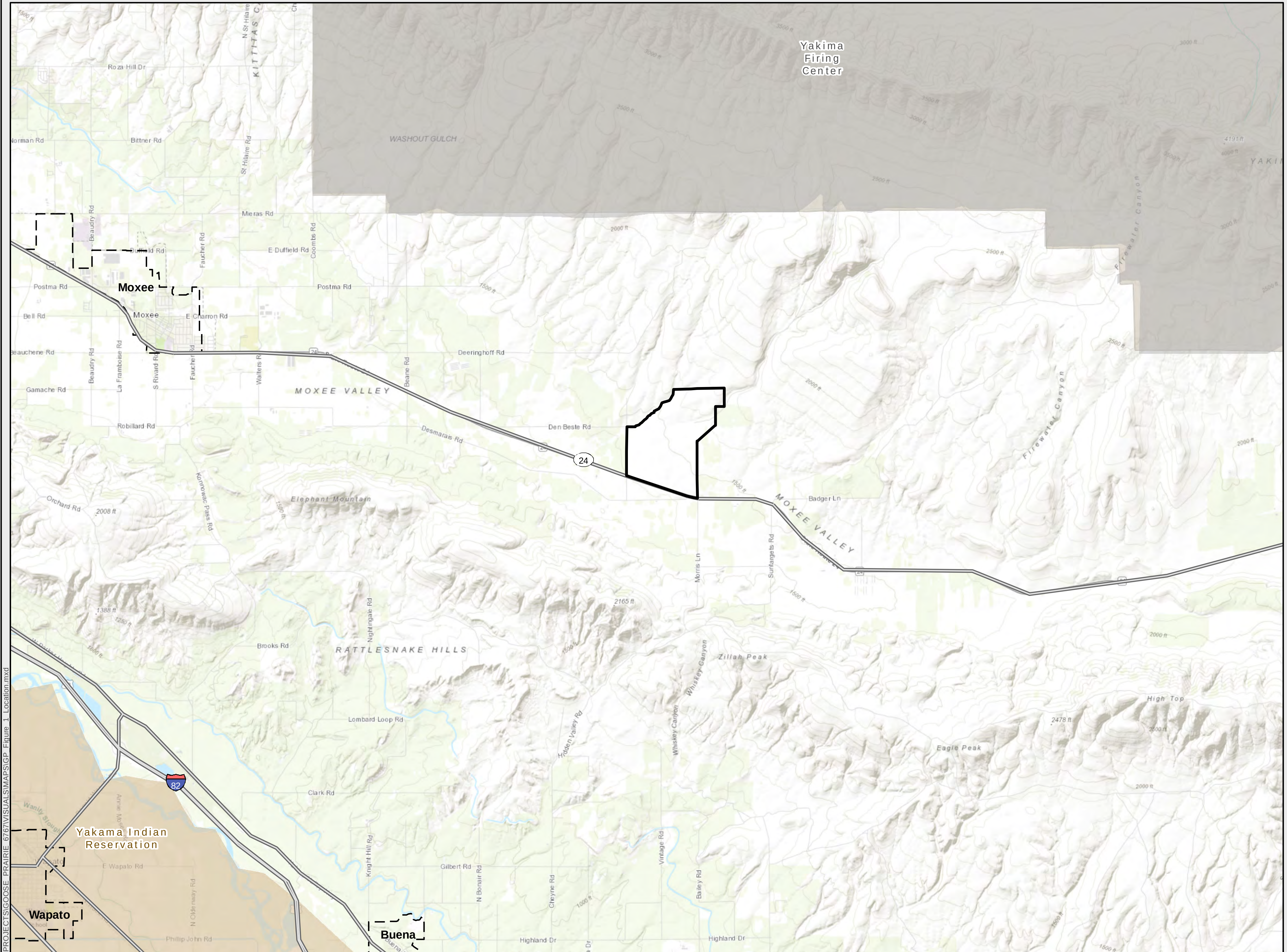
Figures

Goose Prairie Solar Project

Figure 1
Project Vicinity

Yakima County, Washington



Project Area

Populated Place

Military Installation

Tribal Land

N

0 0.5 1 2

Miles

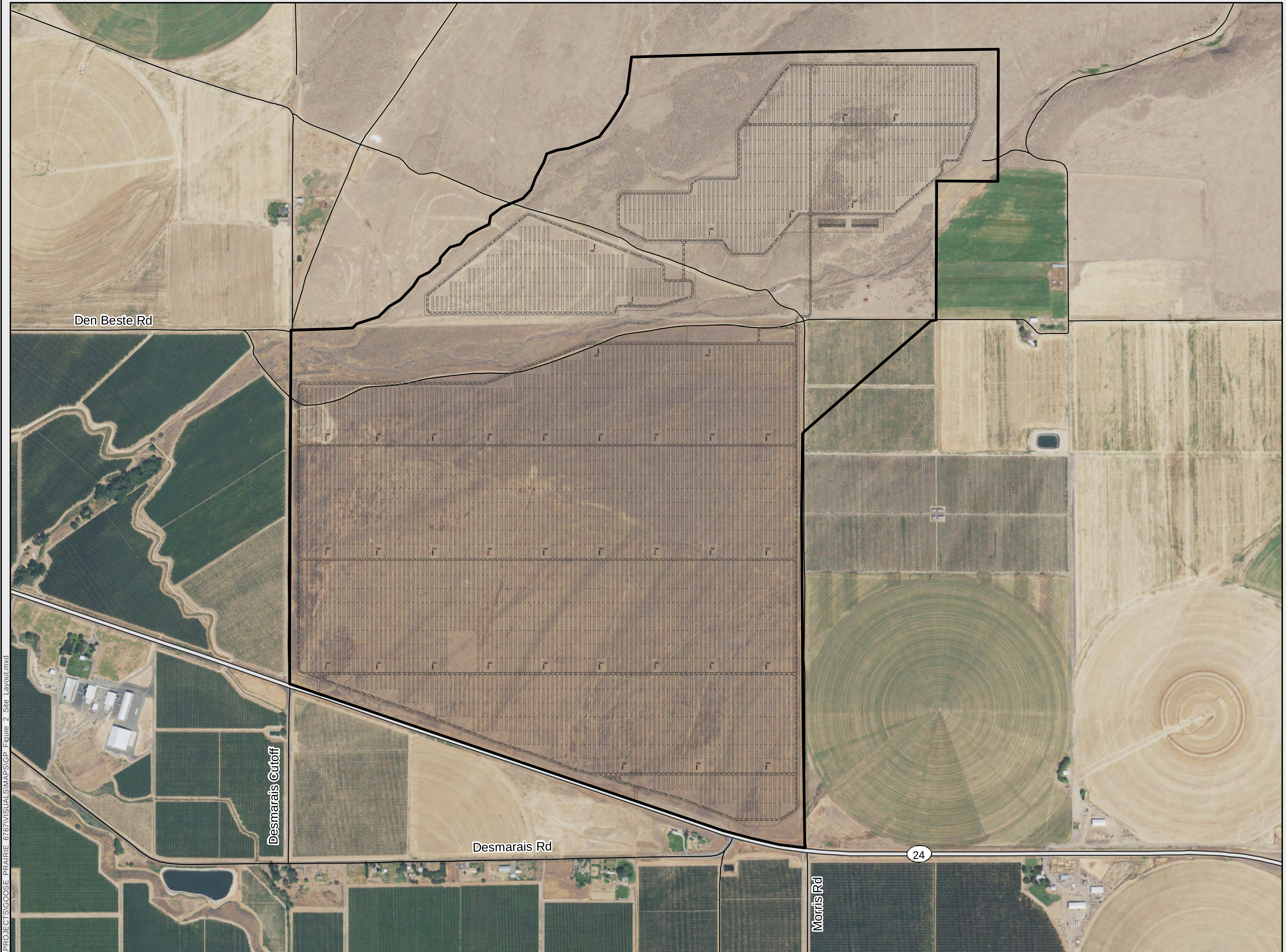
TETRA TECH OneEnergy

R:\PROJECTS\GOOSE_PRAIRIE_6767\VISUALS\MAPS\GP_Figure_1_Location.mxd

Goose Prairie Solar Project

Figure 2
Site Map

Yakima County, Washington



Project Area

N

0 500 1,000 2,000
Feet

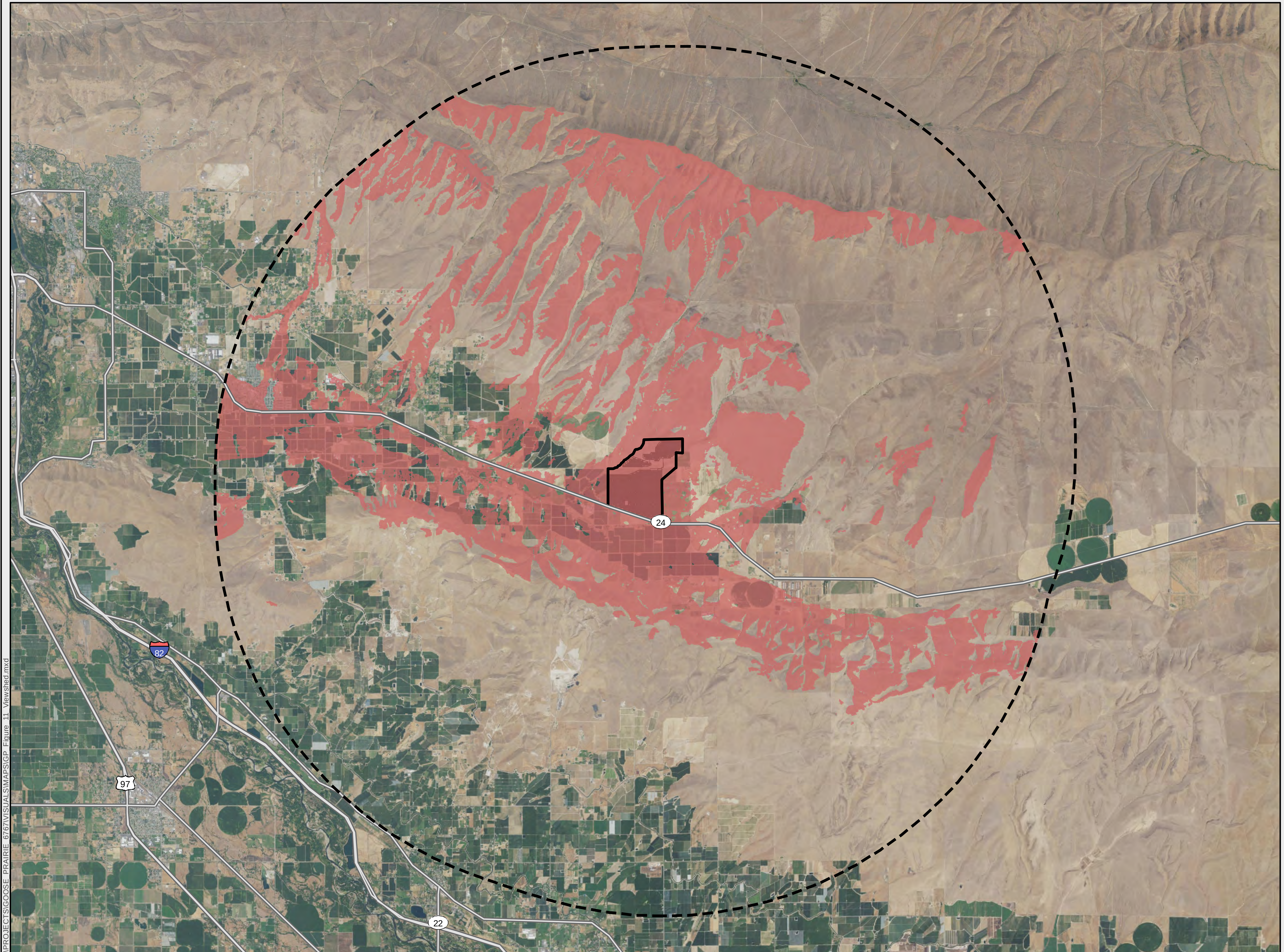
TETRA TECH
OneEnergy

R:\PROJECTS\GOOSE_PRAIRIE_6767\VISUALS\MAPS\GP_Figure_2_Site_Layout.mxd

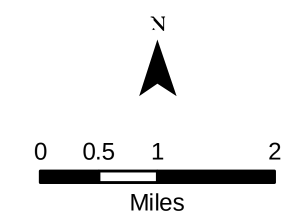
Goose Prairie Solar Project

Figure 3
Zone of Visual Influence

Yakima County, Washington



Project Area
7-mile Buffer
Panel Potential Visibility

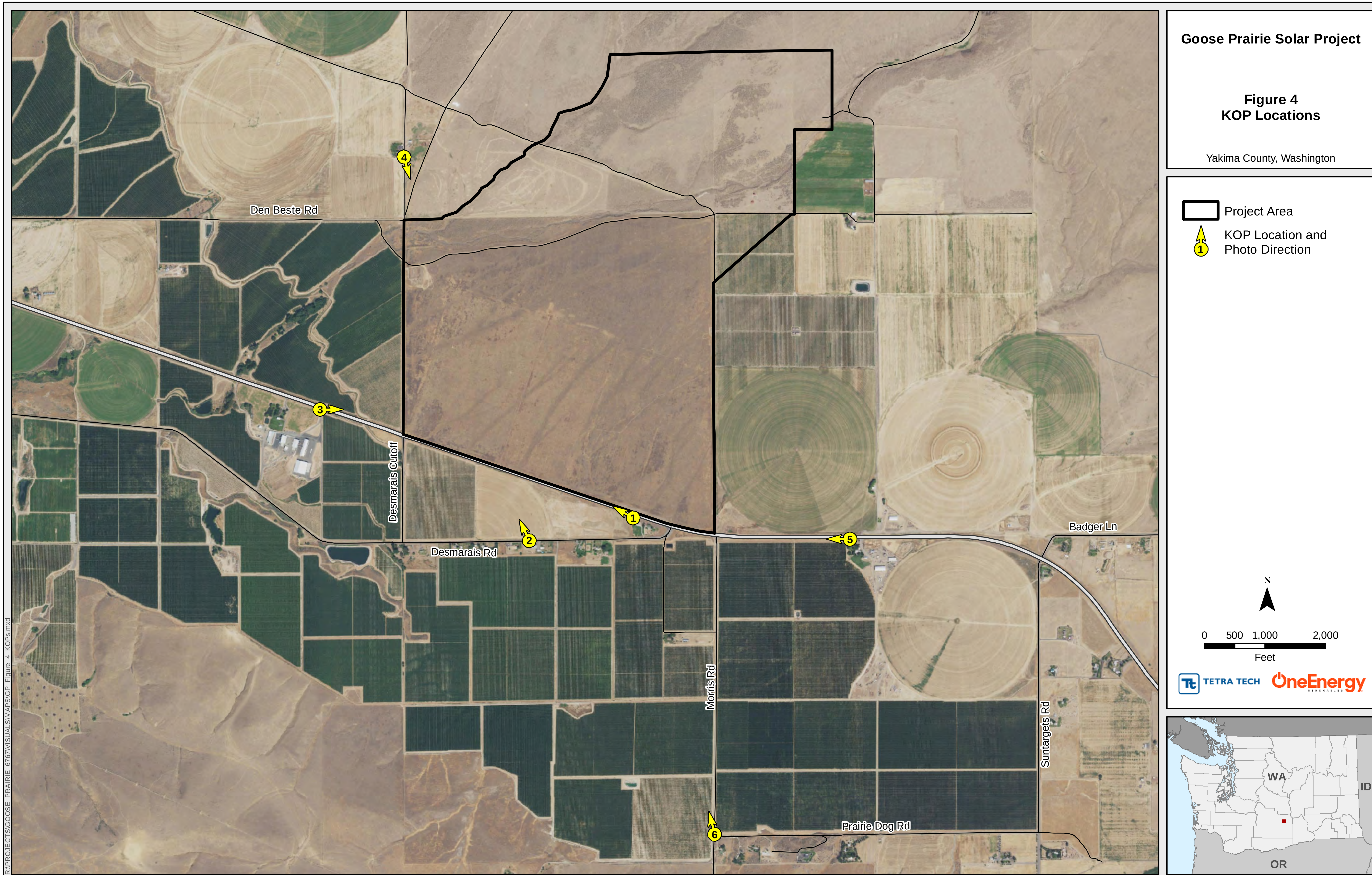


TETRA TECH OneEnergy

Goose Prairie Solar Project

Figure 4
KOP Locations

Yakima County, Washington



View of the proposed Facility Area from the southwest corner of Washington State Highway 24 and Desmaris Road.

Goose Prairie Solar Project

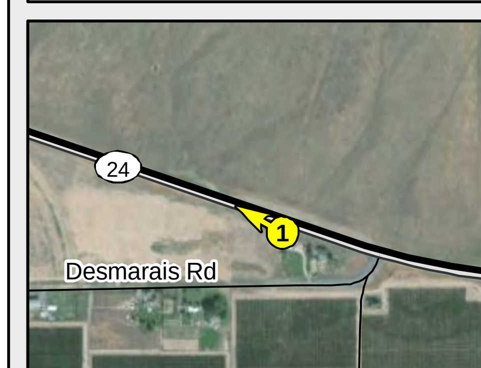
Figure 5
KOP 1: Existing Conditions

Yakima County, Washington

Project Area

KOP Location and Photo Direction

TETRA TECH OneEnergy



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View of the proposed Facility Area, south of the Facility Area, about halfway between the intersection of Desmaris Cutoff and Desmaris Road and the intersection of Desmaris Road and Washington State Highway 24.

Goose Prairie Solar Project

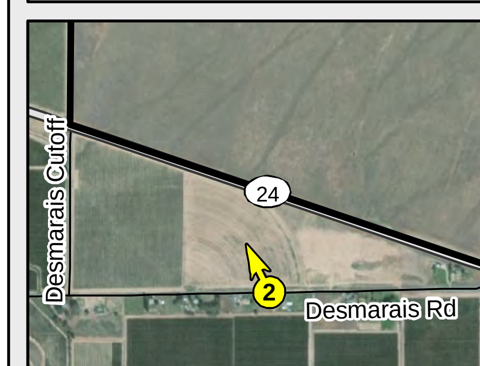
Figure 6
KOP 2: Existing Conditions

Yakima County, Washington

Project Area

KOP Location and Photo Direction

TETRA TECH OneEnergy



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View of the proposed Facility Area from the southside of Washington State Highway 24, approximately 0.5 miles west of Desmaris Cutoff.

Goose Prairie Solar Project

Figure 7
KOP 3: Existing Conditions

Yakima County, Washington

Project Area

KOP Location and Photo Direction

TETRA TECH

OneEnergy RENEWABLES

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View of the proposed Facility Area approximately 0.8 miles north of Washington State Highway 24.

Goose Prairie Solar Project

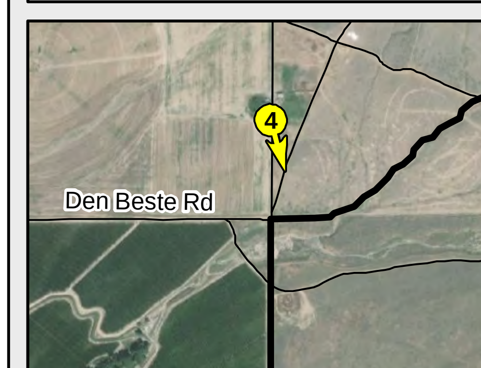
Figure 8
KOP 4: Existing Conditions

Yakima County, Washington

Project Area

KOP Location and Photo Direction

TETRA TECH OneEnergy



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View of the proposed Facility Area from the southside of Washington State Highway 24 approximately 0.5 miles east of Morris Lane.

Goose Prairie Solar Project

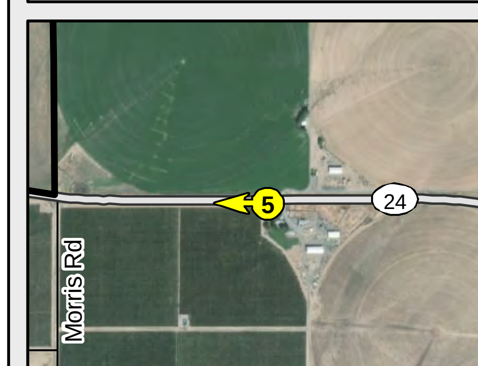
Figure 9
KOP 5: Existing Conditions

Yakima County, Washington

Project Area

KOP Location and Photo Direction

TETRA TECH OneEnergy



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View of the proposed Facility Area, approximately 1 mile south of Washington State Highway 24, at the intersection of Morris Lane and Newkirk Drive.

Goose Prairie Solar Project

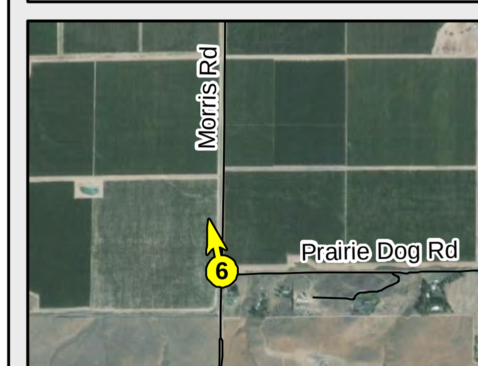
Figure 10
KOP 6: Existing Conditions

Yakima County, Washington

Project Area

KOP Location and Photo Direction

TETRA TECH OneEnergy



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Goose Prairie Solar Project

Figure 11
KOP 1: Existing Conditions and Simulation

Yakima County, Washington

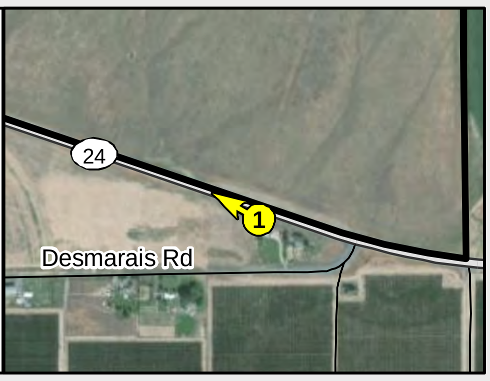
Project Area

KOP Location and Photo Direction

This sheet should be printed at 11x17 inches; full size with no scaling; and viewed at 9.9 inches from the eye. If viewed on a computer monitor, the document should be scaled at 100% and viewed at 9.9 inches from the eye.

TETRA TECH

OneEnergy



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Goose Prairie Solar Project

Figure 12
KOP 6: Existing Conditions and Simulation

Yakima County, Washington

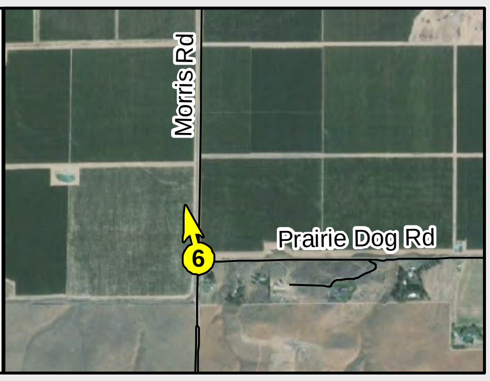
Project Area

KOP Location and Photo Direction

This sheet should be printed at 11x17 inches; full size with no scaling; and viewed at 9.9 inches from the eye. If viewed on a computer monitor, the document should be scaled at 100% and viewed at 9.9 inches from the eye.

TETRA TECH

OneEnergy



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Attachment 1: Visual Contrast Rating Worksheets

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date November 14, 2020

District

Resource Area

Activity (program) N/A

SECTION A. PROJECT INFORMATION

1. Project Name Goose Prairie Solar
2. Key Observation Point 1
3. VRM Class Unclassified/Not on Federal Land

4. Location
Township ______
Range ______
Section ______

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Fore - gently undulating: Back -rounded hills	Grass - regular, short with tall clumps, Trees - large, irregular	Highway - linear, prominent;Fencing - linear, parallel, Sign - linear
LINE	Diffuse edge	Grass - continuous, soft with irregular clumps, Trees - rounded, vertical	Highway - horizontal; Fencing - vertical, horizontal, Sign - vertical
COLOR	Fore - light tans, Back - browns, white	Grass - tans, Trees - greens, browns	Highway - dark gray; Fencing - brown, gray, Sign - yellow, brown
TEX-TURE	Fore - coarse, Back - coarse, snow	Grass - fine to medium Trees - medium	Highway - fine, Fencing - smooth, rough. Sign - smooth, rough

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Fore - flat, gently undulating, Back -rounded hills	Grass - sparse, irregular	Solar - linear, angular, Highway - linear, prominent. Fencing - linear, parallel, Sign - linear
LINE	Diffuse edge	Grass - soft with clumps, irregular	Solar, Highway - horizontal, Fencing - vertical, horizontal, Sign - vertical
COLOR	Fore - light tans, Back - browns, white	Grass - tans and greens	Solar - dark blue, gray, Highway - dark gray, Fencing - brown, gray, Sign - yellow, brown
TEX-TURE	Fore - coarse, Back - coarse, snow	Grass - patchy	Solar - smooth, Highway - fine, Fencing - smooth, rough, Sign - smooth, rough

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			✔			✔					✔	
Line			✔			✔					✔	
Color			✔				✔				✔	
Texture			✔				✔				✔	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☐ No (Explain on reverse side)

Evaluator's Names	Date
Tiffanie Ramos Paula Fell	November 14, 2020

~~Rel. 8-30~~
1/17/86

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date November 14, 2020

District

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Activity (program) N/A

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SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

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Form			✔			✔					✔	
Line			✔			✔					✔	
Color			✔				✔				✔	
Texture			✔				✔				✔	

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~~Rel. 8-30~~
1/17/86

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(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date November 14, 2020

District

Resource Area

Activity (program) N/A

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Range ______
Section ______

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SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1.

DEGREE OF CONTRAST	LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
ELEMENTS: Form			✔			✔					✔	
Line			✔			✔					✔	
Color			✔				✔				✔	
Texture			✔				✔				✔	

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Tiffanie Ramos Paula Fell	November 14, 2020

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1/17/86

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VISUAL CONTRAST RATING WORKSHEET

Date November 14, 2020

District

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Activity (program) N/A

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SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

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ELEMENTS	Land/Water Body (1) Strong	Moderate	Weak	None	Vegetation (2) Strong	Moderate	Weak	None	Structures (3) Strong	Moderate	Weak	None
Form			✔			✔					✔	
Line			✔			✔					✔	
Color			✔				✔				✔	
Texture			✔				✔				✔	

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3. Additional mitigating measures recommended ☐ Yes ☐ No (Explain on reverse side)

Evaluator's Names	Date
Tiffanie Ramos Paula Fell	November 14, 2020

~~Rel. 8-30~~
1/17/86

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date November 14, 2020

District

Resource Area

Activity (program) N/A

SECTION A. PROJECT INFORMATION

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2. Key Observation Point 1
3. VRM Class Unclassified/Not on Federal Land

4. Location
Township ______
Range ______
Section ______

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Form			✔			✔					✔	
Line			✔			✔					✔	
Color			✔				✔				✔	
Texture			✔				✔				✔	

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Evaluator's Names	Date
Tiffanie Ramos Paula Fell	November 14, 2020

~~Rel. 8-30~~
1/17/86

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date November 14, 2020

District

Resource Area

Activity (program) N/A

SECTION A. PROJECT INFORMATION

1. Project Name Goose Prairie Solar

2. Key Observation Point 1

3. VRM Class Unclassified/Not on Federal Land

4. Location
Township ______
Range ______
Section ______

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SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Fore - flat, gently undulating, Back -rounded hills	Grass - sparse, irregular	Solar - linear, angular, Highway - linear, prominent. Fencing - linear, parallel, Sign - linear
LINE	Diffuse edge	Grass - soft with clumps, irregular	Solar, Highway - horizontal, Fencing - vertical, horizontal, Sign - vertical
COLOR	Fore - light tans, Back - browns, white	Grass - tans and greens	Solar - dark blue, gray, Highway - dark gray, Fencing - brown, gray, Sign - yellow, brown
TEX-TURE	Fore - coarse, Back - coarse, snow	Grass - patchy	Solar - smooth, Highway - fine, Fencing - smooth, rough, Sign - smooth, rough

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form			✔			✔					✔	
Line			✔			✔					✔	
Color			✔				✔				✔	
Texture			✔				✔				✔	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No
(Explain on reverse side)

3. Additional mitigating measures recommended
☐ Yes ☐ No (Explain on reverse side)

Evaluator's Names	Date
Tiffanie Ramos Paula Fell	November 14, 2020

ATTACHMENT K

Solar Glare Reports

FORGESOLAR GLARE ANALYSIS

Project: **WA Solar**
Site configuration: **Goose Prairie Airports**
Analysis conducted by Nicole Larson (nicole@oneenergyrenewables.com) at 00:52 on 10 Dec, 2019.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis parameters and observer eye characteristics (for reference only):

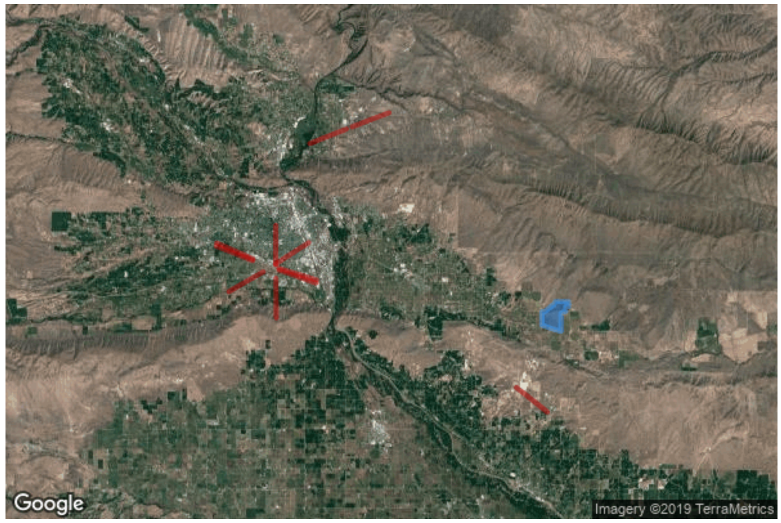
- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

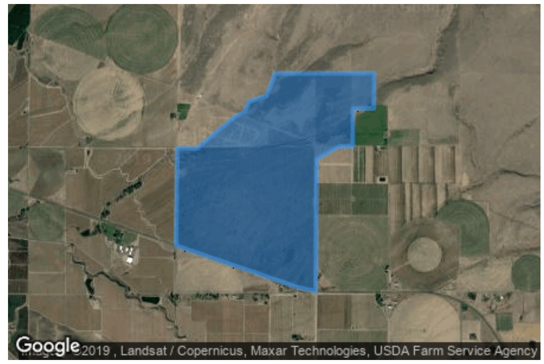
Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 34100.3717



PV Array(s)

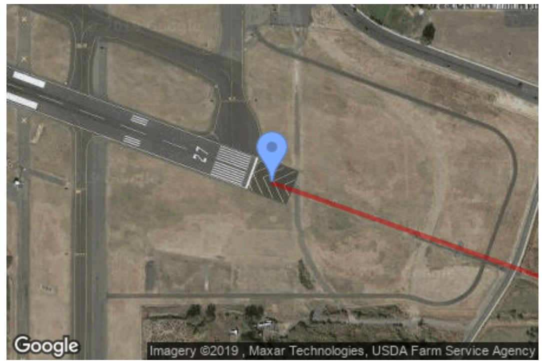
Name: PV array 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: 80000.0 kW
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	46.520400	-120.230125	1417.61	7.00	1424.61
2	46.520831	-120.232929	1410.51	7.00	1417.51
3	46.524950	-120.250402	1381.10	7.00	1388.11
4	46.534650	-120.250247	1424.58	7.00	1431.58
5	46.534643	-120.247351	1428.80	7.00	1435.80
6	46.537764	-120.241907	1476.48	7.00	1483.48
7	46.538292	-120.240459	1491.16	7.00	1498.16
8	46.539281	-120.239869	1498.20	7.00	1505.20
9	46.539864	-120.237305	1519.24	7.00	1526.24
10	46.542092	-120.236060	1547.53	7.00	1554.53
11	46.542122	-120.221683	1722.42	7.00	1729.42
12	46.538624	-120.221726	1633.35	7.00	1640.35
13	46.538580	-120.224773	1634.45	7.00	1641.45
14	46.534845	-120.224741	1602.91	7.00	1609.91
15	46.534831	-120.226747	1582.59	7.00	1589.59
16	46.533561	-120.230009	1555.66	7.00	1562.66

Flight Path Receptor(s)

Name: FP 1
Description:
Threshold height: 50 ft
Direction: 289.2°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

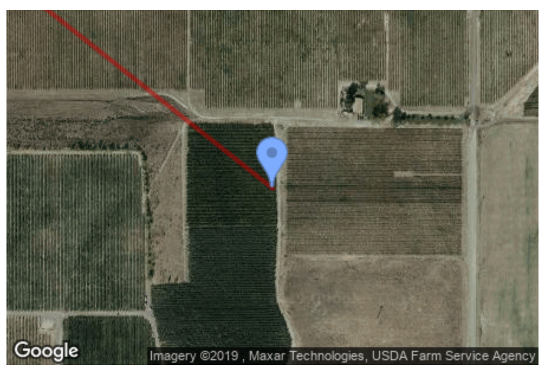


Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.565317	-120.530800	1039.23	50.00	1089.23
Two-mile	46.555790	-120.491049	982.68	660.00	1642.69

Name: FP 10
Description:
Threshold height: 50 ft
Direction: 68.4°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.668629	-120.458947	1370.30	50.00	1420.31
Two-mile	46.657981	-120.498165	1090.29	883.47	1973.76

Name: FP 11
Description:
Threshold height: 50 ft
Direction: 128.4°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.461137	-120.244488	1213.71	50.00	1263.71
Two-mile	46.479092	-120.277425	1343.03	474.13	1817.16

Name: FP 2
Description:
Threshold height: 50 ft
Direction: 359.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.559236	-120.534182	1045.98	50.00	1095.98
Two-mile	46.530324	-120.533837	1894.33	-244.89	1649.44

Name: FP 3
Description:
Threshold height: 50 ft
Direction: 180.2°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.569268	-120.534354	1047.35	50.00	1097.35
Two-mile	46.598180	-120.534244	1156.99	493.82	1650.81

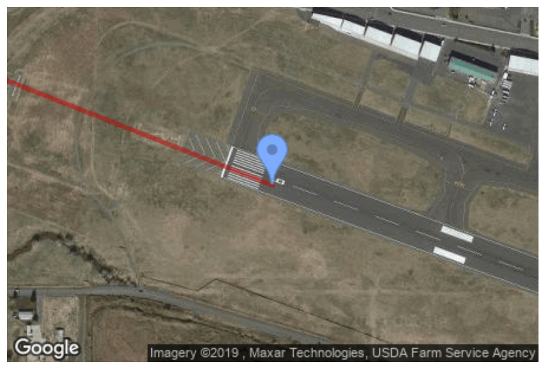
Name: FP 4
Description:
Threshold height: 50 ft
Direction: 237.1°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.569740	-120.534526	1047.83	50.00	1097.84
Two-mile	46.585432	-120.499161	1035.55	615.74	1651.29

Name: FP 5
Description:
Threshold height: 50 ft
Direction: 60.1°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.564003	-120.547729	1069.51	50.00	1119.51
Two-mile	46.549569	-120.584208	1154.75	518.21	1672.96

Name: FP 6
Description:
Threshold height: 50 ft
Direction: 111.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.572264	-120.558715	1088.81	50.00	1138.81
Two-mile	46.582879	-120.597882	1155.14	537.13	1692.27

Name: FP 7
Description:
Threshold height: 50 ft
Direction: 287.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.566658	-120.531050	1040.84	50.00	1090.84
Two-mile	46.557979	-120.490888	987.76	656.54	1644.29

Name: FP 8
Description:
Threshold height: 50 ft
Direction: 113.7°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.573510	-120.558779	1091.06	50.00	1141.07
Two-mile	46.585150	-120.597324	1156.61	537.91	1694.52

Name: FP 9
Description:
Threshold height: 50 ft
Direction: 249.1°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	46.670220	-120.452993	1369.32	50.00	1419.32
Two-mile	46.680534	-120.413584	1738.38	234.39	1972.77

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV array 1	SA tracking	SA tracking	0	0	236,000,000.0

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
FP 1	0	0
FP 10	0	0
FP 11	0	0
FP 2	0	0
FP 3	0	0
FP 4	0	0
FP 5	0	0
FP 6	0	0
FP 7	0	0
FP 8	0	0
FP 9	0	0

Results for: PV array 1

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1	0	0
FP 10	0	0
FP 11	0	0
FP 2	0	0
FP 3	0	0
FP 4	0	0
FP 5	0	0
FP 6	0	0
FP 7	0	0
FP 8	0	0
FP 9	0	0

Flight Path: FP 1

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 10

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 11

0 minutes of yellow glare

0 minutes of green glare

Flight Path: FP 2

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 7

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 8

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 9

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

FORGESOLAR GLARE ANALYSIS

Project: **WA Solar**
Site configuration: **Goose Prairie Residences**
Analysis conducted by Nicole Larson (nicole@oneenergyrenewables.com) at 19:31 on 09 Dec, 2019.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	N/A	No flight paths analyzed
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis parameters and observer eye characteristics (for reference only):

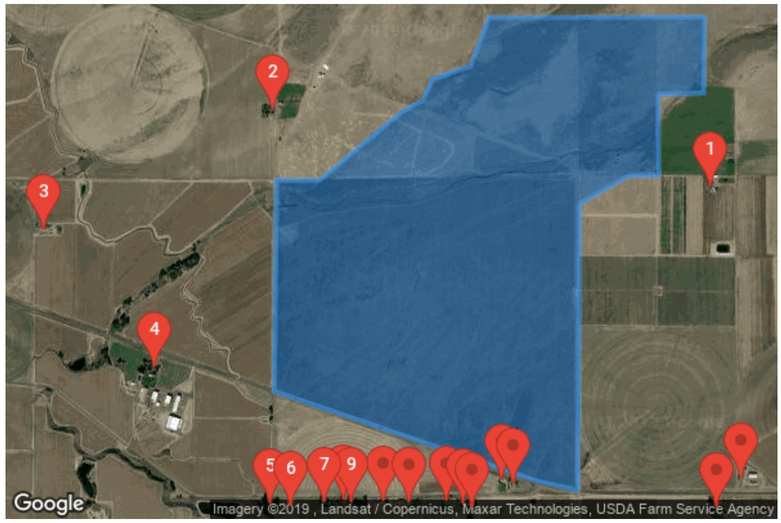
- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

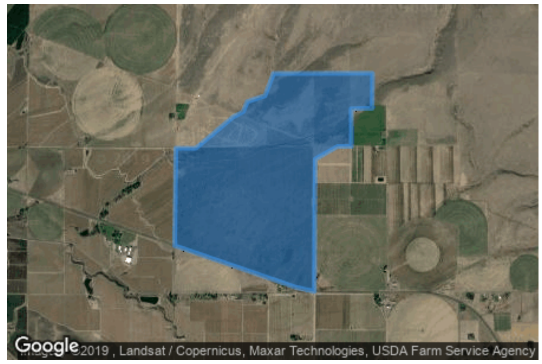
Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 34038.3717



PV Array(s)

Name: PV array 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: 80000.0 kW
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	46.520400	-120.230125	1417.61	7.00	1424.61
2	46.520831	-120.232929	1410.51	7.00	1417.51
3	46.524950	-120.250402	1381.10	7.00	1388.11
4	46.534650	-120.250247	1424.58	7.00	1431.58
5	46.534643	-120.247351	1428.80	7.00	1435.80
6	46.537764	-120.241907	1476.48	7.00	1483.48
7	46.538292	-120.240459	1491.16	7.00	1498.16
8	46.539281	-120.239869	1498.20	7.00	1505.20
9	46.539864	-120.237305	1519.24	7.00	1526.24
10	46.542092	-120.236060	1547.53	7.00	1554.53
11	46.542122	-120.221683	1722.42	7.00	1729.42
12	46.538624	-120.221726	1633.35	7.00	1640.35
13	46.538580	-120.224773	1634.45	7.00	1641.45
14	46.534845	-120.224741	1602.91	7.00	1609.91
15	46.534831	-120.226747	1582.59	7.00	1589.59
16	46.533561	-120.230009	1555.66	7.00	1562.66

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	46.534290	-120.221304	1640.64	5.50
OP 2	2	46.537849	-120.250502	1520.36	5.50
OP 3	3	46.532370	-120.265758	1376.84	5.50
OP 4	4	46.526049	-120.258365	1347.74	5.50
OP 5	5	46.519772	-120.250641	1347.11	5.50
OP 6	6	46.519653	-120.249229	1341.81	5.50
OP 7	7	46.519851	-120.247045	1352.76	5.50
OP 8	8	46.519925	-120.245708	1356.96	5.50
OP 9	9	46.519862	-120.245220	1358.82	5.50
OP 10	10	46.519879	-120.243101	1367.47	17.50
OP 11	11	46.519818	-120.241384	1366.77	5.50
OP 12	12	46.519874	-120.238876	1374.11	5.50
OP 13	13	46.519758	-120.237774	1381.29	5.50
OP 14	14	46.519615	-120.237151	1385.57	5.50
OP 15	15	46.520907	-120.235201	1416.79	5.50
OP 16	16	46.520722	-120.234383	1408.74	5.50
OP 17	17	46.519616	-120.220819	1462.09	5.50
OP 18	18	46.520986	-120.219234	1478.88	5.50

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV array 1	SA tracking	SA tracking	0	0	236,000,000.0

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0

Results for: PV array 1

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0

Point Receptor: OP 1

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 14

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 15

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 16

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 17

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 18

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

FORGESOLAR GLARE ANALYSIS

Project: **WA Solar**
Site configuration: **Goose Prairie Roads**
Analysis conducted by Nicole Larson (nicole@oneenergyrenewables.com) at 18:29 on 29 Jan, 2020.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	N/A	No flight paths analyzed
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

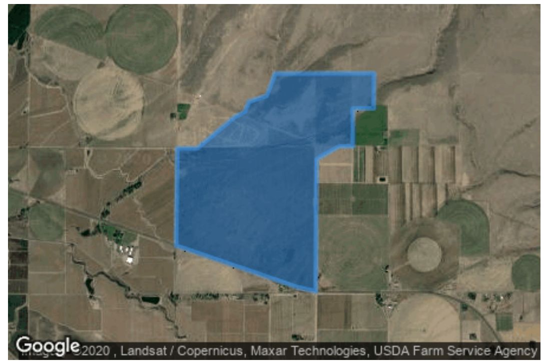
SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 34175.3717

PV Array(s)

Name: PV array 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: 80000.0 kW
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	46.520400	-120.230125	1417.61	7.00	1424.61
2	46.520831	-120.232929	1410.51	7.00	1417.51
3	46.524950	-120.250402	1381.10	7.00	1388.11
4	46.534650	-120.250247	1424.58	7.00	1431.58
5	46.534643	-120.247351	1428.80	7.00	1435.80
6	46.537764	-120.241907	1476.48	7.00	1483.48
7	46.538292	-120.240459	1491.16	7.00	1498.16
8	46.539281	-120.239869	1498.20	7.00	1505.20
9	46.539864	-120.237305	1519.24	7.00	1526.24
10	46.542092	-120.236060	1547.53	7.00	1554.53
11	46.542122	-120.221683	1722.42	7.00	1729.42
12	46.538624	-120.221726	1633.35	7.00	1640.35
13	46.538580	-120.224773	1634.45	7.00	1641.45
14	46.534845	-120.224741	1602.91	7.00	1609.91
15	46.534831	-120.226747	1582.59	7.00	1589.59
16	46.533561	-120.230009	1555.66	7.00	1562.66

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	46.533650	-120.250495	1404.62	10.00
OP 2	2	46.530912	-120.250410	1409.29	10.00
OP 3	3	46.527074	-120.250581	1397.27	10.00
OP 4	4	46.522231	-120.229982	1450.12	10.00
OP 5	5	46.525597	-120.230068	1492.59	10.00
OP 6	6	46.529672	-120.230153	1522.86	10.00
OP 7	7	46.533333	-120.230153	1554.29	10.00
OP 8	8	46.534986	-120.226806	1580.82	10.00
OP 9	9	46.534927	-120.222772	1623.36	10.00

Route Receptor(s)

Name: Route 1
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	46.509903	-120.195623	1481.93	10.00	1491.93
2	46.513329	-120.201373	1502.01	10.00	1512.01
3	46.517552	-120.205579	1530.38	10.00	1540.38
4	46.518674	-120.207210	1523.97	10.00	1533.97
5	46.519354	-120.208926	1519.02	10.00	1529.02
6	46.519974	-120.211458	1507.13	10.00	1517.13
7	46.520181	-120.213518	1494.21	10.00	1504.21
8	46.520313	-120.230116	1418.25	10.00	1428.25
9	46.520764	-120.233120	1411.67	10.00	1421.67
10	46.534611	-120.291301	1239.48	10.00	1249.48

Name: Route 2
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	46.534835	-120.220970	1644.24	10.00	1654.24
2	46.534820	-120.229961	1555.96	10.00	1565.96
3	46.520314	-120.230031	1418.33	10.00	1428.33

Name: Route 3
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	46.520718	-120.233025	1411.34	10.00	1421.34
2	46.520408	-120.233143	1408.77	10.00	1418.77
3	46.520201	-120.233636	1405.33	10.00	1415.33
4	46.520017	-120.254971	1335.13	10.00	1345.13
5	46.520077	-120.255518	1334.17	10.00	1344.17
6	46.520224	-120.256022	1334.20	10.00	1344.20
7	46.524986	-120.265024	1317.48	10.00	1327.48
8	46.525133	-120.265388	1316.66	10.00	1326.66
9	46.525975	-120.277555	1302.91	10.00	1312.91
10	46.526145	-120.278306	1295.97	10.00	1305.97
11	46.529680	-120.288563	1260.67	10.00	1270.67
12	46.530640	-120.292500	1239.88	10.00	1249.88

Name: Route 4
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	46.520060	-120.250487	1340.61	10.00	1350.61
2	46.540421	-120.250203	1484.45	10.00	1494.45
3	46.540569	-120.250267	1481.10	10.00	1491.10
4	46.540683	-120.250476	1472.46	10.00	1482.46
5	46.540757	-120.250766	1467.17	10.00	1477.17

Name: Route 5
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	46.534607	-120.250316	1422.97	10.00	1432.97
2	46.534716	-120.290702	1240.16	10.00	1250.16
3	46.534635	-120.291324	1238.85	10.00	1248.85

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV array 1	SA tracking	SA tracking	1,388,179	52,385	236,000,000.0

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 1	45283	284
OP 2	113170	4180
OP 3	102314	2632
OP 4	29161	7
OP 5	126147	5812
OP 6	180949	10281
OP 7	194499	10437
OP 8	239063	767
OP 9	0	0
Route 1	0	0
Route 2	247931	13955
Route 3	0	0

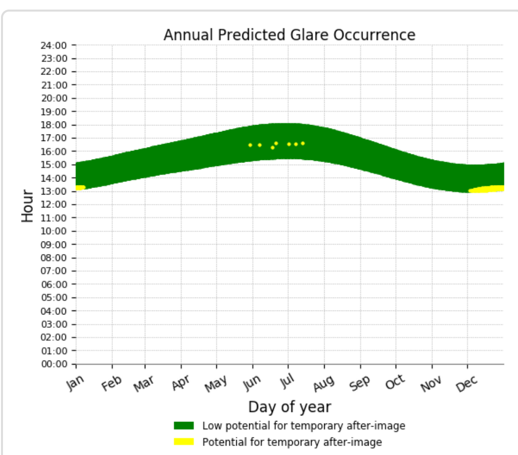
Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
Route 4	109662	4030
Route 5	0	0

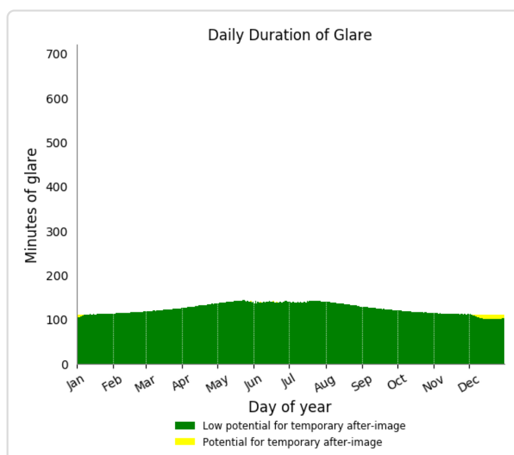
Results for: PV array 1

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	45283	284
OP 2	113170	4180
OP 3	102314	2632
OP 4	29161	7
OP 5	126147	5812
OP 6	180949	10281
OP 7	194499	10437
OP 8	239063	767
OP 9	0	0
Route 1	0	0
Route 2	247931	13955
Route 3	0	0
Route 4	109662	4030
Route 5	0	0

Point Receptor: OP 1

284 minutes of yellow glare
45283 minutes of green glare

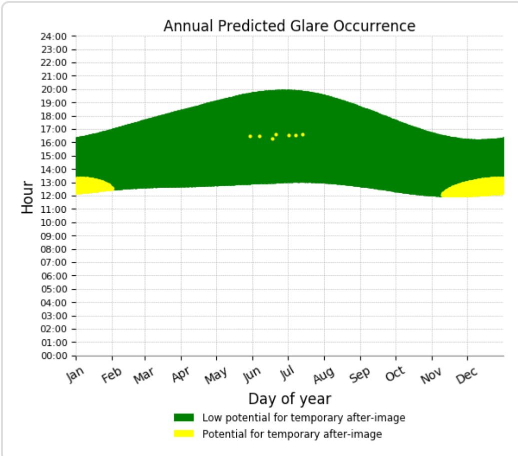


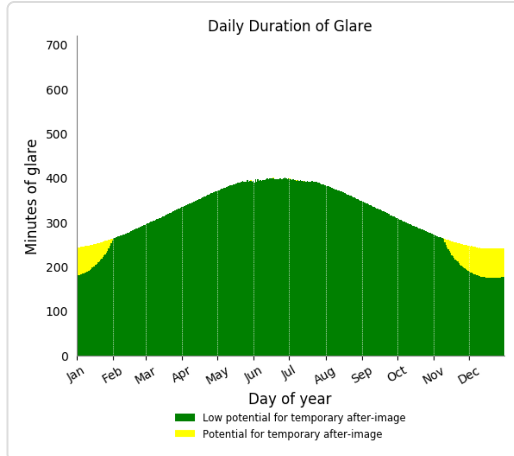


Point Receptor: OP 2

4180 minutes of yellow glare

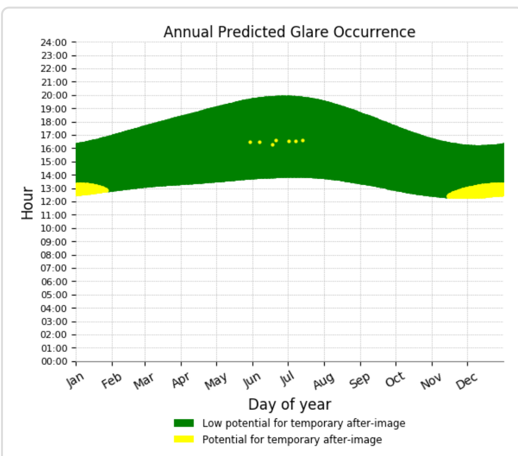
113170 minutes of green glare

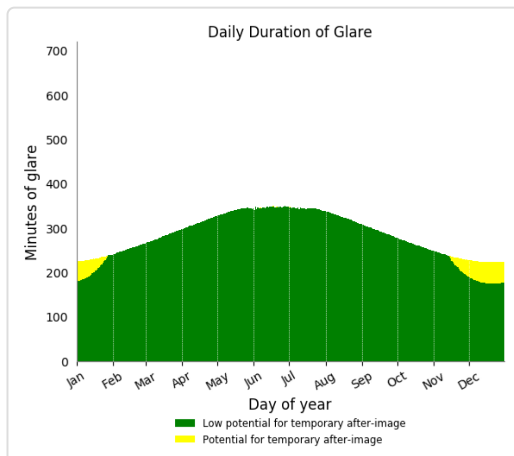




Point Receptor: OP 3

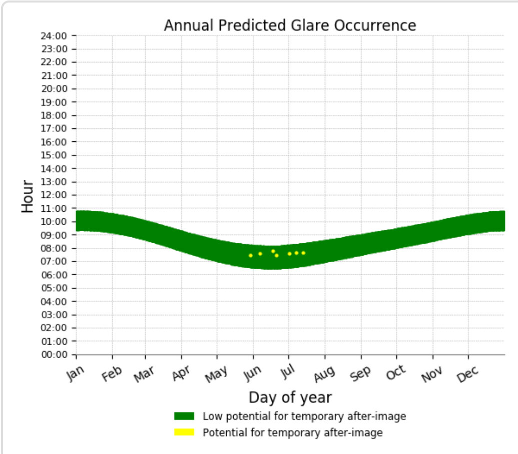
2632 minutes of yellow glare
102314 minutes of green glare

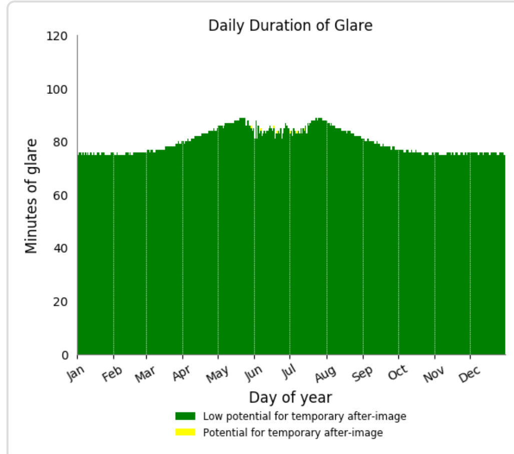




Point Receptor: OP 4

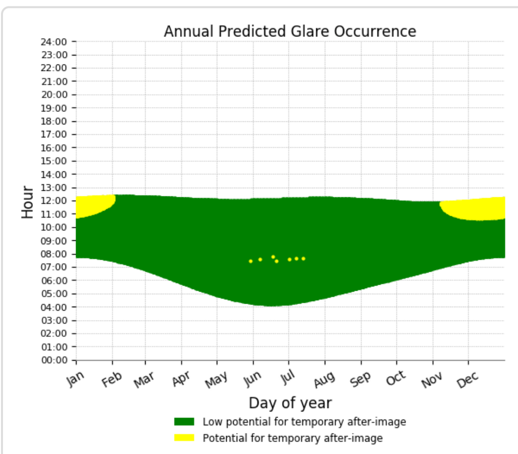
7 minutes of yellow glare
29161 minutes of green glare

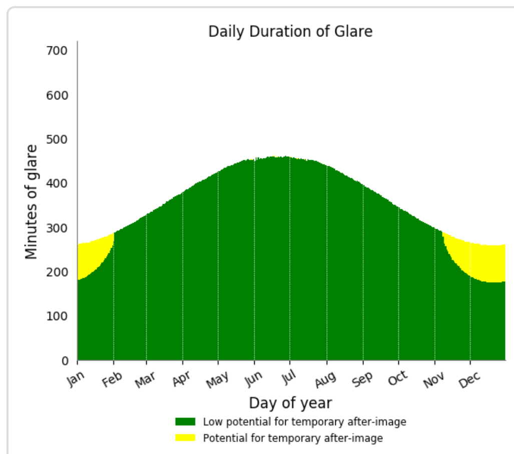




Point Receptor: OP 5

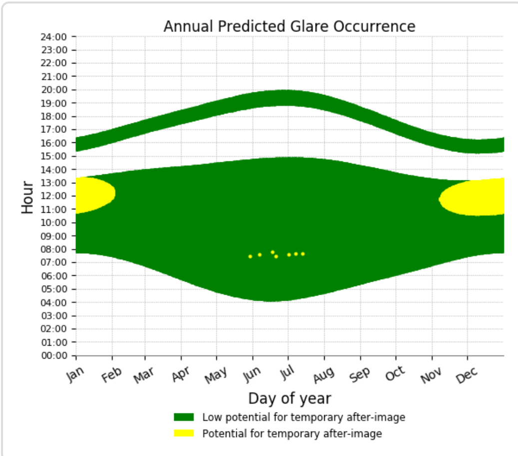
5812 minutes of yellow glare
126147 minutes of green glare

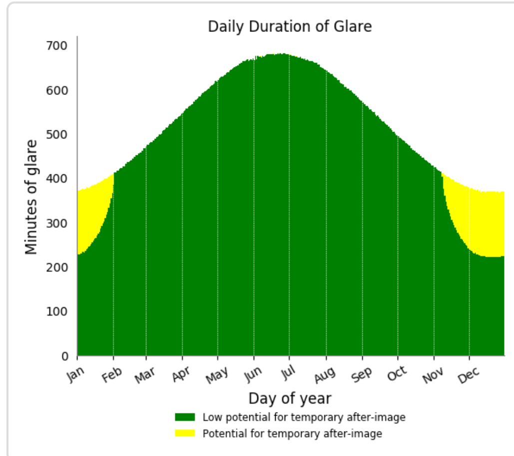




Point Receptor: OP 6

10281 minutes of yellow glare
180949 minutes of green glare

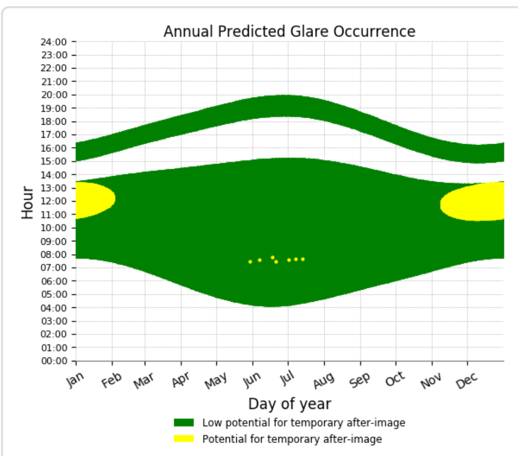


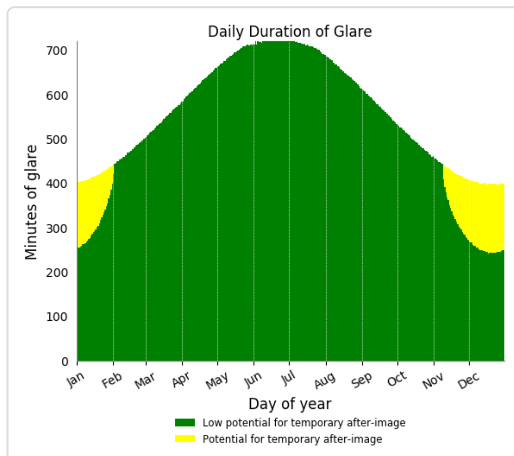


Point Receptor: OP 7

10437 minutes of yellow glare

194499 minutes of green glare

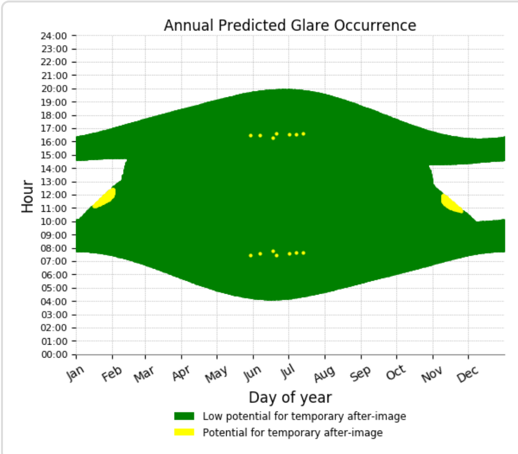


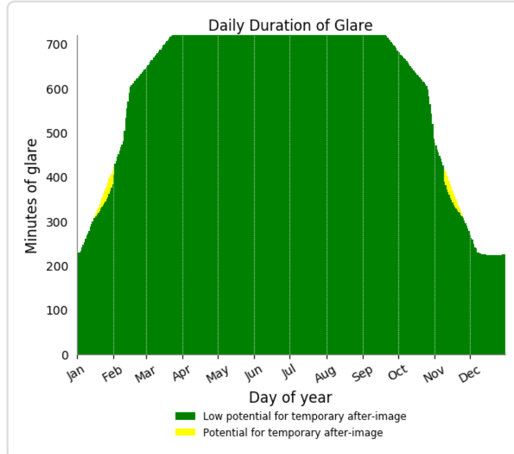


Point Receptor: OP 8

767 minutes of yellow glare

239063 minutes of green glare





Point Receptor: OP 9

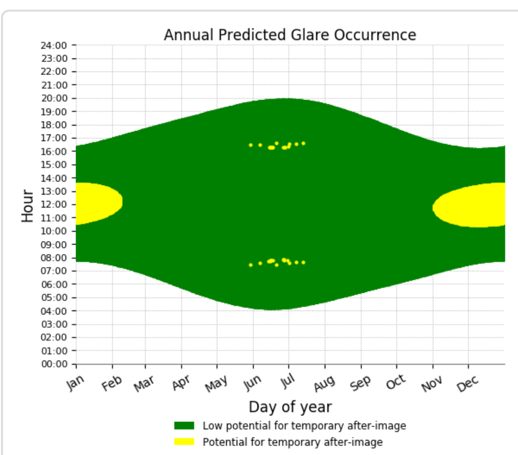
0 minutes of yellow glare
0 minutes of green glare

Route: Route 1

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2

13955 minutes of yellow glare
247931 minutes of green glare



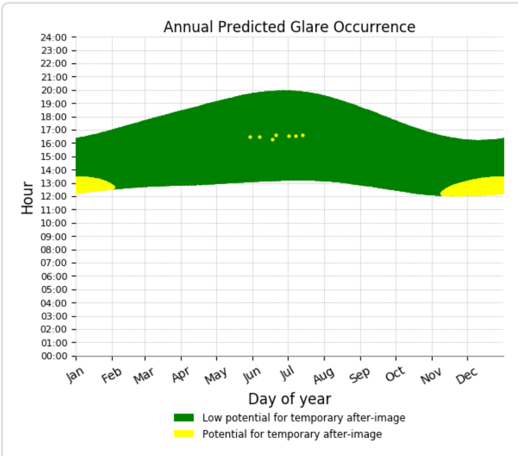
Route: Route 3

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4

4030 minutes of yellow glare

109662 minutes of green glare



Route: Route 5

0 minutes of yellow glare

0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

ATTACHMENT L

Geotechnical Site Investigation and Critical Areas/Geohazards Report

Northern, Inc.
Consulting Engineers Environmental Scientists Geologists
Construction Materials Testing Geophysical Services

GEOTECHNICAL SITE INVESTIGATION AND CRITICAL AREAS / GEOHAZARDS REPORT

GOOSE PRAIRIE PHOTOVOLTAIC (PV) SOLAR ARRAY PROJECT
STATE ROUTE 24 & DESMARAIS CUTOFF
MOXEE, YAKIMA COUNTY, WASHINGTON

GNN PROJECT NO. 220-1274

DECEMBER 2020

Prepared for

OER WA SOLAR 1, LLC
2003 WESTERN AVENUE, SUITE 225
SEATTLE, WASHINGTON

Prepared by

GN NORTHERN, INC.
CONSULTING GEOTECHNICAL ENGINEERS
YAKIMA, WASHINGTON
(509) 248-9798

Common Sense Approach to Earth and Engineering
Since 1995

GN Northern, Inc.

At GN Northern our mission is to serve our clients in the most efficient, cost effective way using the best resources and tools available while maintaining professionalism on every level. Our philosophy is to satisfy our clients through hard work, dedication and extraordinary efforts from all of our valued employees working as an extension of the design and construction team.

December 14, 2020

OER WA Solar 1, LLC
2003 Western Avenue, Suite 225
Seattle, Washington 98121

Attn: Blake Bjornson, Manager, Project Development

Subject: Geotechnical Site Investigation and Critical Areas / Geohazards Report
Goose Prairie, Photovoltaic (PV) Solar Array Project
State Route 24 & Desmarais Cutoff, Moxee, Yakima County, Washington

GNN Project No. 220-1274

Dear Mr. Bjornson,

As requested, GN Northern (GNN) has completed a geotechnical site investigation for the proposed Goose Prairie, Photovoltaic (PV) Solar Array Project to be constructed at the ~791-acre site located north and east of the intersection of Desmarais Cutoff and State Route 24 near Moxee, in Yakima County, Washington.

Based on the findings of our subsurface study, we conclude that the site is suitable for the proposed construction provided that our geotechnical recommendations presented in this report are followed during the design and construction phases of the project.

This report describes in detail the results of our investigation, summarizes our findings and presents our recommendations concerning earthwork and the design and construction of foundations for the proposed project. It is important that GN Northern provide consultation during the design phase as well as field compaction testing and geotechnical monitoring services during the earthwork phase to ensure implementation of the geotechnical recommendations.

If you have any questions regarding this report, please contact us at 509-248-9798.

Respectfully submitted,

GN Northern, Inc.

Max Barnett, GIT
Staff Geologist

Karl A. Harmon, LEG, PE
Senior Geologist/Engineer

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1.0 EXCECUTIVE SUMMARY

GN Northern (GNN) has prepared this executive summary to provide a general overview of this Geotechnical Site Investigation and geologic hazards / critical areas assessment report for the proposed Goose Prairie PV Solar Array Project in Yakima County, Washington. The report itself should be relied upon for information about the findings, conclusions, recommendations, and other concerns. The intent of this report is to assess various geologic hazards that may impact the proposed development and provide our recommendations for mitigation. Our site assessment has been prepared in general accordance with the requirements outlined by Yakima County Critical Areas Ordinance Title 16C, specifically regarding Chapter 16C.08 Geologically Hazardous Areas.

Development on sloping ground poses an inherent risk related to global and local stability of the slopes. Surface soils are generally considered to be erodible. Portions of the project site are identified by Yakima County to lie within areas mapped to be at risk from geology hazards, including steep slopes and erosion hazards.

Our site assessment was performed to identify common geologic conditions in the project region, including soil and bedrock conditions, groundwater, slopes, drainage, erosion, and geologic hazards. A review of selected information pertaining to the subject property and surrounding region was performed that included published technical literature, published geologic maps, available aerial photographs, and previous geotechnical/geologic studies prepared for other sites in the vicinity. Site specific geologic and geotechnical data was obtained from our field exploration program conducted at the project site.

Based on our site evaluation and analyses, our findings indicate that the proposed project may be constructed as planned, provided that the recommendations in this report are incorporated in the final design and construction of this project. The existing site slope conditions are generally considered stable. The proposed development will require appropriate design and construction for proposed reconfigured slopes as well as drainage/erosion control measures to further reduce the risk from geologic site constraints.

The subject property is situated in an area where sheet flow and erosion may occur and near-surface site soils are known to exhibit a risk for erosion. Erosion concerns will require mitigation with appropriate best management practices (BMPs), including proper drainage design as well as collection and disposal (conveyance) of water to approved points of discharge in a non-erosive manner.

In our professional opinion, the proposed project may be developed as planned, provided that the recommendations in this report are incorporated in the final design and construction. Based on our site evaluation and analysis, the existing native slope conditions are considered stable, however proposed cut and fill slopes for the planned development will require appropriate grading measures as recommended within this report to minimize the risk of slope instability and increase safety factors of the reconfigured slopes. Additionally, based on our evaluation, near surface site soils will not be subject to a significant threat of erosion, provided that the recommendations within this report are incorporated during site grading operations along with appropriate project design, construction, and maintenance.

In our professional opinion, the proposed development, as depicted on the conceptual site layout plan (dated October 28, 2020), will not pose a threat to the public health, safety, or general welfare of the citizens, or increase the risk from geologic hazards on the site or to the surrounding properties, provided the recommendations in this report are followed in the design and construction of the project.

2.0 PURPOSE AND SCOPE OF SERVICES

This report has been prepared for the proposed Goose Prairie PV Solar Array Project to be constructed on the approximately 791-acre site located north and east of the intersection of Desmarais Cutoff and State Route 24 near Moxee, in Yakima County, Washington; site location is shown on the *Vicinity Map* (Figure 1, Appendix I). Our investigation was conducted to collect information regarding subsurface conditions and present recommendations for suitability of the subsurface materials to support the proposed ground-mounted PV solar array facilities and geotechnical design parameters for foundation design and construction.

GN Northern, Inc. has prepared this report for use by the client and their design consultants in the design of the proposed development. Do not use or rely upon this report for other locations or purposes without the written consent of GN Northern, Inc.

Our study was conducted in general accordance with our *Proposal for Geotechnical Site Investigation* dated July 7, 2020; you provided notice to proceed on August 3, 2020 in the form of a signed copy of the *Professional Services Agreement for Geotechnical Engineering Services*.

You provided:

- A topographic survey (*One Energy – Goose Prairie Solar* dated 3/17/2020) for the project site prepared by Gray Surveying & Engineering, Inc. provided via email on August 27, 2020.

- A Google Earth KMZ file showing the site boundaries, the proposed substation location, suggested boring locations, and areas to avoid for subsurface exploration.

- A Statement of Work (SOW) document outlining the minimum requirements for completion of our geotechnical services was provided via email on June 25, 2020.

- An additional electrical resistivity test location provided via email on July 31, 2020.

- A Conceptual Layout Plan (Sheet A-001, dated October 28, 2020) was provided on November 17th depicting the proposed layout of new solar arrays and other planned project improvements.

An initial first round of field exploration, consisting of ten (10) exploratory test pits and three (3) infiltration tests, was completed on August 26, 2020. A second round of exploration, consisting fourteen (14) exploratory borings was conducted between September 15th and the 21st. The various locations of our points of explorations and testing are shown on the *Site & Exploration Maps* (Figures 2 & 3, Appendix I), and detailed boring and test pit logs are presented in Appendix II. Upon receiving the conceptual solar array layout, GNN completed an additional site reconnaissance on November 20th to review site condition and evaluate potential areas of steep slopes that could impact the proposed development.

This report has been prepared to summarize the data obtained during this study and to present our recommendations based on the proposed construction and the subsurface conditions encountered at the site. Results of the field exploration were analyzed to develop recommendations for site development, earthwork, pavements and foundation bearing capacity. Design parameters and a discussion of the geotechnical engineering considerations related to construction are included in this report.

3.0 PROPOSED CONSTRUCTION

Based on our understanding of the proposed project, a fixed-rack, ground-mounted solar photovoltaic (PV) array system is proposed to be constructed at the project site. Furthermore, we understand that installation of the PV array will require installation of pile foundations, the racking system, solar panels along with associated buried conduit and wiring. Based on our review of the provided KMZ map file of the proposed project site, we understand that an Operation & Maintenance (O & M) building and electrical substation/switch gear facility will be constructed southwest of the intersection of the northern extension of Morris Lane and the eastern extension of Den Beste Road located near the northeast corner of Section 18 (Yakima County Assessor's Parcel No.: 211218-11003). Structural loading information was not available at the time of this report. We further understand that the site will also be developed with various unpaved internal access roadways.

4.0 SITE CONDITIONS

The project site is located along the north side of Highway 24, approximately 7 miles east of the city limits of Moxee, in Yakima County, Washington. Site boundaries include most of Section 18, the most of the southern half of Section 7 and the majority of the SW ¼ of Section 8 Township 12 North and Range 21 East, Willamette Meridian. The site is bound to the east/southeast by Morris Lane, to the south by Highway 24, to the west by Desmarais Cutoff, to the northwest by Den Beste Road, and to the north/northeast by undeveloped/agricultural land. Morris Lane is a north-south aligned gravel road that separates the agricultural land to the east. Den Beste Road is discontinuous on the north side but is mapped as a gravel road. Two gates that access the northern portion of the site are located near the intersection of Den Beste Road and Morris Lane.

The project site is currently undeveloped and has a natural drainage pathway that flows through the site from the northwest to the southwest. The drainage pathway is lined with cobbles and boulders deposits from wash and possible flash flooding events. The site includes a dense growth of grass and sagebrush areas. Based on a brief review of historical aerial photographs, the southwestern portion appears to be historically used for agricultural purposes. Based on the topographic survey

(*One Energy – Goose Prairie Solar* dated 3/17/2020), the site slopes down to the southwest, with surface elevations ranging from approximately 1,726' near the northeast corner of the site to ~1,386' near the southwestern corner of the site.

5.0 FIELD EXPLORATION & LABORATORY TESTING

Our field exploration included an initial round of test pits, infiltration tests and soil sampling for thermal resistivity testing was completed on August 26, 2020. A local public utility clearance was obtained prior to the field exploration. Ten (10) exploratory test pits and three (3) infiltration test pits were excavated by Valley Septic & Excavation using a Case 580 Super N backhoe to depths ranging from approximately 6 to 11 feet below existing ground surface (BGS). The test pits were logged by a GNN field geologist. Upon completion, all excavations were loosely backfilled with excavation spoils. Secondary subsurface exploration consisted of fourteen (14) exploratory borings to depths of ~20 to 41.5 feet BGS, drilled by Western States Soil Conservation, Inc. using a CME 55 track mounted drill rig. Boring, test pit, and infiltration test locations are shown on the *Site & Exploration Maps* (Figures 2 & 3).

The soils observed during our field exploration were classified according to the Unified Soil Classification System (USCS), utilizing the field classification procedures as outlined in ASTM D2488. A copy of the USCS Classification Chart is included in Appendix II. Photographs of the site and exploration are presented in Appendix V. Depths referred to in this report are relative to the existing ground surface elevation at the time of our investigation. The surface and subsurface conditions described in this report are as observed at the time of our field investigation.

Representative samples of the subsurface soils obtained from the field exploration were selected for testing to determine the index properties of the soils in general accordance with ASTM procedures. The following laboratory tests were performed:

Table 1: Laboratory Tests Performed

Test	To determine
Particle Size Distribution (ASTM D6913 & D422)	Soil classification based on proportion of sand, silt, and clay-sized particles
Natural Moisture Content (ASTM D2216)	Soil moisture content indicative of in-situ condition at the time samples were taken

Moisture-density Relationship (ASTM D698 Standard Proctor test)	The optimum moisture content for compacting soil and the maximum dry unit weight (density) for a given compaction effort
Soil pH (ASTM G51)	Electrometric procedure for measuring pH in soils
Soil Resistivity (ASTM G-187)	Measurement of soil resistivity to assist in the determination of soil's corrosive nature
Redox Potential (ASTM D1498-76)	Electrometric measurement of oxidation-reduction potential (ORP) in water
Chloride and Sulfate (ASTM D4327)	Determination of chloride and sulfate inorganic ions in soil
Sulfide (Acetate Paper)	Determination of the total Sulphur content of soil

Results of the laboratory soil testing are included in Appendix III and soil corrosivity laboratory tests are included in Appendix IV attached to the end of the report.

6.0 SOIL INFILTRATION TESTING

Infiltration testing was performed within shallow test pits at the three selected locations (see Figures 2 & 3) using a single ring infiltrometer consisting of a 10-inch diameter steel pipe driven into the ground at the test depth. After an initial pre-soak period, a constant water level was maintained in the ring with the use of a float valve and timed intervals of the water demand volumes were recorded. Continuous readings of the infiltration rates of water volumes required to maintain the constant head were recorded until a relatively constant rate was achieved. The following table presents the results of infiltration tests performed, indicative of the infiltration characteristics of the soils encountered at the test locations/depths using the specified test method:

Test ID	Test Location (Approx. GPS Coords.)	Test Depth (BGS)	Soil Tested	Field Measured Soil Infiltration Rate
P-1	46.534377°, -120.231318°	3 feet	Silt with Gravel (ML)	**0.9 inches/hour**
P-2	46.535864°, -120.234161°	3 feet	Silt (ML)	**0.2 inches/hour**
P-3	46.522976°, -120.238195°	3 feet	Silt (ML)	**0.1 inches/hour**

An appropriate factor of safety should be applied to the field infiltration rates to determine long-term design infiltration rates. Determination of safety factors for long-term infiltration design should consider the following: pretreatment, potential for bio-fouling, system maintainability, horizontal and vertical variability of soils. A factor of safety of 2 to 3 is considered appropriate for long-term design.

7.0 SUBSURFACE CONDITIONS

Based on the findings of our field exploration, subsurface soil conditions across the site generally include a layer of aeolian (wind-blown) silts and sands atop cemented gravels and deeper siltstone and sandstone layers. These fine- to coarse-grained sedimentary rocks are mapped as the Ellensburg Formation (*Source*: Geologic Map of the East Half of the Yakima 1:100,000 Quadrangle, Washington). Interbedded gravelly layers were encountered within borings B-1, B-5, & B-7. Shallow gravel units were classified as Silty Gravel with Sand (GM) with large amounts of caliche. This hard caliche unit resulted in excavation (bucket) refusal at all test pit locations except for test pits TP-1 & TP-3. Borings extended deeper into dense and very dense cemented silts and sands. Logs of exploratory borings and test pits with detailed descriptions and stratification of the soils encountered are included in Appendix II.

7.1 NRCS Soil Survey

The soil survey map of the site prepared by the Natural Resources Conservation Service (NRCS) identifies the site soils as *Finley cobbly fine sandy loam*, *Kiona stony silt loam*, *Lickskillet very stony silt loam*, *Moxee silt loam*, *Ritzville silt loam*, *Willis silt loam*. These soils generally are sourced from parent material described as *loess*, *alluvium*, *residuum*, *and colluvium derived from basalt*. The typical soil profile for these units are described as *silt* to *cobbly loam* atop *cemented material*, *very gravelly loam*, and *unweathered bedrock*. Based on the NRCS map (Appendix VI), this soil unit generally consists of *well drained* materials.

7.2 Groundwater

Groundwater was not encountered within the borings and test pits at time of our exploration to a maximum depth of approximately 41 feet BGS. We reviewed the Washington Department of Ecology (DOE) Well Log database to estimate groundwater levels in the site vicinity based on nearby wells. Our review of three nearby well log indicates depth of groundwater in the site vicinity to be on the order of 100 feet BGS or greater (see Appendix VII). There is a potential for surface water percolating and perching atop the hard caliche layer. Groundwater levels likely fluctuate throughout the year with irrigation, precipitation, drainage, and regional pumping from wells, typically highest during the irrigation season and decreasing thereafter.

With regard to Yakima County Critical Areas Ordinance, Chapter 16C.09, addressing Critical Aquifer Recharge Areas (CARAs), due to the noted subsurface soil and rock conditions that prevail across the project site and significant depth to static groundwater conditions, the risk of groundwater contamination resulting from the proposed development is nil provided appropriate stormwater management facilities are incorporated into the project design.

7.3 Regional Geology

The large and irregularly shaped subject site is located within the Moxee Valley on the southern flanks of Yakima Ridge, north of the Rattlesnake Hills approximately 7 miles east of Moxee, Washington. The approximately 791-acre proposed solar project site extends from Highway 24 to approximately 1 ½ miles north and encompasses the northern portion of Section 18, the southeastern portion of Section 7, and the southwestern portion of Section 8.

The Moxee Valley is located in the Yakima Fold Belts sub-province, formed by north–south compression within the Columbia Basin physiographic province of southeastern Washington. The Columbia Basin Plateau is a broad plain situated between the Cascade Range to the west and the Rocky Mountains to the east. The Columbia Plateau is often called the Columbia Basin for the reason that it forms a broad lowland surrounded by mountains. The Columbia Plateau was formed by a thick sequence of folded Miocene-Age (17-6 million years BYP) tholeiitic basalt flows and interbedded sediments, known as the Columbia River Basalt Group (CRBG), which erupted from fissures in north-central and northeastern Oregon, eastern Washington, and western Idaho. Published geologic maps of the site vicinity generally depict Miocene basalts of the Columbia River Basalt Group (CRBG) in higher elevations north of the site along the Yakima Ridge as well as the Rattlesnake hills to the south. The subject site is situated on alluvial fan deposits underlain by middle to upper Miocene continental sedimentary deposits and rock of the Ellensburg Formation. Overlying sediments include relatively thin surficial deposits consisting of Plio-Pleistocene loess, including silt and fine-grained sands.

8.0 CRITICAL AREAS / GEOLOGIC HAZARDS

Geologic hazards that may affect the development include seismic hazards (ground shaking, surface fault rupture, soil liquefaction, and other secondary earthquake-related hazards), slope instability, flooding, ground subsidence, and erosion. A discussion follows on the specific hazards to this site.

8.1 Seismic Hazards

8.1.1 Surface Fault Rupture: For the purposes of this report, an active fault is defined as a fault that has had displacement within the Holocene epoch or last 11,000 years. Due to the lack of known active fault traces in the immediate site vicinity, surface fault rupture is unlikely to occur at the project site. While fault rupture would most likely occur along previously established fault traces, future fault rupture could occur at other locations.

8.1.2 Soil Liquefaction: Liquefaction is the loss of soil strength from sudden shock (usually earthquake shaking), causing the soil to become a fluid mass. In general, for the effects of liquefaction to be manifested at the surface, groundwater levels must be within 50 feet of the ground surface and the soils within the saturated zone must also be susceptible to liquefaction. Based on the published *Liquefaction Susceptibility Map of Yakima County, Washington* (dated September 2004- Figure 5 in Appendix I) prepared by Washington State Department of Natural Resources (DNR), the site is mapped within an area of very low to low liquefaction ssusceptibility with a few areas mapped as bedrock. Based on our site-specific evaluation, the risk of liquefaction at the subject site is considered very low.

8.1.3 Secondary Seismic Hazards: Secondary seismic hazards include tsunamis, and seiches. The site is far inland, so the hazard from tsunamis is non-existent. The potential hazard from seiches in also nil due to the lack of nearby surface water bodies and the noted low magnitudes of potential seismic shaking.

8.1.4 Seismic Conditions: The Yakima region is generally not considered to be located within an area of high seismic activity. There are no confirmed major faults in the region capable of producing strong earthquakes. Anticipated ground motions in the region due to seismic activity along faults in other parts of the Northwest are relatively low.

The two largest crustal earthquakes felt in the state of Washington included the 1872, M 6.8 quake near Lake Chelan and the 1936, M 6.0 Walla Walla earthquake. The following list provides information regarding historic earthquakes within the past 50 years for epicenters within 100 miles of the subject site (data from www.earthquake.usgs.gov) listed by magnitude:

Table 2: Earthquakes within 100-miles of site

Date of Event	Magnitude	Distance from site (miles)
May 18, 1980	5.7	96.7
May 28, 1981	5.5	55.7
December 12, 1989	4.9	89.9
May 16, 1980	4.7	96.5
May 13, 1981	4.6	97.1
October 8, 2006	4.5	68.9

8.2 Site Slope Conditions

Native slopes throughout the project site generally descend at gradients ranging from approximately less than 5% to some limited areas at greater than 75%. Site elevations range from approximately 1,386' to 1,726', for a total relief within the project boundaries of about 340 feet.

Detailed field reconnaissance of the project site was performed on August 26th and November 20th to observe site conditions and correlate the information gathered from our preliminary research. During our reconnaissance we looked for common geomorphic features of landslides as well as indications of possible signs demonstrating recent activity and instability of slide masses. Aside from noted area of potential ongoing sluffing along the over-steeped erosional slopes along the drainage wash that crosses the northern portion of the site, no evidence of any significant slope instability within the native conditions was noted at the site.

Based on the findings from our subsurface field explorations, detailed site reconnaissance, and desktop study, we can conclude that the existing native (undisturbed) site slopes are generally considered to be grossly stable with expected factors of safety against movement to be well above recommended minimums for development. The existing native onsite vegetation serves to provide some protection from shallow surficial instability and erosional forces. Ongoing long-term raveling/spalling of the exposed gravely/cobbly incised sides of the noted drainage channel will continue. No further stability analyses of the existing slope conditions appear warranted.

Based on our review of the conceptual site layout and the topographic survey, it appears that the planned layout generally avoids any areas of significantly steep slopes. It shall be noted that construction of new solar arrays or other ancillary structures should be avoided on areas of existing native slopes steeper than 2H:1V. Any proposed reconfigured cut or fill slopes should be constructed with appropriate geotechnical engineered grading practices, including keying and benching and proper placement of engineered fill at maximum gradients not to exceed 2H:1V. The design team shall prepare an overlay of the final layout on the final grading plan to ensure compliance with this requirement. GNN is available for additional review and consultation if necessary.

8.3 Flooding and Erosion

The subject property is not located in an area mapped by FEMA regarding flooding concerns. Portions of the subject property are however situated in areas where sheet flow and erosion may occur. Additionally, the project site includes a number of natural downslope drainages/gullies crossing the proposed development. A significant erosional drainage gully or wash extends from the northeast portion of the site and then drains approximately east to west through the site near the northern boundary of Section 18. The incised drainage is depicted on USGS maps as an *intermittent* stream (seasonal) / *ephemeral* stream (flow only after significant precipitation). The noted drainage path incises through the alluvial fan deposits. Yakima County has mapped the area along the well-defined drainage as geologically hazardous that is susceptible to "*alluvial fan/flash flooding*".

Erosion susceptibility from water is based on several factors including the intensity of rainfall and runoff, soil erodibility, length and steepness of slopes, and surface condition. The erodibility factor of the soils is a measure of the soils resistance to erosion based on its physical characteristics. Typically, very fine sand, silt and clay soils are generally susceptible to erosion. Based on site specific field exploration, observations, and laboratory testing, the surficial soil exposed at the project site consists primarily of sandy silt. The near surface site soils are known to exhibit a moderate to severe potential for erosion.

Soil erodibility is only one of several factors affecting the erosion susceptibility. Soil erosion by water also increases with the length and steepness of the site slopes due to the increased velocity of runoff and resulting greater degree of scour and sediment transport. Appropriate erosion & sediment control and drainage plans shall be prepared by the project civil engineer with the final construction drawings.

The need for and design of flood control devices and erosion protection measures is within the purview of the design Civil Engineer. Based on a review of the conceptual layout for the proposed solar array facility, we understand that no development is planned within or in sufficiently close proximity to the noted incised drainage to pose a risk from potential flooding events. In general, erosion should be mitigated with best management practices (BMPs) consisting of proper drainage design including collecting and disposal (conveyance) of water to approved points of discharge in a non-erosive manner, installation of check dams, placement of vegetative covers and erosion control mats on slope surfaces. Appropriate project design, construction, and maintenance will be necessary to mitigate the risk from site erosion.

9.0 SEISMIC DESIGN PARAMETERS

To estimate the mapped maximum credible earthquake (MCE) spectral response accelerations with 5 percent damping at short periods (S_S) and at the 1-second period (S_1), the site's latitude and longitude coordinates were entered into the USGS Earthquake Ground Motion Application which computes values based on smoothing and averaging of the spectral response acceleration contour map data included in the IBC (International Code Council, 2015). As per the *2015 International Building Code* (IBC), a Site Class 'D' may be used for seismic design purposes. Site Class 'D' corresponds to 'still soil'.

We anticipate that the seismic design of this project will follow the procedures in 2015 IBC (ICC 2015) and ASCE 7-10 (ASCE/SEI 2010). However, we have also provided the design parameters in accordance with ASCE 7-16 (ASCE/SEI 2016). We obtained the seismic parameter from the National Seismic Hazard Maps. The following tables present the recommended seismic design parameters per ASCE 7-10 and ASCE 7-16 for a code-based response spectrum with a return period of 2,475 years.

IBC 2015 Design Response Spectra Parameters

Seismic Design Parameter	Value (unit)
S_S	0.470 (g)
S_1	0.192 (g)
F_a	1.424 (unitless)
F_v	2.030 (unitless)
S_{MS}	0.669 (g)
S_{M1}	0.391 (g)
S_{DS}	0.446 (g)
S_{D1}	0.260 (g)
PGA	0.193 (g)
F_{PGA}	1.414
PGA_M	0.273 (g)
PGA_D	0.6

IBC 2018/ASCE7-16 Design Response Spectra Parameters

Seismic Design Parameter	Value (unit)
S_S	0.438 (g)
S_1	0.182 (g)
F_a	1.449 (unitless)
F_v	2.235 (unitless)
S_{MS}	0.635 (g)
S_{M1}	0.408 (g)
S_{DS}	0.424 (g)
S_{D1}	0.272 (g)
PGA	0.195 (g)
F_{PGA}	1.410
PGA_M	0.275 (g)
PGA_D	0.5

S_S = MCE spectral response acceleration at short periods
S_1 = MCE spectral response acceleration at 1-second period
F_a = Site coefficient for short periods
F_v = Site coefficient for 1-second period
S_{MS} = MCE spectral response acceleration at short periods as adjusted for site effects
S_{M1} = MCE spectral response acceleration at 1-second period as adjusted for site effects
S_{DS} = Design spectral response acceleration at short periods
S_{D1} = Design spectral response acceleration at 1-second period
PGA = MCE_G peak ground acceleration
F_{PGA} = Site amplification factor at PGA
PGA_M = Site modified peak ground acceleration
PGA_D = Factored deterministic acceleration value

10.0 SOIL CORROSIVITY TESTING

The potential corrosive environment for metal (ductile iron or steel piping) placed beneath the ground at the project site was evaluated based on data collected during our field exploration and laboratory analytical testing based on the parameters presented in "Corrosion of Building Materials" by Dietbert Knofel. Soil samples were collected at depths of approx. 1.5 and 4 feet BGS from test pits TP-1 (substation), TP-3 (northeastern portion) and TP-8 (most southern test pit) and shipped to AMTest for laboratory testing. The corrosion suite includes pH, electrical resistivity, Redox potential, chloride, sulfate, and sulfide. The results of laboratory testing are attached in Appendix IV and summarized as follows:

Table 3: Summary of Corrosivity Testing Results

Sample, Ft. BGS	pH	Resistivity (ohms cm)	Redox Potential	Water Soluble Chloride (µg/g)	Water Soluble Sulfate (µg/g)	Sulfide
TP-1 @ 4'	8.16	3,300	359	30	<10	Negative
TP-3 @ 4'	8.35	2,400	379	64	<10	Negative
TP-8 @ 1.5'	7.33	8200	414	<10	17	Negative

The electrical resistivity of a soil is the measure of resistance to the flow of electrical current. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of electrical current (DC) from the metal into the soil. As the resistivity of the soil decreases, the corrosivity generally increases. The following correlation between soil resistivity and expected corrosion attack is used in our assessment of soil aggressivity (*from Dietbert Knofel page 64, Table 6.7; Source: Waters et al.*):

Specific Resistivity (ohm-cm)	Exposed Corrosion Attack
<1000	very strongly aggressive
1000 to 3,000	strongly aggressive
3,000 to 5,000	aggressive
5,000 to 10,000	moderately aggressive
10,000 to 20,000	slightly aggressive
>20,000	virtually nonaggressive

Electrical resistivity test results indicate that the near surface soil conditions are "strongly to moderately aggressive" towards iron and other buried metal. Based on a scale published in "Corrosion of Building Materials", the results of other parameters used in the determination of soil aggressivity i.e. soil type, water content, pH, redox potential, sulfate, chloride and sulfide indicate subsurface soils to be slightly aggressive. Other soils found across the project site may be more, less, or of a similar corrosive nature.

We recommend that additional near surface soil samples be collected from various locations across the site for laboratory testing, this would help better define the potential risk for buried metal corrosion and the need for corrosion protection.

Water Soluble Sulfates: Sulfate and other salts can attack the cement within concrete causing weakening of the cement matrix and eventual deterioration by raveling. This attack is in the form of a chemical attack, a chemical reaction between the sulfate and the cement used in the concrete.

According to ACI 318, if sulfate concentrations exceed 1000 ppm there will be special requirements.

The concentration of water-soluble sulfates measured in samples tested ranges from less than 10 ppm to 17 ppm. This concentration of water-soluble sulfates represents a negligible degree of sulfate attack on concrete exposed to these soils. The degree of attack is based on a range of negligible, positive, severe and very severe as presented in the U.S. Bureau of Reclamation Concrete Manual. We recommend that the use of ASTM Type I or Type II cement is appropriate for the project.

Chloride Ion Concentration: Chloride ions can cause corrosion of reinforcing steel. For this project, the testing results suggest a low chloride ion concentration. ACI 318 provides commentary relative to the effects of chlorides present in the soil from both internal and external sources. It is possible that long term saturation of foundations with chloride rich water could allow the chloride access to the reinforcing steel. Therefore, if the site is adequately drained in accordance with sound engineering practice and the applicable codes, this should be a low threat. A minimum concrete cover of cast-in-place concrete should be in accordance with Section 7.7 of the 2007 edition of ACI 318. Additionally, the concrete should be thoroughly vibrated during placement. The information provided above should be considered preliminary. These values can potentially change based on several factors, such as importing soil from another job site and the quality of water used during grading.

11.0 ELECTRICAL RESISTIVITY

Soil resistivity testing was performed at the substation location and the alternate test site in the northeast corner of the site on September 2, 2020.

The electrical resistivity sounding technique measures the differences in the electrical properties of geologic materials. These differences can result from variations in lithology, water content, and pore-water chemistry. The method involves transmitting an electric current into the ground between two electrodes and measuring the voltage between two other electrodes. The direct measurement is the apparent resistivity of the area beneath the electrodes. The measurements include deeper layers as the electrode spacing is increased.

Two sets of resistivity testing were performed at each location using the Wenner Four-Electrode Method. The data was acquired with an AGI Super Sting resistivity meter, along N-S and E-W directions. Eight (8) different pin spacings were used for each of the two traverses. The current and potential electrodes were driven to a uniform depth not exceeding more than 10% of the pin spacing. The four pins/electrodes were equally spaced for each set of pin spacings. Ground temperature and the moisture content of the ground (dry, moist, wet) at the time of the resistivity test was recorded. Care was taken to avoid traverses that are parallel to transmission lines or buried metallic or concrete structures.

Apparent Resistance measurements trend downwards with increased pin spacings. The date measured confirms this trend. The date indicate low resistivity soils. The type of soil, moisture content, depth of groundwater, temperature, and soil pH (mineral/salt content) affect its resistivity.

A map showing the N-S and E-W resistivity traverses is included in Appendix I, Figures 2 and 3, and the resistivity measurements are presented in Appendix V.

12.0 THERMAL RESISTIVITY

Soil samples were collected at depth of 3 feet BGS at locations TRT #1 (northern portion), TRT #2 (substation location) and TRT #3 (southern portion) for thermal resistivity analysis and shipped to Geotherm USA. The testing was conducted in accordance with IEEE Standard 442-2017. Results of the thermal resistivity testing are shown in Appendix VI.

13.0 SUMMARY OF FINDINGS & CONCLUSIONS

Conditions imposed by the proposed development have been evaluated on the basis of assumed elevations and engineering characteristics of the subsurface materials encountered in the exploratory borings and test pits, and their anticipated behavior both during and after construction. The following is a summary of our findings, conclusions and professional opinions based on the data obtained from a review of selected technical literature and the site evaluation.

- Based on the findings of this geotechnical evaluation and our understanding of the proposed development, from a geotechnical perspective, it is our opinion that the site is suitable for the proposed development, provided the soil design parameters and site-specific recommendations in this report are followed in the design and construction of the project.

- Final design plans for the proposed development, including grading, drainage and finished elevations, were not provided at the time of this report**.** Once the plans are finalized, GNN shall be provided an opportunity to review final design plans to provide revised recommendations if/as necessary.

- GNN's findings and recommendations presented in this report are based on a limited number of widely spaced points of subsurface exploration across the project site. Due to the large nature of the site, variations in soil, bedrock, and/or groundwater conditions could exist between and beyond the areas observed and explored and may not become evident until construction.

- We recommend that additional near surface soil samples be collected from various locations across the site for laboratory testing, this would help better define the potential risk for buried metal corrosion and the need for corrosion protection.

- Site soils include generally a relatively thin layer of silty/sandy loess soil atop a shallow unit of cemented gravelly soil stratum underlain at depth by sedimentary sandstone and siltstone known as the Ellensburg Formation.

- Groundwater was not encountered within any of our explorations to a maximum depth of approximately 41 feet BGS and is not considered a factor in the design and construction at the site.

- The underlying geologic condition for seismic design is site class 'D'. The *minimum* seismic design should comply with the *2015 or 2018 International Building Code* (IBC) and ASCE 07-10 or ASCE 07-16, *Minimum Design Loads for Buildings and Other Structures*.

- The onsite silty/sandy soils, free of oversize rocks (>5 inches) and any deleterious materials, are generally suitable for reuse as engineered fill and utility trench backfill. Excavated material derived from the caliche/cemented soil unit may be considered suitable for backfill provided the material is processed and screened to create a 5-inch minus well-graded material.

- The upper fine-grained silts and sands aeolian/loess deposits (wind-blown deposits) will require over-excavation and recompaction to minimize the risk of soil collapse.

- The proposed O & M building may be supported on conventional shallow foundations bearing directly on the native caliche subgrade in accordance with the recommendations of this report.

- Site grading shall incorporate the requirements of IBC 2015, Appendix J *Grading*.
- Upon completion, all test pit excavations were loosely backfilled with excavation spoils. The contractor is responsible to locate the test pits to re-excavate the loose soils and re-place as compacted engineered fill.
- The presence of relatively shallow caliche that prevail across the majority of the project site, particularly the southern portion located south of Den Beste Road, poses a challenge/difficulty for excavation with traditional earthwork equipment. Appropriately capable rippers and/or excavator-mounted hoe-rams will be required for excavation into/through the caliche layer.
- Construction of solar arrays or other ancillary structures should be avoided on areas of existing native slopes steeper than 2H:1V. Any proposed reconfigured cut or fill slopes should be constructed with appropriate geotechnical engineered grading practices, including keying and benching and proper placement of engineered fill at maximum gradients not to exceed 2H:1V.
- The subject site is situated on alluvial fan deposits underlain by sedimentary deposits and rock of the Ellensburg Formation. Overlying sediments include relatively thin surficial deposits consisting of Plio-Pleistocene loess, including silt and fine-grained sands.
- The near-surface site soils are susceptible to wind and water erosion when exposed during grading operations. Preventative measures and appropriate BMPs to control runoff and reduce erosion should be incorporated into site grading plans, with particular attention along the numerous noted onsite natural drainage pathways throughout the project site.
- All slope faces shall be protected with appropriate erosion control measures (BMPs) to insure long-term surficial stability.
- Yakima County has mapped the area along the noted well-defined drainage as geologically hazardous and susceptible to "*alluvial fan/flash flooding*". It should be understood that there is no geologic hazards directly associate with the project site situated on alluvial fan deposits. However, development within the drainage should be avoided due to the potential risk of flooding. Based on a review of the conceptual layout for the proposed solar array facility, we understand that no development is planned within or in sufficiently close proximity to the noted incised drainage to pose a risk from potential flooding events.

- ***In our professional opinion, the proposed development at the site will not pose a threat to the public health, safety, or general welfare of the citizens, or increase the risk from geologic hazards at the site or to surrounding properties, provided the recommendations in this report are followed in the design and construction of the project.***

14.0 GEOTECHNICAL RECOMMENDATIONS

The following geotechnical recommendations are based on our current understanding of the proposed project. The report is prepared to comply with the 2015 International Building Code Section 1803, Geotechnical Investigations, and as required by Subsection 1803.2, Investigations Required. Please note that Soil Design Parameters and Recommendations presented in this report are predicated upon appropriate geotechnical monitoring and testing of the site preparation and foundation and building pad construction by a representative of GNN's Geotechnical-Engineer-of-Record (GER). Any deviation and nonconformity from this requirement may invalidate, partially or in whole, the following recommendations. We recommend that we be engaged to review grading and foundation plans in order to provide revised, augmented, and/or additional geotechnical recommendations as required.

14.1 Site Development – Grading

Site grading shall incorporate the requirements of IBC 2015 Appendix J. The project GER or a representative of the GER should observe site clearing, grading, and the bottoms of excavations before placing fills. Local variations in soil conditions may warrant increasing the depth of over-excavation and recompaction. Seasonal weather conditions may adversely affect grading operations. To improve compaction efforts and prevent potential pumping and unstable ground conditions, we suggest performing site grading during dryer periods of the year.

Soil conditions shall be evaluated by in-place density testing, visual evaluation, probing, and proof-rolling of the imported fill and re-compacted on-site soil as it is prepared to check for compliance with recommendations of this report. A moisture-density curve shall be established in accordance with the ASTM D1557 method for all onsite soils and imported fill materials used as structural fill.

To mitigate the risk of soil collapse, over-excavation and recompaction of the upper fine-grained silts and sands (wind-blown loess deposits) is required if encountered under spread footings, slabs and hardscapes areas.

The contractor shall locate all test pits indicated in the Geotechnical Site Investigation Report within the limits of Work. At each test pit, re-excavate soils loosely backfilled during prior investigation and backfill the excavation with onsite fill soils placed as engineered fill.

Earthwork during wet weather should be avoided, if possible. If earthwork operations cannot be avoided in wet weather, comply with recommendations presented in Section 13.15 "Wet Weather Conditions". If earthwork occurs during wet weather, expect disturbance to subgrades and expect to perform corrective work to repair disturbed subgrades.

14.2 Clearing and Grubbing

At the start of site grading, any vegetation, large roots, any non-engineered/artificial fill, and any abandoned underground utilities shall be removed from the proposed building and structural areas. The surface shall be stripped of all topsoil and/or organic growth (vegetation) that may exist within the proposed structural areas. The topsoil and organic rich soils shall either be stockpiled on-site separately for future use or be removed from the construction area. Depth of stripping can be minimized with real-time onsite observation of sufficient removals. Areas disturbed during clearing shall be properly backfilled and compacted as described below.

14.3 Suitability of the Onsite Soils as Engineered Fill

The native onsite silty/sandy soils, free of oversize rocks (>5 inches) and deleterious materials, are generally suitable for reuse as engineered fill and utility trench backfill. Excavated material derived from the cemented gravelly unit may be considered suitable for backfill provided the material is processed and screened to create a 5-inch minus well-graded material meeting the following grading limits:

Sieve Size	Percent Passing
5"	100
¾"	70
#4	35-65
#200	Less than 8

Suitable onsite soils shall be placed in maximum 8-inch lifts (loose) and compacted to at least 95% relative compaction (ASTM D1557) near its optimum moisture content. The near-surface silty/sandy soils are considered moisture-sensitive; therefore, compaction of the suitable onsite soils shall be performed within a range of ±2% of optimum moisture to achieve the proper degree of compaction.

14.4 Temporary Excavations

It shall be the responsibility of the contractor to maintain safe temporary slope configurations since the contractor is at the job site, able to observe the nature and conditions of the slopes and be able to monitor the subsurface conditions encountered. Unsupported vertical cuts deeper than 4 feet are not recommended if worker access is necessary. The cuts shall be adequately sloped, shored or supported to prevent injury to personnel from caving and sloughing. The contractor and subcontractors shall be aware of and familiar with applicable local, state and federal safety regulation including the current OSHA Excavation and Trench Safety Standards, and OSHA Health and Safety Standards for Excavations, 29 CFR Part 1929, or successor regulations.

According to chapter 296-155 of the Washington Administrative Code (WAC), it is our opinion that the near-surface soil encountered at the site is classified as Type C soils. We recommend that temporary, unsupported, open cut slopes shall be no steeper than 1.5 feet horizontal to 1.0 feet vertical (1.5H:1V) in Type C soils. Excavation into the hard caliche unit may be completed at near-vertical. No heavy equipment should be allowed near the top of temporary cut slopes unless the cut slopes are adequately braced. Final (permanent) fill slopes should be graded to an angle of 2H:1V or flatter. Where unstable soils are encountered, flatter slopes may be required.

The presence of the noted relatively shallow cemented gravel stratum at the site poses a challenge/difficulty for excavation with traditional earthwork equipment. Appropriately capable rippers and/or excavator-mounted hoe-rams may be required for excavation into/through this layer.

14.5 Utility Excavation, Pipe Bedding and Trench Backfill

To provide suitable support and bedding for the pipe, we recommend the utilities be founded on suitable bedding material consisting of clean sand and/or sand & gravel mixture. To minimize trench subgrade disturbance during excavation, the excavator should use a smooth-edged bucket rather than a toothed bucket.

Pipe bedding and pipe zone materials shall conform to Section 9-03.12(3), Gravel Backfill for Pipe Zone Bedding, of the Washington State Department of Transportation (WSDOT) 2018 Standard Specifications. Pipe bedding should provide a firm uniform cradle for support of the pipes. A minimum 4-inch thickness of bedding material beneath the pipe should be provided. Prior to installation of the pipe, the pipe bedding should be shaped to fit the lower part of the pipe exterior with reasonable closeness to provide uniform support along the pipe. Pipe bedding material should be used as pipe zone backfill and placed in layers and tamped around the pipes to obtain complete contact. To protect the pipe, bedding material should extend at least 6 inches above the top of pipe.

Placement of bedding material is particularly critical where maintenance of precise grades is essential. Backfill placed within the first 12 inches above utility lines should be compacted to at least 90% of the maximum dry density (ASTM D1557), such that the utility lines are not damaged during backfill placement and compaction. In addition, rock fragments greater than 1 inch in maximum dimension should be excluded from this first lift. The remainder of the utility excavations should be backfilled and compacted to 95% of the maximum dry density as determined by ASTM D1557.

Onsite soils are considered suitable for utility trench backfill provided they are free of oversize material and can be adequately compacted. All excavations should be wide enough to allow for compaction around the haunches of pipes and underground tanks. We recommend that utility trenching, installation, and backfilling conform to all applicable federal, state, and local regulations such as OSHA and WISHA for open excavations.

Compaction of backfill material should be accomplished with soils within ±2% of their optimum moisture content in order to achieve the minimum specified compaction levels recommended in this report. However, initial lift thickness could be increased to levels recommended by the manufacturer to protect utilities from damage by compacting equipment.

14.6 Imported Crushed Rock Structural Fill

Where and as needed, imported structural fill shall consist of well-graded, crushed aggregate material meeting the grading requirements of WSDOT 2018 Standard Specifications, Section 9-03.9(3) (1-1/4 inch minus Base Course Material) presented here:

Table 4: WSDOT Standard Spec. 9-03.9(3)

Sieve Size	Percent Passing (by Weight)
1¼ Inch Square	99 - 100
1 Inch Square	80 - 100
5/8 Inch Square	50 – 80
U.S. No. 4	25 - 45
U.S. No. 40	3 – 18
U.S. No. 200	Less than 7.5

A fifty (50) pound sample of each imported fill material shall be collected by GNN personnel prior to placement to ensure proper gradation and establish the moisture-density relationship (proctor curve).

14.7 Compaction Requirements for Engineered Fill

All fill or backfill shall be approved by a representative of the GER, placed in uniform lifts, and compacted to a minimum 95% of the maximum dry density as determined by ASTM D1557. The compaction effort must be verified by a representative of the GER in the field using a nuclear density gauge in accordance with ASTM D6938. The thickness of the loose, non-compacted lift of fill shall not exceed 8 inches for heavy-duty compactors or 4 inches for hand operated compactors.

14.8 O&M Building Foundation Bearing Support

The proposed O&M building may be supported on conventional shallow foundations in accordance with the recommendations of this report. The minimum footing depth shall be 24 inches below adjacent grades for frost protection and bearing capacity considerations. All foundations shall be constructed to bear directly on the caliche layer or on 1¼-minus crushed rock structural fill extending down to the caliche layer. Foundation excavations shall be cleared of all loose soils and shall be observed by a representative of the GER to confirm the dense caliche has been exposed. Footings constructed in accordance with the above recommendations may be designed for an allowable bearing capacity of **2,500 pounds per square foot (psf)**. The allowable bearing pressure may be increased by 1/3 for short-term transient loading conditions. The estimated total settlement for footings is approximately 1-inch with differential settlement less than half that magnitude. The weight of the foundation concrete below grade may be neglected in dead load computations.

Lateral forces on foundations from short term wind and seismic loading would be resisted by friction at the base of foundations and passive earth pressure against the buried portions. We recommend an allowable passive earth pressure for the compacted onsite soil of **200 pcf**. This lateral foundation resistance value includes a factor of safety of 1.5. We recommend a coefficient of friction of **0.40** be used between cast-in-place concrete and native caliche. An appropriate factor of safety should be used to calculate sliding resistance at the base of footings.

14.9 O&M Building Slab-on-Grade Floors

Place a minimum 6-inch layer of crushed aggregate fill beneath the slabs. The material shall meet the WSDOT 2018 Standards Specifications, Section 9-03.9(3), "Crushed Surfacing Top Course", with less than 5 percent passing the No. 200 sieve (fines). The crushed rock material shall be compacted to at least 95% of the maximum dry density as determined by the ASTM D1557 method. Prior to placing the crushed rock layer, the native subgrade shall be moisture-conditioned and compacted to minimum 95% of the maximum dry density as determined by ASTM D1557 to a minimum depth of 12 inches. Any soft spots or areas displaying pumping/deformation during compaction shall be over-excavated an additional 12 inches, backfilled with imported granular structural fill and re-compacted.

We recommend a modulus of subgrade reaction equal to **120 pounds per cubic inch (pci)** based on a value for gravel presented in the Portland Cement Association publication No. EB075.01D. Slab thickness, reinforcement and joint spacing shall be determined by a licensed engineer based on the intended use and loading.

14.10 Driven Posts Pile Foundation

We understand that the PV array structures will be supported on driven posts pile foundations. The selection of pile type, size, and method of installation shall be determined by the design-build racking contractor considering the geotechnical parameters presented in this report. Uplift and overturning resistance shall be factored into the foundation design.

The structural designer shall determine the pile length based on the structural demands for axial compressive loads, lateral loads and overturning moments. Pile foundations in cemented/hardpan soils units shall be socketed to a sufficient depth to satisfy structural demands to resist uplift and lateral loads and shall fulfill minimum penetration and length requirements. Foundation supported on bedrock shall penetrate a minimum 6 inches into the weathered basalt bedrock unit. Additional penetration into the dense bearing stratum may be required to compensate for the skin friction lost due to surface disturbance caused by installation.

Axial capacity of driven piles may be estimated based on the perimeter of the pile and embedment depth. End bearing of driven piles should be neglected. For pipe piles the perimeter is the circumference, for wide flange beams, the perimeter is twice the sum of the flange width and web depth. We recommend the upper 24 inches of soil for each pile be neglected for capacity; however, the upper 18 inches may be included for overburden pressure.

Based on the findings of our subsurface investigation, we recommend that post pile foundations be supported on the underlying hardpan/bedrock unit. If design requires pile lengths to be greater 8 to 9 feet, pre-drilling of the hardpan/bedrock may be warranted.

An allowable end bearing pressure of **4,000 psf** may be used for the design of driven post/pile foundations bearing directly on the underlying hardpan/bedrock unit. This value may be increased one-third (33%) for short-term (transient) loading events.

We estimate the total settlement for piles constructed per the recommendations of this report to be less than 1-inch, with differential settlement less than half that magnitude.

Lateral forces on foundation from short term wind and seismic loading would be resisted by friction at the base of piles and passive earth pressure against the buried portions. We recommend an allowable passive earth pressure within the upper silty soils of **140 pcf and 250 pcf** for the underlying cemented soil units. This lateral foundation resistance value includes a factor of safety of 1.5. We recommend an allowable coefficient of skin friction between steel pile (assumed) and the loose native silt of **0.15**. We recommend a coefficient of skin friction of **0.35** be used between steel pile (assumed) and the underlying hardpan layer. An appropriate factor of safety should be used to calculate sliding resistance at the base of the pile. The following table provides additional geotechnical parameters for use in design:

Table 5: Geotechnical Design Parameters

Soil Type	Soil Angle of Friction	Effective Unit Weight	Apparent Cohesion	p-y modulus, k
Loose Silt with Sand	26 degrees	80 pcf	*ignore*	25 pci
Caliche/Hardpan/Silt stone/Sandstone	32 degrees	105 pcf	200 psf	300 pci
Weathered Basaltic Bedrock	40 degrees	145 pcf	400 psf	500 pci

Driven Pile Foundation Installation Considerations

If refusal is encountered during installation, the vibration action of the hammer could result in an oversized installation hole that greatly reduces axial and lateral capacity of the installed pile. If pile refusal occurs, we recommend the pile be immediately smoothly withdrawn and to predrill the installation location. The pre-drilled hole should have a diameter of at least one (1) inch smaller than the pipe pile outer diameter (O.D.) or two (2) inches smaller than the diagonal dimension of a wide flange beam. Test driving of pile should be considered to determine the proper pre-drill hole size.

A representative of the GNN should observe the driven pile installation and materials penetrated to confirm that the conditions encountered are consistent with those used in our analyses and to evaluate conditions that may affect pile capacities. We recommend that pile load testing shall be conducted before installation of production piles for this project. The pile load test shall be monitored by a geotechnical representative of GNN and the results reviewed by the GER.

14.11 Drilled & Grouted Posts Pile Foundation

Due to the presence of shallow cemented gravels that may likely prevent driven pile advancement, the PV array structures may be supported on drilled and grouted posts pile foundations

14.12 Foundation Options for Substation Equipment Pads

Based on subsurface conditions encountered at the site, we believe that shallow spread footings and/or mat foundations may both be suitable options for foundation types for the proposed substation located southeast of the intersection of Morris Lane and Den Beste Road.

Spread Footings: Structures supported on conventional spread footings shall be founded on crushed rock structural fill overlying compacted native soils. All footings should be placed at least

24 inches below exterior finished grade for frost protection. We recommend at least 12-inches of 1½” minus crushed rock fill be placed directly beneath the footing base in two lifts, with each lift compacted to at least 95% of the maximum dry density as determined by ASTM D1557. The lateral extent of crushed rock shall be 12 inches on all sides of the foundation. Prior to placing the structural gravel fill material, the native subgrade soil shall be scarified to a minimum depth of 12-inch, moisture conditioned to near optimum and compacted to at least 95% of the maximum dry density as determined by ASTM D1557. Spread footings supported on compacted structural gravel fill can be proportioned for a maximum allowable bearing pressure of **2,000 psf**.

This allowable bearing pressure include a factor of safety of 3. Allowable bearing pressure may be increased by one-third (33%) for seismic loading conditions. In our opinion, foundations constructed on compacted structural gravel fill overlying compacted native subgrade will settle less than 1-inch, with differential settlement less than half that magnitude.

<u>Mat Foundations</u>: Mat foundations shall be supported on a minimum 12-inches of 1½" minus crushed rock fill be placed directly beneath the mat in two lifts, with each lift compacted to at least 95% of the maximum dry density as determined by ASTM D1557. Prior to placing the structural gravel fill material, the native subgrade soil shall be scarified to a minimum depth of 12-inch, moisture conditioned (as necessary) and re-compacted to at least 95% of the maximum dry density as determined by ASTM D1557. The lateral extent of crushed rock shall be 12 inches on all sides of the foundation. A modulus of subgrade reaction of **200 pci** may considered for mat foundations supported on minimum 18-inches of imported crushed rock on prepared and compacted subgrade.

For design purposes, an allowable passive earth pressure of 220 pcf and 300 pcf (equivalent fluid unit weight) is appropriate for compacted onsite backfill and crushed rock structural fill, respectively. This lateral foundation resistance value includes a factor of safety of 1.5. A coefficient of base friction of 0.45 (mass concrete poured directly over granular structural fill) may be used for the frictional resistance against sliding. An appropriate factor of safety shall be used to calculate sliding resistance at the base of footings.

Based on the findings of our exploration, our experience with similar soils, and the results of our laboratory testing, effect of frost heave and soil expansion are considered negligible.

14.13 Subgrade Protection

The degree to which construction grading problems develop is expected to be dependent, in part, on the time of year that construction proceeds and the precautions which are taken by the contractor to protect the subgrade. The near-surface fine-grained soils currently present on site are considered to be moisture and disturbance sensitive due to their fines content and may become unstable (pumping) if allowed to increase in moisture content and are disturbed (rutted) by construction traffic if wet. If necessary, the construction access road should be covered with a layer of gravel or quarry spalls course. The soils are also susceptible to erosion in the presence of moving water. The soils shall be stabilized to minimize the potential of erosion into the foundation excavation. The site shall be graded to prevent water from ponding within construction areas and/or flowing into excavations. Accumulated water must be removed immediately along with any unstable soil. Foundation concrete shall be placed and excavations backfilled as soon as possible to protect the bearing grade. We further recommend that soils that become unstable are to be either:

- Removed and replaced with structural compacted gravel fill, or
- Mechanically stabilized with a coarse crushed aggregate (possibly underlain with a geotextile) and compacted into the subgrade.

14.14 Surface Drainage

With respect to surface water drainage, we recommend that the ground surface be sloped to drain away from the structure. Final exterior site grades shall promote free and positive drainage from the building areas. Water shall not be allowed to pond or to collect adjacent to foundations or within the immediate building area. We recommend that a gradient of at least 5% for a minimum distance of 10 feet from the building perimeter be provided, except in paved locations. In paved areas, a minimum gradient of 1% should be provided unless provisions are included for collection/disposal of surface water adjacent to the structure. Catch basins, drainage swales, or other drainage facilities should be aptly located. All surface water such as that coming from roof downspouts and catch basins be collected in tight drain lines and carried to a suitable discharge point. Surface water and downspout water should not discharge into a perforated or slotted subdrain, nor should such water discharge onto the ground surface adjacent to the building. Cleanouts should be provided at convenient locations along all drain lines.

14.15 Wet Weather Conditions

The onsite fine-grained soils (Silt/Loess) are moisture sensitive during handling and compaction. Proceeding with earthwork using these soils during wet weather could add significant project costs and/or delays. The stability of exposed soils may rapidly deteriorate due to a change in moisture content. Therefore, if at all possible, complete site clearing, preparation, and earthwork during periods of warm, dry weather when soil moisture can be controlled by aeration. During or subsequent to wet weather, drying or compacting the on-site soils will be difficult. It will be necessary to either amend the on-site soils or import granular materials for use as structural fill. If earthwork takes place in wet weather or wet conditions, the following recommendations should be followed:

- Fill materials should consist of imported clean, granular soil, with less than 3 percent fines (passing the No. 200 sieve size), based on wet-sieving the soil fraction passing the ¾-inch sieve.
- Earthwork should be accomplished in small sections and carried through to completion to reduce exposure to wet weather. Soils that becomes too wet for compaction should be removed and replaced with clean, granular material.
- The construction area ground surface should be sloped and sealed to reduce water infiltration, to promote rapid runoff, and to prevent water ponding.
- To prevent soil disturbance, the size or type of equipment may have to be limited.
- Carefully stage equipment and/or stockpiles, route construction equipment away from subgrades, and implement aggressive site drainage procedures to help reduce saturating subgrades during wet weather conditions.
- Equipment with large tracks, lugs, or having toothed buckets has a significant potential to disturb the site soil prior to or following compaction. Rubber-tired vehicles should not access prepared subgrades unless the subgrade is sufficiently stiff to allow construction traffic without disturbance.
- Maintain the subgrade in a compacted condition and protect subgrades from construction traffic disturbance after they have been prepared and meet compaction requirements. Consequently, do not operate construction equipment or vehicles on prepared subgrade areas during wet weather conditions.

- Prior to rain and other events that may cause fine-grained soil (silt and silty sand) to exceed optimum moisture content, stabilize such soils to minimize potential for erosion into adjacent excavations.
- Earthwork should not be performed immediately after rainfall, or until soil can dry sufficiently to allow construction traffic without disturbing the subgrade. After inclement weather, inspect all subgrade areas prepared before the inclement weather conditions.
- For soils exhibiting pumping, rutting, weaving, or otherwise exhibiting unstable performance, moisture-condition (typically dry) and re-compact the soil to structural fill requirements, or remove and replace the unstable soils with imported free draining granular fill material acceptable to the GER
- Work areas and stockpiles should be covered with plastic. Straw bales, straw wattles, geotextile silt fences, and/or other measures should be used as appropriate to control soil erosion.
- Excavation and structural fill placement should be observed on a full-time basis by a representative of our geotechnical engineer to determine that unsuitable materials are fully removed and that suitable compaction and site drainage is achieved.

14.16 Slope Maintenance and Erosion Protection

Proper slope protection and maintenance will help minimize slope erosion and improve the stability of the project slopes. The project soils are prone to erosion and will require appropriate BMP protection and maintenance. Positive drainage should be provided at the tops of all slopes to divert runoff away from the face. Swales constructed in native soils should be lined with suitable no-erosive material. Erosion protection should be provided, especially where concentrated runoff is anticipated.

The need for and design of flood control and erosion protection measures is within the purview of the design civil engineer. In general, erosion should be mitigated with best management practices (BMPs) consisting of proper drainage design including collecting and disposal (conveyance) of water to approved points of discharge in a non-erosive manner. Appropriate project design, construction, and maintenance will be necessary to mitigate the site erosion concerns.

15.0 CONTINUING GEOTECHNICAL SERVICES

GNN recommends that the Client should maintain an adequate program of geotechnical consultation, construction monitoring, and soils testing during the final design and construction phases to monitor compliance with GNN's geotechnical recommendations. <u>Maintaining GNN as the geotechnical consultant from beginning to end of the project will provide continuity of services.</u> If GN Northern, Inc. is not retained by the owner/developer and/or the contractor to provide the recommended geotechnical inspections/observations and testing services, the geotechnical engineering firm or testing/inspection firm providing tests and observations shall assume the role and responsibilities of Geotechnical Engineer-of-Record.

GNN can provide construction monitoring and testing as additional services. The costs of these services are not included in our present fee arrangement, but can be obtained from our office. The recommended construction monitoring and testing includes, but is not necessarily limited to, the following:

- Consultation during the design stages of the project.
- Review of the grading and drainage plans to monitor compliance and proper implementation of the recommendations in GNN's Report.
- Observation and quality control testing during site preparation, grading, and placement of engineered fill as required by the local building ordinances.
- Geotechnical engineering consultation as needed during construction

16.0 LIMITATIONS OF THE GEOTECHNICAL SITE INVESTIGATION REPORT

This GEOTECHNICAL SITE INVESTIGATION REPORT ("Report") was prepared for the exclusive use of the Client. GN Northern, Inc.'s (GNN) findings, conclusions and recommendations in this Report are based on a limited number of widely spaced points of subsurface exploration across the project site, and GNN's understanding of the proposed project at the time the Report is prepared. Furthermore, GNN's findings and recommendations are based on the assumption that soil, rock and/or groundwater conditions do not vary significantly from those found at specific exploratory locations at the project site. Due to the large nature of the site, variations in soil, bedrock and/or groundwater conditions could exist between and beyond the areas observed and explored. The nature and extent of these variations may not become evident until during or after construction. Variations in soil, bedrock and groundwater may require additional studies, consultation, and revisions to GNN's recommendations in the Report.

In many cases the scope of geotechnical exploration and the test locations are selected by others without consultation from the geotechnical engineer/consultant. GNN assumes no responsibility and, by preparing this Report, does not impliedly or expressly validate the scope of exploration and the test locations selected by others.

This Report's findings are valid as of the issued date of this Report. However, changes in conditions of the subject property or adjoining properties can occur due to passage of time, natural processes, or works of man. In addition, applicable building standards/codes may change over time. Accordingly, findings, conclusions, and recommendations of this Report may be invalidated, wholly or partially, by changes outside of GNN's control. Therefore, this Report is subject to review and shall not be relied upon after a period of **three (3) year** from the issued date of the Report.

In the event that any changes in the nature, design, or location of structures are planned, the findings, conclusions and recommendations contained in this Report shall not be considered valid unless the changes are reviewed by GNN and the findings, conclusions, and recommendations of this Report are modified or verified in writing.

This Report is issued with the understanding that the owner or the owner's representative has the responsibility to bring the findings, conclusions, and recommendations contained herein to the attention of the architect and design professional(s) for the project so that they are incorporated into the plans and construction specifications, and any follow-up addendum for the project. The owner or the owner’s representative also has the responsibility to verify that the general contractor and all subcontractors follow such recommendations during construction. It is further understood that the owner or the owner’s representative is responsible for submittal of this Report to the appropriate governing agencies. The foregoing notwithstanding, no party other than the Client shall have any right to rely on this Report and GNN shall have no liability to any third party who claims injury due to reliance upon this Report, which is prepared exclusively for Client’s use and reliance.

GNN has provided geotechnical services in accordance with generally accepted geotechnical engineering practices in this locality at this time. GNN expressly disclaims all warranties and guarantees, express or implied.

Client shall provide GNN an opportunity to review the final design and specifications so that earthwork, drainage and foundation recommendations may be properly interpreted and implemented in the design and specifications. If GNN is not accorded the review opportunity, GNN shall have no responsibility for misinterpretation of GNN’s recommendations.

Although GNN can provide environmental assessment and investigation services for an additional cost, the current scope of GNN’s services does not include an environmental assessment or an investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, surface water, groundwater, or air on, below, or adjacent to the subject property.

APPENDICES

Appendix I

Vicinity Map (Figure 1)

Site Exploration Maps (Figures 2 & 3)

Fault & Geologic Map (Figure 4)

Liquefaction Susceptibility Map (Figure 5)

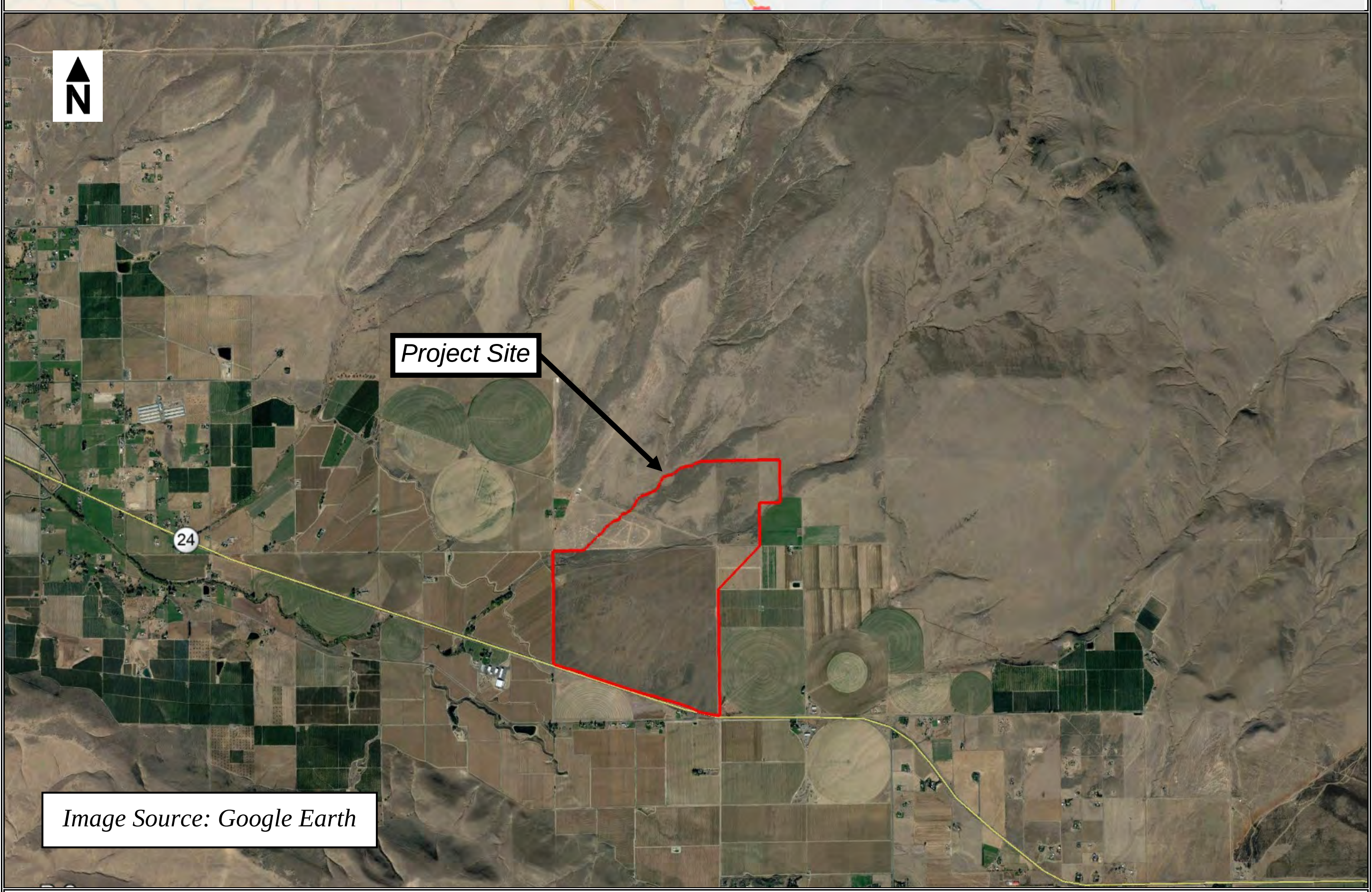


FIGURE 1: VICINITY MAP **PROJECT NO. 220-1274**

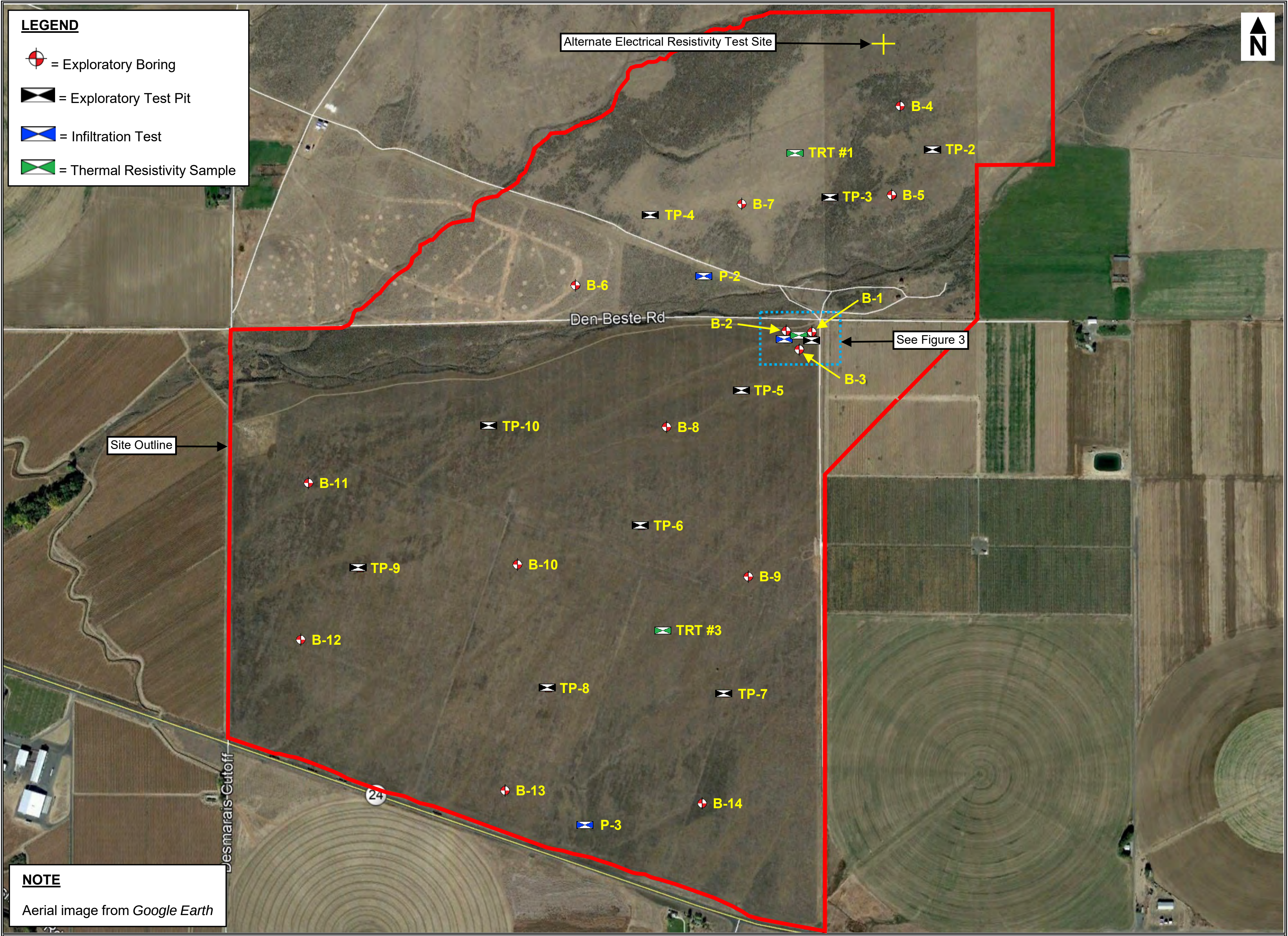


FIGURE 2: SITE EXPLORATION MAP **PROJECT NO. 220-1274**

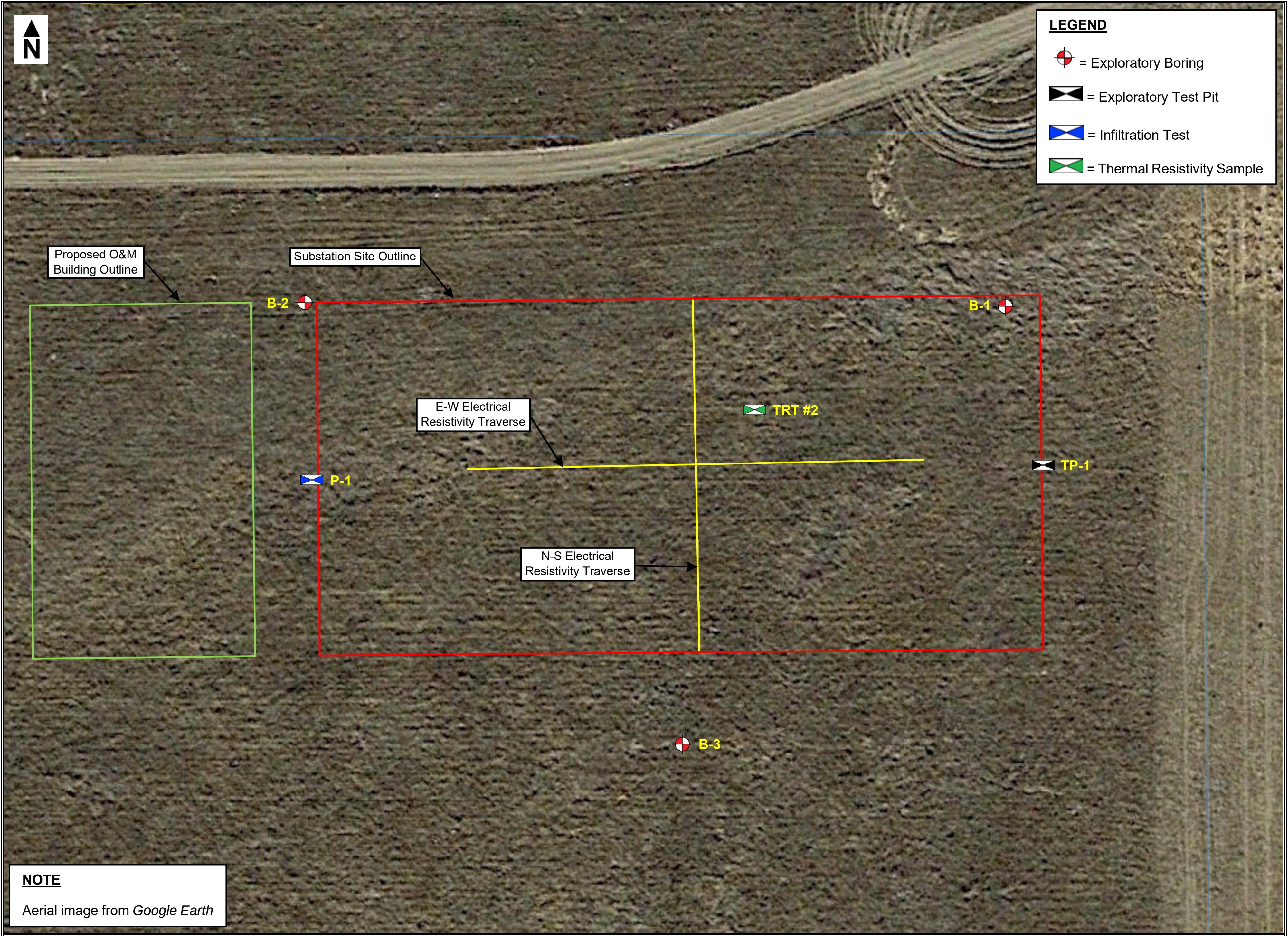


FIGURE 3: SITE EXPLORATION MAP **PROJECT NO. 220-1274**

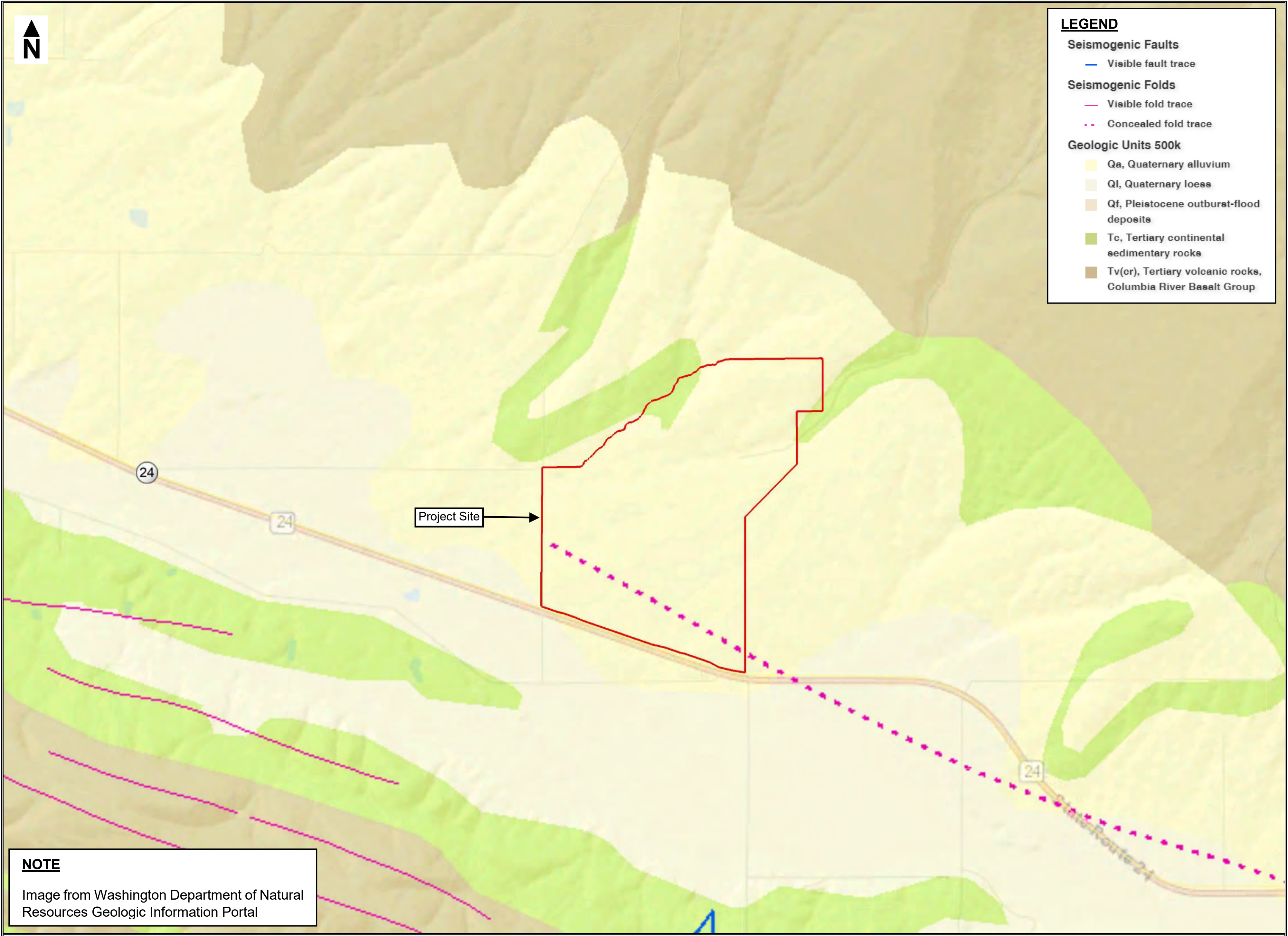


FIGURE 4: FAULT & GEOLOGIC MAP **PROJECT NO. 220-1274**

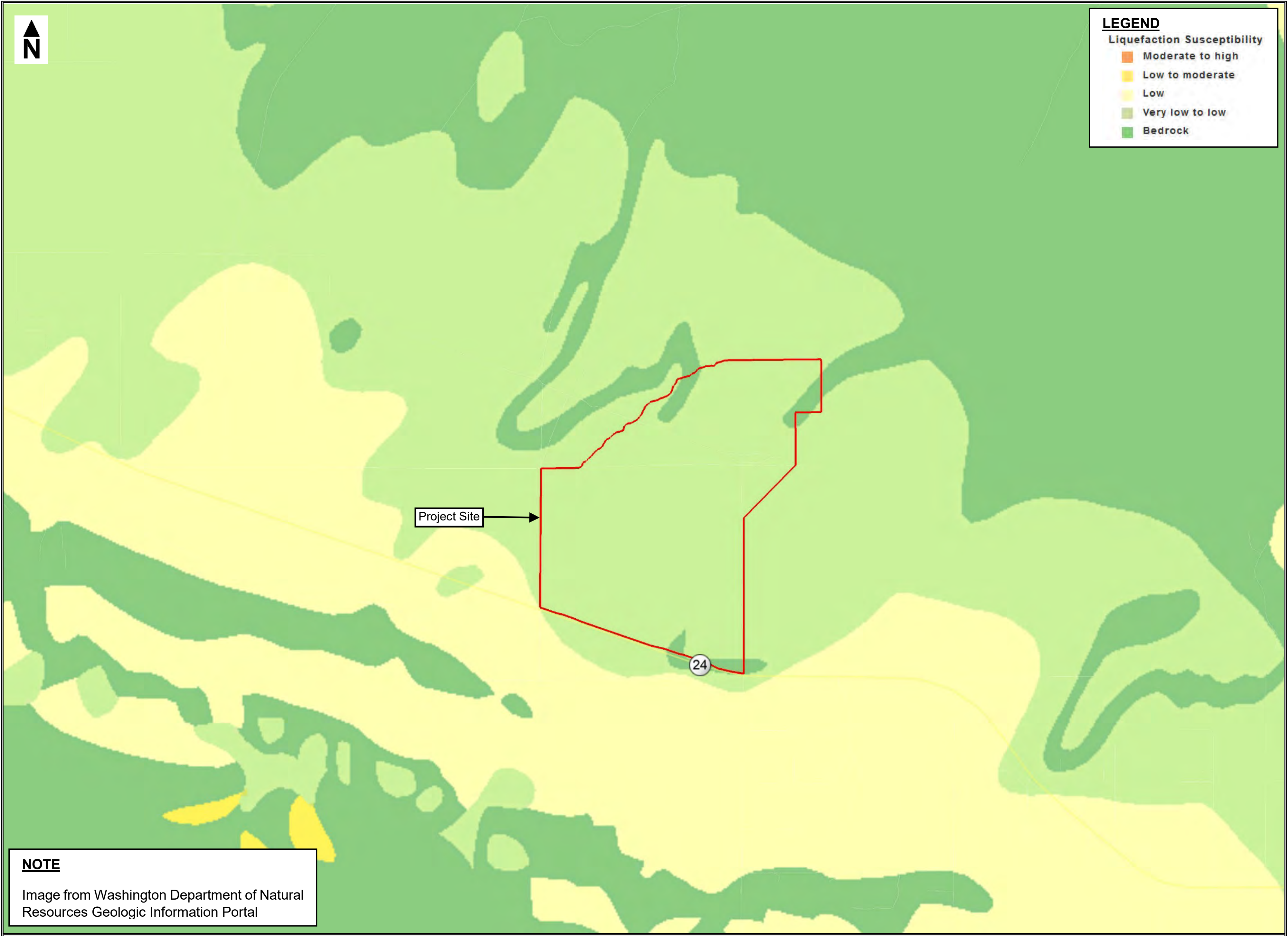
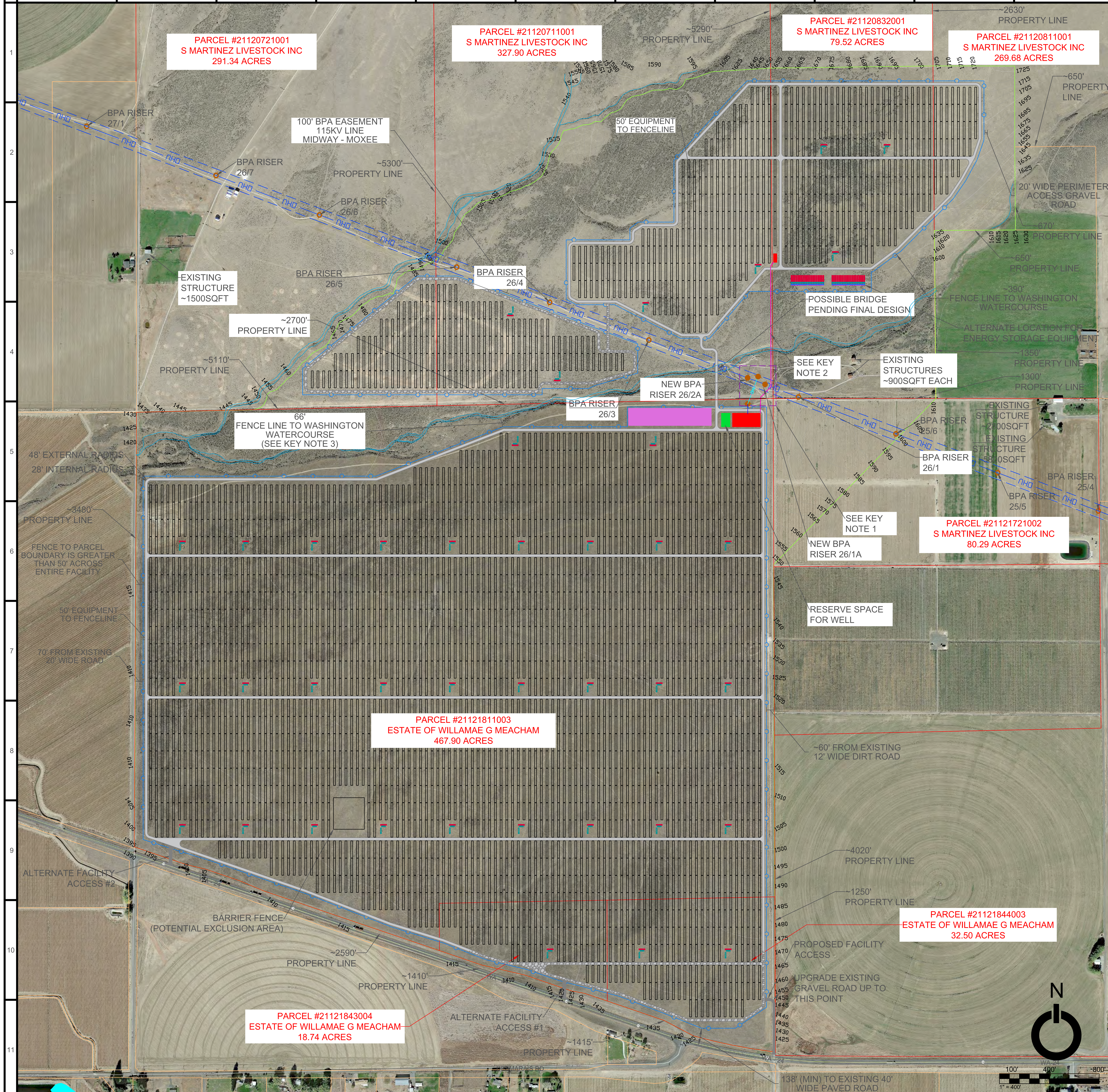


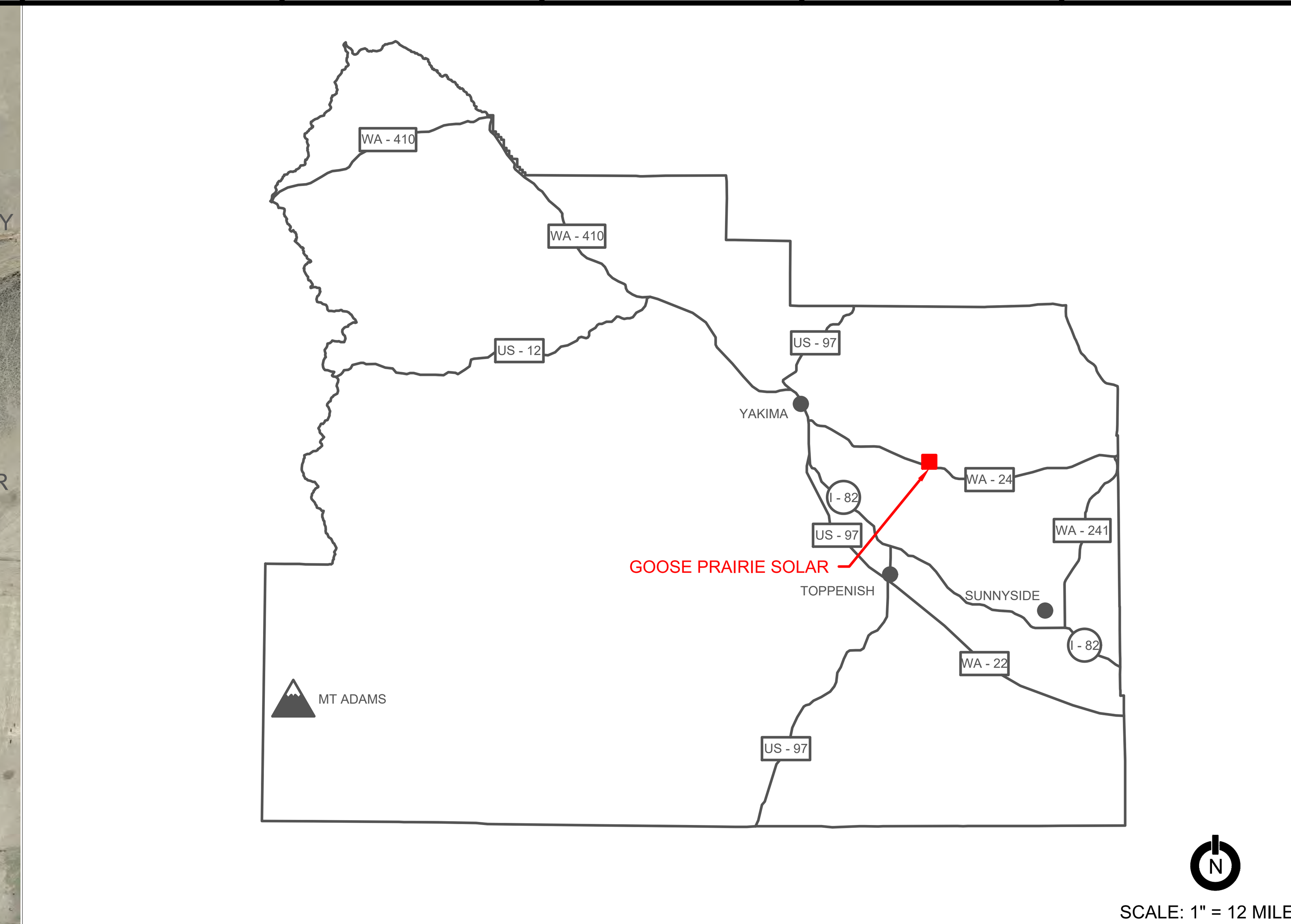
FIGURE 5: LIQUEFACTION SUSCEPTIBILITY MAP

PROJECT NO. 220-1274



GOOSE PRAIRIE SOLAR + STORAGE 80.00MWAC - CONCEPTUAL LAYOUT

SCALE: 1" = 400'



YAKIMA COUNTY VICINITY MAP

SITE DETAILS:

SITE LAT:	46.528557°
SITE LONG:	-120.240075°
PARCEL ID:	21121811003
OWNER:	ESTATE OF WILLIMAE G MEACHAM
ACREAGE:	467.90
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21121843004
OWNER:	ESTATE OF WILLIMAE G MEACHAM
ACREAGE:	18.74
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21121844003
OWNER:	ESTATE OF WILLIMAE G MEACHAM
ACREAGE:	32.50
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21120721001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	291.34
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21120711001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	327.9
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21120832001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	79.52
EXISTING ZONING:	AG
EXISTING USE:	81 AGRICULTURE NOT CURRENT USE
PARCEL ID:	21120811001
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	269.68
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE
PARCEL ID:	21121721002
OWNER:	S MARTINEZ LIVESTOCK INC
ACREAGE:	80.29
EXISTING ZONING:	AG
EXISTING USE:	83 CURRENT USE AGRICULTURE

DESIGN SUMMARY:

MODULE POWER:	445W
MODULE COUNT:	260,550
ARRAY DC VOLTAGE:	1500V
SOLAR INVERTER SIZE:	2.105MW/2.500MVA @50C
SOLAR INVERTER QTY:	38 +/-
DC CAPACITY:	115.944MWdc @ STC (Front)
AC CAPACITY:	80.000MWac
DC/AC RATIO:	1.45
GROUND COVERGE RATIO:	33.25%
GROUND SNOW LOAD:	15 PSF
ASCE 7-10 WINDSPEED:	110 MPH

LAND USE SUMMARY:

TOTAL PARCEL AREA:	1567.87 ACRES
FACILITY AREA EXTENT:	791.39 ACRES
TOTAL FENCED AREA:	590.00 ACRES
TOTAL ACCESS ROAD:	23.09 ACRES
FACILITY STAGING AREA:	2.12 ACRES
O&M FACILITY AREA:	0.171 ACRES
FACILITY SUBSTATION:	0.556 ACRES

KEY NOTES:

1. PRELIMINARY LOCATION OF LINE TAP. FINAL LOCATION IS SUBJECT TO CHANGE BASED ON BPA INTERCONNECTION ENGINEERING STUDY RESULTS.
2. MEDIUM VOLTAGE LINE TO CONNECT NORTHERN PROJECT AREA TO FACILITY SUBSTATION. EXACT LOCATION TO BE DETERMINED.
3. FACILITY SHALL MAINTAIN A MINIMUM 60' SETBACK FROM ALL WATERWAYS.

GENERAL NOTES:

1. PARCEL BOUNDARIES PROVIDED BY YAKIMA COUNTY, WA OPEN DATA PORTAL.
2. NO FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD HAZARD ZONES ARE FOUND ON THE PARCEL ON WHICH THE FACILITY IS PROPOSED.
3. NATIONAL WETLAND INVENTORY (NWI) WETLANDS SHOWN. ALL ELECTRICAL EQUIPMENT MINIMUM OF 50' FROM HIGH WATER LINE. NWI WETLANDS WILL BE GROUND-TRUTHED VIA A PROFESSIONAL WETLAND SURVEY AND DELINEATION.SITE LAYOUT WILL ADJUST ACCORDING TO RESULTS.
4. LOCATION OF WASHINGTON WATERCOURSES PROVIDED BY WASHINGTON GEOSPATIAL OPEN DATA PORTAL.
5. FACILITY FALLS WITHIN A MILITARY TRAINING ROUTE BUFFER. CONSULTATION WITH DEPARTMENT OF DEFENSE HAS BEGUN. NO CONCERNS FLAGGED BY DEPARTMENT OF DEFENSE.
6. FACILITY LAYOUT INCLUDES AN OPTIONAL BATTERY STORAGE SYSTEM CAPABLE OF SERVING AS 80MW OF LOAD OR GENERATION. APPLICANT SEEKS FLEXIBILITY BETWEEN AN AC-COUPLED OR DC-COUPLED SYSTEM. BOTH ARE SHOWN FOR ILLUSTRATIVE PURPOSES.
7. PROPOSED FACILITY ACCESS POINT TO BE COORDINATED WITH WASHINGTON DEPARTMENT OF TRANSPORTATION AND YAKIMA COUNTY TRANSPORTATION SERVICES DIVISION.
8. THE FACILITY WILL COMPLY WITH ALL ZONING AND COUNTY REQUIREMENTS.
9. LOCATION OF ALL PROPOSED EQUIPMENT ARE SUBJECT TO CHANGE. CHANGES TO SITE PLAN ARE TO STAY WITHIN THE FACILITY AREA EXTENT AS SHOWN.
10. COLLECTION LINE LOCATIONS ARE PENDING BASED ON FURTHER ENGINEERING ANALYSIS.
11. PROJECT IS IN YAKIMA COUNTY FIRE DISTRICT #4 AND WILL COMPLY WITH ALL REQUIREMENTS OF THE FIRE OFFICIAL. ACCESS ROADS AND GATES WILL COMPLY WITH THE APPLICABLE VERSION OF THE INTERNATIONAL FIRE CODE AS ADOPTED BY THE STATE OF WASHINGTON. GATES 20' IN WIDTH WITH ACCESSIBLE HARDWARE PER FIRE DEPARTMENT REQUIREMENTS SHALL BE INSTALLED. FIRE ACCESS ROADS SHALL BE 20' IN WIDTH, WITH INNER TURNING RADIUS OF 30' AND OUTER TURNING RADIUS OF 45'.
12. THE AMENDED 2018 INTERNATIONAL FIRE CODE WILL REPLACE THE 2015 CODE EFFECTIVE JULY 1, 2020.
13. THIS SITE CONSISTS OF TWO NRCS SOIL TYPES; WILLIS SILT LOAM AND MOXEE SILT LOAM.
14. REFER TO STUDY RESULTS PERFORMED BY WEST INC. FOR DETAILED INFORMATION REGARDING THREATENED, ENDANGERED AND SENSITIVE SPECIES FOUND ON SITE.

PROJECT

GOOSE PRAIRIE

ADDRESS

11900-12898 WA -24
MOXEE, WA 98936

DRAWING

TITLE:
CONCEPT LAYOUT
SHEET NUMBER:
A-001
SCALE:
1" = 400'
DRAWN BY:
CG
CHECKED BY:

DATE:
10/28/2020
REVISIONS:

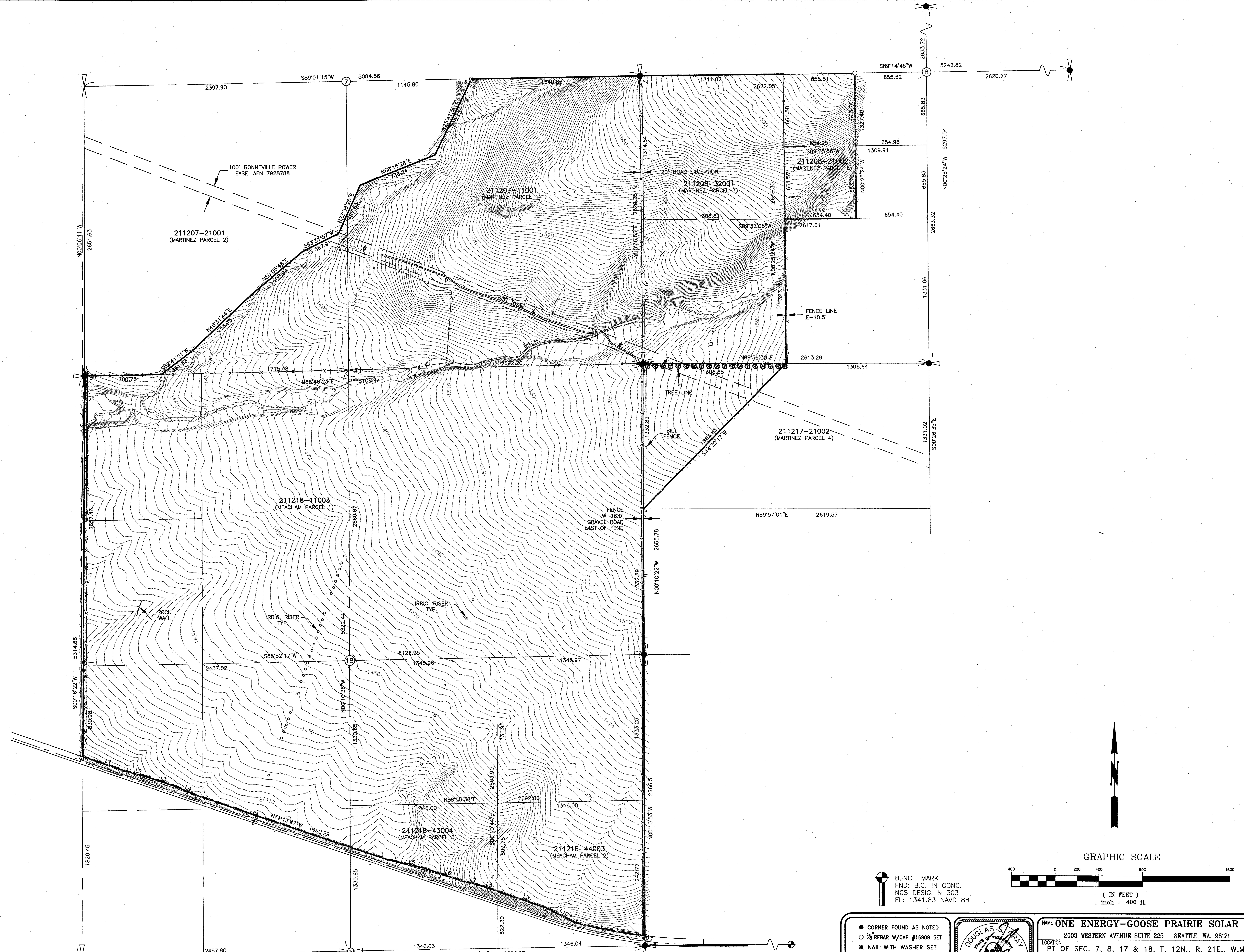
DESCRIPTION

THIS FACILITY CONSISTS OF THE DESIGN AND INSTALLATION OF AN 80.00MWac SOLAR PHOTOVOLTAIC + BATTERY SYSTEM. MODULES ARE TO BE MOUNTED IN SINGLE AXIS TRACKERS, WHICH FOLLOW THE SUN FROM EAST TO WEST THROUGHOUT THE DAY. INTERCONNECTION TO BE COORDINATED WITH THE LOCAL UTILITY.

LEGEND

- GRAVEL ACCESS ROAD
- FACILITY STAGING / PARKING AREA
- FACILITY O&M BUILDING
- FACILITY SUBSTATION
- PARCEL BOUNDARY
- PARCEL ZONING OFFSET
- NEIGHBOR PARCEL BOUNDARY
- FACILITY AREA EXTENT
- FACILITY SECURITY FENCE
- EXISTING UTILITY LINE
- GENERATION TIE LINE
- EXISTING UTILITY RISER
- PROPOSED NEW RISER

OneEnergy RENEWABLES



● CORNER FOUND AS NOTED
○ 5/8" REBAR W/CAP #16909 SET
⌘ NAIL WITH WASHER SET

GSE
Gray Surveying & Engineering, Inc.
Land Surveying • Civil Engineering • Project Management
P.O. Box 510 • 2706 River Road
Yakima, Wa. 98902 • (509) 575-6434

DOUGLAS S. GRAY
STATE OF WASHINGTON
16909
REGISTERED
PROFESSIONAL LAND SURVEYOR
4-1-20

NAME	ONE ENERGY–GOOSE PRAIRIE SOLAR
	2003 WESTERN AVENUE SUITE 225 SEATTLE, WA. 98121
LOCATION	PT OF SEC. 7, 8, 17 & 18, T. 12N., R. 21E., W.M.
DRAWING TYPE	ALTA/NSPS
DRAWN BY: MM	SCALE: 1" = 400'
CHECKED BY: D.S.G.	DATE: 3/17/2020
PROJECT NO. 20–075	SHEET 2 OF 3
PARCEL NO. AS SHOWN ON MAP	

Appendix II

Exploratory Boring & Test Pit Logs

Key Chart (for Soil Classification)

GN Northern, Inc.
722 N. 16th Avenue Suite 31
Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

BORING NUMBER B-1

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/15/20 **COMPLETED** 9/15/20
GROUND ELEVATION 1552 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°32'4.27"N, 120°13'49.68"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.
0			GM		SILTY GRAVEL WITH SAND, (GM) tan to pink, dry, very dense, some cobbles	
	SPT	30-50/5"				
4.0						1548.0
5			SM		SILTY SAND, (SM) brown, fine grained, moist, dense	
	SPT	7-15-23 (38)			- ash lense	
	SPT	50/4"			- becomes damp, very dense, trace gravel	
10	SPT	38-50/2"			- with lenses of silt, some gravel	
					- no gravel	
15	SPT	7-19-43 (62)			- becomes moist	
19.0						1533.0
20	SPT	50/4"	GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) brown gray, damp, very dense	
22.0						1530.0
25	SPT	50-50/2"	SM		SILTY SAND, (SM) brown, fine to medium grained, damp to moist, very dense, some basalt gravel (sandstone) [Ellensburg Formation]	
29.0						1523.0
30	SPT	18-25-48 (73)	GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, damp, very dense	
31.0			SM		SILTY SAND, (SM) brown, fine grained, moist, dense to very dense, trace caliche (sandstone)	1521.0
34.0			GM		SILTY GRAVEL WITH SAND, (GM) brown, damp, very dense	1518.0
35	SPT	50/3"				
37.5			SM		SILTY SAND, (SM) brown, fine to medium grained, damp to moist, very dense, some gravel (sandstone)	1514.5
40	SPT	50/5"				
40.4						1511.6

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 40.4 feet.

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BORING NUMBER B-2

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/16/20 **COMPLETED** 9/16/20
GROUND ELEVATION 1546 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°32'4.30"N, 120°13'52.78"W
AFTER DRILLING ---

SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS
SPT	50/5"	
SPT	50	
SPT	50/3"	
SPT	50/3"	
SPT	17-36-50/3"	MC = 6% Fines = 77%
SPT	7-14-50/6"	
SPT	30-42-50/2"	
SPT	17-30-47 (77)	
SPT	18-34-50/4"	
SPT	17-34-50/3"	

DEPTH (ft)	U.S.C.S.	MATERIAL DESCRIPTION	Elevation
0 – 8.5	GM	SILTY GRAVEL WITH SAND, (GM) tan to pink, dry, dense, ashy, with cobbles	1537.5
8.5 – 19.0	SM	SILTY SAND, (SM) brown, fine to coarse grained, damp, very dense, trace gravel - becomes damp to moist, fine grained, with Silt with Sand (ML)	1527.0
19.0 – 24.0	ML	SILT WITH SAND (ML) / SANDY SILT, (ML) brown, moist, very dense, (siltstone) [Ellensburg Formation]	1522.0
24.0 – 41.3	SM	SILTY SAND, (SM) fine grained, moist, very dense, (sandstone) - some gravel - some Sandy Silt (ML) - trace gravel - with gravel	1504.8

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 41.3 feet.

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Yakima, Washington 98902
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BORING NUMBER B-3

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/16/20 **COMPLETED** 9/16/20
GROUND ELEVATION 1550 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°32'2.95"N, 120°13'51.13"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation
0			GM		SILTY GRAVEL WITH SAND, (GM) tan, dry, dense, ashy	
	SPT	12-50/2"				
5	SPT	50/5"				
7.0			ML		SANDY SILT, (ML) brown, damp, very dense, (siltstone) [Ellensburg Formation]	1543.0
	SPT	13-44-50/3"				
10	SPT	12-29-39 (68)				
14.0			SM		SILTY SAND, (SM) gray brown, fine to medium grained, dry to damp, very dense, trace coarse grained sand (sandstone)	1536.0
15	SPT	40-38-30 (68)				
20	SPT	16-36-50/5"			- becomes damp to moist, fine grained	
25	SPT	27-50/4"			- trace gravel	
30	SPT	27-50/5"				
35	SPT	11-26-42 (68)			- becomes moist	
40	SPT	23-50/6"			- becomes damp to moist, trace coarse grained sand	
41.0						1509.0

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 41.0 feet.

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BORING NUMBER B-4

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/17/20 **COMPLETED** 9/17/20
GROUND ELEVATION 1655 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°32'23.50"N, 120°13'38.83"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				ML		SILT, (ML) tan, dry to damp, medium dense
	SPT	5-5-7 (12)				
5	SPT	3-5-8 (13)				
	SPT	8-12-18 (30)	MC = 4% Fines = 83%			- becomes medium dense to dense
10	SPT	6-39-49 (88)				
10.5				SM		1644.5 SILTY SAND, (SM) tan, fine grained, dry, very dense, trace ash lense in upper ~6" (sandstone) [Ellensburg Formation]
						- trace gravel
15	SPT	22-50/4"				- becomes dry to damp, very dense, slightly cemented, trace medium grained sand, with Silt with Sand (ML)
						- trace gravel
20	SPT	50/3"				- some gravel
23.0						1632.0

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 23.0 feet.

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722 N. 16th Avenue Suite 31
Yakima, Washington 98902
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BORING NUMBER B-5

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/17/20 **COMPLETED** 9/17/20
GROUND ELEVATION 1616 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°32'15.94"N, 120°13'39.72"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation
0			GM		SILTY GRAVEL WITH SAND, (GM) brown, dry, very dense	
	SPT	50				
5	SPT	50/3"				
	SPT	50/3"				
10	SPT	50/4"				
12.0			ML		SILT WITH SAND (ML) / SANDY SILT, (ML) brown, fine grained, dry, very dense, (siltstone) [Ellensburg Formation]	1604.0
14.5			GM		SILTY GRAVEL WITH SAND, (GM) brown, dry, very dense	1601.5
15	SPT	50/3"				
19.0			SM		SILTY SAND, (SM) brown, dry, very dense, (sandstone)	1597.0
20	SPT	50/1"				
20.1						1595.9

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 20.1 feet.

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722 N. 16th Avenue Suite 31
Yakima, Washington 98902
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BORING NUMBER B-6

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/17/20 **COMPLETED** 9/17/20
GROUND ELEVATION 1501 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°32'8.31"N, 120°14'18.63"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			ML		SILT, (ML) tan, dry, loose
3.0	SPT	4-18-11 (29)	GM		SILTY GRAVEL WITH SAND, (GM) brown, dry, medium dense (1498.0)
5	SPT	50/6"			- becomes very dense
	SPT	50/5"			
10	SPT	50/1"			
12.0			ML		SILTY SAND, (ML) light olive tan, damp, very dense, (sandstone) [Ellensburg Formation] (1489.0)
15	SPT	12-23-44 (67)			
20	SPT	12-20-25 (45)			- becomes Silt with Sand (ML) / Sandy Silt (ML), brown
25	SPT	16-33-49 (82)			
26.5					(1474.5)

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 26.5 feet.

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722 N. 16th Avenue Suite 31
Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

BORING NUMBER B-7

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/17/20 **COMPLETED** 9/17/20
GROUND ELEVATION 1580 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°32'15.21"N, 120°13'58.26"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				ML		SILT, (ML) tan, dry, loose to medium dense
2.0						(1578.0)
				GM		SILTY GRAVEL, (GM) brown, dry, very dense
	SPT	48-50				
5	SPT	50/3"				
	SPT	50/3"				
10	SPT	50/3"				
15	SPT	39-50/4"	MC = 3% Fines = 13%			- becomes Poorly Graded Gravel with Silt and Sand (GP-GM)
19.0						(1561.0)
				SM		SILTY SAND, (SM) brown, fine grained, dry to damp, very dense, trace gravel (sandstone) [Ellensburg Formation]
20	SPT	50/3"				
22.0						(1558.0)
				GM		SILTY GRAVEL WITH SAND, (GM) brown, dry to damp, very dense, with Silty Sand with Gravel (SM)
25	SPT	50/3"				
25.3						(1554.8)

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 25.3 feet.

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722 N. 16th Avenue Suite 31
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BORING NUMBER B-8

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/18/20 **COMPLETED** 9/18/20
GROUND ELEVATION 1510 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°31'56.31"N, 120°14'7.56"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation
0				ML		SILT, (ML) tan, dry, loose	
2.0	SPT	50/2"		GM		SILTY GRAVEL WITH SAND, (GM) light brown, dry, very dense	1508.0
5	SPT	50/4"					
8.5				ML		SILT WITH SAND, (ML) brown, moist, very dense, some Sandy Silt (ML) (siltstone) [Ellensburg Formation]	1501.5
10	SPT	11-16-44 (60)					
14.5				SM		SILTY SAND, (SM) brown, fine grained, damp to moist, dense to very dense, (sandstone)	1495.5
15	SPT	17-23-26 (49)					
20	SPT	43-46-50 (96)	MC = 5% Fines = 15%			- becomes fine to medium grained, trace coarse grained sand	
25	SPT	12-17-22 (39)					
26.5							1483.5

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 26.5 feet.

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Yakima, Washington 98902
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BORING NUMBER B-9

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/21/20 **COMPLETED** 9/21/20
GROUND ELEVATION 1502 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°31'43.70"N, 120°13'57.42"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0			ML		SILT, (ML) tan, dry, loose to medium dense	
2.0			GM		SILTY GRAVEL WITH SAND, (GM) tan, dry, very dense	1500.0
	SPT	50/6"				
5	SPT	50/5"			- becomes dry to damp	
	SPT	50/4"			- becomes brown, damp	
10	SPT	50/3"				
13.5			SM		SILTY SAND WITH GRAVEL, (SM) brown, damp, very dense, (sandstone) [Ellensburg Formation]	1488.5
15	SPT	50/5"				
18.5			ML		SANDY SILT, (ML) brown, moist, medium dense, some Silty Sand (SM) and Silt with Sand (ML) (siltstone)	1483.5
20	SPT	7-8-8 (16)				
25	SPT	27-35-50/4"			- becomes very dense	
26.2						1475.8

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 26.2 feet.

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BORING NUMBER B-10

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/21/20 **COMPLETED** 9/21/20
GROUND ELEVATION 1461 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°31'44.71"N, 120°14'25.90"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation
0			ML		SILT, (ML) tan, dry, loose	
2.0						1459.0
			GM		SILTY GRAVEL WITH SAND, (GM) tan, dry, very dense	
	SPT	31-50/4"				
5	SPT	50/4"				
9.5						1451.5
			SM		SILTY SAND, (SM) brown, fine grained, damp, very dense, (sandstone) [Ellensburg Formation]	
10	SPT	50/5"				
15	SPT	20-45-50/5"			- becomes moist, with Sandy Silt (ML)	
20	SPT	35-50/3"			- becomes damp to moist	
25	SPT	18-33-45 (78)			- becomes moist	
26.5						1434.5

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 26.5 feet.

GN Northern, Inc.
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Yakima, Washington 98902
Telephone: (509) 248-9798
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BORING NUMBER B-11

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/21/20 **COMPLETED** 9/21/20
GROUND ELEVATION 1426 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°31'51.57"N, 120°14'51.61"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			ML		SILT, (ML) tan, dry, loose
	SPT	5-10-34 (44)			
3.5			GM		SILTY GRAVEL WITH SAND, (GM) tan, dry, very dense (1422.5)
5	SPT	50/4"			
7.0			GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) brown, dry to damp, very dense (1419.0)
	SPT	18-28-33 (61)			
10	SPT	50/4"			
15	SPT	50/3"			- becomes Silty Gravel (GM)
20.0			ML		SILT, (ML) olive tan, damp to moist, dense, (siltstone) [Ellensburg Formation] (1406.0)
	SPT	16-15-16 (31)			
25	SPT	19-25-23 (48)			- becomes moist
26.5					(1399.5)

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 26.5 feet.

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BORING NUMBER B-12

CLIENT OER WA Solar 1, LLC

PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project

PROJECT NUMBER 220-1274

PROJECT LOCATION Near Moxee, Yakima County Washington

DATE STARTED 9/21/20 **COMPLETED** 9/21/20

GROUND ELEVATION 1418 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR Western States Soil Conservation, Inc.

GROUND WATER LEVELS:

DRILLING METHOD CME 55 Track-Mounted Rig

AT TIME OF DRILLING ---

LOGGED BY KAH **CHECKED BY** IM

AT END OF DRILLING ---

NOTES Approx. GPS Coords.: 46°31'38.34"N, 120°14'52.47"W

AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation
0			ML		SILT, (ML) tan, dry, loose	
2.8	SPT	25-50/3"	GM		SILTY GRAVEL WITH SAND, (GM) tan, dry, very dense	1415.3
5	SPT	50/4"				
	SPT	50/6"				
10	SPT	30-18-15 (33)				
11.0			ML		SILT WITH CLAY, (ML) olive brown, moist, dense	1407.0
15	SPT	4-8-14 (22)			- becomes medium dense	
20	SPT	5-9-14 (23)				
25	SPT	8-13-13 (26)				
26.5						1391.5

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 26.5 feet.

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Yakima, Washington 98902
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BORING NUMBER B-13

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/21/20 **COMPLETED** 9/21/20
GROUND ELEVATION 1417 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°31'25.60"N, 120°14'27.30"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	MATERIAL DESCRIPTION	Elevation
0–2.0			ML	SILT, (ML) tan, dry, loose	1415.0
2.0–6.5	SPT	26-50/6"	GM	SILTY GRAVEL WITH SAND, (GM) tan, dry, very dense	1410.5
	SPT	50/1"			
6.5–9.0	SPT	50/5"	GP-GM	POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) brown, dry to damp, very dense	1408.0
9.0–13.5	SPT	23-50/5"	GM	SILTY GRAVEL WITH SAND, (GM) brown, damp to moist, very dense - becomes dry to damp	1403.5
13.5–19.5	SPT	34-45-50 (95)	SM	SILTY SAND, (SM) brown, damp to moist, very dense, (sandstone) [Ellensburg Formation]	1397.5
19.5–26.5	SPT	6-14-31 (45)	ML	SANDY SILT, (ML) brown, moist, medium dense, some Silty Sand (SM) and Silt with Sand (ML) (siltstone)	1390.5
	SPT	17-38-50 (88)			

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 26.5 feet.

GN Northern, Inc.
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Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

BORING NUMBER B-14

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 9/21/20 **COMPLETED** 9/21/20
GROUND ELEVATION 1442 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation, Inc.
GROUND WATER LEVELS:
DRILLING METHOD CME 55 Track-Mounted Rig
AT TIME OF DRILLING ---
LOGGED BY KAH **CHECKED BY** IM
AT END OF DRILLING ---
NOTES Approx. GPS Coords.: 46°31'24.49"N, 120°14'3.15"W
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			ML		SILT, (ML) tan, dry, loose
	SPT	3-2-3 (5)			
5	SPT	1-4-3 (7)			
7.0			SM		1435.0 SILTY SAND, (SM) tan, fine grained, dry, very dense, some Sandy Silt (ML), with ash lenses (sandstone) [Ellensburg Formation]
	SPT	32-49-50 (99)			
10	SPT	31-32-34 (66)			
15	SPT	50/5"			- becomes slightly cemented, trace caliche, trace gravel
20	SPT	9-26-24 (50)			- becomes dense to very dense
25	SPT	29-30-33 (63)			- becomes dry, very dense
26.5					1415.5

- Groundwater not encountered at time of drilling
- Referenced elevations are approximate and based on Google Earth topography

Bottom of borehole at 26.5 feet.

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Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

TEST PIT NUMBER TP-1

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 8/26/20 **COMPLETED** 8/26/20
GROUND ELEVATION 1552 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Valley Septic & Excavating
GROUND WATER LEVELS:
EXCAVATION METHOD Case 580 Super N Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY MBB **CHECKED BY** KAH
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46°32'3.77"N, 120°13'49.52"W
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0		GM		SILTY GRAVEL WITH SAND, (GM) brown, angular, dry, appears dense to very dense, with cobbles, trace boulders - becomes cemented, appears very dense - becomes reddish brown, moist	
2.5					
5.0					
			6.0		1546.0
		SM		SILTY SAND WITH GRAVEL, (SM) dark reddish brown, fine to medium grained, moist, appears very dense, (sandstone) [Ellensburg Formation]	
7.5					
10.0			10.0		1542.0

- Test pit terminated at ~10' BGS due to excavator refusal
- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 10.0 feet.

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Fax: (509) 248-4220

TEST PIT NUMBER TP-2

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 8/26/20 **COMPLETED** 8/26/20
GROUND ELEVATION 1639 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Valley Septic & Excavating
GROUND WATER LEVELS:
EXCAVATION METHOD Case 580 Super N Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY MBB **CHECKED BY** KAH
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46°32'19.81"N, 120°13'34.61"W
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0		ML		SILT WITH GRAVEL, (ML) brown, dry, appears loose	
2.5		SM	2.5	SILTY SAND WITH GRAVEL, (SM) light pinkish tan, dry, appears very dense, (caliche)	1636.5
		GM	4.0	SILTY GRAVEL WITH SAND, (GM) light pinkish tan, dry, appears very dense, highly cemented	1635.0
5.0				- becomes moist	
7.5			8.0		1631.0

- Test pit terminated at ~8' BGS due to excavator refusal
- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 8.0 feet.

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722 N. 16th Avenue Suite 31
Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

TEST PIT NUMBER TP-3

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 8/26/20 **COMPLETED** 8/26/20
GROUND ELEVATION 1589 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Valley Septic & Excavating
GROUND WATER LEVELS:
EXCAVATION METHOD Case 580 Super N Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY MBB **CHECKED BY** KAH
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46°32'15.77"N, 120°13'47.13"W
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0		ML		SILT WITH SAND, (ML) brown, dry, appears medium dense
2.5				
5.0				
7.5				- becomes cemented, trace cobbles
				- becomes moderately cemented, with cobbles
10.0				
11.0				1578.0

- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 11.0 feet.

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Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

TEST PIT NUMBER TP-4

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 8/26/20 **COMPLETED** 8/26/20
GROUND ELEVATION 1559 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Valley Septic & Excavating
GROUND WATER LEVELS:
EXCAVATION METHOD Case 580 Super N Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY MBB **CHECKED BY** KAH
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46°32'14.29"N, 120°14'9.38"W
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation
0.0		ML		SILT WITH SAND, (ML) brown, dry, appears medium dense, trace gravel	
2.5		GM	2.5	SILTY GRAVEL WITH SAND, (GM) light brown, subangular, dry to damp, appears very dense, moderately to highly cemented	1556.5
5.0				- becomes highly cemented	
			6.0		1553.0

- Test pit terminated at ~6' BGS due to excavator refusal
- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 6.0 feet.

GN Northern, Inc.
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Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

TEST PIT NUMBER TP-5

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 8/26/20 **COMPLETED** 8/26/20
GROUND ELEVATION 1531 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Valley Septic & Excavating
GROUND WATER LEVELS:
EXCAVATION METHOD Case 580 Super N Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY MBB **CHECKED BY** KAH
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46°31'59.45"N, 120°13'58.16"W
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0		ML		SILT WITH GRAVEL, (ML) brown, dry, appears medium dense
1.5		GM		SILTY GRAVEL WITH SAND, (GM) light brown to white, subrounded to subangular, dry, appears very dense, with cobbles, highly cemented (1529.5)
2.5				
				- trace boulder
5.0				- becomes Poorly Graded Gravel with Silt and Sand (GP-GM)
6.0				(1525.0)

- Test pit terminated at ~6' BGS due to excavator refusal
- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 6.0 feet.

GN Northern, Inc.
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Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

TEST PIT NUMBER TP-6

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 8/26/20 **COMPLETED** 8/26/20
GROUND ELEVATION 1492 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Valley Septic & Excavating
GROUND WATER LEVELS:
EXCAVATION METHOD Case 580 Super N Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY MBB **CHECKED BY** KAH
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46°31'47.98"N, 120°14'10.63"W
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation
0.0		ML		SILT WITH GRAVEL, (ML) brown, dry, appears medium dense	
3.5		GM		SILTY GRAVEL WITH SAND, (GM) light brown to white, subrounded to subangular, dry, appears very dense, with cobbles, highly cemented, with caliche	1488.5
6.0					1486.0

- Test pit terminated at ~6' BGS due to excavator refusal
- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 6.0 feet.

GN Northern, Inc.
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Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

TEST PIT NUMBER TP-7

CLIENT OER WA Solar 1, LLC

PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project

PROJECT NUMBER 220-1274

PROJECT LOCATION Near Moxee, Yakima County Washington

DATE STARTED 8/26/20 **COMPLETED** 8/26/20

GROUND ELEVATION 1475 ft **TEST PIT SIZE** 30 x 72 inches

EXCAVATION CONTRACTOR Valley Septic & Excavating

GROUND WATER LEVELS:

EXCAVATION METHOD Case 580 Super N Backhoe

AT TIME OF EXCAVATION ---

LOGGED BY MBB **CHECKED BY** KAH

AT END OF EXCAVATION ---

NOTES Approx. GPS Coords.: 46°31'33.81"N, 120°14'0.30"W

AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0		ML		SILT WITH GRAVEL, (ML) brown, dry, appears medium dense	
2.5		GM	2.5	SILTY GRAVEL WITH SAND, (GM) light brown to white, subrounded to subangular, dry, appears very dense, with cobbles, highly cemented, with caliche	1472.5
5.0			7.0		1468.0

- Test pit terminated at ~7' BGS due to excavator refusal
- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 7.0 feet.

GN Northern, Inc.
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Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

TEST PIT NUMBER TP-8

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 8/26/20 **COMPLETED** 8/26/20
GROUND ELEVATION 1443 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Valley Septic & Excavating
GROUND WATER LEVELS:
EXCAVATION METHOD Case 580 Super N Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY MBB **CHECKED BY** KAH
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46°31'34.25"N, 120°14'22.07"W
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0		ML		SILT WITH GRAVEL, (ML) brown, dry, appears medium dense	
2.5		GM	2.5	SILTY GRAVEL WITH SAND, (GM) light brown to white, subrounded to subangular, dry, appears very dense, with cobbles, highly cemented, with caliche	1440.5
5.0			6.0		1437.0

- Test pit terminated at ~6' BGS due to excavator refusal
- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 6.0 feet.

GN Northern, Inc.
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Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

TEST PIT NUMBER TP-9

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington
DATE STARTED 8/26/20 **COMPLETED** 8/26/20
GROUND ELEVATION 1429 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Valley Septic & Excavating
GROUND WATER LEVELS:
EXCAVATION METHOD Case 580 Super N Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY MBB **CHECKED BY** KAH
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46°31'44.39"N, 120°14'45.19"W
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0		ML		SILT WITH GRAVEL, (ML) brown, dry, appears medium dense	
2.5					
			3.5		1425.5
		GM		SILTY GRAVEL WITH SAND, (GM) light brown to white, subrounded to subangular, dry, appears very dense, with cobbles, highly cemented, with caliche	
5.0					
			6.0		1423.0

- Test pit terminated at ~6' BGS due to excavator refusal
- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 6.0 feet.

GN Northern, Inc.
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Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

TEST PIT NUMBER TP-10

CLIENT OER WA Solar 1, LLC

PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project

PROJECT NUMBER 220-1274

PROJECT LOCATION Near Moxee, Yakima County Washington

DATE STARTED 8/26/20 **COMPLETED** 8/26/20

GROUND ELEVATION 1471 ft **TEST PIT SIZE** 30 x 72 inches

EXCAVATION CONTRACTOR Valley Septic & Excavating

GROUND WATER LEVELS:

EXCAVATION METHOD Case 580 Super N Backhoe

AT TIME OF EXCAVATION ---

LOGGED BY MBB **CHECKED BY** KAH

AT END OF EXCAVATION ---

NOTES Approx. GPS Coords.: 46°31'56.46"N, 120°14'29.35"W

AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0		ML		SILT WITH GRAVEL, (ML) brown, dry, appears medium dense	
2.5		GM	2.5	SILTY GRAVEL WITH SAND, (GM) light brown to white, subrounded to subangular, dry, appears very dense, with cobbles, highly cemented, with caliche	1468.5
5.0			6.5		1464.5

- Test pit terminated at ~6.5' BGS due to excavator refusal
- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on Google Earth topography

Bottom of test pit at 6.5 feet.

Northern, Inc.
Kennewick, Yakima, Spokane, Hermiston (OR)

KEY CHART

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE					
COARSE-GRAINED SOILS			FINE-GRAINED SOILS		
DENSITY	N (BLOWS/FT)	FIELD TEST	CONSISTENCY	N (BLOWS/FT)	FIELD TEST
Very Loose	0 – 4	Easily penetrated with ½-inch reinforcing rod pushed by hand	Very Soft	0 – 2	Easily penetrated several inches by thumb
Loose	4 – 10	Difficult to penetrate with ½-inch reinforcing rod pushed by hand	Soft	2 – 4	Easily penetrated one inch by thumb
Medium -Dense	10 – 30	Easily penetrated with ½-inch rod driven with a 5-lb hammer	Medium-Stiff	4 – 8	Penetrated over ½-inch by thumb with moderate effort
Dense	30 – 50	Difficult to penetrate with ½-inch rod driven with a 5-lb hammer	Stiff	8 – 15	Indented about ½-inch by thumb but penetrated with great effort
Very Dense	> 50	penetrated only a few inches with ½-inch rod driven with a 5-lb hammer	Very Stiff	15 – 30	Readily indented by thumb
			Hard	> 30	Indented with difficulty by thumbnail

USCS SOIL CLASSIFICATION				
MAJOR DIVISIONS			GROUP DESCRIPTION	
Coarse-Grained Soils <50% passes #200 sieve	**Gravel** and **Gravelly Soils** <50% coarse fraction passes #4 sieve	**Gravel** (with little or no fines)	GW	Well-graded **Gravel**
			GP	Poorly Graded **Gravel**
		Gravel (with >12% fines)	GM	Silty **Gravel**
			GC	Clayey **Gravel**
	Sand and **Sandy Soils** >50% coarse fraction passes #4 sieve	**Sand** (with little or no fines)	SW	Well-graded **Sand**
			SP	Poorly graded **Sand**
		Sand (with >12% fines)	SM	Silty **Sand**
			SC	Clayey **Sand**
Fine-Grained Soils >50% passes #200 sieve	**Silt** and **Clay** Liquid Limit < 50		ML	**Silt**
			CL	Lean **Clay**
			OL	Organic **Silt** and **Clay** (low plasticity)
	Silt and **Clay** Liquid Limit > 50		MH	Inorganic **Silt**
			CH	Inorganic **Clay**
			OH	Organic **Clay** and **Silt** (med. to high plasticity)
Highly Organic Soils			PT	**Peat** **Top Soil**

LOG SYMBOLS	
2S	2" OD Split Spoon (SPT)
3S	3" OD Split Spoon
NS	Non-Standard Split Spoon
ST	Shelby Tube
CR	Core Run
BG	Bag Sample
TV	Torvane Reading
PP	Penetrometer Reading
NR	No Recovery
GW	Groundwater Table

MODIFIERS	
DESCRIPTION	RANGE
Trace	<5%
Little	5% – 12%
Some	>12%

MOISTURE CONTENT	
DESCRIPTION	FIELD OBSERVATION
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but not visible water
Wet	Visible free water

SOIL CLASSIFICATION INCLUDES

1. Group Name
2. Group Symbol
3. Color
4. Moisture content
5. Density / consistency
6. Cementation
7. Particle size (if applicable)
8. Odor (if present)
9. Comments

MAJOR DIVISIONS WITH GRAIN SIZE							
SIEVE SIZE							
12"	3"	3/4"	4	10	40	200	
GRAIN SIZE (INCHES)							
12	3	0.75	0.19	0.079	0.0171	0.0029	
Boulders	Cobbles	Gravel		Sand			Silt and Clay
		Coarse	Fine	Coarse	Medium	Fine	

Conditions shown on boring and testpit logs represent our observations at the time and location of the fieldwork, modifications based on lab test, analysis, and geological and engineering judgment. These conditions may not exist at other times and locations, even in close proximity thereof. This information was gathered as part of our investigation, and we are not responsible for any use or interpretation of the information by others.

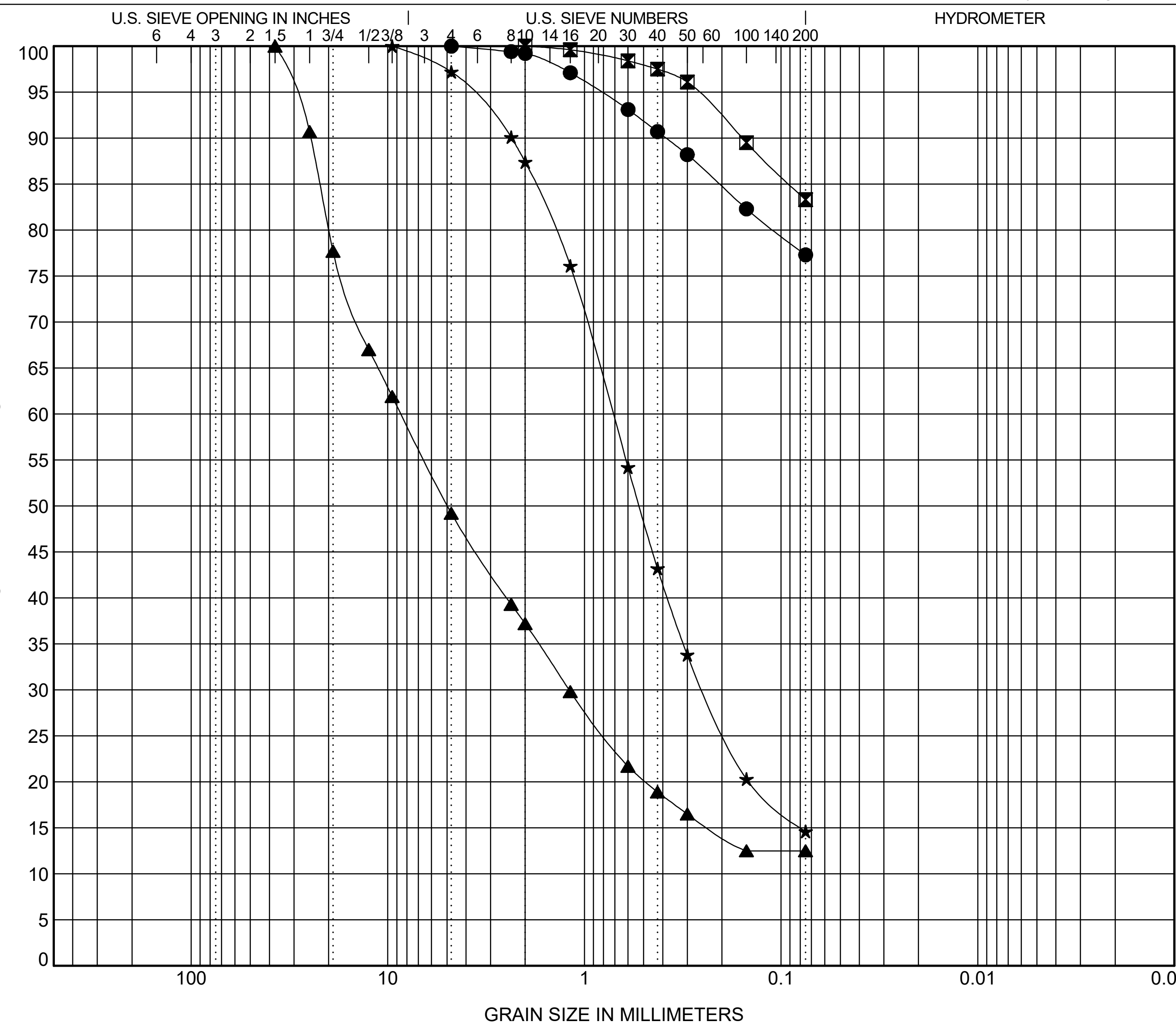
Appendix III

Laboratory Testing Results

GN Northern, Inc.
722 N. 16th Avenue Suite 31
Yakima, Washington 98902
Telephone: (509) 248-9798
Fax: (509) 248-4220

GRAIN SIZE DISTRIBUTION

CLIENT OER WA Solar 1, LLC
PROJECT NAME Goose Prairie Photovoltaic (PV) Solar Array Project
PROJECT NUMBER 220-1274
PROJECT LOCATION Near Moxee, Yakima County Washington



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	**B-2**	**15.0**	**SILT WITH SAND (ML)**					
⊠	**B-4**	**7.5**	**SILT WITH SAND (ML)**					
▲	**B-7**	**15.0**	**POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM)**					
★	**B-8**	**20.0**	**SILTY SAND (SM)**					

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-2**	**15.0**	**4.75**				**0.0**	**22.7**	**77.3**	
⊠	**B-4**	**7.5**	**2**				**0.0**	**16.7**	**83.3**	
▲	**B-7**	**15.0**	**37.5**	**8.564**	**1.197**		**50.8**	**36.7**	**12.5**	
★	**B-8**	**20.0**	**9.5**	**0.718**	**0.247**		**2.8**	**82.6**	**14.6**	

Appendix IV

Soil Corrosivity Testing Results

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

GN NORTHERN, INC.
11115 E MONTGOMERY AVE
SPOKANE VALLEY, WA 99206
Attention: KARL HARMON
Project Name: GOOSE PRAIRIE SOLAR ARRAY
Project #: 220-1274
PO Number: 220-1274
All results reported on an as received basis.

Date Received: 09/03/20
Date Reported: 9/23/20

AMTEST Identification Number **20-A013972**
Client Identification **TP1 @ 4'**
Sampling Date **08/26/20**

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
pH	8.16	Unit			ASTM G51	KF	09/08/20
Resistivity	3300	ohms cm		100	ASTM G-187	KF	09/08/20
Redox Potential	359.	unit		200	ASTM D1498-76	KF	09/08/20

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	30.	ug/g		10	ASTM D4327	AY	09/16/20
Sulfate	< 10	ug/g		10	ASTM D4327	AY	09/16/20

Miscellaneous

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANLST	DATE
Sulfide	NEGATIVE				Acetate Paper Acetate	KF	09/08/20

AMTEST Identification Number **20-A013973**
Client Identification **TP3 @ 4'**
Sampling Date **08/26/20**

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
pH	8.35	Unit			ASTM G51	KF	09/08/20
Resistivity	2400	ohms cm		100	ASTM G-187	KF	09/08/20
Redox Potential	379.	unit		200	ASTM D1498-76	KF	09/08/20

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	64.	ug/g		10	ASTM D4327	AY	09/16/20
Sulfate	< 10	ug/g		10	ASTM D4327	AY	09/16/20

Miscellaneous

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANLST	DATE
Sulfide	NEGATIVE				Acetate Paper Acetate	KF	09/08/20

GN NORTHERN, INC.
Project Name: GOOSE PRAIRIE SOLAR ARRAY
AmTest ID: 20-A013974

AMTEST Identification Number **20-A013974**
Client Identification **TP8 @ 1.5'**
Sampling Date **08/26/20**

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
pH	7.33	Unit			ASTM G51	KF	09/08/20
Resistivity	8200	ohms cm		100	ASTM G-187	KF	09/08/20
Redox Potential	414.	unit		200	ASTM D1498-76	KF	09/08/20

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	< 10	ug/g		10	ASTM D4327	AY	09/16/20
Sulfate	17.	ug/g		10	ASTM D4327	AY	09/16/20

Miscellaneous

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANLST	DATE
Sulfide	NAGATIVE				Acetate Paper Acetate	KF	09/08/20

Kathy Fugiel
President

Appendix V

Results of Electrical Resistivity Testing

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321
Fax: 206-582-0838

September 8, 2020 Our ref: 110-0901.000

GN Northern Inc.
722 North 16th Avenue, Suite 31
Yakima, WA 98902

Attention: Mr. Imran Magsi

RE: REPORT FOR ELECTRICAL RESISTIVITY SURVEY IN MOXEE, WA

This letter report presents the results of the geophysical surveys performed by Global Geophysics. The survey was carried out on September 2, 2020 in Moxee, WA. The objective of the survey was to measure the soil resistivity for grounding design.

GEOPHYSICAL METHODS AND FIELD PROCEDURES

Electrical Resistivity

The electrical resistivity sounding technique measures the differences in the electrical properties of geologic materials. These differences can result from variations in lithology, water content, and pore-water chemistry. The method involves transmitting an electric current into the ground between two electrodes and measuring the voltage between two other electrodes. The direct measurement is the apparent resistivity of the area beneath the electrodes. The measurements include deeper layers as the electrode spacing is increased.

The data were acquired with an AGI SuperSting resistivity meter, along E-W and N-S directions.

RESULTS

The line layout is shown below

Location: Moxee WA

Supplier: Conducted by Global Geophysics, P.O. Box 2229, Redmond, WA, 98073. Tel. 425-890-4321; email: Jliu@GlobalGeophysics.com;

Date of Test: September 2, 2020

Test Type: In situ

Manufacturer and model: AGI SuperSting

Date of last meter calibration: April, 2020

Ambient temperature: 85-95 F

Weather condition: Sunny

Recent precipitation: None

Soil composition: Sand

Difficulty of inserting the electrodes: Easy

Terrain condition: Flat open area with minimal vegetation

Lead cable size: 16 gauge copper wires

Electrode: 3/4 inch in diameter, 30 inch long stainless steel

Sounding Name: Moxee 1- EW

Electrode Spacing "a" (ft)	Source Voltage (V)	I Injected (mA)	Apparent Resistance (ohm)	Apparent Resistivity (ohm-m)
1	400	8.00	34.900	66.85
2	400	13.00	9.1000	34.86
3	400	8.00	7.5000	43.10
5	400	14.00	5.2000	49.80
7	400	14.00	4.3000	57.66
10	400	17.00	2.9000	55.55
30	400	18.00	0.7000	40.23
50	400	24.00	0.3500	33.52

Test Type: In situ

Supplier: Conducted by Global Geophysics, P.O. Box 2229, Redmond, WA, 98073. Tel. 425-890-4321; email: Jliu@GlobalGeophysics.com;

Manufacturer and model: AGI SuperSting

Date of last meter calibration: April, 2020

Ambient temperature: 85-95 F

Weather condition: Sunny

Recent precipitation: None

Soil composition: Sand

Difficulty of inserting the electrodes: Easy

Terrain condition: Flat open area with minimal vegetation

Lead cable size: 16 gauge copper wires

Electrode: 3/4 inch in diameter, 30 inch long stainless steel

Sounding Name: Moxee 1 -NS

Electrode Spacing "a" (ft)	Source Voltage (V)	I Injected (mA)	Apparent Resistance (ohm)	Apparent Resistivity (ohm-m)
1	400	8.00	34.865	66.79
2	400	13.00	8.9993	34.48
3	400	8.00	7.0532	40.53
5	400	14.00	5.0870	48.72
7	400	14.00	4.2257	56.66
10	400	17.00	2.9217	55.97
30	400	18.00	0.6761	38.85
50	400	24.00	0.3192	30.57

Location: Moxee WA

Supplier: Conducted by Global Geophysics, P.O. Box 2229, Redmond, WA, 98073. Tel. 425-890-4321; email: Jliu@GlobalGeophysics.com;

Date of Test: September 2, 2020

Test Type: In situ

Manufacturer and model: AGI SuperSting

Date of last meter calibration: April, 2020

Ambient temperature: 85-95 F

Weather condition: Sunny

Recent precipitation: None

Soil composition: Sand

Difficulty of inserting the electrodes: Easy

Terrain condition: Flat open area with minimal vegetation

Lead cable size: 16 gauge copper wires

Electrode: 3/4 inch in diameter, 30 inch long stainless steel

Sounding Name: Moxee 2- EW

Electrode Spacing "a" (ft)	Source Voltage (V)	I Injected (mA)	Apparent Resistance (ohm)	Apparent Resistivity (ohm-m)
1	400	7.00	17.4300	33.39
2	400	12.00	9.6800	37.09
3	400	11.00	7.0810	40.69
5	400	11.00	5.1580	49.40
7	400	10.00	4.4420	59.56
10	400	21.00	2.7530	52.74
30	400	96.00	0.5246	30.15
50	400	35.00	0.1645	15.76

Test Type: In situ

Supplier: Conducted by Global Geophysics, P.O. Box 2229, Redmond, WA, 98073. Tel. 425-890-4321; email: Jliu@GlobalGeophysics.com;

Manufacturer and model: AGI SuperSting

Date of last meter calibration: April, 2020

Ambient temperature: 85-95 F

Weather condition: Sunny

Recent precipitation: None

Soil composition: Sand

Difficulty of inserting the electrodes: Easy

Terrain condition: Flat open area with minimal vegetation

Lead cable size: 16 gauge copper wires

Electrode: 3/4 inch in diameter, 30 inch long stainless steel

Sounding Name: Moxee 2 -NS

Electrode Spacing "a" (ft)	Source Voltage (V)	I Injected (mA)	Apparent Resistance (ohm)	Apparent Resistivity (ohm-m)
1	400	7.00	17.5600	33.64
2	400	12.00	9.7000	37.16
3	400	11.00	7.1000	40.80
5	400	11.00	5.2000	49.80
7	400	10.00	4.4000	59.00
10	400	21.00	2.8000	53.64
30	400	96.00	0.5300	30.46
50	400	35.00	0.1800	17.24

CLOSURE

Global Geophysics services will be conducted in a manner consistent with the level of care and skill ordinarily exercised by other members of the geophysical community currently practicing under similar conditions subject to the time limits and financial and physical constraints applicable to the services.

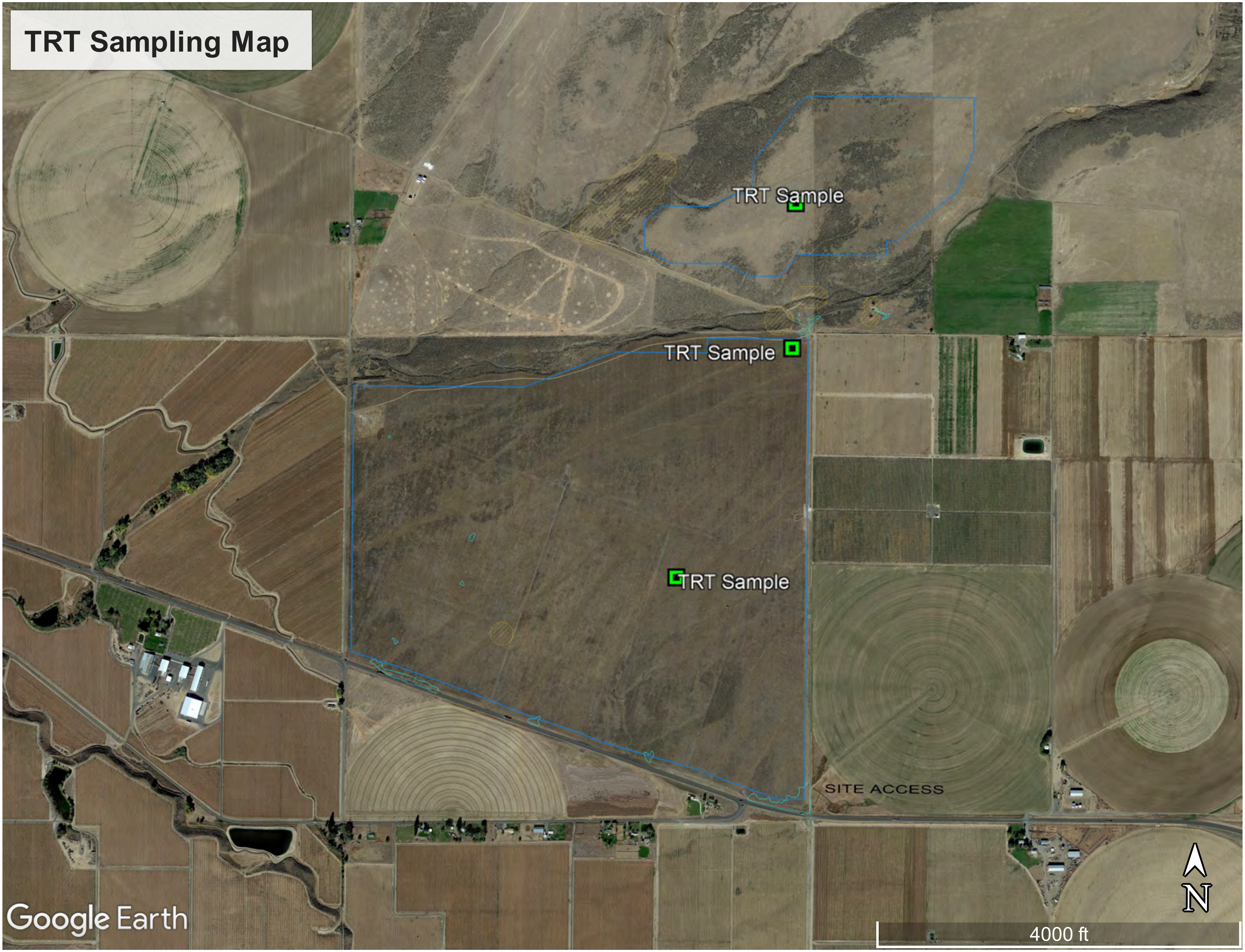
We appreciate the opportunity to work with you on this project, and we hope that you find the results of the geophysical survey useful to your investigation. If you have any questions regarding this report, please call the undersigned at 425-890-4321. We look forward to providing you with additional geophysical services in the future.

Sincerely,

Global Geophysics.

John Liu, Ph.D., R.G.
Principal Geophysicist

Appendix VI
Results of Thermal Resistivity Testing


TRT Sampling Map
TRT Sample
TRT Sample
TRT Sample
SITE ACCESS
N
4000 ft
Google Earth

21239 FM529 Rd., Bldg F
Cypress, Texas 77433
Tel: 281-985-9344
Fax: 832-427-1752
www.geothermusa.com
info@geothermusa.com

September 25, 2020

GN Northern
722 No. 16th Ave, Ste. 31
Yakima, WA 98902
Attn: Max Barnett, GIT

Re: Thermal Analysis of Native Samples
Goose Prairie Solar Array - Moxee, WA (PO No. 220-1274)

The following is the report of thermal dryout characterization tests conducted on three (3) soil samples sent to our laboratory.

Thermal Dryout Tests: The samples were tested at the optimum moisture content and 90% of the maximum dry density provided by **GN Northern**. The tests were conducted in accordance with the IEEE standard 442-2017. The results are tabulated below, and the thermal dryout curves are presented in **Figures 1 to 3.**

Sample ID, Description, Thermal Resistivity, Moisture Content and Density

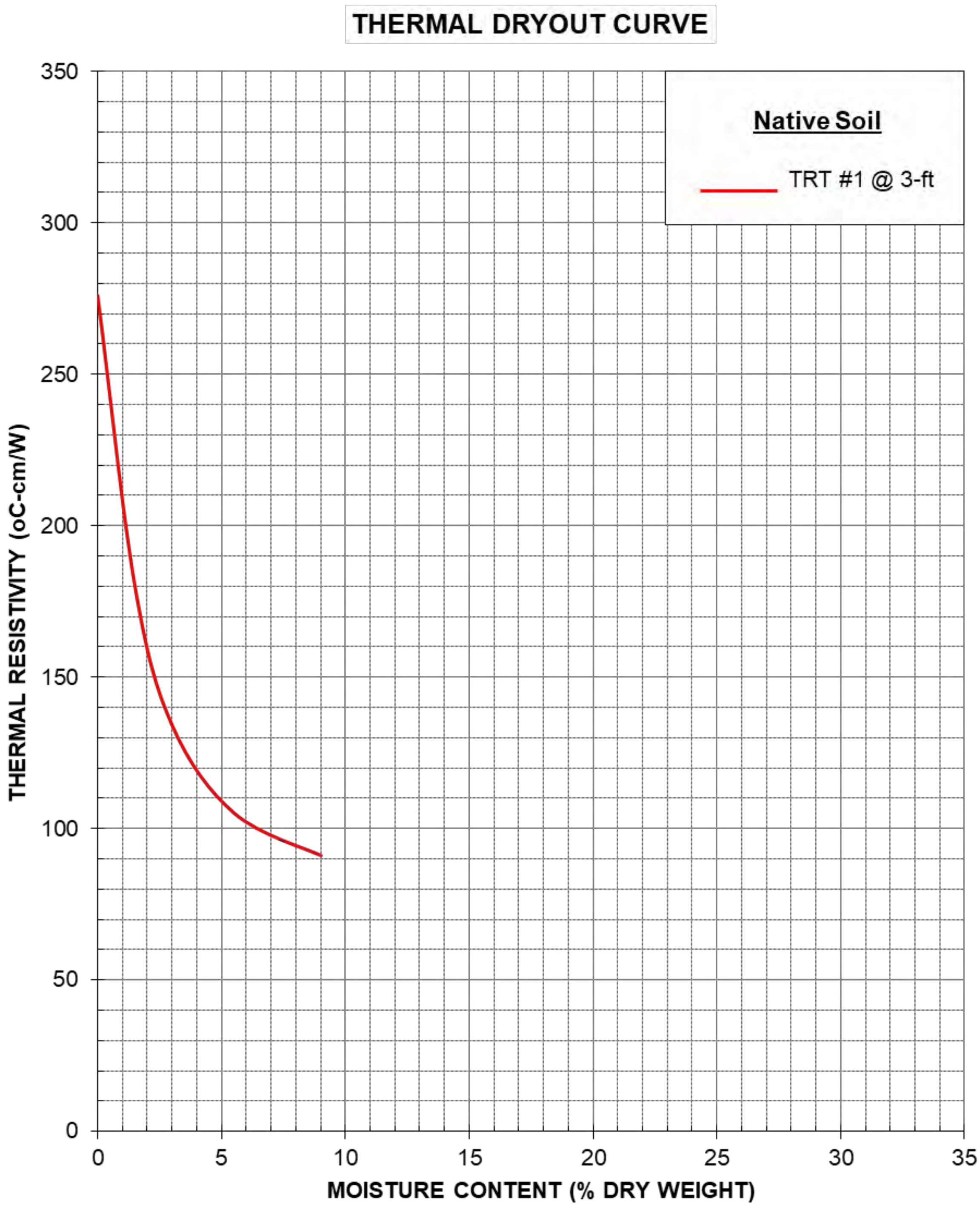
Sample ID	Description (GN Northern)	Thermal Resistivity (°C-cm/W)		Moisture Content (%)	Dry Density (lb/ft^3)
		Wet	Dry		
TRT #1 @ 3-ft	Silty gravel with sand	91	276	9	110
TRT #2 @ 3-ft	Silty gravel with sand	98	290	9	106
TRT #3 @ 3-ft	Silty gravel with sand	110	309	11	98

Comments: The thermal characteristic depicted in the dryout curves apply for the soils at their respective test dry density.

Please contact us if you have any questions or if we can be of further assistance.

Geotherm USA

Nimesh Patel

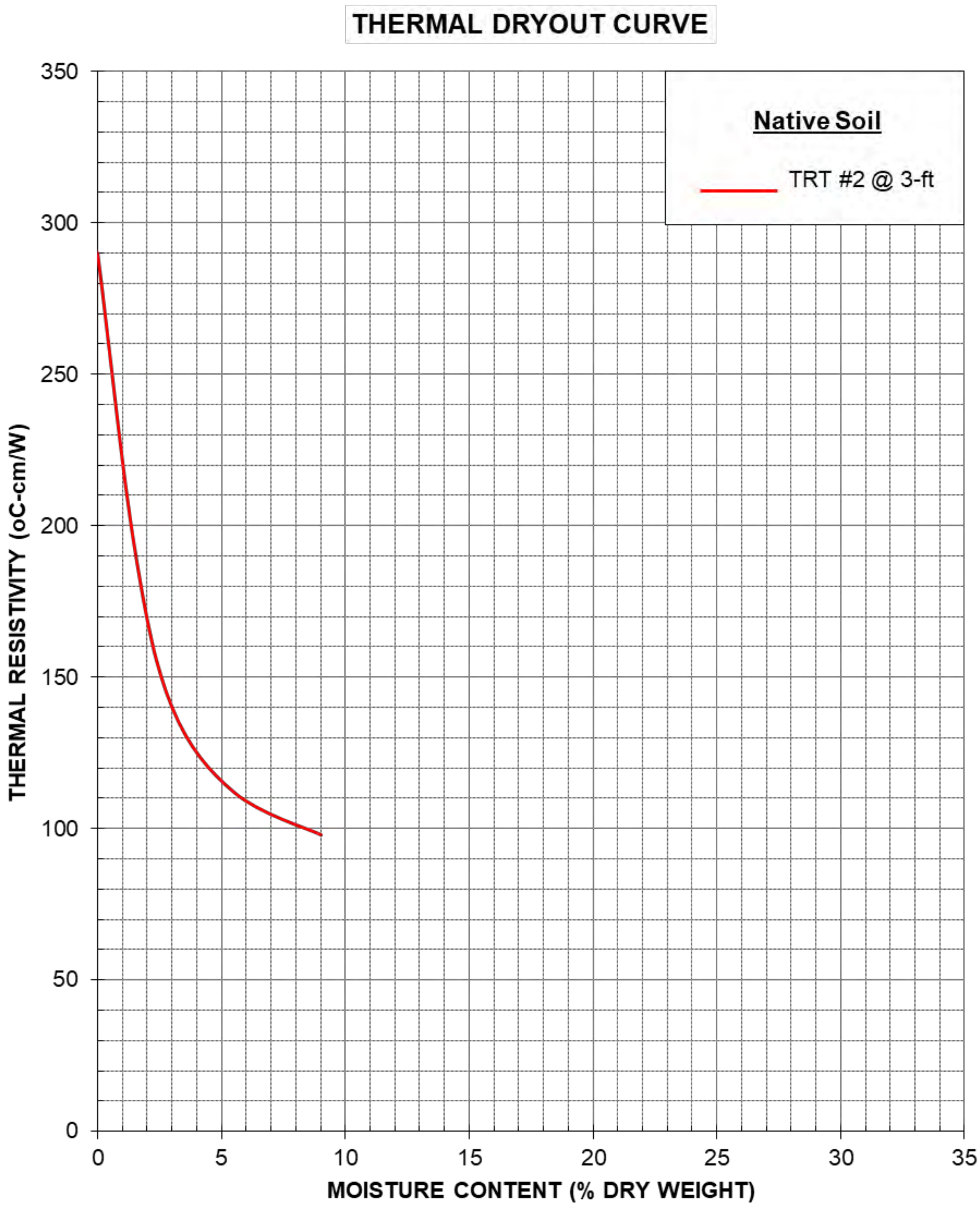


GN Northern (PO No. 220-1274)

Thermal Analysis of Native Soil

Goose Prairie Solar Array, Moxee, WA

September 2020 **Figure 1**

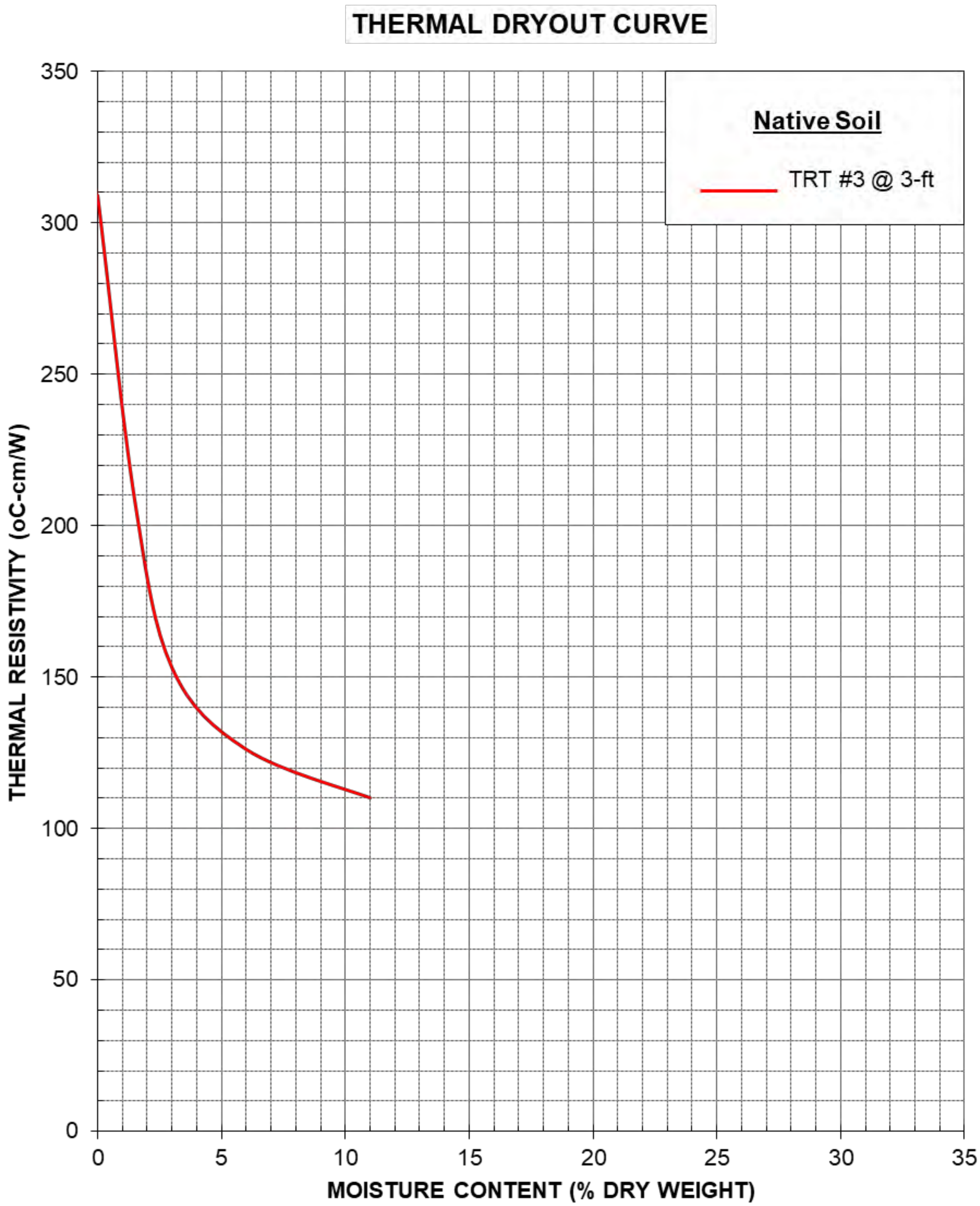


GN Northern (PO No. 220-1274)

Thermal Analysis of Native Soil

Goose Prairie Solar Array, Moxee, WA

September 2020 **Figure 2**



GN Northern (PO No. 220-1274)

Thermal Analysis of Native Soil

Goose Prairie Solar Array, Moxee, WA

September 2020 **Figure 3**

Appendix VII
Site & Exploration Photographs


View of site conditions looking south from near Den Beste Rd


View of site conditions looking NE from near test pit TP-1


Exposed subsurface soil profile within test pit TP-1


Exposed subsurface soil profile within test pit TP-2


Exposed subsurface soil profile within test pit TP-3


Exposed subsurface soil profile within test pit TP-4

PLATE 1: SITE & EXPLORATION PHOTOS – 8/26/2020 **PROJECT NO. 220-1274**

Exposed subsurface soil profile within test pit TP-5

Exposed subsurface soil profile within test pit TP-6

Excavation and spoils at test pit TP-7

Exposed subsurface soil profile within test pit TP-7

Exposed subsurface soil profile within test pit TP-8

Exposed subsurface soil profile within test pit TP-9

PLATE 2: SITE & EXPLORATION PHOTOS – 8/26/2020 **PROJECT NO. 220-1274**

Exposed subsurface soil profile within test pit TP-10

Infiltration test setup at P-1

Infiltration test setup at P-3

Drilling at boring B-1, looking northeast

Split-spoon sample obtained from boring B-1 at 15' BGS

Drilling at boring B-4, looking south

PLATE 3: SITE & EXPLORATION PHOTOS – 8/26 & 9/15/2020 **PROJECT NO. 220-1274**

View of conditions in northeastern portion of site, looking east

View of conditions in northeastern portion of site, looking northeast

View of conditions in northeastern portion of site, looking northeast

View of conditions in northeastern portion of site, looking south

View of conditions in northeastern portion of site

View of conditions in northeastern portion of site, looking south

View of conditions in northeastern portion of site, looking east

View of conditions in northeastern portion of site, looking northeast

View of conditions in northeastern portion of site, looking northeast

View of conditions in northeastern portion of site

View of conditions in northeastern portion of site, looking southeast

View of conditions in northeastern portion of site, looking south

PLATE 5: SITE RECONNAISSANCE PHOTOS – 11/20/2020 **PROJECT NO. 220-1274**

Appendix VIII

NRCS Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

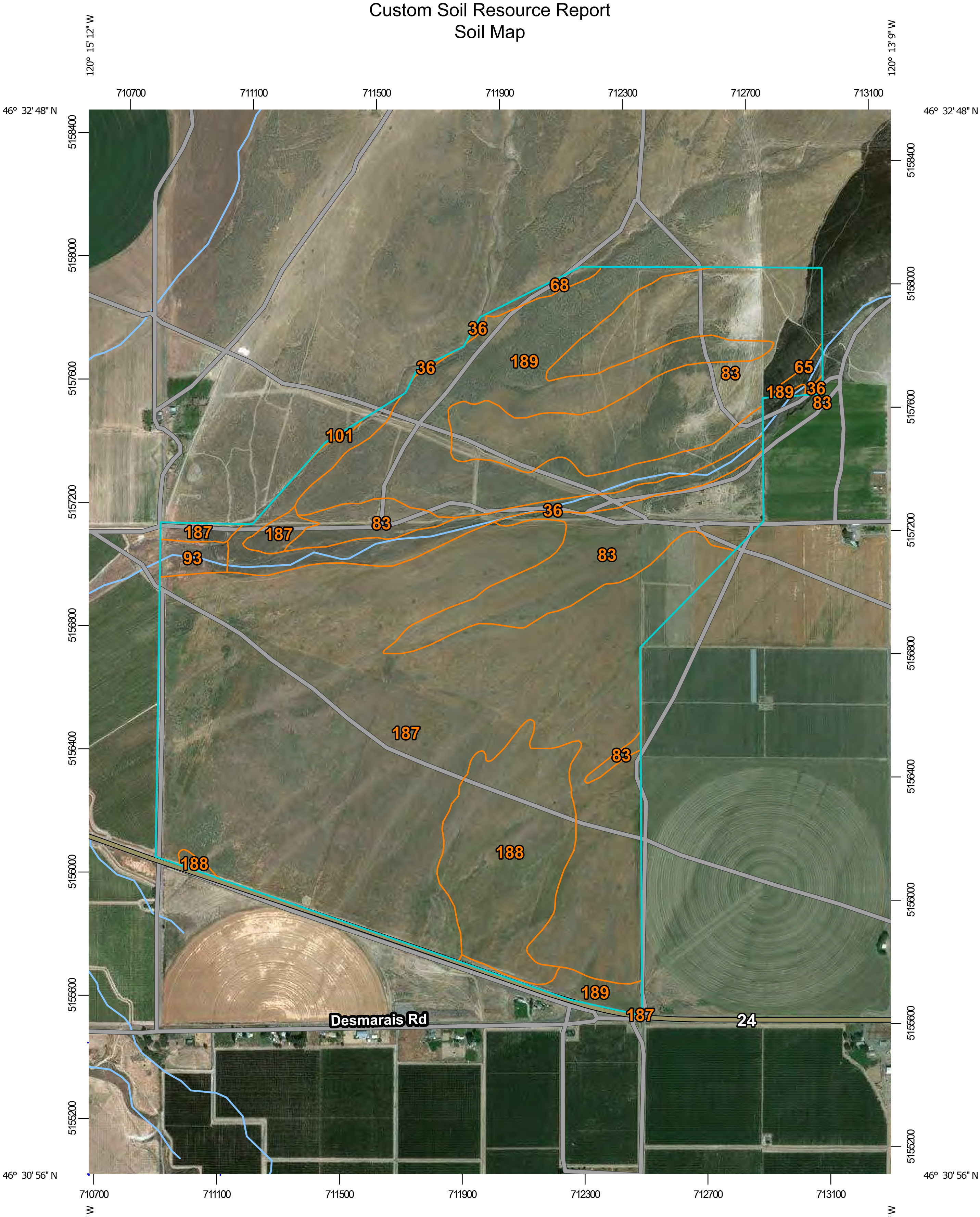
A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Yakima County Area, Washington

Goose Prairie Solar Array, near Moxee, WA

October 8, 2020

Soil Map



Map Scale: 1:16,800 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 200, 400, 800, 1200

Feet: 0, 500, 1000, 2000, 3000

N

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

Yakima County Area, Washington

36—Finley cobbly fine sandy loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 29sx
Elevation: 300 to 1,500 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 135 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Finley, cobbly, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Finley, Cobbly

Setting

Landform: Terraces, alluvial fans
Parent material: Alluvium

Typical profile

H1 - 0 to 4 inches: cobbly fine sandy loam
H2 - 4 to 14 inches: fine sandy loam
H3 - 14 to 30 inches: very gravelly loam
H4 - 30 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
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: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: R007XY501WA - SANDY 6-10 PZ
Hydric soil rating: No

65—Kiona stony silt loam, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: 29ty
Elevation: 400 to 2,500 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 140 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Kiona and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kiona

Setting

Landform: Hillslopes
Parent material: Loess and colluvium derived from basalt

Typical profile

H1 - 0 to 5 inches: stony silt loam
H2 - 5 to 14 inches: very cobbly loam
H3 - 14 to 60 inches: very cobbly silt loam

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R007XY102WA - LOAMY 6-10 PZ
Hydric soil rating: No

68—Lickskillet very stony silt loam, 5 to 45 percent slopes

Map Unit Setting

National map unit symbol: 29v1
Elevation: 200 to 3,600 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Lickskillet and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lickskillet

Setting

Landform: Hillslopes, ridges
Parent material: Residuum and colluvium weathered from basalt, and loess

Typical profile

H1 - 0 to 3 inches: silt loam
H2 - 3 to 20 inches: very gravelly loam, very cobbly loam
H2 - 3 to 20 inches: unweathered bedrock
H3 - 20 to 24 inches:

Properties and qualities

Slope: 5 to 45 percent
Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained
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 capacity: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: R008XY201WA - DRY STONY 10-16 PZ
Hydric soil rating: No

83—Moxee silt loam, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: 29vl
Elevation: 900 to 2,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 125 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Moxee and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moxee

Setting

Parent material: Loess

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 11 inches: silt loam
H3 - 11 to 18 inches: gravelly silt loam
H4 - 18 to 22 inches: cemented material

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 10 to 20 inches to duripan
Drainage class: Well drained
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: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R008XY201WA - DRY STONY 10-16 PZ
Hydric soil rating: No

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Alluvial cones
Hydric soil rating: Yes

93—Pits

Map Unit Composition

Pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

101—Ritzville silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 29p1
Elevation: 800 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Ritzville and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ritzville

Setting

Landform: Hillslopes
Parent material: Loess

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 37 inches: silt loam
H3 - 37 to 60 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R008XY102WA
Hydric soil rating: No

187—Willis silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 29s2
Elevation: 1,000 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 125 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Willis and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willis

Setting

Parent material: Loess

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 22 inches: silt loam
H3 - 22 to 34 inches: silt loam
H4 - 34 to 38 inches: cemented material

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Drainage class: Well drained
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 capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Ecological site: R008XY102WA
Hydric soil rating: No

188—Willis silt loam, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 29s3
Elevation: 1,000 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 125 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Willis and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willis

Setting

Parent material: Loess

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 22 inches: silt loam
H3 - 22 to 34 inches: silt loam
H4 - 34 to 38 inches: cemented material

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Drainage class: Well drained
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 capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R008XY102WA
Hydric soil rating: No

189—Willis silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 29s4
Elevation: 1,000 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 125 to 180 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Willis and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willis

Setting

Parent material: Loess

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 22 inches: silt loam
H3 - 22 to 34 inches: silt loam
H4 - 34 to 38 inches: cemented material

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Drainage class: Well drained
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 capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R008XY102WA
Hydric soil rating: No

Appendix IX

Washington Department of Ecology Well Logs

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. G4-250
Permit No. G4 25018

(1) OWNER: Name Gordon Meacham Address Hanford Highway Rt. 1 Box 209 Mox

(2) LOCATION OF WELL: County Yakima — NW ¼ SW ¼ Sec. 18 T. 12 N., R. 21 W.M.
Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☑ Stock

(4) TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☑ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☑ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 142 ft. Depth of completed well 142 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from +1 ft. to 74 ft.
Threaded ☐ ....." Diam. from ..... ft. to ..... ft.
Welded ☑ ....." Diam. from ..... ft. to ..... ft.

Perforations: Yes ☐ No ☑
Type of perforator used.....
SIZE of perforations ..... in. by ..... in.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☐ No ☑
Manufacturer's Name.....
Type..... Model No.....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☑ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☑ No ☐ To what depth? 22 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water?..... Depth of strata.....
Method of sealing strata off.....

(7) PUMP: Manufacturer's Name Sta Rite
Type: Submersible H.P. 3/4

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ft.
Static level 100 ft. below top of well Date ~~9-29-77~~ 10-4-77
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?.....
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ~~9-29-77~~ 10-4-77
Bailer test 12 gal./min. with 30 ft. drawdown after 1 hrs.
Artesian flow..... g.p.m. Date.....
Temperature of water..... Was a chemical analysis made? Yes ☐ No ☑

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
soil	0	2
hardpan cobbles + gravel	3	18
tan clay (sandy)	19	95
Dark brown clay (little sand + gravel)	96	139
coarse sand + gravel (little clay)	140	142
water		
Picked up about 4-5 gpm at 51'		

RECEIVED
OCT 25 1977
DEPARTMENT OF ECOLOGY
CENTRAL REGIONAL OFFICE

Work started 9-29, 1977. Completed 10-4, 1977

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Henry Bach Well Drilling (Person, firm, or corporation) (Type or print)
Address P.O. Box 1651 Yakima Wn. 98907
[Signed] Henry Bach (Well Driller)
License No. 6053 Date 10-8, 1977

(USE ADDITIONAL SHEETS IF NECESSARY) OR

ECY 050-1-20

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

56386

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W085226
UNIQUE WELL I.D. # ACE159
Water Right Permit No.

(1) OWNER: Name Benito Uribe Address 4209 Thorp Rd Moxee WA 98936

(2) LOCATION OF WELL: County Yakima SE 1/4 SE 1/4 Sec 18 T. 12 N., R 21 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) PARCEL # 211218-44004 R

(3) PROPOSED USE: [X] Domestic [ ] Irrigation [ ] DeWater; Industrial [ ] Test Well [ ]; Municipal [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (If more than one)
Abandoned [ ] New well [X] Deepened [ ] Reconditioned [ ]
Method: Dug [ ] Cable [ ] Rotary [X] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 220 feet. Depth of completed well 220 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 6 " Diam. from 3 ft. to 157 ft.
Welded [X] " Diam. from ft. to ft.
Liner installed [ ] " Diam. from ft. to ft.
Threaded [ ]

Perforations: Yes [ ] No [X]
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [ ] No [X]
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [X] Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes [X] No [ ] To what depth? 20 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 148 ft. below top of well Date 8-12-96
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [X] If yes, by whom?
Yield: 35 gal./min. with ft. drawdown after hrs.
" ESTIMATED AIRLIFT "
" " " "
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes [ ] No [X]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Topsoil Brown Soft	0	3
Sandstone Brown Med	3	45
Clay Tan + Brown Soft	45	92
Cemented Gravel/Brown Med	92	95
Sandstone tan med	95	148
Cemented gravel brown hard	148	189
Sandstone Brown Med	189	220

6" Drive Shoe Utilized

RECEIVED SEP 13 1996 DEPT OF ECOLOGY CENTRAL REGIONAL OFFICE

Work Started July 17, 1996 Completed August 12, 1996

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME WILLYS WELLS INC (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 6520 Postma Rd Yakima WA 98901
(Signed) Chris Hayes (WELL DRILLER) License No. 1908
(Chris Hayes)
Contractor's Registration No. WILLYW1088MW Date September 12, 1996

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original with Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's Copy

89643

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent W122778
UNIQUE WELL I D # AFH 085
Water Right Permit No

(1) OWNER: Name Thomas Saucedo Address 7253 Desmarias Rd, Moxee

(2) LOCATION OF WELL County Yakima SE 1/4 SE 1/4 Sec 18 T 12 N R 21 WM

(2a) STREET ADDRESS OF WELL (or nearest address) 7253 Desmarias Rd, Moxee

TAX PARCEL NO

(3) PROPOSED USE ☒ Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐ DeWater

(4) TYPE OF WORK Owner's number of well (if more than one)
☒ New Well ☐ Deepened ☐ Reconditioned ☐ Decommission
Method ☐ Dug ☐ Bored ☐ Cable ☐ Driven ☒ Rotary ☐ Jetted

(5) DIMENSIONS Diameter of well 6 inches
Drilled 240 feet Depth of completed well 240 ft

(6) CONSTRUCTION DETAILS
Casing Installed
☒ Welded 6" Diam from +1½ ft to 233½ ft
☐ Liner installed " Diam from ft to ft
☐ Threaded " Diam from ft to ft

Perforations ☐ Yes ☒ No
Type of perforator used
SIZE of perforations in by in
perforations from ft to ft

Screens ☐ Yes ☒ No ☐ K-Pac Location
Manufacturer's Name
Type Model No
Diam Slot Size from ft to ft
Diam Slot Size from ft to ft

Gravel/Filter packed ☐ Yes ☒ No ☐ Size of gravel/sand
Material placed from ft to ft

Surface seal ☒ Yes ☐ No To what depth? 18 ft
Material used in seal bentonite
Did any strata contain unusable water? ☐ Yes ☐ No
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP Manufacturer's Name
Type H P

(8) WATER LEVELS Land-surface elevation above mean sea level ft
Static level 130 ft below top of well Date 8-16-00
~~Artesian pressure lbs per square inch~~ Date
Artesian water is controlled by
(Cap, valve, etc)

(9) WELL TESTS Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom?
Yield gal /min with ft drawdown after hrs
Yield gal /min with ft drawdown after hrs
Yield gal /min with ft drawdown after hrs
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal /min with ft drawdown after hrs
Airtest 50 gal./min with ft drawdown after hrs
Artesian flow g p m Date
Temperature of water Was a chemical analysis made? ☐ Yes ☒ No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION
Formation Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information Indicate all water encountered

MATERIAL	FROM	TO
Clay	0	8
conglomerate	8	18
sandstone	18	20
clay, conglomerate	20	28
lt brn clay	28	121
brn sandstone	121	181
clay sandstone	181	220
sandstone, water	220	240

RECEIVED
AUG 2 2 2000
DEPARTMENT OF ECOLOGY

Work Started 809-00 Completed 8-16-00

WELL CONSTRUCTION CERTIFICATION

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards Materials used and the information reported above are true to my best knowledge and belief

Type or Print Name Charles White License No 2328
(Licensed Driller/Engineer)

Trainee Name License No

Drilling Company Water Wells Drilling

(Signed) [signature] License No 2328
(Licensed Driller/Engineer)

Address 5503 Ahtanum Rd, Yakima 98903

Contractor's Registration No WATERWD*112QB Date 8-17-00

(USE ADDITIONAL SHEETS IF NECESSARY)

ATTACHMENT M

FAA Determination of No Hazard

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANM-3228-OE
Prior Study No.
2018-ANM-3231-OE

Issued Date: 07/07/2020

Ann Siqveland
OneEnergy Renewables
206 NE 28th Ave
Suite 202
Portland, OR 97232

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Goose Prairie 1
Location:	Moxee, WA
Latitude:	46-32-05.46N NAD 83
Longitude:	120-13-48.01W
Heights:	1557 feet site elevation (SE) 7 feet above ground level (AGL) 1564 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 01/07/2022 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

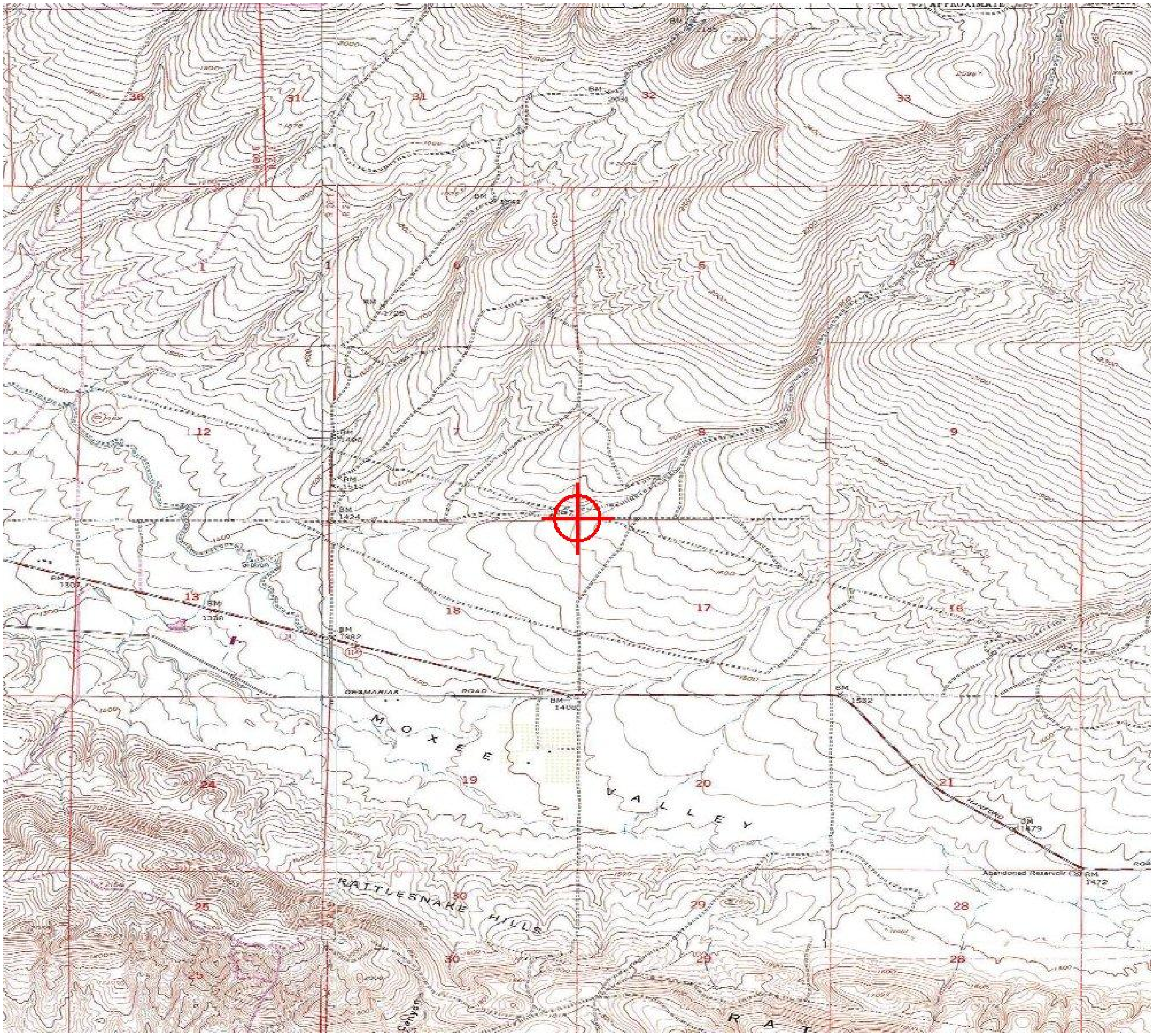
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (206) 231-2989, or dan.shoemaker@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANM-3228-OE.

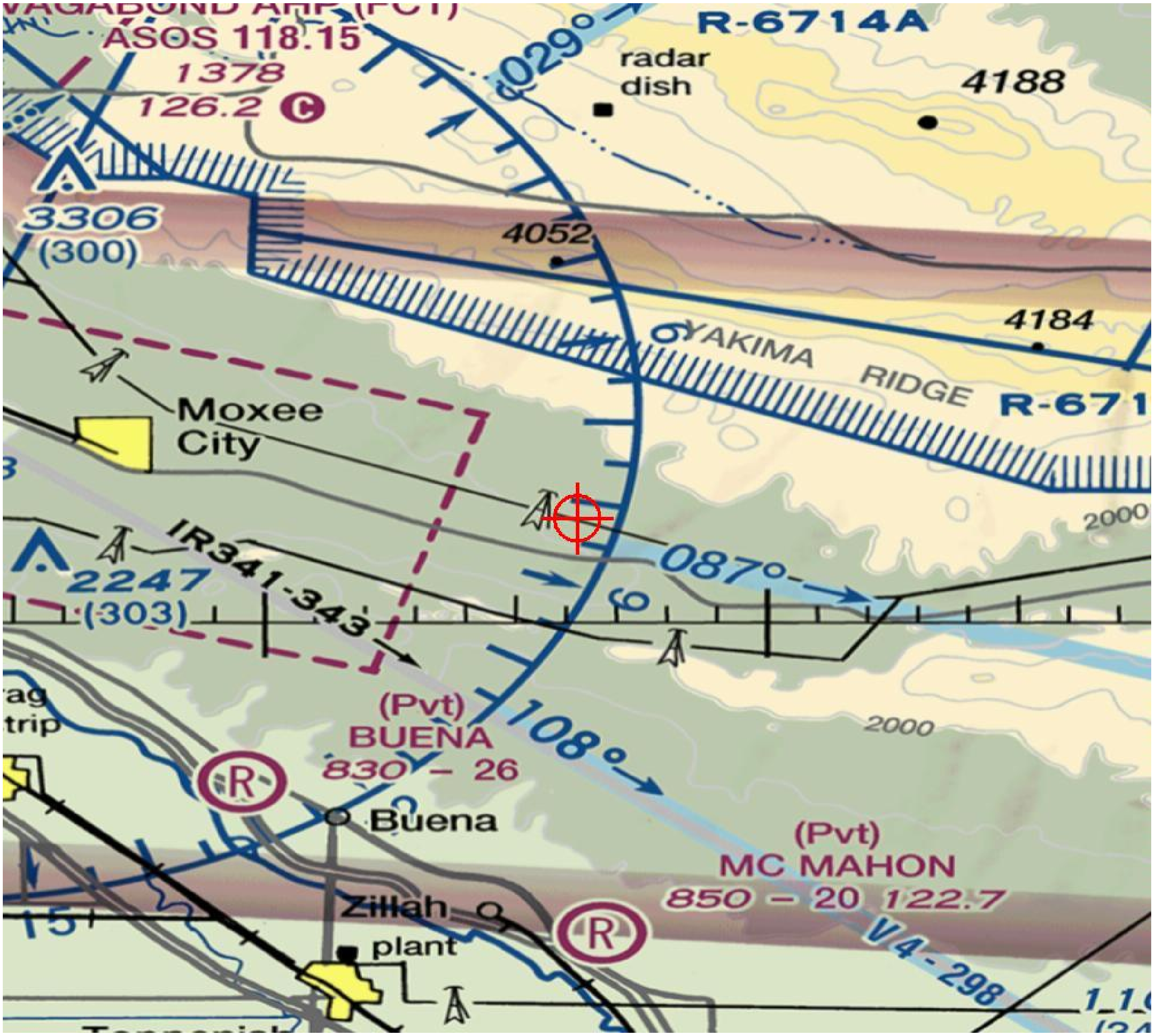
Signature Control No: 443466834-444724952 (DNE)
Daniel Shoemaker
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-ANM-3228-OE



Sectional Map for ASN 2020-ANM-3228-OE



Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANM-3229-OE
Prior Study No.
2018-ANM-3232-OE

Issued Date: 07/07/2020

Ann Siqveland
OneEnergy Renewables
206 NE 28th Ave
Suite 202
Portland, OR 97232

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Goose Prairie 2
Location:	Moxee, WA
Latitude:	46-32-04.51N NAD 83
Longitude:	120-15-01.02W
Heights:	1424 feet site elevation (SE) 7 feet above ground level (AGL) 1431 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 01/07/2022 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

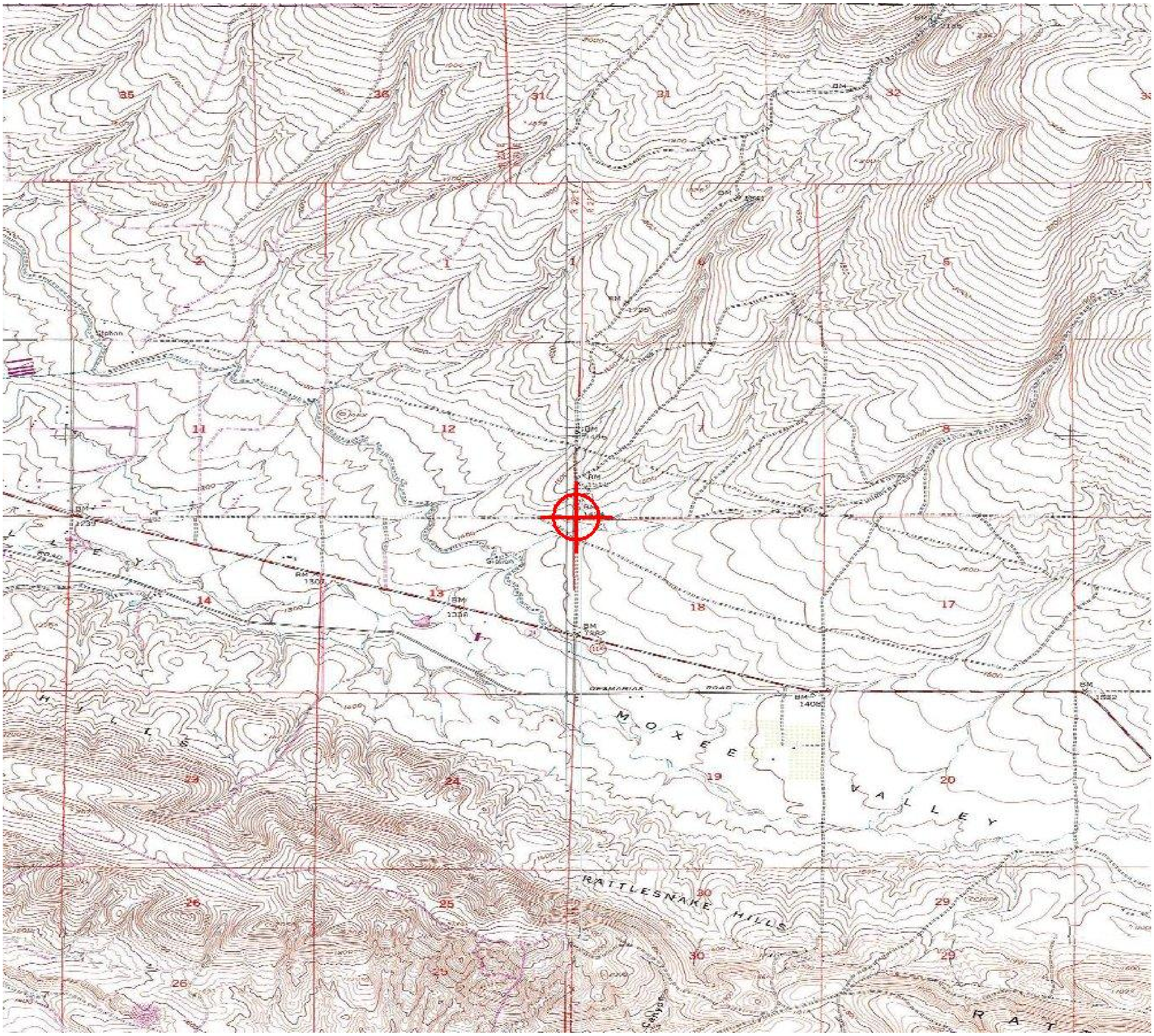
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (206) 231-2989, or dan.shoemaker@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANM-3229-OE.

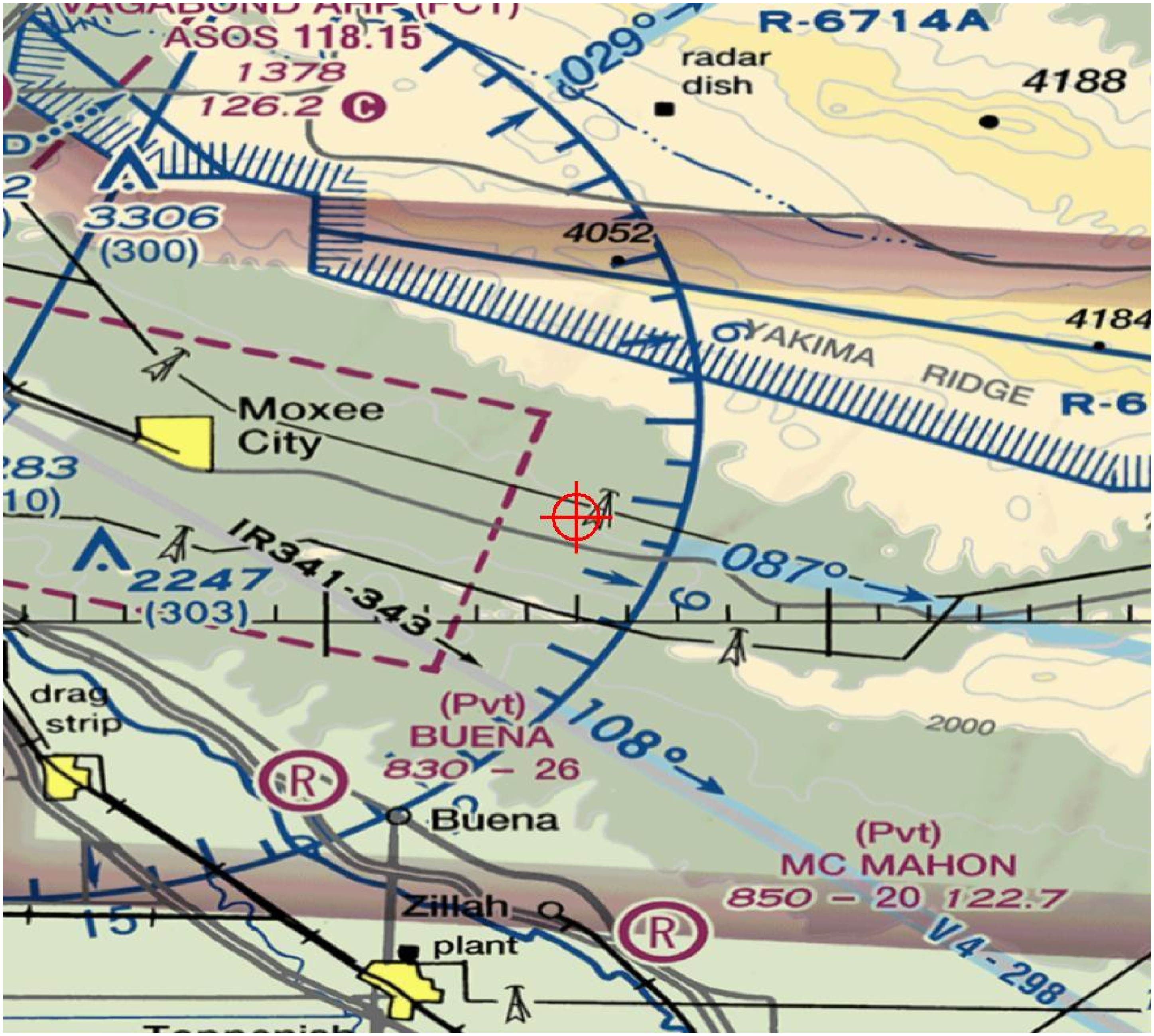
Signature Control No: 443466837-444724951 (DNE)
Daniel Shoemaker
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-ANM-3229-OE



Sectional Map for ASN 2020-ANM-3229-OE



Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANM-3230-OE
Prior Study No.
2018-ANM-3233-OE

Issued Date: 07/07/2020

Ann Siqveland
OneEnergy Renewables
206 NE 28th Ave
Suite 202
Portland, OR 97232

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Goose Prairie 3
Location:	Moxee, WA
Latitude:	46-31-30.18N NAD 83
Longitude:	120-15-01.49W
Heights:	1384 feet site elevation (SE)
	7 feet above ground level (AGL)
	1391 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 01/07/2022 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

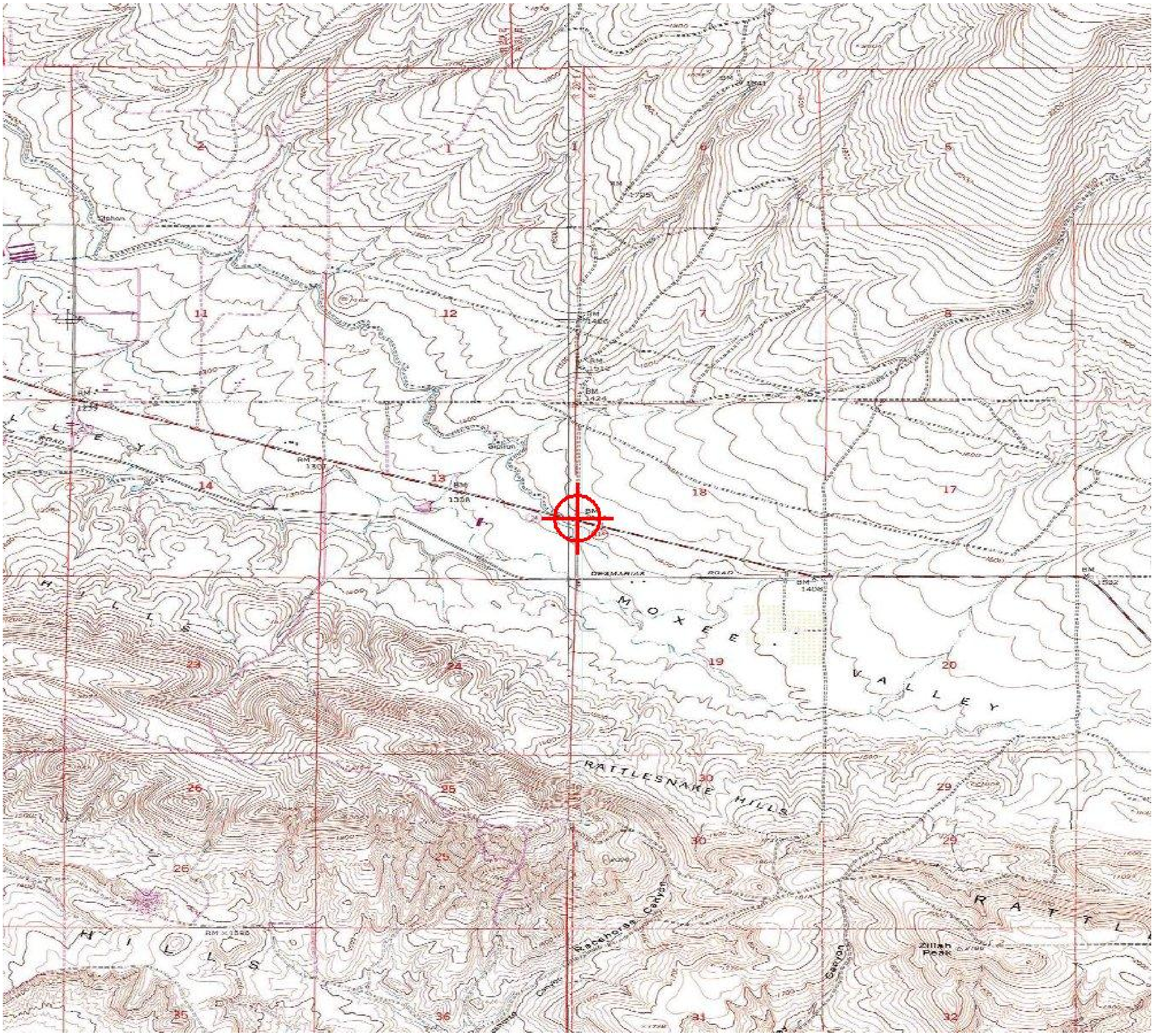
If we can be of further assistance, please contact our office at (206) 231-2989, or dan.shoemaker@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANM-3230-OE.

Signature Control No: 443466838-444724949 (DNE)

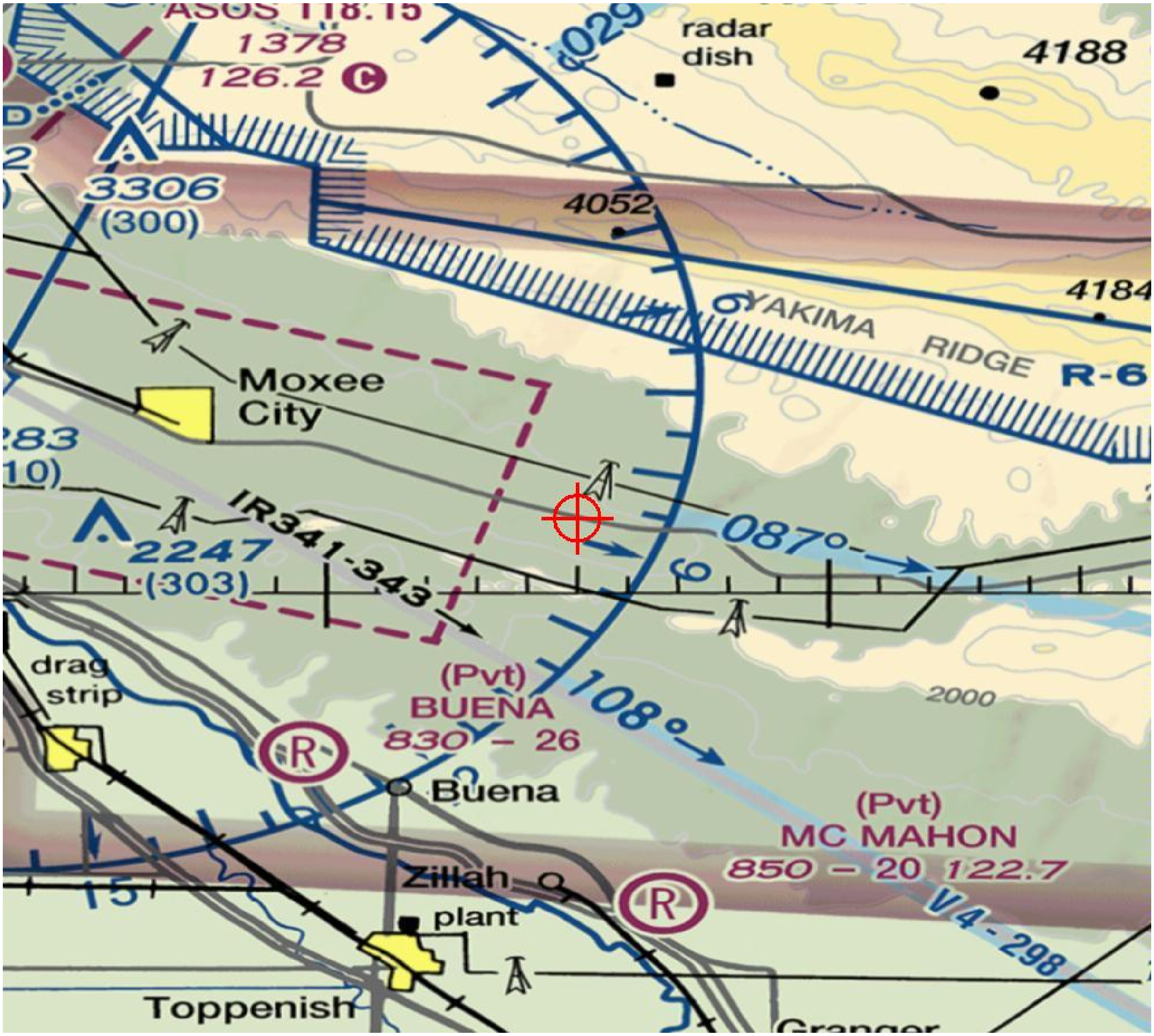
Daniel Shoemaker
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-ANM-3230-OE



Sectional Map for ASN 2020-ANM-3230-OE



Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANM-3231-OE
Prior Study No.
2018-ANM-3234-OE

Issued Date: 07/07/2020

Ann Siqveland
OneEnergy Renewables
206 NE 28th Ave
Suite 202
Portland, OR 97232

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Goose Prairie 4
Location:	Moxee, WA
Latitude:	46-31-13.44N NAD 83
Longitude:	120-13-47.97W
Heights:	1419 feet site elevation (SE) 7 feet above ground level (AGL) 1426 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 01/07/2022 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

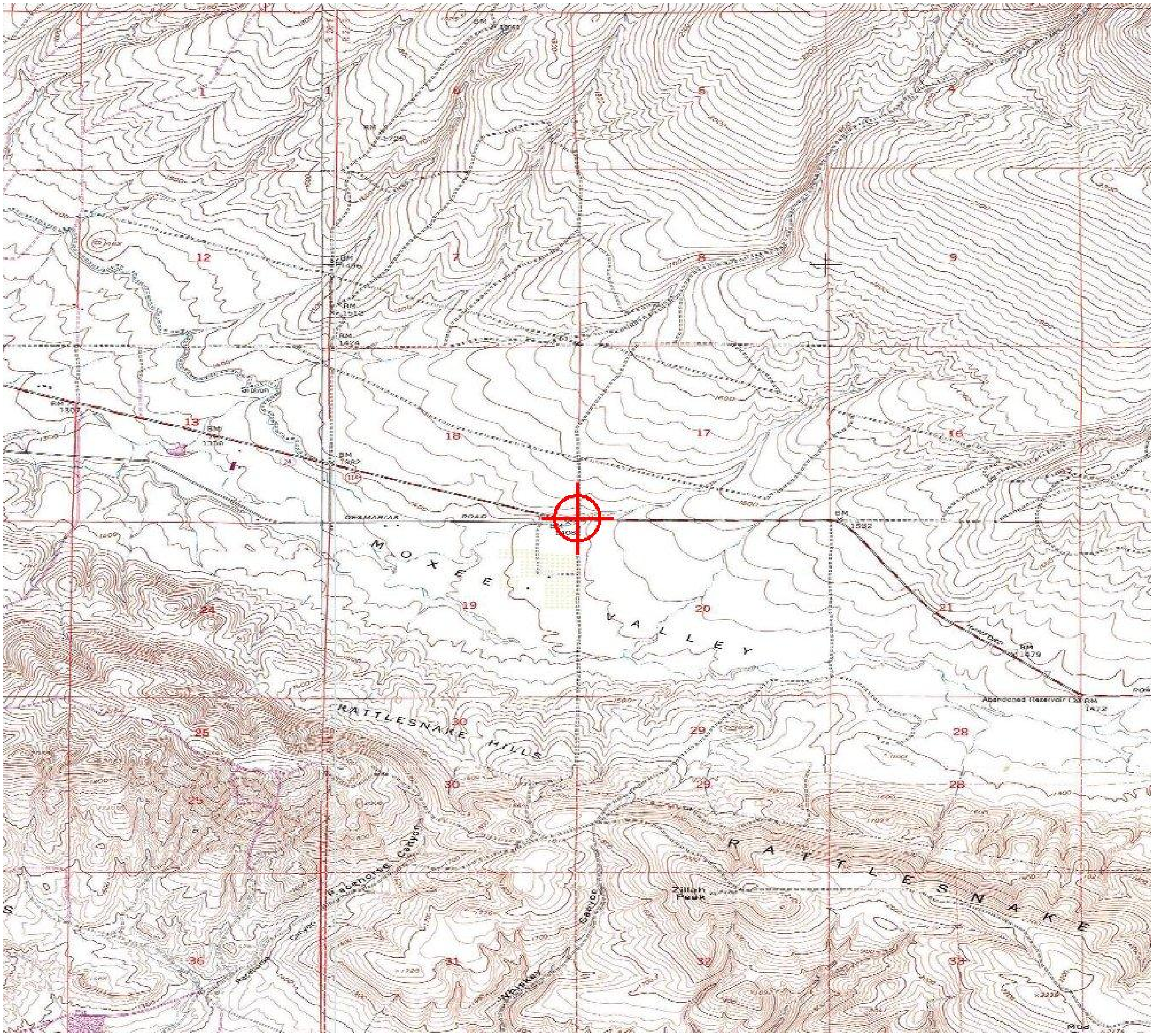
If we can be of further assistance, please contact our office at (206) 231-2989, or dan.shoemaker@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANM-3231-OE.

Signature Control No: 443466839-444724948 (DNE)

Daniel Shoemaker
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2020-ANM-3231-OE



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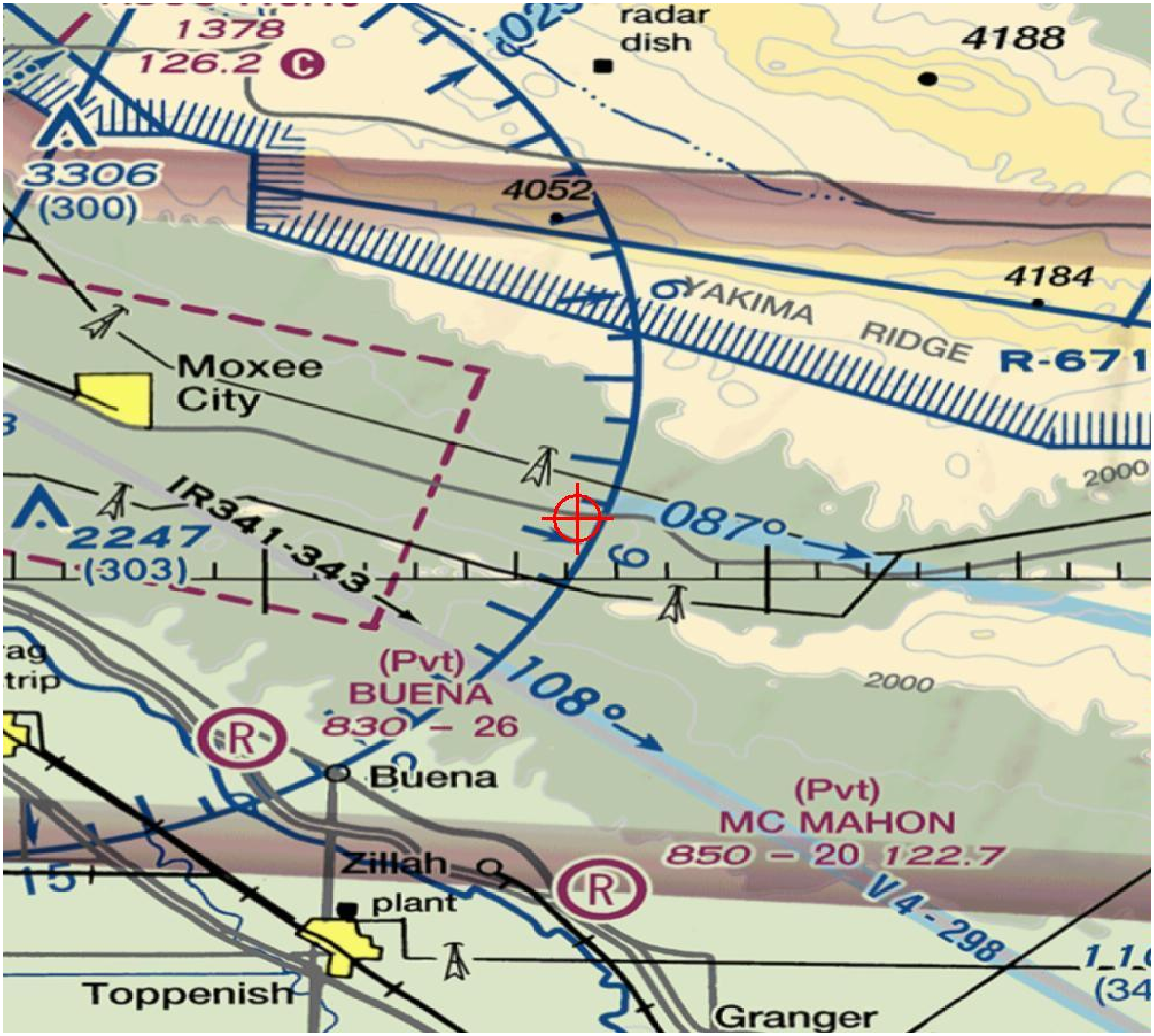

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANM-1104-OE

Issued Date: 03/17/2020

Ann Siqveland
OneEnergy Renewables
206 NE 28th Ave
Suite 202
Portland, OR 97232

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Goose Prairie 8
Location:	Moxee, WA
Latitude:	46-32-18.71N NAD 83
Longitude:	120-13-20.22W
Heights:	1625 feet site elevation (SE)
	13 feet above ground level (AGL)
	1638 feet above mean sea level (AMSL)

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Signature Control No: 430633768-433794407 (DNE)
Daniel Shoemaker
Specialist

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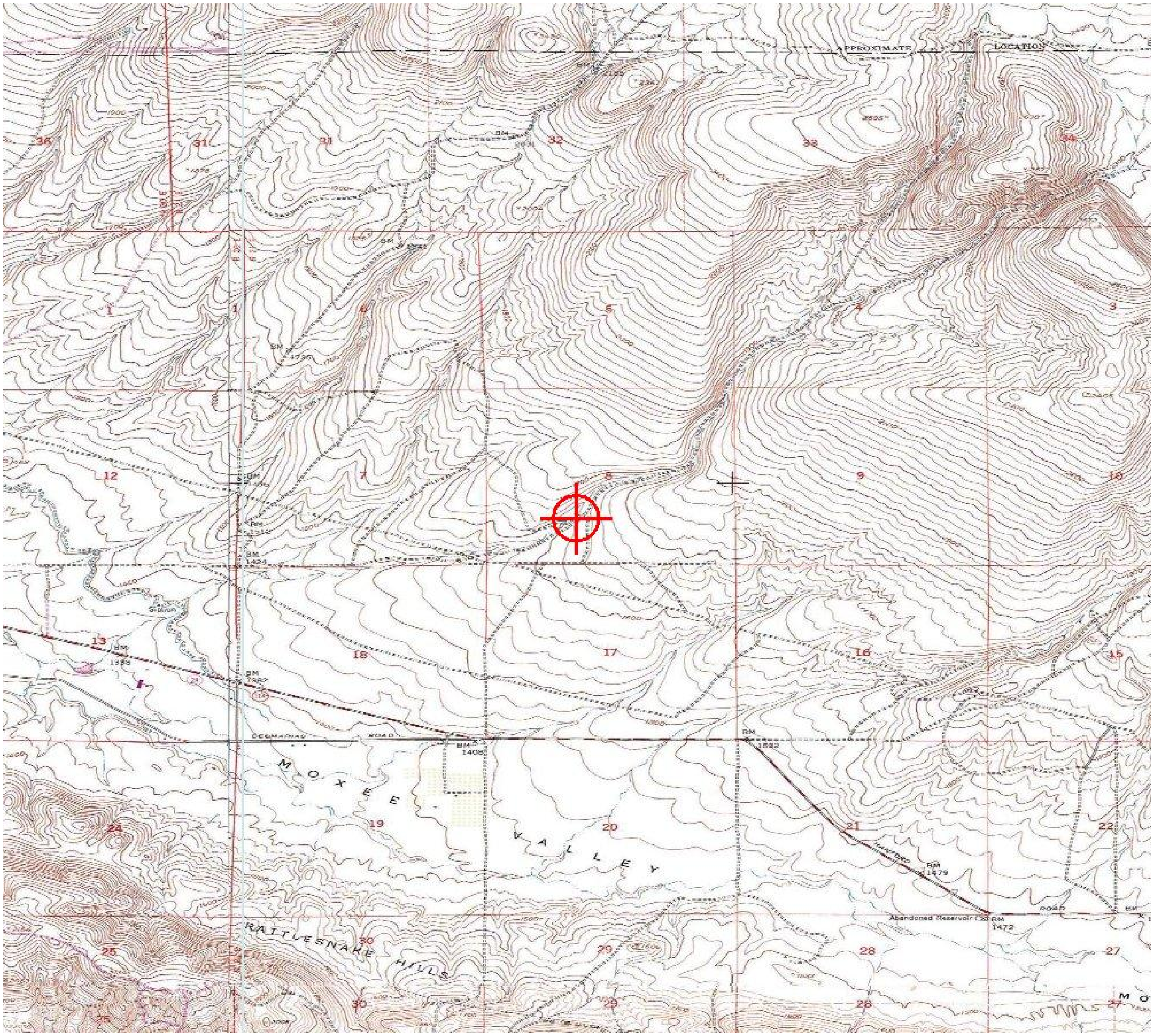

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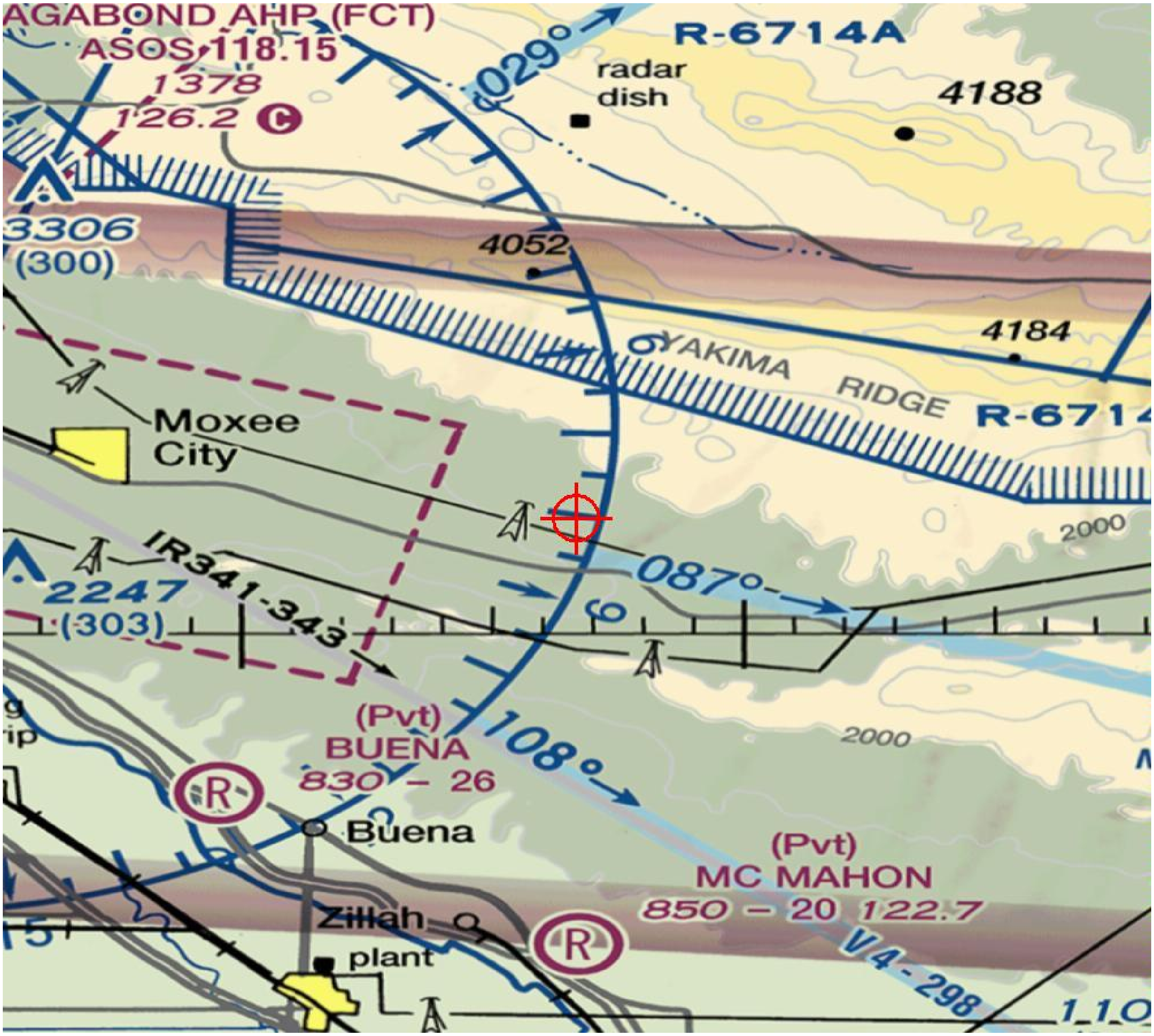

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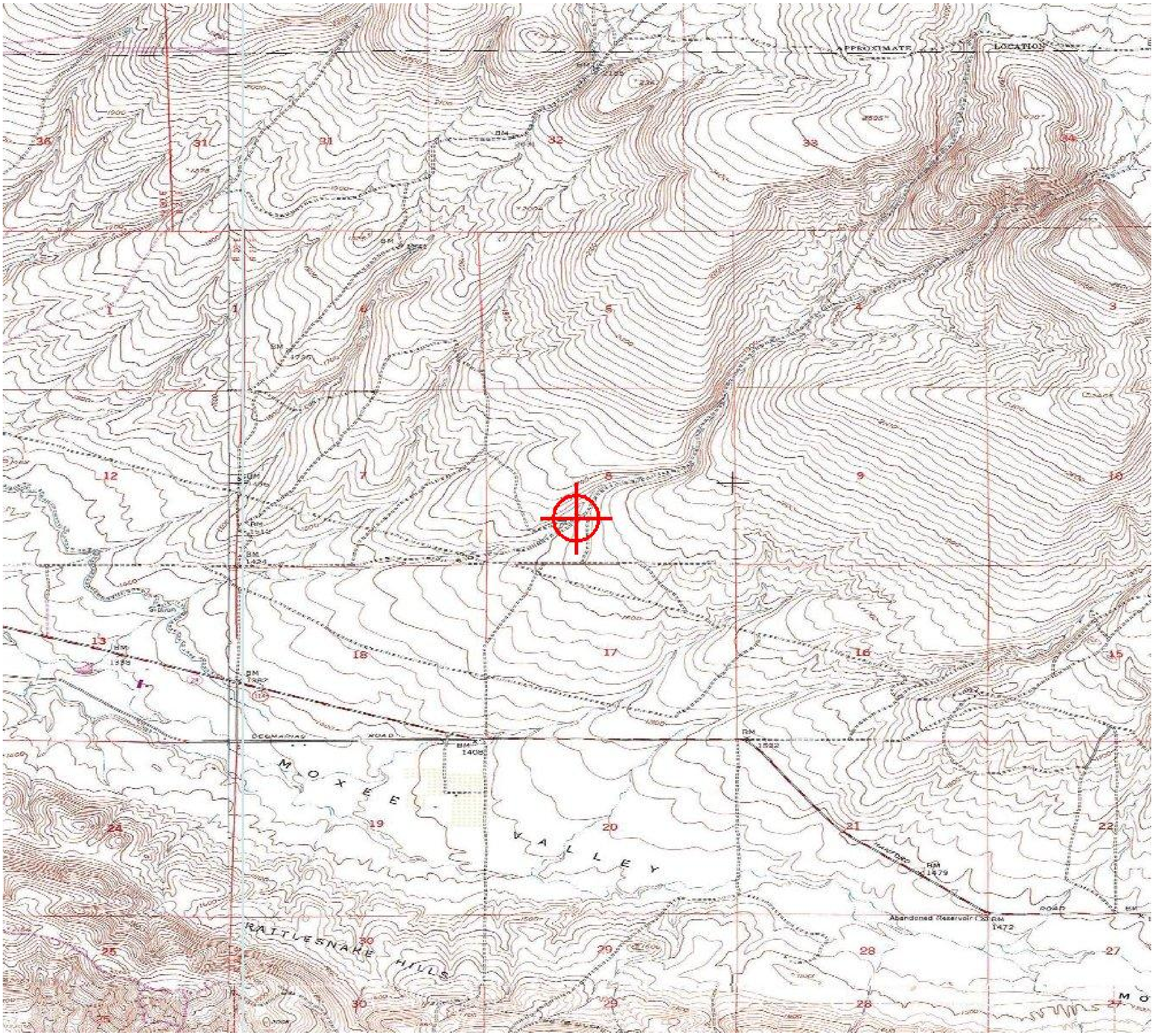

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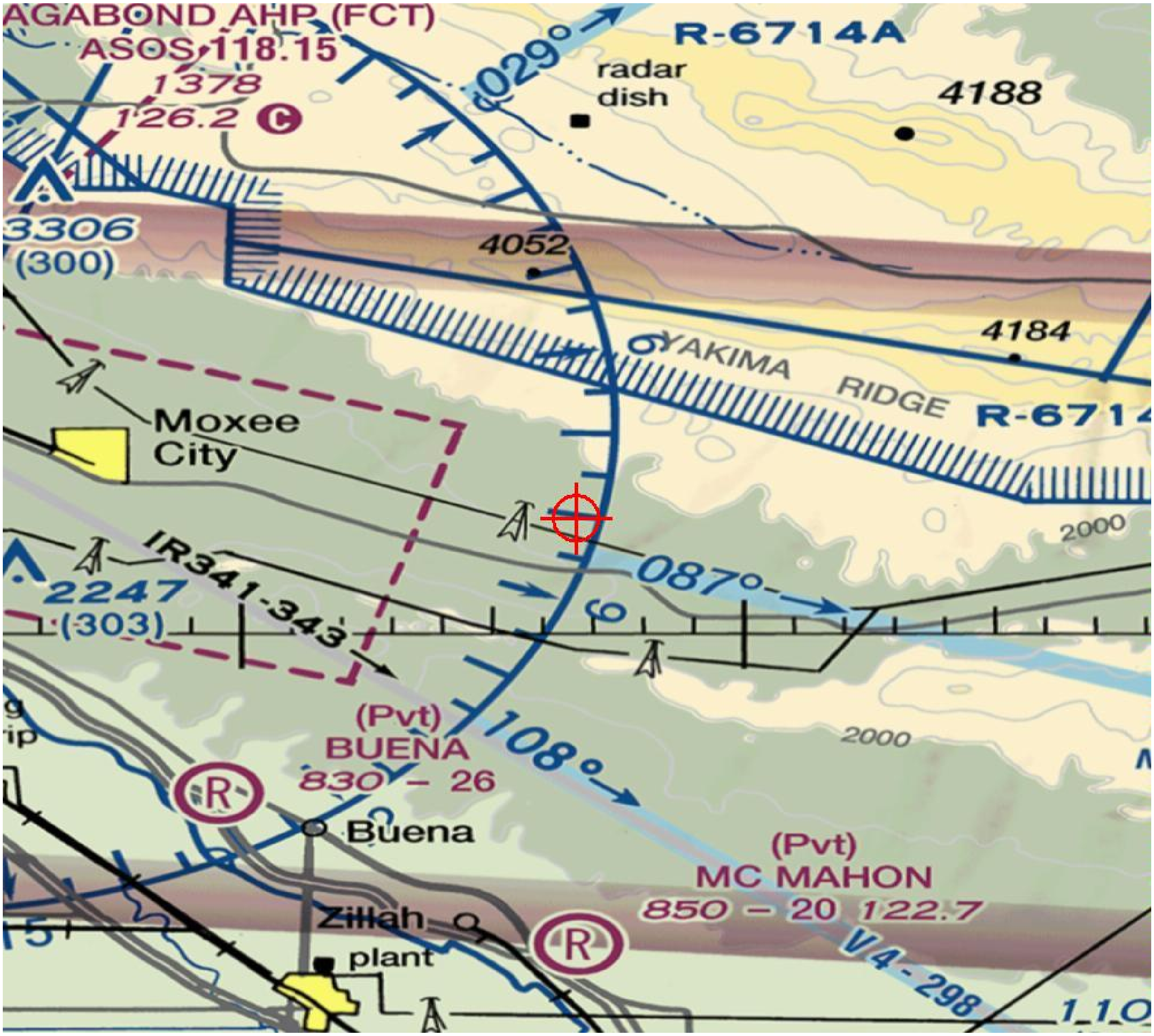

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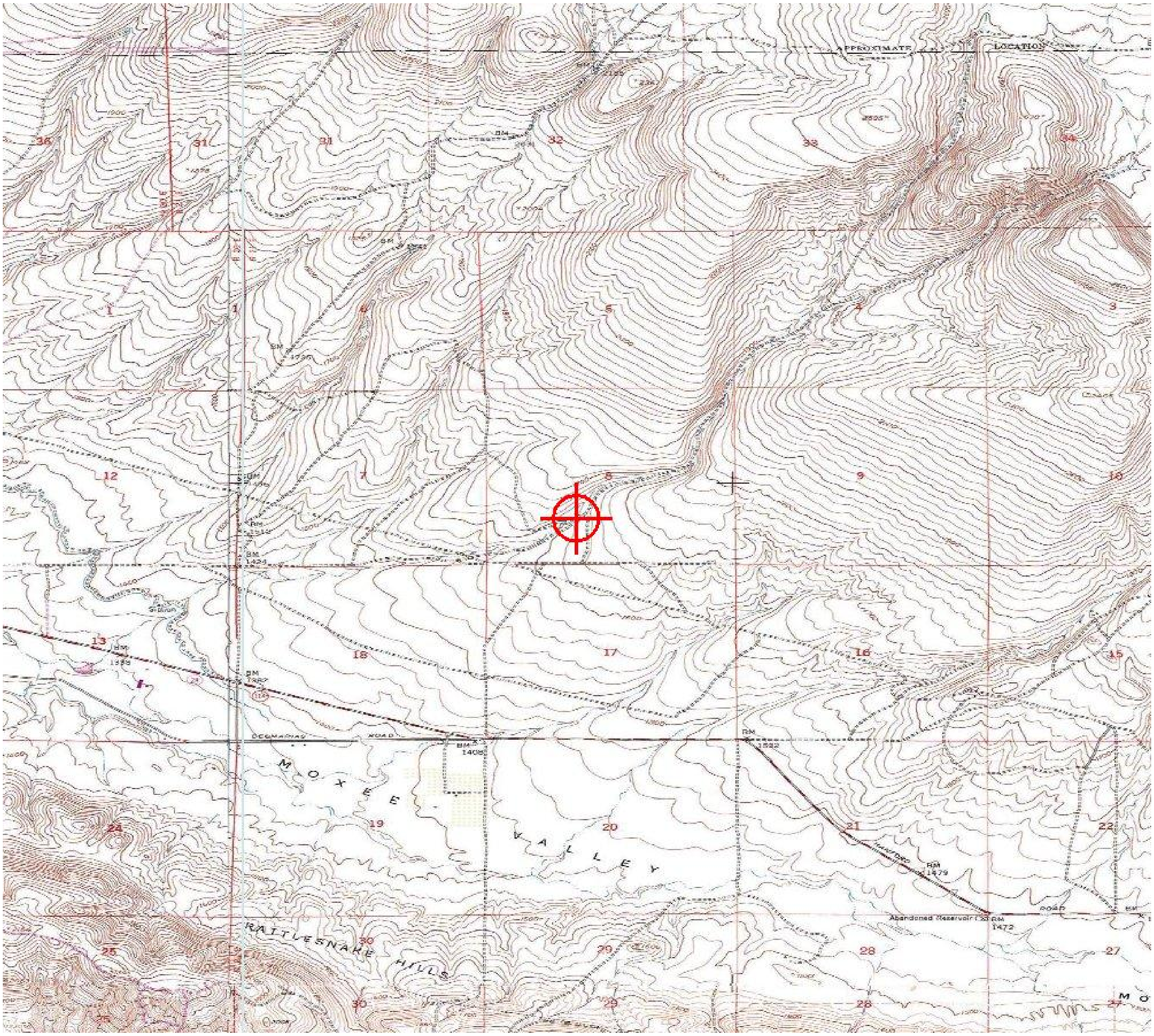

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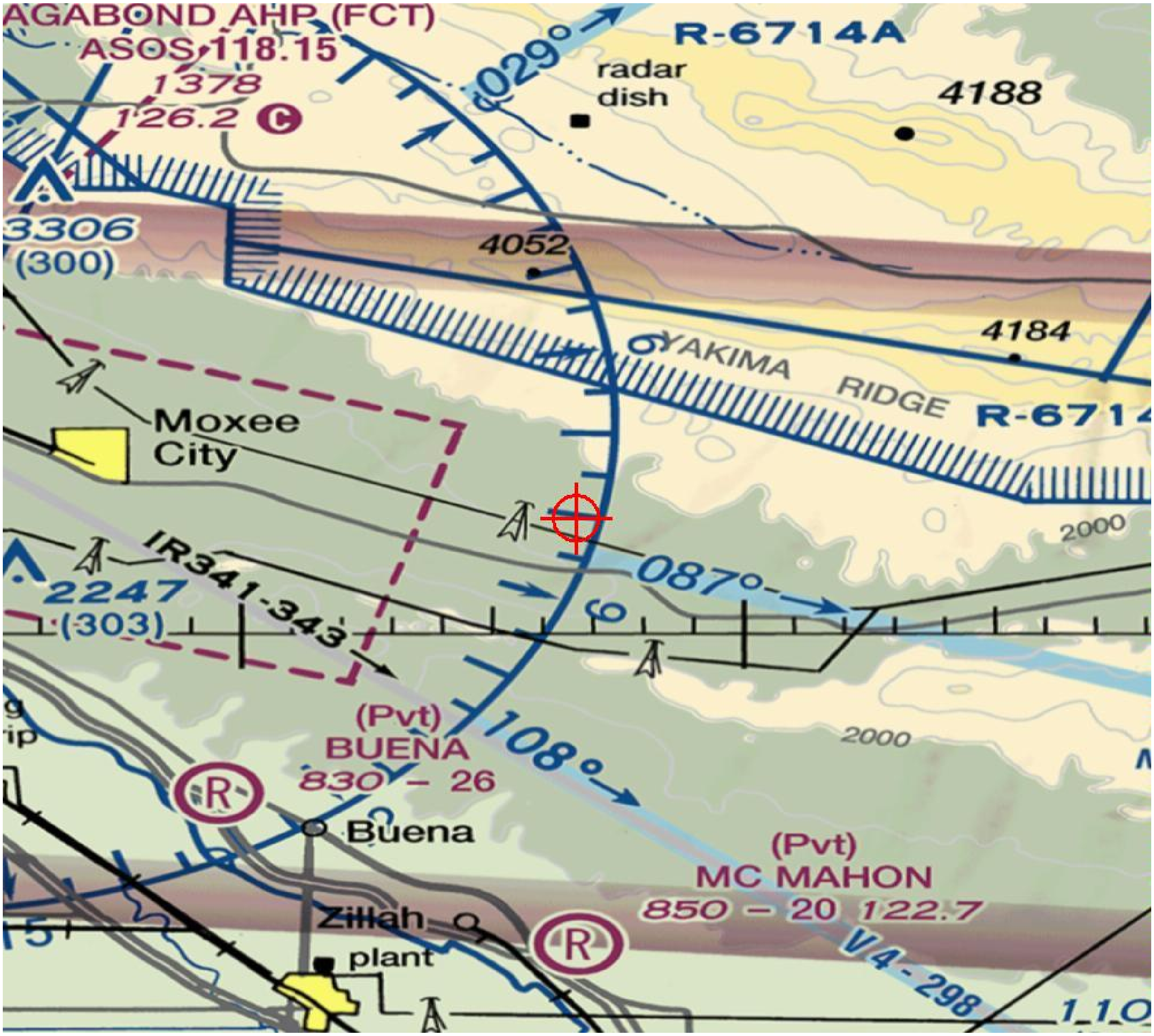

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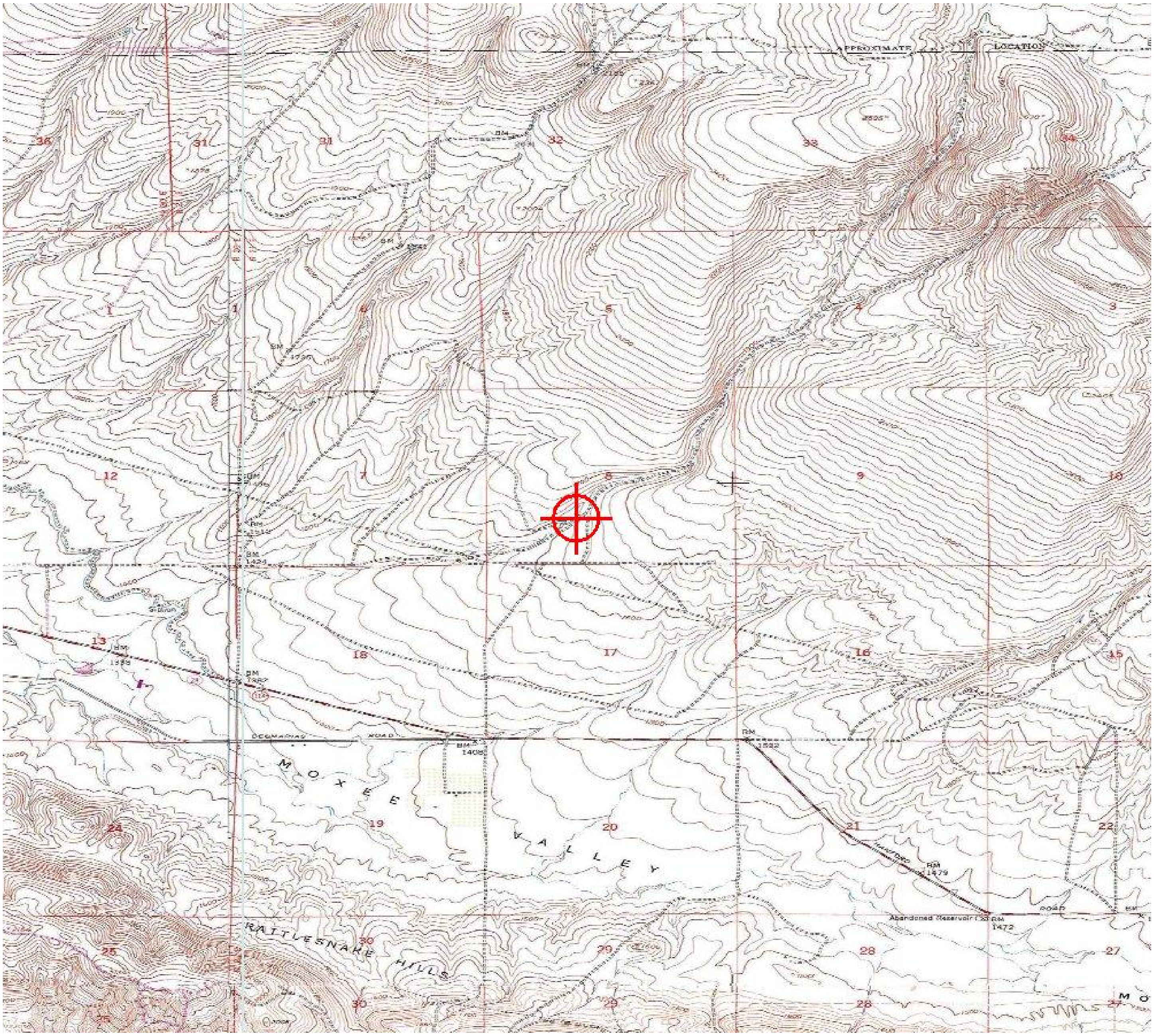

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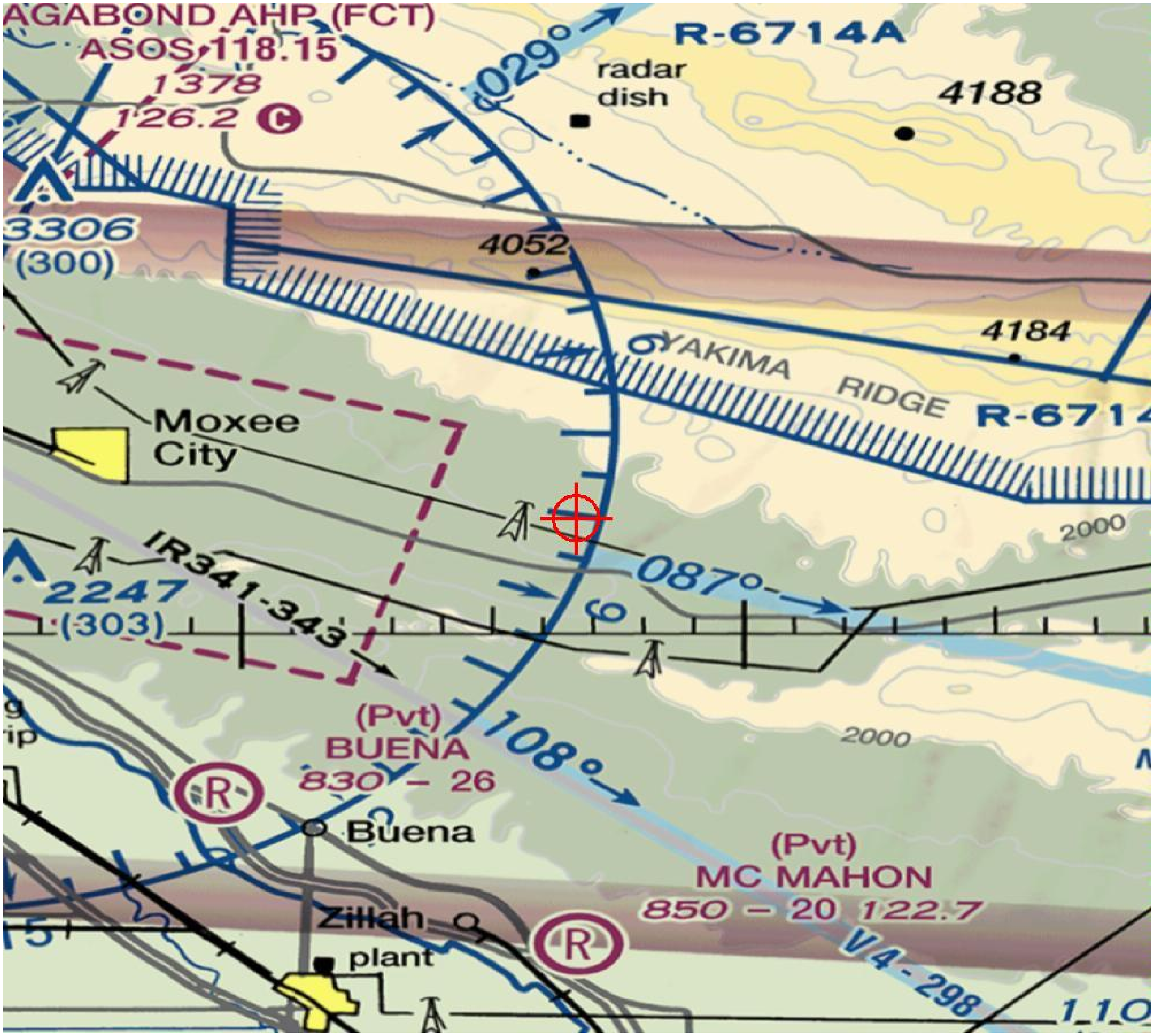

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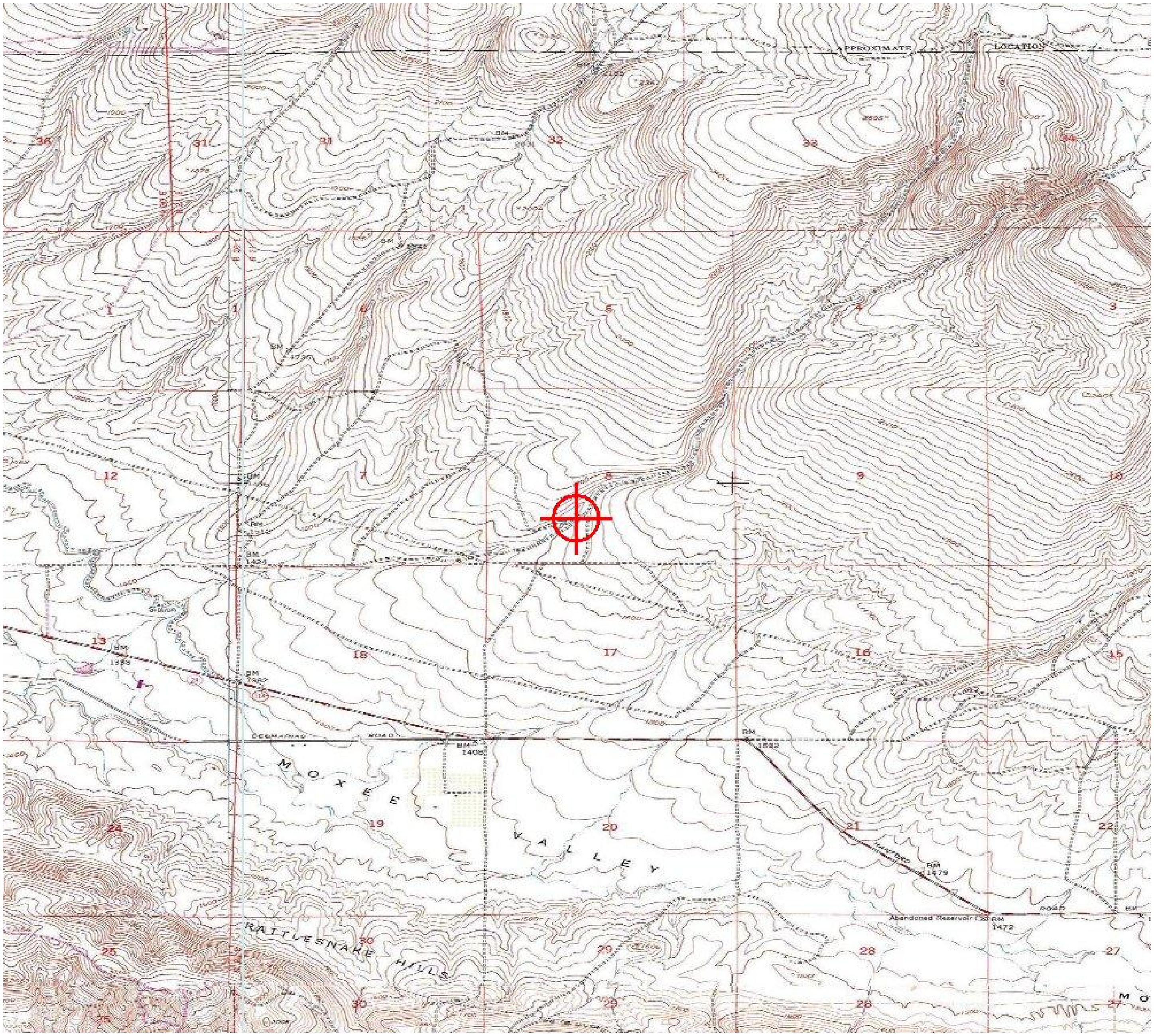

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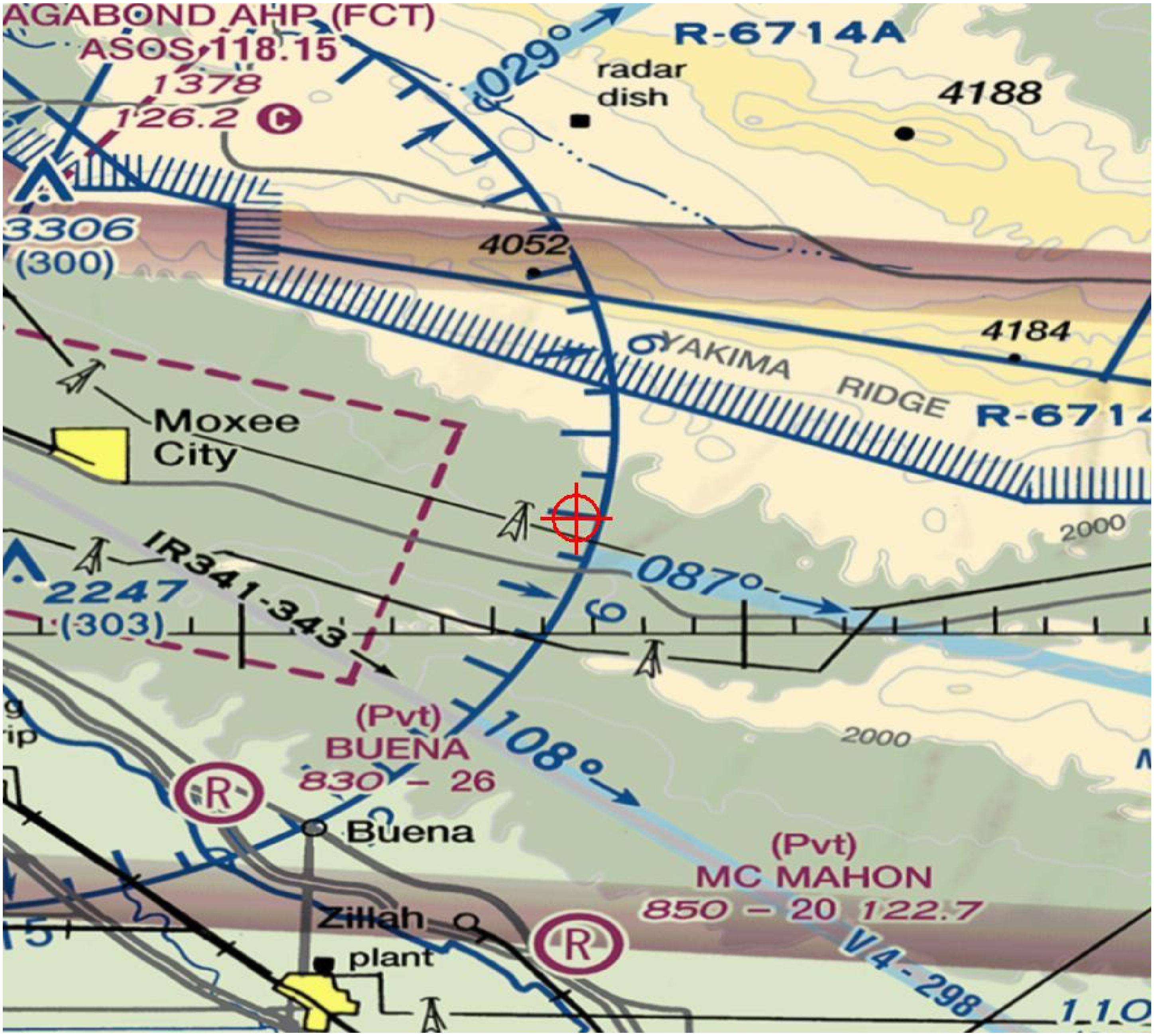

ATTACHMENT N

Department of Defense Consultations

DEPARTMENT OF THE NAVY
NAVAL AIR STATION WHIDBEY ISLAND
3730 NORTH CHARLES PORTER AVENUE
OAK HARBOR, WASHINGTON 98278-5000

3700
Ser N00RM/ 2440
August 9, 2018

Ms. Ann Siqveland
Director
One Energy Renewables
911 NE Davis St.
Portland, OR 97232

SUBJECT: PROPOSED GOOSE PRAIRIE SOLAR PROJECT

Dear Ms. Siqveland:

Naval Air Station (NAS) Whidbey Island staff have reviewed the subject project in Yakima County in conjunction with the Yakima Training Center staff and offers the following comments.

Based on the information provided regarding the proposed site location and the project's associated infrastructure, the proposed project would be in the vicinity of navigable airspace utilized by Department of Defense aircraft to meet training and readiness requirements for military personnel. The proposed location for the project does not appear to pose a direct impact to military operations. It should be expected to have minimal glint or glare effect on aircrew flying either the IR-341 or 343 military training routes for which NAS Whidbey Island is the designated scheduling agency.

The Navy appreciates the opportunity to review this project and appreciates developer's early coordination with stakeholders. My point of contact for this project is Ms. Kimberly Peacher, cell (360) 930-4085 or email: Kimberly.peacher@navy.mil.

Sincerely,

J. F. RANKIN
Commander, U.S. Navy
Commanding Officer
Acting

ATTACHMENT O

Wetland Delineation Report

Goose Prairie Solar Project
Wetland Delineation Report

Prepared for:

OER WA Solar 1 LLC

Prepared by:

TETRA TECH

July 2020

CONFIDENTIAL BUSINESS INFORMATION

Table of Contents

List of Tables

List of Appendices

Acronyms and Abbreviations

AW Supplement	*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West* (Version 2.0)
CRP	Conservation Reserve Program
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GPS	global positioning system
LRR	Land Resource Region
NHD	National Hydrography Dataset
NI	No Indicator
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
OHWM	Ordinary High Water Mark
OHWM Field Guide	*A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*
Project	Goose Prairie Solar Project
R4SBC	riverine, intermittent, streambed, seasonally flooded
SAV	submerged aquatic vegetation
SDAM	Streamflow Duration Assessment Method
Tetra Tech	Tetra Tech, Inc.
the Manual	Wetlands Delineation Manual, Technical Report Y-87-1
UPL	Upland
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
WETS	Climate Analysis for Wetlands Tables
YCC	Yakima County Code

1.0 Introduction

OER WA Solar 1, LLC is proposing the Goose Prairie Solar Project (Project) southeast of Moxee in Yakima County, Washington. The Project area is located on eight parcels of land east of Yakima on Washington Highway 24 (Appendix A, Figure A-1). Three of the parcels are currently in the Conservation Reserve Program (CRP), four of the parcels are currently used for grazing, and the eighth parcel is under active agricultural production. OER WA Solar 1, LLC contracted Tetra Tech, Inc. (Tetra Tech) to perform a wetland and other waters of the U.S. delineation within the Project area. The Project study area consists of approximately 809 acres as shown in Appendix A, Figure A-1.

Tetra Tech biologist Karen Brimacombe conducted the wetland and other waters of the U.S. delineations. Ms. Brimacombe has more than 12 years of experience conducting wetland and other waters of the U.S. assessments in the Pacific Northwest and the central and western United States, including the arid west region.

2.0 Landscape Setting and Land Use

2.1 Project Study Area

The approximately 809-acre Project study area was evaluated for wetlands and other potentially jurisdictional waters. The Project study area consists of a mix of sagebrush-steppe, mixed perennial and annual grassland and forbland, and active cropland. Land use in the Project study area includes grazing lands in the north, CRP land in the south, and a small area under active agricultural production in the east-central area. The Project study area is located in Township 12 N, Range 21 E, Sections 7, 8, and 18 (Appendix A, Figure A-2). Appendix A, Figure A-3, shows the tax lots crossed by the Project study area.

2.2 Landscape Setting

The Project is located within the Level III Columbia Plateau Ecoregion and the Yakima Folds Level IV Ecoregion (EPA 2019). In addition, the Project is within U.S. Department of Agriculture (USDA) Land Resource Region (LRR) B, Northwestern Wheat and Range Region (NRCS 2006). LRR B, Northwestern Wheat and Range Region, is equivalent to the LRR B Columbia/Snake River Plateau Region in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (AW Supplement; USACE 2008).

Plant species names and associated wetland indicator status ratings noted in this report are from the State of Washington 2018 Wetland Plant List (USACE 2018). The following wetland indicator ratings are ordered according to the percent likelihood, from most likely to least likely, of the plant occurring in wetlands: Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), and Upland (UPL). Species with an indicator of NI (No Indicator) refers to plants that are not listed in the 2018 wetland plant list and are thereby considered to be Upland plants.

The northeastern and west-central portions of the Project study area are a mix of sagebrush-steppe and grassland vegetation with interspersed pasture areas. The dominant shrub species found within these areas are big sagebrush (*Artemisia tridentata*, NI). Other shrub species observed include bitterbrush (*Purshia tridentata,* NI), yellow rabbitbrush (*Chrysothamnus viscidiflorus,* NI), spiny hopsage (*Grayia spinosa*, NI), purple sage (*Salvia dorrii*, NI), and mock orange (*Philadelphus lewisii*, NI). Dominant grass species found within these portions of the Project study area include cheatgrass (*Bromus tectorum*, NI), bulbous blue grass (*Poa bulbosa*, FACU), and curly blue grass (*Poa secunda* ssp. *secunda*, FACU). Herbaceous species observed include prickly lettuce (*Lactuca serriola*, FACU), tall hedge-mustard (*Sisymbrium altissimum*, FACU), Douglas' dustymaiden (*Chaenactis douglasii*, NI), Gray's biscuitroot (*Lomatium grayi*, NI), redstem stork's bill (*Erodium cicutarium*, NI), jagged chickweed (*Holosteum umbellatum*, NI), largeflower triteleia (*Triteleia grandiflora*, NI), and longleaf phlox (*Phlox longifolia,* NI).

The east-central and southern portions of the Project study area consist primarily of mixed perennial and annual grassland and forbland vegetation. The dominant grass species in these areas include cheatgrass (NI), bulbous bluegrass (FACU), crested wheatgrass (*Agropyron cristatum*, NI), and big bluegrass (cultivar of curly blue grass, FACU). Common herbaceous species in this area include tansymustard (*Descurainia* spp., NI), crossflower (*Chorispora tenella*, NI), tall hedge-mustard (FACU), redstem stork's bill (NI), jagged chickweed (NI), and largeflower triteleia (NI).

The Washington State Department of Ecology requests information of priority habitats and species from the Washington Department of Fish and Wildlife. Surveys for specialized habitats and species are being conducted as part of separate studies in support of this Project.

2.3 NWI, NHD, and NRCS Soils

Prior to field work, Tetra Tech reviewed the National Wetlands Inventory (NWI) database, National Hydrography Dataset (NHD), hydric soils data, and aerial photographs to identify potential wetlands and other waters occurring within the Project study area, as described below.

2.3.1 National Wetlands Inventory and National Hydrography Dataset

Desktop review of NWI data identified one riverine, intermittent, streambed, seasonally flooded (R4SBC) feature and one palustrine, emergent, persistent, temporary flooded wetland (PEM1A) within the Project study area (NWI 2019, 2020). These features correspond with two features mapped as intermittent streams by the NHD. The location of NWI- and NHD-mapped features within the Project study area are presented in Appendix A, Figure A-4.

2.3.2 Hydric Soils Data

Nine soil map units are mapped in the Project study area (NRCS 2020a; Table 1). The dominant soil in the Project study area is Willis silt loam, 2 to 5 percent slopes, that covers approximately 399.6 acres (49.4 percent) of the Project study area. Only the Moxee silt loam, 2 to 15 percent slopes, covering 168.6 acres (20.8 percent) of the Project study area, is listed as having a hydric component

(NRCS 2020a,b). Soil types mapped within the Project study area are presented in Appendix A, Figure A-5.

Table 1. Soils Mapped in the Project Study Area

Map Code and Unit Name	Acres	Percent of Study Area	Percent Hydric Soil
187: Willis silt loam, 2 to 5 percent slopes	399.6	49.4	0
83: Moxee silt loam, 2 to 15 percent slopes	168.6	20.8	5
188: Willis silt loam, 8 to 15 percent slopes	121.1	15.0	0
189: Willis silt loam, 5 to 8 percent slopes	65.8	8.1	0
36: Finley cobbly fine sandy loam, 0 to 5 percent slopes	38.6	4.8	0
68: Lickskillet very stony silt loam, 5 to 45 percent slopes	6.6	0.8	0
93: Pits	5.6	0.7	0
65: Kiona stony silt loam, 15 to 45 percent slopes	2.1	0.3	0
101: Ritzville silt loam, 8 to 15 percent slopes	1.4	0.2	0
Total	809.4	100.0	
Sources: NRCS 2020a,b			

3.0 Site Alterations

Site alterations are those activities that directly or indirectly impact wetlands and other waters such that the function or area of the feature changes significantly. A significant alteration would be one that renders the feature non-functioning, or one that changes the boundaries of the feature. Land use in the Project study area includes grazing, active agricultural fields and associated infrastructure (e.g., fences, farm roads), as well as lands enrolled in the CRP, a portion of which was previously used for row crops. These land uses have resulted in various levels of removal and disturbance of native vegetation. Development of roads, and other drainage alterations associated with land development including agricultural development, may have affected the geographic size and/or the hydroperiod of wetlands and other waters.

4.0 Precipitation Data and Analysis

Precipitation data for the period preceding and during field work were collected from the National Weather Service, Yakima Airport, Washington Station (NOAA 2019, 2020). Data from the NRCS Climate Analysis for Wetlands Tables (WETS) Station in Moxee, Washington, were used to compare historical precipitation data with recent precipitation records (NRCS 2020c).

During the 10-day span preceding field work in 2019, which occurred on May 3 and 4, no precipitation was measured (NOAA 2019). Monthly precipitation in January and February 2019 were well above average; precipitation in March 2019 was slightly below average, but within the normal range for that period; and precipitation in April 2019 was average (NOAA 2019; Table 2).

For the Water Year May 2018 through April 30, 2019, precipitation was 101 percent of average, with some months recording below average precipitation and others recording above average precipitation (Table 2). Based on the precipitation data for the 3 months prior to the site visits (i.e., February, March, and April 2019), rainfall was approximately 1.8 inches above the average; thus, it was estimated that when field surveys were conducted in early May 2019, the groundwater table was likely closer to the surface than what is usually encountered at that time of year.

During the 10-day span preceding field work in 2020, which occurred on April 9, a trace of precipitation was measured on April 1, 3, and 5 (NOAA 2020). Monthly precipitation in December 2019 was below average and precipitation in January 2020 was above average, but both were within the normal range (NOAA 2020; Table 2). Monthly precipitation in February and March 2020 were below average.

For the Water Year April 2019 through March 2020, precipitation was 71 percent of average, with 8 months recording below average precipitation, 3 months recording above average, and 1 month recording average precipitation (Table 2). Based on the precipitation data for the 3 months prior to the site visits (i.e., January, February, and March 2020), rainfall was approximately 0.69 inch below the average; thus, it was estimated that when field surveys were conducted in early April 2020, the groundwater table was likely lower than what is usually encountered at that time of year. Below average precipitation levels did not affect the delineation of other waters, as determination of intermittent versus ephemeral streams were made using indicators described in the Streamflow Duration Assessment Method (Nadeau 2015), which relies on multiple indicators independent of the presence or absence of hydrology.

Table 2. Precipitation Data – Current and Historical

Precipitation	May 2018	June 2018	July 2018	Aug 2018	Sept 2018	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	April 2019	Water Year to Date Total
Recorded Monthly Precipitation Totals (inches); Yakima Airport WA[1]	0.13	0.53	0.00	T	0.01	1.07	0.42	0.68	1.42	2.41	0.61	0.68	7.96
WETS Average Monthly Precipitation (inches); Moxee, WA[2]	0.80	0.61	0.22	0.39	0.34	0.65	0.93	1.09	0.92	0.58	0.68	0.68	7.89
Recorded Precipitation Relative to WETS Average Monthly Precipitation	16%	87%	0%	0%	3%	165%	45%	62%	154%	415%	88%	100%	101%
Average Monthly Range of Precipitation (inches)[2]	0.42-0.98	0.22-0.69	0.08-0.22	0.07-0.35	0.11-0.36	0.31-0.77	0.52-1.12	0.56-1.32	0.47-1.13	0.29-0.7	0.34-0.83	0.32-0.81	
Precipitation	**April 2019**	**May 2019**	**June 2019**	**July 2019**	**Aug 2019**	**Sept 2019**	**Oct 2019**	**Nov 2019**	**Dec 2019**	**Jan 2020**	**Feb 2020**	**Mar 2020**	**Water Year to Date Total**
Recorded Monthly Precipitation Totals (inches); Yakima Airport WA[3]	0.68	0.77	0.04	0.11	0.75	0.52	0.51	0.04	0.66	1.05	0.11	0.33	5.57
WETS Average Monthly Precipitation (inches); Moxee, WA[4]	0.68	0.80	0.61	0.22	0.39	0.34	0.65	0.93	1.09	0.92	0.58	0.68	7.89
Recorded Precipitation Relative to WETS Average Monthly Precipitation	100%	96%	6%	50%	192%	153%	78%	4%	61%	114%	19%	48%	71%
Average Monthly Range of Precipitation (inches)[4]	0.32-0.81	0.42-0.98	0.22-0.69	0.08-0.22	0.07-0.35	0.11-0.36	0.31-0.77	0.52-1.12	0.56-1.32	0.47-1.13	0.29-0.7	0.34-0.83	

[1] NOAA 2019
[2] WETS table for Moxee, Washington, years 1971-2019 (NRCS 2020c)
[3] NOAA 2020
[4] WETS table for Moxee, Washington, years 1971-2020 (NRCS 2020c)
T = trace

5.0 Methods

5.1 Pre-field Work

In preparation for the field work, Tetra Tech reviewed the NWI database, NHD, hydric soils data, and aerial photographs to identify potential wetlands and other waters within the Project study area, as described in the preceding sections. Tetra Tech prepared digital field maps with these data and uploaded these maps onto a Samsung Android data collection tablet, using the Collector for ArcGIS application, to assist field staff in identifying and delineating the locations of wetlands and non-wetland waters within or adjacent to the Project study area.

Wetlands and surface water data were obtained from the NWI (NWI 2019, 2020) and the NHD (USGS 2019, 2020). Soils data were obtained from the NRCS Web Soil Survey (NRCS, 2020a,b). Tetra Tech used high-resolution USDA National Agriculture Imagery Program imagery captured in 2017 because it provided recent 1-meter resolution aerial imagery taken during the peak of the growing season (USDA-FSA AFPO 2017). Tetra Tech also reviewed the Washington Natural Heritage Program for high-quality wetlands in or near the Project study area (WNHP 2018). No high-quality wetlands were noted as occurring in the Project study area. The following guidance documents and procedures were also reviewed:

- AW Supplement (USACE 2008);
- Wetlands Delineation Manual, Technical Report Y-87-1 (the Manual) (USACE 1987);
- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979);
- A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (OHWM Field Guide; Lichvar and McColley 2008);
- Updated datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (Curtis and Lichvar 2010);
- Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State (Anderson et al. 2016); and
- Streamflow Duration Assessment Method (SDAM) for the Pacific Northwest (Nadeau 2015).

5.2 Field Work

Field investigations to document wetlands and other waters within the Project study area were conducted on May 3 and 4, 2019 and April 9, 2020. Field investigations on May 3 and 4, 2019, were conducted within the original Project study area as noted in Appendix A, Figures A-6a and A-6b. Subsequent to the field investigations in 2019, two additional areas were added to the Project study area. This expanded Project study area is noted in Appendix A, Figures A-1 through A-6.

5.2.1 Wetland Delineations

Wetland presence was determined as per methods in the Manual and the AW Supplement. Three field indicators of wetlands (hydrophytic vegetation, hydric soils, and wetland hydrology) must be present to make a positive wetland determination. Based on these criteria, no wetlands were identified within the Project study area.

5.2.2 Non-wetland Waters Evaluations

Non-wetland waters were evaluated using the following criteria.

- Flow duration for non-wetland waters was determined using criteria in the Streamflow Duration Assessment Methodology (Nadeau 2015).
- The centerline of non-wetland waters less than 6 feet in width was recorded as a line feature and buffered to the stream width determined in the field.
- Non-wetland waters greater than 6 feet wide were recorded as left and right bank lines.

5.2.3 Mapping Methods

Non-wetland water boundaries and photograph locations were recorded using Juniper Geode series global positioning system (GPS) units, configured to differentially correct positions in real time using the Satellite Based Augmentation System, which typically results in positional error of less than 1 meter (Juniper Systems 2018).

Non-wetland water boundaries were recorded as line features using GPS units set to collect vertices every 2 seconds. For non-wetland waters less than 6 feet in width, the centerline of the feature was recorded, and the line was then buffered based on the width of the stream as determined in the field. For non-wetland waters greater than 6 feet in width, the left and right banks of the feature were recorded as separate lines.

6.0 Description of Wetlands and Other Non-wetland Waters

6.1 Wetlands

As stated in Section 5.2.1, no wetlands were identified within the Project study area. See Section 7.0 for additional information regarding the NWI-mapped wetland features within the Project study area and why these areas were not considered to be wetlands.

6.2 Non-wetland Waters

Five non-wetland waters were identified within the Project study area. All five features were determined to be ephemeral drainages, which are classified as Type 5 streams under the Yakima County Code (YCC Section 16C.06.06).

In general, all five ephemeral drainages were rocky, dry, and vegetated with upland grasses and forbs, such as cheatgrass, tall hedge-mustard, and redstem stork's bill. The drainages were typically bordered by a variety of upland shrubs, grasses, and forbs, including big sagebrush, cheatgrass, tall hedge-mustard, Gray's biscuit root, prickly lettuce, and redstem stork's bill.

Table 3 below provides additional information on these five features. The locations of these features are presented in Appendix A, Figures A-6a and A-6b, SDAM field forms are provided in Appendix B, and representative photographs are provided in Appendix C. As demonstrated in Appendix C, Photos 10 and 11, features STR-1 and STR-2 were much more heavily vegetated during field investigations in May 2019 as compared to during field investigations in April 2020. This is likely, in part, due to the later dates of field surveys. Additionally, the OHWM was much wider and more distinct along the west end of feature STR-1 in April 9, 2020 as compared to May 4, 2019 (Appendix C, Photos 1 and 2). This is likely due to heavy rainfalls occurring over a short period in January 2020, including rainfall of 0.67 inch (64 percent of the month's total) recorded the week of January 21 to January 28, 2020, including 0.3 inch on January 27, 2020.

6.3 Other Features

In addition to the five non-wetland water features delineated within the Project study area, one additional area was investigated due to the observed aerial signature. During the field investigation, this area lacked a defined channel and evidence of past water conveyance. Therefore, it was determined that no wetland, or non-wetland water feature, is present in this area (see Appendix C, Photo 22).

Table 3. Non-wetland Waters Delineated within in the Project Study Area

Feature Name	Latitude[1]	Longitude[1]	Flow Duration	Flow Direction	OHWM Width (feet)	OHWM Height (feet)	Photo Number	Notes	Acres/ Linear Feet
STR-1	46.53725 46.53365	-120.22476 -120.25028	Ephemeral	WSW	25	0.5	1 – 8	Channel generally single-thread; one-side channel noted. Feature flows into Project study area. Riparian vegetation absent. No submerged aquatic vegetation (SAV), FACW, or OBL plants observed. No hydrology or macroinvertebrates or casings observed. OHWM field indicators: textural change of depositional sediment and change in vegetation type and cover. Gradient approximately 3%.	4.02 / 7,005
STR-1a	46.53956 46.53858	-120.22233 -120.22300	Ephemeral	SSW	5	0.5	9		0.25/ 435
STR-2	46.54200 46.53398	-120.23651 -120.24874	Ephemeral	SSW	25	1	10 – 15, 21	Channel generally single thread; one side channel noted. Feature flows into Project study area and joins feature STR-1. Riparian vegetation absent. No SAV, FACW, or OBL plants observed. No macro-invertebrates or casings observed. No hydrology observed. OHWM field indicators: textural change of depositional sediment, change in vegetation type and cover, litter deposits, and break in bank slope. Gradient approximately 3%.	2.63 / 5,4745
STR-2a	46.54203 46.54171	-120.23609 -120.23640	Ephemeral	S	4	0.5	16, 17	Channel is single thread. Feature flows into Project study area and joins feature STR-2. These two features may re-connect upstream, north of the Project area boundary. No SAV, FACW, or OBL plants observed. No hydrology or macro-invertebrates or casings observed. OHWM field indicators: textural change of depositional sediment, change in vegetation type and cover, and break in bank slope. Gradient approximately 7%.	0.04 / 155
STR-3	46.54207 46.54089	-120.23239 -120.23675	Ephemeral	SW	3	0.5	18 - 20	Channel is single thread. Feature flows into Project study area and joins feature STR-2. No SAV, FACW, or OBL plants observed. No hydrology or macro-invertebrates or casings observed. OHWM field indicators: textural change of depositional sediment, change in vegetation type and cover, and break in bank slope. Gradient approximately 5%.	0.28 / 1,240
								Total Other Waters Acreage and Linear Feet	**7.22 / 13,410**

[1] Top number is latitude and longitude at upstream end of stream segment; bottom number is latitude and longitude at downstream end of stream segment.

7.0 Deviation from NWI

Deviations are features that are mapped by the NWI that differ from field observations. As noted in Section 2.3.1 and displayed in Appendix A, Figure A-4, two features, one riverine (RS4BC) wetland and one freshwater emergent (PEM1A) wetland, are mapped by the NWI within the Project study area. In addition, as noted in Section 2.3.1, the location of these NWI-mapped wetland features corresponds with areas mapped by the NHD as intermittent streams.

During the field delineation conducted in May of 2019 and April of 2020, it was determined, based on the lack of wetland indicators, that no wetlands occur in the Project study area, including the areas mapped as wetland by the NWI. The areas mapped by the NWI as riverine wetlands correspond with three non-wetland water features, STR-1, STR-1a, and STR-2, delineated during the field delineation. As noted in Section 6.2 and in Table 3, all non-wetland waters delineated within the Project study area were determined to be ephemeral drainages that lacked hydrology and hydrophytic vegetation associated with intermittent or perennial streams. Due to the lack of wetland indicators, it was determined that no wetlands occur along these features.

Additionally, field investigations determined that no wetland occurs in the area mapped as a freshwater emergent wetland by the NWI. This area was determined to be an ephemeral drainage (portions of features STR-2 and STR-2a) that lacked wetland characteristics. As illustrated in Appendix C, Photos 15 through 18 and 21, this area consisted of a dry, very sparsely vegetated drainage. Vegetation that was observed in the channel included cheatgrass (NI), bulbous bluegrass (FACU), redstem stork's bill (NI), tall hedge-mustard (FACU), great mullein (*Verbascum thapsus*; FACU), and common dandelion (*Taraxacum officinale*; FACU).

8.0 Results and Conclusions

Using methods recommended in the OHWM Field Guide, the Manual, and AW Supplement, five non-wetland water features were delineated and documented within the Project study area. The total area of non-wetland waters delineated within the Project study area boundary is 7.22 acres and 13,410 linear feet acres (Table 3). These five features were determined to be ephemeral drainages that would be classified as Type 5 streams under the Yakima County Code (YCC Section 16C.06.06). Per Section 16C.06.16 of the YCC:

> "Type 5 streams are not regulated through buffer requirements. However, activities such as clearing, grading, dumping, filling, or activities that restrict or block flow, redirect flow to a point other than the original exit point from the property or result in the potential to deliver sediment to a drainage way/channel, are regulated under clearing and grading regulations. These drainages may also be protected under geologically hazardous area, floodplain, stormwater, building and construction, or other development regulations."

On April 21, 2020, the U.S. Environmental Protection Agency and the Department of the Army published the Navigable Waters Protection Rule to define "Waters of the United States" (85(77) *Federal Register* 22250–22342). Under this rule, *ephemeral features that flow only in direct response to precipitation, including ephemeral streams, swales, gullies, rills, and pools* are not considered waters of the United States. Notwithstanding potential litigation, this new rule took effect on June 22, 2020, in which case the five non-wetland water features would likely be considered non-jurisdictional by the U.S. Army Corps of Engineers (USACE).

Regardless of federal jurisdictional status, all non-wetland waters identified in this report would likely be subject to regulations by the Washington State Department of Ecology.

9.0 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 the USACE and the Washington State Department of Ecology.

Prepared by:

Karen Brimacombe
Wetland Biologist

Reviewed by:

Ed Strohmaier

Ed Strohmaier
Senior Wetland Scientist

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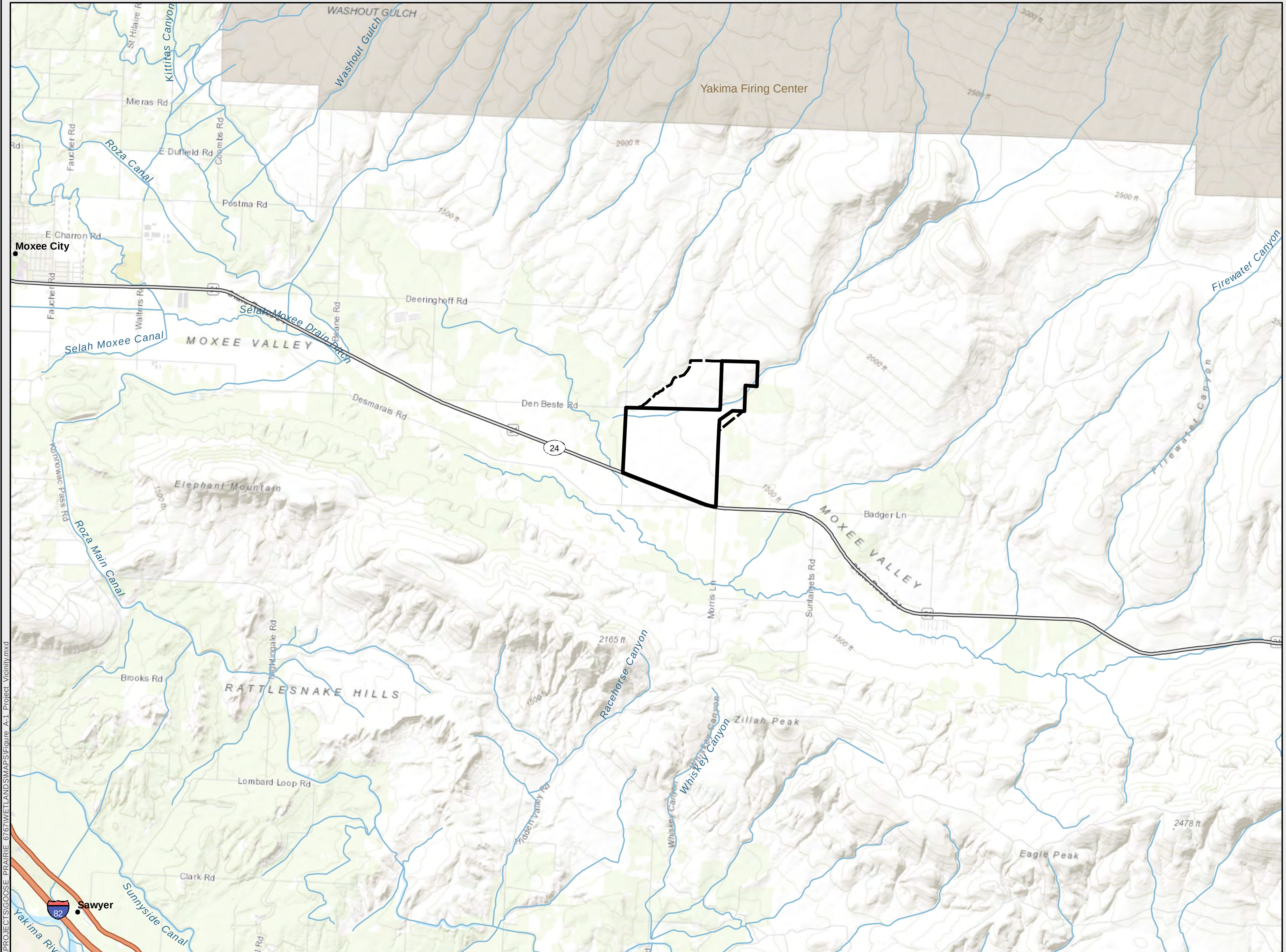
Appendix A:

Figures

Goose Prairie Solar Project

Figure A-1
Project Vicinity

Yakima County, Washington



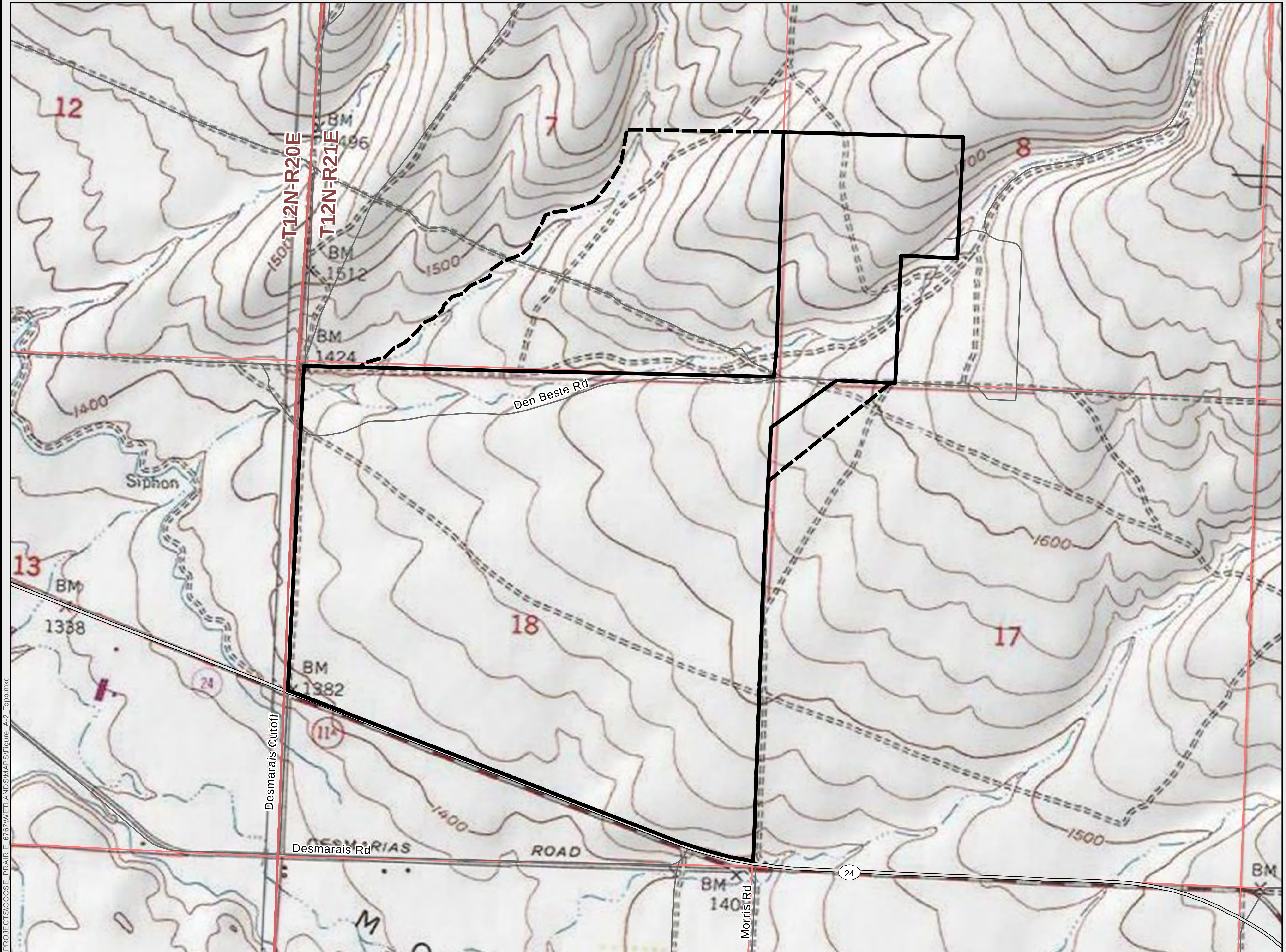
Project Study Area
Expanded Project Study Area
Town
River
Interstate
Highway

N

0 0.5 1 2
Miles

TETRA TECH
OneEnergy

R:\PROJECTS\GOOSE_PRAIRIE_6767\WETLANDS\MAPS\Figure_A-1_Project_Vicinity.mxd



Goose Prairie Solar Project

Figure A-2
Topographic Map

Yakima County, Washington

Project Study Area
Expanded Project Study Area
PLSS Township/Range
PLSS Section
Highway
Local Road

N

0 500 1,000 2,000
Feet

TETRA TECH
OneEnergy

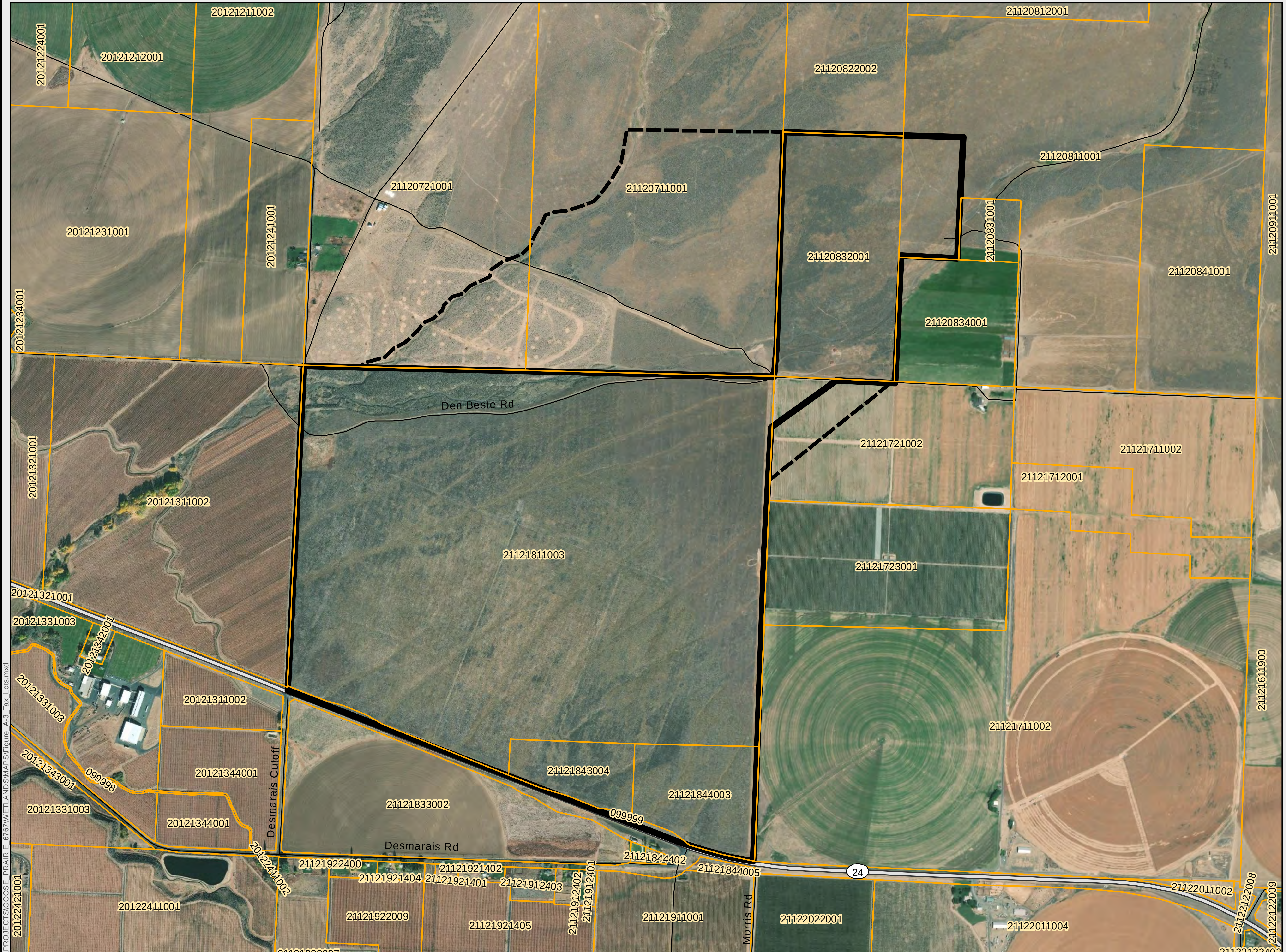
WA
ID
OR

R:\PROJECTS\GOOSE_PRAIRIE_6767\WETLANDS\MAPS\Figure_A-2_Topo.mxd

Goose Prairie Solar Project

Figure A-3
Tax Lots

Yakima County, Washington



- Project Study Area
- Expanded Project Study Area
- Tax Lots
- Highway
- Local Road

N

0 500 1,000 2,000

Feet

TETRA TECH OneEnergy

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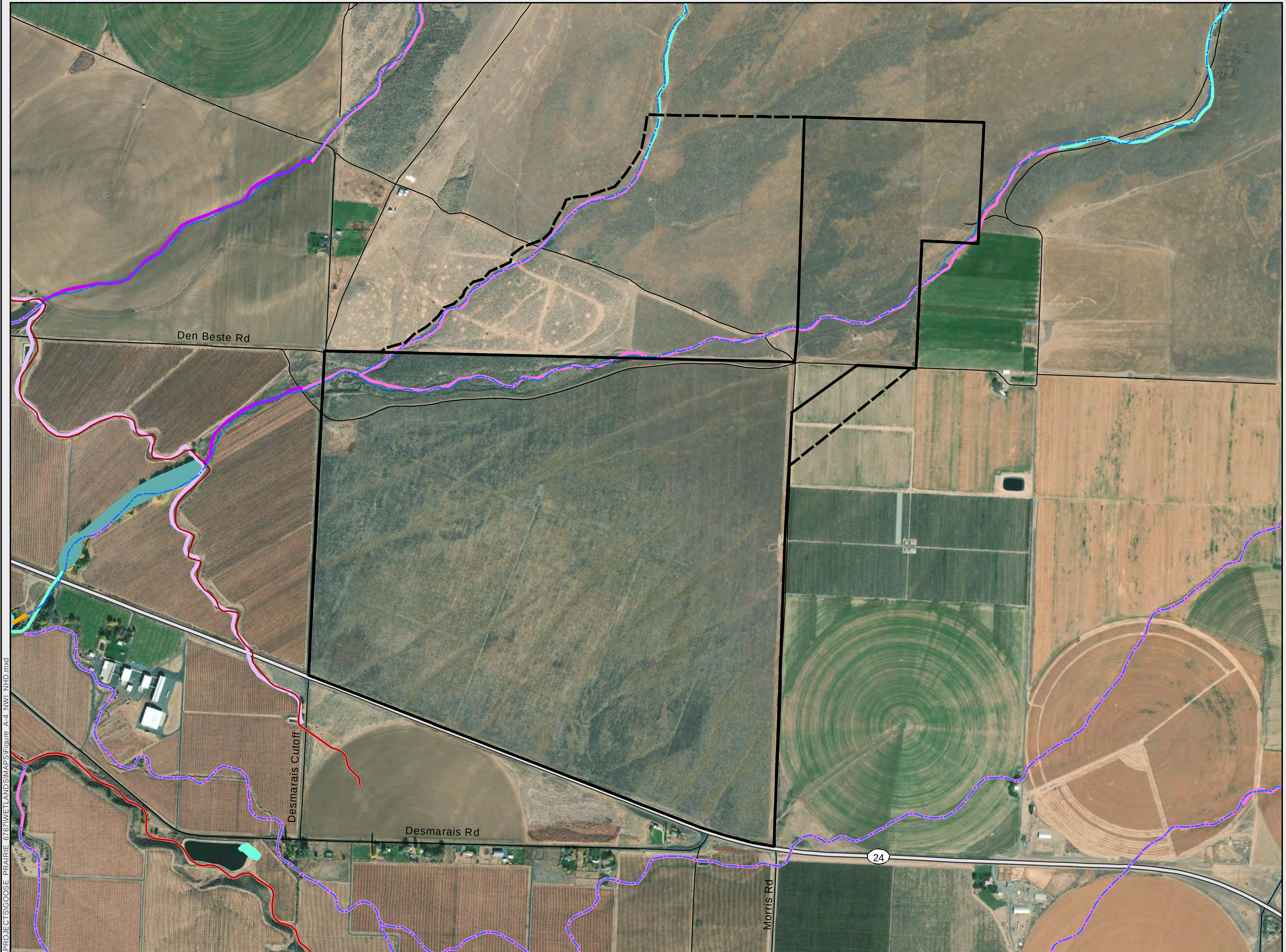


Goose Prairie Solar Project

Figure A-4
NWI Wetlands and
NHD Flowlines

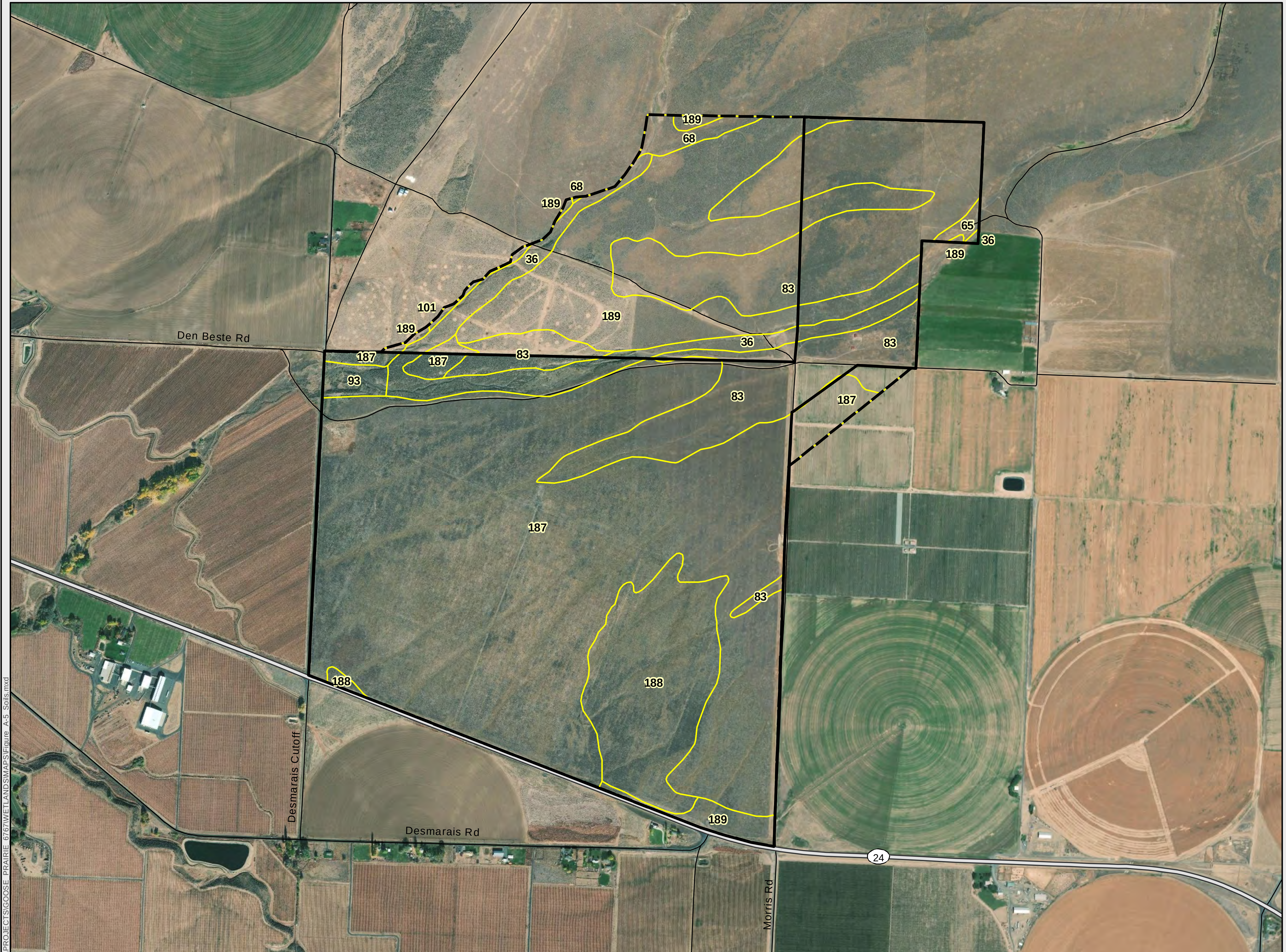
Yakima County, Washington

Project Study Area
Expanded Project Study Area
Highway
Local Road
NHD Flowline
Canal/Ditch
Intermittent Stream
NWI Wetland Type
Freshwater Emergent Wetland (PEM1/FO1A)
Freshwater Emergent Wetland (PEM1A)
Freshwater Pond (PUBFh)
Riverine (R2UBHx)
Riverine (R4SBA)
Riverine (R4SBC)
Riverine (R5UBFx)
Riverine (R5UBH)

N

0 500 1,000 2,000
Feet

TETRA TECH
OneEnergy



Goose Prairie Solar Project

Figure A-5
NRCS Soils

Yakima County, Washington

Project Study Area
Expanded Project Study Area
Highway
Local Road
Soil Unit: Soil Name

36: Finley cobbly fine sandy loam, 0-5% slopes
65: Kiona stony silt loam, 15-45% slopes
68: Lickskillet very stony silt loam, 5-45% slopes
83: Moxee silt loam, 2-15% slopes
93: Pits
101: Ritzville silt loam, 8-15% slopes
187: Willis silt loam, 2-5% slopes
188: Willis silt loam, 5-8% slopes
189: Willis silt loam, 8-15% slopes

N

0 500 1,000 2,000
Feet

TETRA TECH OneEnergy

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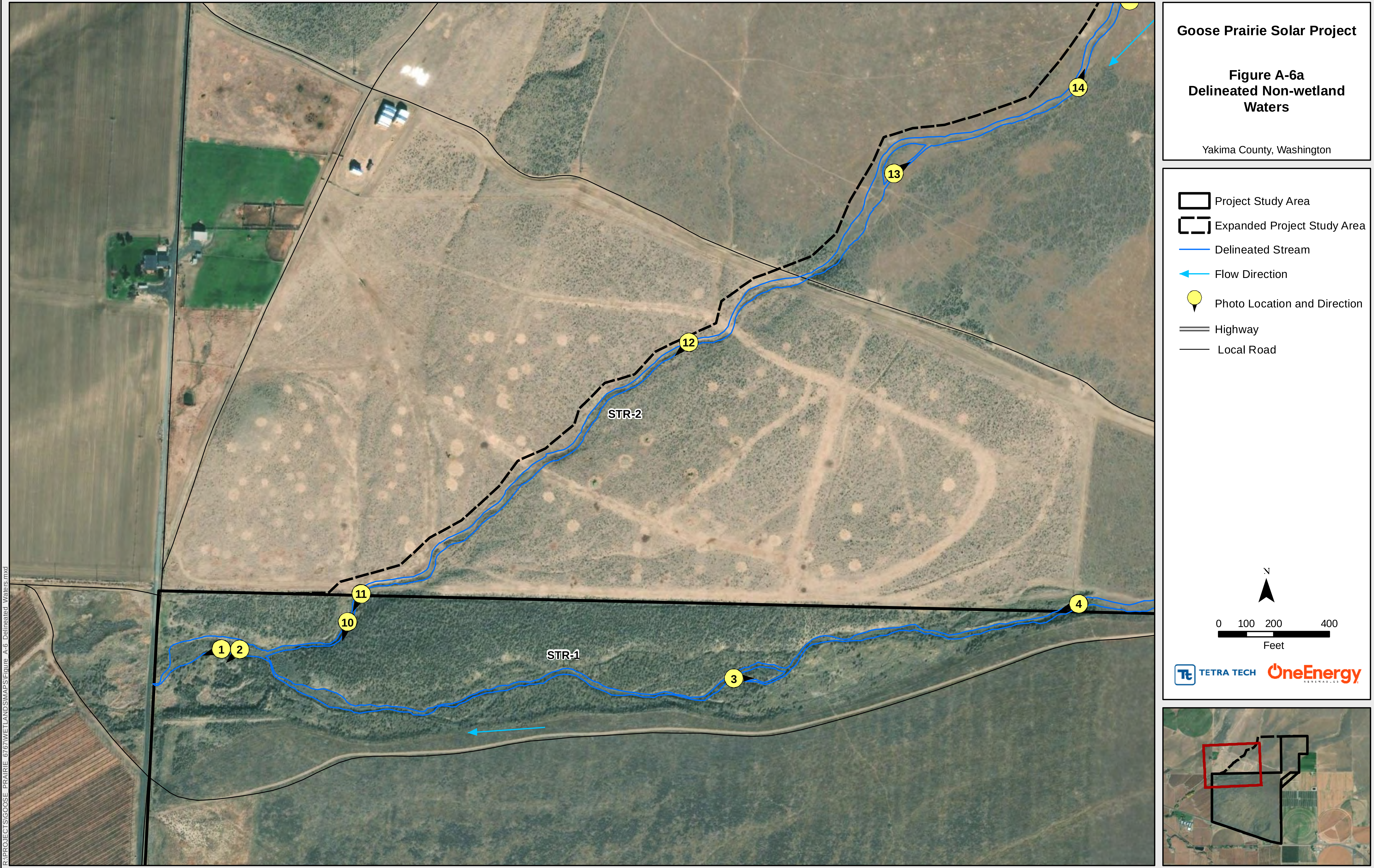
Goose Prairie Solar Project

Figure A-6a
Delineated Non-wetland Waters

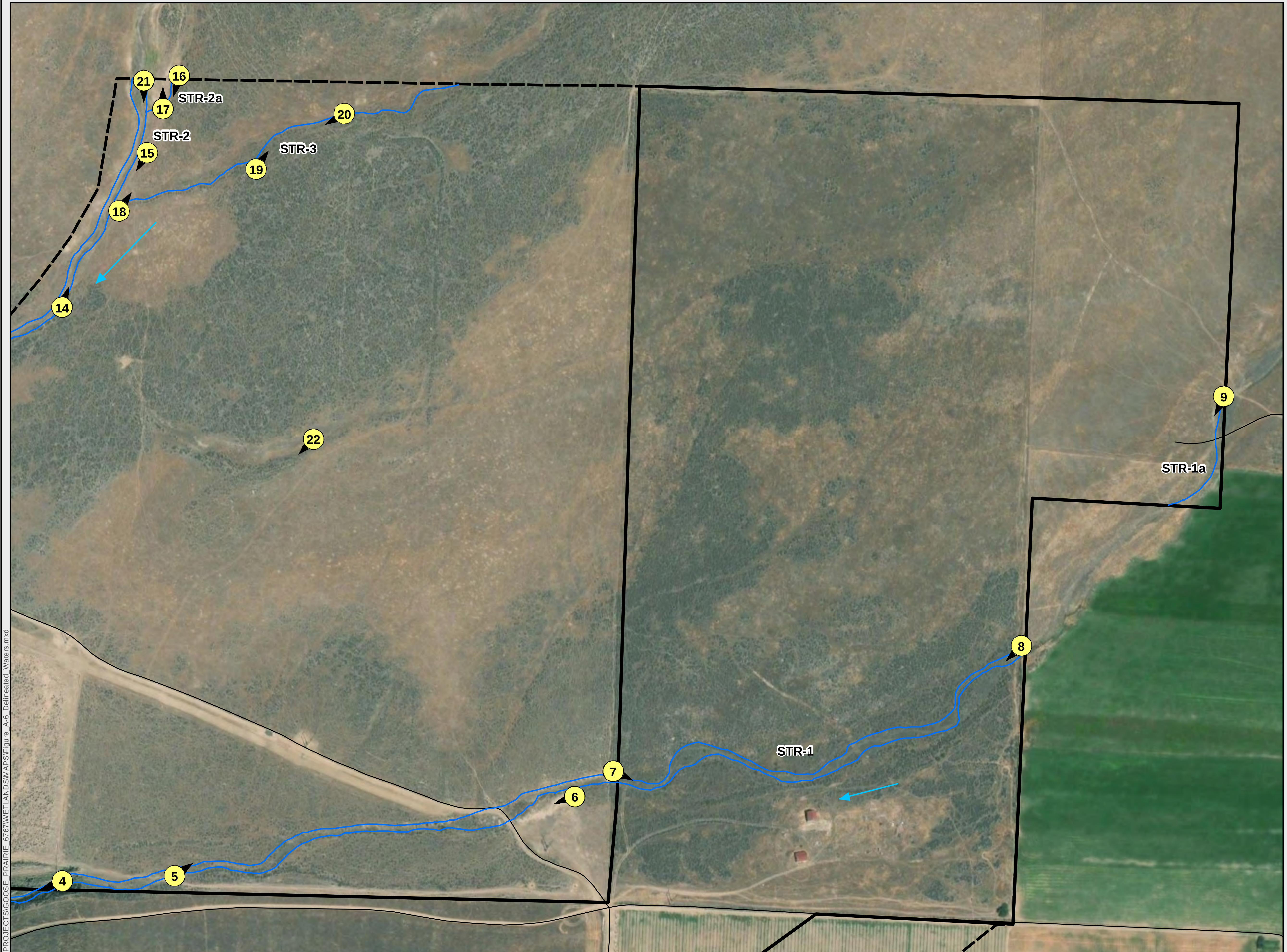
Yakima County, Washington



Goose Prairie Solar Project

Figure A-6b
Delineated Non-wetland Waters

Yakima County, Washington

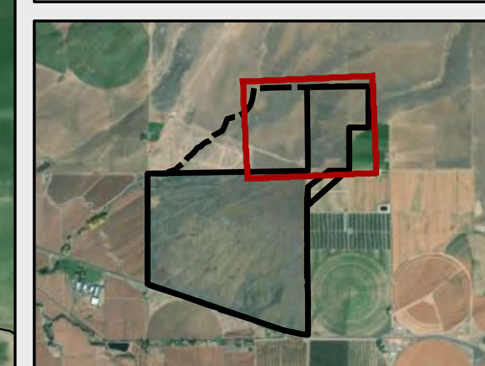


Project Study Area
Expanded Project Study Area
Delineated Stream
Flow Direction
Photo Location and Direction
Highway
Local Road

N

0 100 200 400
Feet

TETRA TECH
OneEnergy



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Appendix B:

Streamflow Duration Field Assessment Forms

Streamflow Duration Field Assessment Form

Project # / Name	Goose Prairie Solar Power Project	Assessor	Karen Brimacombe
Address	Moxee, Washington	Date	05/03/2019 and 04/09/2020
Waterway Name	STR-1	Coordinates at downstream end (ddd.mm.ss)	Lat. 46.533646 N Long. -120.25028 W
Reach Boundaries			

Precipitation w/in 48 hours (cm) 0	Channel Width (m) 7.6	☐ 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): None

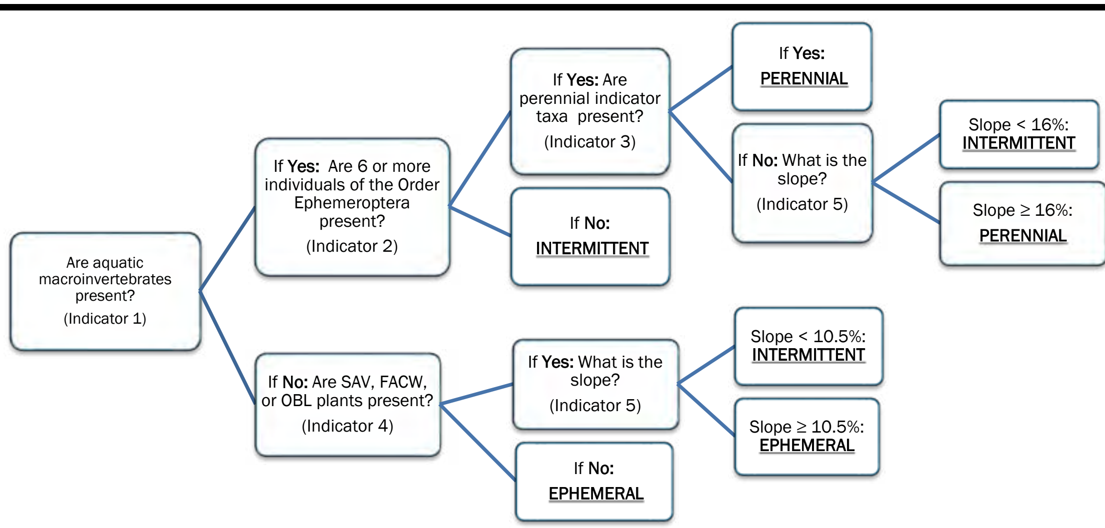
Observed Macroinvertebrates: None

Taxon	Indicator Status	Ephemeroptera?	# of Individuals

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.

Dry, rocky channel; no macroinvertebrate casings under rocks.
See Table 3 of report for more details on STR-1. Also see Photos 1-8 Appendix C and Appendix A, Figure A-6a and Figure A-6b

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Streamflow Duration Field Assessment Form

Project # / Name	Goose Prairie Solar Power Project	Assessor	Karen Brimacombe
Address	Moxee, Washington	Date	05/03/2019
Waterway Name	STR-1a	Coordinates at downstream end (ddd.mm.ss)	Lat. 46.538583 N Long. -120.223002 W
Reach Boundaries			
Precipitation w/in 48 hours (cm)	0	Channel Width (m)	1.5

☐ 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): None

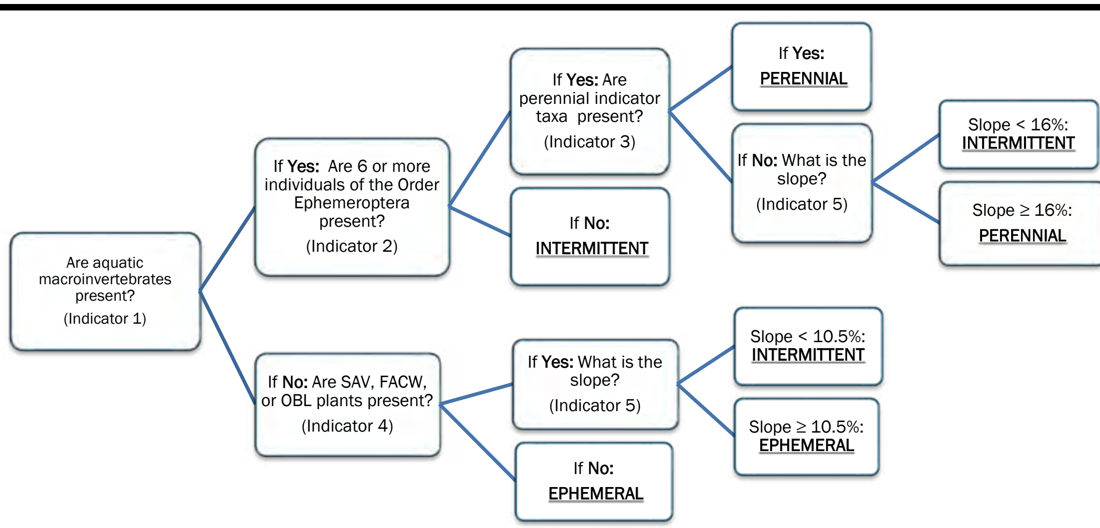
Observed Macroinvertebrates: None

Taxon	Indicator Status	Ephemer-optera?	# of Individuals

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.

Dry, rocky channel; no macroinvertebrate casings under rocks.
See Table 3 of report for additional details on STR-1a. Also see photo 9 in Appendix C and Appendix A, Figure A-6b

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Streamflow Duration Field Assessment Form

Project # / Name	Goose Prairie Solar Power Project	Assessor	Karen Brimacombe
Address	Moxee, Washington	Date	05/03/2019 and 04/09/2020
Waterway Name	STR-2	Coordinates at downstream end (ddd.mm.ss)	Lat. 46.533985 N
Reach Boundaries			Long. -120.248741 W

Precipitation w/in 48 hours (cm) 0	Channel Width (m) 4.6	☐ 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): None

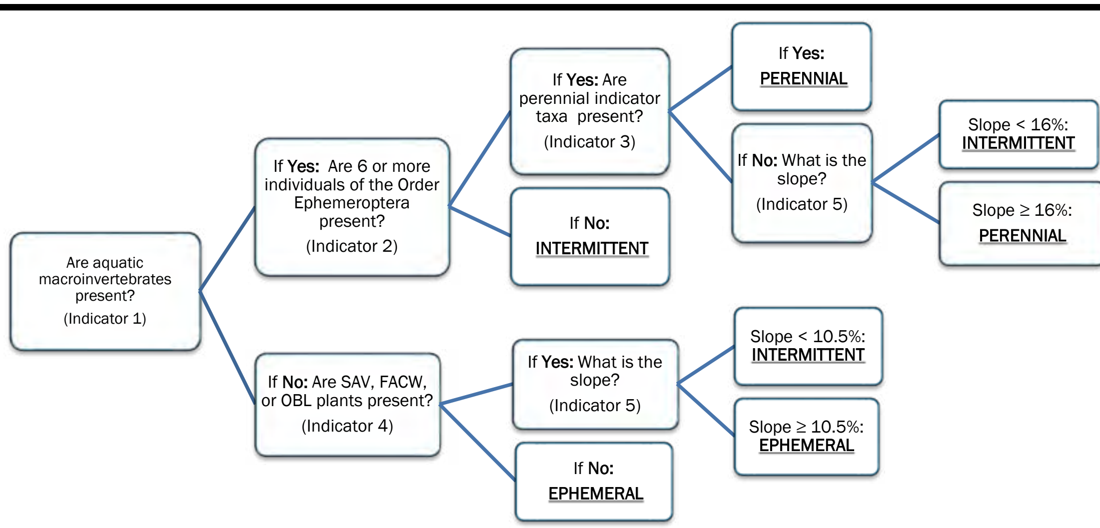
Observed Macroinvertebrates: None

Taxon	Indicator Status	Ephemeroptera?	# of Individuals

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.

Dry, rocky channel; no macroinvertebrate casings under rocks.
See Table 3 of report for additional details for STR-2. Also see photos 10-15, and 21 in Appendix C and Appendix A, Figure A-6a and Figure A-6b

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Streamflow Duration Field Assessment Form

Project # / Name: Goose Prairie Solar Power Project	Assessor: Karen Brimacombe
Address: Moxee, Washington	Date: 04/09/2020
Waterway Name: STR-2a	Coordinates at downstream end (ddd.mm.ss): Lat. 46.541712 N; Long. -120.236403 W
Reach Boundaries	
Precipitation w/in 48 hours (cm): 0	Channel Width (m): 3.6
☐ 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): None

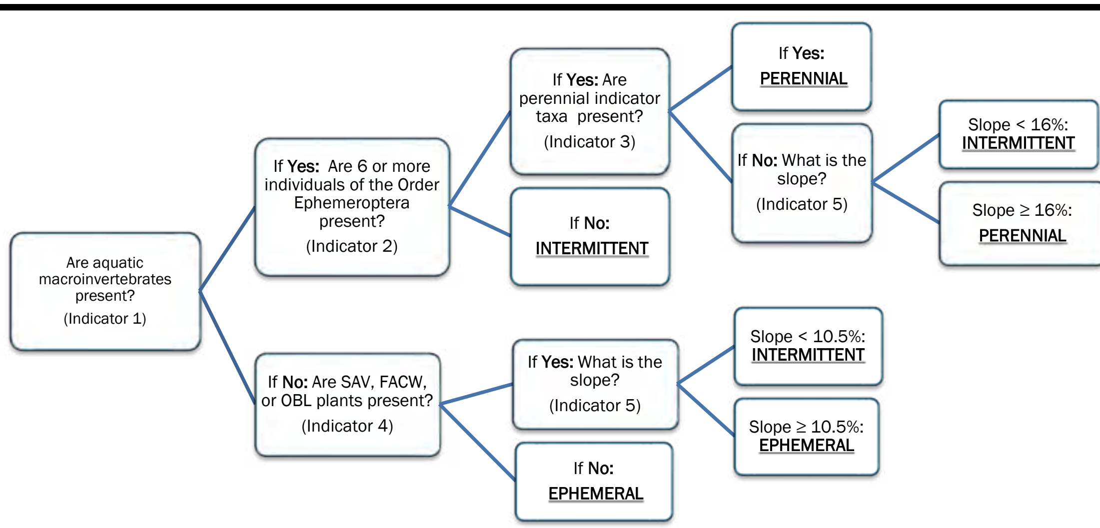
Observed Macroinvertebrates: None

Taxon	Indicator Status	Ephemeroptera?	# of Individuals

Indicators

	Yes	No
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.

Dry, rocky channel; no macroinvertebrate casings under rocks.
See Table 3 of report for additional details for STR-2a. Also see photos 16 and 17 in Appendix C and Appendix A, Figure A-6b

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Streamflow Duration Field Assessment Form

Project # / Name	Goose Prairie Solar Power Project	Assessor **Karen Brimacombe**	
Address	Moxee, Washington		Date 04/09/2020
Waterway Name	STR-3	Coordinates at downstream end (ddd.mm.ss)	Lat. 46.540892 N Long. -120.236752 W
Reach Boundaries			
Precipitation w/in 48 hours (cm) 0	Channel Width (m) 1.5	☐ 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): None

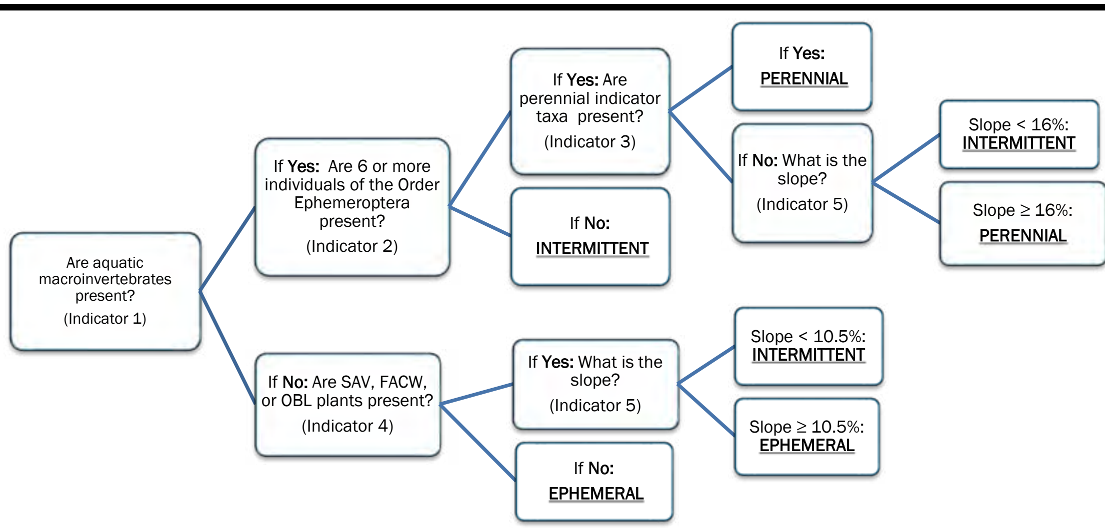
Observed Macroinvertebrates: None

Taxon	Indicator Status	Ephemeroptera?	# of Individuals

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)	____5__ %	

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.

Dry, rocky channel; no macroinvertebrate casings under rocks.
See Table 3 for additional details for STR-3. Also see photos 18-20 in Appendix C and Appendix A, Figure A-6b

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix C:

Photolog

Appendix C:

Photolog

Photo 1. Feature STR-1: Rocky ephemeral drainage within sagebrush-steppe habitat. West end of Feature STR-1. Facing west-southwest. Date: May 4, 2019

Photo 2. Feature STR-1: Same location as Photo 1. Date: April 9, 2020.

Photo 3. Rocky, side channel of Feature STR-1: Facing east. Date: May 3, 2019.

Photo 4. Feature STR-1: Rocky ephemeral drainage within sagebrush-steppe habitat. Facing west-southwest. Date: May 3, 2019.

Photo 5. Feature STR-1: Rocky ephemeral drainage within sagebrush-steppe habitat. Facing east-northeast. Date: April 9, 2020.

Photo 6. Feature STR-1: Rocky, ephemeral drainage within sagebrush-steppe habitat. Facing west-southwest. Date: April 9, 2020.

Photo 7. Feature STR-1: Overview of this ephemeral drainage. Facing east-southeast. Date: May 3, 2019.

Photo 8. Feature STR-1: West end of this ephemeral drainage; drainage continues to east outside Project study area. Facing southwest. Date: May 3, 2019.

Photo 9. Feature STR-1a: Rocky, vegetated ephemeral channel. At east end of Project study area. Facing south-southwest. Date: May 3, 2019.

Photo 10. Feature STR-2: Rocky ephemeral channel within sagebrush-steppe habitat. At south end of feature near confluence with STR-1. Facing south-southwest.

Photo 11. Feature STR-2: Taken near location of Photo 10 approximately one year prior. Facing south-southwest. Date: May 3, 2019.

Photo 12. Feature STR-2: Ephemeral drainage within heavily grazed sagebrush-steppe habitat. Facing southwest. Date: April 9, 2020.

Photo 13. Feature STR-2: Ephemeral, erosional side channel likely created during heavy rains in January 2020. Facing northeast. Date: April 9, 2020.

Photo 14. Feature STR-2: Rocky, ephemeral drainage in grazed grassland and sagebrush-steppe habitat. Facing north-northeast. Date: April 9, 2020.

Photo 15. Feature STR-2: Near north end of Project study area Facing south-southwest. Date: April 9, 2020.

Photo 16. Feature STR-2a: Rocky, ephemeral drainage at north end of portion of drainage within Project study area. Facing south-southwest. Date: April 9, 2020.

Photo 17. Feature STR-2a: Rocky, ephemeral drainage in grazed grassland and sagebrush-steppe habitat. Facing north-northeast. Date: April 9, 2020.

Photo 18. Feature STR-3: At confluence with feature STR-2. Facing east-northeast. Date: April 9, 2020.

Photo 19. Feature STR-3: Narrow, rocky, ephemeral drainage. Facing east-northeast. Date: April 9, 2020.

Photo 20. Feature STR-3: Taken near the northern border of the Project study area. Facing west-southwest. Date: April 9, 2020.

Photo 21. Feature STR-2: At north end of Project study area Facing south. Date: April 9, 2020.

Photo 22. Area investigated due to aerial signature. No stream characteristics observed. Facing southwest. Date: April 9, 2020.

ATTACHMENT P

Socioeconomic Review

Goose Prairie Solar

Socioeconomic Review

December 2020

OneEnergy Renewables
2003 Western Ave, Suite 225
Seattle, Washington 98121

Executive Summary

This Socioeconomic Review addresses components of WAC 463-60-535 as discussed in conversations with EFSEC. The document contains information about population and labor force impacts and housing. Even at peak construction, the Facility will not require enough workers to significantly impact the overall unemployed labor force in Yakima County. There are sufficient laborers for Facility construction and operations within a reasonable commuting distance. Any non-local hires may commute from within Yakima County or the Tri-Cities area or they may relocate temporarily. There is sufficient capacity to house any temporary workers in hotels, motels or RV parks.

1. Population and Labor Force Impacts

a. Population and growth rate data for the most current ten-year period.

Table 1 shows population information for the City of Moxee, City of Yakima, Yakima County, and State of Washington for 2010 and 2018. All four areas experienced population growth during this period. The City of Moxee experienced the highest growth rate (19.65%) from 2010 to 2018. The City of Yakima and Yakima County had a growth rate of 2.58% and 2.51% respectively while Washington had an overall growth rate of 8.47%.

Table 1: Population and Growth Rate Data (2010 and 2018)

Jurisdiction	2010 Census Population	2018 Population (2010-2018)	Population Change	Percent Change per Year (2010-2018)
City of Moxee	3,308	3,958	650	19.65%
City of Yakima	91,067	93,416	2,349	2.58%
Yakima County	243,231	249,325	6,094	2.51%
Washington	6,724,540	7,294,336	569,796	8.47%

Source: U.S. Census Bureau (https://www.census.gov/data.html)

b. Published forecast population figures for the study area for both the construction and operation periods.

The Washington State Office of Financial Management's (OFM) population forecast for 2019 indicates that the projected population of Washington State is estimated to be 7,969,840 by 2025 and 8,937,114 by 2040. From the 2018 population data, this represents a growth of 9% and 22% respectively. The OFM population forecasts for Yakima County are shown in Table 2. The Medium Projection estimates a population growth of 13% by 2025 and 27% by 2040. Thus, the Yakima County population is projected to grow by a greater percentage than Washington State during the construction and operation phase of the Facility.

Table 2: OFM Population Projections for Yakima County

OFM Low Projections			
2025	**2030**	**2035**	**2040**
241,402	246,769	251,955	256,834
OFM Medium Projections			
2025	**2030**	**2035**	**2040**
282,057	294,445	306,636	318,494
OFM High Projections			
2025	**2030**	**2035**	**2040**
342,341	363,341	384,341	405,341

Source: Yakima County GMA June 2017

c. Numbers and percentages describing the race/ethnic composition.

Table 3 shows the aggregate population as well as population percentage of racial/ethnic categories for the City of Moxee, City of Yakima, Yakima County, and Washington in 2018. Hispanic or Latino populations comprise the largest racial/ethnic group in the City of Moxee (50.23%) and Yakima County (48.91%) as well as a large portion of the total population in the City of Yakima (46.40%). In Washington, Hispanic or Latino populations only represent 12.50% of the total population. White alone populations represent the largest racial/ethnic categories in the City of Yakima (47.89%) Washington (69.09%).

Table 3: Population by Race/Ethnicity (2018)

	City of Moxee	City of Yakima	Yakima County	Washington
Total Population	3,958	93,416	249,325	7,294,336
Not Hispanic or Latino:	1,970 (49.77%)	50,075 (53.60%)	127,381 (51.09%)	6,382,763 (87.50%)
• White alone	1,561 (39.44%)	44,738 (47.89%)	108,938 (43.69%)	5,039,208 (69.09%)
• Black or African American alone	147 (3.71%)	997 (1.07%)	1,935 (0.78%)	259,482(3.56%)
• American Indian and Alaska Native alone	148 (3.74%)	1,240 (1.33%)	8,962 (3.59%)	80,274 (1.10%)
• Asian alone	40 (1.01%)	1,085 (1.16%)	2,174 (0.87%)	602,020 (8.25%)
• Native Hawaiian and Other Pacific Islander alone	-	17 (0.02%)	173 (0.07%)	46,476 (0.64%)
• Some other race alone	-	55 (0.06%)	107(0.04%)	12,077 (0.17%)
• Two or more races:	74 (1.87%)	1,943(2.08%)	5,092 (2.04%)	343,226(4.71%)
○ Two races including Some other race	8 (0.20%)	-	65 (0.03%)	6,662 (0.09%)
○ Two races excluding Some other race, and three or more races	66 (1.67%)	1,943(2.08%)	5,027 (2.02%)	336,564 (4.61%)
Hispanic or Latino:	1,988 (50.23%)	43,341 (46.40%)	121,944 (48.91%)	911,573 (12.50%)
• White alone	1,096 (27.69%)	25,862 (27.68%)	85,858 (34.44%)	506,789 (6.95%)
• Black or African American alone	-	596 (0.64%)	750 (0.30%)	10,372 (0.14%)
• American Indian and Alaska Native alone	53 (1.34%)	758 (0.81%)	1,520 (0.61%)	14,774 (0.14%)
• Asian alone	-	-	93 (0.04%)	5,409 (0.07%)
• Native Hawaiian and Other Pacific Islander alone	-	-	8 (0.003%)	1,567 (0.02%)
• Some other race alone	719 (18.17%)	14,457 (15.48%)	30,471 (12.22%)	299,093 (4.10%)
• Two or more races:	120(3.03%)	1,668 (1.79%)	3,244 (1.30%)	73,569 (1.01%)
○ Two races including Some other race	18 (0.45%)	1,002 (1.07%)	1,818 (0.73%)	33,979 (0.47%)
○ Two races excluding Some other race, and three or more races	102 (2.58%)	666 (0.71%)	1,426 (0.57%)	39,590 (0.54%)

Source: U.S. Census Bureau (https://www.census.gov/data.html)

d. Aggregate per capita and household incomes, including the number and percentages of the population below the poverty level.

As seen in Table 4, the City of Moxee has the highest proportion of residents living below the poverty level (24%) followed by the City of Yakima (20%). The City of Yakima has the lowest median household income ($44,266) followed by Yakima County ($49,871). Washington as a whole has the lowest proportion of residents living below the poverty level (12%) as well as the highest median household income ($70,116).

Table 4: Income and Poverty Level (2018)

	Median Household Income	Per Capita Income	Population Below Poverty Level	Percent Below Poverty Level
City of Moxee	$53,024	$18,290	942	24%
City of Yakima	$44,266	$23,013	18,081	20%
Yakima County	$49,871	$22,459	44,600	18%
Washington	$70,116	$36,888	821,621	12%

Source: U.S. Census Bureau (https://www.census.gov/data.html)

e. A description of whether or not any minority or low-income populations would be displaced by this project or disproportionately impacted.

As described in Part 3, Section 15 of the Application, the Facility will not displace existing or future housing, including housing for low- and moderate-income households. Only one parcel that may be utilized for an aerial easement contains a residence. However, such an easement would not displace the residence. Furthermore, local land use planning documents, including the Yakima County Comprehensive Plan, have not identified the Facility Area Extent as a site for future residential growth.

f. The average annual work force size, total number of employed workers, and the number and percentage of unemployed workers including the year that data are most recently available. Employment numbers and percentage of the total work force should be provided for the primary employment sectors.

Tables 5 and 6 identify the available labor force, employed population, and unemployed population in aggregation and by industry in the City of Moxee, City of Yakima, Yakima County, and Washington. The City of Moxee and City of Yakima have the highest unemployment rates (6.9%). In both those areas, the educational and health care industry employs the most people, followed by retail trade and agriculture.

Table 5: Labor Force Data (2018)

	Labor Force Population 16 Years Old and Over	Employed Population	Employment Rate	Unemployed Population	Unemployment Rate
City of Moxee	2,518	1,654	65.7%	173	6.9%
City of Yakima	70,122	39,941	57.0%	4,838	6.9%
Yakima County	182,459	104,784	57.4%	12,042	6.6%
Washington	5,843,155	3,513,856	60.1%	309,687	5.3%

Source: U.S. Census Bureau (https://www.census.gov/data.html)

Table 6: Employed Population by Industry (2018)

	City of Moxee	City of Yakima	Yakima County	Washington
Civilian employed population 16 years and over	1,654	39,941	104,784	3,513,856
• Agriculture, forestry, fishing and hunting, and mining:	147	4,288	17,144	91,208
○ Agriculture, forestry, fishing and hunting	147	4,288	17,099	87,715
○ Mining, quarrying, and oil and gas extraction	-	-	45	3,493

• Construction	22	1,829	5,550	230,167
• Manufacturing	170	3,386	9,223	354,379
• Wholesale trade	54	2,063	4,926	97,502
• Retail trade	262	4,512	10,755	411,244
• Transportation and warehousing, and utilities:	96	3,282	7,699	186,128
○ Transportation and warehousing	69	3,211	7,236	159,221
○ Utilities	27	71	463	26,907
• Information	7	442	958	78,995
• Finance and insurance, and real estate and rental and leasing:	84	1,371	2,955	187,588
○ Finance and insurance	66	993	2,095	115,278
○ Real estate and rental and leasing	18	378	860	72,310
• Professional, scientific, and management, and administrative and waste management services:	134	2,399	5,909	454,863
○ Professional, scientific, and technical services	120	1,165	2,772	318,515
○ Management of companies and enterprises	0	11	11	3,845
○ Administrative and support and waste management services	14	1.223	3,126	132,503
• Educational services, and health care and social assistance:	423	9,466	22,667	757,898
○ Educational services	171	3,156	8,668	29,6475
○ Health care and social assistance	252	6,310	13,999	461,423
• Arts, entertainment, and recreation, and accommodation and food services:	107	3,158	7,826	324,204
○ Arts, entertainment, and recreation	21	542	1,758	82,479
○ Accommodation and food services	86	2,616	6,068	241,725
• Other services, except public administration	75	2,079	4,422	161,118
• Public administration	73	1,666	4,750	178,562

Source: U.S. Census Bureau (https://www.census.gov/data.html)

g. An estimate by month of the average size of the project construction, operational work force by trade, and work force peak periods.

Table 7 provides a proposed schedule for site preparation, construction, operation/use, and closure/reclamation. Construction is scheduled to begin April 2022. Construction will require approximately 9 months to complete. As outlined in Part 2 of the Application, at peak construction the Facility will employ up to 300 workers. During the first 30 days there would be clearing and grubbing activities and grading of access roads. Construction personnel should be limited to less than 20 workers during this period. Once the facility construction begins, the onsite head count should begin to increase and peak at approximately 300 workers. During the final 30-day period, the electrical work will be completed and the headcount will begin dropping back to approximately 30 workers.

Table 7: Proposed Schedule and Workforce

Phase	Proposed Timing	Duration	Employee numbers on site & frequency
Site preparation	Mar 2022	30 days	<20
Construction	Apr-Dec 2022	270 days	Estimated max of 300
Operation/use	Dec 31, 2022	35 years	None full-time
Closure/reclamation	End of project	6-8 weeks	TBD

h. An analysis of whether or not the locally available work force would be sufficient to meet the anticipated demand for direct workers and an estimate of the number of construction and operation workers that would be hired from outside of the study area if the locally available work force would not meet the demand.

Utility-scale projects typically create 3.3 construction jobs per MW. An 80 MW would be expected to create about 264-300 construction jobs. Up to 80% of large-scale solar construction jobs can be sourced through local and/or veteran labor. Since there are 12,042 unemployed people in Yakima County (Table 5), the unemployed labor pool can provide the estimated 264 construction jobs required for the Facility. Even at peak construction, the Facility will not require enough workers to significantly impact the overall unemployed labor population in Yakima County.

i. A list of the required trades for the proposed project construction.

Trades required during the construction phase of the Facility include:

- Electricians
- Truck Drivers for semi-tractor trailers, concrete mixing tricks, dump trucks, and water trucks
- Heavy equipment operators for excavators, backhoes, graders, trenchers, bore/drill rigs, paving equipment, and fork lifts.
- Form construction and cement workers
- General laborers to install fencing and operate other material handling equipment

j. An estimate of how many direct or indirect operation and maintenance workers (including family members and/or dependents) would temporally relocate.

According to Table 7, the Facility will not employ any full-time operation and maintenance workers. During the operation/use phase, employee sites visits will be infrequent. Thus, it is not expected that any director or indirect operation and maintenance would temporally relocate.

k. An estimate of how many workers would potentially commute on a daily basis and where they would originate.

As previously indicated, up to 80% of large-scale solar construction jobs can be sourced through local and/or veteran labor. At peak construction (300 maximum daily workers), that equates to 240 jobs that can sourced within Yakima County. Commuting distance will vary but it can be assumed most workers will commute from the City of Yakima and surrounding area, which is approximately 8 miles from the Facility in Moxee, WA.

The 60 non-local hires that the Facility may require could commute from other nearby cities, such as Ellensburg (43 miles) and the Tri-Cities (70 miles).

2. Housing Impacts

a. Housing data from the most recent ten-year period that data are available, including the total number of housing units in the study area, number of units occupied, number and percentage of units vacant, median home value, and median gross rent. A description of the available hotels, motels, bed and breakfasts, campgrounds or other recreational facilities.

Tables 8 and 9 summarize the housing characteristics for the City of Moxee, City of Yakima, Yakima County, and Washington for 2018 and 2010. In 2018, the City of Moxee had the lowest percent of vacant units (3.4%), while Washington had the highest percent of vacant units (8.6%). The vacancy percentages are comparable to the 2010 figures. Median home value and median gross rent, in both 2018 and 2010, were highest in Washington. In 2018, the City of Yakima had the lowest median home value ($164,200) and median gross rent ($80/month). In 2010, Yakima County had the lowest median home value ($149,700) and median gross rent ($644/month).

Table 8: Housing Characteristics for 2018

	Total Number of Housing Units	Number of Units Occupied	Number and Percent of Units Vacant	Median Home Value (owner-occupied units)	Median Gross Rent (per month)
City of Moxee	1,103	1,065	38 (3.4%)	$171,700	$1,077
City of Yakima	35,658	33,557	2,101 (5.9%)	$164,200	$801
Yakima County	88,226	82,300	5,926 (6.7%)	$167,700	$803
Washington	3,064,381	2,800,423	263,958 (8.6%)	$311,700	$1,194

Source: U.S. Census Bureau (https://www.census.gov/data.html)

Table 9: Housing Characteristics for 2010

	Total Number of Housing Units	Number of Units Occupied	Number and Percent of Units Vacant	Median Home Value (owner-occupied units)	Median Gross Rent (per month)
City of Moxee	826	800	26 (3.1%)	$160,500	$960
City of Yakima	34,828	32,794	2,034 (5.8%)	$152,800	$649
Yakima County	84,387	79,075	5,312 (6.3%)	$149,700	$644
Washington	2,829,352	2,577,375	251,977 (8.9%)	$285,400	$882

Source: U.S. Census Bureau (https://www.census.gov/data.html)

Table 10 identifies a portion of available hotels and lodging accommodations available in Yakima County as of 2020 according to the Yakima County Chamber of Commerce. These 17 facilities represent a variety of hotels, motels, and bed and breakfasts available for short-term rentals.

Table 10: Selected Hotels and Other Accommodations in Yakima County

Accommodation	Location
Best Western Plus Yakima Hotel	1st St, Yakima, WA
Comfort Suites Yakima	Fruitvale Blvd, Yakima, WA
Fairfield Inn & Suits by Marriott	N Fair Ave, Yakima, WA

Hilton Garden Inn Yakima	E Yakima Ave, Yakima, WA
Holiday Inn – Downtown Yakima	E Yakima Ave, Yakima, WA
Home2 Suites by Hilton Yakima	W Nob Hill Blvd, Yakima
Hotel Maison	E Yakima Ave, Yakima, WA
Howard Johnson Plaza Hotel	N 9th St, Yakima, WA
Ledgestone Hotel	N Fair Ave, Yakima, WA
Motel 6 Yakima	E Staff Sgt Pendleton Way, Yakima, WA
My place Hotel Yakima	S 18th St, Yakima, WA
Oxford Suites	E Yakima Ave, Yakima, WA
Red Lion Hotel Yakima Center	E Yakima Ave, Yakima, WA
Super 8 Model of Yakima	South Rudkin Rd Union Gap Interchange, Union Gap
The Hotel Y	N 1st St, Yakima, WA
Union Gospel Mission	N 1st St, Yakima, WA
Yakima Legends Casino Hotel	Fort Rd, Toppenish, WA

Source: Yakima County Chamber of Commerce

b. How and where the direct construction and indirect work force would likely be housed. A description of the potential impacts on area hotels, motels, bed and breakfasts, campgrounds and recreational facilities.

The majority (80%) of direct construction and indirect workers would likely be local hires. The 20% of non-local hires would likely commute from within Yakima County or the Tri-Cities. Thus, it is not anticipated that the construction of the Facility would result in the permanent relocation of any of the construction workforce. In addition, according to Table 10, there is sufficient capacity to house any temporary workers in hotels, motels, or RV parks. Due to the small number of temporary workers required for construction, the impact to these accommodation facilities is expected to be insignificant.

c. Whether or not meeting the direct construction and indirect work force's housing needs might constrain the housing market for existing residents and whether or not increased demand could lead to increased median housing values or median gross rents and/or new housing construction. Describe mitigation plans, if needed, to meet shortfalls in housing needs for these direct and indirect work forces.

As described in the previous section, construction of the Facility is not anticipated to result in the permanent relocation of any of the construction workforce. Thus, there would be no impacts on the housing market for existing residents in the City of Moxee, City of Yakima, or Yakima County. Construction would not result in increased median housing values or median gross rents.

ATTACHMENT Q

Water Availability Letter

January 11, 2021

Energy Facility Siting Evaluation Council
c/o Sonia Bumpus
621 Woodland Square Loop SE
Olympia, WA 98504

RE: Water Availability for Goose Prairie Solar Project

Dear Ms. Bumpus,

This letter is to confirm the discussion I had with Blake Bjornson of OneEnergy Renewables on January 11, 2021. The City of Moxee currently has adequate water to supply up to 50,000 gallons of water per day during the upcoming construction of the Goose Prairie Solar facility.

Please reach out to me with any questions at 509-575-8851.

Thank you,

Byron Adams
City Supervisor/Public Works Director
City of Moxee

ATTACHMENT R

Habitat Mitigation Memo

January 19, 2021

OER WA Solar 1, LLC
2003 Western Ave #225
Seattle, WA 98121

Washington Energy Facility Site Evaluation Council
Attn: Administrative File
621 Woodland Square Loop SE
PO Box 43172
Olympia, WA 98504-3172
efsec@utc.wa.gov

Washington Department of Wildlife
South Central Region 3
Attn: Eric Bertrand
1701 South 24th Avenue
Yakima, WA 98902-5720
eric.bartrand@dfw.wa.gov

MEMO: SUMMARY OF AGENCY CONSULTATION FOR WILDLIFE AND HABITAT RESOURCES AND HABITAT MITIGATION CONSIDERATIONS AT THE PROPOSED GOOSE PRAIRIE SOLAR, YAKIMA COUNTY, WASHINGTON.

DEAR INTERESTED PARTIES,

OER WA Solar 1, LLC, a wholly owned subsidiary of OneEnergy Development, LLC (OneEnergy) has proposed the development of the 80-megawatt (MW) Goose Prairie Solar (Facility) in Yakima County, Washington (see Figure 2 and Figure 3 for a Regional Context Map and Site Map). OneEnergy is submitting an Application for Site Certificate (ASC) to the Energy Facility Site Evaluation Council (EFSEC) for the Facility. The power generated from the Facility will help fulfill the legislative mandate from Governor Inslee and the Washington Legislature to transition Washington's electrical generation systems to 100 percent clean energy by 2045 under the Clean Energy Transformation Act (CETA). OneEnergy is committed to environmentally conscientious renewable energy development that avoids and/or minimizes impacts to State trust resources by including stakeholder participation of state and federal agency resource experts.

Since 2017, OneEnergy has met with agency resource experts to discuss the Facility and solicit feedback on environmental studies. Information from these meetings was used to contract Western EcoSystems Technology, Inc, (WEST), an independent third-party consultant, to determine biological resources present at the proposed Facility site. This expert evaluation from WEST, a reputable and nationally recognized environmental consultant, will help facilitate discussions of mitigation measures associated with Facility development per Yakima County Code (YCC) 16C.11; EFSEC's rules, including as relevant here, Washington Administrative Code (WAC) 463-60-332 and WAC 463-62-040; and Department of Fish and Wildlife (WDFW) Policy M-5002, *to ensure no net loss of fish and wildlife habitat functions or values in the areas impacted by energy development*.

Memo Purpose

The purpose of this memo is to: 1) summarize the history of due diligence and stakeholder engagement initiated by OneEnergy in the development of the Facility; 2) outline the findings of field surveys as it relates to habitat mapping; 3) discuss considerations related to compensatory habitat mitigation when evaluating impacts from the Facility; 4) describe mitigation actions taken to-date and additional habitat benefits of the Facility; and 5) propose next steps in the consultation process.

These next steps will occur in two parts. First, OneEnergy proposes to meet with WDFW and EFSEC with the goal of determining the appropriate compensatory mitigation required to demonstrate the Facility creates “no net loss of fish and wildlife habitat functions or values” as required by WAC 463-62-040. Ideally, the first meeting would be held within fifteen business days of the ASC submission and would conclude within 60 days of that first meeting. The agreed-upon compensatory mitigation would be formally submitted as supplemental information to the ASC for consideration in the State Environmental Policy Act (SEPA) determination and Site Certificate Agreement (SCA) issuance.

Second, and in accordance with WAC 463-60-332(3) and YCC 16C.11.060, OneEnergy will develop and implement a Habitat Restoration and Mitigation Plan, which will describe the implementation of wildlife and habitat mitigation measures for the Facility, including the compensatory mitigation. OneEnergy will consult with WDFW and EFSEC in development of this plan, which would be finalized following issuance of the SCA and submitted to EFSEC for approval at least sixty days prior to site preparation.

CONTENTS

1. Initial Site Selection and Agency Consultation History

1a. Initial Site Screening and Selection Process

OneEnergy used a tiered approach, similar to the US Fish and Wildlife Services *Land-Based Wind Energy Guidelines* (USFWS 2012), to evaluate the feasibility and constraints of several proposed solar facilities. Accordingly, the Facility development process included rigorous due diligence, including early stage desktop review and agency consultation to inform site selection and understand any potential risks or concerns. Due diligence screening used publicly available data from state and federal agencies to identify critical land use and environmental issues. Such desktop mapping platforms include the WDFW Priority Habitat and Species (PHS), the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (iPaC) and the National Wetland Inventory.

1b. Agency Consultation and Survey Participation

Once a potential site was selected for the Facility, OneEnergy solicited preliminary feedback from WDFW in 2017, before field surveys were initiated, to understand any potential concerns regarding habitat and wildlife, and to review survey protocols and provide input. See Table 1 below for a history of the WDFW consultations and biological surveys. The official correspondence letters from WDFW are included as Attachment 1.

Table 1. History of wildlife agency consultation and chronology of biological surveys

Date and Topic	Participants	Purpose / Recommendation	Outcome
September 2017 Introductions	OER & WDFW	Email to request in-person meeting to review Facility materials	Meeting scheduled
October 2017 In-Person Initial Consultation	OER & WDFW	Review of land use and biological data at a site 12 miles east of current Facility location where OER had a long-term site control agreement and an interconnection queue position/ WDFW expressed sage grouse concerns and habitat fragmentation	OER abandoned site and redirected focus based on WDFW recommendations
July 2018 Consultation Letter	OER & WDFW	Provided summary desktop analysis and revised Facility location; requested WDFW feedback	WDFW provided letter response August 17, 2018
February 2019 WDFW/USFWS Site Visit	OER, WDFW & USFWS	Physical site walk/Habitat and survey protocol review of Facility / WDFW expressed shrub-steppe concerns	OER modified Facility design to exclude shrub-steppe draw; WDFW provided letter response March 19, 2019
May 2019 First Year TESS Surveys Completed	OER, WDFW & WEST	TESS Surveys completed per WDFW protocol recommendations; report drafted / second year surveys planned	Second year survey planned
March 2020 Consultation Continued	OER & WDFW	OER provided WDFW update with modified Facility Area Extent expanding the Facility north, excluding the shrub-steppe draw and boundary refinement	No change in survey protocols; deferred mitigation discussion until all surveys were completed
May 2020 Second Year TESS Surveys Completed	OER, WDFW & WEST	TESS Surveys completed per WDFW protocol recommendations; report drafted	Further modifications to Facility design based on occurrence of TESS in high-quality habitat

2. Field Surveys

During 2019 and 2020, OneEnergy contracted WEST to produce a Wildlife and Habitat Survey Report, which included 1) pedestrian surveys for wildlife species listed by federal and state agencies as threatened, endangered, and sensitive species (TESS), 2) habitat mapping as further discussed below and 3) a raptor nest survey. The report is included as Attachment F to the ASC.

In 2020, WEST completed a Rare Plant Occurrence and Big Game Assessment, which is included as Attachment G to the ASC. This memo summarizes the WEST's assessment of the occurrence of special status plant species and the potential for the Facility to obstruct big game movement or migration corridors.

In 2019 and 2020, OneEnergy also contracted Tetra Tech to complete a Wetland Delineation Report, which has been finalized and will be submitted to Department of Ecology in tandem with the ASC. The report is included as Attachment O to the ASC.

All field surveys were conducted on an area totaling 808 acres, known as the Survey Area.

2a. Habitat Mapping

In 2019 and 2020, biological field survey protocols were provided to WDFW by OneEnergy for review and comment prior to completion of any field work. A component of the biological field surveys was to map and characterize habitat types within the Survey Area to identify the extent and condition of habitat using classifications described in the *Washington Wind Power Guidelines* (Guidelines) developed by WDFW. This approach, although not tailored to *solar* development, was recommended by WDFW during survey protocol review. See Part 3a below for additional discussion on the Guidelines.

Table 2 below summarizes the habitat types found within the Survey Area and Figure 5 (pg. 19) shows their locations.

Table 2. Habitat types observed during combined surveys at the Goose Prairie Solar, Yakima County, Washington.

Habitat Type	Area (ac)	% Composition
Conservation Reserve Program	487.3	60.3
Shrub-steppe - Intact	149.5	18.5
Shrub-steppe - Degraded	45.3	5.6
Eastside (Interior) Grassland	95.0	11.8
Cropland	16.9	1.8
Pasture Mixed Environ	14.5	2.1
Total	808.5	100

As described in section 4.3 of the Wildlife and Habitat Survey Report, the most prevalent habitat type was land enrolled in the Conservation Reserve Program (CRP). CRP land is clearly defined and located entirely within the area north of State Route 24 and south of Den Beste Rd and was composed primarily of non-native species including downy brome, crested wheat, Russian thistle, blue mustard, black mustard, western tansymustard, and yellow salsify. Non-native plant species have been shown to degrade the value and function of CRP for wildlife by outcompeting more desirable native plant species (Vandever and Allen 2015). During its 2019 site visit, WDFW noted verbally that the CRP land appeared to be of relatively lower habitat value due to the extensive non-native species. The CRP contract for the site is set to expire on September 30, 2022. If not for construction of the Facility, the land currently subject to CRP management would likely return to agricultural use for either grazing or Cropland.

Shrub-steppe habitat was the second-most abundant habitat type. However, not all shrub-steppe habitat provided the same potential habitat function and value. To provide more accurate findings, based upon scientific criteria, WEST created two categories: *degraded* shrub-steppe and *intact* shrub-steppe. WEST evaluated the shrub-steppe habitat patches (a) against known stressors (NRCS 2004) and (b) relative to each other, to determine whether specific patches were degraded and intact.[1]

This mapping confirmed a clear distinction between the intact shrub-steppe habitat that WDFW initially identified as higher-quality habitat early in the consultation process and the less-valuable, degraded shrub-steppe habitat found immediately north of Den Beste Rd and south of the transmission line. Within the degraded area, active cattle grazing has reduced (or eliminated) the shrub height, degraded herbaceous cover and caused compacted soils. Evidence of supplementary cattle forage (e.g., hay) was evident throughout the degraded shrub-steppe habitat. Intact shrub-steppe comprised the remainder of the shrub-steppe habitat and included areas along the dry wash and paddocks where livestock grazing was less intense as evidenced by increased shrub height, shrub density, and understory vegetative cover. See Part 3b below for additional discussion on the potential causes and reduced function and value of degraded shrub-steppe habitat.

2b. Soil Types

Silt loam soils were the primary underlying soil type accounting for 95.2% of the soil types, with only Finley cobbly fine sandy loam as the non-silt soil type (Figure 6, Table 3). The primary soil type found in the CRP habitat was Willis silt loam, 2 to 5% slopes and is the same underlying soil type as that found in the intact shrub-steppe habitat differing only in the percent slope (Willis silt loam, 8 to 15% slopes). Silt loam soils are characterized by deep soil horizons that lack the basalt bedrock and shallow, rocky soil structure indicative of lithosols, an ecologically sensitive soil type.

[1] WEST did not measure vegetation or complete a botanical survey during the habitat mapping.

Table 3. National Resource Conservation Service soil types at Goose Prairie Solar, Yakima County, Washington. Map symbols reflect the soil series ID shown in Figure 6.

Map Symbol	Soil Description	Acres
36	Finley cobbly fine sandy loam, 0 to 5 percent slopes	38.6
65	Kiona stony silt loam, 15 to 45 percent slopes	2.1
68	Lickskillet very stony silt loam, 5 to 45 percent slope	6.6
83	Moxee slit loam, 2 to 15 percent slopes	168.6
93	Pits	5.6
101	Ritzville slit loam, 8 to 15 percent slopes	1.4
187	Willis slit loam, 2 to 5 percent slopes	399.5
188	Willis slit loam, 5 to 8 percent slopes	65.8
189	Willis slit loam, 8 to 15 percent slopes	121.0
Total		809[1]

[1] Minor difference in total acreage due to NRCS mapping service and rounding

3. Impact Calculations and Micrositing Considerations

In some permitting contexts, including this one, renewable energy developers need to calculate a project's impacts prior to having the final design. For wind energy developers, the turbine locations might be known but the turbine type unknown. For solar energy developers, the leased boundary might be known but the alignment of the photovoltaic (PV) panel array and extent of permanent impacts may be unknown. Thus, the developer must account for the uncertainty when estimating impacts but provide enough resolution to satisfy the permitting process.

In its ASC, OneEnergy is proposing a micrositing approach with a maximum acreage within a broader micrositing boundary. The Facility will have a maximum footprint of 625 acres (the Facility Area) that will be wholly located within the 789-acre Facility Area Extent (see Figure 1). (Note that the field survey was completed for an 808-acre area (the Survey Area) which wholly encompasses the Facility Area Extent.) The micrositing flexibility allows for the ability to refine the design including spacing of solar modules and the location of associated access roads, collector lines and staging areas.

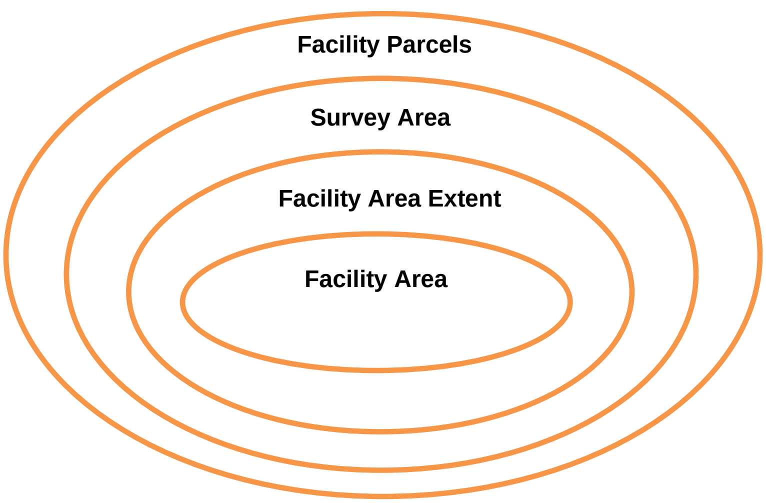


Figure 1: Area Definitions

A Preliminary Site Plan is provided as Attachment B to the ASC. While the final layout may change within the parameters described above, OneEnergy proposes to calculate the Facility's temporary and permanent impacts and their associated compensatory mitigation requirements based on this Preliminary Site Plan, and then replace the acreages used for the calculations based on the final design once it is complete.

3a. Wind Power Guidelines

At present, PV-specific solar power guidelines for solar energy developers to utilize in consideration of mitigation in the State of Washington are not available. In lieu of solar-specific guidelines, WDFW has recommended use of the 2009 Wind Power Guidelines, which were published following a multi-year stakeholder process targeted at the specific impacts unique to wind energy facilities, as the guiding document for compensatory mitigation for both wind and solar development, despite different impacts (WDFW 2009).

Under the Wind Power Guidelines, WDFW assigns a ratio of land needed for restoration or acquisition to land impacted (Table 4) for both permanent and temporary impacts.

Permanent impacts to habitat are defined in the Guidelines as "those that are anticipated to persist and cannot be restored within the life of a project." The Guidelines include the following as permanent impacts: "new permanent roads, operations and maintenance facilities, turbine pads, impervious and/or areas devoid of native vegetation resulting from project operations." In lieu of turbine pads, solar facilities require mounting infrastructure. Thus, in the context of solar, OneEnergy proposes the following impacts be considered permanent: 1) the total area impacted by the steel support posts and 2) the concrete pads for electrical equipment. Areas under and between the solar arrays will be revegetated with a native seed mix selected in coordination with WDFW; because it will not be "devoid of native vegetation", OneEnergy does not include these areas in the calculation of permanent impacts. See section 4c below for discussion related to residual habitat benefits.

Temporary impacts to habitat are defined as "those that are anticipated to end when construction is complete and the impacts have been restored." The Guidelines state that the following are temporary impacts: "trenching for placement of underground cables, construction staging areas, lay-down areas, and temporary construction access." Temporary impacts also include "the portions of road corridors that are used during construction but that are re-vegetated at the end of construction, but do not include the portions of roads that continue to be used for project operations."

Table 4. Habitat classification and mitigation ratios (WDFW Wind Power Guidelines, 2009).

Habitat Classification	Habitat Type	Mitigation Ratio	
		Temporary Impact	Permanent Impact
Class II	Shrub-steppe	0.5:1 Mitigation/Restoration	2:1 Acquisition
Class III	Eastside (Interior) Grasslands, CRP Lands	0.1:1 Mitigation/ Restoration	1:1 Acquisition
Class IV	Croplands, Pasture Mixed Environs	No Mitigation Required	No Mitigation Required

3b. Habitat Function and Values

In the Guidelines, WDFW discusses how existing habitat functions and values could affect the level of compensatory mitigation necessary to fully offset impacts from development. However, WDFW does not define how functions and values are quantified in the field nor does it make the coarse distinctions for how habitat could be qualified between degraded habitat and intact habitat. Land use practices such as livestock grazing or agricultural conversion can result in degraded habitat that no longer provides the similar function and value to wildlife or native plants that undisturbed habitats provide. With ongoing agricultural practices, the degraded habitats will not provide such values in the future.

Shrub-steppe habitat can transition to a degraded state through several mechanisms including drought, poor grazing practices, or poor shrub management. The resulting habitat could have an appropriate shrub component but be dominated by cheatgrass, medusahead and other exotic annual grasses and forbs. Alternatively, the removal of grass and forb component could result in an excessive shrub understory (NRCS 2004).

Within the Facility's Survey Area, the degraded shrub-steppe habitat has a demonstrably lower function due to reduced shrub height, herbaceous cover and compacted soils. Based on these physical characteristics, reduced function and value was evidenced by a lack of sensitive species observed during biological surveys in the degraded area relative to the surrounding landscape as demonstrated in the Wildlife and Habitat Survey Report. Absent Facility construction, restoration of this particular degraded shrub-steppe habitat would be unlikely given continued management under private-enterprise agricultural practices. In the event restoration to be attempted, it would take a prohibitively long time and face clear limitations considering the substantial degradation and extent to which this area has transitioned away from intact shrub-steppe.

EFSEC requires that "[m]itigation credits and debits shall be based on *a scientifically valid measure of habitat function, value, and area*." WAC 463-62-040(2)(c). The scientifically valid methods employed in WEST's Wildlife and Habitat Survey Report, See Att. F to ASC at 6, measured material differences in the function and value of the intact and degraded shrub-steppe habitats within the Survey Area. For purposes of habitat classification and assigning mitigation ratios, because the degraded shrub-steppe habitat represents a materially distinct habitat function and value that more closely resembles Class III habitat, it should not be considered Class II habitat. OneEnergy proposes that the degraded shrub-steppe be considered a Class III habitat for assigning mitigation ratios.

3c. Calculating Impacts and Compensatory Mitigation for Goose Prairie Solar

Applying the calculation as described above and further in the Wind Power Guidelines, OneEnergy has determined the preliminary permanent and temporary impacts by habitat type based on the Preliminary Site Plan. The impacted acreages by habitat type are shown in Table 5 and the resulting calculated number of "mitigated" acres are shown in Table 6. Based on the Preliminary Site Plan, the Facility requires 0.76 acres of mitigation or restoration and 32.25 acres of acquisition for mitigation of the habitat impacts.

As discussed in the Guidelines, options for developers to mitigate habitat impacts can include the restoration of temporarily impacted areas and acquisition of in-kind habitat types and quality. Acquisition of replacement habitat will be selected in consultation with WDFW and EFSEC and with the considerations provided in Section 5.2B of the Wind Power Guidelines. If suitable replacement habitat of in-kind type and quality cannot be identified, mitigation "By Fee" may be considered as an alternative to acquisition of habitat pursuant to Section 5.4 of the Guidelines.

Table 5. Impacted acres by habitat type at Goose Prairie Solar, Yakima County, Washington.

		Acres Impacted	
Classification	Habitat Type	Temporary Impact	Permanent Impact
Class II	Shrub-steppe -Intact	0.37	3.25
Class II	Shrub-steppe - Degraded[2]	0.12	2.81
Class III	Eastside (Interior) Grasslands, CRP Lands	5.58	22.96
Class IV	Croplands, Pasture Mixed Environs	0.00	0.51
Total		6.07	29.53

Table 6. Mitigated acres by habitat type at Goose Prairie Solar, Yakima County, Washington.

		Acres Mitigated	
Classification	Habitat Type	Temporary Impact	Permanent Impact
Class II	Shrub-steppe -Intact (0.5:1, 2:1)	0.19	6.5
Class II	Shrub-steppe – Degraded (0.1:1, 1:1)[3]	0.01	2.81
Class III	Eastside (Interior) Grasslands, CRP Lands (0.1:1, 1:1)	0.56	22.94
Class IV	Croplands, Pasture Mixed Environs (0:1, 0:1)	0.00	0.00
Total		0.76 ac of mitigation/restoration	32.25 ac of acquisition

[2] See discussion at Part 3b regarding appropriate degraded shrub-steppe classification.

4. Mitigation and Additional Benefits Unaccounted for in the Calculation

This approach for calculating the compensatory mitigation requirement does not take into account certain additional steps OneEnergy has taken to-date to (1) avoid and (2) minimize impacts, (3) provide residual habitat function, and (4) serve climate benefits that improve cumulative habitat function. These avoidance and minimization measures and additional benefits are described as follows. See Table 7 for a summary of the mitigation tactics taken by OneEnergy for the Facility.

4a. Avoidance

The first action of avoidance mitigation that OneEnergy undertook was to move the entire Facility from its original site to a new site twelve miles away, following feedback provided by WDFW in 2017. OneEnergy abandoned the preliminary site after capital had already been invested in site control acquisition and an interconnection queue position had been filed with BPA. OneEnergy relocated the Facility to a less ecologically sensitive area, securing new site control and a new interconnection position. Land use surrounding the current Facility location consists of active agricultural practices and livestock grazing. The Facility Area Extent is bisected by the BPA Midway-to-Moxee 115-kilovolt transmission line and adjacent to State Route 24 to the south. In response to WDFW feedback, the Facility is strategically located in a modified landscape to avoid sensitive environmental resources, reduce new road construction, overhead transmission lines and habitat fragmentation.

The second action is OneEnergy's commitment to avoid, and leave unfenced, the shrub-steppe sage draw located in between the northern and southern portions of the Facility (Figure 4). The only Facility components in this area will be the collector electrical infrastructure and civil road infrastructure necessary to connect the Facility. Avoidance of PV and fencing infrastructure in this approximately 62-acre area maintains higher-value habitat and leaves the corridor open for terrestrial movement and wildlife connectivity function.

4b. Minimization

OneEnergy has also taken multiple steps to minimize impacts in the design of the Facility. Using proper siting and facility design, PV solar energy facilities can be constructed to minimize vegetation removal by leaving habitat in place that could provide value to wildlife by facilitating movement, retaining plant pollinator species, and benefiting ground nesting birds (Sinha et al. 2018, Walston et al. 2018).

To minimize impacts to meso-carnivores and small mammals, the Facility has committed to raising the bottom of the fence by four inches above grade. To minimize impacts to birds and animals that attempt to jump the fence, razor wire will not be used with the fence. These fence specifications are in direct response to WDFW request. To minimize impacts to intact shrub-steppe, the proposed facilities north of the sage draw are intentionally located on areas of lower quality shrub-steppe habitat while avoiding other areas of intact shrub-steppe habitat to the extent practical.

Additionally, construction and operation best management practices will be employed. Some of these BMPs include stormwater and erosion control measures to minimize impacts to waterways and native vegetation, emergency and spill plans to reduce the risk and impact of hazardous spills.

Others include noxious weed control, downward-directed security lighting, and above-ground power lines designed according to guidelines in the Avian Power Line Interaction Committee standards.

As detailed above, OneEnergy will develop a Habitat Restoration and Mitigation Plan, in consultation with WDFW and EFSEC, which will include details for revegetation of temporarily disturbed areas, including identification of an appropriate seed mix, the timing for restoration and a plan for monitoring the success of revegetation.

4c. Residual Habitat Value

By implementing low impact principles, The Nature Conservancy and other environmental organizations have noted the residual benefits to wildlife and habitat from solar energy development[3]. OneEnergy is employing these low impact principles, including allowing for wildlife connectivity, preferentially using degraded land, protecting water quality and avoiding erosion, revegetating with native plants and avoiding on-site habitat.

Studies conducted by the National Renewable Energy Laboratory (NREL) and universities find residual benefits to soil physical and chemical properties when combined with thoughtful revegetation practices (Choi et al. 2020). Portions of the Facility that are temporarily disturbed during construction (e.g. the areas underneath and between panel rows) will be revegetated with a native plant seed mix selected in coordination with WDFW.

Finally, scientific data suggests residual habitat function in areas impacted by solar development. A study conducted at the Topaz Solar Farms in San Luis Obispo County, California documented higher vegetation productivity on site than in surrounding reference sites (Sinha et al. 2018). Numerous wildlife species were recorded using habitat within that project site, including 27 bird species, eight mammal species, and four reptile species (Sinha et al. 2018).

4d. Positive Climate Impacts

Furthermore, in light of the increasing threat to wildlife and habitat due to the cumulative impacts of climate change, renewable energy is serving a public benefit as a carbon-free energy generation source, which is credited for facilitating the decarbonization of the electrical grid. To combat the effects of climate change, the State of Washington enacted legislation in 2019, the Washington Clean Energy Transformation Act, which will transition the State to 100 percent clean electricity by 2045.

The National Audubon Society has promoted the development of solar energy to reduce emissions associated with climate change, which Audubon as identified as the number one threat to birds[4]. However, with regard to wildlife and habitat impacts in the State of Washington, negative site impacts trigger compensatory mitigation, yet the *positive impacts* are not accounted for as a credit

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3 https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/Documents/ED_TNCNCPrinciplesofSolarSitingandDesignJan2019.pdf

4 https://www.audubon.org/climate/survivalbydegrees *as cited in*: https://www.audubon.org/news/audubon-study-confirms-solar-major-economic-driver-south-carolina

to cumulative habitat improvement that occurs when a carbon-free generation facility is constructed in lieu of a fossil fuel plant in serving public energy needs. OneEnergy looks forward to further discussing the positive impacts to wildlife and associated ecosystems derived from the Facility's contribution to reducing greenhouse gas emissions from the electricity sector.

Table 7. Summary of Considerations Pertinent to Compensatory Mitigation

Mitigation Tactic	Detail
Avoidance	Facility location moved 12 miles to a less ecologically sensitive area, per WDFW feedback
Avoidance	Approximately 62-acre intact shrub-steppe draw area excluded from PV placement and fencing infrastructure in Facility design, intentionally left unfenced to facilitate terrestrial movement and wildlife connectivity function
Avoidance & Minimization	OneEnergy largely avoided higher-quality, intact shrub-steppe areas in favor of CRP and low-quality, degraded shrub-steppe in facility design
Minimization	Fence bottom raised four inches to facilitate terrestrial wildlife movement
Minimization	Construction and Operations Best Management Practices as outlined in the ASC, including but not limited to: • turning off unnecessary lighting at night and directing light downward to minimize horizontal or skyward illumination • designing above-ground power lines to guidelines outlined in the Avian Power Line Interaction Committee (APLIC) standards • Implementation of noxious weed control and stormwater pollution prevention plans
Minimization & Improvement	Habitat restoration with native plant seed mixture; potential for improvement of Eastside Grassland habitat within the CRP area, which are currently dominated by non-native species
Coordination	OneEnergy will develop a Habitat Restoration and Mitigation Plan in coordination with WDFW as described above
Other	Residual habitat benefits not considered in the mitigation framework
Other	Consideration of alignment between the State's renewable energy goals and habitat mitigation policy: in the context of climate change, renewable energy is yielding a cumulative benefit for habitat and wildlife yet the habitat mitigation framework only looks at site-specific impacts in a negative light.

5. Conclusion and Next Steps

In sum, to determine the value of compensatory mitigation, OneEnergy has calculated the acreages of temporary and permanent impacts to habitat based on the Wind Power Guidelines, as recommended by WDFW specifically for this Facility. This acreage reflects the expected calculation of the compensatory mitigation required by WDFW, but does not take into account other important considerations noted above, including the presence of degraded shrub-steppe habitat, the mitigation actions already taken by OneEnergy in the siting and design of the Facility, and other additional benefits not encompassed within the mitigation framework.

As a next step, OneEnergy proposes to meet with WDFW and EFSEC to discuss Facility benefits and creative mitigation solutions that incorporate 'customized or alternative' mitigation packages,' per Section 5 of the Wind Power Guidelines, with the ultimate goal of determining the appropriate compensatory mitigation required to demonstrate the Facility creates "no net loss of fish and wildlife habitat functions or values" as required by WAC 463-62-040. Ideally, the first meeting would be held within fifteen business days of the ASC submission and would conclude within 60 days of that first meeting. The agreed-upon compensatory mitigation would be formally submitted as supplemental information to the ASC for consideration in the SEPA determination and Site Certificate Agreement issuance.

In accordance with WAC 463-60-332(3) and YCC 16C.11.060, OneEnergy will develop and implement a Habitat Restoration and Mitigation Plan, which will describe the implementation of wildlife and habitat mitigation measures for the Facility, including the compensatory mitigation. OneEnergy will consult with WDFW and EFSEC in development of this plan, which would be finalized following issuance of the SCA and submitted to EFSEC for approval at least sixty days prior to site preparation.

Literature Cited

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Figures

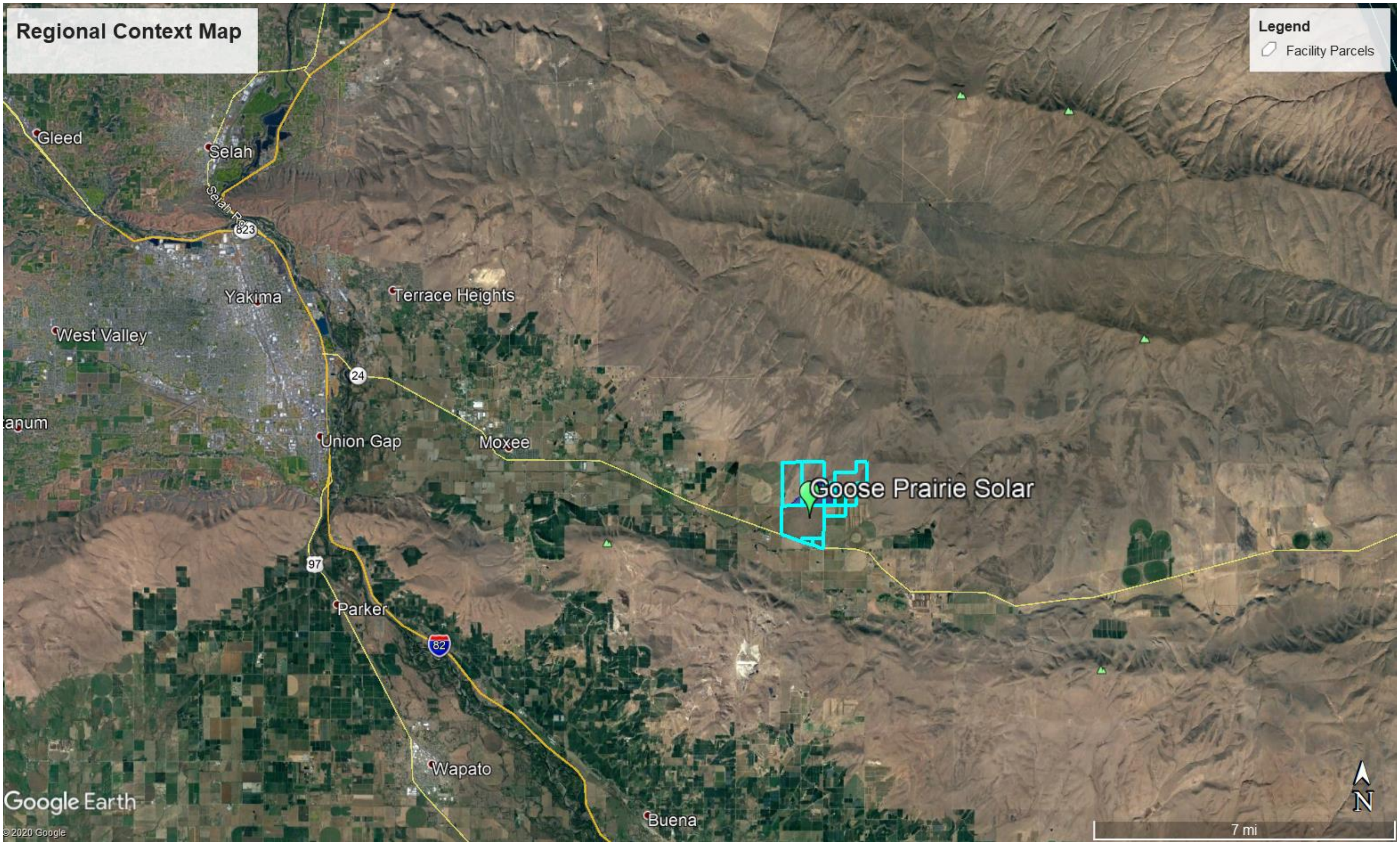

Figure 2. Regional Context Map

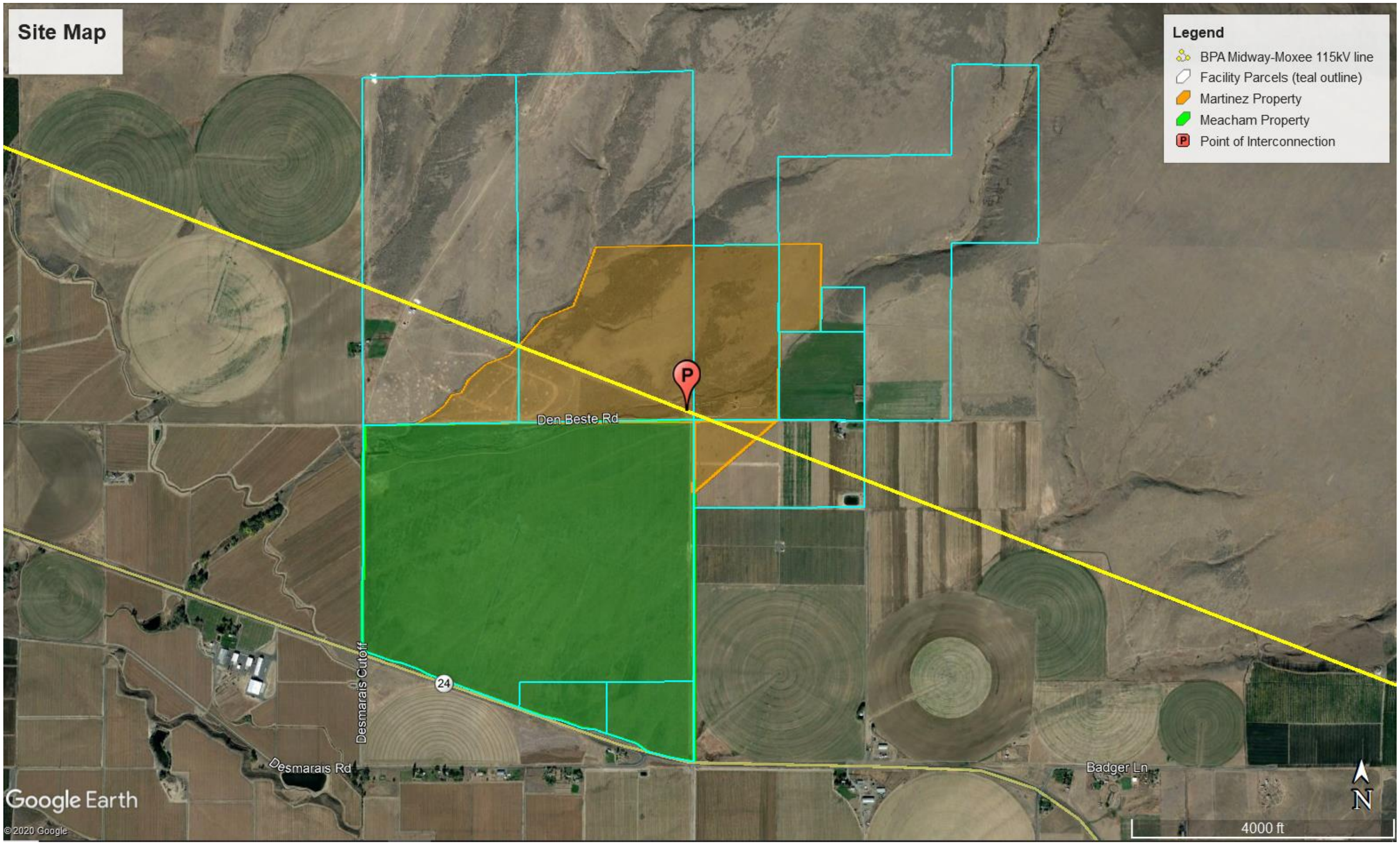

Figure 3. Site Location and Land Ownership

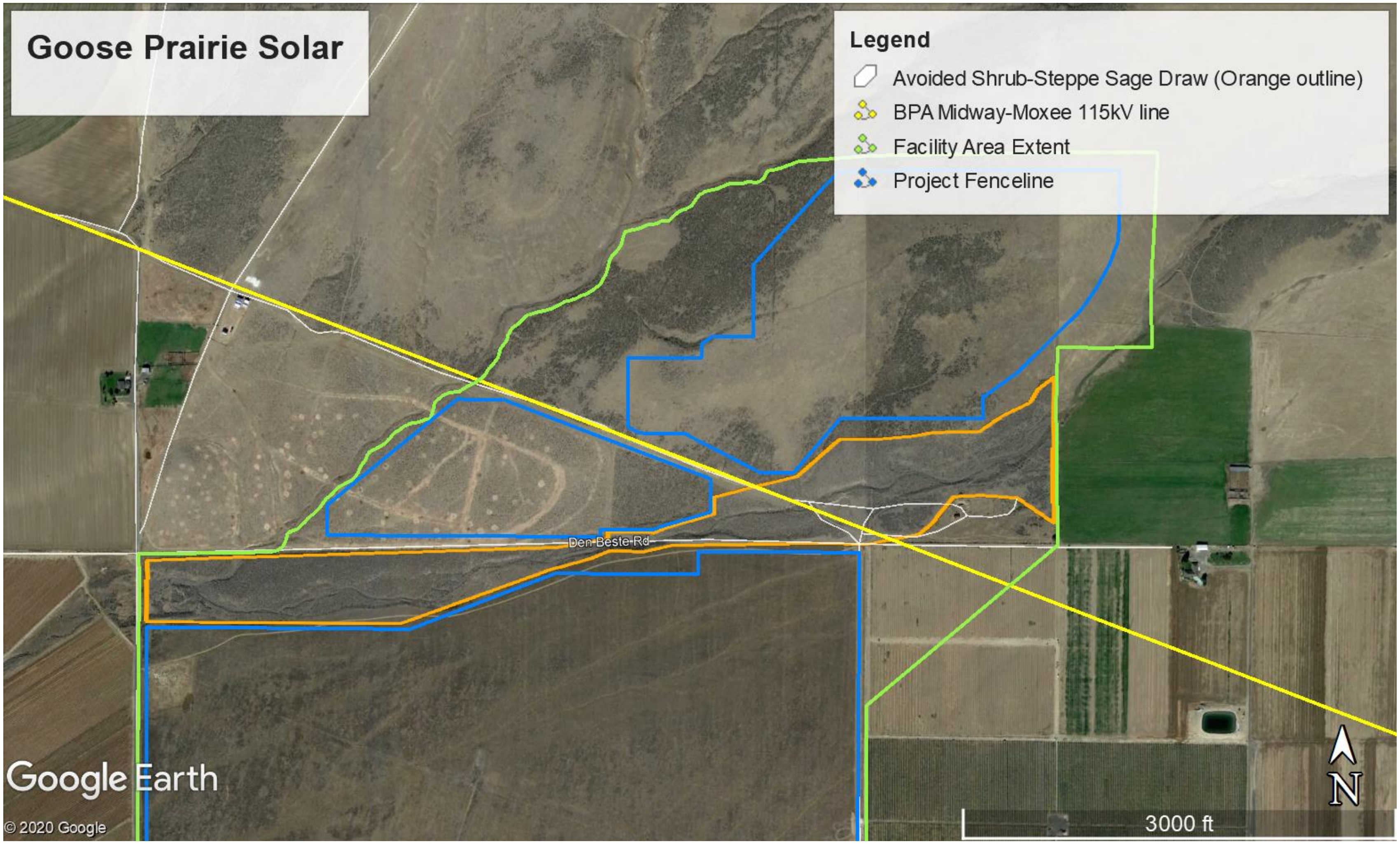

Figure 4. Location of Avoided Shrub-Steppe Sage Draw

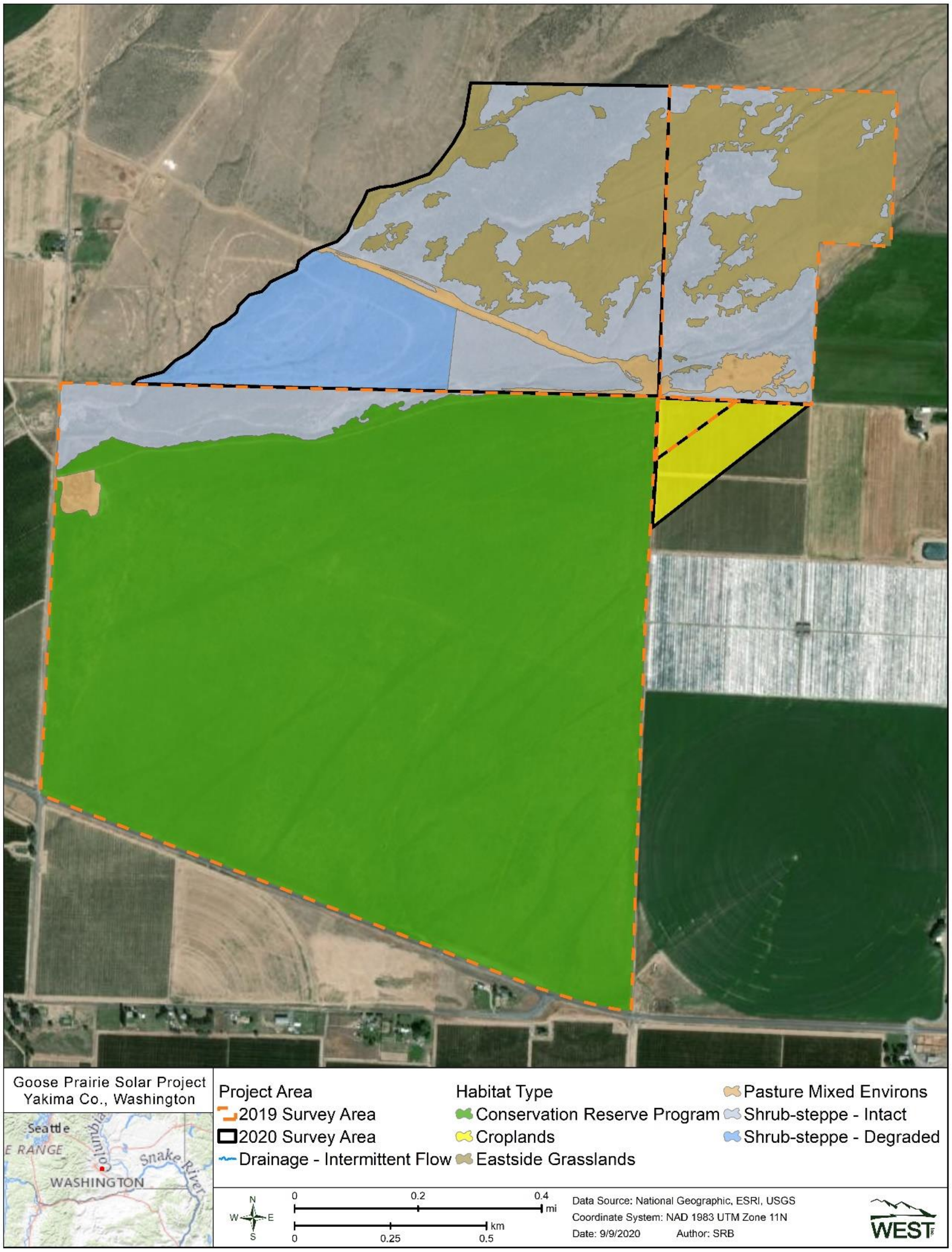

Figure 5. WDFW (2009) habitat types within the Goose Prairie Solar Survey Area for 2019 and 2020, Yakima County, Washington.

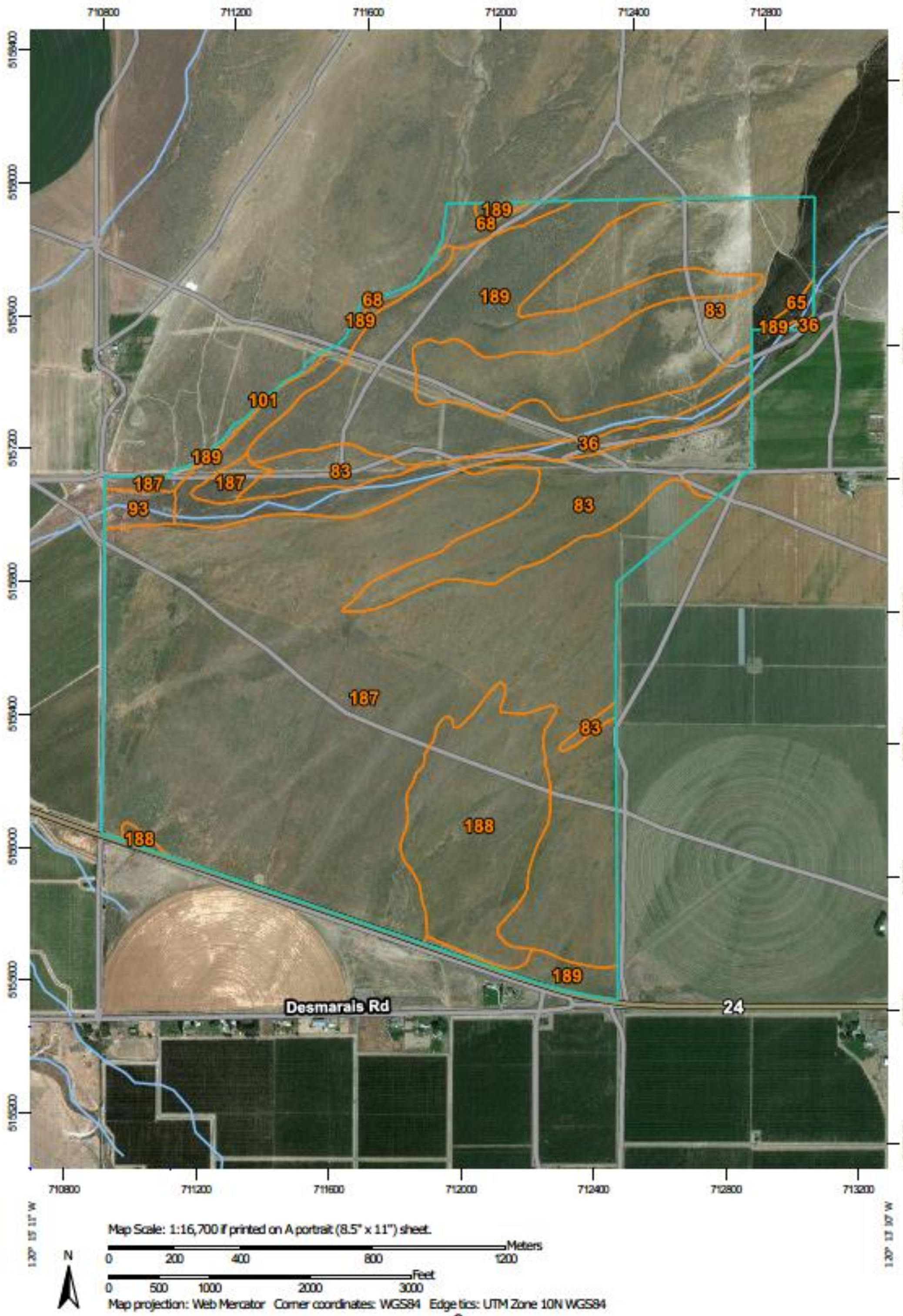

Figure 6. NRCS soil types for the Goose Prairie Solar Survey Area, Yakima County, Washington. The blue line represents the Survey Area; soil types are identified in Table 3.

Attachment 1: WDFW Consultation Letters

State of Washington
DEPARTMENT OF FISH AND WILDLIFE
South Central Region • Region 3 • 1701 South 24th Avenue, Yakima, WA 98902-5720
Telephone: (509) 575-2740 • Fax: (509) 575-2474

August 17, 2018

OneEnergy Renewables, Inc.
Attn: Ann Siqveland
2003 Western Avenue
Suite 225
Seattle, WA 98121

Subject: **Review of two potential solar power development sites**

Dear Ann

I received your e-mail request to provide comments on the possible OneEnergy Renewables solar development sites on July 25, 2018. Thank you for the early opportunity to provide our ideas on the "County Line" and "Goose Prairie" potential sites. Their characteristics reflect much of WDFW's input as provided during our first meeting. Our Habitat and Wildlife staff team has identified merit in both of these locations. The following information should be considered somewhat cursory and not final.

County Line Solar Project site-

Pros/Cons:
This potential site is at the developing edge of irrigated agriculture. Thus, it would already be subject to elevated levels of activity disturbances from both Ag and residential sources. It is recently burned and probably grazed, so site development is unlikely to have much impact to any existing vegetation of high habitat value. Historic soil profiles are likely to be intact. So the land retains its likelihood of returning to a high-quality shrub/bunchgrass land cover in the absence of fire and heavy grazing.

A sizeable ephemeral stream runs through the NW quarter of Section 13 and lesser expressions of both channelized and sheet flow traverse the remainder of the site. Channelized features can be associated with increased forage and wildlife cover. Some level of protection for those are usually prescribed by the local jurisdictions, which could result in additional needs for mitigation.

Habitat Status & known species use:
Portions of the property in both counties are Priority Shrub Steppe Habitat. While the Yakima County portion is designated by the jurisdiction as in the Upland Wildlife Habitat Conservation

Area – Critical Area, the Benton County portion will be part of a Fish and Wildlife Conservation Area – Critical Area. Considerable habitat potential exists for the proposed site as a whole. Priority functions of the property are Wintering Habitat for the Rattlesnake Ridge Elk Herd and inclusion in the Rattlesnake Hills Sage Grouse Management Unit area. There is a lack of relevant records in our sensitive species databases, which is likely due to a long-term lack of presence and effort. Properly viewing the property has not been possible without first securing the appropriate permission from private owners. That may never have happened.

Surveys & site review needed:
Habitat and soil types across the entire property should be mapped. Ground surveys for wildlife presence and usage will also be needed, and might be done concurrent with habitat mapping. April is the suggested time to start the wildlife surveys.

Mitigation scenarios:
Construction of the initial solar power development can be focused within the portions of lower quality habitat. While some grasses and shrubs possibly occupied by ground squirrels can grow between panels, caution towards any unknown harmful effects to raptors that might prey on the squirrels is an issue. Wind power development in shrub-steppe is often mitigated at the ratio of 2:1. However, our experience with solar power development is that it results in a larger amount of non-mitigatable impacts compared to those of wind turbines. Therefore, 2:1 should be taken as a minimum standard for offsetting, with well-functioning shrub-steppe, the installation of solar panels in lesser-functioning habitat areas.

I remain interested in creative compensatory mitigation solutions that contribute to a reduction in habitat losses resulting from frequent fires. We can discuss those after a project location is better determined.

Goose Prairie Solar Project site-

Pros/Cons:
This site avoids impacts to migratory connectivity versus an alternative siting “out in the sage”. It is mostly a grassland within the developed edge of cultivated agriculture. State Highway 24 borders its southern edge. An elevated level of activity disturbance is associated with the location. Habitat and design shouldn’t be affected by drainage features. Historic soil profiles may be mostly intact. So the land retains the possibility of returning to a shrub/bunchgrass land cover of decent quality while in the absence of fire, cultivation, or heavy grazing.

Habitat status & known species use:
The existing habitat is functioning at a moderate-to-low level. Townsend’s ground squirrel and Long-billed curlews have regularly used this field- and raptors regularly hunt the ground squirrels. Ferruginous hawks have been observed doing this there. There are historical records in our database of Burrowing owl near the site. Badgers are also associated with it. The Rattlesnake Hills Sage Grouse Management Unit includes this property.

Surveys & site review needed:
Same as for the County Line site. Soil mapping should capture where the subsoils are disturbed.

Mitigation scenarios:
This property is proposed for a complete build-out including setbacks. Mitigation would need to occur mostly offsite. Otherwise, the considerations are the same as for the County Line site.

Thanks again for the opportunity to provide these comments. Please feel free to contact me with any questions or clarifications you may require. My phone number is 457-9310.

Sincerely,

Eric Bartrand

Eric Bartrand

Department of Fish and Wildlife
Area Habitat Biologist
1701 S 24th Avenue
Yakima, WA 98902

EB:eb

State of Washington
DEPARTMENT OF FISH AND WILDLIFE
South Central Region • Region 3 • 1701 South 24th Avenue, Yakima, WA 98902-5720
Telephone: (509) 575-2740 • Fax: (509) 575-2474

March 19, 2019

Ann Siqveland
Blake Bjornson
Directors / Project Development
OneEnergy Renewables
2003 Western Ave #225
Seattle, WA 98121

Subject: **Guidance for and Preliminary Attributes of the "Goose Prairie" Potential Solar Site in Yakima County, Washington**

Dear Ann and Blake:

Thanks again for providing us the chance on 2/07/2018 to put our eyes on the Goose Prairie property, which OneEnergy is now committing to further study for possible facility implementation. This letter follows-up our conversations and observations from the visit, per request. We are quite familiar with the general habitat settings of most areas in the County, naturally. Yet, the visit reinforced the precise setting and environmental contexts of it. Scott Downes and I put together the following recommendations that reflect our on-site discussions. You will also find a matrix that describes site attributes as we understand them and the comparative challenges and opportunities for protecting sensitive wildlife species within a possible implementation.

Recommendations:

- Facility fences should be at least 8 feet in height and if any barbed wire is put on top, it should be single strand barbed wire. Creative minimization/mitigation options include providing for some passage of small animals through lower area of the fence (larger fence opening, say 6" x 6", i.e. hog fencing panels).
- Grass mixes: WDFW can supply suggestions on mixes that will do well in the area when development gets to that stage. If possible, forbs (pollinator species) should be incorporated into the mix. Mitigation ratios should be consistent with ratios in wind power guidelines. Some flexibility is allowed for good siting, choosing less intact habitats (positive) though the guidelines also allow for somewhat higher ratios if the habitat is found to rate highly for priority species. Any burrow areas located are best avoided, especially if burrowing owl. Additional discussion of mitigation ratios should be done once surveys are conducted.
- Once surveys are conducted in spring, DFW is happy to sit down with OneEnergy again to discuss micro-siting and layout of the sites to better minimize wildlife disturbance and maximize mitigation options.
- All big sage should be avoided and left in the draw as possible. In fact, in places a buffer strip extending "landward" from the existing big sage habitat, which would allow future recruitment of big sage (or planting of big sage), is desirable. This would be recommended even if the project needs to spill to the north side of the draw (area between existing power line to the north and intact big sage habitat to the south). A potential buffer line could be everything north of the existing two-track road, to be discussed further once constraints are known.
- Expanding the buffer of the intact big sage area and locating the project to the north and south of the project also has merit as potential mitigation.
- If avoidance of sage or wildlife connectivity functions is not possible, WDFW and OneEnergy will discuss mitigation options.
- Focus wildlife surveys on these primary species—Townsend's Ground Squirrel, Burrowing Owl, Long-billed Curlew and White and Black-tailed Jackrabbit.

PHS GROUND SURVEYS:

- The entirety of proposed disturbed facility footprints should be surveyed.
- Any trees within ¼ mile of the project footprint should be surveyed for raptor nests during year of construction and if found to be active during year of construction, measures to reduce or eliminate noise to at or below background noise levels should be in place from March 1-July 15.
- Vegetation surveys to assess habitat types. Surveys should map habitat types in accordance with WDFW Wind Power Guidelines habitat types.
- Wildlife surveys should be conducted in April and May (one in each month). Surveys should be conducted walking transects of ~60 meters apart during good weather conditions (low-moderate wind and little-no rain).
- A comprehensive wildlife list should be kept of all species seen.
- All PHS species locations should be recorded (GPS) for discussions on possible avoidance later. If species are identifiable via scat or tracks, they should also be noted.
- If species avoidance is not possible, WDFW and OneEnergy will discuss necessary mitigation options.

I am optimistic of the compatibility with wildlife the described solar facilities will ultimately demonstrate. We greatly appreciate the early engagement you've provided us so far. Please feel free to contact me with any questions or clarifications related to this information you may require. My phone number is 457-9310.

Sincerely,

Eric Bartrand

Department of Fish and Wildlife
Area Habitat Biologist
1701 S 24th Avenue
Yakima, WA 98902

SD,EB:eb

Attachment: Feb2019-Evaluations_table.pdf

Sent E-mail to ann@oneenergyrenewables.com