Exhibit J

Wetlands and Other Jurisdictional Waters

Wheatridge Wind Energy Facility
June 2019

Prepared for

NEXTera® ENERGY RESOURCES

Prepared by

TETRA TECH

Tetra Tech, Inc.

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Attachment J-1. Wheatridge Solar Assessment Wetlands and Waters Report

Acronyms and Abbreviations

ASC	Application for Site Certificate
Certificate Holder	Wheatridge Wind Energy, LLC
CFR	Code of Federal Regulations
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
MW	megawatts
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statutes
RFA 4	Request for Amendment 4
WOS	Waters of the State
WOUS	Waters of the United States

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Amend four existing site certificate conditions and increase the approved MW of the turbines by approximately 12 percent, from 2.5 MW to 2.8 MW.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit J provides information related to regulated waters of the State (WOS) and waters of the United States (WOUS), as required by Oregon Administrative Rule (OAR) 345-021-0010(1)(j) paragraphs (A) through (F), in consideration of the proposed changes. As detailed in the following sections, although the proposed changes provide for a new source of energy generation for the Facility and a larger Site Boundary, the Certificate Holder will not require a removal-fill permit.

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

2.0 Analysis Area

The Analysis Area for wetlands and other waters is the area within the Site Boundary. The Site Boundary is defined in detail in Exhibits B and C. As the Facility within the Approved Site Boundary, presented in the Application for Site Certificate (ASC; Wheatridge 2015) and subsequent amendments, was already reviewed by the Council for potential impacts to wetlands and other waters, this exhibit focuses on the Amended Site Boundary or the solar micrositing corridors (Figure J-1). The Certificate Holder acknowledges that if the location of proposed solar facilities changes to areas outside of these corridors, additional delineations may be required.

3.0 Wetlands and Other Jurisdictional Waters – OAR 345-021-0010(1)(j)(A)

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

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

The following sections summarize wetlands and other waters as identified by the Certificate Holder. Descriptions of the wetlands and other waters are presented in the Wetland Delineation Report (Attachment J-1). Maps showing locations reviewed as part of the desktop evaluation are found in Figure J-1 and Attachment J-1. Delineated features can be found in Figure J-2 and Attachment J-1.

In the ASC, nine wetlands and 61 streams (six of which were WOS) were delineated within the Approved Site Boundary (Wheatridge 2015). As detailed below, no wetlands or jurisdictional waters were identified within the Amended Site Boundary, as proposed by RFA 4.

3.1 Definitions

3.1.1 Federal

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

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or

natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

a) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

b) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

c) Which are used or could be used for industrial purpose by industries in interstate commerce;

4. All impoundments of waters otherwise defined as WOUS under the definition;
5. Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;
6. The territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

Wetlands are defined federally at 33 CFR § 328.3(b) as "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

3.1.2 State

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

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

3.2 Jurisdictional Versus Non-Jurisdictional Waters

Not all wetlands and streams are within the jurisdiction of state or federal regulation, and not all waters falling within the state's jurisdiction fall under federal jurisdiction. For the Facility, several jurisdictional distinctions are important to estimate impacts only to jurisdictional wetlands and other waters.

These include determinations related to the following:

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

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

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

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

Based on the definitions of jurisdictional waters given above, intermittent streams are likely to be jurisdictional under federal regulations if they have physical characteristics such as discernible banks, evidence of sustained surface flow for at least 3 consecutive months of the year, and a surface water connection to other WOUS.

3.3 Desktop Study

Prior to field work, the Certificate Holder reviewed the National Wetlands Inventory and the National Hydrography Dataset (Oregon Spatial Data Library 2018, NWI 2018, NHD 2018), hydric soils data (NRCS 2018), and aerial photographs (FSA 2016) to identify potential wetlands and other waters. Desktop review of the National Wetlands Inventory data and aerial photography showed no wetlands in the Amended Site Boundary. Natural Resources Conservation Service soil survey data indicated that there were no hydric soils. The National Hydrography Dataset showed no perennial streams within the Amended Site Boundary; the intermittent streams in this dataset were assessed in the field and found to be ephemeral (see Section 3.4). Additional information on the desktop evaluation is provided in Attachment J-1.

3.4 Delineation of Wetlands and Other Water Features

3.4.1 Methods

Field investigations for the delineation of wetlands and other waters included pedestrian surveys within the Amended Site Boundary. The field survey and delineation of waters were carried out on August 22 and 23, 2018, and November 9, 2018; all parcels were assessed, and the delineation is complete.

The field investigation utilized the following guidance documents and procedures:

- Arid West Region Supplement (USACE 2008b);
- Wetlands Delineation Manual, Technical Report Y-87-1 (USACE 1987);
- Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015);
- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979); and
- OAR 141-090, Administrative Rules for Wetland Delineation Report Requirements and for Jurisdictional Determinations for the Purpose of Regulating Fill and Removal within Waters of the State.

Additional details regarding methodology are provided in Attachment J-1.

3.4.2 Results

No wetlands or jurisdictional waters were found within the Amended Site Boundary (Figure J-2). Table J-1 presents the seven ephemeral streams and one roadside drainage ditch delineated in field surveys, totaling less than an acre. None of these waters have the characteristics identified in Sections 3.1 and 3.2 for jurisdictional waters, nor do they connect to any downstream waterbody that would be WOS or WOUS; therefore, none of the identified water features are jurisdictional under state or federal regulation. Additional details regarding field results are provided in Attachment J-1.

Table J-1. Summary of Wetlands, Other Water Features, and Roadside Drainage Ditches

Feature Name	Feature Type	Acreage	Connects to WOS/WOUS?
EPH-001	Ephemeral stream	0.11	No
EPH-002	Ephemeral stream	0.03	No
EPH-003	Ephemeral stream	0.05	No
EPH-004	Ephemeral stream	0.03	No
EPH-005	Ephemeral stream	0.20	No
EPH-007	Ephemeral stream	0.31	No

Feature Name	Feature Type	Acreage	Connects to WOS/WOUS?
EPH-008	Ephemeral stream	0.03	No
Total Other Waters Acreage		**0.75**	–
RD1	Roadside Drainage Ditch	0.04	No
Total Roadside Drainage Ditch Acreage		**0.04**	–

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

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

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

As demonstrated in Section 3, there are no wetlands or other jurisdictional waters within the Amended Site Boundary, as proposed by RFA 4. Therefore, no material would be removed from or placed in any WOS, and the Facility would not adversely affect any WOS.

The wetlands and other jurisdictional waters delineated in the ASC are located outside of the Amended Site Boundary (Wheatridge 2015). No changes proposed under RFA 4 would impact the WOS identified in the ASC; therefore, there would be no change to the Council's previous finding: that no WOS would be impacted by the Facility (ODOE 2017).

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

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

As described in Sections 3 and 4, there are no wetlands or other jurisdictional waters within the Amended Site Boundary, and therefore the modifications proposed under RFA 4 will not impact WOS. WOS identified in the ASC would not be impacted by the Facility (ODOE 2017). Therefore, the Facility would not impact WOS, and removal-fill authorization is not required.

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

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

There are no wetlands or jurisdictional waters within the Amended Site Boundary; therefore, no removal-fill authorization is required, and this section is not applicable.

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

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

The Facility will have no adverse impacts to wetlands or other jurisdictional waters, as none are present within the Amended Site Boundary and no WOS identified in the ASC will be impacted by the Facility as previously approved (ODOE 2017). Therefore, no monitoring or mitigation is proposed.

8.0 References

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

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USACE. 2008b. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2). ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

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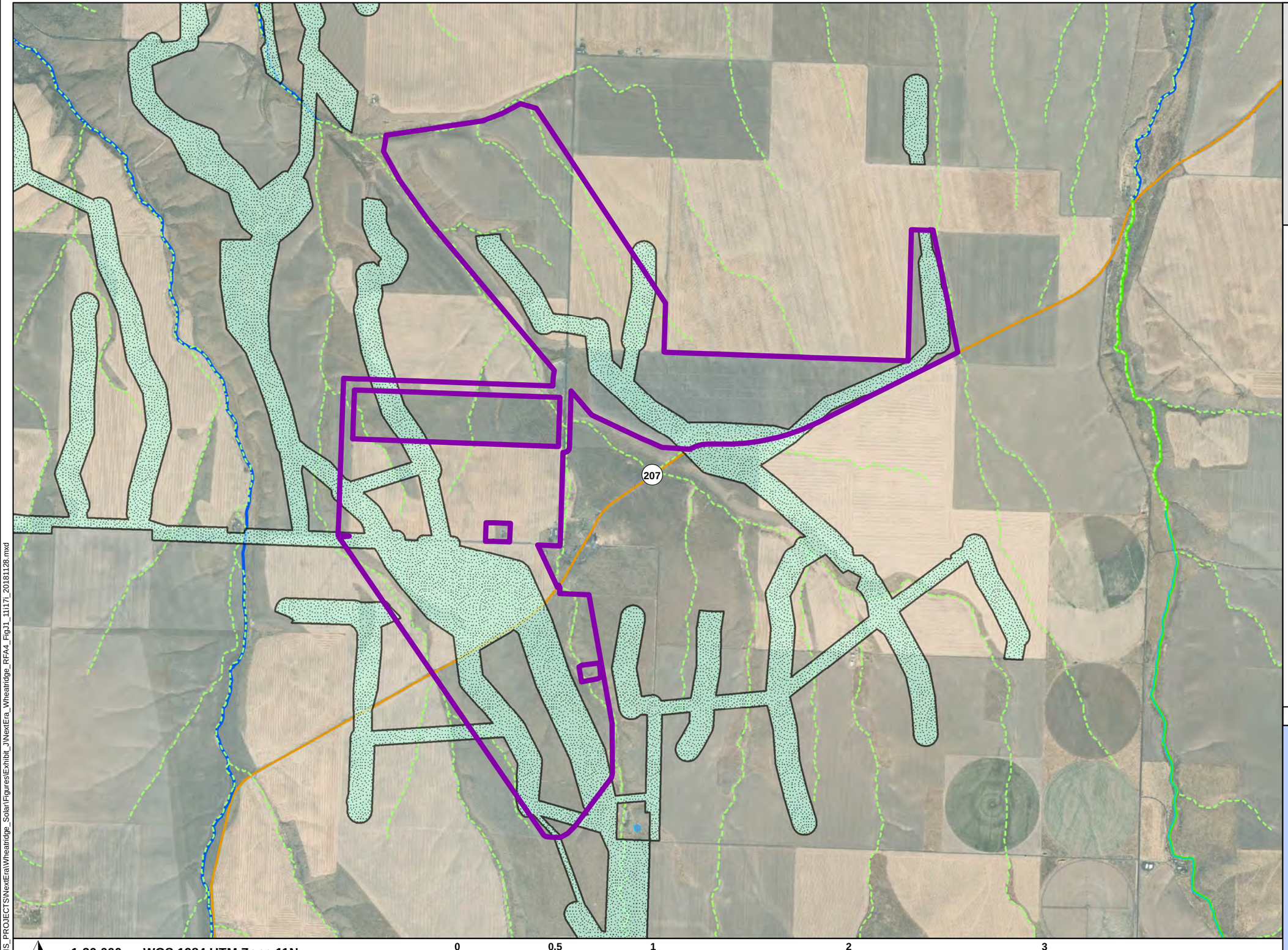
Figures

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure J-1 National Wetland Inventory and National Hydrography Data

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Boundary

NHD Waterbodies

- Perennial Stream/River
- Intermittent Stream/River
- Intermittent Lake/Pond

NWI Waterbodies

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

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Reference Map



1:30,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 Miles

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure J-2 Delineated Waters

MORROW AND UMATILLA COUNTIES, OR

Figure J-2.1

Figure J-2.2

Figure J-2.3

Figure J-2.4

Umatilla County

Morrow County

207

74

74, 207

Approved Site Boundary (Approved Wind Micrositing Corridors)

Amended Site Boundary (Proposed Solar Micrositing Corridors)

State Highway

County Boundary

Map Grid

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Reference Map

Canada

MT

WA

ID

OR

CA

NV

1:130,000 WGS 1984 UTM Zone 11N

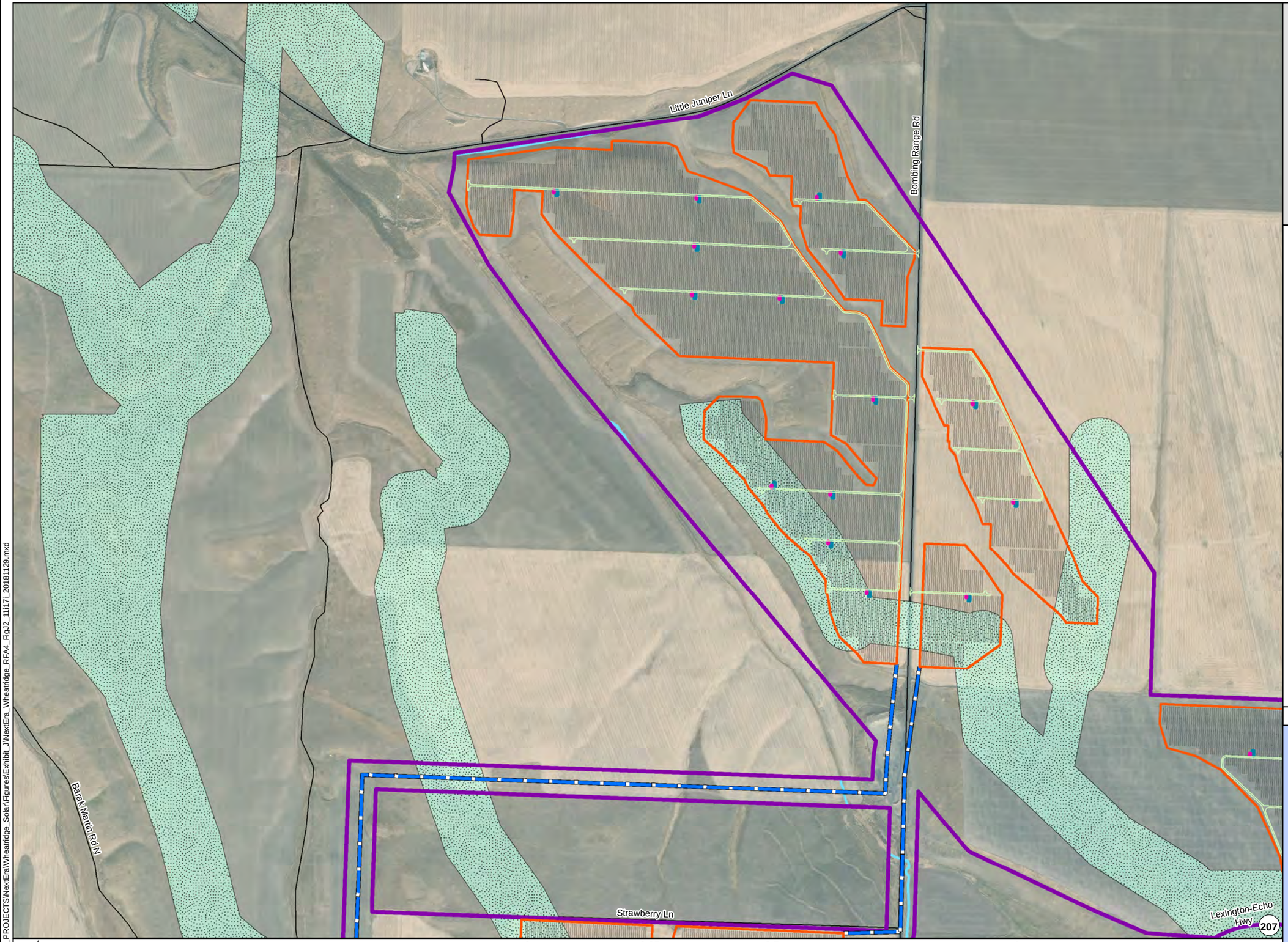
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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure J-2.1
Delineated Waters

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Highway
- Local Road
- County Boundary

Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Solar Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

Water Class - Delineated

- Ephemeral

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Reference Map



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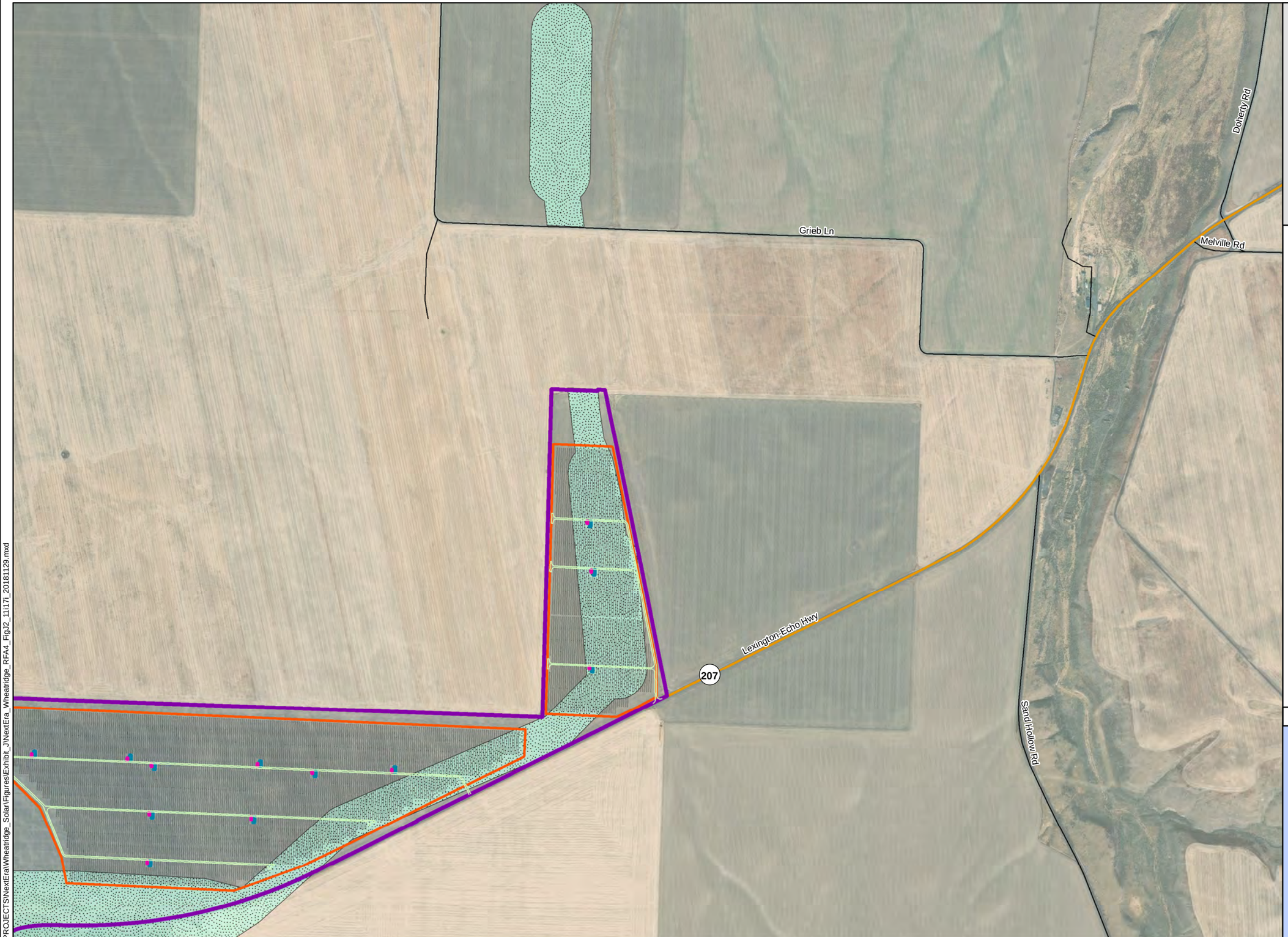
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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure J-2.2
Delineated Waters

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Highway
- Local Road
- County Boundary

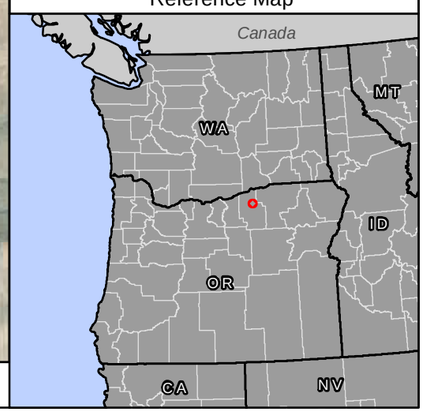
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Solar Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

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Reference Map



1:12,000 WGS 1984 UTM Zone 11N

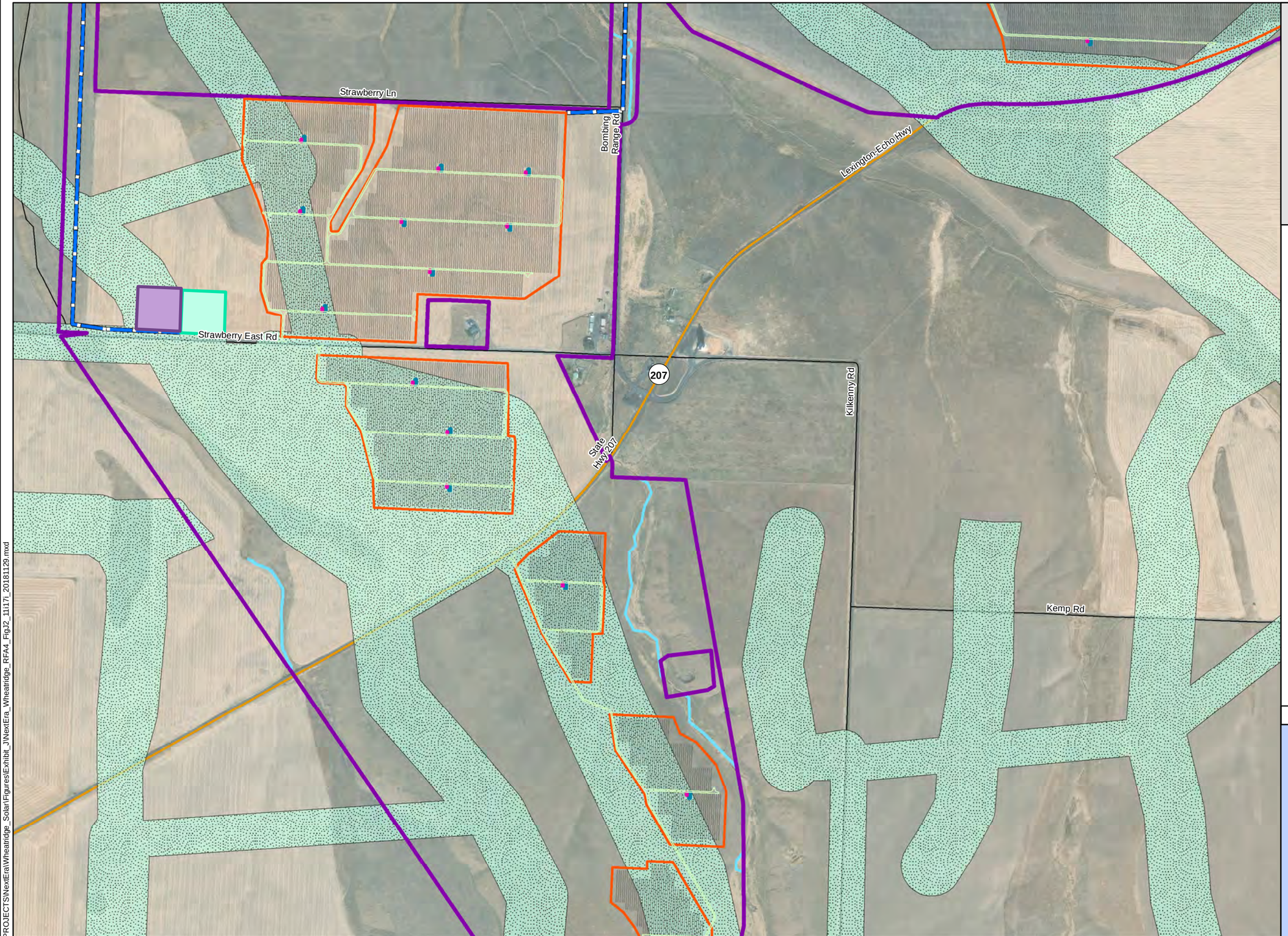
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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure J-2.3
Delineated Waters

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Highway
- Local Road
- County Boundary

Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Solar Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

Water Class - Delineated

- Ephemeral

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Reference Map



1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure J-2.4
Delineated Waters

MORROW AND UMATILLA COUNTIES, OR

Beach Ln

Kilkenny Rd

Baseline Ln

Cutsforth Rd

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Highway
- Local Road
- County Boundary

Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Solar Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

Water Class - Delineated

- Ephemeral

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Reference Map



1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

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Attachment J-1. Wheatridge Solar Assessment Wetlands and Waters Report

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Wheatridge Solar Assessment Wetlands and Waters Report

Prepared for



Prepared By



Tetra Tech, Inc.

November 2018

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Appendix B. Tables

Appendix C. Photolog

Acronyms and Abbreviations

EPA	Environmental Protection Agency
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GPS	Global Positioning System
LRR B	Columbia/Snake River Plateau Land Resource Region
NHD	National Hydrography Dataset
NI	No Wetland Species Indicator
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OAR	Oregon Administrative Rule
OBL	Obligate wetland
Project	Wheatridge Solar Assessment
Tetra Tech	Tetra Tech, Inc.
USDA	US Department of Agriculture
WETS	Climate Analysis for Wetlands Tables

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1.0 Introduction

Wheatridge Wind Energy, LLC contacted Tetra Tech, Inc. (Tetra Tech) to provide siting and permitting support for an up to 310 megawatt (MW) Wheatridge Solar Project (Project) within the existing Wheatridge Wind Energy Facility Lease Boundary. The Project is located in Morrow and Umatilla counties, Oregon (Appendix A, Figure 1).

Tetra Tech completed wetlands and waters surveys on August 22-23 and November 9, 2018. The purpose of these surveys was to confirm the National Wetlands Inventory (NWI) data and the information gathered during a biological reconnaissance survey (spring 2018) on the presence of wetland and water features within the solar siting area.

2.0 Landscape Setting and Land Use

2.1 Study Area

The Project study area for wetlands and other potentially jurisdictional waters is divided into two locations—Wheatridge West and Wheatridge East. Wheatridge West is a 232-acre site located entirely within Morrow County, approximately 5 miles northeast of Lexington, and approximately 7 miles northwest of Heppner (Appendix A, Figure 1). Wheatridge West is bisected by Oregon Highway 207 (OR-207), with sections extending north and south of OR-207 along Strawberry Land and Bombing Range Road. Wheatridge East is a 550-acre site, located in Umatilla County, approximately 16 miles northeast of Heppner in a remote area accessible by gravel roads and unimproved two-track roads.

Appendix A, Figure 2 shows the tax lots crossed by the study area and Appendix B, Table B-3 lists the township, range, and sections within the Project study area.

2.2 Landscape Setting

The Project is located within the Level III Columbia Plateau Ecoregion, and within the further subdivided Level IV Umatilla Plateau (Thorson et al. 2003). In addition, the Project is within U.S. Department of Agriculture (USDA) Land Resource Region (LRR) B, Northwest Wheat and Range Region (NRCS 2006). The U.S. Army Corp of Engineers Wetland Delineation Manual Regional Supplement associated with LRR B is the *Arid West Region (Version 2.0)* (Arid West Supplement) (USACE 2008).

This ecoregion is characterized by a nearly flat to rolling, treeless plateau, underlain by basalt with layers of loess deposits. Glacial features, such as patterned ground, are common. Thicker loess deposits are farmed for grain and chemically fallowed every other season. Rangeland dominates areas of thin loess deposits and other soils. The climate within this ecoregion is arid due to the rain-shadow effect of the Cascade Mountains. Most of this ecoregion receives less than 15 inches of

precipitation a year, with some areas receiving as little as eight inches (OSU 2010). The low annual precipitation supports semi-arid grassland, and sagebrush steppe. Non-native cheatgrass (*Bromus tectorum*) inhabits vast areas of this ecoregion (Franklin and Dyrness 1988).

The ephemeral waterways in all of the Project study area are dominated by cheatgrass and ventenata (*Ventenata dubia*) and often have basin big sagebrush (*Artemisia tridentata spp. tridentata*) both inside the channels and on the banks.

2.3 Land Use

The study area generally encompasses rural lands. Towns within proximity to the Project include the cities of Lexington and Heppner in Morrow County, and Echo in Umatilla County. Much of the historic native grassland and shrub-steppe habitat within the study area has been converted for agricultural use since European settlement in the mid-1800s.

The Wheatridge West Project area is almost entirely in a dryland winter wheat/chemical fallow rotation due to the low annual precipitation rate and lack of irrigation water in this region. The remaining land in the Wheatridge West Project area has been converted from farmland to introduced and native grasses dominated by tall wheatgrass (*Thinopyrum ponticum*) and bluebunch wheatgrass (*Pseudoroegneria spicata*) in deeper soils, and invasive cheatgrass (*Bromus tectorum*) in the shallower soils.

Wheatridge East Project area is mostly dryland wheat/chemical fallow and is bordered by rangeland and ephemeral streams. The rangeland is actively grazed and is predominately populated by introduced grass species.

2.4 NWI, NHD, NRCS, and Local Wetland Inventory Mapped Features

Prior to field work, Tetra Tech reviewed NWI, the National Hydrography Dataset (NHD), hydric soils data, and aerial photographs from the Farm Service Agency to identify potential wetlands and other waters, as described below.

2.4.1 National Wetlands Inventory and Local Wetland Inventory Data

Desktop review of NWI data showed no wetlands in the Project area. There is no Local Wetland Inventory available at this location (ODSL 2018). Figure 3 in Appendix A shows the NWI map layered over the Project study area.

2.4.2 Hydric Soils Data

Seventeen soil map units are mapped in the Project study area (Appendix A, Figure 4; NRCS 2018a). There are no soils with a hydric component within the Project study area. Table 1 below summarizes the soil types found within the study area.

Table 1. Soils Mapped in the Project Study Area

Map Unit Code	Map Unit Name	Acres	Percent of Study Area	Percent Hydric Soil
13E	Gravden very gravelly loam, 20 to 40 percent slopes	152.26	5.35	0
15B	Burke silt loam, 1 to 7 percent slopes	147.69	5.19	0
15C	Burke silt loam, 7 to 12 percent slopes	76.68	2.70	0
28E	Lickskillet very stony loam, 7 to 40 percent slopes	65.25	2.29	0
43A	Kimberly silt loam, 0 to 3 percent slopes	49.38	1.74	0
45A	Ritzville silt loam, 0 to 2 percent slopes	133.92	4.71	0
45B	Ritzville silt loam, 2 to 7 percent slopes	415.37	14.60	0
45C	Ritzville silt loam, 7 to 12 percent slopes	50.65	1.78	0
47E	Ritzville silt loam, 20 to 40 percent south slopes	40.55	1.43	0
48E	Lickskillet very stony loam, 7 to 40 percent slopes	25.79	0.91	0
71B	Warden silt loam, 2 to 5 percent slopes	7.96	0.28	0
75B	Willis silt loam, 2 to 5 percent slopes	1344.38	47.25	0
75C	Willis silt loam, 5 to 12 percent slopes	25.05	0.88	0
78	Xeric Torriorthents, nearly level	58.89	2.07	0
80B	Ritzville silt loam, 2 to 7 percent slopes	0.01	0.00	0
89B	Shano silt loam, 2 to 7 percent slopes	151.32	5.32	0
89C	Shano silt loam, 7 to 12 percent slopes	99.99	3.51	0

2.4.3 National Hydrography Dataset

The NHD shows no perennial streams within the Project study area. There are intermittent stream lines present on the NHD maps within the Project study area and those were used to determine field survey locations.

3.0 Site Alterations

Site alterations are those activities that 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. Land use in the

Project study area is generally dominated by agricultural activities including wheat farming and open range grazing. Tillage practices are changing across the region and the conversion to reduced till and no-till methods of farming have decreased the amount of overland flow and increased the infiltration rates on site. The alterations associated with these practices may have affected the geographic size and/or the hydroperiod of wetlands and other waters. Some waters that were delineated in the study area are likely to have had historically higher flows due to runoff from the farmed fields that wouldn't be present with the new farming practices.

4.0 Precipitation Data and Analysis

Average historical monthly precipitation data and daily precipitation data for the periods preceding and during field work were obtained from the National Oceanic and Atmospheric Administration's National Weather Service (NOAA 2018) (Table 2). The closest geographical location with an Natural Resources Conservation Service (NRCS) WETS table is Pendleton, Oregon, 36 miles to the east and approximately 500 feet higher in elevation than the project area (NOAA 2018).

Total accumulated precipitation between November 1, 2017 and November 9, 2018, was 59 percent of average due to below-average precipitation in almost every month. Based on the precipitation data for the 3 months prior to each of the site visits, it was estimated that groundwater was below what is usually encountered at this time of year (Table 2).

Lower than normal precipitation levels did not affect the delineation of waters as determinations of intermittent versus ephemeral stream were made using indicators described in the Streamflow Duration Assessment Method for the Pacific Northwest (SDAM) (Nadeau 2015). The SDAM relies on multiple indicators independent of the presence/absence of hydrology.

4.1 August 22-23, 2018 Site Visits

For the 10-day span preceding and during field work no precipitation was measured (NOAA 2018). Monthly precipitation for August 2018 was 0 percent of average. Monthly precipitation totals in May, June, and July 2018 were below normal at 39 percent, 40 percent, and 0 percent, respectively.

4.2 November 9, 2018 Site Visit

For the 10-day span preceding and during field work, 0.1 inches of precipitation was measured (NOAA 2018). Monthly precipitation for October 2018 was 123 percent of average. Monthly precipitation in July, August, and September 2018 were markedly below normal at 0 percent, 4 percent, and 0 percent, respectively.

Table 2. Precipitation Data – Current and Historical (Inches)

Precipitation	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov 1-9, 2018	Annual Total to Date (Nov 9, 2018)
Recorded Monthly Precipitation Totals[1] (inches); (Pendleton, OR)	1.56	1.22	1.59	0.74	1.38	1.71	0.65	0.42	0	0.03	0	1.63	0.1	11.03
WETS Accumulated Monthly Averages[2] (inches); (Pendleton, OR)	2.35	1.99	1.94	1.63	1.92	1.65	1.67	1.06	0.39	0.72	0.83	1.33	1.22	18.7
Recorded Precipitation Relative to Average Monthly Precipitation (Pendleton, OR)	66%	61%	82%	45%	72%	104%	39%	40%	0%	4%	0%	123%	8%	59%
Cumulative Water Year Precipitation (inches); (Pendleton, OR)	1.56	2.78	4.37	5.11	6.49	8.2	8.85	9.27	9.27	9.3	9.3	10.93	11.03	11.03

1. NOAA 2018
2. WETS Table for Pendleton, OR

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5.0 Methods

5.1 Pre-field Work

In preparation for the field work, Tetra Tech reviewed NWI, NHD, Local Wetland Inventory, hydric soils data, and aerial photographs to identify potential wetlands and other waters, 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 to assist field staff in identifying the locations of probable wetlands and non-wetland waters within or adjacent to the Project study area.

Wetlands and surface water data were obtained from the Oregon Wetlands Database, which includes NWI and miscellaneous wetland mapping by state and federal agencies, non-governmental organizations, academia and consultants, and from the NHD (Oregon Spatial Data Library 2018; NWI 2018; NHD 2018). Soils data were also obtained from the Oregon Wetlands Database, which includes statewide polygon cover of hydric, partially hydric, and related wetland soils (Oregon Spatial Data Library 2018), as well as from the NRCS Web Soil Survey (NRCS 2018b). Tetra Tech used high-resolution USDA National Agriculture Imagery Program imagery captured during 2016 because it provided recent 1-meter resolution aerial imagery taken during the peak of the growing season (USDA-FSA AFPO 2016).

The following guidance documents and procedures were reviewed:

- Arid West Supplement (USACE 2008);
- Wetlands Delineation Manual, Technical Report Y-87-1 (the Manual) (USACE 1987);
- Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015);
- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979); and
- Oregon Administrative Rules 141-090, Administrative Rules for Wetland Delineation Report Requirements and for Jurisdictional Determinations for the Purpose of Regulating Fill and Removal within Waters of the State.

5.2 Field Work

Field investigations for the delineation of wetlands and other waters included pedestrian surveys within the Project study area. Tetra Tech conducted the field survey and delineation of waters on August 22 & 23, and November 9, 2018. The desktop surface water data were used to focus the non-wetlands water evaluation as necessary.

5.2.1 Wetland Delineations

Wetland presence was determined as per methods in the Manual and the Arid West Supplement. No wetland indicators were found at any of the low elevation sites on the landscape nor were they found within the ephemeral streambeds.

5.2.2 Non-wetland Waters Evaluations

- Flow duration for non-wetland waters was determined using the Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015). Details on mapping methods are presented in Section 8.0.
- Ordinary High Water Mark was determined based on criteria such as changes in the character of the soil, sediment, litter or debris deposition, changes in vegetation, and scour lines.
- 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.
- Photographs were taken to document streams, ditches, and upland conditions at locations that NHD mapped as streams (Appendix C, Photolog).

5.2.3 Roadside Drainage Ditch Evaluations

- Roadside drainage ditches that were delineated were assessed based on guidance in the Oregon Department of State Lands *A Guide to the Removal-Fill Permit Process* (ODSL 2016).
- The centerline of drainage ditches was recorded as a line feature and buffered to the width determined in the field.

6.0 Description of Wetlands, Other Non-wetland Waters, and Roadside Drainage Ditches

All wetlands, non-wetland waters, and roadside drainage ditches evaluated in the Project study area are depicted in Appendix A; Figure 5 map set.

6.1 Wetlands

There are no wetlands within the Project study area.

6.2 Non-wetland Waters

Seven ephemeral streams and one roadside drainage ditch were delineated within the Project study area (Appendix B, Table B-2). There was no water present in the ditch at the time of survey and field staff did not observe any location where the ditch connected with any type of waterbody. The desktop study shows that the ditch does not connect to any mapped waterway.

7.0 Deviation from NWI

The NWI showed no wetlands in the Project study area. Field surveys confirmed this finding.

8.0 Mapping Methods

Water centerlines and photograph locations were recorded using a Juniper Geode series GPS unit, 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).

Water centerlines were recorded as line features using GPS units set to collect vertices every 2 seconds. Field staff walked the centerline of the ephemeral streams and the roadside drainage ditch with the GPS unit in hand, at a pace consistent with creating an accurate representation of the water feature.

9.0 Results and Conclusions

Using methods recommended in the Manual and Arid West Supplement, no wetlands were found in the Project study area (Table 3). One roadside ditch and seven ephemeral streams were delineated.

Table 3. Summary of Wetlands, Other Water Features, and Roadside Drainage Ditches

Feature	Number of Features	Acres
Ephemeral Stream	7	0.75
Roadside Ditch	1	0.04

10.0 Disclaimer

This disclaimer is included according to OAR 141-090-0035(12)(j): "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 Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055."

11.0 References

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Appendix A. Figures

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Wheatridge Energy Project

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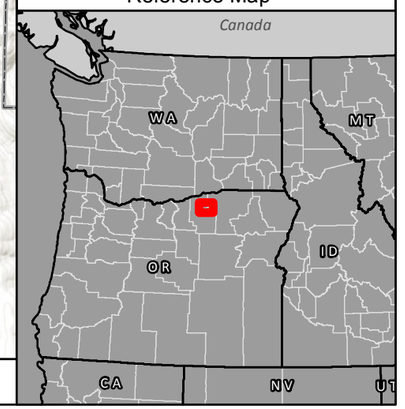
Figure 1
Project Location

MORROW AND UMATILLA COUNTIES, OR

- Study Area
- Secondary Road
- County Boundary

TETRA TECH

Reference Map



1:100,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 2
Tax Lot Index Map

MORROW AND UMATILLA COUNTIES, OR

- Study Area
- Figure 2 Map Grid
- Secondary Road
- County Boundary

TETRA TECH

Reference Map

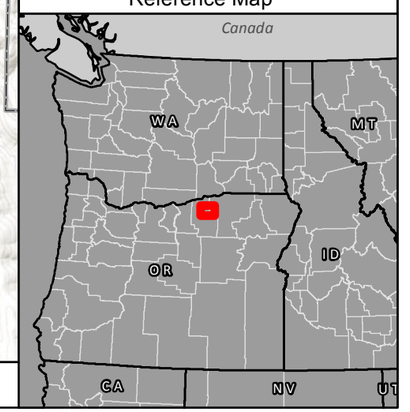


Figure 2.1

Figure 2.2

1:100,000 WGS 1984 UTM Zone 11N

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

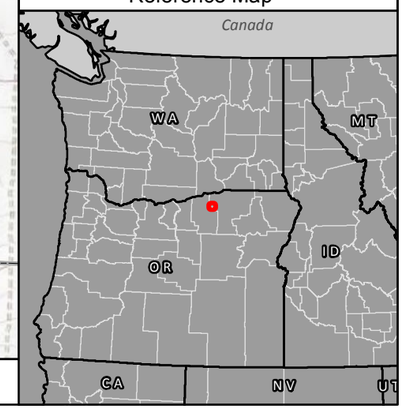
Figure 2.1
Tax Lot Detail Map

MORROW AND UMATILLA COUNTIES, OR

Study Area
Taxlot Boundary
County Boundary

TETRA TECH

Reference Map



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Umatilla County
Morrow County

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Wheatridge Energy Project

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Figure 2.2
Tax Lot Detail Map

MORROW AND UMATILLA COUNTIES, OR

Taxlot 10N, 260E 0 1100

Taxlot 10N 260E 0 1301

Taxlot 10N 260E 0 1102

Taxlot 10N 260E 0 1500

Taxlot 10N 250E 0 1600

Taxlot 10N 260E 0 1200

Taxlot 10N 260E 0 2700

Taxlot 10N 260E 0 3200

Taxlot 10N 260E 0 3201

Taxlot 10N 260E 0 3301

Taxlot 10N 260E 0 2900

Taxlot 10N 260E 0 2805

Taxlot 10N 260E 0 3600

Taxlot 10N 250E 0 3100

Taxlot 10N 260E 0 3300

Taxlot 10N 260E 0 3400

Taxlot 10N 260E 0 3502

Taxlot 10N 260E 0 3500

Little Juniper Ln

Bombing Range Rd

Strawberry

Canyon

Sand Hollow

Sand Hollow Rd

Gravel Pit

Borrow Pit

Grain Elevator

207

- Study Area
- Taxlot Boundary
- Secondary Road
- County Boundary

TETRA TECH

Reference Map

Canada

WA MT OR ID CA NV UT

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Wheatridge Energy Project

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Figure 3
National Wetland Inventory Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 3.1

Figure 3.2

Butter Creek

Umatilla County

Morrow County

Little Butter Creek

- Study Area
- Figure 3 Map Grid
- County Boundary

NWI Waterbodies

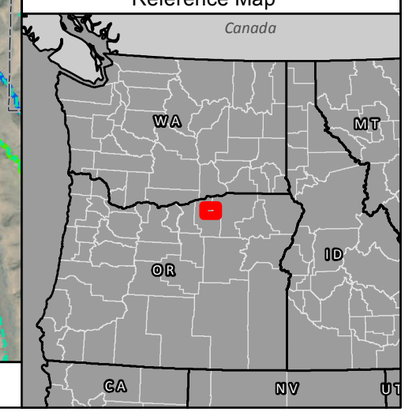
- Freshwater Emergent Wetland
- Shrub Wetland/Freshwater Forest
- Freshwater Pond
- Riverine

NHD Waterbodies

- Perennial Stream/River
- Intermittent Stream/River
- Canal/Ditch

TETRA TECH

Reference Map



1:100,000 WGS 1984 UTM Zone 11N

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 3.1
National Wetland Inventory Detail Map

MORROW AND UMATILLA COUNTIES, OR

Study Area

County Boundary

NHD Waterbodies

Intermittent Stream/River

TETRA TECH

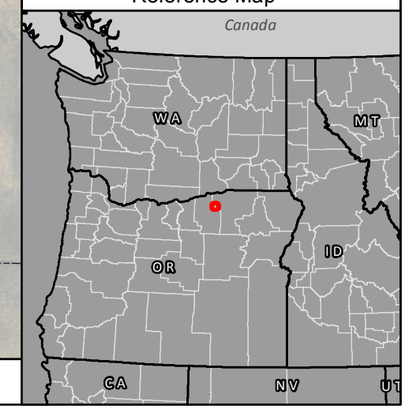
Umatilla County

Morrow County

1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

Reference Map



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Wheatridge Energy Project

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Figure 3.2
National Wetland Inventory Detail Map

MORROW AND UMATILLA COUNTIES, OR

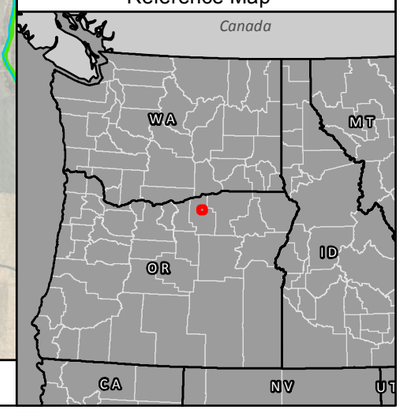
- Study Area
- Secondary Road
- County Boundary

NHD Waterbodies
- Perennial Stream/River
- Intermittent Stream/River

NWI Waterbodies
- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

TETRA TECH

Reference Map



Little Juniper Ln
Bombing Range Rd
207
Sand Hollow Rd

1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 4
Soils Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 4.1

Figure 4.2

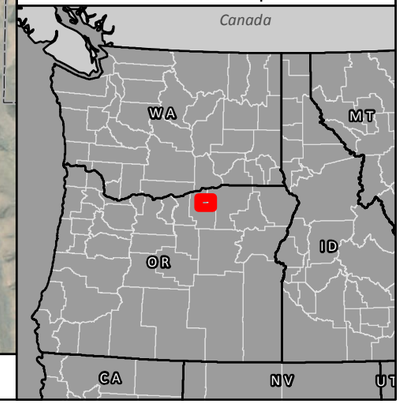
Umatilla County
Morrow County

Bombing Range Rd
Juniper Rd
Little Juniper Ln
Sand Hollow Rd
Butter Creek Rd
Big Butter Creek Ln
578
Baseline Rd
Sandhollow Rd
Pine City Rd

- Study Area
- Figure 4 Map Grid
- Secondary Road
- County Boundary

TETRA TECH

Reference Map



1:100,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge Energy Project

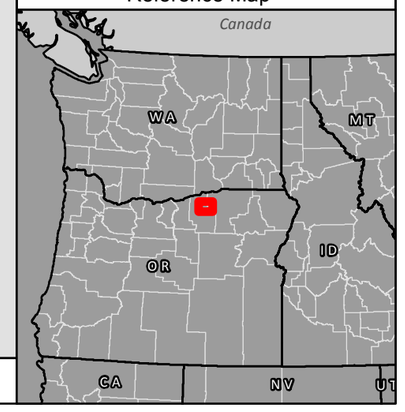
NEXTera ENERGY RESOURCES

Figure 4
Soils Map Legend

MORROW AND UMATILLA COUNTIES, OR

Map Symbol: Map Unit Name
13E: Gravden very gravelly loam, 20 to 40 percent slopes
15B: Burke silt loam, 1 to 7 percent slopes
15C: Burke silt loam, 7 to 12 percent slopes
28E: Lickskillet very stony loam, 7 to 40 percent slopes
43A: Kimberly silt loam, 0 to 3 percent slopes
45A: Ritzville silt loam, 0 to 2 percent slopes
45B: Ritzville silt loam, 2 to 7 percent slopes
45C: Ritzville silt loam, 7 to 12 percent slopes
47E: Ritzville silt loam, 20 to 40 percent south slopes
48E: Lickskillet very stony loam, 7 to 40 percent slopes
71B: Warden silt loam, 2 to 5 percent slopes
75B: Willis silt loam, 2 to 5 percent slopes
75C: Willis silt loam, 5 to 12 percent slopes
78: Xeric Torriorthents, nearly level
80B: Ritzville silt loam, 2 to 7 percent slopes
89B: Shano silt loam, 2 to 7 percent slopes

Reference Map



1:120,000 WGS 1984 UTM Zone 10N

0 0.5 1 2 3 4 Miles

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 4.1
Soils Detail Map

MORROW AND UMATILLA COUNTIES, OR

Study Area

County Boundary

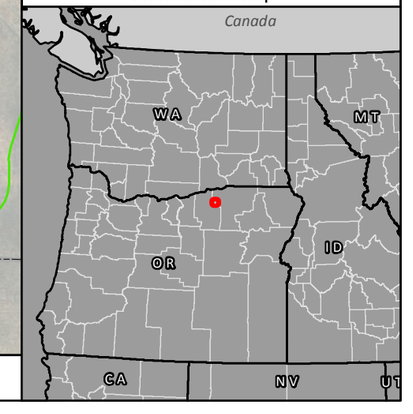
Hydric Rating

Nonhydric

Partially Hydric

TETRA TECH

Reference Map



Umatilla County

Morrow County

1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 4.2
Soils Detail Map

MORROW AND UMATILLA COUNTIES, OR

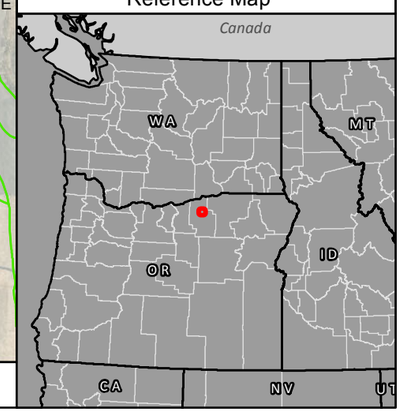
- Study Area
- Secondary Road
- County Boundary

Hydric Rating

- Nonhydric

TETRA TECH

Reference Map



1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5
Waters Delineation Map
Index Map

MORROW AND UMATILLA COUNTIES, OR

- Study Area
- Map Grid
- Secondary Road
- County Boundary

TETRA TECH

Reference Map

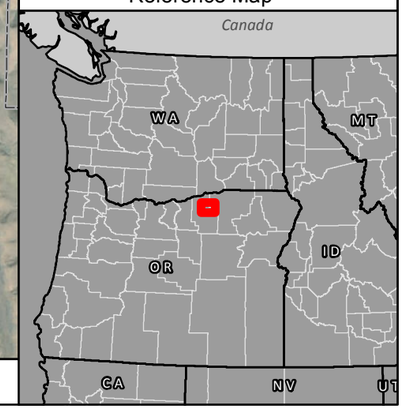


Figure 5.1

Figure 5.2

Figure 5.3

Juniper Rd
Little Juniper Ln
Bombing Range Rd
Butter Creek Rd
Umatilla County
Morrow County
Sand Hollow Rd
207
578
Baseline Rd
Big Butter Creek Ln
Pine City Rd
Sandhollow Rd

1:100,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1
Waters Delineation Map
Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 5.1.1

Figure 5.1.2

Figure 5.1.3

Figure 5.1.4

Study Area

Map Grid

County Boundary

TETRA TECH

Reference Map

OR

1:12,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.2
Waters Delineation Map Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 5.1.4

Figure 5.1.5

Figure 5.1.6

Figure 5.1.7

Figure 5.1.8

Figure 5.1.9

Figure 5.1.10

Study Area

Map Grid

County Boundary

TETRA TECH

Reference Map

OR

1:12,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.3
Waters Delineation Map Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 5.1.11

Figure 5.1.12

Figure 5.1.13

- Study Area
- Map Grid
- County Boundary

TETRA TECH

Reference Map

OR

1:12,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Feet

P:\GIS_PROJECTS\NextEra\Wheatridge\MXDs\Wetland_Delineation_Report\NextEra_Wheatridge_WetlandDelin_Fig05_Waters_12k_Index_11i17_20181114.mxd

Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.1
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

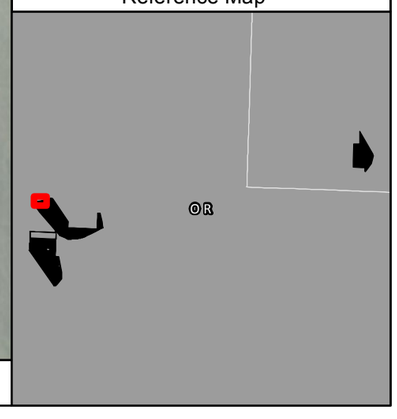


- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.2
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

XBB-006 *(#13)*

XBB-004 *(#11)*

XBB-005 *(#12)*

#9

EPH-004

#10

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map

OR

1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.3
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

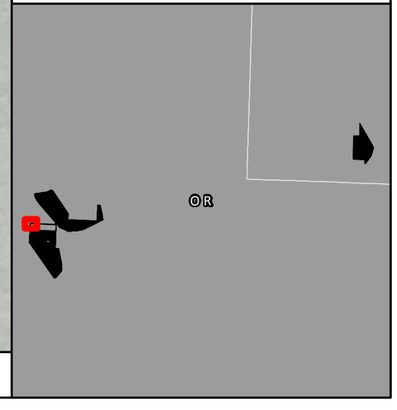


- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.4
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

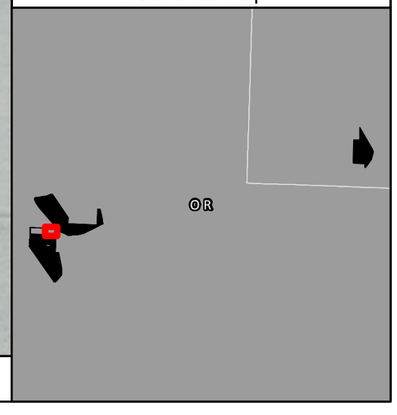


- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.5
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

XBB-007 *(#14)*

XBB-009 *(#16)*

XBB-103 *(#32)*

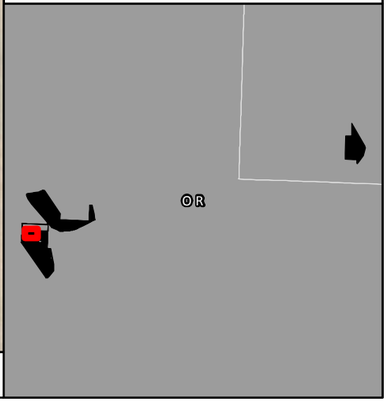
XBB-008 *(#15)*

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

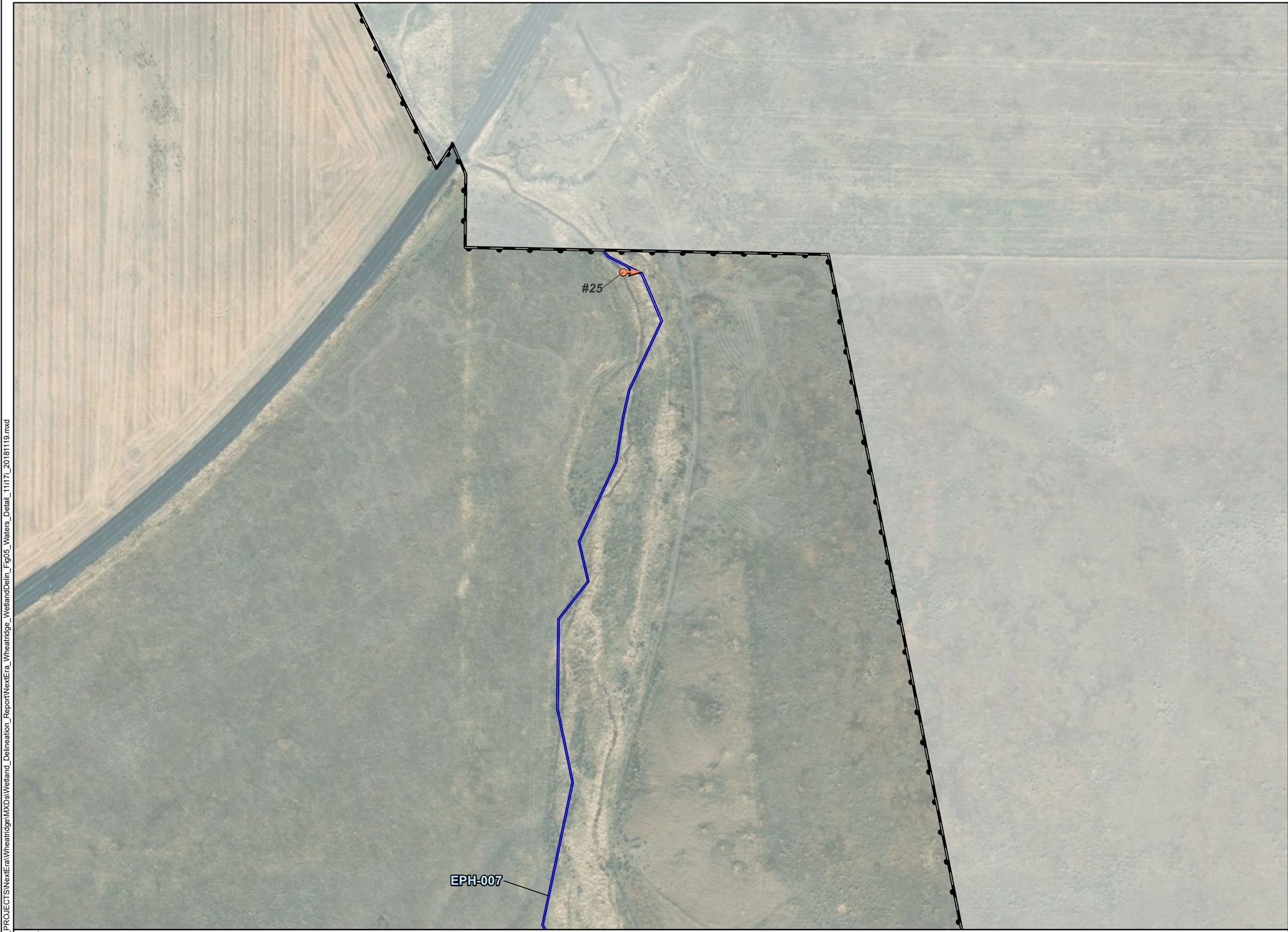
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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.6
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

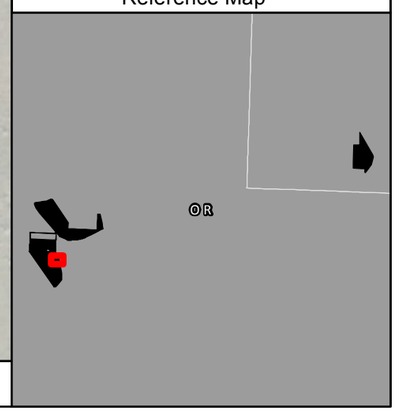


- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

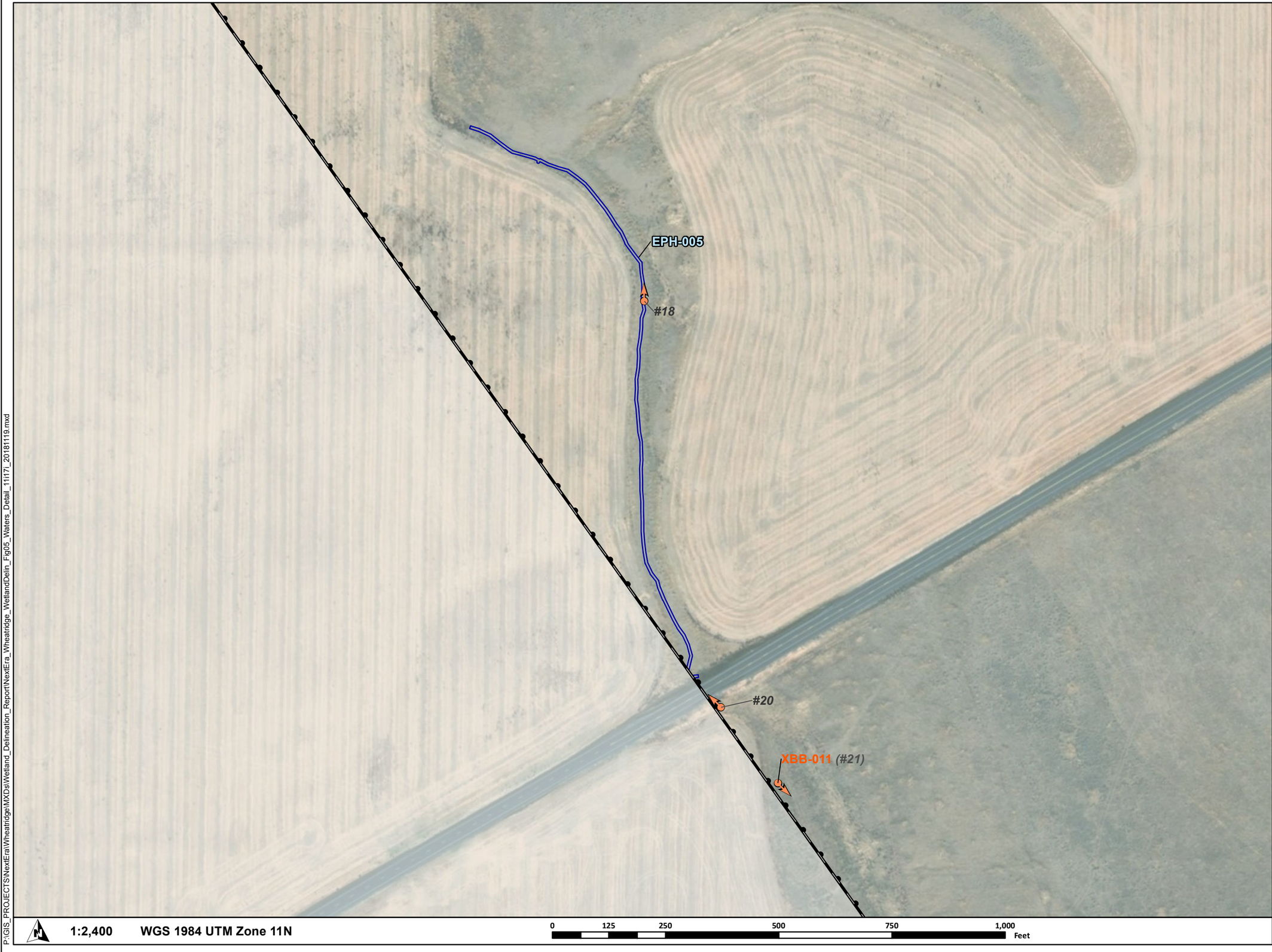
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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.7
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

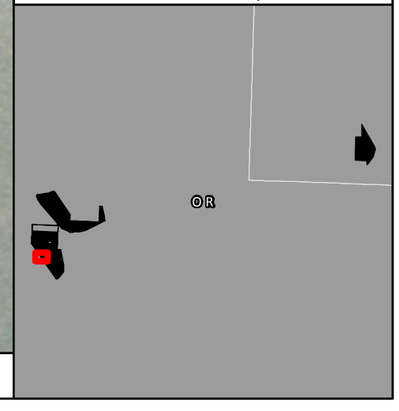


- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.8
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

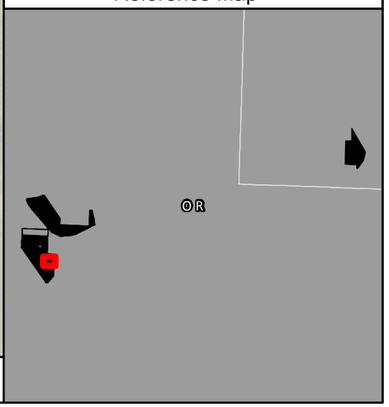
EPH-007

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

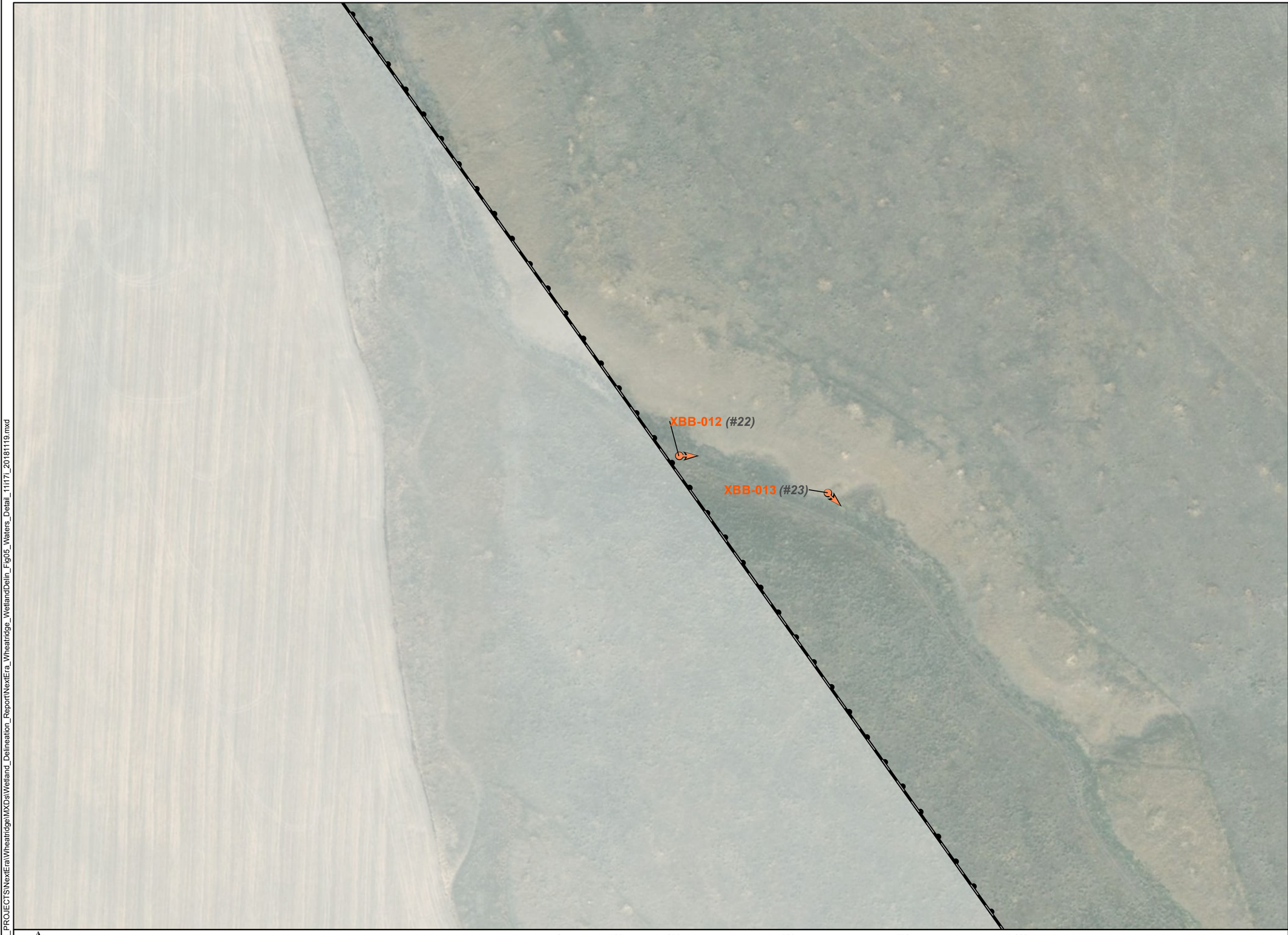
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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.9
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

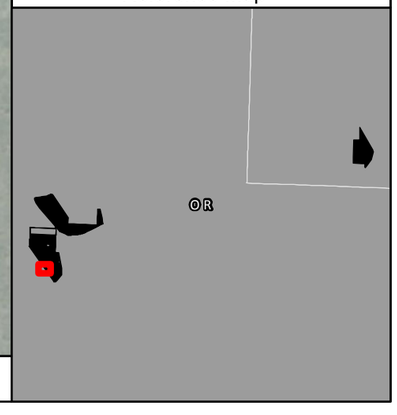


- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.10
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

EPH-007

EPH-007

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map

OR

1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.11
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR



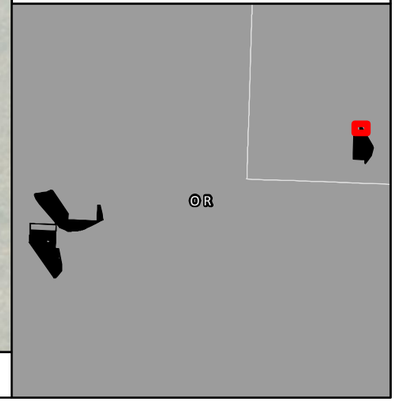
- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

EPH-001 is completely contained within the Study *

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.12
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR



- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

EPH-001 is completely contained within the Study *

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.13
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

EPH-003

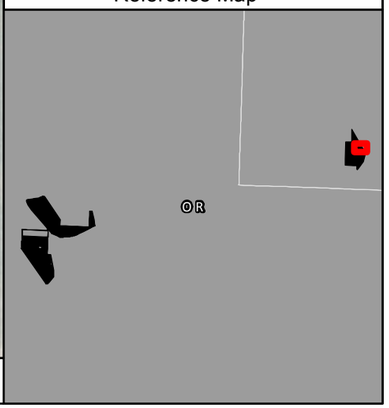
#6

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Appendix B. Tables

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Table B-1. Delineated Waters

Feature Name	Map Number	Latitude	Longitude	Flow Duration	Flow Direction	OHWL Width (feet)	OHWL Height (feet)	Photo Number	Additional Notes
EPH-001	Figure 5.1.11,12	45.635811	-119.334801	Ephemeral	N	2	< 1	3	Channel is single thread. Flow direction is north. Feature flows in and out of study area. Riparian vegetation absent. Grazed, Mowed. Herbicided: Historic
EPH-002	Figure 5.1.12	45.631886	-119.331253	Ephemeral	SW	2	< 1	4	Channel is single thread. Flow direction is southwest. Feature flows into study area. Riparian vegetation absent. OHWL field indicators: textural change of depositional sediment or soil. Grazed, Mowed. Herbicided: Historic
EPH-003	Figure 5.1.12,13	45.627934	-119.328018	Ephemeral	SE	1	< 1	6, 8	Channel is single thread. Flow direction is southeast. Feature originates within study area. Riparian vegetation absent. OHWL field indicators: textural change of depositional sediment or soil. Grazed, Mowed. Herbicided.
DTCH-001	Figure 5.1.1	45.590763	-119.613892	Ephemeral	SW	1	< 1	7	Channel is single thread. Flow direction is southwest. Feature flows in and out of study area. Riparian vegetation absent. OHWL field indicators: change in vegetation.
EPH-004	Figure 5.1.2	45.581867	-119.613754	Ephemeral	SE	3	< 1	9, 10	Channel is single thread. Flow direction is southeast. Feature flows in and out of study area. Riparian vegetation absent. Modified stream. Drainage ditch. Plowed and Planted: Historic.
EPH-005	Figure 5.1.7	45.553196	-119.615303	Ephemeral	SE	6	< 1	18	Channel is single thread. Flow direction is southeast. Feature originates within study area. Riparian vegetation absent. Modified stream. Plowed and planted: Historic.
EPH-007	Figure 5.1.6,8,10	45.551094	-119.598915	Ephemeral	SE	3.5	< 1	25	Channel is single thread. Flow direction is southeast. Feature flows in and out of study area. Riparian vegetation absent. OHWL field indicators: clear, natural line impressed on the bank. Modified stream. Plowed and planted: Historic. Similar to other waterways in this area where far.
EPH-008	Figure 5.1.4	45.569305	-119.601128	Ephemeral	S	1	< 1	27, 28, 33, 35	Channel is single thread. Flow direction is south. Feature flows in and out of study area. Riparian vegetation absent. OHWL field indicators: slope angle break in bank. Modified stream. Plowed and planted: Historic.

Table B-2. Other Features

Feature Name	Map Number	Lat	Long	Photograph Number	Feature Characteristics
XBB-002	Figure 5.1.11	45.638020	-119.335327	2	Obligate upland shrubs, no bed or banks
XBB-003	Figure 5.1.1	45.590218	-119.611412	8	Farmed, currently wheat stubble with no signs of water flow
XBB-004	Figure 5.1.2	45.582569	-119.610741	11	Farmed, currently wheat stubble with no signs of water flow
XBB-005	Figure 5.1.2	45.581985	-119.605087	12	Farmed, currently wheat stubble with no signs of water flow
XBB-006	Figure 5.1.2	45.583069	-119.613640	13	Obligate upland species, previously tilled
XBB-007	Figure 5.1.5	45.566551	-119.620102	14	Farmed, currently chem fallow stubble with no signs of water flow
XBB-008	Figure 5.1.5	45.563469	-119.617981	15	Previously tilled ground, no bed or banks in replanted grasslands
XBB-009	Figure 5.1.5	45.566776	-119.611107	16	Farmed, currently wheat stubble with no signs of water flow
XBB-010	Figure 5.1.3	45.571247	-119.623291	17	Farmed, currently chem fallow stubble with no signs of water flow
XBB-011	Figure 5.1.7	45.549599	-119.613586	21	Previously tilled ground, no bed or banks in replanted grasslands
XBB-012	Figure 5.1.9	45.546158	-119.609955	22	Previously tilled ground, no bed or banks in replanted grasslands
XBB-013	Figure 5.1.9	45.545952	-119.608681	23	Previously tilled ground, no bed or banks in replanted grasslands
XBB-100	Figure 5.1.4	45.570850	-119.607887	29	Farmed, recently seeded ground with no signs of water flow
XBB-101	Figure 5.1.4	45.570900	-119.610580	30	Previously tilled ground, no bed or banks in replanted grasslands
XBB-102	Figure 5.1.3	45.570641	-119.624611	31	Farmed, currently wheat stubble with no signs of water flow
XBB-103	Figure 5.1.5	45.564850	-119.618904	32	Farmed, recently seeded ground with no signs of water flow

Table B-3. Township, Range, Section within the Project Study Area

Township	Range	Section
001N	025E	013
001N	025E	024
001N	026E	006
001N	026E	007
001N	026E	008
001N	026E	010
001N	026E	009
001N	026E	017
001N	026E	018
001N	026E	016
001N	026E	020
001N	026E	019
001N	026E	029
001N	026E	030
002N	028E	020
002N	028E	021
002N	028E	028
002N	028E	029
002N	028E	033

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Appendix C. Photolog

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Photo 2. Feature XBB-002. No stream on NHD line, obligate upland plants throughout. Looking North. 8/22/2018. Lat/Long: 45.638020/-119.335327.



Photo 3. Feature EPH-001. No macroinvertebrates or wetland plants observed in channel. Looking South. 8/22/2018. Lat/Long: 45.636452/-119.335373.



Photo 4. Feature EPH-002. No macroinvertebrates or wetland plants observed in channel. Obligate upland plants throughout. Looking Northeast. 8/22/2018. Lat/Long: 45.631897/-119.331680.



Photo 6. Feature EPH-003. No macroinvertebrates or wetland plants observed in channel. Obligate upland plants throughout. Looking Southeast. 8/22/2018. Lat/Long: 45.628952/-119.329048.



Photo 7. Feature DTCH-001. Roadside drainage ditch, no water present at time of survey. Does not connect to any Waters of the State or Waters of the United States. Looking West. 8/22/2018. Lat/Long: 45.591070/-119.611500.



Photo 8. Feature XBB-003. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Southeast. 8/22/2018. Lat/Long: 45.590218/-119.611412.



Photo 9. Feature EPH-004. No macroinvertebrates or wetland plants observed in length of channel. The larger obligate upland shrubs (rabbitbrush and Big Basin sagebrush) appear to have stress induced senescence, possibly caused by water flowing at some point. Looking Southeast. 8/22/2018. Lat/Long: 45.582001/-119.614128.



Photo 10. Feature EPH-004. No macroinvertebrates or wetland plants observed in channel. Looking Northwest. 8/22/2018. Lat/Long: 45.581451/-119.613319.



Photo 11. Feature XBB-004. No stream on NHD line, obligate upland plants throughout. Area has been disturbed by tillage and subsequent weed growth and control methods. Looking Northeast. 8/22/2018. Lat/Long: 45.582569/-119.610741.



Photo 12. Feature XBB-005. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Southeast. 8/22/2018. Lat/Long: 45.581985/-119.605087.



Photo 13. Feature XBB-006. No stream on NHD line, obligate upland plants throughout. Looking Southwest.8/22/2018. Lat/Long: 45.583069/-119.613640.



Photo 14. Feature XBB-007. No stream on NHD line, obligate upland plants throughout. Looking Southeast.8/22/2018. Lat/Long: 45.566551/-119.620102.



Photo 15. Feature XBB-008. No stream on NHD line, obligate upland plants throughout. Looking Southeast. 8/22/2018. Lat/Long: 45.563469/-119.617981.



Photo 16. Feature XBB-009. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking South. 8/22/2018. Lat/Long: 45.566776/-119.611107.



Photo 17. Feature XBB-010. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Northeast. 8/22/2018. Lat/Long: 45.571247/-119.623291.



Photo 18. Feature EPH-005. No macroinvertebrates or wetland plants observed in the length of the channel. Looking North. 8/23/2018. Lat/Long: 45.552505/-119.614799.



Photo 20. Feature Culvert. Culvert drains into basin with no visible outlet. No wetland indicators present. Looking Northwest. 8/23/2018. Lat/Long: 45.550053/-119.614090.



Photo 21. Feature XBB-011. No stream on NHD line, land was previously farmed and appears to have been seeded with introduced/native grassmix. Looking Southeast. 8/23/2018. Lat/Long: 45.549599/-119.613586.



Photo 22. Feature XBB-012. No stream on NHD line, land was previously farmed and appears to have been seeded with introduced/native grassmix. Looking East. 8/23/2018. Lat/Long: 45.546158/-119.609955.



Photo 23. Feature XBB-013. No stream on NHD line, land was previously farmed and appears to have been seeded with introduced/native grassmix. Looking Southeast. 8/23/2018. Lat/Long: 45.545952/-119.608681.



Photo 25. Feature EPH-007. No macroinvertebrates or wetland plants observed in the length of the channel. Upland obligate plants throughout. Looking East. 8/23/2018. Lat/Long: 45.556194/-119.599762.



Photo 27. Feature EPH-008. No macroinvertebrates or wetland plants observed in channel. Looking North. 11/9/2018. Lat/Long: 45.571579/-119.603867.



Photo 28. Feature EPH-008. No macroinvertebrates or wetland plants observed in channel. Looking South. 11/9/2018. Lat/Long: 45.571751/-119.603928.



Photo 29. Feature XBB-100. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking North. 11/9/2018. Lat/Long: 45.570850/-119.607887.



Photo 30. Feature XBB-101. No stream on NHD line, land was previously farmed and appears to have been seeded with introduced/native grassmix. Looking North. 11/9/2018. Lat/Long: 45.570900/-119.610580.



Photo 31. Feature XBB-102. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Southwest. 11/9/2018. Lat/Long: 45.570641/-119.624611.



Photo 32. Feature XBB-103. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Northwest. 11/9/2018. Lat/Long: 45.564850/-119.618904.



Photo 33. Feature EPH-008. No macroinvertebrates or wetland plants observed in channel. Channel has natural sinuousity in two sections, appears to have been straightened to make room for farm road at southern end of the project boundary. Looking North. 11/9/2018. Lat/Long: 45.566666/-119.600792.



Photo 34. Feature Culvert. Culvert drains into dry streambed, no water present. No macroinvertebrates or wetland indicators present. Looking West. 11/9/2018. Lat/Long: 45.569298/-119.600975.



Photo 35. Feature EPH-008. Straightened drainage, no macroinvertebrates or wetland indicators observed. Looking West. 11/9/2018. Lat/Long: 45.569321/-119.601303.