Exhibit J

Wetlands and Other Jurisdictional Waters

Wheatridge Renewable Energy Facility East January 2024

Prepared for Wheatridge East Wind, LLC

Prepared by





Table of Contents

1.0	Introduction	1
2.0	Analysis Area	1
3.0	Wetlands and Other Jurisdictional Waters - OAR 345-021-0010(1)(j)(A)	1
3.1	Definitions	2
3	.1.1 Federal	2
3	.1.2 State	2
3.2	Jurisdictional Versus Non-Jurisdictional Waters	3
3.3	Desktop Study	3
3.4	Delineation of Wetlands and Other Water Features	4
3	.4.1 Methods	4
3	.4.2 Results	4
4.0 0010(Effects on Wetlands and Other Jurisdictional Waters of the State – OAR 345-021-1)(j)(B)	5
4.1	Avoidance and Minimization	5
4.2	Significance of Impacts – OAR 345-021-0010(1)(j)(C)	<i>6</i>
5.0 0010(Information Supporting Lack of Requirement for Removal-Fill Permit – OAR 345-021- 1)(j)(D)	<i>6</i>
6.0	Information Supporting Issuance of Removal-Fill Permit – OAR 345-021-0010(1)(j)(E)	6
7.0	Mitigation and Monitoring Program – OAR 345-021-0010(1)(j)(F)	7
7.1	Avoidance and Minimization	7
7.2	Environmental Training	8
8.0	References	8
	List of Tables	
Table	J-1. Summary of Delineated Wetlands and Other Water Features	5
Table	J-2. Summary of Impacts to Features	6

List of Figures

Figure J-1. Overview NWI and NHD Map

Figure J-2. Delineated Wetlands and Waters Map

List of Attachments

Attachment J-1. Wetland Delineation Report

Attachment J-2. Joint Permit Application

Acronyms and Abbreviations

ASC Application for Site Certificate
Certificate Holder Wheatridge East Wind, LLC

Code of Federal Regulations CFR

Council Energy Facility Siting Council

EPA U.S. Environmental Protection Agency

Facility Wheatridge Renewable Energy Facility East

MW megawatt

NHD National Hydrography Dataset

NRCS Natural Resources Conservation Service

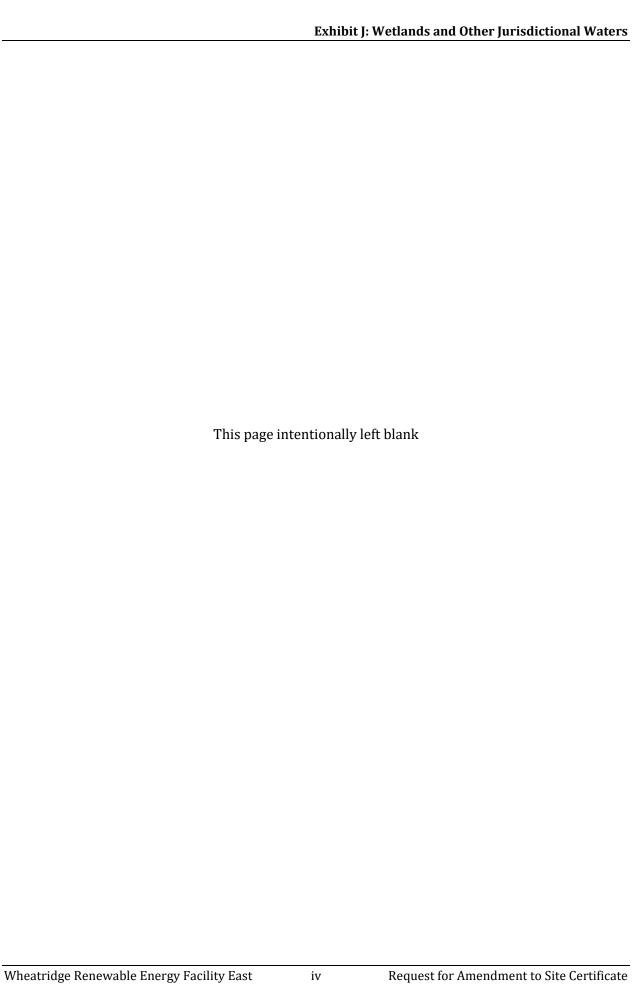
NWI National Wetland Inventory

ODSL Oregon Department of State Lands

O&M operations and maintenance
OAR Oregon Administrative Rules
ORS Oregon Revised Statutes
RFA 1 Request for Amendment 1
USACE U.S. Army Corps of Engineers

WOS Waters of the State

WOUS Waters of the United States



1.0 Introduction

The Wheatridge Renewable Energy Facility East (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 66 turbines and related or supporting facilities with a peak generating capacity of up to 200 megawatts (MW), to be located in an Approved Site Boundary of approximately 4,582 acres on over 42,000 acres of leased land in Morrow and Umatilla counties, Oregon. As part of Request for Amendment (RFA) 1 to the Facility Site Certificate, Wheatridge East Wind, LLC (Certificate Holder) is proposing to expand wind power generation at the Facility to provide the opportunity for increased power capacity and availability. This includes expanding the Site Boundary and micrositing corridors, increasing the peak generating capacity by adding more and newer turbines, changing the intraconnection routes, and extending the construction date. See the RFA 1's Division 27 document (*Request for Amendment #1 for the Wheatridge Renewable Energy Facility East*) for a more detailed summary of the proposed changes.

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

2.0 Analysis Area

The Analysis Area for wetland and other jurisdictional waters is the area within the Amended Site Boundary (Figure J-1). The Amended Site Boundary is defined in detail in Exhibits B and C and is shown on Figure J-1.

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

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

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

3.1 Definitions

3.1.1 Federal

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

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

Wetlands are defined federally in 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 Waters of the State (WOS) more broadly than federal WOUS. Specifically, WOS include "all natural waterways, tidal and non-tidal bays, intermittent streams, constantly flowing streams, lakes, wetlands, that portion of the Pacific Ocean that is in the boundaries of this state, all other navigable and non-navigable bodies of water in this state and those portions of the ocean shore, as defined in ORS 390.605, where removal or fill

activities are regulated under a state-assumed permit program as provided in 33 United States Code 1344(g) of the Federal Water Pollution Control Act, as amended."

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

3.2 Jurisdictional Versus Non-Jurisdictional Waters

Not all wetlands and streams are within the jurisdiction of state or federal regulation, and not all waters falling within the state's jurisdiction fall under federal jurisdiction. For the proposed 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 2008).
- Artificially created roadside and farm ditches, which are considered WOS if they contain
 food or game fish and are connected to WOS (OAR 141-085-0515(8)) and WOUS if they
 connect to other WOUS and are not ephemeral (EPA and USACE 2011).

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

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

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

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 three consecutive months of the year, and a surface water connection to other WOUS.

3.3 Desktop Study

Prior to field work, Tetra Tech conducted a desktop study of potentially jurisdictional wetlands and other waters to assist in planning for field delineations. Site-specific literature and Geographic Information System map layers reviewed as part of the desktop study included:

National Wetland Inventory (NWI) maps (USFWS 2022a);

- Hydric Soils List for Morrow County and Umatilla County, Oregon (NRCS 2022a);
- The Natural Resources Conservation Service (NRCS) Soil Surveys of Morrow and Umatilla County in Oregon (NRCS 2022b);
- United States Geological Survey National Hydrography Dataset (NHD) (USGS 2022), which provided the location of potential streams; and
- Google Earth (2022), Morrow County and Umatilla County, Oregon.

3.4 Delineation of Wetlands and Other Water Features

Field investigations for the delineation of wetlands and other waters included pedestrian surveys within the Analysis Area. Tetra Tech conducted the field delineation on July 22, 2022, October 18–26, 2022, and November 8-17, 2022. The desktop wetlands and water data were used to focus the delineations as necessary.

3.4.1 Methods

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

During the delineation efforts, each waterbody encountered was examined for wetland characteristics consistent with WOS definitions (see Section 3.1.2), and this evidence was documented using standard field data sheets. The location and extent of each waterbody (regardless of its characteristics) was mapped with Global Positioning System technology. Upland plots were also established at some survey locations with mapped NWI features to confirm that the site did not meet wetland criteria. Streams were characterized using the Oregon Streamflow Duration Assessment Method (Nadeau 2015).

3.4.2 Results

Using the methodology above, 20 wetlands and 227 other water features were delineated and documented within the Analysis Area. Table J-1 summarizes the potentially jurisdictional WOS delineated within the site boundary by water type classification and the projected infrastructure impacts. Many ephemeral streams that were delineated in the Analysis Area flow into jurisdictional waterways and are presumed to be state jurisdictional; therefore, they are included in Table J-1. Not all features that were delineated will be impacted by the proposed Facility.

Table J-1. Summary of Delineated Wetlands and Other Water Features

Type of Water	Number of Features	Acres
Emergent Wetland	11	0.99
Riverine Wetland	9	31.16
Vernal Pool	13	0.93
Total Wetlands	33	33.08
Perennial Stream	2	1.76
Intermittent Stream	6	0.69
Ephemeral Stream	238	8.85
Total Other Water Features	246	11.30

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

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

Delineated wetlands and other waters were overlaid with proposed Facility components and areas of impact and are reflected in Figures J-2 and J-3. The Certificate Holder has provided the initial Facility layouts prior to review of delineated wetlands and non-wetland waters. Analysis of the proposed Facility layouts indicates that some wetlands and non-wetland waters will be impacted both temporarily and permanently.

4.1 Avoidance and Minimization

The Certificate Holder has provided one initial Facility layout option that has been adjusted to reflect avoidance and minimization of impacts to jurisdictional waters. The Certificate Holder has submitted the Wetland Delineation Report to ODSL and it is under review (WDR2023-0223; Attachment J-1). Assuming that ODSL concurs with the assessment of the impacted features within the Amended Site Boundary, the following section discusses impacts to one wetland and two ephemeral stream segments that were unavoidable due to existing access road conditions.

4.2 Continued Assessment of Impacts

As part of final design and facility micrositing, the Certificate Holder will continue to adjust the location of components of the proposed Facility to avoid and minimize impacts to WOS to the extent practicable. Any new areas identified during micrositing and final design will be surveyed prior to construction. Wetlands or streams identified in these areas are expected to be avoided by construction or its impacts mitigated.

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

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

Table J-2 details the wetland and non-wetland waters within the Analysis Area that are most likely WOS and are currently impacted by the proposed Facility layout. No perennial streams will be impacted by the proposed Facility layout, although wetlands and ephemeral streams that flow into jurisdictional waters and have been determined to be WOS will be impacted by the Facility layout. Figure J-2 presents the impacts outlined in the table below.

Type of Water	Number of Permanent Impact Sites	Permanent (Acres)	Number of Temporary Impact Sites	Temporary (Acres)	Number of Features Impacted
Ephemeral Stream	5	0.219	44	2.15	45
Intermittent Stream	0	N/A	0	N/A	0
Emergent Wetland	0	N/A	2	0.052	2
Riverine Wetland	6	0.008	11	0.48	6

Table J-2. Summary of Impacts to Features

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 stated below in Section 6.0, the proposed Facility will require a Removal-Fill Permit and therefore this requirement is not applicable.

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.

The proposed Facility will require a Removal-Fill Permit due to adverse impacts to potential WOS. Within the Analysis Area, there are two named fish-bearing streams, Butter Creek and Little Butter Creek. Many delineated intermittent and ephemeral streams within the Analysis Area are hydrologically connected to these fish-bearing streams or riverine wetlands and are WOS as defined under OAR 141-085-0510. Due to these potential WOS being impacted by the Facility layout, the Certificate Holder will be applying for a joint permit through ODSL. The volume of removal and fill to features are provided with the Joint Permit Application (Attachment J-2) submitted to ODSL in July 2023.

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 Certificate Holder will work to avoid impacts to WOS within the proposed Facility upon review of wetlands and non-wetlands waters data presented by Tetra Tech. Impacted sites will be mitigated for based on a mitigation and monitoring plan to be established by the Certificate Holder alongside Tetra Tech. In addition to a mitigation and monitoring plan, this section describes avoidance and minimization measures that will be used during construction.

7.1 Avoidance and Minimization

The Certificate Holder will work to avoid potential construction impacts of the proposed Facility. Impacts to wetlands and other waters will be adjusted and continue to be avoided during Facility design to the extent practicable. Avoidance and minimization measures include the following:

- The proposed locations of turbine pads and transmission towers will be microsited, wherever possible, to avoid wetlands and their buffers.
- Underground collector lines and access roads are to be routed around wetlands and waters that do not span the entire width of the right-of-way.
- To avoid new road construction, existing roads leading to proposed turbine locations have been used for construction and maintenance purposes to the extent possible.
- To the extent practicable, necessary road widening will take place on the side of the road that does not have an adjacent jurisdictional wetland or other water.

Indirect impacts to wetlands and other waters will be avoided and minimized by employing Best Management Practices for erosion and sediment control listed in the National Pollutant Discharge Elimination System permit required for the proposed Facility and the accompanying Erosion and Sediment Control Plan (Exhibit I, Attachment I-1).

7.2 Environmental Training

The following measures will be implemented during construction to avoid impacts:

- The Certificate Holder will develop an environmental awareness course for the construction contractors that will provide information on the sensitive wetland and stream resources present onsite, the exclusion flagging/signing, permit requirements, and other environmental issues.
- Construction site personnel will be required to attend the environmental awareness course in conjunction with hazard and safety training prior to working on-site. The Certificate Holder's construction contractor will maintain a list of on-site construction personnel who have received the training.

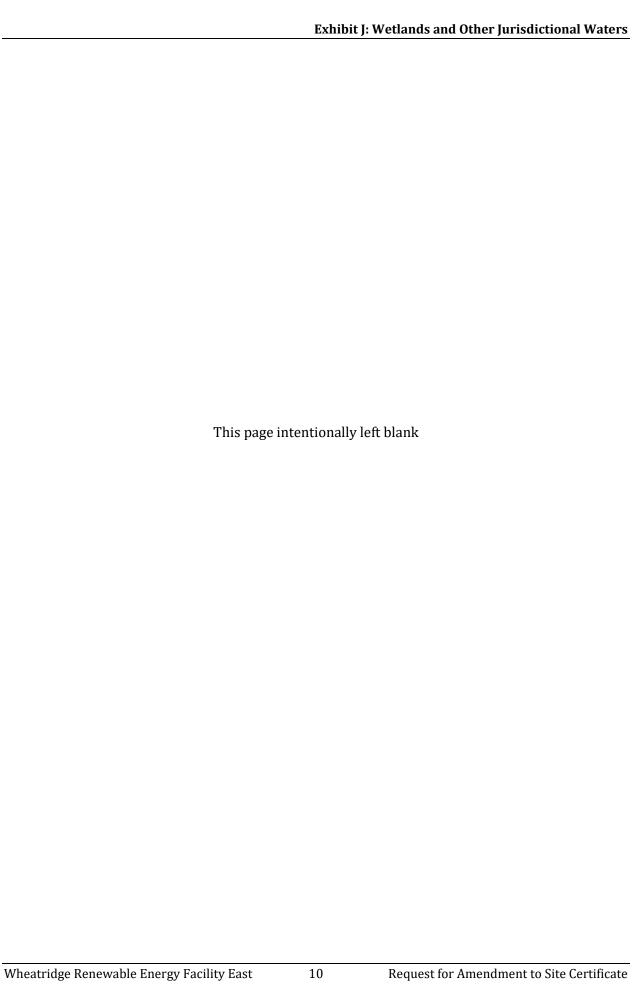
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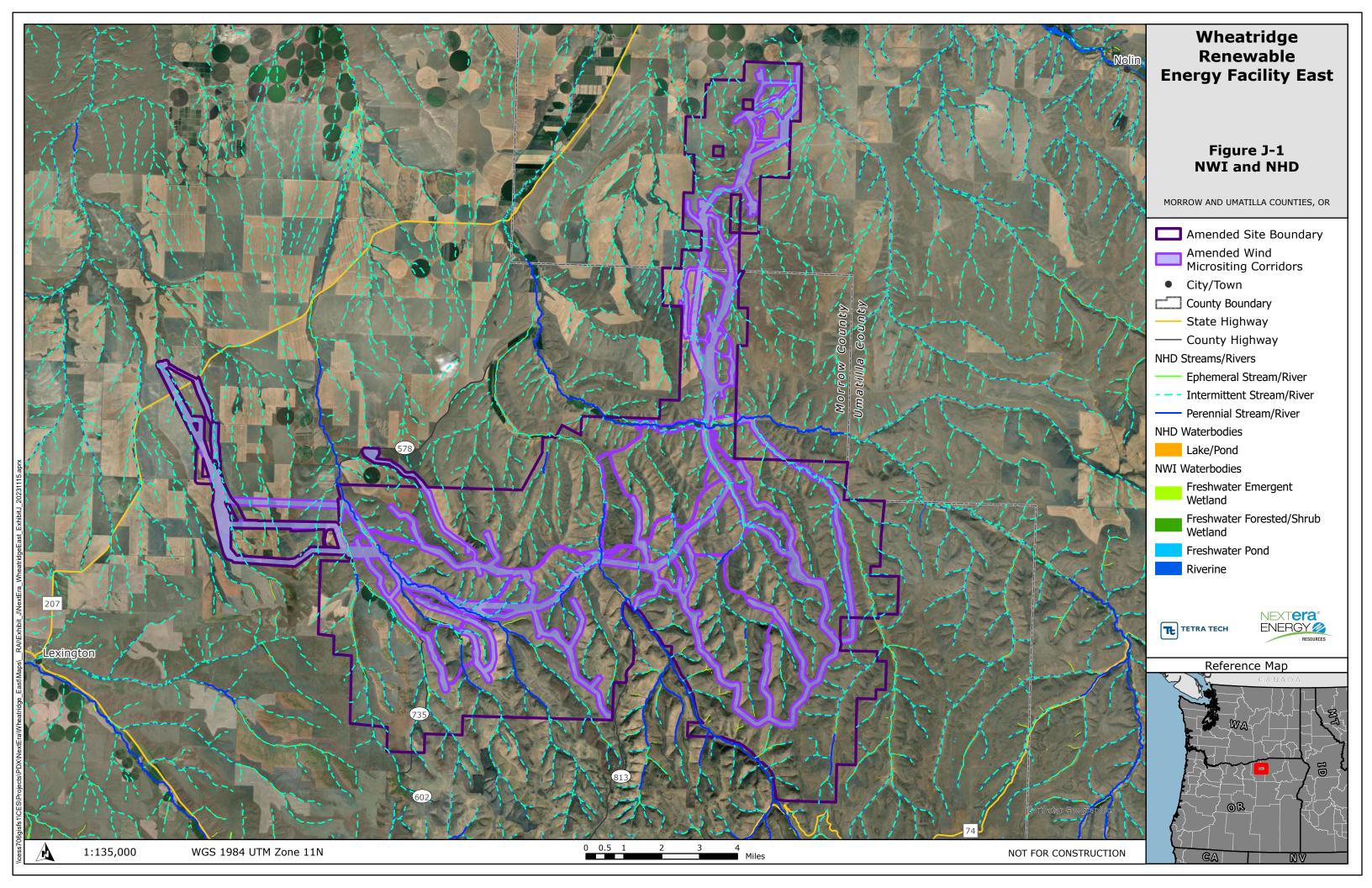
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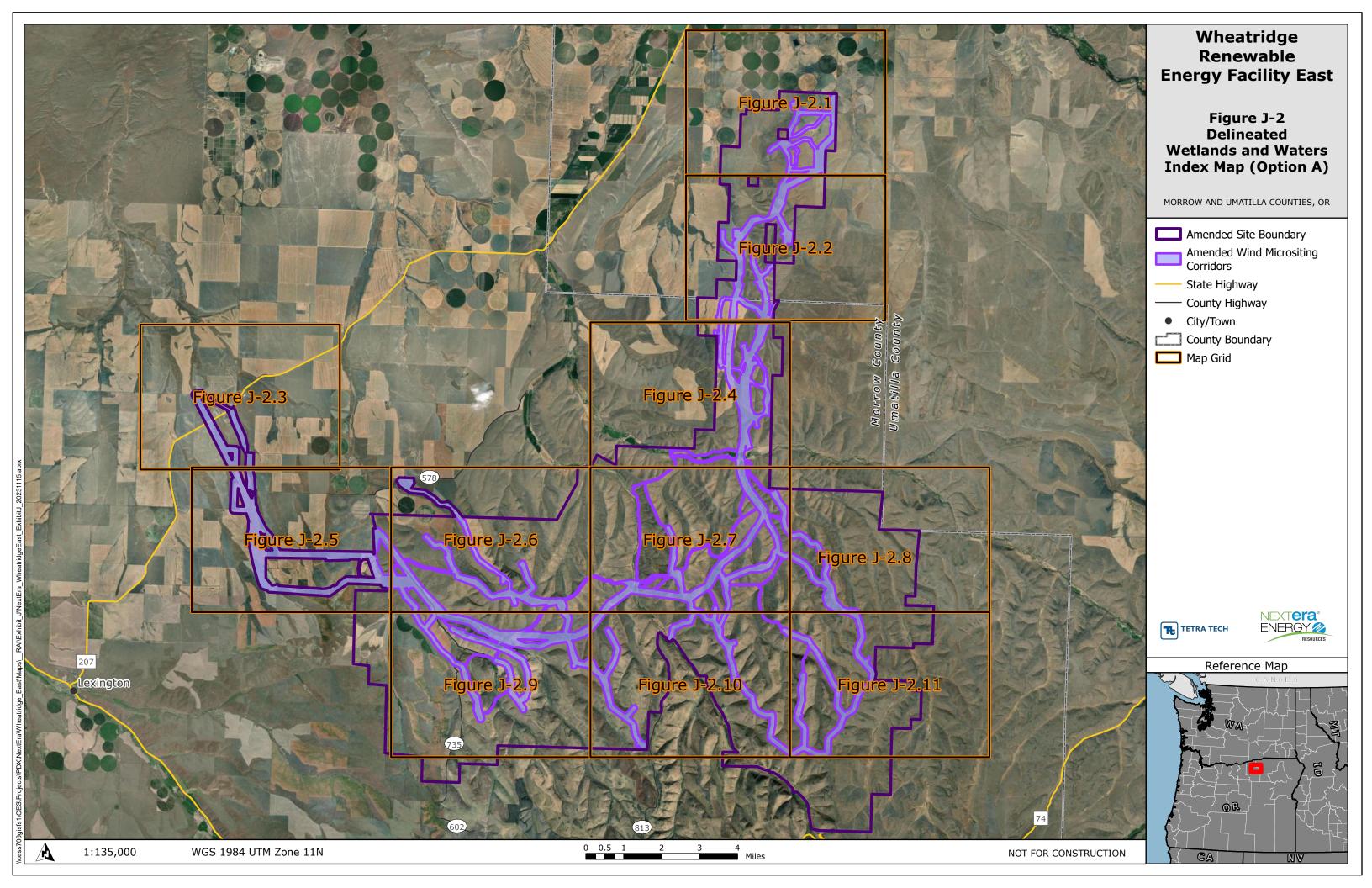
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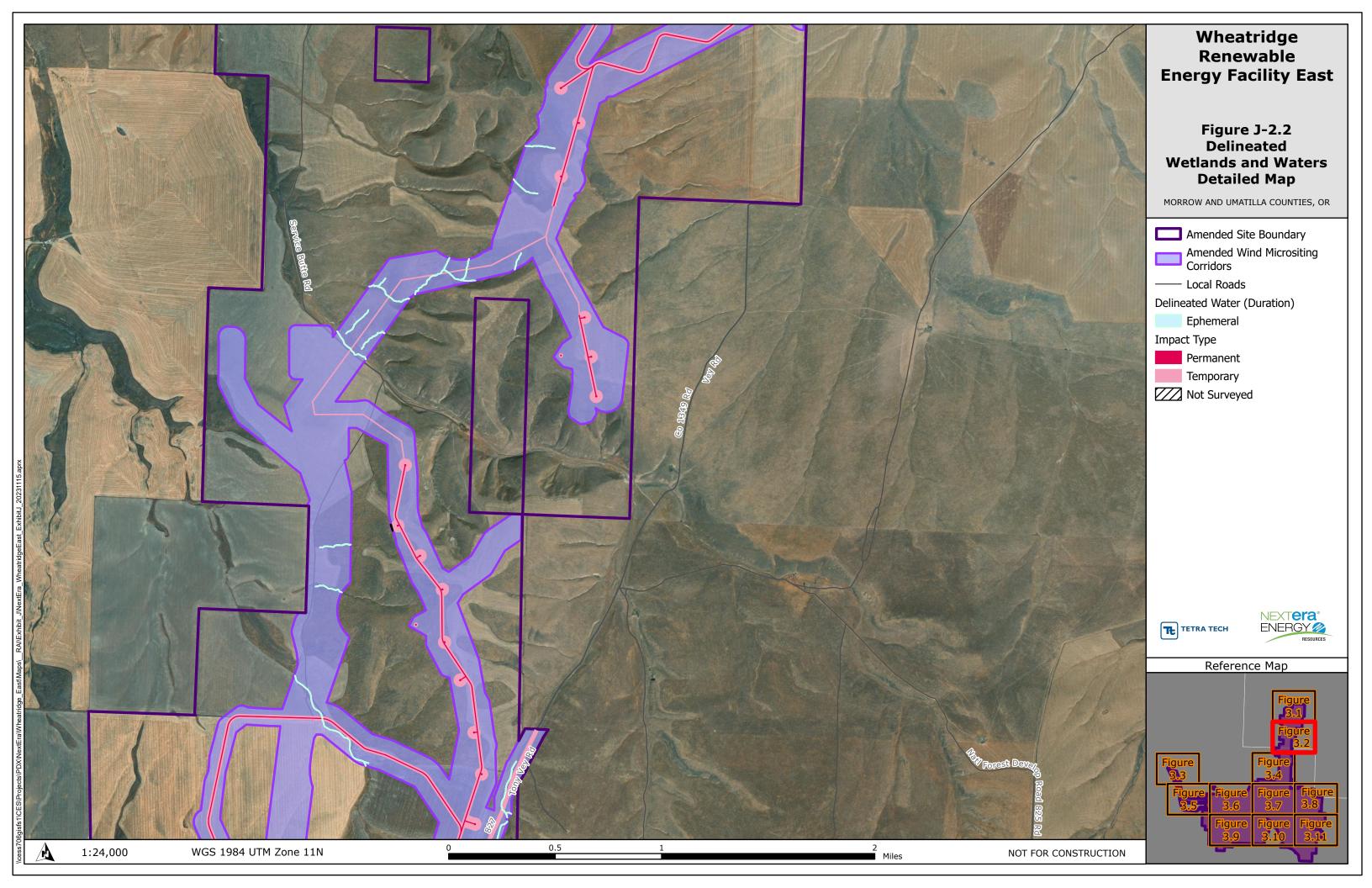


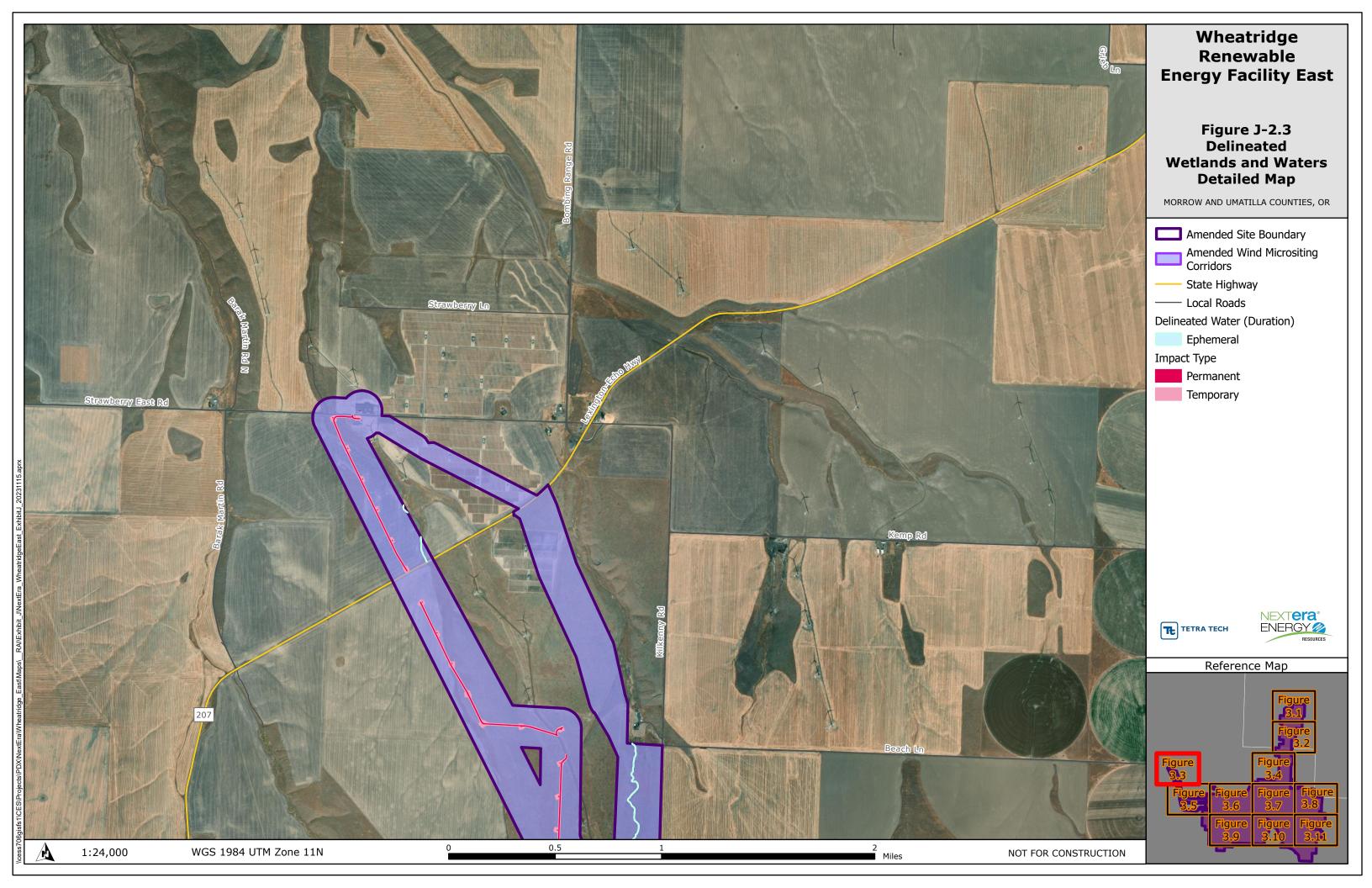
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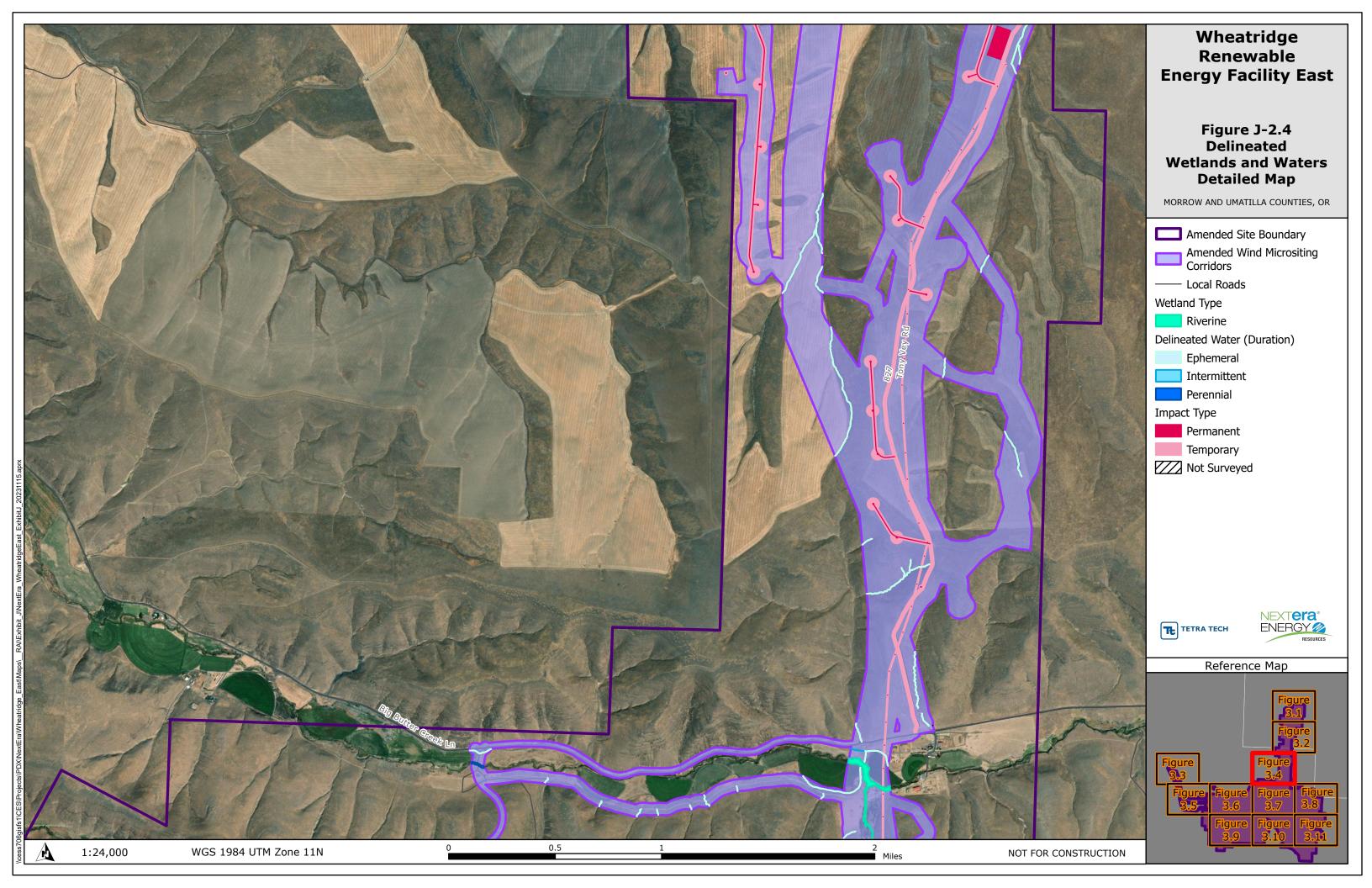


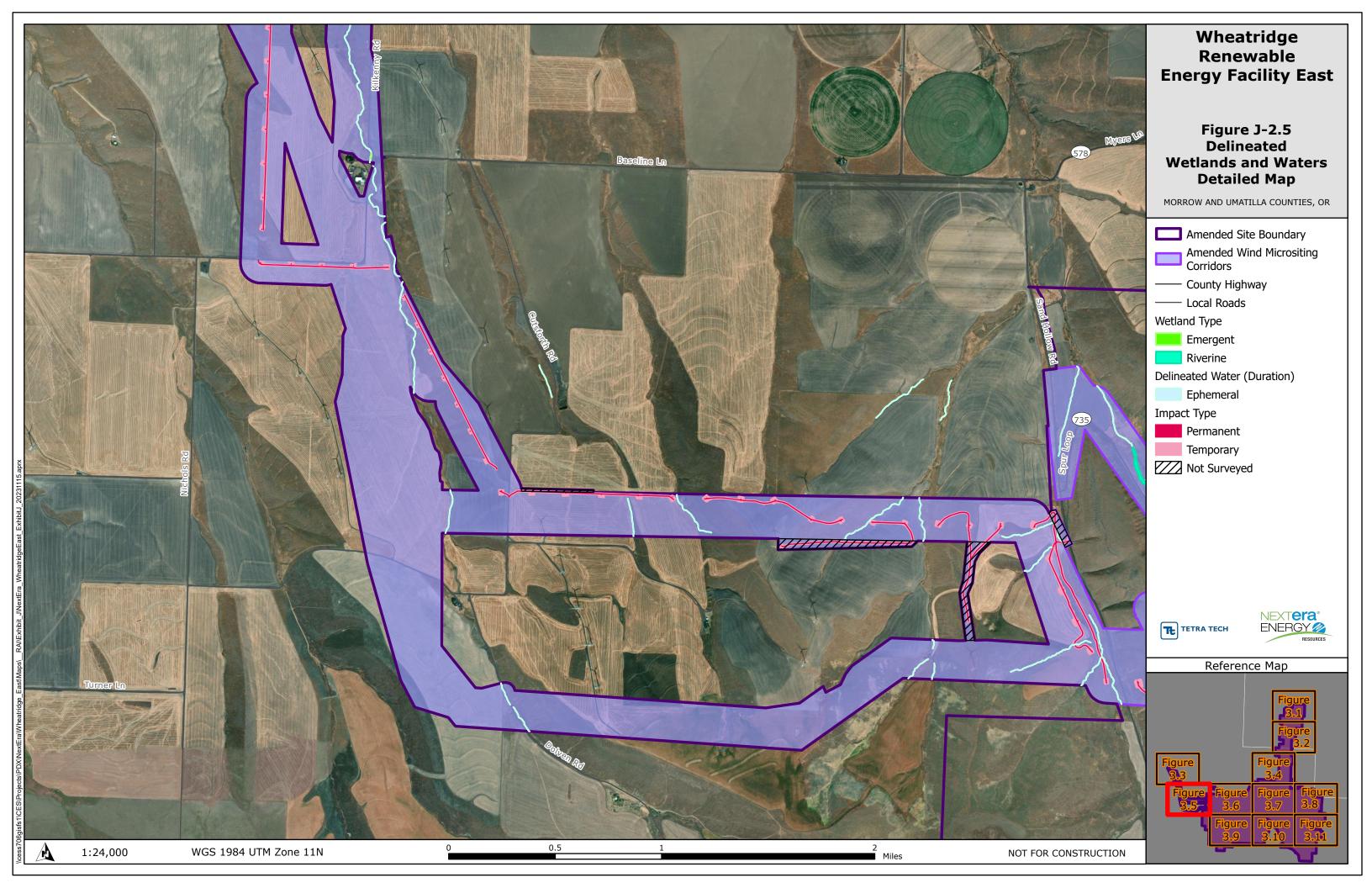


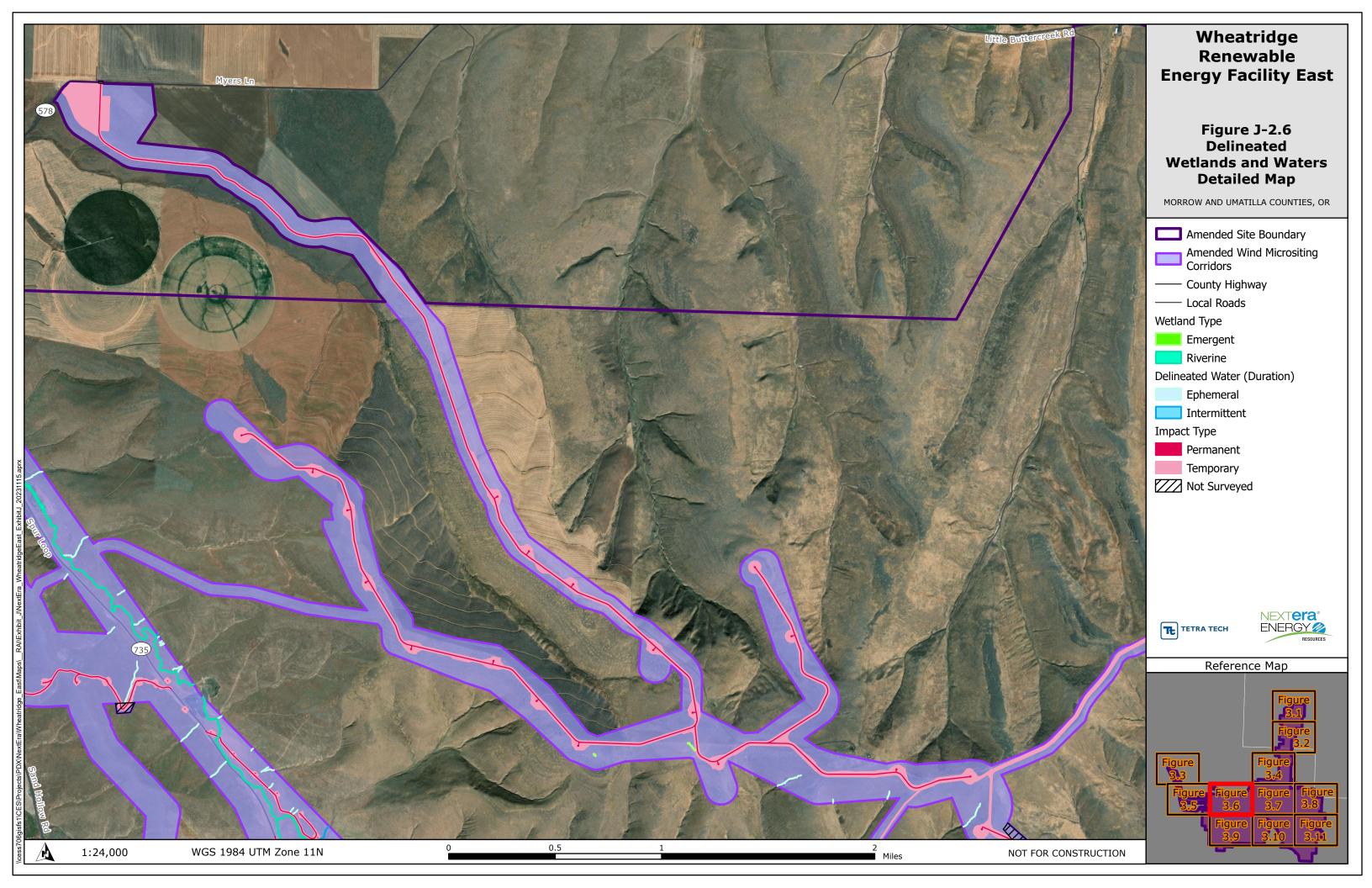


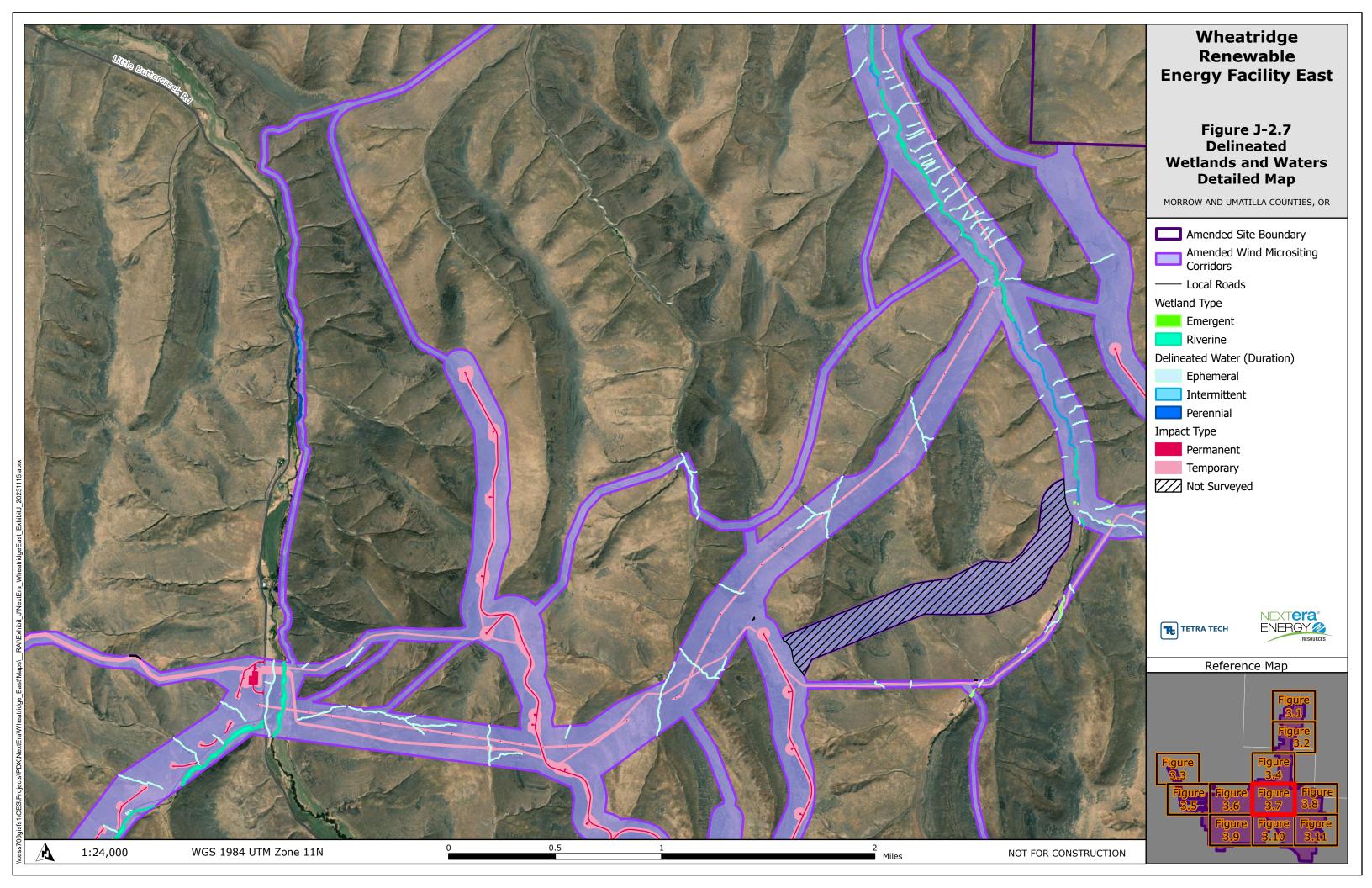


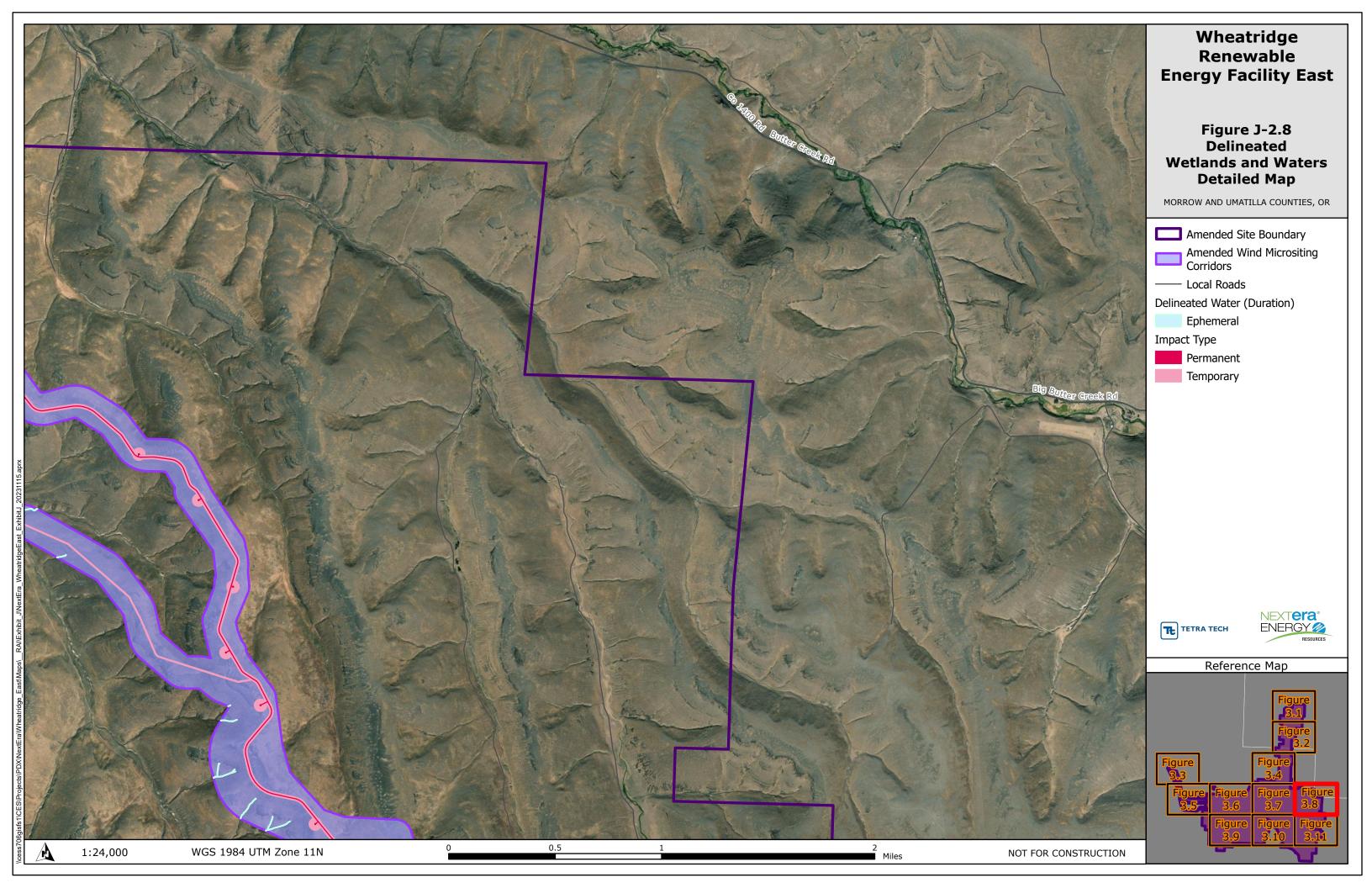


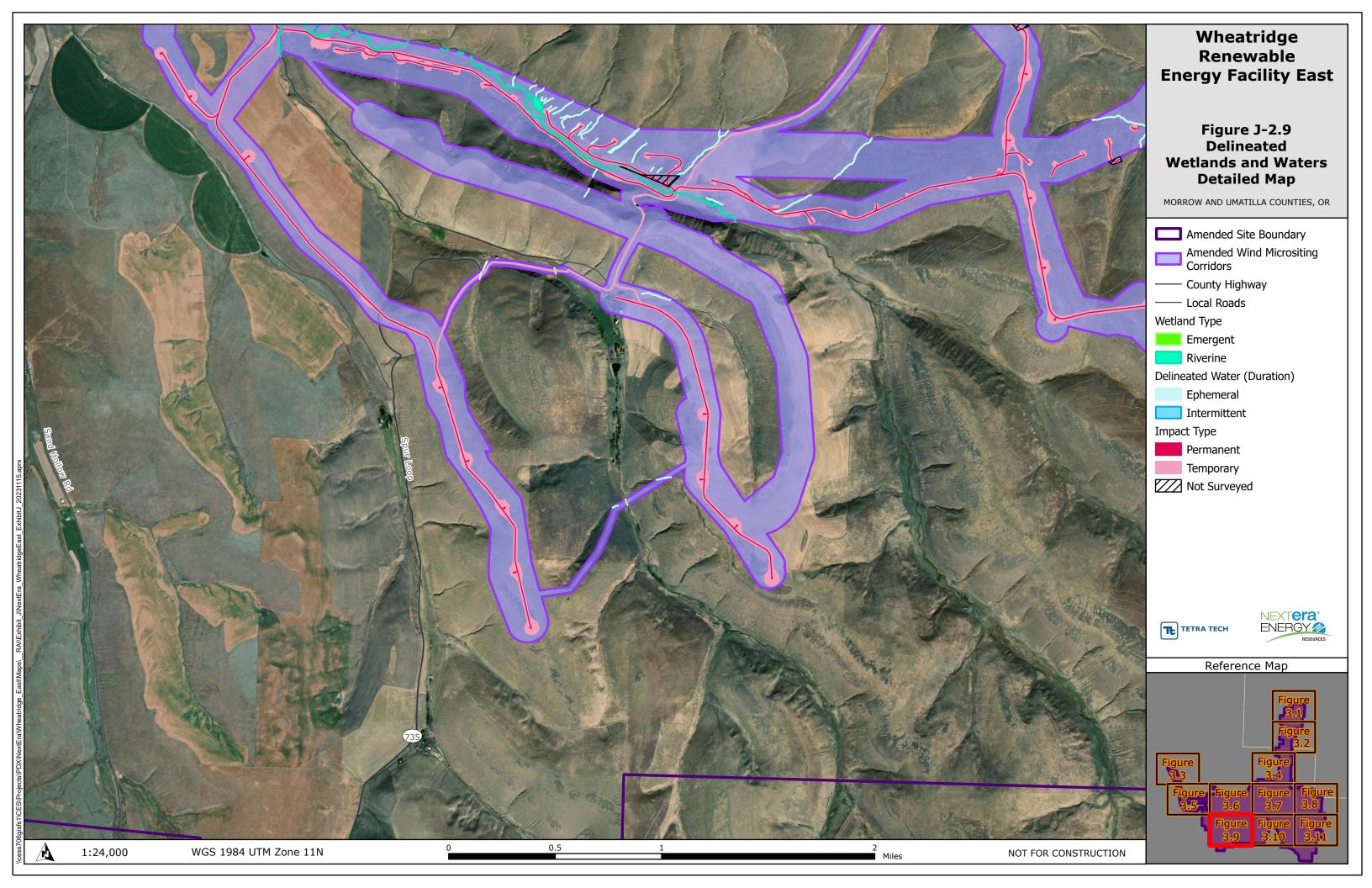


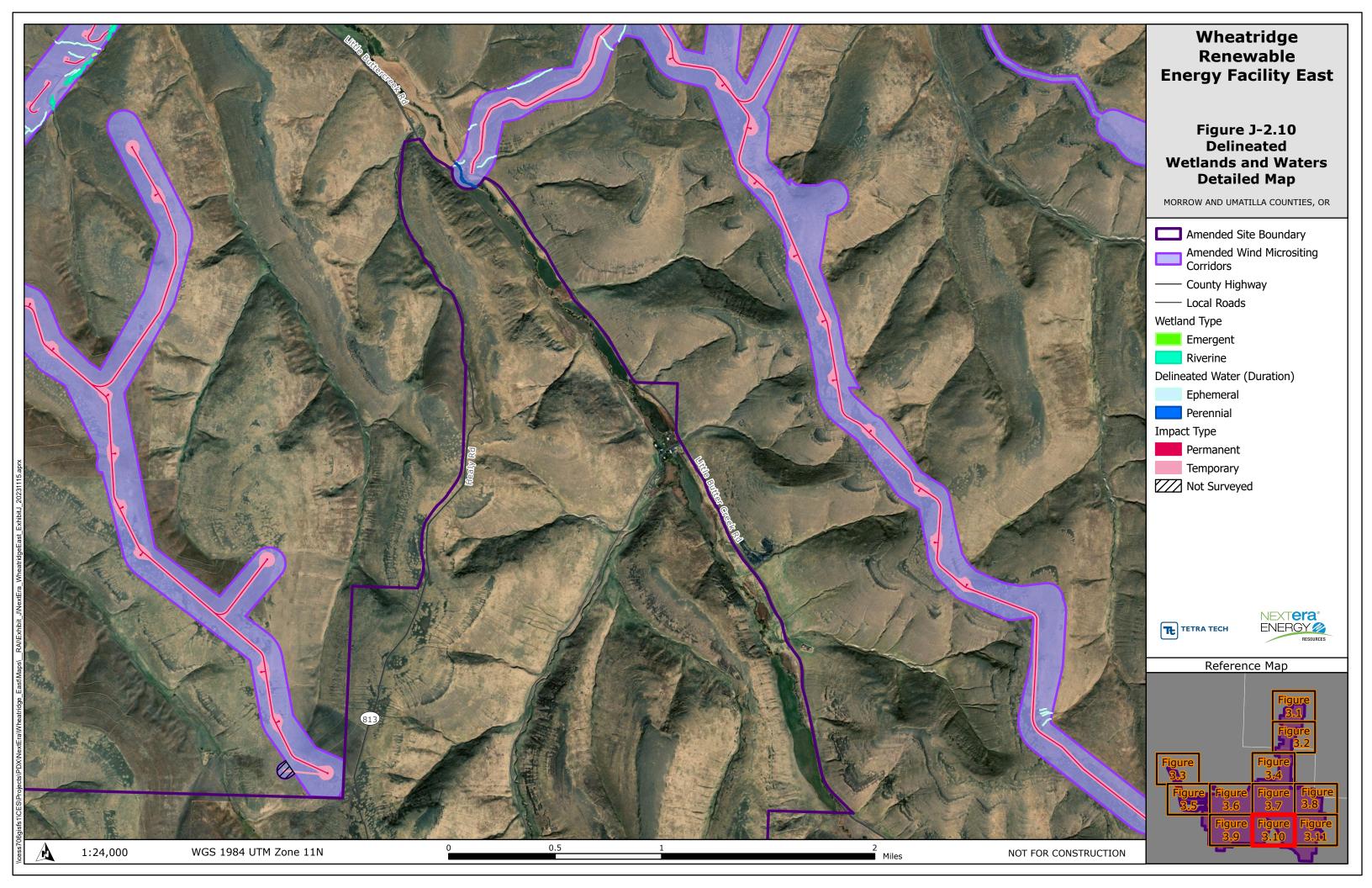


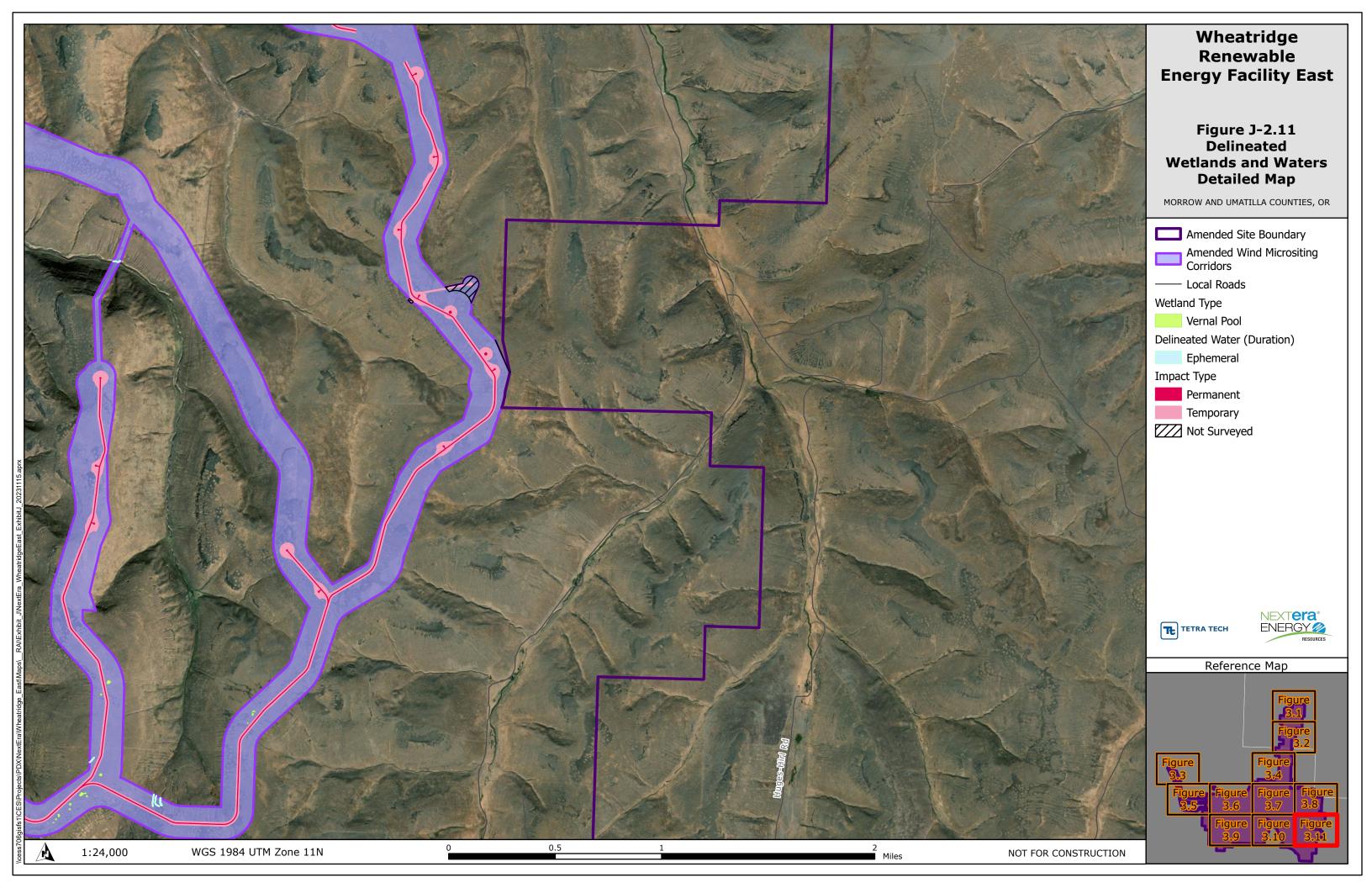














Attachment J-1. Wetland Delineation Report

Wetlands and Waters Report

Wheatridge Renewable Energy Facility East

Prepared For Wheatridge East Wind, LLC

Prepared By



Tetra Tech, Inc.

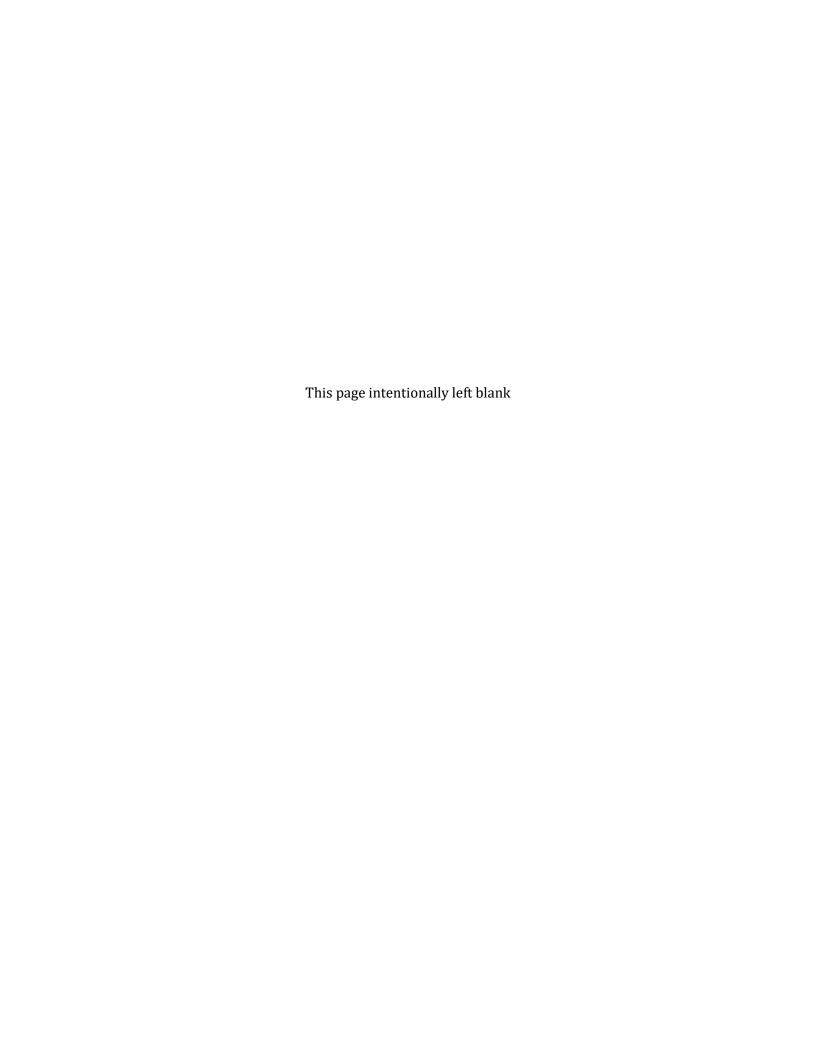


Table of Contents

1.0 Intr	oduction	1			
2.0 Lan	dscape Setting and Land Use	1			
2.1	Study Area	1			
2.2	Landscape Setting	3			
2.3	Land Use	4			
	2.3.1 National Wetlands Inventory and Local Wetland Inventory Data	4			
	2.3.2 Hydric Soils Data	4			
3.0 Site	Alterations	6			
4.0 Precipitation Data and Analysis					
4.1	July 21, 2022, Site Visit	7			
4.2	October 17 to 28, 2022, Site Visit	7			
4.3	November 7 to 17, 2022, Site Visit	7			
4.4	March 27 to 29, 2023, Site Visit	7			
5.0 Met	hods	11			
5.1	Pre-field Work	11			
5.2	Field Work	11			
6.0 Des	cription of Wetlands, Other Non-wetland Waters, and Roadside Drainage Ditches	12			
6.1	Wetlands	12			
6.2	Non-wetland Waters	13			
7.0 Map	pping Methods	13			
8.0 Res	ults and Conclusions	13			
9.0 Disc	claimer	14			
10.0 F	References	14			
	List of Tables				
	Tax Map and Tax Lot Numbers within the Project Study Area				
	Soils Mapped in the Project Study Area				
	Precipitation Data – Current and Historical (Inches)				
Table 4.	Summary of Wetlands and Other Water Features	14			

List of Figures

Figure 1. Project Location

Figure 2. Tax Lot Map

Figure 3. NWI and NHD Map

Figure 4. NRCS Soils Map

Figure 5. Wetland and Waters Delineation Map

List of Appendices

Appendix A. USACE Wetland Datasheets

Appendix B. Wetlands and Waters Photolog

Appendix C. Wetlands and Waters Summary Tables

1.0 Introduction

This report presents the methods and results for the wetlands and other waters surveys Tetra Tech, Inc. (Tetra Tech) conducted for the Wheatridge Renewable Energy Facility East (Project) on behalf of Wheatridge East Wind, LLC, a subsidiary of NextEra Energy Resources, Inc. The 15,564-acre Project area is in Morrow and Umatilla counties, Oregon (Figure 1).

Tetra Tech completed wetlands and waters surveys on July 21, 2022, October 17 to 28, 2022, November 7 to 17, 2022, and March 27 to 29, 2023. The purpose of these surveys was to confirm the National Wetland Inventory (NWI) data and the information gathered during a desktop analysis on the presence of wetlands and water features within the wind 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 a 15,564-acre site within Morrow and Umatilla counties, approximately 7 miles northwest of Heppner (Figure 1). Figure 2 shows the tax lots, township, and range crossed by the study area. Tax lots are listed in Table1 below.

Table 1. Tax Map an	d Tax Lot Num	bers within t	he Project	t Study Area
---------------------	---------------	---------------	------------	--------------

Tax Lot Number	Access Granted For Survey	Tax Lot Number	Access Granted For Survey
02S28-00100	Yes	01S28E000000400	Yes
01S26E000001802	Yes	01S28E000002300	Yes
01N28E000000201	Yes	01S29E000000400	Yes
01N28E000000201	Yes	01S27E000000500	Yes
01S28E000000301	Yes	01S27E000000401	Yes
01S27E000000509	Yes	01N28E000000301	Yes
01S27E000001600	Yes	01N28E000000301	Yes
01S28E000000500	Yes	01N28E000000301	Yes
01S28E000000500	Yes	01S28E000000700	Yes
01N28E000000303	Yes	01S28E000000700	Yes
01S27E000000600	Yes	01S27E000000516	Yes
01S27E000000512	Yes	01S28E000000200	Yes
01S27E000001000	Yes	01N27E000000700	No
01S27E000000300	Yes	01S27E000000505	Yes
01S29E000001900	Yes	01N28E000000200	No

Tax Lot Number	Tax Lot Number Access Granted For Survey		Access Granted For Survey
01N28E000000304	Yes	01N28E000000200	No
01N28E000000304	Yes	01S27E000000503	Yes
01S27E000000510	Yes	01S28E000001401	Yes
01S28E000001300	Yes	01S28E000002200	Yes
01N28E000001000	Yes	2N28000001900	Yes
01S26E000000100	Yes	01S28E000002100	No
01S26E000000100	Yes	01S28E000001002	No
01S29E000000300	Yes	01S28E000001001	No
01N27E000001700	Yes	01N26E000004800	Yes
01S27E000001200	Yes	01N26E000004500	No
01S28E000001000	Yes	01N26E000003502	Yes
01S28E000000201	Yes	01N26E000003500	Yes
01S27E000000800	Yes	01N26E000003400	Yes
01S28E000001200	Yes	01N26E000003300	Yes
01S27E000000507	Yes	01N25E000001600	Yes
01N28E000000900	Yes	01N25E000003100	Yes
01N28E000000900	Yes	01N26E000004700	Yes
01S28E000000300	Yes	01S26E000001602	Yes
01S27E000001300	Yes	01S26E000001400	Yes
01S28E000001600	Yes	01S26E000001500	Yes
01N28E000000700	Yes	01S26E000000500	Yes
01S28E000001200	Yes	01S26E000000400	Yes
01S27E000000400	Yes	01N26E000003200	Yes
01S28E000000600	Yes	01S26E000001800	Yes
01S28E000000600	Yes	01S28E000002100	No
01S26E000001801	Yes	01S28E000001002	No
01S27E000000514	Yes	01S28E000001001	No
01N26E000004900	Yes	01S27E000001100	No
01S28E000001500	Yes	01S26E000000300	No
01S29E000000900	Yes	2N28000000400	Yes
01S29E000002000	Yes	2N28000001901	Yes
01S27E000001100	No	2N28000002100	Yes
01N28E000000300	Yes	2N28000002200	Yes
01S28E000000100	Yes	2N28000002300	Yes
01S27E000000200	Yes	2N28000002400	Yes

Tax Lot Number	Access Granted For Survey	Tax Lot Number	Access Granted For Survey
01N28E000000201	Yes	2N28000002700	Yes
01S27E000000515	Yes	2N28000002800	Yes
01S28E000001400	Yes	01S26E000000200	Yes
01N27E000002400	Yes	01S28E000001000	Yes

2.2 Landscape Setting

The Project is located within the Level III Columbia Plateau Ecoregion and 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 for LRR B is the *Arid West Region (Version 2.0)* (Arid West Supplement) (USACE 2008).

Most of this ecoregion receives under 15 inches of precipitation per year with some areas receiving as few as 8 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 the Project study area are dominated by cheatgrass (*Bromus tectorum*), bulbous bluegrass (*Poa bulbosa*), ripgut brome (*Bromus diandrus*), Russian thistle (*Salsola tragus*), prickly lettuce (*Lactuca serriola*), and rubber rabbitbrush (*Ericameria nauseosa*) both inside the channels and on the banks. The dominant plant species within the Project study area and their wetland indicator status ratings according to the State of Oregon 2018 Wetland Plant List (Lichvar et al. 2018) are described below. The wetland indicator ratings refer to the percent likelihood of the plant species occurring in wetlands. They include, from most- to least-likely to occur in a wetland, Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), and Upland (UPL). Species not included in Lichvar et al. (2018) are labeled NI (No Indicator) and considered UPL species.

The dominant shrub species in the Project study area is rubber rabbitbrush (*Ericameria nauseosa*, UPL). There are small, scattered populations of basin big sagebrush (*Artemisia tridentata*, NI) and yellow rabbitbrush (*Chrysothamnus viscidiflorus*, UPL). Dominant grass species in the study area include wheat (*Triticum aestivum*, NI), Intermediate wheatgrass (*Agropyron intermedium*, UPL), bluebunch wheatgrass (*Pseudoroegneria spicata*, UPL), tall fescue (*Schedonorus arundinacea*, FACU), cheatgrass (*Bromus tectorum*, NI), ripgut brome (*Bromus diandrus*, NI), bulbous bluegrass (*Poa bulbosa*, FACU), Sandberg bluegrass (*Poa secunda*, FACU), soft brome (*Bromus hordeaceus*, FACU), medusahead (*Taeniatherum caput-medusae*, NI), cereal rye (*Secale cereal*, NI), giant basin wildrye (*Leymus cinereus*, FAC), dense silkybent (*Apera interrupta*, NI), mouse barley (*Hordeum murinum*, FACU), thickspike wheatgrass (*Elymus lanceolatus*, UPL), tall wheatgrass (*Thinopyrum ponticum*, NI), and saltgrass (*Distichlis spicata*, FAC).

Dominant herbaceous species documented in the Project study area include: common yarrow (*Achillea millefolium*, FACU), arrowleaf buckwheat (*Eriogonum compositum*, NI), snow buckwheat

(Eriogonum niveum, NI), broom snakeweed (Gutierrezia sarothrae, NI), wavyleaf thistle (Cirsium undulatum, FACU), ribseed sandmat (Euphorbia glyptosperma, NI), redstem stork's bill (Erodium cicutarium, NI), mullein (Verbascum thapsus, FACU), prickly lettuce (Lactuca serriola, FACU), teasel (Dipsacus fullonum, FAC), clasping pepperweed (Lepidium perfoliatum, FACU), turkey mullein (Croton setigerus, NI), Scotch thistle (Onopordum acanthium, NI), slender hareleaf (Lagophylla ramossisima, NI), prostrate pigweed (Amaranthus blitoides, FACU), tall hedge-mustard (Sisymbrium altissimum, FACU), prickly Russian thistle (Salsola tragus, FACU), spotted knapweed (Centaurea stoebe, NI), curlycup gumweed (Grindelia squarrosa, FACU), Tolmie's onion (Allium tolmiei, UPL), and Canadian horseweed (Conyza canadensis, NI).

2.3 Land Use

The study area is mostly rural land. Towns near the Project include Heppner, in Morrow County, and Echo, in Umatilla County. Much of the study area's historic native grassland and shrub-steppe habitat has been converted to agricultural use since European settlement in the mid-1800s.

The western side of the Project study area is almost entirely dryland wheat in a chemical fallow rotation. The central and eastern sides are rangeland with irrigated hay fields in the valley adjacent to Butter Creek. The rangeland is actively grazed and has many weedy grass and forb species, as detailed in Section 2.2 of this report.

2.3.1 National Wetlands Inventory and Local Wetland Inventory Data

Desktop review of NWI data showed several riverine and emergent wetlands in the Project area. There is no Local Wetland Inventory available at this location (ODSL 2022). Figure 3 shows the NWI map layered over the Project study area.

2.3.2 Hydric Soils Data

Fifty-five soil map units are mapped in the Project study area (Figure 4). Table 2 below summarizes the soil types and indicates if they are considered hydric.

Map Unit Code	Map Unit Name	Hydric Rating				
11	Endersby fine sandy loam	No				
12	Esquatzel silt loam	No				
121B	Willis silt loam, 2 to 7 percent slopes	No				
121D	Willis silt loam, 12 to 30 percent slopes	No				
15B	Burke silt loam, 1 to 7 percent slopes	No				
15C	Burke silt loam, 7 to 12 percent slopes	No				
18C	Condon silt loam, 7 to 12 percent slopes	Yes				
19D	Condon silt loam, 12 to 20 percent north slopes	No				

Table 2. Soils Mapped in the Project Study Area

Map Unit Code	Map Unit Name	Hydric Rating
22	Kimberly fine sandy loam	No
28E	Lickskillet very stony loam, 7 to 40 percent slopes	No
29F	Lickskillet-Rock outcrop complex, 40 to 70 percent slopes	No
2D	Bakeoven very cobbly loam, 2 to 20 percent slopes	Yes
30B	Mikkalo silt loam, 2 to 7 percent slopes	No
30C	Mikkalo silt loam, 7 to 12 percent slopes	No
30D	Mikkalo silt loam, 12 to 20 percent slopes	Yes
31B	Morrow silt loam, 1 to 7 percent slopes	No
31C	Morrow silt loam, 7 to 12 percent slopes	No
32D	Morrow silt loam, 12 to 20 percent north slopes	Yes
32E	Morrow silt loam, 20 to 35 percent north slopes	No
33E	Morrow silt loam, 20 to 30 percent south slopes	No
34F	Nansene silt loam, 35 to 70 percent slopes	No
35	Onyx silt loam	No
36	Pedigo silt loam	No
3D	Bakeoven-Morrow complex, 2 to 20 percent slopes	No
43A	Kimberly silt loam, 0 to 3 percent slopes	No
43C	Rhea silt loam, 7 to 12 percent slopes	No
43D	Rhea silt loam, 12 to 20 percent slopes	No
43E	Rhea silt loam, 20 to 35 percent slopes	No
43F	Rhea silt loam, 35 to 50 percent slopes	No
45B	Ritzville silt loam, 2 to 7 percent slopes	No
45C	Ritzville silt loam, 7 to 12 percent slopes	No
45D	Ritzville silt loam, 12 to 20 percent slopes	No
47E	Ritzville silt loam, 20 to 40 percent south slopes	No
48E	Lickskillet very stony loam, 7 to 40 percent slopes	No
4D	Bakeoven-Valby complex, 2 to 20 percent slopes	No
50F	Lickskillet-Rock outcrop complex, 40 to 70 percent slopes	No
54B	Mikkalo silt loam, 2 to 7 percent slopes	No
54C	Mikkalo silt loam, 7 to 12 percent slopes	No
54D	Mikkalo silt loam, 12 to 20 percent slopes	No
63B	Valby silt loam, 1 to 7 percent slopes	No
63C	Valby silt loam, 7 to 12 percent slopes	No
64D	Valby silt loam, 12 to 20 percent north slopes	Yes
65D	Valby silt loam, 12 to 20 percent south slopes	No

Map Unit Code	Map Unit Name	Hydric Rating
65E	Valby silt loam, 20 to 30 percent south slopes	No
75B	Willis silt loam, 2 to 5 percent slopes	No
75C	Willis silt loam, 5 to 12 percent slopes	No
77F	Wrentham-Rock outcrop complex, 35 to 70 percent slopes	No
78	Xeric Torriorthents, nearly level	No
80B	Ritzville silt loam, 2 to 7 percent slopes	No
80D	Ritzville silt loam, 12 to 25 percent slopes	No
81E	Ritzville silt loam, 25 to 40 percent north slopes	No
83D	Condon silt loam, 12 to 20 percent north slopes	No
85C	Condon silt loam, 7 to 12 percent slopes	No
89B	Shano silt loam, 2 to 7 percent slopes	No
89C	Shano silt loam, 7 to 12 percent slopes	No

3.0 Site Alterations

Site alterations are activities that directly or indirectly impact wetlands and other water features, such that the feature's area or function changes significantly. A significant change renders the feature non-functioning or changes its boundaries. Land use in the Project study area is generally dominated by agricultural activities like wheat farming and open-range grazing. Tillage practices are changing across the region, and the conversion to reduced- and no-till farming methods has decreased the overland flow and increased the infiltration rates on-site. The alterations associated with these practices may have affected the size or hydroperiod of wetlands and other waters. For instance, some waters delineated in the study area likely had higher flows in the past due to runoff from farm fields that doesn't occur with new farming practices. In addition, permanent gravel farm roads and other drainage alterations from land development may have affected the size and hydroperiod of some water features.

Where livestock is present on agricultural lands, wetlands and streams have been altered by compaction of soils, trampling and grazing of vegetation (especially in riparian areas), introduction and spread of non-native invasive plant species in disturbed wetland soils, and reduced water quality from manure and increased sedimentation through trampling of stream-side soil and vegetation. Alterations from livestock affect wetland vegetation, soils, and hydrologic conditions, but generally not geographic area.

4.0 Precipitation Data and Analysis

Average historical monthly 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 2022; Table 3). The closest geographical location with an NRCS WETS table is Heppner, Oregon, approximately 10 miles southeast of the project area (NOAA 2022).

Total accumulated precipitation between April 2022 and March 2023 was 108 percent of average due to above average precipitation in April, May, June, October, and November 2022. Based on the precipitation data for the 3 months before each site visit, it was estimated that groundwater was higher than usual for the time of year (Table 3).

Higher-than-normal precipitation levels did not affect the delineation of waters, as determinations of intermittent versus ephemeral streams were made using indicators described in the Streamflow Duration Assessment Method for the Pacific Northwest (SDAM; Nadeau 2015). The SDAM relies on multiple indicators that are independent of hydrology.

4.1 July 21, 2022, Site Visit

For the 10-day span preceding and during field work, no precipitation was measured (NOAA 2022). Monthly precipitation for July 2022 was 10 percent of average. This below-average precipitation in July was made up for by above-normal precipitation in April, May, and June at 141, 181, and 187 percent of average, respectively.

4.2 October 17 to 28, 2022, Site Visit

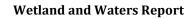
For the 10-day span preceding and during field work, 1.32 inches of precipitation was measured (NOAA 2022). Precipitation for October 2022 was 114 percent of average. Monthly precipitation totals in July, August, and September were below normal at 10, 31, and 33 percent of average, respectively.

4.3 November 7 to 17, 2022, Site Visit

For the 10-day span preceding and during field work, 1.48 inches of precipitation was measured (NOAA 2022). Precipitation for November 2022 was 96 percent of average. Monthly precipitation totals in August and September were below normal at 29 and 33 percent of average, respectively, while monthly precipitation was above normal in October with 113 percent of average.

4.4 March 27 to 29, 2023, Site Visit

For the 10-day span preceding and during field work, 0.27 inches of precipitation was measured (NOAA 2023). Precipitation for March 2023 was 80 percent of average. Monthly precipitation totals in January, February, and March were below normal at 35, 45, and 80 percent of average, respectively.



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Table 3. Precipitation Data - Current and Historical (Inches)

			-										
Precipitation	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Water Year Total
Recorded Monthly Precipitation Totals ¹ (inches); (Heppner, OR)	2.12	3.12	2.6	0.03	0.08	0.14	1.32	1.67	0.97	0.43	0.48	1.03	13.99
WETS Average Monthly Precipitation ² (inches); (Heppner, OR)	1.5	1.72	1.39	0.29	0.26	0.43	1.16	1.39	1.28	1.22	1.06	1.29	12.99
Recorded Precipitation Relative to WETS Average Monthly Precipitation	141%	181%	187%	10%	31%	33%	114%	120%	76%	35%	45%	80%	108%
Normal Monthly Range of Precipitation ² (inches)	1.00-1.80	1.11-2.06	0.65-1.69	0.10-0.30	0.07-0.23	0.16-0.46	0.82-1.38	0.88-1.67	0.84-1.54	0.78-1.46	0.63-1.29	0.88-1.54	N/A

^{1.} National Weather Service, Heppner, OR Climate Station.

Wheatridge Renewable Energy Facility East

^{2.} WETS Table for Heppner, OR, years 1991-2020.

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Wheatridge Renewable Energy Facility East

5.0 Methods

5.1 Pre-field Work

In preparation for the field work, Tetra Tech reviewed NWI, NHD, hydric soils data, and aerial photographs to identify potential wetlands and other waters, as described in the preceding sections. Using these data, Tetra Tech prepared digital field maps which were uploaded to 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 wetland mapping data from the NWI, state and federal agencies, non-governmental organizations, academia and consultants, and the NHD (Oregon Spatial Data Library 2022; NWI 2022; NHD 2022). 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 2022), as well as from the NRCS Web Soil Survey (NRCS 2022b).

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 July 21, October 17 to 28, November 7 to 17 of 2022 and March 27 to 29 of 2023. The desktop surface-water data were used to focus the non-wetlands water evaluation as necessary.

Wetland presence was determined per methods in the Manual and the Arid West Supplement. Three field indicators of wetlands (hydrophytic vegetation, hydric soils, and wetland hydrology) must be present to make a positive wetland determination. 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 7.0. The list below details the procedures implemented in the field.

- Sample plots were established in all features identified by NWI data (US Fish and Wildlife Service 2022). Each sample plot was located where feature was most likely to have wetland characteristics (i.e., the lowest or greenest place).
- Paired sample plots were established in logical locations to document wetland boundaries.
- The number of sample plots was commensurate with the size and complexity of the associated wetland and whether it was bordered by uplands or another wetland with a different classification (Cowardin et al. 1979). The number of sample plots per wetland ranged from one to several. Wetland datasheets are provided in Appendix A.
- Photographs were taken to document wetland and upland conditions at the wetland boundaries. Photographs were also taken at sample plots documenting upland conditions at locations that NHD mapped as streams. The wetland and waters photolog is provided in Appendix B.
- Each wetland boundary was recorded as a polygon using a Juniper Geode global positioning system (GPS) unit. Details on mapping methods are presented in Section 7.
- The ordinary high water mark was determined using criteria such as change in the soil character or vegetation, sediment, litter or debris deposition, and scour lines.
- The centerlines of non-wetland waters less than 6 feet wide were recorded as line features 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 B, Photolog).

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

All wetlands and non-wetland waters evaluated in the Project study area are depicted in the Figure 5 map set.

6.1 Wetlands

The dominant herbaceous vegetation species observed in the riverine, emergent, and vernal pool wetlands include broadleaf cattail, (*Typha latifolia*, OBL), Baltic rush (*Juncus balticus*, FACW), Bolander's rush (*Juncus bolanderi*, OBL), jointed rush (*Juncus articulatus*, OBL), celery-leaved buttercup (*Ranunculus sceleratus*, OBL), rabbitsfoot grass (*Polypogon monspeliensis*, FACW), American brooklime (*Veronica americana*, OBL), watercress (*Nasturtium officinale*, OBL), barnyard grass (*Echinochloa crus-galli*, FACW), needle-leaf pincushion-plant (*Navarretia intertexta*, FACW), water parsley (*Oenanthe sarmentosa*, OBL), and duckweed (*Lemna minor*, OBL).

Woody vegetation documented in delineated wetlands was primarily peach-leaf willow (*Salix amygdaloides*, FACW) and cottonwood (*Populus balsamifera*, FAC).

6.2 Non-wetland Waters

Using the Stream Duration Assessment Method to characterize the drainages in the Project study area, 238 ephemeral streams, six intermittent streams, and two perennial streams were delineated. The perennial and intermittent waterways were also determined to be riverine wetlands due to the amount of vegetation in their beds and banks.

The non-wetland waters in the Project study area consist of 238 ephemeral drainages, 6 intermittent streams, and 2 perennial streams. The beds and banks of the ephemeral drainages are dominated by cheatgrass (*Bromus tectorum*, NI), bulbous bluegrass (*Poa bulbosa*, FACU), rubber rabbitbrush (*Ericameria nauseosa*, NI), Russian thistle (*Salsola tragus*, FACU), prickly lettuce (*Lactuca serriola*, FACU), spotted knapweed (*Centaurea stoebe*, NI), ripgut brome (*Bromus diandrus*, NI), tumble mustard (*Sisymbrium altissimum*, FACU), fiddleneck (*Amsinckia spp.*), wavyleaf thistle (*Cirsium undulatum*, FACU), arrowleaf buckwheat (*Eriogonum compositum*, NI), soft brome (*Bromus hordeaceus*, FACU), and mouse barley (*Hordeum murinum*, FACU). Numerous other native species of grasses and forbs are common, especially at higher elevations or where the soil is thin, but generally the ephemeral waterways are overrun by the species listed above.

The intermittent streams contained primarily the same vegetation populations as the ephemeral drainages but had additional species such as smooth horsetail (*Equisetum laevigatum*, FACW), and Baltic rush (*Juncus balticus*, FACW), that bring the features into the intermittent category per the SDAM protocol. Both perennial streams had flowing water and are fish bearing. (StreamNet 2022).

7.0 Mapping Methods

Wetland polygons, 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).

Wetland polygons and water centerlines were recorded as line features using GPS units set to collect vertices every 2 seconds. With the GPS unit in hand, field staff walked the boundaries of the wetlands and the centerline or ordinary high water marks of all waterways at a consistent pace to create an accurate representation of the wetland and water features.

8.0 Results and Conclusions

Using the methods prescribed in the Manual, the Arid West Supplement, and SDAM, 33 wetlands, 238 ephemeral streams, six intermittent streams, and two perennial streams were delineated within the Project study area. Table 4 summarizes these features. Details about the individual wetlands and waterways are in Appendix C.

Table 4. Summary of Wetlands and Other Water Features

Feature	Number of Features	Acres ¹
Palustrine Emergent Wetland	11	0.99
Riverine Wetland	9	31.16
Vernal Pool	13	0.93
Wetland Total	33	33.08
Ephemeral Stream	238	8.85
Intermittent Stream	6	0.69
Perennial Stream	2	1.76
Other Waters Total	246	11.29
Potentially Jurisdictional Features	279	44.37

^{1.} Totals in this table may not be precise due to rounding.

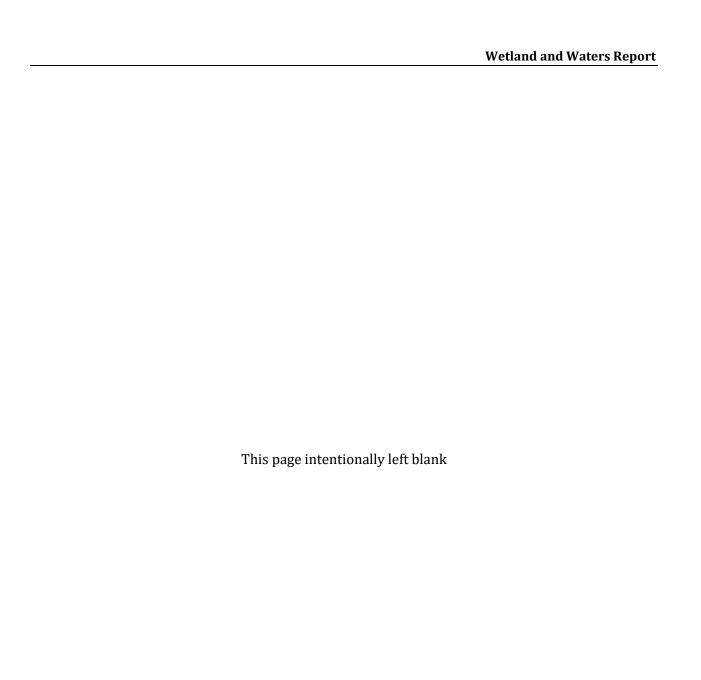
9.0 Disclaimer

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."

10.0 References

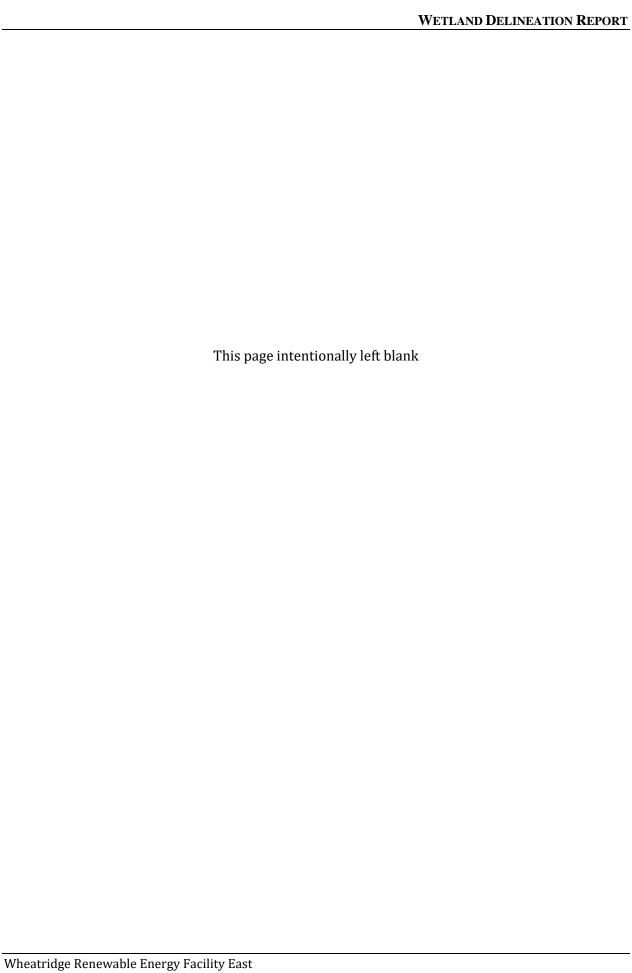
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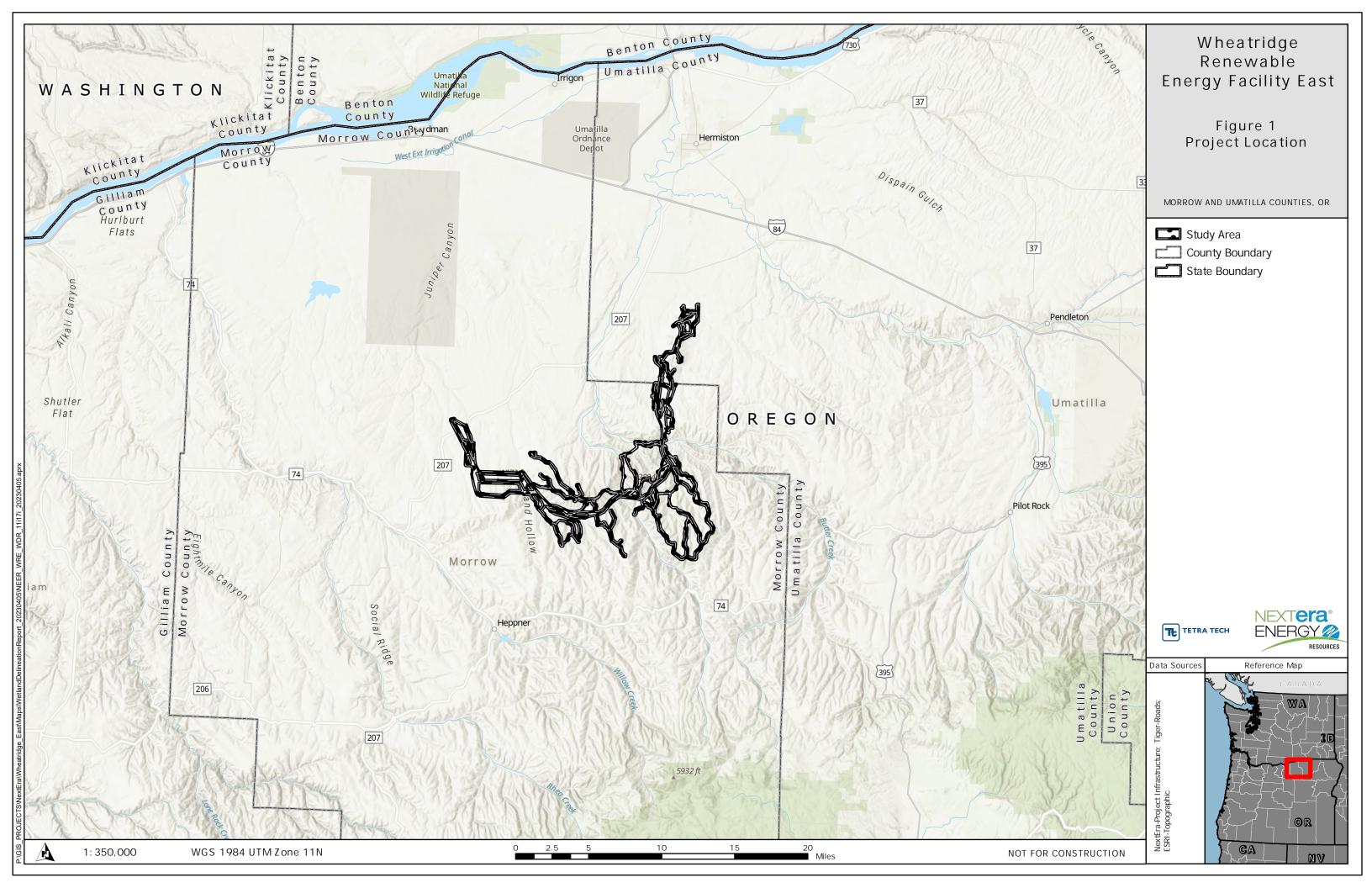
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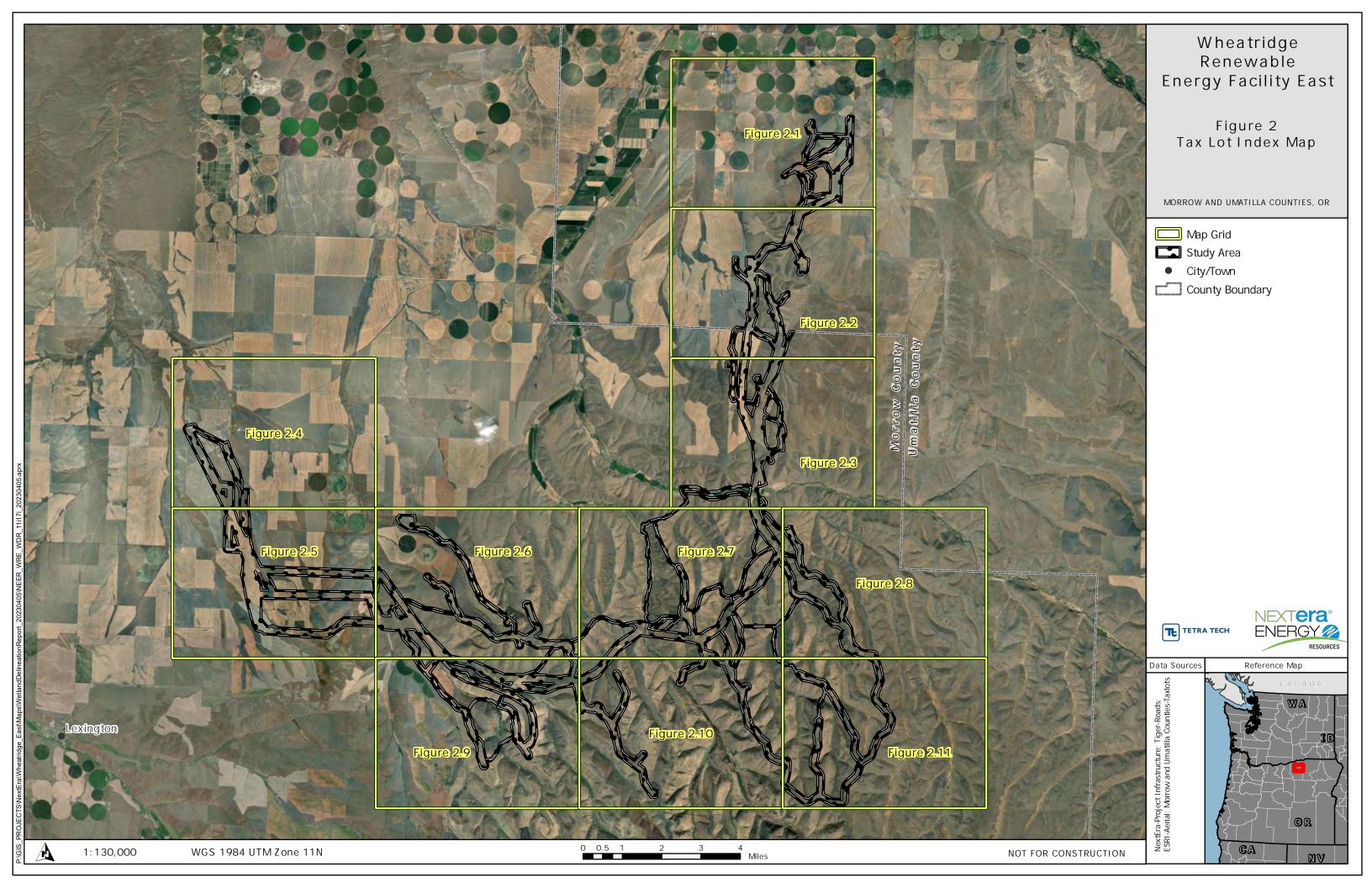


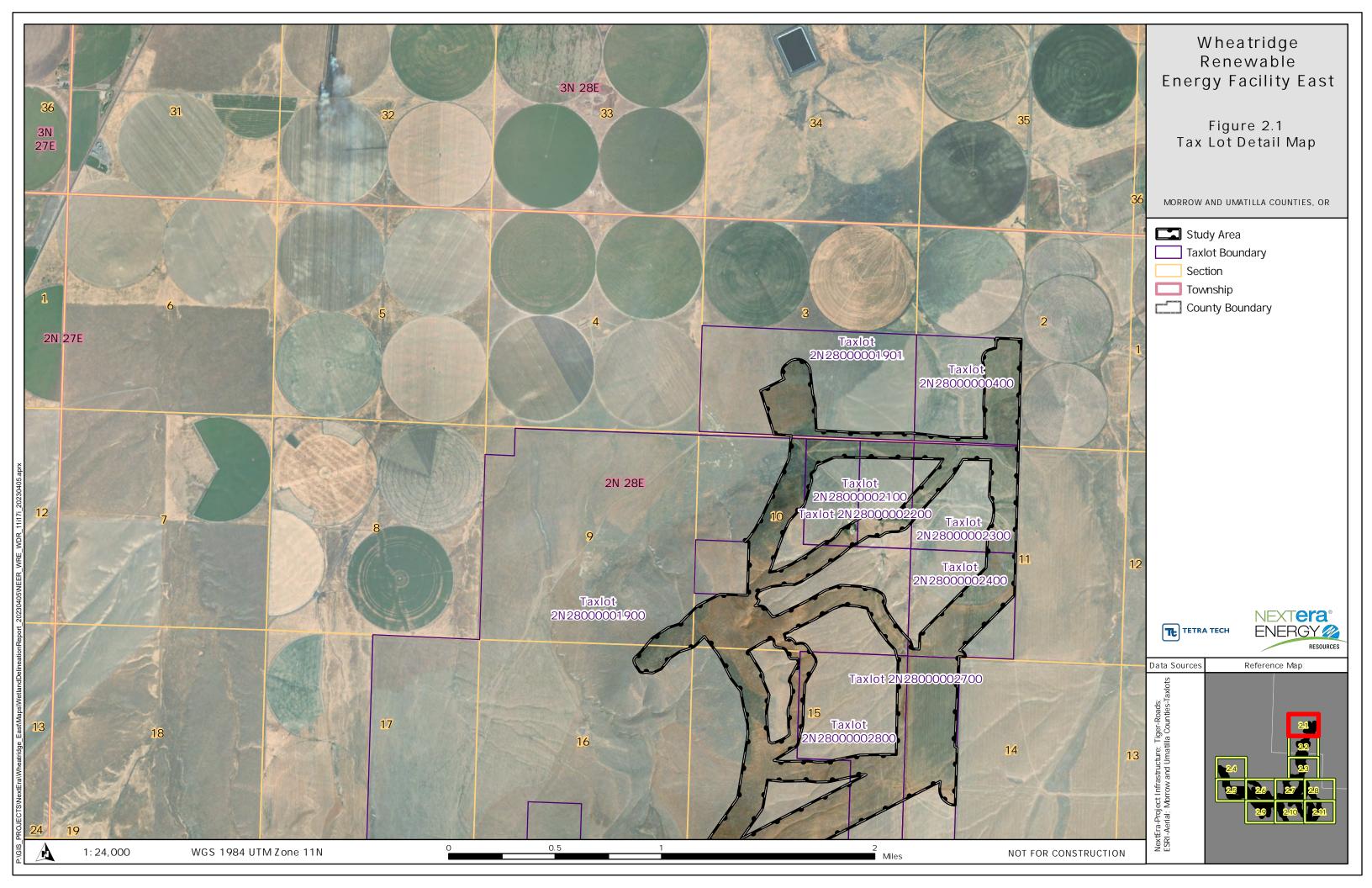
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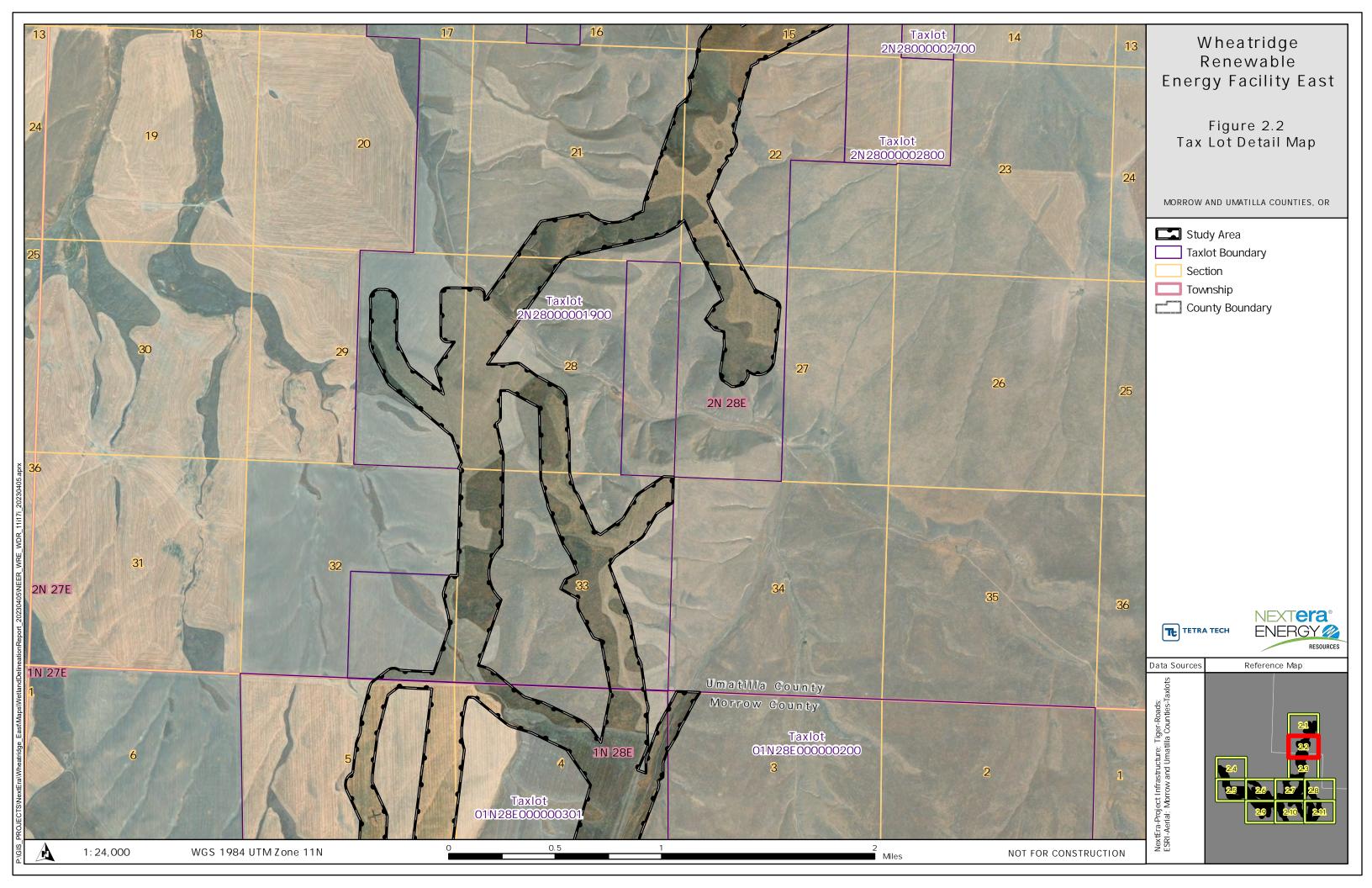
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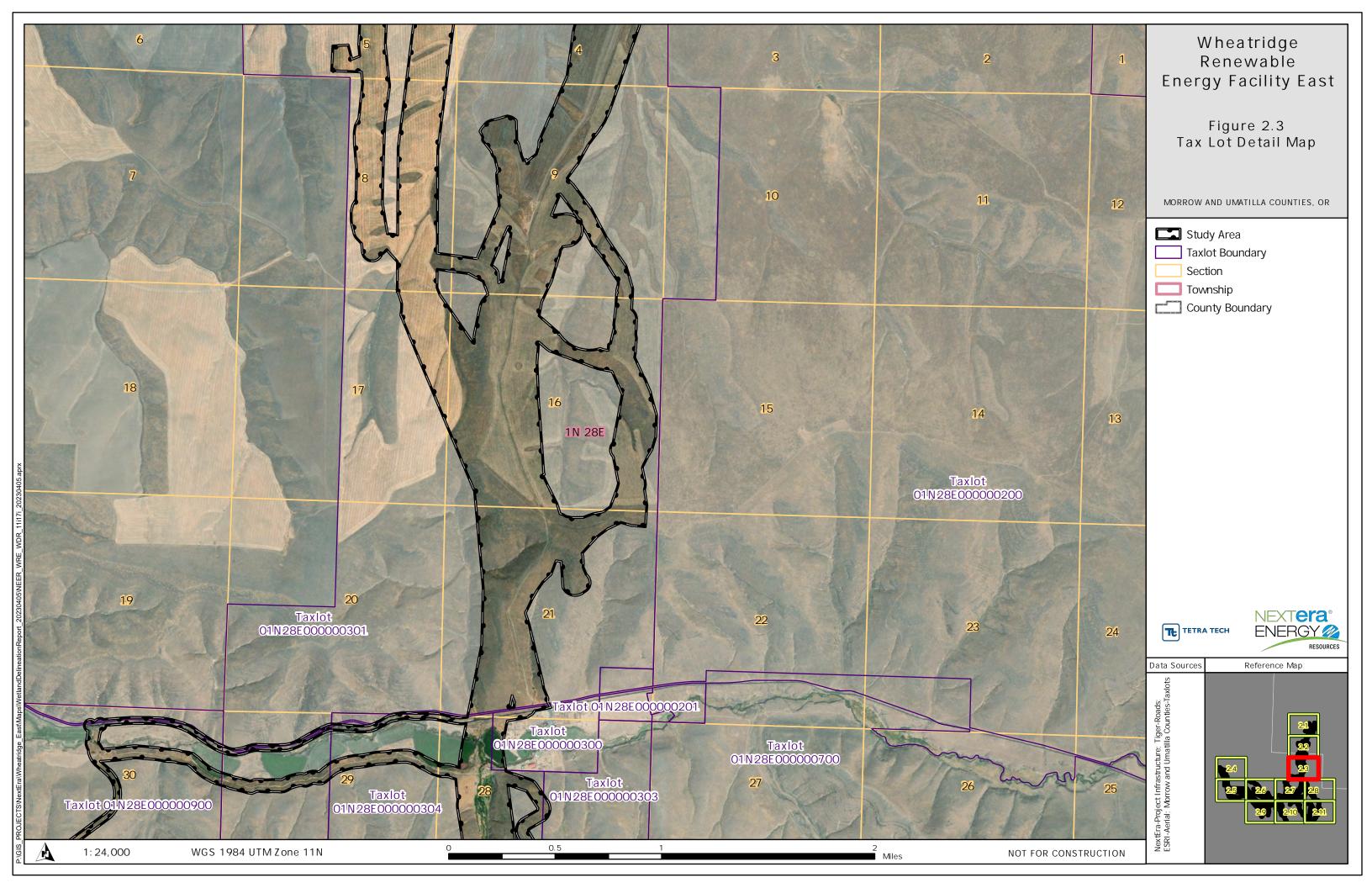


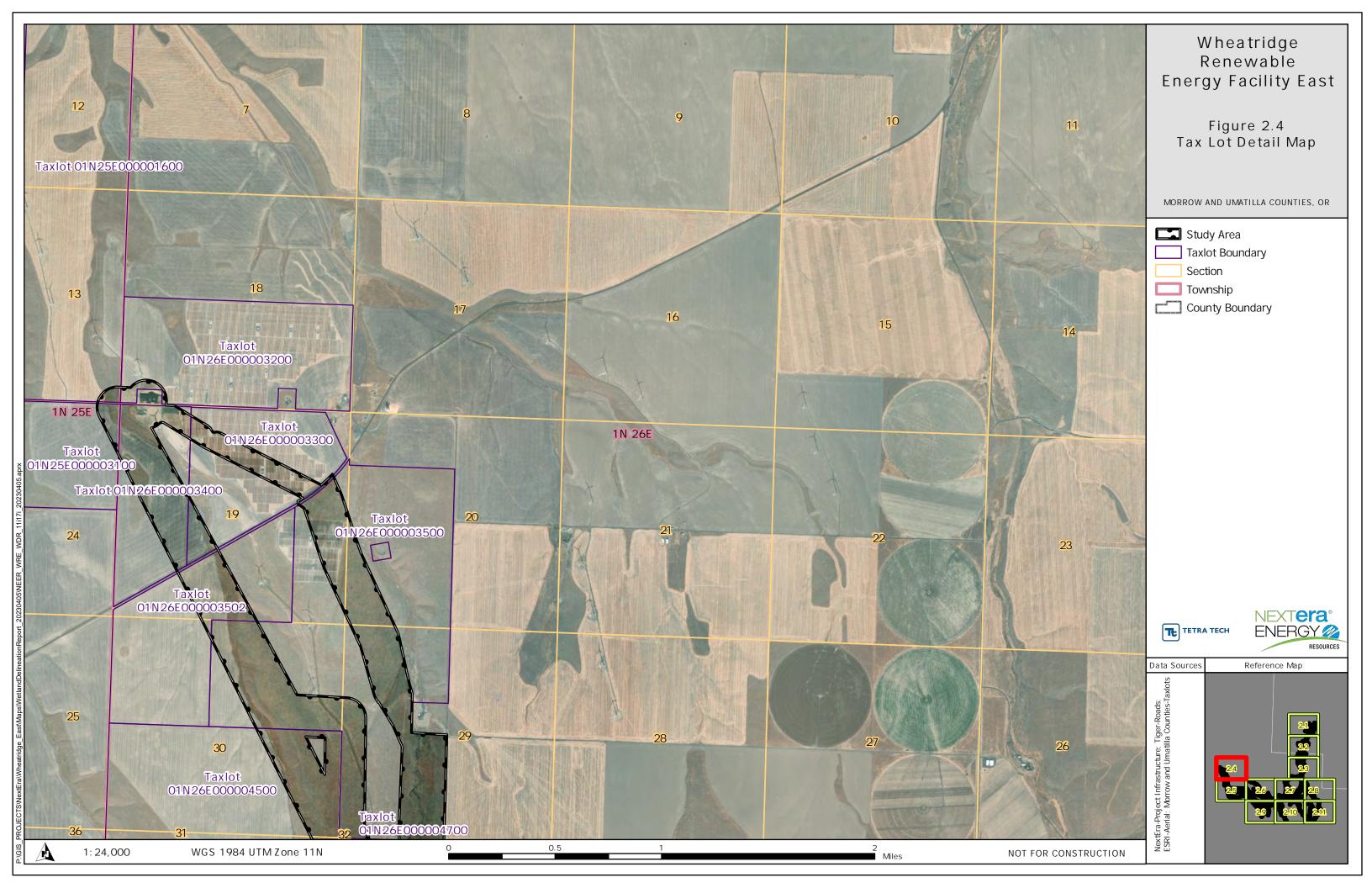


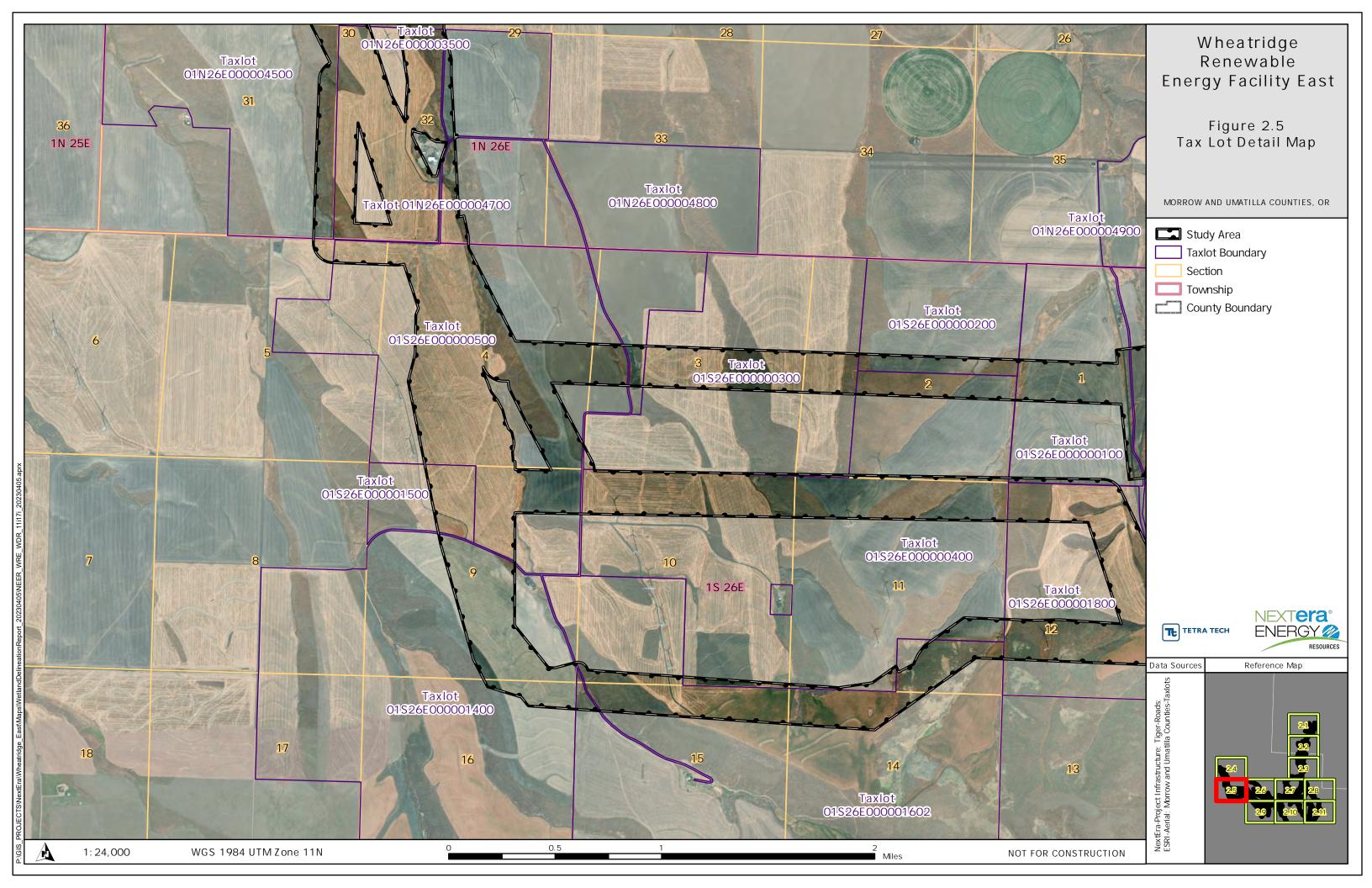


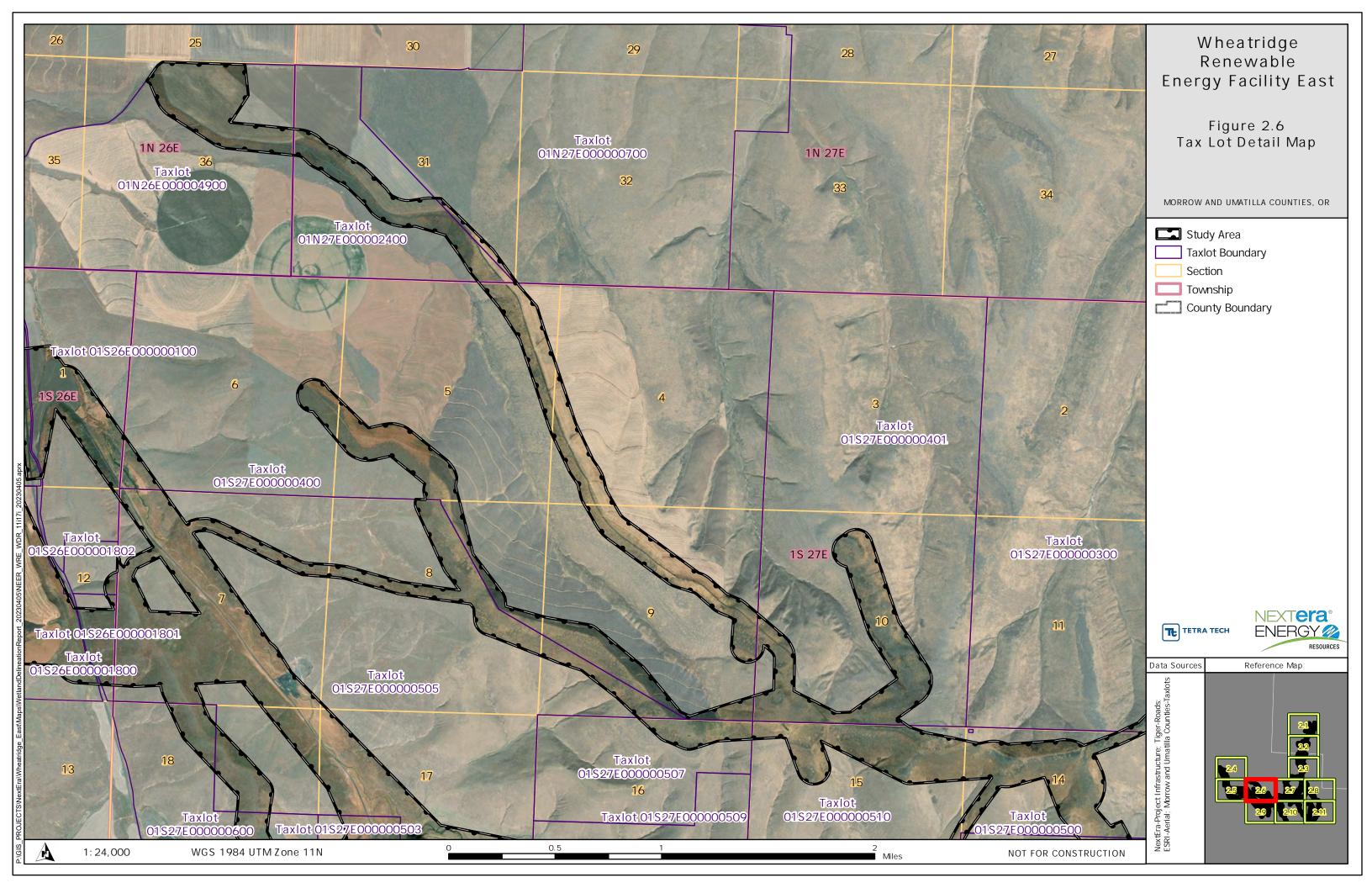


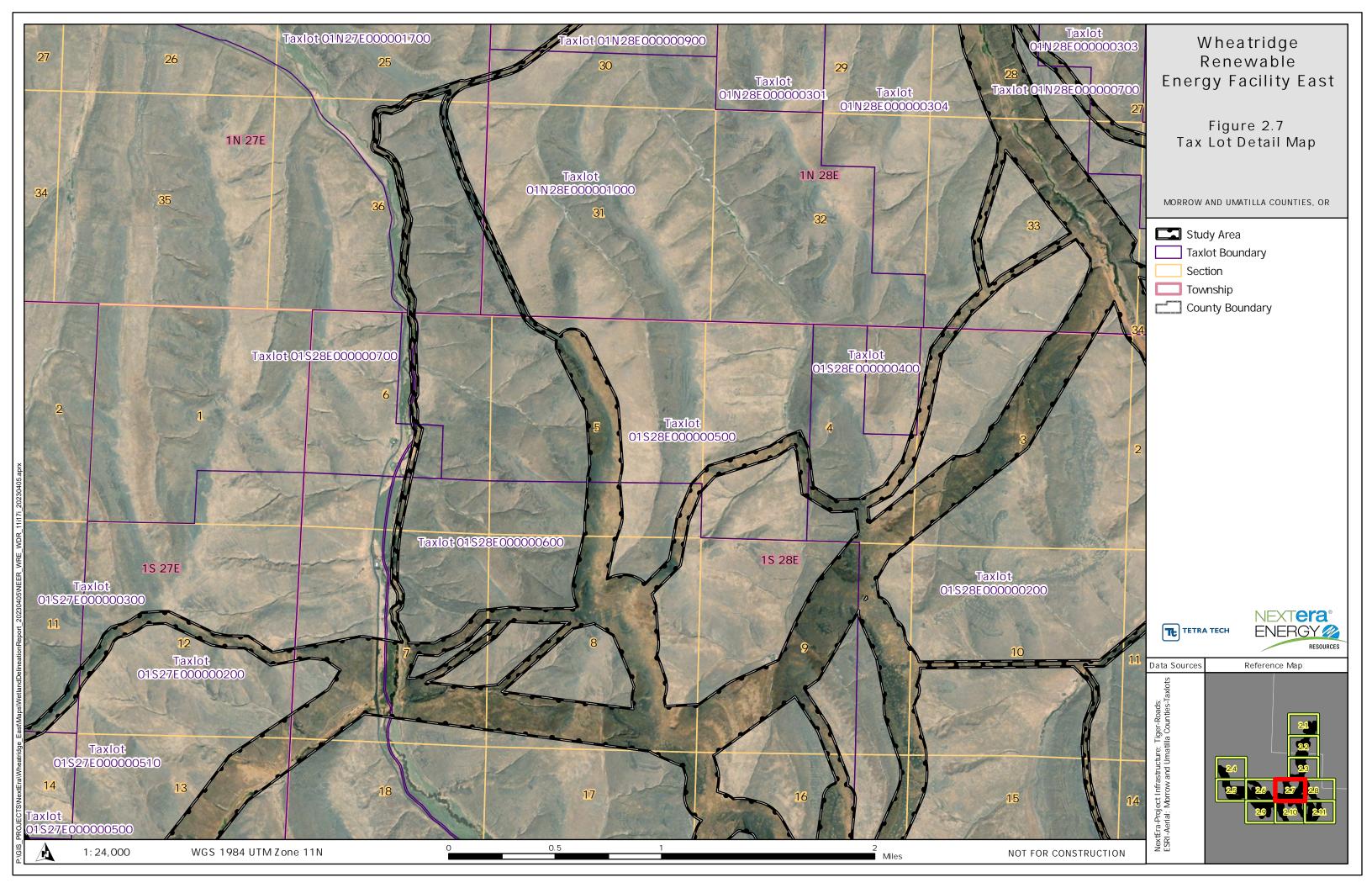


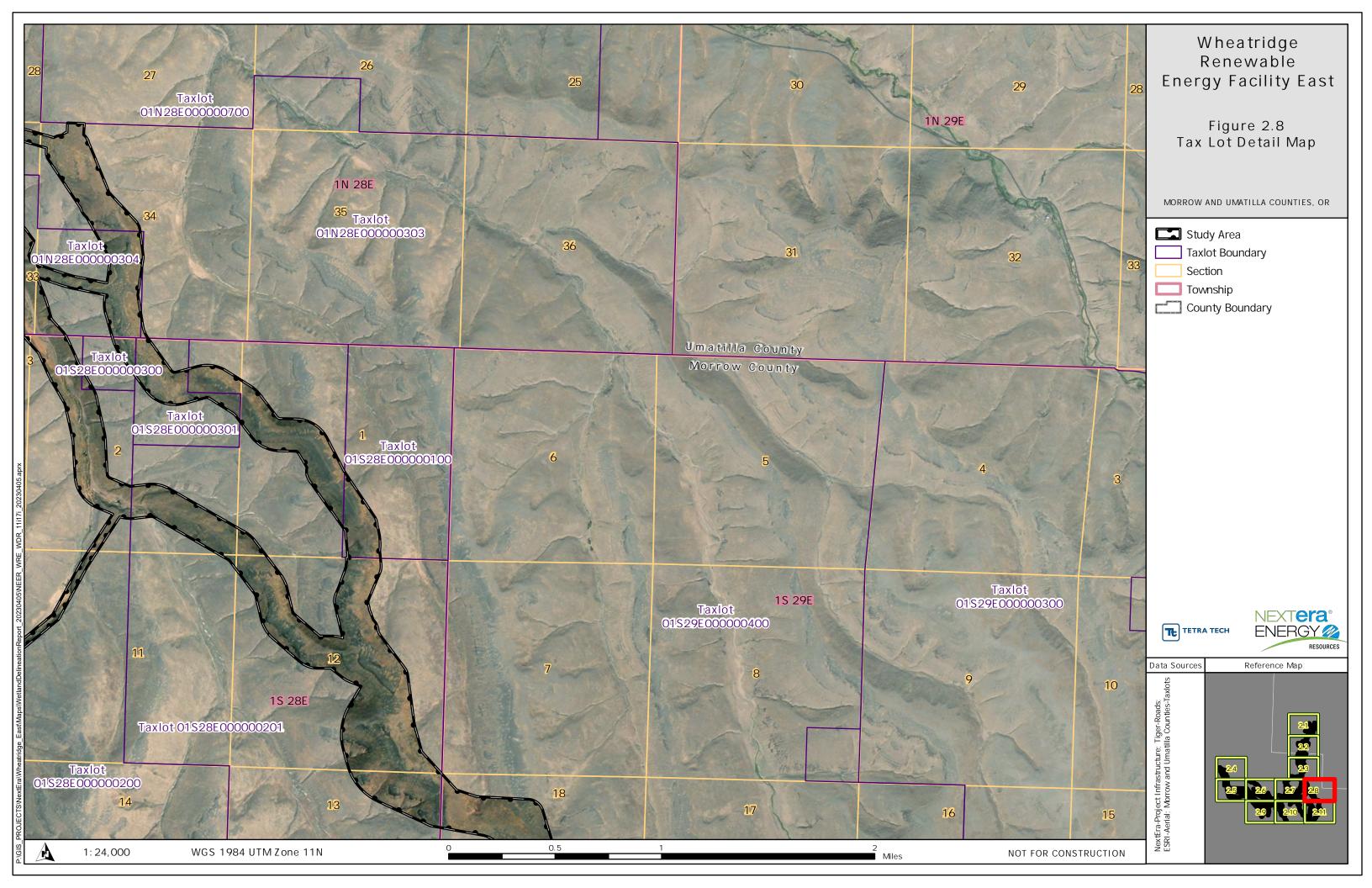


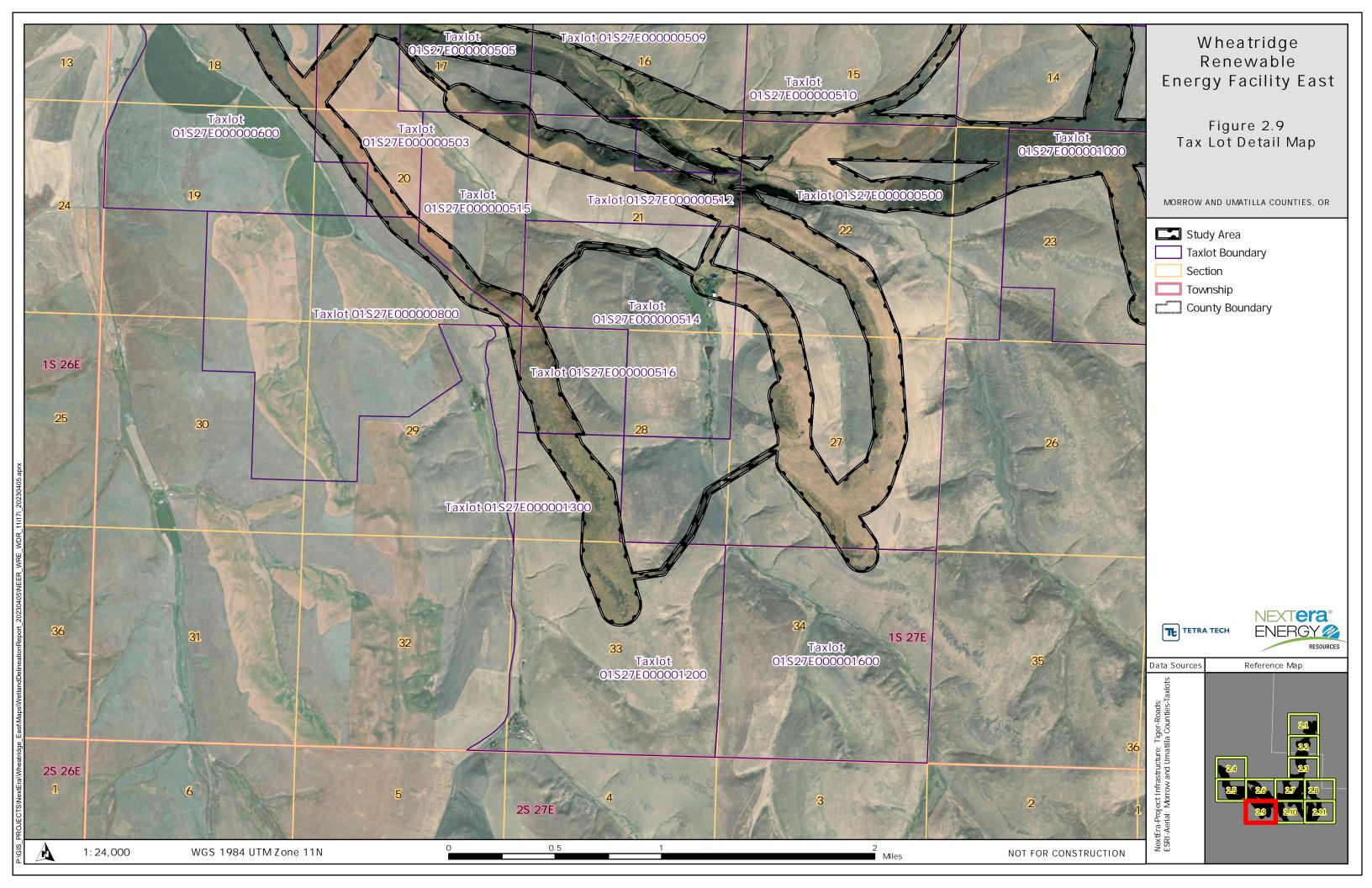


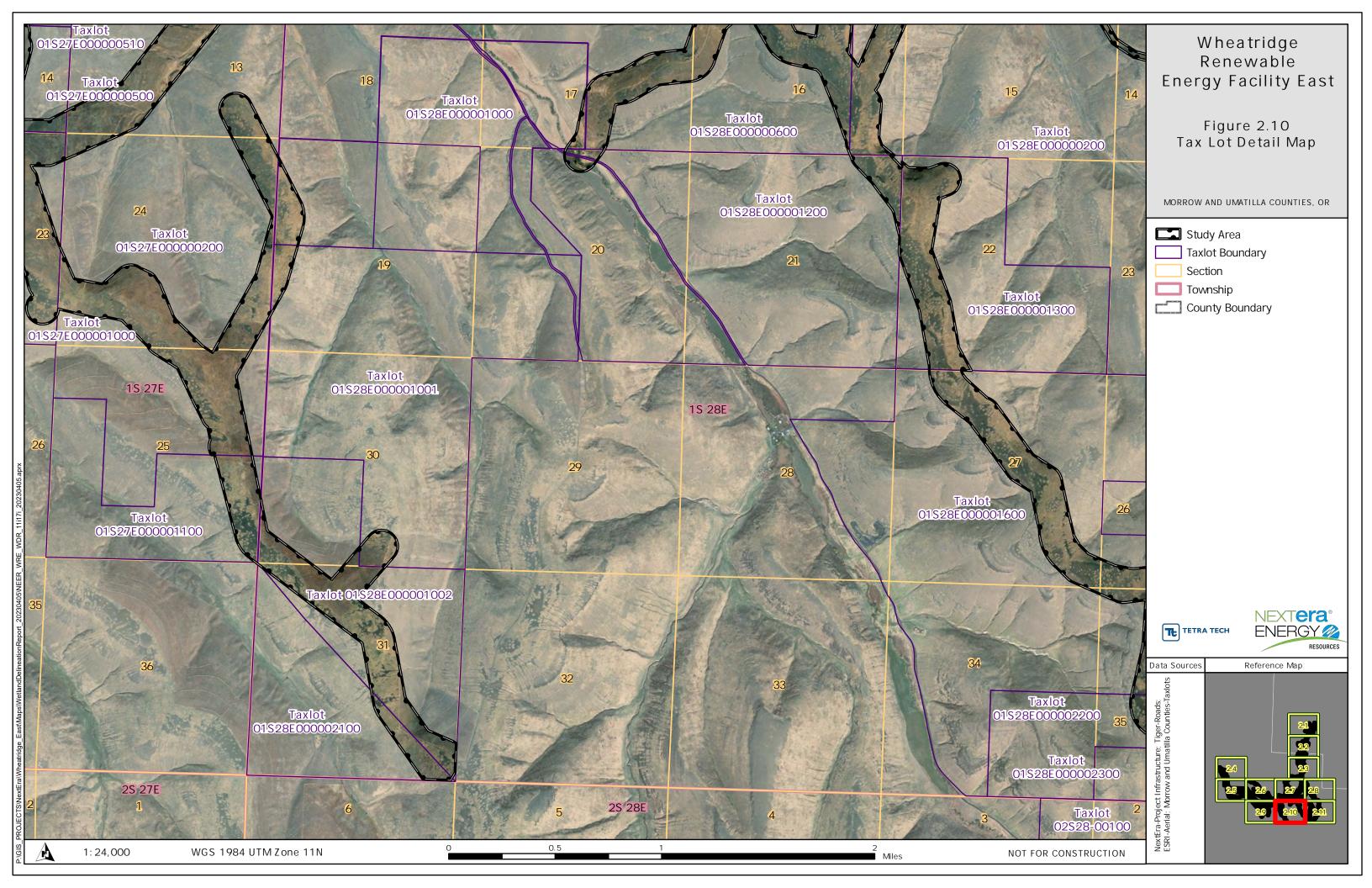


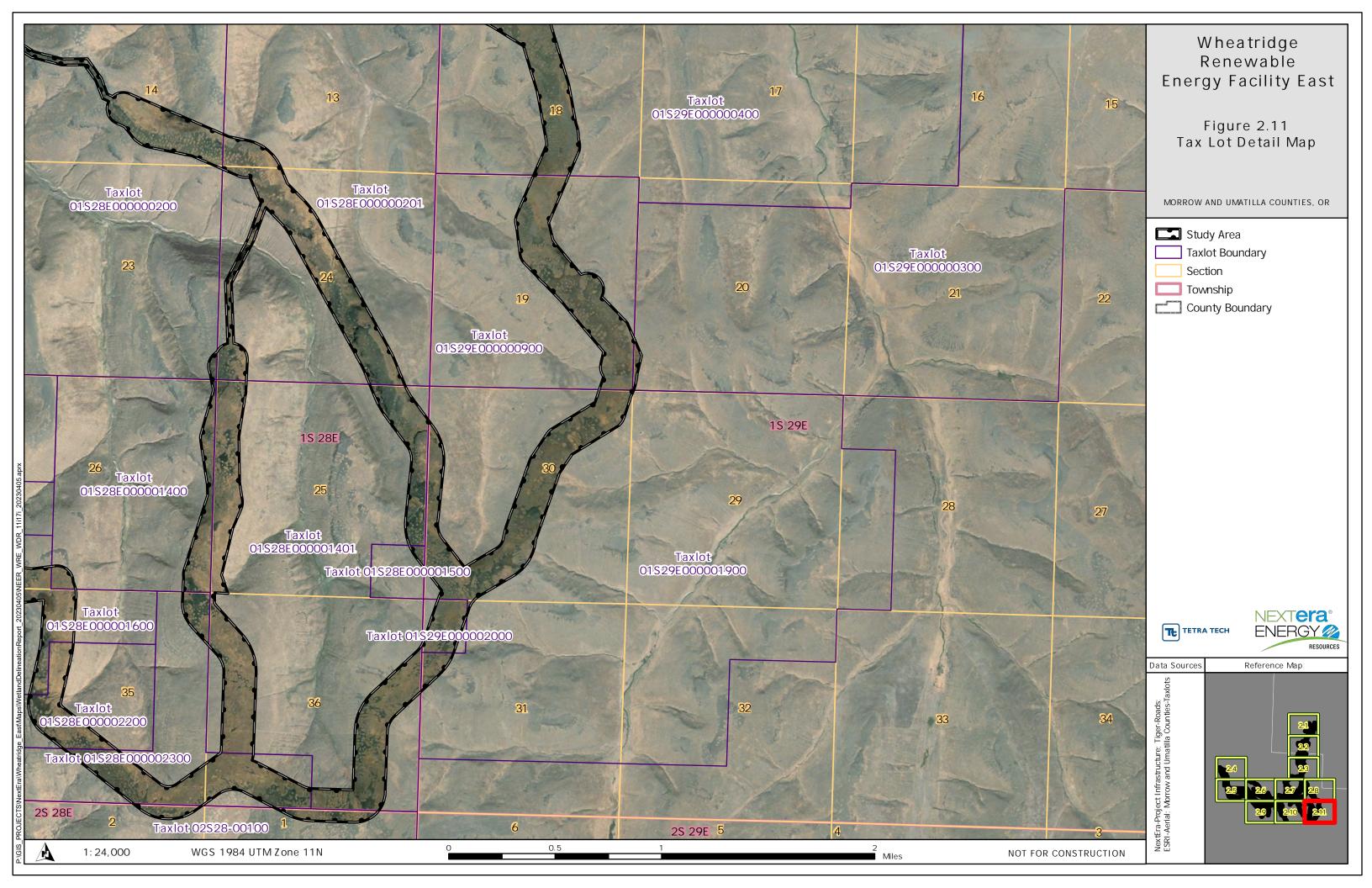


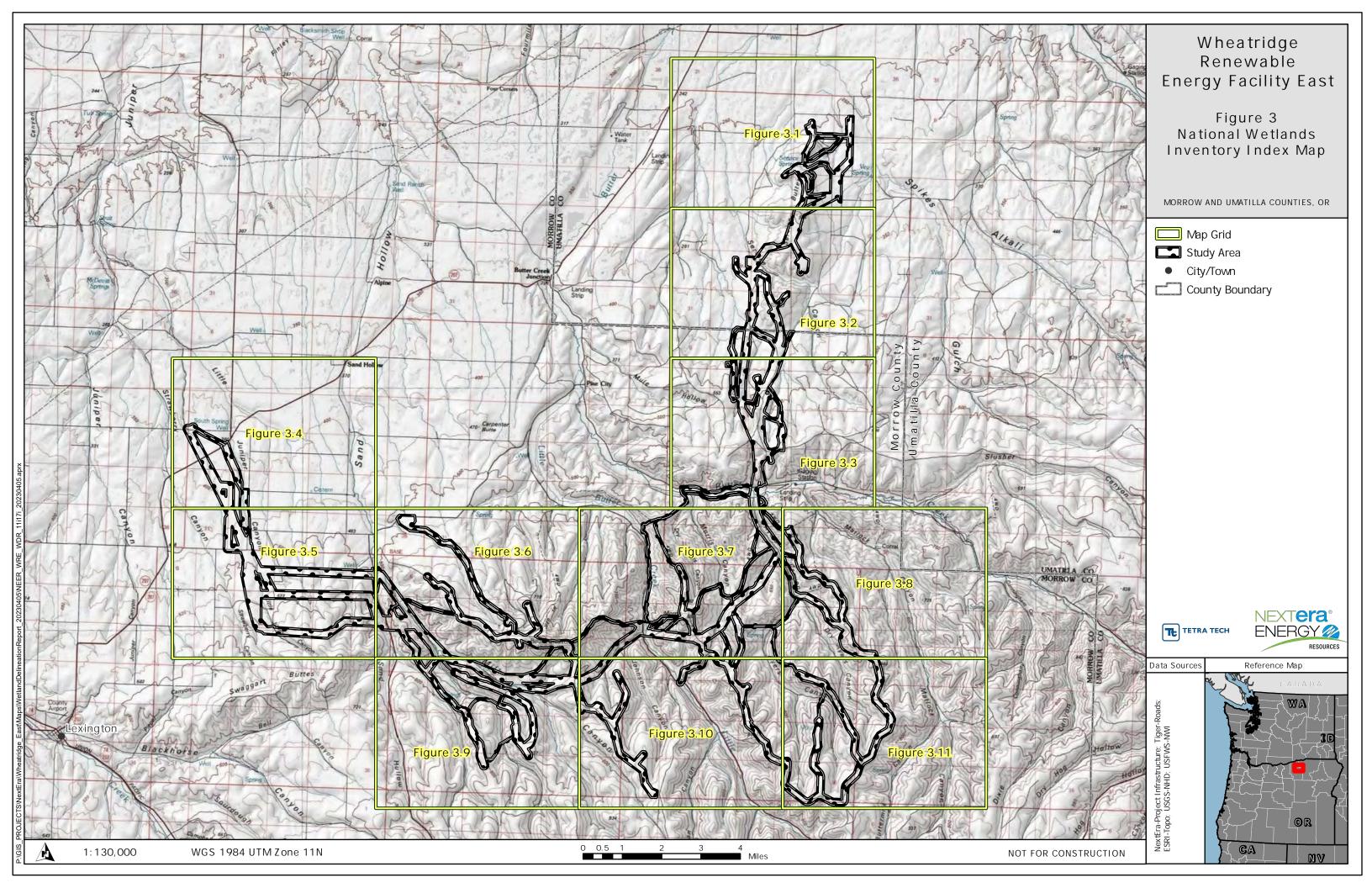


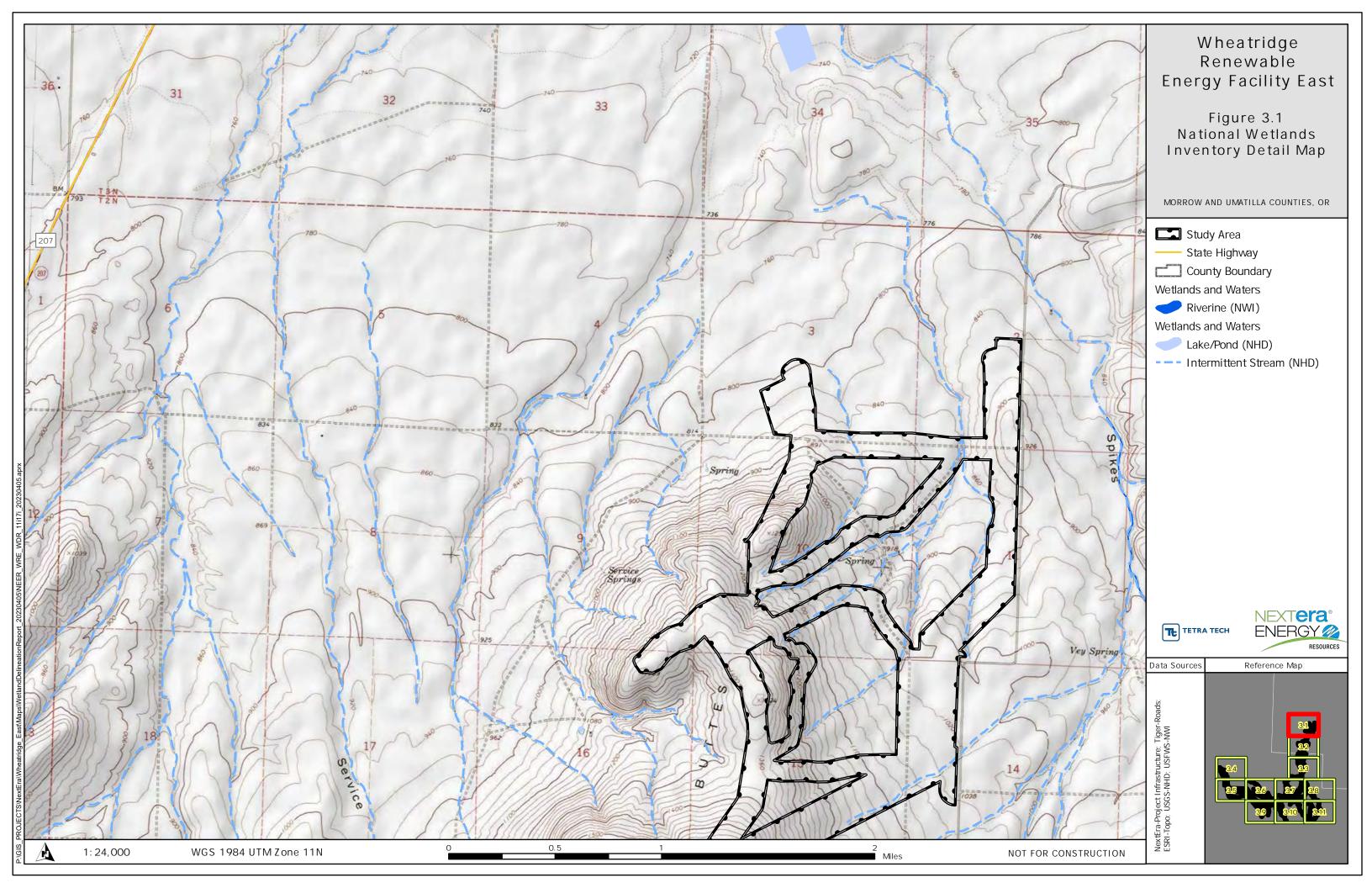


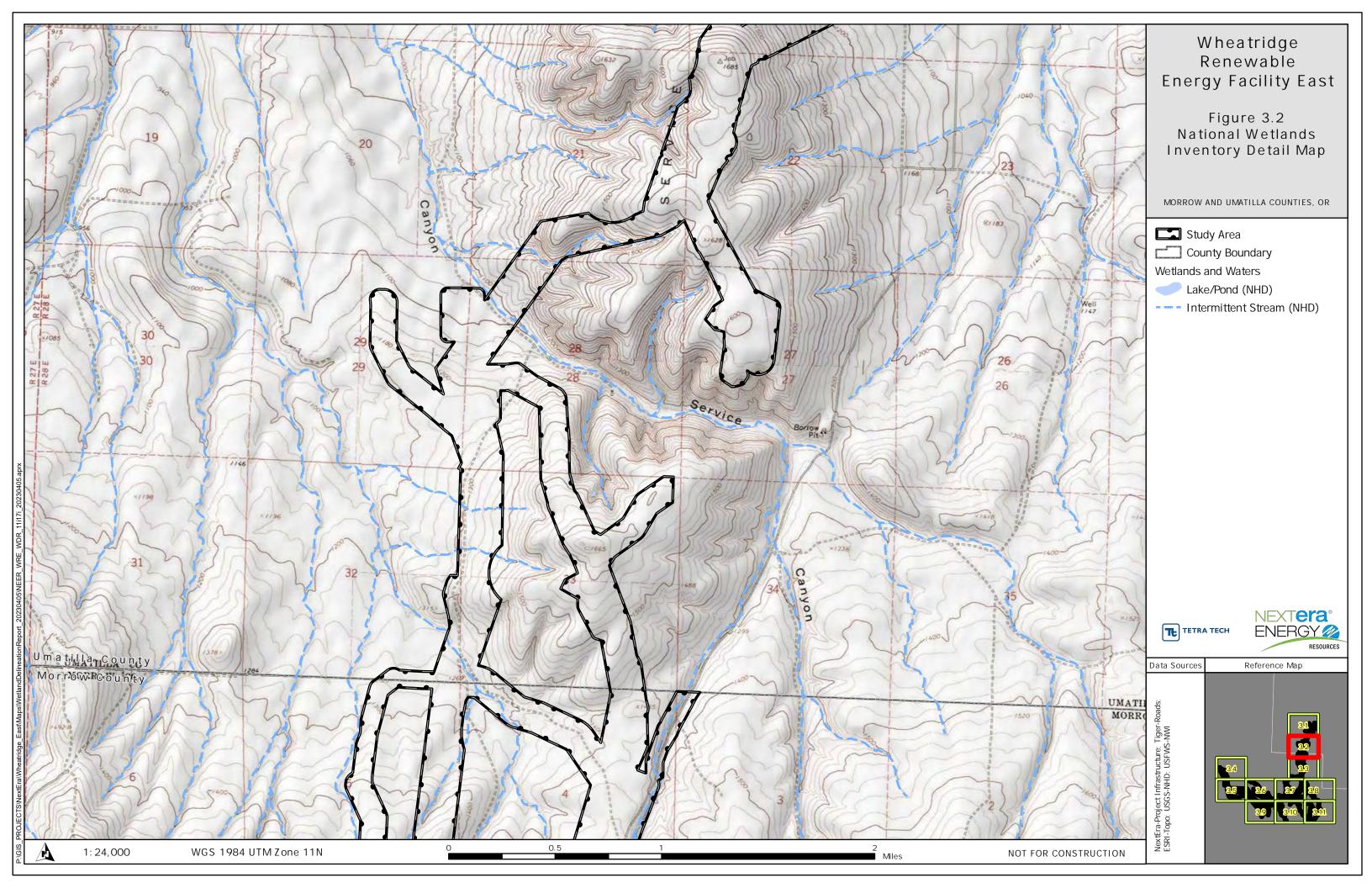


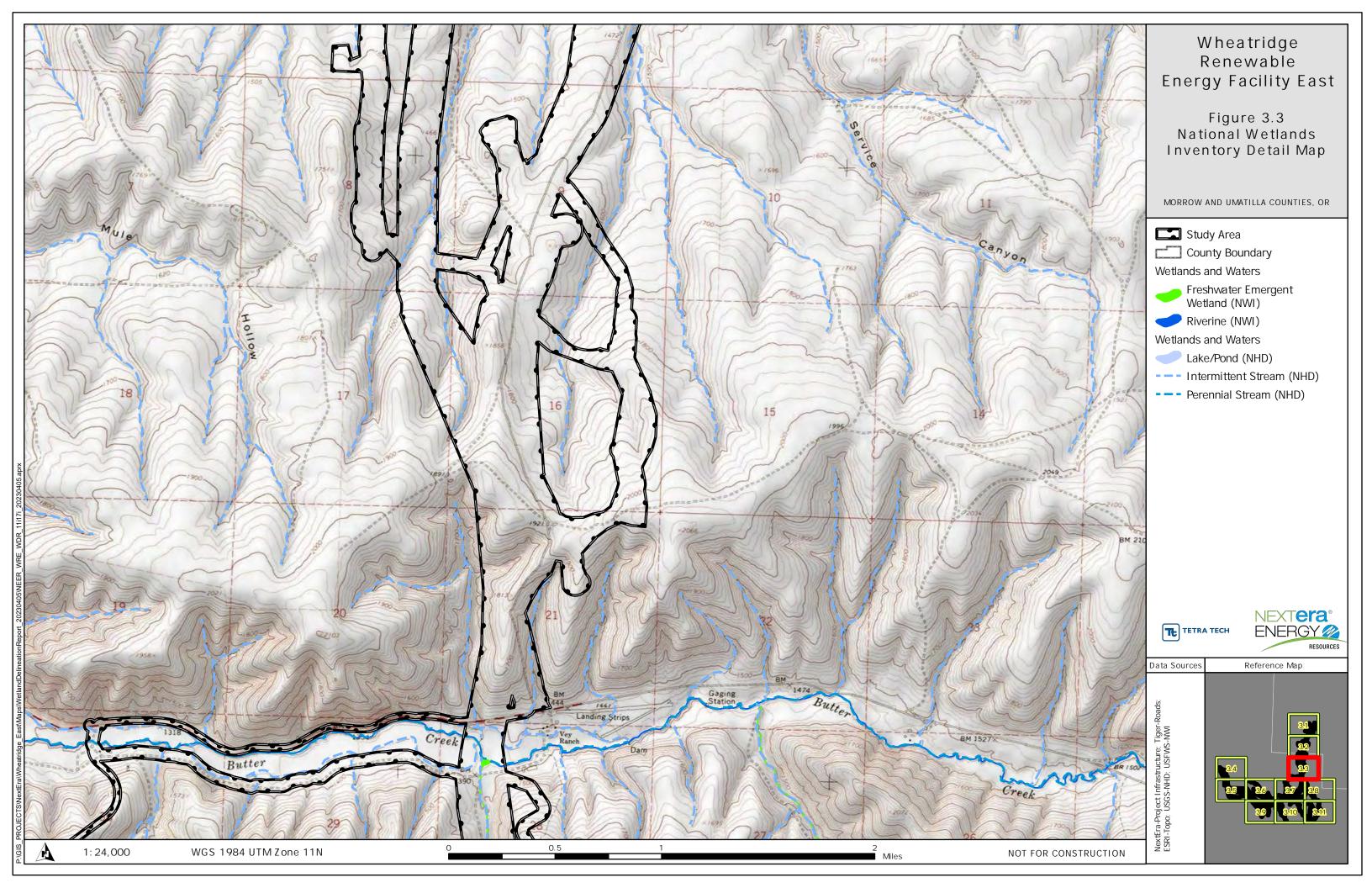


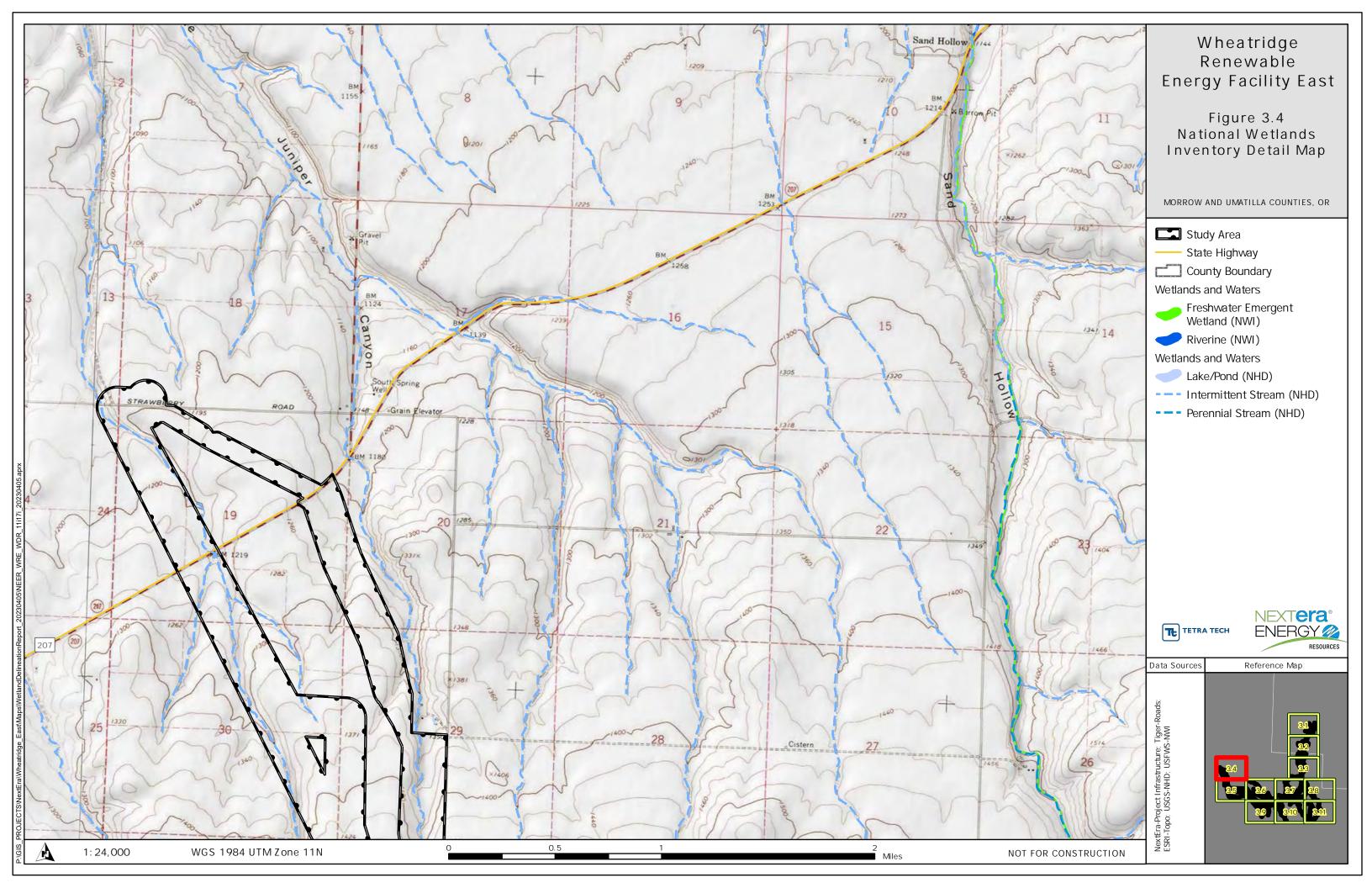


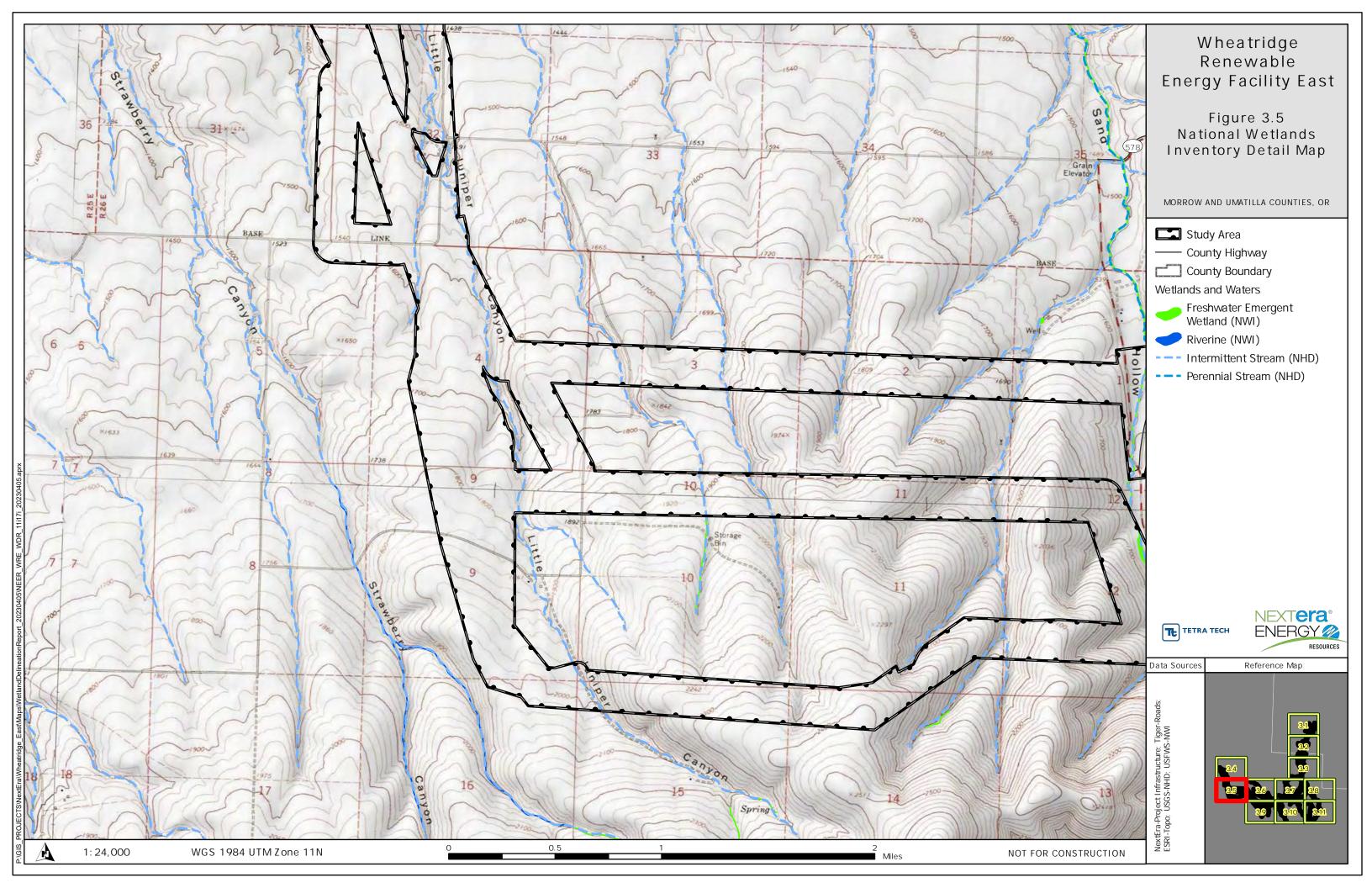


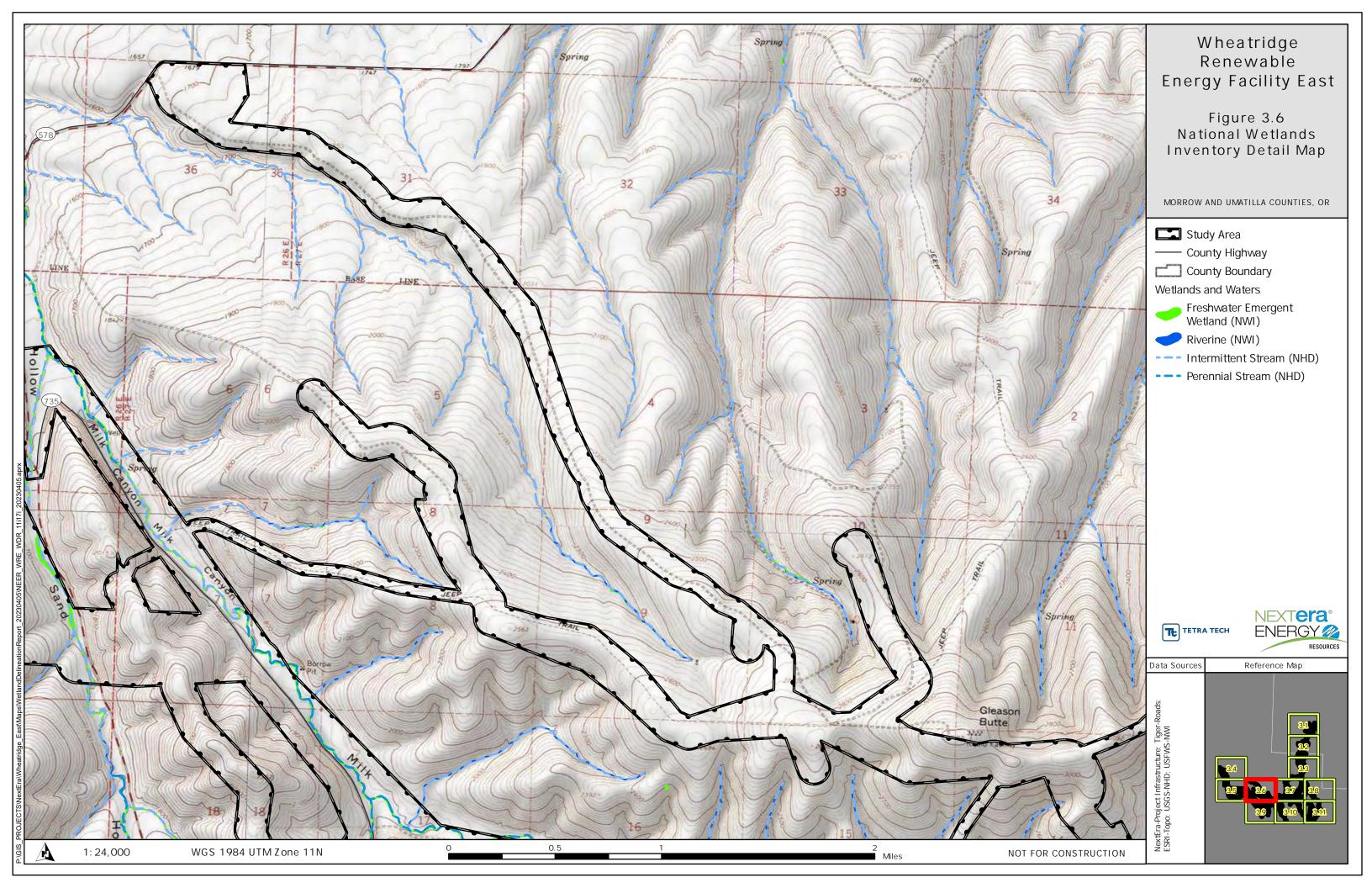




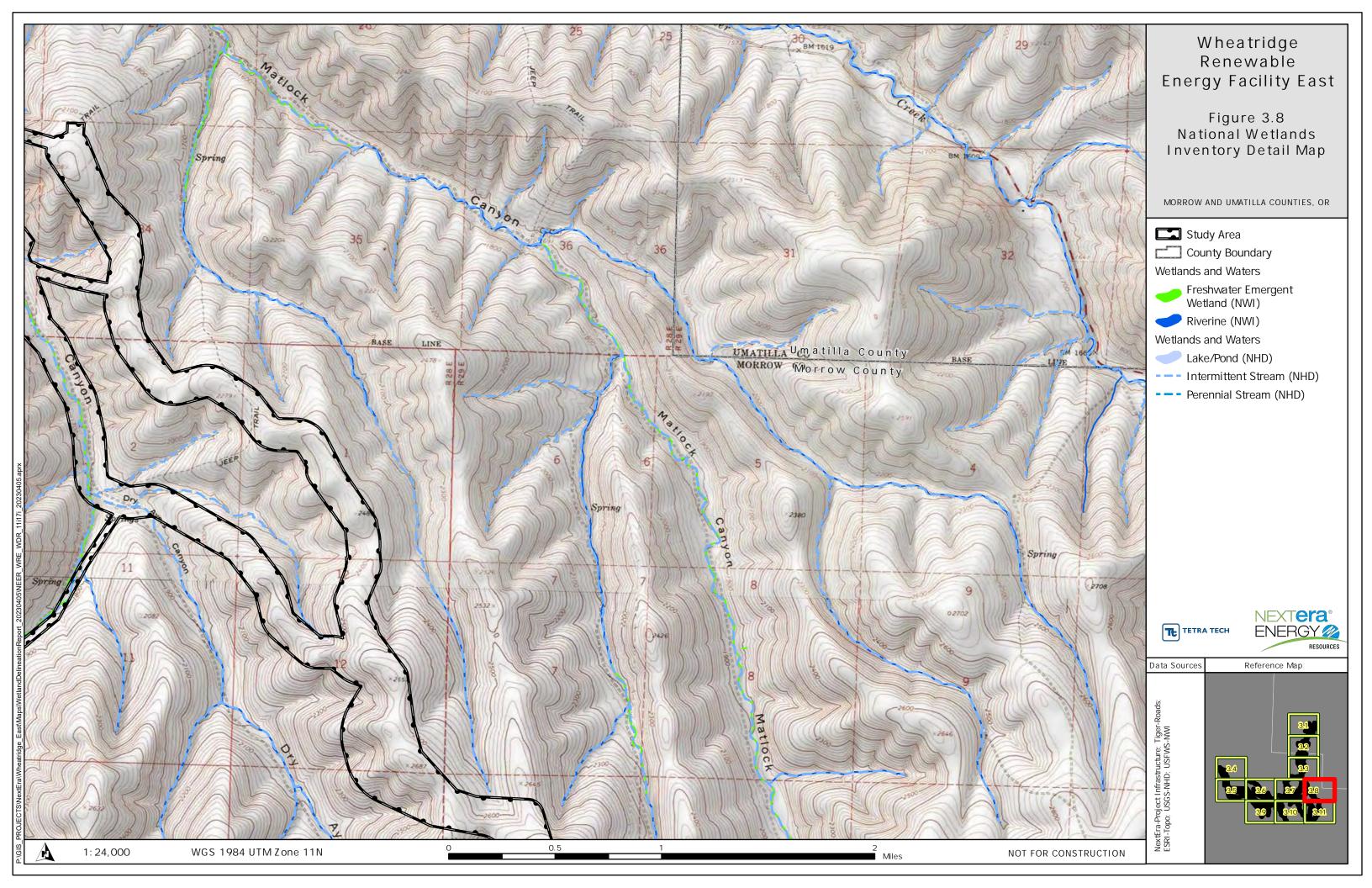


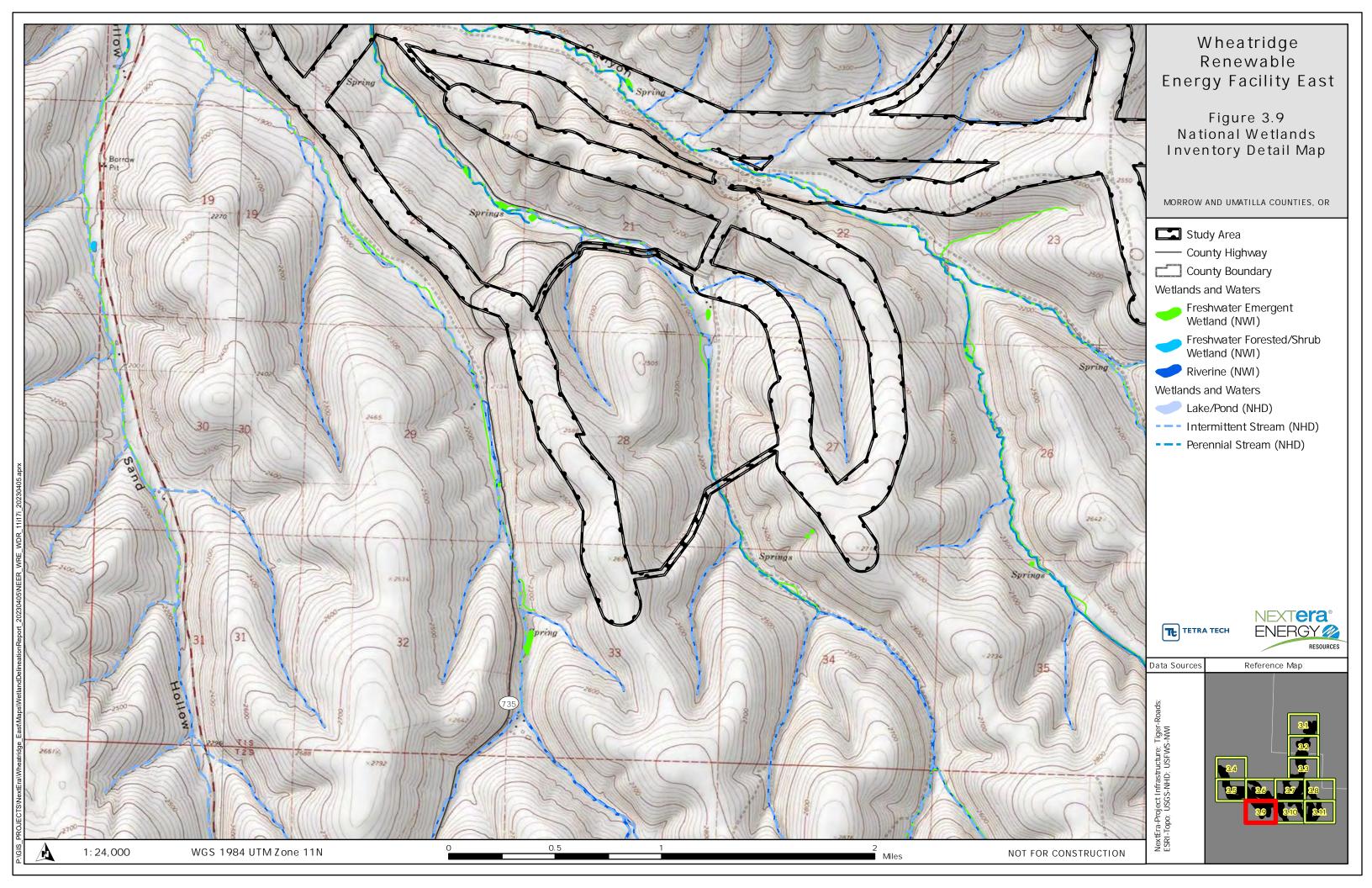


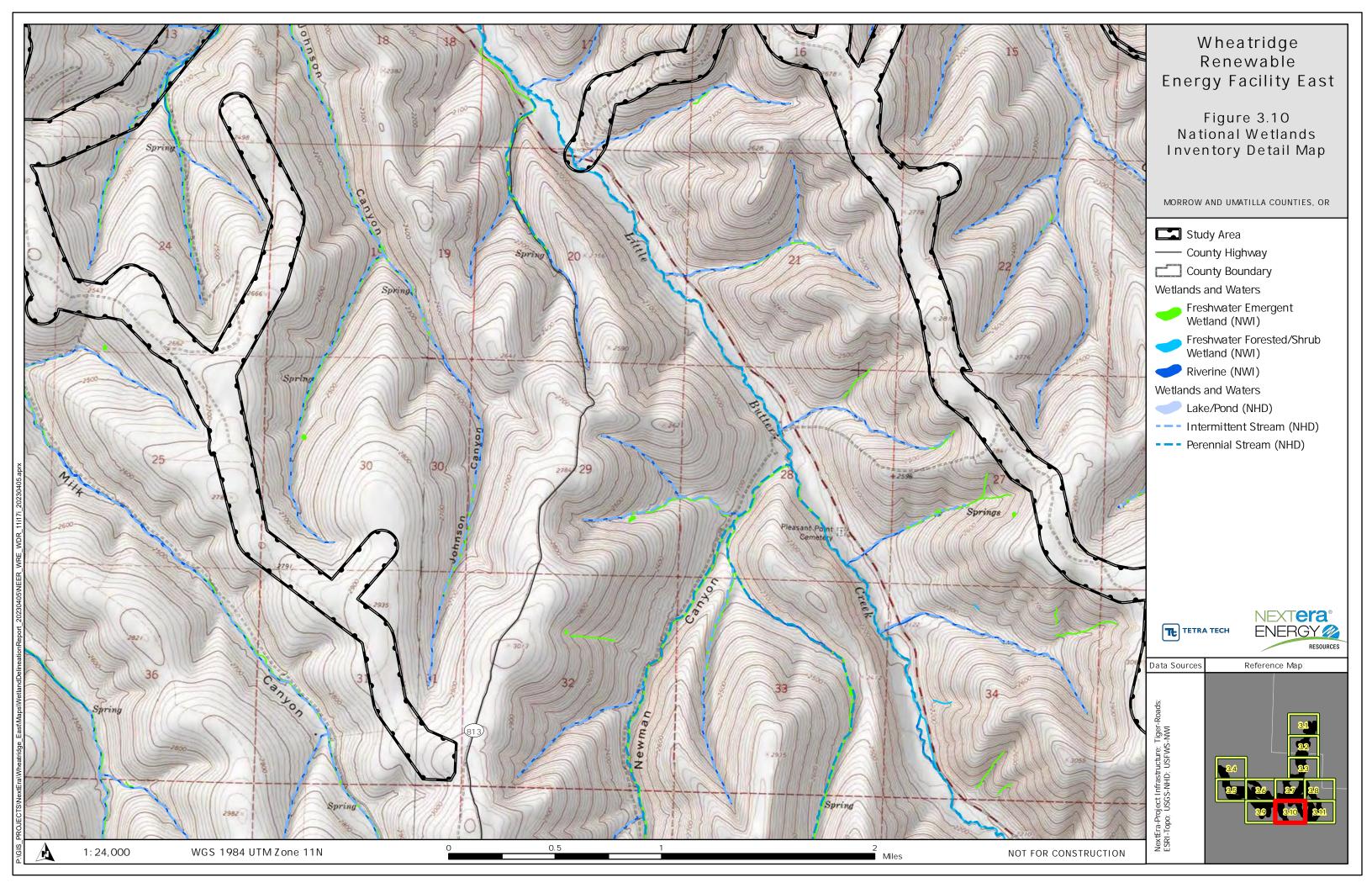


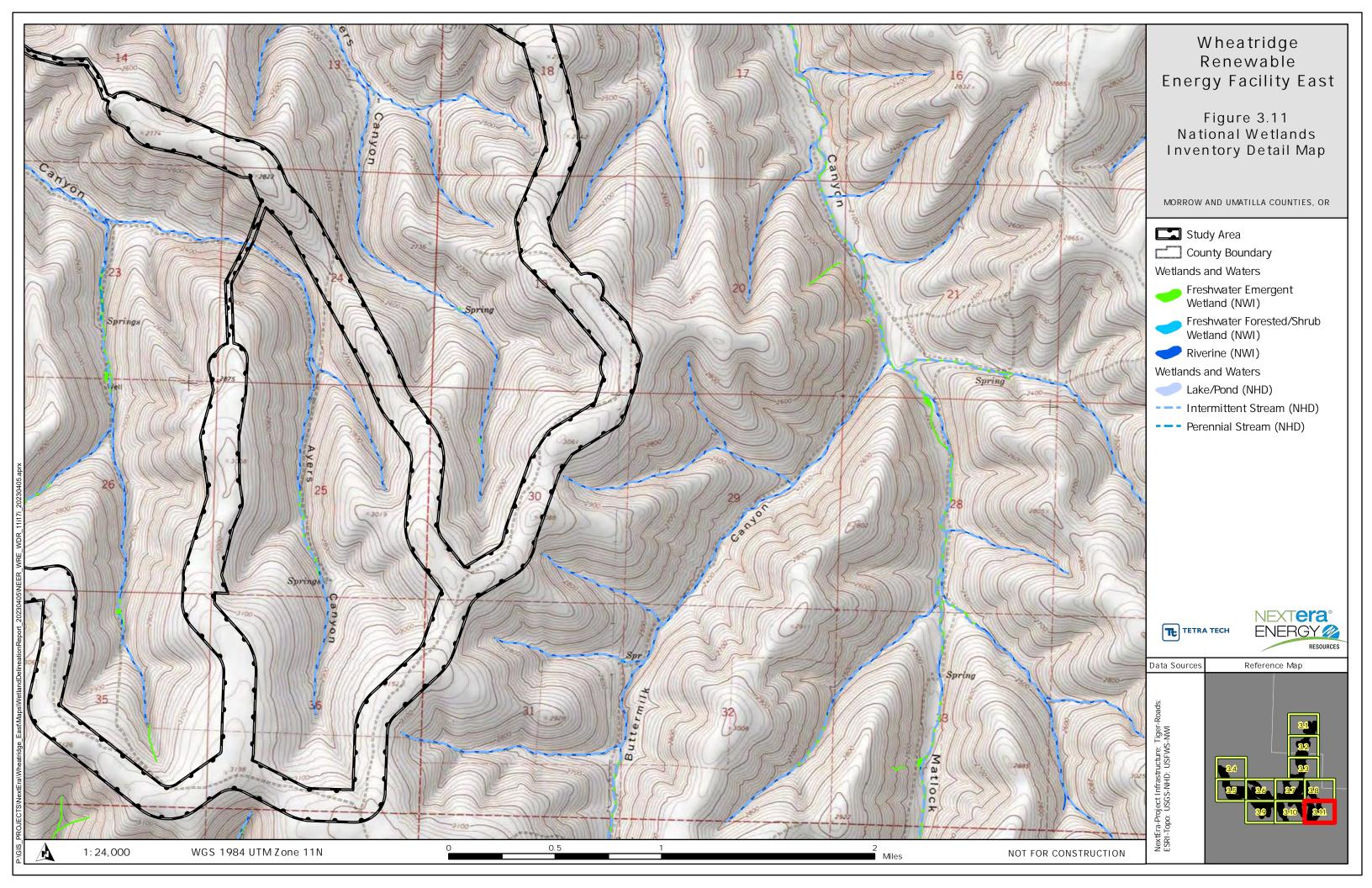












Map Unit Symbol - Map Unit Name 11 - Endersby fine sandy loam 12 - Esquatzel silt loam

121B - Willis silt loam, 2 to 7 percent slopes 121D - Willis silt loam, 12 to 30 percent slopes

15B - Burke silt loam, 1 to 7 percent slopes

15C - Burke silt loam, 7 to 12 percent slopes

18C - Condon silt loam, 7 to 12 percent slopes

19D - Condon silt loam, 12 to 20 percent north slopes

22 - Kimberly fine sandy loam

28E - Lickskillet very stony loam, 7 to 40 percent slopes

29F - Lickskillet-Rock outcrop complex, 40 to 70 percent slopes

2D - Bakeoven very cobbly loam, 2 to 20 percent slopes

30B - Mikkalo silt loam, 2 to 7 percent slopes

30C - Mikkalo silt loam, 7 to 12 percent slopes

30D - Mikkalo silt loam, 12 to 20 percent slopes

31B - Morrow silt loam, 1 to 7 percent slopes

31C - Morrow silt loam, 7 to 12 percent slopes

32D - Morrow silt loam, 12 to 20 percent north slopes

32E - Morrow silt loam, 20 to 35 percent north slopes

33E - Morrow silt loam, 20 to 30 percent south slopes

34 - Nansene silt loam, 35 to 70 percent slopes

35 - Onyx silt loam

36 - Pedigo silt loam

3D - Bakeoven-Morrow complex, 2 to 20 percent slopes

43A - Kimberly silt loam, 0 to 3 percent slopes

43C - Rhea silt loam, 7 to 12 percent slopes

43D - Rhea silt loam, 12 to 20 percent slopes

43E - Rhea silt loam, 20 to 35 percent slopes

43F - Rhea silt loam, 35 to 50 percent slopes

45B - Ritzville silt loam, 2 to 7 percent slopes

45C - Ritzville silt loam, 7 to 12 percent slopes

45D - Ritzville silt loam, 12 to 20 percent slopes

47E - Ritzville silt loam, 20 to 40 percent south slopes

48E - Lickskillet very stony loam, 7 to 40 percent slopes

4D - Bakeoven-Valby complex, 2 to 20 percent slopes

50F - Lickskillet-Rock outcrop complex, 40 to 70 percent slopes

54B - Mikkalo silt loam, 2 to 7 percent slopes

54C - Mikkalo silt loam, 7 to 12 percent slopes

54D - Mikkalo silt loam, 12 to 20 percent slopes

63B - Valby silt loam, 1 to 7 percent slopes

63C - Valby silt loam, 7 to 12 percent slopes

64D - Valby silt loam, 12 to 20 percent north slopes

65D - Valby silt loam, 12 to 20 percent south slopes

65E - Valby silt loam, 20 to 30 percent south slopes

75B - Willis silt loam, 2 to 5 percent slopes

75C - Willis silt loam, 5 to 12 percent slopes

77F - Wrentham-Rock outcrop complex, 35 to 70 percent slopes

78 - Xeric Torriorthents, nearly level

80B - Ritzville silt loam, 2 to 7 percent slopes

80D - Ritzville silt loam, 12 to 25 percent slopes

81E - Ritzville silt loam, 25 to 40 percent north slopes

83D - Condon silt loam, 12 to 20 percent north slopes

85C - Condon silt loam, 7 to 12 percent slopes

89B - Shano silt loam, 2 to 7 percent slopes

89C - Shano silt loam, 7 to 12 percent slopes

Wheatridge Renewable Energy Facility East

Figure 4a Soils Legend

MORROW AND UMATILLA COUNTIES, OR





NEXTERA

ENERGY 🚧

NextEra-Project Infrastructure; Tiger-Roads;
ESRI-Aerial; Soils-NRCS

ESRI-Aerial; Soils-NRCS

