EXHIBIT H

GEOLOGY AND SEISMICITY
OAR 345-021-0010(1)(h)

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H.1 INTRODUCTION

The Council's Structural Standard, OAR 345-022-0020 requires that the Applicant adequately characterize seismic and non-seismic geologic and soil hazards of the Project, and that the Applicant design, engineer and construct the Project to avoid danger to human safety from these hazards. Specifically OAR 345-022-0020 states:

In addition OAR 345-021-0010(1)(h) requires that information be provided to meet the standard, specifically:

The Project will be located on private land in an unincorporated area of Sherman County. It will consist of up to 267 wind turbines. The Project will interconnect with the BPA transmission system at two locations – one near Klondike Schoolhouse Substation (200 MW) and one at the John Day Substation (200 MW). Overhead transmission lines (one approximately 4 miles and one approximately 11 miles) will be built from the project substations to the BPA interconnection points.

Power generation facilities will include wind turbines that have an aggregate nominal nameplate generating capacity of up to 400 MW. The turbines will most likely consist of either a 1.65 MW turbine with hub height of 78 meters and rotor diameter of 82 meters or a 2.5 MW turbine with a hub height of 80 meters and rotor diameter of 96 meters. The turbines will be sited within 900-foot corridors; their precise locations within each corridor will be determined by the Applicant, based on the wind turbine model selected and the various siting criteria.

The Project will also include approximately 50 miles of newly constructed 16- to 20-foot wide access roads and turnaround areas (temporary accessways will be widened to about 36 feet for construction), up to six permanent meteorological towers up to 85 meters in height, a 62 mile long 34.5-kilovolt (kV) power collection system (possibly all underground) linking each turbine to the next and to the project substations, two project substations including a 4 and an 11-mile long overhead transmission line will be constructed to the points of interconnection with BPA, an O&M facility including an approximately 5,000 square foot building and groundwater supply well, and a fully integrated SCADA system. There will also be several principal, temporary laydown areas for the staging of construction equipment, wind turbines and their components, towers, and other parts, facilities, and equipment.

Figure H-1 shows the approximate locations of the wind turbine corridors, new access roads, power collection system corridors, substations, overhead transmission lines, and the temporary laydown areas. Existing state and county roads designated for improvements are also shown.

A detailed geologic study of the project area was performed to fulfill the requirements of OAR 345-021-0010(1)(h). The findings of the geologic and soil stability study (i.e., this Exhibit) demonstrate that the above standards can be met. Characterization of seismic, geologic, and soil hazards of the Project indicate a low potential for risk. The facilities will be designed and constructed to standards that adequately protect the proposed facilities and the public from seismic, geologic and soil hazards.

H.2 GEOLOGICAL AND TOPOGRAPHIC FEATURES

OAR 345-021-0010(1)(h)(A) *A geologic report meeting the guidance in Oregon Department of Geology and Mineral Industries open file report 00-04 "Guidelines for Engineering Geologic reports and Site-Specific Seismic Hazard Reports."*

Response: Topographic and geologic conditions/hazards within the Project were evaluated by reviewing available reference materials (including publications and State logs of water wells), reviewing topographic and geologic maps, and aerial photos, and conducting a field reconnaissance of the proposed project area. The findings are described in the following sections. Prior to construction, explorations, testing, and engineering analysis will be conducted for final design purposes.

H.2.1 Topography

The Project is located in Sherman County near the towns of Wasco and Moro, Oregon. Sherman County, located in north-central Oregon. The County is bordered to the north by the Columbia River, the Deschutes River to the west and the John Day River to the east. Much of the south boundary is defined by Buck Hollow Creek, a tributary of the Deschutes River.

The open rolling hills and steeper narrow canyons within the Project range in surface elevation from about 1,100 feet on the northern edge to about 1,900 feet on the rolling hills near the southern edge of the project area. Regionally, the ground surface generally slopes down the north.

Much of the project area ground surface gradient is very flat with a typical range of about 1 to 5 percent in the open rolling hills and near the crest of ridges. There are areas where the slopes approach 10 percent. The gradient with the side slopes of the rolling hills and narrower ridges is generally controlled by near-surface geology (i.e., loess or basalt) and typically ranges from 5 to 10 percent, with some areas approaching 20 to 25 percent and isolated steeper areas (especially where basalt bedrock is exposed at the ground surface).

Existing cut and fill slopes are uncommon within the project area and typically are less than 10 feet high. During the reconnaissance of the project area, some isolated cuts were up to about 30 feet in height.

Much of the rolling hills and wider ridgelines above the drainageways and gulleys are cultivated for wheat and other crops.

H.2.2 Geologic Features

All of Sherman County is located within the Deschutes-Columbia River Plateau in north-central Oregon. The project area is located in the Columbia Plateau physiographic province. The province is predominantly a volcanic plateau covering over 63,000 square miles in Oregon, Washington and Idaho. Mountains surround the plateau on all sides; the

Okanogan Highlands are located to the north, the Cascade Range to the west, and the Blue Mountains in Oregon to the south and east. In Oregon, the province surface gently descends northerly towards the Columbia River.

The bedrock that underlies much of the region began erupting approximately 24 million years ago as immense outpourings of basalt. During this time, the voluminous flows of the Columbia River Basalt Group erupted from volcanic vents located in central and northeast Oregon, southeast Washington and Idaho. These eruptions created a massive "flood basalt" province.

The Grande Ronde Basalt and Frenchman Springs and Priest Rapids members, of the Wanapum Basalt, are all part of the Columbia River Basalt Group (CRBG) that comprises the volcanic bedrock in most of the area. The Grande Ronde Basalt is the oldest of the three basalt types and also has the most extensive surface exposure in this study area. The Grande Ronde Basalt consists of fine-grained basalt with a total thickness up to several thousand feet. Quaternary loess (i.e., wind blown silt) deposits cover most of the bedrock in the Project. In general, basalt bedrock is only exposed at the ground surface in valley walls, road cuts, and rock pits.

Near the end of the last major Ice Age about 15,000 years ago, large lakes formed behind massive ice dams in western Montana. When these dams repeatedly failed (on the order of about 40 times), the torrential "Missoula Floods" repeatedly poured massive amounts of water and debris down the Columbia Plateau. These floods continued for about 2,000 years.

Flood elevations likely reached as high as about 1,100 feet above mean sea level (amsl) in the vicinity of the Project. Where side canyons or tributaries enter the Columbia River, the flood waters flowed back into them. Just north of the Project, the lower elevations of the canyons show topographic evidence suggesting scouring by the ebb and flood of the "Missoula Floods".

The massive outpourings scoured the surface of the Columbia Plateau bedrock and also deposited silt, sand, gravel, and cobbles/boulders. After the Missoula Floods, stream and some wind-related depositional and erosive processes continued to dominate the geology of the Columbia Plateau. Alluvium, alluvial fans, and landslides have formed in incised valleys while deposits of wind blown sand and silt (i.e., loess) have formed on top of the basalt bedrock.

Based on the results of this study, the loess covers the underlying basalt bedrock throughout much of the project area. Topographic maps, geologic maps, logs of water wells, and the site reconnaissance indicates that the loess deposit ranges up to about 40 feet thick (averaging about 15 feet). This deposit overlies the basalt bedock and appears to thin or not exist within the steeper areas along the sides of relatively narrow ridges and within drainageways found throughout the project area (i.e., where basalt bedrock is exposed).

Logs of water wells, native exposures of basalt bedrock, and basalt quarry exposures indicate that the basalt generally is variably fractured, is fresh to slightly weathered, possesses very close to wide joint spacing, and has a variable hardness (generally ranging from medium hard to hard). Where observed, the contacts between layers of basalt show limited or no signs of a distinct weathered soil horizon.

H.2.3 Soils

A relatively thin veneer of soil exists throughout most of the project study area. The soil principally consists of silty loam formed from weathering of loess (i.e., wind-blown silt and fine sand). Where the loess deposit thins, there are variable amounts of weathered rock fragments derived from basalt bedrock that underlies the loess. Where basalt bedrock is exposed at the ground surface, the soil consists of a very gravelly/cobbly loamy sand with boulders.

Refer to other sections of this Exhibit for additional information pertinent to preparation of a geologic report in accordance with State guidance.

H.3 SITE-SPECIFIC GEOLOGIC AND GEOTECHNICAL WORK

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

Response:

H.3.1 Future Work Planned

A detailed design geotechnical investigation will be conducted prior to the start of construction. This design study will include exploratory test drilling at key locations where site improvements are proposed. Where needed to enhance understanding of subsurface soil/rock conditions in some areas and provide details on bulk shear wave velocity and other properties, down-hole and surface geophysical studies will be conducted. As needed, field resistivity and other non-destructive geophysical testing will be conducted to evaluate bulk properties.

Soil and rock samples obtained during explorations will be utilized to evaluate soil and rock characteristics in a laboratory. Such testing will include an array of tests including some or all of the following: index tests to identify general characteristics, shear and compressive tests, soil modulus tests for pavement design, thermal conductivity, and a series of tests to evaluate corrosion potential.

Geotechnical engineering analysis of the field and laboratory data will be conducted. Design recommendations will be prepared to address a myriad of design and construction considerations including geotechnical aspects related to foundations, site grading, utilities, roadways, and improvements to existing infrastructure (e.g., roads, culverts, bridges).

It is anticipated that this design study will be conducted during the third quarter of 2007.

H.3.2 Work Performed to Prepare This Exhibit

To prepare this Exhibit, GeoEngineers conducted a detailed office study and geologic field reconnaissance along the proposed wind turbine corridors, underground connector corridors, equipment lay down areas, transmission line alignments, project substations, crane paths, and new permanent access roads. Areas of proposed improvements to existing County road improvements were also included in the combined office/field effort.

The findings of this work were used to preliminarily evaluate seismic and non-seismic related hazards. The nature and extent of the work to date is presented in the following paragraphs.

Review of Soils/Geologic and Other Publications

Topographic maps, aerial photos, geologic maps, professional publications, and soil surveys were reviewed to identify potential subsurface soil and bedrock conditions, bedrock depth and lithology, and structural attitude of faults within the Project. A list of publications is presented in Section H.3.2.

Field Reconnaissance

A field reconnaissance of the Project was completed along the proposed wind turbine corridors, new access road alignments, power collection system corridors, substations, overhead transmission lines, temporary laydown areas, and existing state and county roads designated for improvements. The field reconnaissance concentrated on identifying geologic hazards, particularly in areas of concern identified during the review of geologic literature.

The site reconnaissance focused on identifying and mapping features associated with slope stability and landslides and other hazards including hummocky topography, ground cracks, scarps, and vegetative indicators of instability. In addition, subsurface conditions along the alignments were interpreted by observing exposures in road cuts, stream channels and borrow pits. The information collected during the reconnaissance was used to qualitatively assess the stability of slopes and landslides where these features were found to be mapped during the geologic literature review, and for use in the seismic hazards assessment of the Project.

Seismic Hazard Analyses

The Oregon Structural Specialty Code (OSSC), 2007 Edition will be used to design equipment shelters and structures included in the proposed project. The OSSC uses the International Building Code (IBC), 2006 edition, with current amendments by the state of Oregon and local agencies. These standards are appropriate protection measures for human safety of the proposed facilities.

A detailed seismic hazard analysis was conducted to establish earthquake ground motion parameters suitable for use in design of the proposed facilities. Amplification factors at the Project were based on a review of existing geologic information and information collected during the site reconnaissance. Refer to Section H.7 of this Exhibit.

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Project Personnel

Exhibit H was prepared for the Applicant by GeoEngineers. The table below summarizes GeoEngineers' professional employees who had primary involvement during this study and these individuals will be engaged in the site-specific work required for final design before construction. A bio sketch for each of the primary investigators is also provided.

Employee	Title	Project Role
David K. Rankin, RG, CEG	Principal	Principal in Charge Engineering Geologic and Geotechnical Reconnaissance Exhibit H Composition
Andrew P. Bauer	Staff Geologist	Geologic Reconnaissance Exhibit H Composition
Brent Nielsen, EIT	Staff Geotechnical Engineer	Seismic Analysis Exhibit H Composition
Catalena Cabrera	GIS Analyst	GIS and GPS Data Analysis Cartography

David K. Rankin, RG, CEG, LEG, LHG, Principal. David has served as a Principal and Project Manager, providing management and technical support, on numerous regional and site-specific engineering geologic, geotechnical, and environmental projects, including those related to energy facility siting/design/construction, commercial development, government infrastructure, ports, industrial sites, and waterfront properties. His geotechnical experience includes preliminary design/feasibility, hazard mitigation planning for the State of Oregon and municipal agencies in Oregon (per FEMA requirements), seismic risk evaluations (for FERC relicensing), landslide evaluation/mitigation, deep and shallow foundations, excavation support, large embankments, bridges, forensic evaluations of foundation/roadway damage, and most other aspects of geotechnical exploration, analysis and design. David has over 27 years of consulting experience principally in the Pacific Northwest, especially Oregon and southwest Washington. He has a Master's Degree in Geology with all applicable geologic licenses in the states of Washington and Oregon. He is a Certified Engineering Geologist and Registered Geologist in Oregon. He also has similar licenses in Washington.

Andrew P. Bauer, Staff Geologist. Andy has seven years professional experience providing consulting services to public and private clients. He Graduated from Western Oregon University in 2000 with a Bachelors degree in Geology. His geologic and geotechnical experience includes numerous geotechnical design investigations, construction materials testing, and special inspection of construction. His experience includes field inspection and/or laboratory testing of reinforced concrete, structural masonry, structural steel and welding, proprietary anchors, soils and aggregates, and asphaltic concrete. Andy is highly knowledgeable of special inspection requirements including communicating with the owner, contractor, engineer, architect, and building official to assure that relevant codes, specifications, and recommendations are being observed. Andy has worked on large diameter pipelines, roadways, healthcare facilities, and commercial, industrial, and residential developments.

Brent Nielsen, EIT, Staff Geotechnical Engineer. Brent is an Engineer-in-Training (EIT) working towards Professional Engineering Registration. While at Montana State University, Brent studied civil engineering. He was graduate fellow teachers assistant for several courses. Brent has performed geotechnical work in the following fields of geotechnical engineering: subsurface investigations, shallow and deep foundations, retaining walls, forensic evaluations, slope stability, seismic ground response, laboratory soil testing, and construction monitoring.

Catalena Cabrera, GIS Analyst. Catalena has six years experience in the field of GIS. Her experience includes designing, creating, maintaining, and analyzing client data. She has extensive GIS analysis and local government planning and permitting software integration. Catalena has conducted GIS training for public agencies and at state conferences. She has comprehensive working experience with ESRI software products including ArcView, ArcInfo Workstation and ArcGIS, and she is well versed with GPS Trimble products.

H.4 EVIDENCE OF CONSULTATION

OAR 345-021-0010(1)(h)(C) *Evidence of consultation with the Oregon Department of Geology and Mineral Industries regarding the appropriate site-specific geotechnical work that must be performed before submitting the application for the Department to determine that the application is complete.*

<u>Response:</u>

While preparing this Exhibit, GeoEngineers consulted Oregon Department of Geology and Mineral Industries (DOGAMI) publications and other publications/guidance.

A summary of the site-specific work planned for the Project is presented in Section H.3.1. During the next phase of the Project, GeoEngineers will consult with DOGAMI regarding the details for the site-specific geotechnical work needed for design in advance of construction.

H.5 TRANSMISSION LINES

OAR 345-021-0010(1)(h)(D) *For all transmission lines, a description of locations along the proposed route where the applicant proposes to perform site specific geotechnical work, including but not limited to railroad crossings, major road crossings, river crossings, dead ends, corners, and portions of the proposed route where geologic reconnaissance and other site specific studies provide evidence of existing landslides or marginally stable slopes that could be made unstable by the planned construction.*

Response:

The results of work conducted to date suggest that cuts in the loess soils exceeding about 50% slope are potentially unstable. Steeper cuts into basalt bedrock are subject to rock falls and potentially larger scale mass instability, especially if bedrock joint geometry is not conducive to maintaining cut stability.

The work conducted to date suggests that project transmission lines do not cross (nor are near) areas that show gross indicators of landslide (recent, historic, and ancient) activity or marginal stability.

The power collectors for the Project follow existing roads in some areas and most likely will be placed underground. During the geologic and soils study, these existing roads were observed to cross dry creek beds. At these culvert crossings, some stream erosion (including over-steepened banks) was observed, principally near the culvert crossings.

Native soil and bedrock stability concerns at cuts, fills and culvert crossings will be addressed during future, site-specific geotechnical studies planned during the design phase of the Project. This future work will include development of design and construction recommendations that minimize the potential for destabilizing marginally stable slopes and minimize the potential for stream erosion at stream crossings.

Future detailed site-specific geotechnical investigation of the proposed transmission line and power collection alignments will likely be conducted in the third quarter of 2007 (prior to the planned start of construction in 2008).

H.6 PIPELINES

OAR 345-021-0010(1)(h)(E) *For all pipelines that would carry explosive, flammable or hazardous materials, a description of locations along the proposed route where the applicant proposes to perform site specific geotechnical work, including but not limited to railroad crossings, major road crossings, river crossings, and portions of the proposed alignment where geologic reconnaissance and other site specific studies provide evidence of existing landslides or marginally stable slopes that could be made unstable by the planned construction.*

Response:

No pipelines carrying explosive, flammable or hazardous materials are planned for the Project.

H.7 SEISMIC HAZARD ASSESSMENT

OAR 345-021-0010(1)(h)(F) *An assessment of seismic hazards. For the purposes of this assessment, the maximum probable earthquake (MPE) is the maximum earthquake that could occur under the known tectonic framework with a 10 percent chance of being exceeded in a 50 year period. If seismic sources are not mapped sufficiently to identify the ground motions above, the applicant shall provide a probabilistic seismic hazard analysis to identify the peak ground accelerations expected at the site for a 500 year recurrence interval and a 5000 year recurrence interval. In the assessment, the applicant shall include*:

(i) Identification of the Maximum Considered Earthquake Ground Motion shown at International Building Code (2003 edition) Section 1615 for the site.

(ii) Identification and characterization of all earthquake sources capable of generating median peak ground accelerations greater than 0.05g on rock at the site. For each earthquake source, the applicant shall assess the magnitude and minimum epicentral distance of the maximum credible earthquake (MCE);

(iii) A description of any recorded earthquakes within 50 miles of the site and of recorded earthquakes greater than 50 miles from the site that caused ground shaking at the site more intense than the Modified Mercalli III intensity. The applicant shall include the date of occurrence and a description of the earthquake that includes its magnitude and highest intensity and its epicenter location of region or highest intensity.

(iv) Assessment of the median ground response spectrum from the MCE and the MPE and identification of the spectral accelerations greater that the design spectrum provided in the Oregon Structural Specialty Code (2004 edition). The applicant shall include a description of the probable behavior of the subsurface materials and amplification by subsurface materials and any topographic or subsurface conditions that could result in expected ground motions greater than those characteristic of the Maximum Considered Earthquake Ground Motion identified above

(v) An assessment of seismic hazards expected to result from reasonably probable seismic events. As used in this rule "seismic hazard" includes ground shaking, ground failure, landslide, lateral spreading, liquefaction, tsunami inundation, fault displacement and subsidence.

<u>Response:</u>

The findings of this assessment are detailed in this Section. Conclusions about seismic hazard mitigation are presented in Section H.9 of this Exhibit.

Oregon recognizes the 2006 International Building Code, with Oregon Structural Specialty Code addenda. The site soil is classified per IBC and OSSC guidelines as site class B.

The site soils generally consist of a relatively thin skin of wind-blown loess silt overlying Columbia River basalt bedrock. The bedrock depth ranges from at the ground surface to about 40 feet below ground surface, with an average soil depth of about 15 feet. Consequently, a soil profile of class C is appropriate for the design of the wind turbine towers and equipment within the project boundaries. The following table presents the design parameters provided by IBC for the project soil profile.

Seismic Design Parameters (2006 IBC)	
Site Class	B
Spectral Response Acceleration (Short Period), S_s	0.46g
Spectral Response Acceleration (1-Second Period), S_1	0.16g
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.0
Damped Response Acceleration (Short Period), S_{DS}	0.31g
Damped Response Acceleration (1-Second Period), S_{D1}	0.11g

H.7.1 Earthquake Sources

The current understanding of seismicity in Oregon considers three main seismic sources. Two of the possible earthquake sources are associated with the Cascadia subduction zone (CSZ), and the third source is comprised of shallow earthquakes that occur within the North American crust. Since these possible seismic events are anticipated to have different ground shaking effects on the Project, each earthquake scenario should be considered individually as the maximum credible earthquake (MCE). The three earthquake scenarios are discussed in the following paragraphs.

The CSZ is the region where the Juan de Fuca Plate is being subducted beneath the North American Plate. The present body of evidence suggests that this subduction zone has generated eight large earthquakes in the last 4,000 years, with the most recent event occurring about 300 years ago. Two MCE subduction zone earthquake scenarios were considered in this study: (1) an earthquake on the seismogenic part of the interface between the Juan de Fuca Plate and the North American Plate on the CSZ with a moment magnitude (Mw) of 9.0 (interplate event), and (2) a deep earthquake with a Mw of 7.5 on the seismogenic part of the subducting plate of the CSZ (intraplate event). These magnitudes are the generally accepted maximum credible events for the CSZ, given the current level of information regarding subduction zone earthquakes in the Pacific Northwest.

Local crustal faults near the Project generally include small thrust faults located just beyond the southwest corner of the Project. There are also several thrust faults located many tens of kilometers away from the project area as schematically shown MPE deaggregation maps (Figures H-5 and H-7).

The thrust fault near the southwest corner of the Project is defined as a non-Quaternary fault (i.e., shown no signs of disturbing geologic units less than about 1.8 million years old). The loess that mantles the basalt is about 13,000 to 15,000 years old. The basalt is between about 15 and 35 million years old.

None of the nearby faults have well-defined slip rates, and one fault near the Project has a recorded earthquake of unknown magnitude.

It is difficult to select a deterministic model of crustal seismicity without making unsupportable assumptions regarding fault activity, slip rate, and fracture length. We represent local crustal seismicity by modeling a magnitude 5 earthquake located 2 miles from the center of the Project. The selected magnitude of this event exceeds the magnitude of recorded earthquakes for the nearby faults.

The maximum probable event (MPE) is defined by EFSC as the maximum earthquake that could occur under the known tectonic framework with a 10 percent chance of being exceeded in a 50-year period (475-year event). The USGS National Seismic Mapping Project (2002) reports that the MPE is equivalent to an earthquake that has a magnitude, Mw of 6.4 and an epicentral distance of 46 miles from the Project.

The maximum credible event (MCE) is defined by EFSC as the maximum earthquake that could occur under the known tectonic framework with a 2 percent chance of being exceeded in a 50-year period (2475-year event). The USGS National Seismic Mapping Project (2002) reports that the MCE is equivalent to an earthquake that has a magnitude, Mw of 6.2 and an epicentral distance of 22 miles from the Project.

The USGS's National Seismic Mapping Project also provides probabilistic response spectra for the 500- and 2500-year return period events based on latitude and longitude. Figures H-5 through H-8 show the probabilistic and geographic seismic hazard deaggregations for the 500-year and 2500-year return period earthquake events.

The table below summarizes the computed horizontal peak ground accelerations (PGA) for the three design earthquakes and the maximum probable earthquake (MPE). The attenuation equation of Crouse (1991) was used to compute the site response for the two postulated CSZ events. We used the attenuation equation of Boore (1997) to compute the site response for the local crustal event.

Calculated PGA Values

Earthquake Event	Moment Magnitude	Focal Depth (miles)	Epicentral Distance (miles)	PGA(g)
CSZ Interplate	9.0	15	175	0.12
CSZ Intraplate	7.5	30	120	0.08
MCE	6.2	--	22	0.19
MPE	6.4	--	46	0.09

Notes:
PGA=peak ground acceleration
g=equals acceleration of gravity=32.2 ft/sec^2

H.7.2 Recorded Earthquakes

Tables H-1 and H-2 provide a list of recorded earthquakes within 50 miles of the Project and greater than 50 miles from the Project that caused ground shaking at the Project, respectively, more intense than the Modified Mercalli (MM) III intensity. Table H-1 shows that recorded earthquakes within 50 miles of the Project generally consist of small events with no apparent pattern or regular recurrence interval.

H.7.3 Median Ground Response Spectrum

Figure H-9 shows a plot of the response spectra for the earthquakes from each of the three mechanisms capable of causing ground shaking at the Project. The response spectra were computed for the ground surface and include the effects of amplification from the project soils. Figure H-9 shows that the IBC design response spectra for a Class B soil profile envelopes the spectra for the MPE, local crust fault earthquake, and deep Cascadia subduction earthquake. At response periods longer than about 0.5 seconds, the response spectra for the magnitude 9 shallow Cascadia subduction earthquake exceeds the IBC response spectra. We recommend that the proposed wind turbine facilities be designed for the response spectra shown in Figure H-9.

H.7.4 Seismic Hazards Expected to Result from Seismic Events

The Project is categorized as IBC Seismic Design Category “B” for a type B soil profile with respect to the design spectral response. Structures designed for this seismic load coefficient should experience only minor damage, and pose a minimal risk to human safety, in the event of a 2,500-year return period earthquake.

An earthquake exceeding the 2,500-year event may cause ground shaking accelerations exceeding the structures’ resisting capacity. In this case, the structures may experience significant damage and could lead to enhanced risk to human safety. If the structures are expected to experience only minor damage in the event of an earthquake exceeding the 2,500-year return period should be designed for the maximum ground motion response spectra resulting from the IBC design spectra for short periods, and CSZ earthquake spectra for longer periods, shown in Figure H-9.

The site topography generally consists of rolling hills, with shallow bedrock depths and a deep groundwater table. Therefore, the risks of landslides, lateral spreading, liquefaction settlement, and subsidence at the Project are relatively low. The site is located well above the nearby Columbia River, so there is essentially no risk for damage from flooding or tsunami.

H.8 NON-SEISMIC GEOLOGIC HAZARDS

OAR 345-021-0010(1)(h)(G) *An assessment of soil-related hazards such as landslides, flooding and erosion which could, in the absence of a seismic event, adversely affect or be aggravated by the construction or operation of the facility*.

Response:

The assessment of the potential for non-seismic geologic hazards at the Project was based on review of geologic maps and literature, aerial photos, and a detailed site reconnaissance, as described in Section H.3.2.

Based on work conducted to date, no gross indicators of significant existing, historic, and ancient geologic or /soil stability hazards were observed during the review and site reconnaissance of the project area.

Most slopes within the Project boundaries are gentle rolling hills consisting of basalt with a relatively thin veneer of wind blown silts, which are generally not susceptible slope stability failures at native slope angles. Steeper and near vertical slopes within the project area are basalt outcrops that show no signs of instability other than rock falls. Road cuts in the surficial loess deposits show signs of minor erosion at slopes greater than about 50% and minor sloughing at slopes greater than about 100%. Cuts in basalt bedrock were normally very steep (i.e., near or greater than about 100%) and only show minor to moderate rock falls.

With thick basalt bedrock at very shallow depths throughout the Project, the likelihood of deep seated slope failures is also very low.

The proposed wind turbine sites are not located on or near unstable slopes that would pose a significant risk of ground movement or other geologic hazards. In addition the wind turbine corridors and major structures will be constructed with sufficient setbacks from all steeper slopes to minimize the potential for creating marginally stable conditions.

Based on the work conducted to date, the proposed Project can be constructed without adversely affecting slope stability provided that the geotechnical design study addresses site grading, cut/fill slope stability, surface water drainage, erosion control, and other measures that mitigate potential impacts derived from development of the Project. The geotechnical design study will occur prior to final design and construction.

The project site is situated above regional flood elevation for the area. Consequently, flooding is not considered a potential hazard. However, localized flooding and erosion, derived from flash floods during extreme rainfall events, may be an isolated hazard in drainageways.

H.9 SEISMIC HAZARD MITIGATION

OAR 345-021-0010(1)(h)(H) *An explanation of how the applicant will design, engineer and construct the facility to avoid dangers to human safety from the seismic hazards identified in paragraph (F). The applicant shall include proposed design and engineering features, applicable construction codes, and any monitoring for seismic hazards.*

Response:

The OSSC uses the 2006 IBC, with current amendments by the state of Oregon and local agencies. Pertinent design codes as they relate to geology, seismicity, and near-surface soil are contained in IBC Section 1613, with slight modifications by the current amendments of the state of Oregon and local agencies. The Project will be designed to meet or exceed these minimum standards. Additionally, a detailed geologic hazard assessment has been performed for the Project. Although there are no known active, historic, or ancient landslides within the project area, the proposed wind turbines and other major project improvements appear to have been sited to avoid potential geologic hazard areas that could become destabilized by a seismic event. Additionally, the information collected during the geotechnical design investigation (including explorations) of the Project will be used to design and construct proposed project improvements to mitigate potential hazards that could be created during a seismic event.

H.10 NON-SEISMIC HAZARD MITIGATION

OAR 345-021-0010(1)(h)(I) *An explanation of how the applicant will design, engineer and construct the facility to adequately avoid dangers to human safety presented by the hazards identified in paragraph (G).*

Response:

A detailed geologic hazards evaluation has been performed. Although there are no known active, historic, or ancient landslides within the project area, the proposed wind turbines and other major project improvements appear to have been sited to avoid potential geologic hazard areas. In addition, most of the turbine corridors, transmission line alignment, and major structures will be located atop ridges where no significant site grading will be required. Also, the results of the geotechnical design investigation will include recommendations for properly engineered temporary and permanent fill and cut slopes.

The Project will be subject to a Stormwater General Permit 1200-C, issued by the Oregon Department of Environmental Quality, and its Erosion and Sediment Control Plan. Surface water drainage provisions, including gravel-lined drainage ditches, culverts, and waterbars will also be included for short- and long-term surface water control.

Erosion control measures to be employed during construction include:

- Installing sediment fence/straw bale barriers at downslope sides of excavations and disturbed areas.
- Straw mulching and discing at locations adjacent to roads that could be affected.
- Providing temporary sediment traps downstream of intermittent stream crossings.
- Planting designated seed mixes at affected areas adjacent to roads.

Areas that are affected by construction will be seeded when there is adequate soil moisture. They will be reseeded in the spring if a healthy cover crop does not grow. The sediment fences and check dams will remain in place until the affected areas are well vegetated.

Whenever feasible, roadways will be constructed so that surface drainage coincides with natural drainage patterns, so diversions through ditches and culverts are minimized. Surface water will be diverted into natural drainage paths via drainage ditches. Regular maintenance of drainage facilities will ensure continued proper operation.

Project facilities will be located to avoid potential landslide hazards, and new slopes will be designed with adequate safety factors against failure. All structures will be constructed with sufficient setbacks from slopes to mitigate any landslide hazards related to their construction.

TABLE H-1
NEIC EARTHQUAKE SEARCH RESULTS

Year	Month	Day	Latitude	Longitude	Magnitude	Estimated MM Intensity at Site
1872	12	15	47.90	-120.30	7	4
1873	11	23	42.00	-124.00	6.7	4
1891	3	8	47.50	-121.50	5	4
1892	2	4	45.50	-122.70	5	4
1893	3	7	45.90	-119.30	4.7	4
1896	4	2	45.20	-123.20	5	4
1906	4	23	41.00	-124.00	6.4	4
1909	1	11	49.00	-122.70	6	4
1915	8	18	48.50	-121.40	5.6	4
1932	7	18	47.75	-121.83	5.2	4
1936	7	16	45.97	-118.21	5.7	4
1939	11	13	47.50	-122.50	5.7	4
1944	7	12	44.41	-115.06	6.1	4
1945	4	29	47.40	-121.70	5.5	4
1946	6	23	49.76	-125.34	7.3	4
1946	2	15	47.40	-122.67	5.7	4
1949	4	13	47.17	-122.62	6.9	4
1953	12	16	45.50	-122.70	5	4
1954	12	21	40.78	-124.17	6.5	4
1959	11	23	46.67	-121.75	4.8	4
1959	8	4	45.68	-122.27	4.7	4
1961	9	16	46.01	-122.13	4.8	4
1961	9	17	46.02	-122.12	5.1	4
1961	11	7	45.70	-122.40	4.5	4
1962	11	6	45.64	-122.59	5.2	4
1965	4	29	47.40	-122.30	6.7	4
1973	12	20	46.94	-119.25	4.8	4
1974	4	20	46.76	-121.52	4.9	4
1974	4	20	46.76	-121.52	4.9	4
1974	12	13	45.26	-121.60	4.1	4
1975	7	1	45.63	-120.00	3.5	4
1976	4	13	45.22	-120.77	4.8	4
1976	4	13	45.22	-120.77	4.8	4
1976	4	17	45.08	-120.80	4.2	4
1980	11	8	41.12	-124.25	7.2	4
1980	11	8	41.12	-124.25	7.2	4
1981	2	2	46.28	-120.88	4	4
1981	5	28	46.53	-121.42	4.3	4
1981	2	14	46.35	-122.25	4.6	4
1981	5	28	46.53	-121.41	4.8	4
1981	2	14	46.35	-122.24	5.5	4
1981	2	14	46.35	-122.24	5.5	4
1981	6	14	45.95	-120.49	3.1	4
1983	10	28	44.06	-113.86	7.3	4
1983	10	28	43.97	-113.92	7.3	4
1985	2	10	45.86	-119.64	3.7	4
1987	12	2	46.68	-120.67	4.3	4
1988	9	29	45.85	-120.26	3.5	4
1989	3	27	45.82	-120.26	3.1	4

TABLE H-1
NEIC EARTHQUAKE SEARCH RESULTS

Year	Month	Day	Latitude	Longitude	Magnitude	Estimated MM Intensity at Site
1989	12	24	46.65	-122.12	5.1	4
1989	12	24	46.65	-122.12	5.1	4
1989	9	15	45.37	-121.71	3.5	4
1990	10	19	45.34	-121.69	3.5	4
1991	4	20	45.35	-120.14	2.8	4
1991	7	13	42.18	-125.64	6.9	4
1991	8	17	41.82	-125.40	7.1	4
1992	8	7	45.86	-119.59	3.9	4
1993	12	18	45.25	-120.11	3.1	4
1993	3	25	45.03	-122.61	5.7	4
1993	9	21	42.36	-122.04	6	4
1993	9	21	42.31	-122.01	6	4
1994	11	17	45.70	-120.18	2.7	4
1994	9	22	45.69	-120.16	2.9	4
1994	4	13	45.14	-120.85	2.8	4
1995	1	29	47.39	-122.36	5.1	4
1996	5	3	47.76	-121.88	5.5	4
1997	9	10	45.65	-120.20	2.7	4
1997	8	17	45.65	-120.19	2.8	4
1997	11	11	45.85	-120.57	2.8	4
1997	10	13	46.10	-120.36	3.3	4
1997	11	18	46.14	-120.46	3.3	4
1997	3	23	45.20	-120.07	3.4	4
1997	11	18	46.14	-120.47	3.8	4
1997	3	22	45.19	-120.07	3.9	4
1997	4	17	45.19	-120.08	3.2	4
1998	4	28	45.26	-120.28	2.7	4
1998	2	3	45.81	-120.20	3.1	4
1998	10	9	46.20	-120.71	4	4
1998	11	1	45.10	-120.83	2.9	4
1999	7	3	47.08	-123.46	5.8	4
1999	8	31	45.19	-120.09	3.2	4
2000	8	17	45.31	-120.04	3.2	4
2000	1	30	45.19	-120.10	3.4	4
2000	2	1	45.19	-120.11	3.6	4
2000	1	30	45.20	-120.12	4.1	4
2000	1	20	43.65	-127.26	6.4	4
2001	2	28	47.15	-122.73	6.8	4
2002	1	31	45.69	-120.17	2.7	4
2002	6	29	45.34	-121.68	3.8	4
2002	6	29	45.33	-121.69	4.5	4
2006	10	8	46.85	-121.60	4.7	4
2007	1	4	45.12	-120.94	3	4
2007	1	20	45.12	-120.94	3	4
2007	4	8	45.13	-120.94	3.1	4
2007	3	1	45.12	-120.93	3.6	4
2007	2	13	45.12	-120.94	2.9	4

TABLE H-1
NEIC EARTHQUAKE SEARCH RESULTS

Year	Month	Day	Latitude	Longitude	Magnitude	Estimated MM Intensity at Site
Earthquakes Associated with Mount St. Helens						
1980	5	16	46.21	-122.18	4.3	4
1980	3	22	46.21	-122.19	4.3	4
1980	4	11	46.21	-122.19	4.3	4
1980	4	13	46.22	-122.17	4.3	4
1980	5	2	46.22	-122.17	4.3	4
1980	5	8	46.22	-122.17	4.3	4
1980	3	28	46.22	-122.18	4.3	4
1980	4	12	46.22	-122.18	4.3	4
1980	4	12	46.22	-122.18	4.3	4
1980	4	16	46.22	-122.18	4.3	4
1980	3	26	46.22	-122.19	4.3	4
1980	3	30	46.22	-122.19	4.3	4
1980	4	6	46.22	-122.19	4.3	4
1980	4	17	46.22	-122.19	4.3	4
1980	4	18	46.22	-122.19	4.3	4
1980	4	29	46.22	-122.19	4.3	4
1980	5	1	46.22	-122.19	4.3	4
1980	4	5	46.23	-122.17	4.3	4
1980	4	19	46.23	-122.17	4.3	4
1980	4	4	46.13	-122.03	4.4	4
1980	4	8	46.21	-122.17	4.4	4
1980	5	5	46.21	-122.18	4.4	4
1980	4	8	46.21	-122.19	4.4	4
1980	4	10	46.22	-122.17	4.4	4
1980	4	14	46.22	-122.17	4.4	4
1980	5	5	46.22	-122.17	4.4	4
1980	4	5	46.22	-122.18	4.4	4
1980	4	21	46.22	-122.18	4.4	4
1980	5	16	46.22	-122.18	4.4	4
1980	3	30	46.22	-122.19	4.4	4
1980	3	31	46.22	-122.19	4.4	4
1980	3	31	46.22	-122.19	4.4	4
1980	4	4	46.22	-122.21	4.4	4
1980	5	10	46.35	-122.03	4.4	4
1980	4	21	46.11	-122.17	4.5	4
1980	4	21	46.11	-122.17	4.5	4
1980	3	31	46.19	-122.18	4.5	4
1980	4	4	46.21	-122.18	4.5	4
1980	5	3	46.21	-122.18	4.5	4
1980	4	4	46.21	-122.18	4.5	4
1980	5	3	46.21	-122.18	4.5	4
1980	3	30	46.22	-122.18	4.5	4
1980	4	1	46.22	-122.18	4.5	4
1980	4	18	46.22	-122.18	4.5	4
1980	4	15	46.22	-122.2	4.5	4
1980	4	1	46.22	-122.18	4.5	4
1980	5	3	46.23	-122.19	4.5	4
1980	4	3	46.23	-122.2	4.5	4

TABLE H-1
NEIC EARTHQUAKE SEARCH RESULTS

Year	Month	Day	Latitude	Longitude	Magnitude	Estimated MM Intensity at Site
1980	4	1	46.21	-122.19	4.6	4
1980	3	30	46.21	-122.18	4.6	4
1980	4	18	46.21	-122.18	4.6	4
1980	3	31	46.21	-122.19	4.6	4
1980	4	1	46.21	-122.19	4.6	4
1980	5	5	46.22	-122.17	4.6	4
1980	5	6	46.22	-122.17	4.6	4
1980	5	9	46.22	-122.17	4.6	4
1980	5	14	46.22	-122.17	4.6	4
1980	4	7	46.22	-122.18	4.6	4
1980	4	22	46.22	-122.18	4.6	4
1980	4	27	46.22	-122.18	4.6	4
1980	4	28	46.22	-122.18	4.6	4
1980	3	31	46.22	-122.19	4.6	4
1980	3	27	46.22	-122.2	4.6	4
1980	5	5	46.22	-122.17	4.6	4
1980	5	9	46.22	-122.17	4.6	4
1980	5	14	46.22	-122.17	4.6	4
1980	4	7	46.22	-122.18	4.6	4
1980	4	22	46.22	-122.18	4.6	4
1980	4	27	46.22	-122.18	4.6	4
1980	4	28	46.22	-122.18	4.6	4
1980	3	27	46.22	-122.2	4.6	4
1980	5	4	46.23	-122.18	4.6	4
1980	5	2	46.23	-122.2	4.6	4
1980	5	4	46.23	-122.18	4.6	4
1980	5	2	46.23	-122.2	4.6	4
1980	5	12	46.25	-122.31	4.6	4
1980	5	12	46.25	-122.31	4.6	4
1980	4	18	46.21	-122.18	4.7	4
1980	4	15	46.21	-122.2	4.7	4
1980	4	29	46.22	-122.17	4.7	4
1980	5	11	46.22	-122.17	4.7	4
1980	5	16	46.22	-122.17	4.7	4
1980	4	10	46.22	-122.18	4.7	4
1980	4	13	46.22	-122.18	4.7	4
1980	4	17	46.22	-122.18	4.7	4
1980	4	18	46.22	-122.18	4.7	4
1980	4	8	46.22	-122.19	4.7	4
1980	4	14	46.22	-122.19	4.7	4
1980	5	7	46.22	-122.19	4.7	4
1980	4	29	46.22	-122.17	4.7	4
1980	5	11	46.22	-122.17	4.7	4
1980	5	16	46.22	-122.17	4.7	4
1980	4	10	46.22	-122.18	4.7	4
1980	4	13	46.22	-122.18	4.7	4
1980	4	17	46.22	-122.18	4.7	4
1980	4	8	46.22	-122.19	4.7	4
1980	4	14	46.22	-122.19	4.7	4

TABLE H-1
NEIC EARTHQUAKE SEARCH RESULTS

Year	Month	Day	Latitude	Longitude	Magnitude	Estimated MM Intensity at Site
1980	5	7	46.22	-122.19	4.7	4
1980	4	11	46.23	-122.17	4.7	4
1980	4	10	46.23	-122.18	4.7	4
1980	4	19	46.23	-122.18	4.7	4
1980	4	6	46.23	-122.19	4.7	4
1980	4	29	46.23	-122.19	4.7	4
1980	4	10	46.23	-122.18	4.7	4
1980	4	19	46.23	-122.18	4.7	4
1980	4	6	46.23	-122.19	4.7	4
1980	4	29	46.23	-122.19	4.7	4
1980	4	23	46.26	-122.01	4.7	4
1980	4	23	46.26	-122.01	4.7	4
1980	5	6	46.36	-122.08	4.7	4
1980	5	6	46.36	-122.08	4.7	4
1980	4	9	46.2	-122.2	4.8	4
1980	4	3	46.21	-122.19	4.8	4
1980	4	11	46.22	-122.16	4.8	4
1980	4	16	46.22	-122.17	4.8	4
1980	4	30	46.22	-122.17	4.8	4
1980	5	9	46.22	-122.17	4.8	4
1980	4	1	46.22	-122.18	4.8	4
1980	4	2	46.22	-122.18	4.8	4
1980	4	18	46.22	-122.18	4.8	4
1980	4	20	46.22	-122.18	4.8	4
1980	4	24	46.22	-122.18	4.8	4
1980	4	11	46.22	-122.16	4.8	4
1980	4	16	46.22	-122.17	4.8	4
1980	4	30	46.22	-122.17	4.8	4
1980	5	9	46.22	-122.17	4.8	4
1980	4	2	46.22	-122.18	4.8	4
1980	4	18	46.22	-122.18	4.8	4
1980	4	20	46.22	-122.18	4.8	4
1980	4	24	46.22	-122.18	4.8	4
1980	4	3	46.23	-122.17	4.8	4
1980	4	3	46.23	-122.17	4.8	4
1980	5	15	46.21	-122.19	4.9	4
1980	4	1	46.21	-122.18	4.9	4
1980	5	15	46.21	-122.19	4.9	4
1980	4	9	46.22	-122.15	4.9	4
1980	4	15	46.22	-122.18	4.9	4
1980	4	16	46.22	-122.18	4.9	4
1980	5	12	46.22	-122.18	4.9	4
1980	4	9	46.22	-122.15	4.9	4
1980	4	15	46.22	-122.18	4.9	4
1980	4	16	46.22	-122.18	4.9	4
1980	5	12	46.22	-122.18	4.9	4
1980	4	5	46.23	-122.19	4.9	4
1980	4	7	46.23	-122.21	4.9	4
1980	4	5	46.23	-122.19	4.9	4

TABLE H-1
NEIC EARTHQUAKE SEARCH RESULTS

Year	Month	Day	Latitude	Longitude	Magnitude	Estimated MM Intensity at Site
1980	4	7	46.23	-122.21	4.9	4
1980	4	1	46.22	-122.18	5	4
1980	4	1	46.22	-122.18	5	4
1980	5	8	46.23	-122.17	5	4
1980	4	3	46.23	-122.22	5	4
1980	5	8	46.23	-122.17	5	4
1980	4	3	46.23	-122.22	5	4
1980	4	25	46.26	-122.18	5	4
1980	4	25	46.26	-122.18	5	4
1980	5	18	46.21	-122.19	5.2	4
1980	5	18	46.21	-122.19	5.2	4
1980	4	14	46.21	-122.19	5.3	4
1980	4	14	46.21	-122.19	5.3	4
1980	5	1	46.21	-122.18	4.3	4

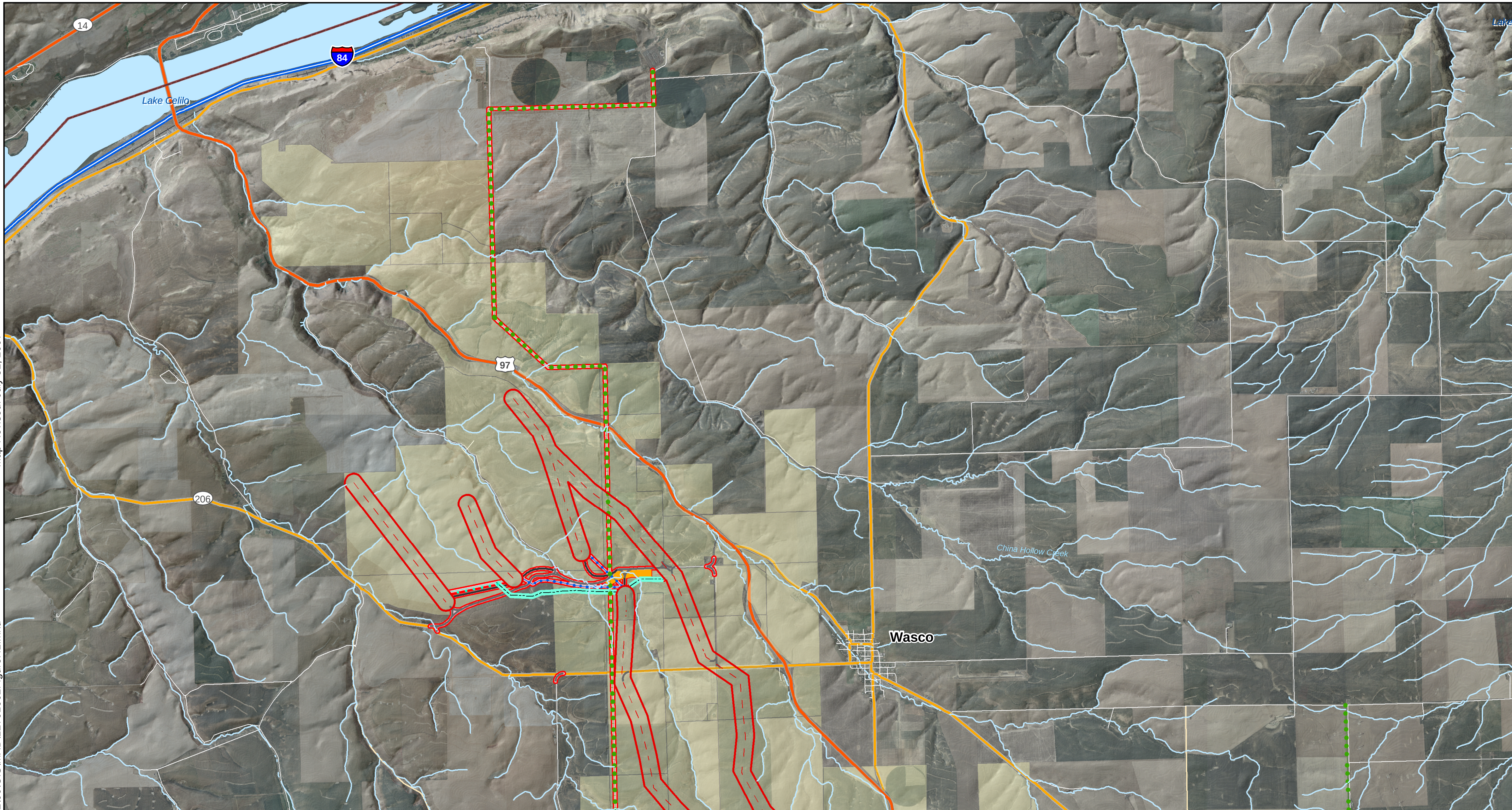
Table H-2: Earthquakes Greater than 50 Miles Causing Ground Shaking >MM-III

Year	Month	Day	Latitude	Longitude	Magnitude	Estimated MM Intensity at Site
1872	12	15	47.9	-120.3	7	4
1873	11	23	42	-124	6.7	4
1891	3	8	47.5	-121.5	5	4
1892	2	4	45.5	-122.7	5	4
1893	3	7	45.9	-119.3	4.7	4
1896	4	2	45.2	-123.2	5	4
1906	4	23	41	-124	6.4	4
1909	1	11	49	-122.7	6	4
1915	8	18	48.5	-121.4	5.6	4
1932	7	18	47.75	-121.83	5.2	4
1936	7	16	45.97	-118.21	5.7	4
1939	11	13	47.5	-122.5	5.7	4
1944	7	12	44.41	-115.06	6.1	4
1945	4	29	47.4	-121.7	5.5	4
1946	6	23	49.76	-125.34	7.3	4
1946	2	15	47.4	-122.67	5.7	4
1949	4	13	47.17	-122.62	6.9	4
1953	12	16	45.5	-122.7	5	4
1954	12	21	40.78	-124.17	6.5	4
1959	11	23	46.67	-121.75	4.8	4
1959	8	4	45.68	-122.27	4.7	4
1961	9	16	46.01	-122.13	4.8	4
1961	9	17	46.02	-122.12	5.1	4
1961	11	7	45.7	-122.4	4.5	4
1962	11	6	45.64	-122.59	5.2	4
1965	4	29	47.4	-122.3	6.7	4
1973	12	20	46.94	-119.25	4.8	4
1974	4	20	46.76	-121.52	4.9	4
1974	4	20	46.76	-121.52	4.9	4
1974	12	13	45.26	-121.6	4.1	4
1975	7	1	45.63	-120	3.5	4
1976	4	13	45.22	-120.77	4.8	4
1976	4	13	45.22	-120.77	4.8	4
1976	4	17	45.08	-120.8	4.2	4

Year	Month	Day	Latitude	Longitude	Magnitude	Estimated MM Intensity at Site
1980	11	8	41.12	-124.25	7.2	4
1980	11	8	41.12	-124.25	7.2	4
1981	2	2	46.28	-120.88	4	4
1981	5	28	46.53	-121.42	4.3	4
1981	2	14	46.35	-122.25	4.6	4
1981	5	28	46.53	-121.41	4.8	4
1981	2	14	46.35	-122.24	5.5	4
1981	2	14	46.35	-122.24	5.5	4
1981	6	14	45.95	-120.49	3.1	4
1983	10	28	44.06	-113.86	7.3	4
1983	10	28	43.97	-113.92	7.3	4
1985	2	10	45.86	-119.64	3.7	4
1987	12	2	46.68	-120.67	4.3	4
1988	9	29	45.85	-120.26	3.5	4
1989	3	27	45.82	-120.26	3.1	4
1989	12	24	46.65	-122.12	5.1	4
1989	12	24	46.65	-122.12	5.1	4
1989	9	15	45.37	-121.71	3.5	4
1990	10	19	45.34	-121.69	3.5	4
1991	4	20	45.35	-120.14	2.8	4
1991	7	13	42.18	-125.64	6.9	4
1991	8	17	41.82	-125.4	7.1	4
1992	8	7	45.86	-119.59	3.9	4
1993	12	18	45.25	-120.11	3.1	4
1993	3	25	45.03	-122.61	5.7	4
1993	9	21	42.36	-122.04	6	4
1993	9	21	42.31	-122.01	6	4
1994	11	17	45.7	-120.18	2.7	4
1994	9	22	45.69	-120.16	2.9	4
1994	4	13	45.14	-120.85	2.8	4
1995	1	29	47.39	-122.36	5.1	4
1996	5	3	47.76	-121.88	5.5	4
1997	9	10	45.65	-120.2	2.7	4
1997	8	17	45.65	-120.19	2.8	4
1997	11	11	45.85	-120.57	2.8	4

Year	Month	Day	Latitude	Longitude	Magnitude	Estimated MM Intensity at Site
1997	10	13	46.1	-120.36	3.3	4
1997	11	18	46.14	-120.46	3.3	4
1997	3	23	45.2	-120.07	3.4	4
1997	11	18	46.14	-120.47	3.8	4
1997	3	22	45.19	-120.07	3.9	4
1997	4	17	45.19	-120.08	3.2	4
1998	4	28	45.26	-120.28	2.7	4
1998	2	3	45.81	-120.2	3.1	4
1998	10	9	46.2	-120.71	4	4
1998	11	1	45.1	-120.83	2.9	4
1999	7	3	47.08	-123.46	5.8	4
1999	8	31	45.19	-120.09	3.2	4
2000	8	17	45.31	-120.04	3.2	4
2000	1	30	45.19	-120.1	3.4	4
2000	2	1	45.19	-120.11	3.6	4
2000	1	30	45.2	-120.12	4.1	4
2000	1	20	43.65	-127.26	6.4	4
2001	2	28	47.15	-122.73	6.8	4
2002	1	31	45.69	-120.17	2.7	4
2002	6	29	45.34	-121.68	3.8	4
2002	6	29	45.33	-121.69	4.5	4
2006	10	8	46.85	-121.6	4.7	4
2007	1	4	45.12	-120.94	3	4
2007	1	20	45.12	-120.94	3	4
2007	4	8	45.13	-120.94	3.1	4
2007	3	1	45.12	-120.93	3.6	4
2007	2	13	45.12	-120.94	2.9	4

Note: Earthquakes associated with the 1980 Mount Saint Helens eruption have been removed from this table.



Notes:
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Data Sources: ESRI Data & Maps, Street Maps 2005. 2006 NAIP imagery from United States Department of Agriculture. Hillshade created from 10 Meter DEM obtained from Regional Ecosystem Office (REO). Corridor data provided by David Evans and Associates, Inc., July, 2007.
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Explanation

- Culvert
- Hydrology
- Connector Corridor
- Wind Turbine Corridor
- Lease Area
- Corridor Centerline
- Crane Path
- Underground Collectors and Crane Path
- County/State Road Improvements
- New Permanent Access Road
- Transmission Line
- Underground Collector
- Bridges
- Existing Bridges
- Equipment Lay Down Area
- Operations/Maintenance
- Project Substation
- Limited Access
- Highway
- Major Road
- Local Road
- Minor Road
- Other Road

N

0 5,000
Feet

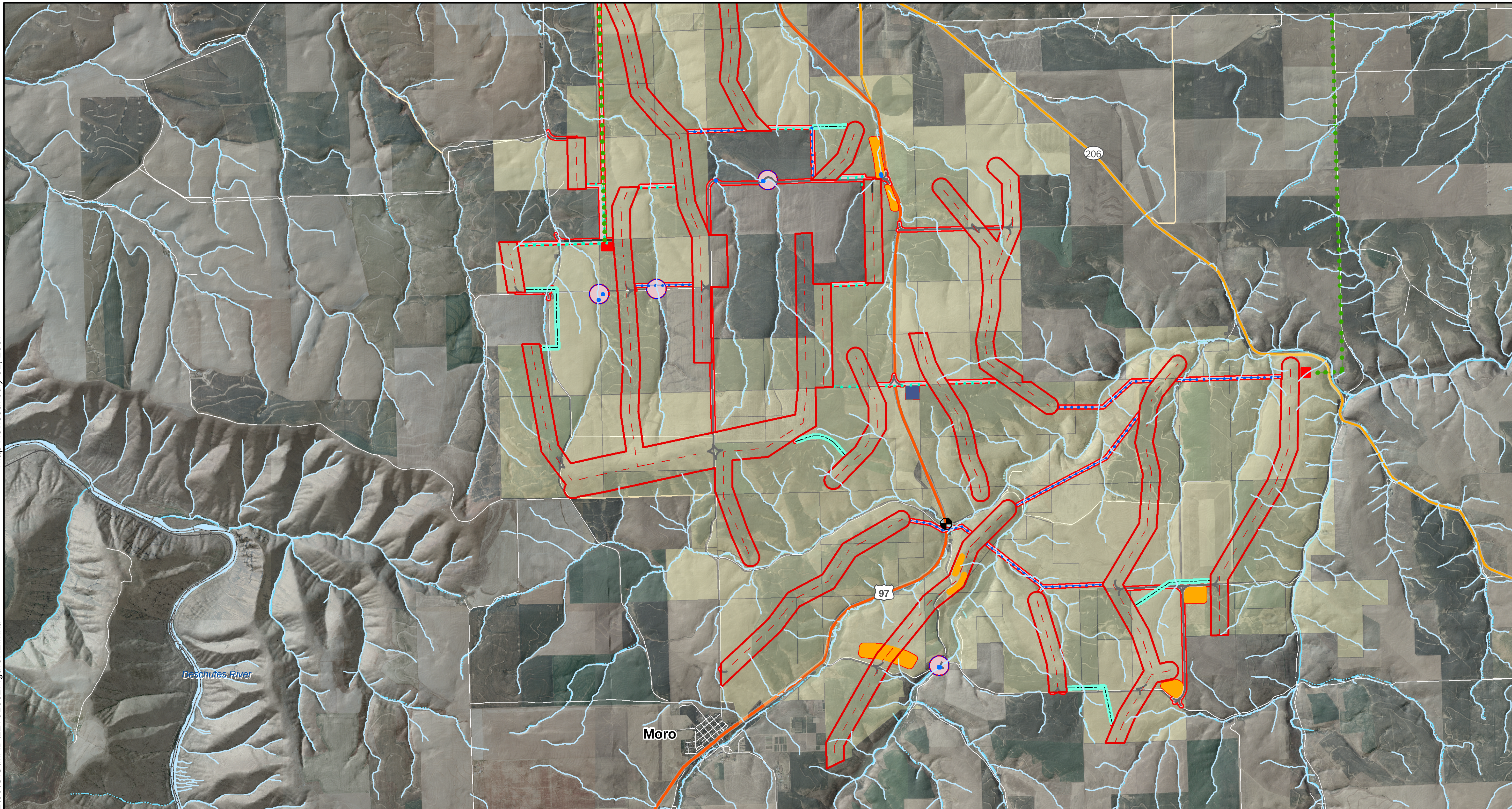
Detailed Site Map: North

Golden Hills
Sherman County, Oregon

GeoEngineers

Figure H-1

Map Revised: July 31, 2007
Path: P:\12\12791002\00\GIS\MXD\12791002FigureH1.mxd
Office: PORT



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Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Explanation

- Culvert
- Hydrology
- Connector Corridor
- Wind Turbine Corridor
- Lease Area
- Corridor Centerline
- Crane Path
- Underground Collectors and Crane Path
- County/State Road Improvements
- New Permanent Access Road
- Transmission Line
- Underground Collector
- Bridges
- Existing Bridges
- Equipment Lay Down Area
- Operations/Maintenance
- Project Substation

Streets and Highways

- Limited Access
- Highway
- Major Road
- Local Road
- Minor Road
- Other Road

N

0 5,000
Feet

Detailed Site Map: South

Golden Hills
Sherman County, Oregon

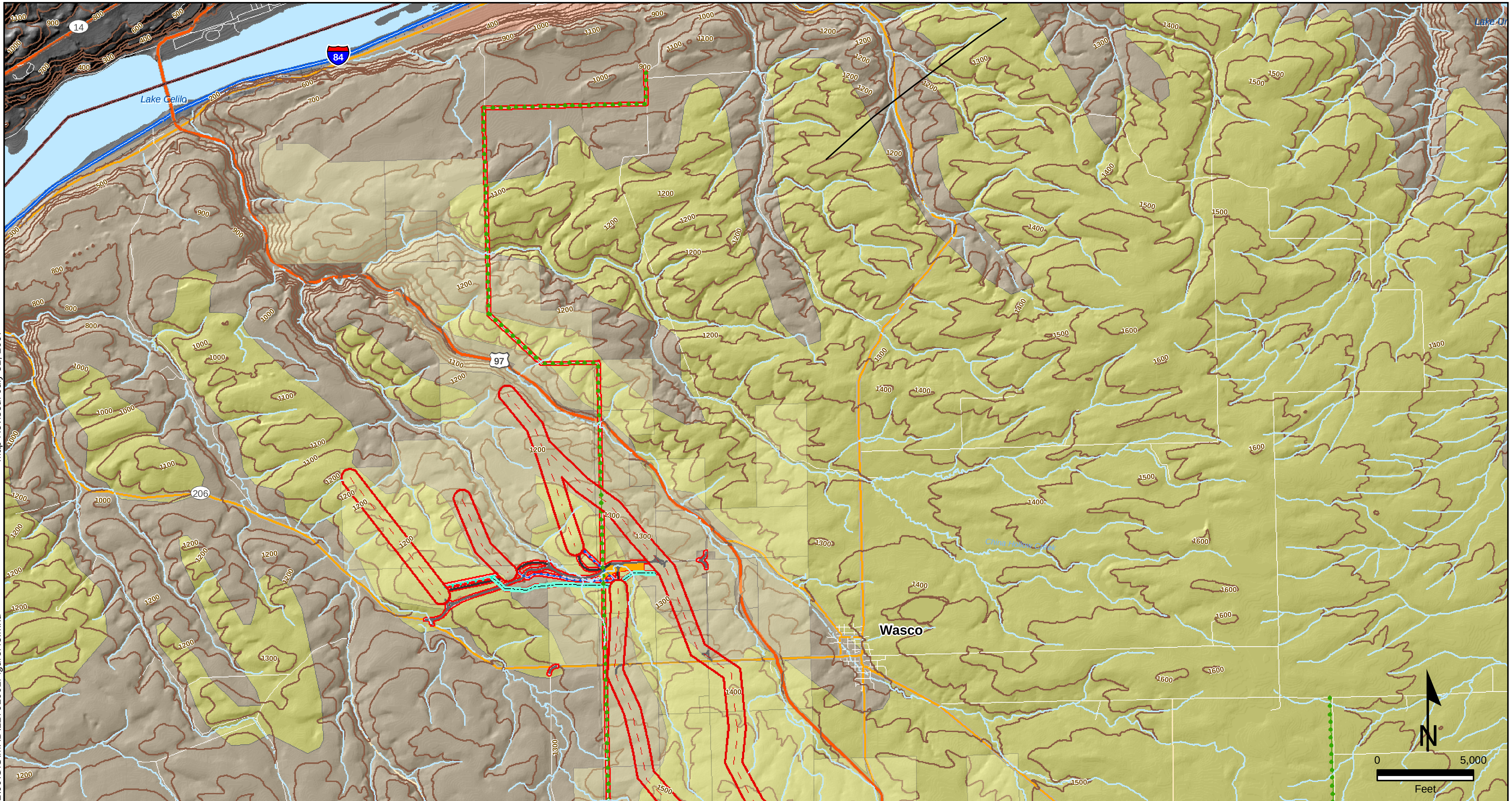
GeoEngineers

Figure H-2

Map Revised: July 31, 2007

Path: P:\12\12791002\00\GIS\MXD\12791002FigureH2.mxd

Office: PORT



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Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Explanation

- Culvert
- Hydrology
- Contours (100 foot)
- Connector Corridor
- Wind Turbine Corridor
- Lease Area
- Corridor Centerline
- Crane Path
- Underground Collectors and Crane Path
- County/State Road Improvements
- New Permanent Access Road
- Transmission Line
- Underground Collector
- Bridges
- Existing Bridges
- Equipment Lay Down Area
- Operations/Maintenance
- Project Substation
- Limited Access
- Highway
- Major Road
- Local Road
- Minor Road
- Other Road

Oregon Geologic Units

- Frenchman Springs Member
- Grand Rhonde Basalt
- Priest Rapids Member

Neotectonic

- Fault (Non Quaternary)
- Thrust Fault (Non Quaternary)

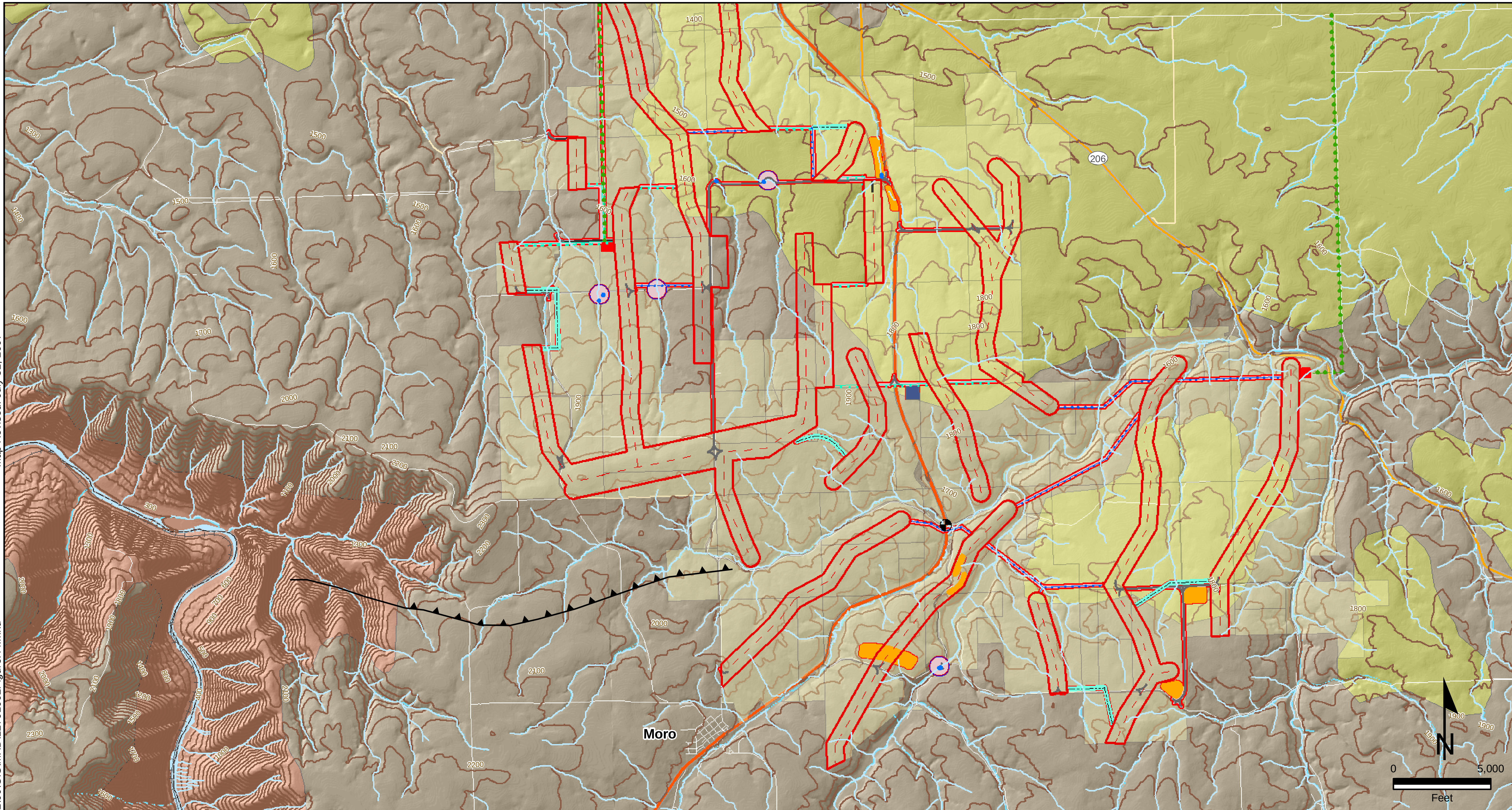
Geology Map: North

Golden Hills
Sherman County, Oregon

GeoEngineers

Figure H-3

Map Revised: July 31, 2007
Path: P:\12\12791002\00\GIS\MXD\12791002FigureH3.mxd
Office: PORT



Map Revised: July 31, 2007

Path: P:\12\12791002\00\GIS\MXD\12791002FigureH4.mxd

Office: PORT

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Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Explanation

- Culvert
- Hydrology
- Contours (100 foot)
- Wind Turbine Corridor
- Connector Corridor
- Lease Area
- Corridor Centerline
- Crane Path
- Underground Collectors and Crane Path
- County/State Road Improvements
- New Permanent Access Road
- Transmission Line
- Underground Collector
- Bridges
- Existing Bridges
- Equipment Lay Down Area
- Operations/Maintenance
- Project Substation

Streets and Highways
- Limited Access
- Highway
- Major Road
- Local Road
- Minor Road
- Other Road

Oregon Geologic Units
- Frenchman Springs Member
- Grand Rhonde Basalt
- Priest Rapids Member

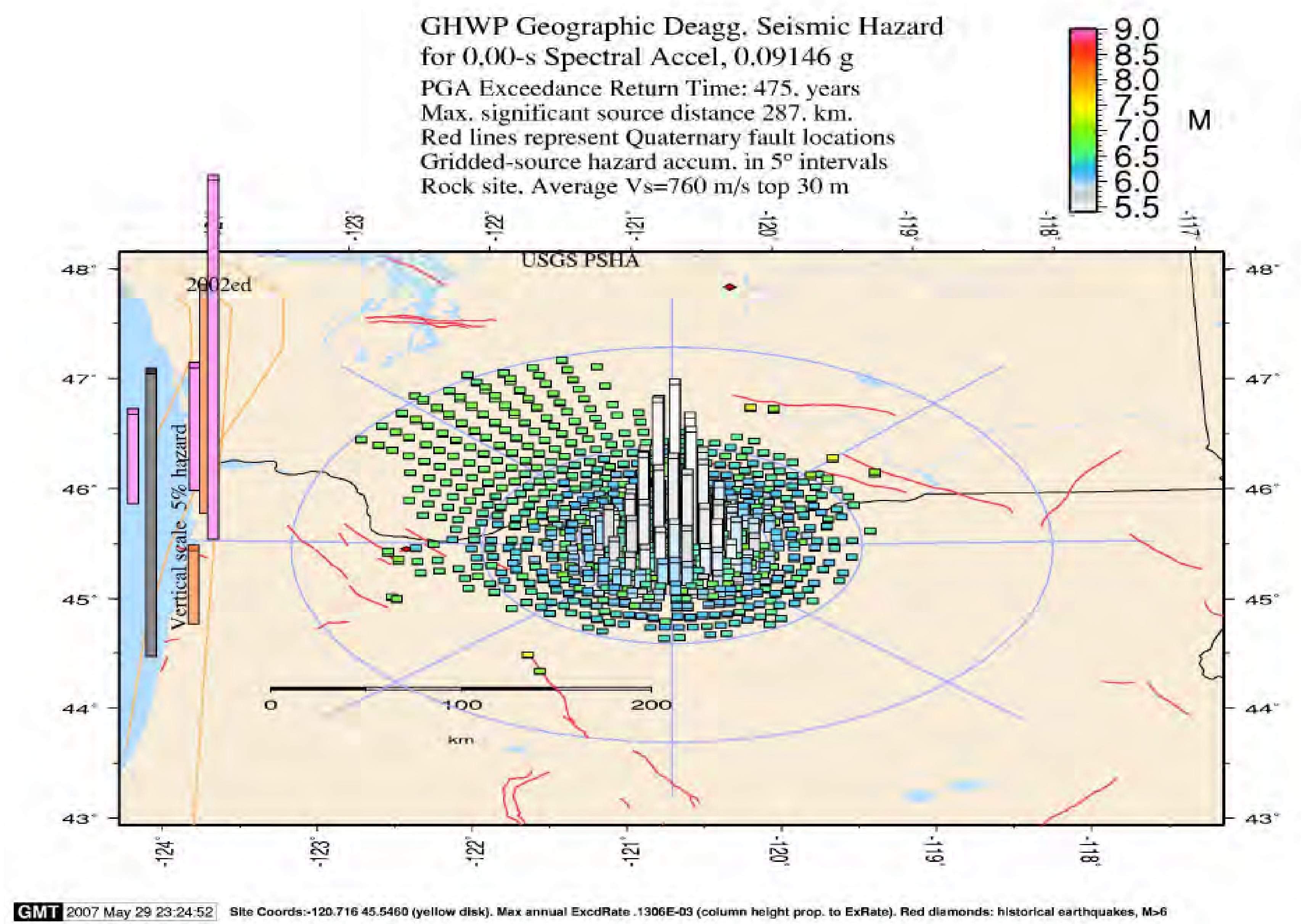
Neotectonic
- Fault (Non Quaternary)
- Thrust Fault (Non Quaternary)

Geology Map: South

Golden Hills
Sherman County, Oregon

GeoEngineers

Figure H-4



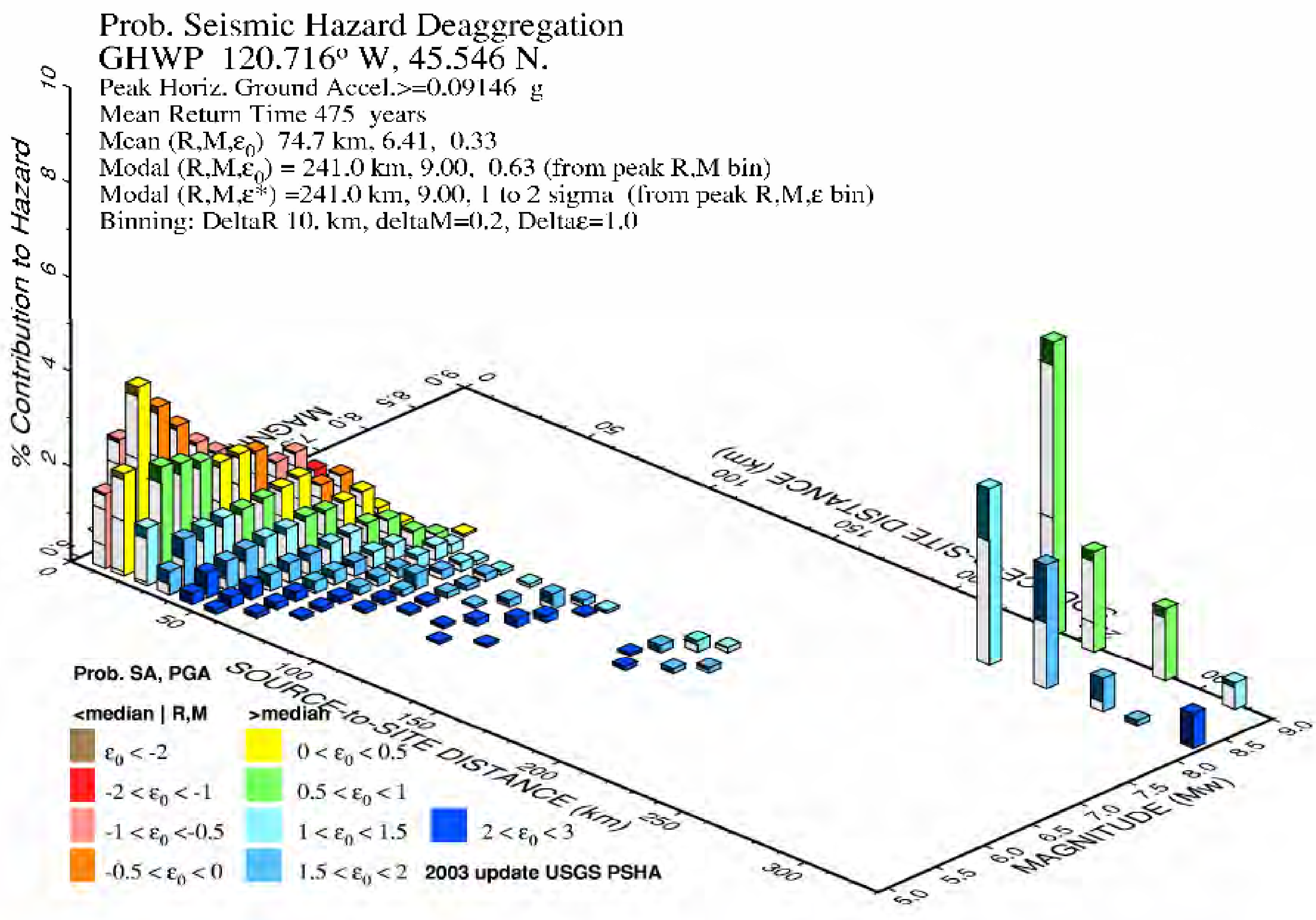
GeoEngineers

Golden Hills Wind Project
Sherman County, Oregon

10% in 50 Years (MPE)
Mapped Deaggregation

Figure H-5

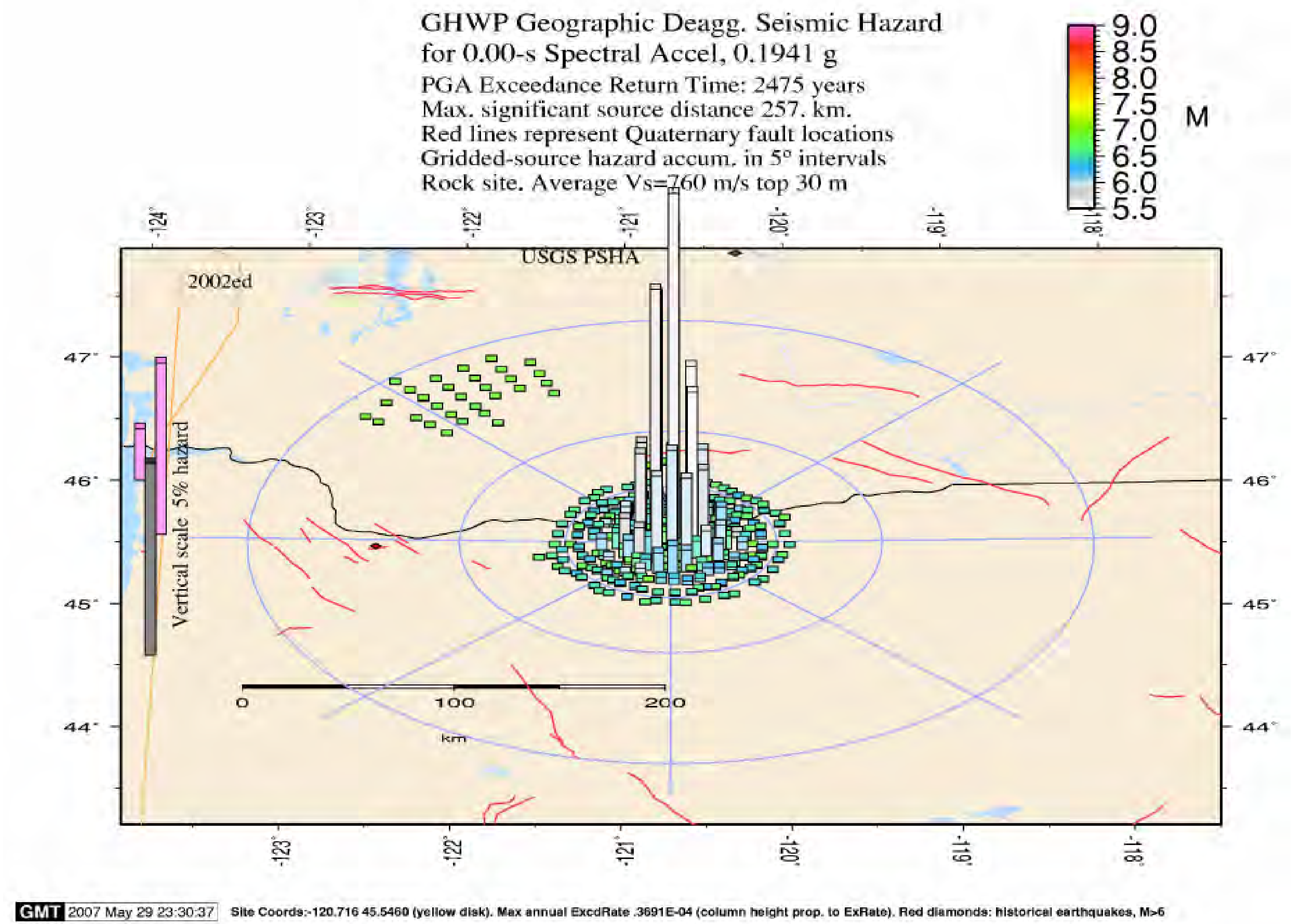
PORT\P:\12\12791002\00\Working\Seismic Hazard Evaluation\Figures H-5 to H-9.ppt DKR:BDN 05/29/07



GMT May 29 23:21 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on ROCK avg Vs=760 m/s top 30 m USGS CGHT PSHA2002v3 UPDATE Bins with lt 0.05% contrib. omitted

GeoEngineers	Golden Hills Wind Project Sherman County, Oregon	**10% in 50 Years (MPE)** **Probabilistic Deaggregation**	**Figure H-6**

PORT\P:\12\12791002\00\Working\Seismic Hazard Evaluation\Figures H-5 to H-9.ppt DKR:BDN 05/29/07

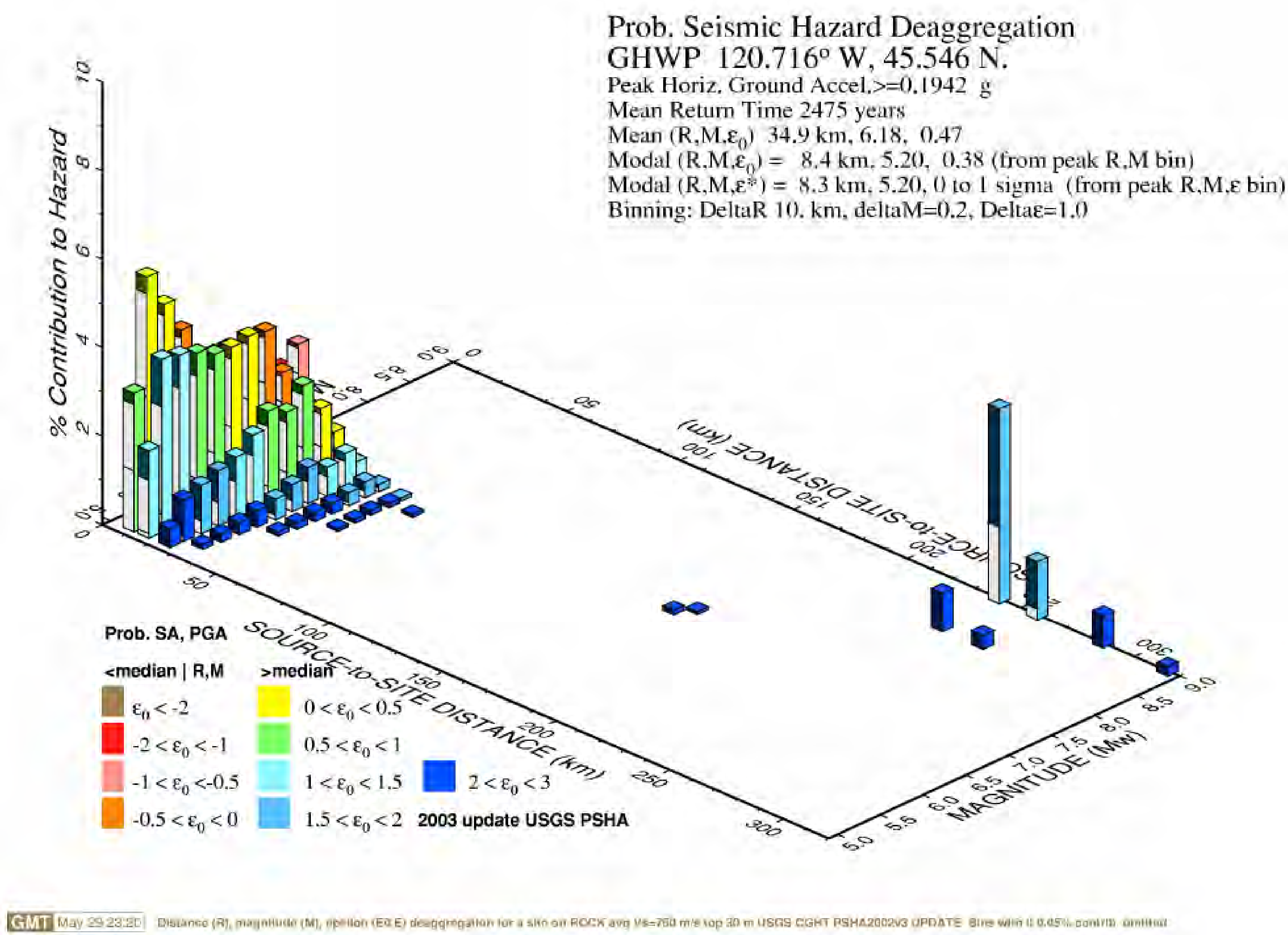


GeoEngineers

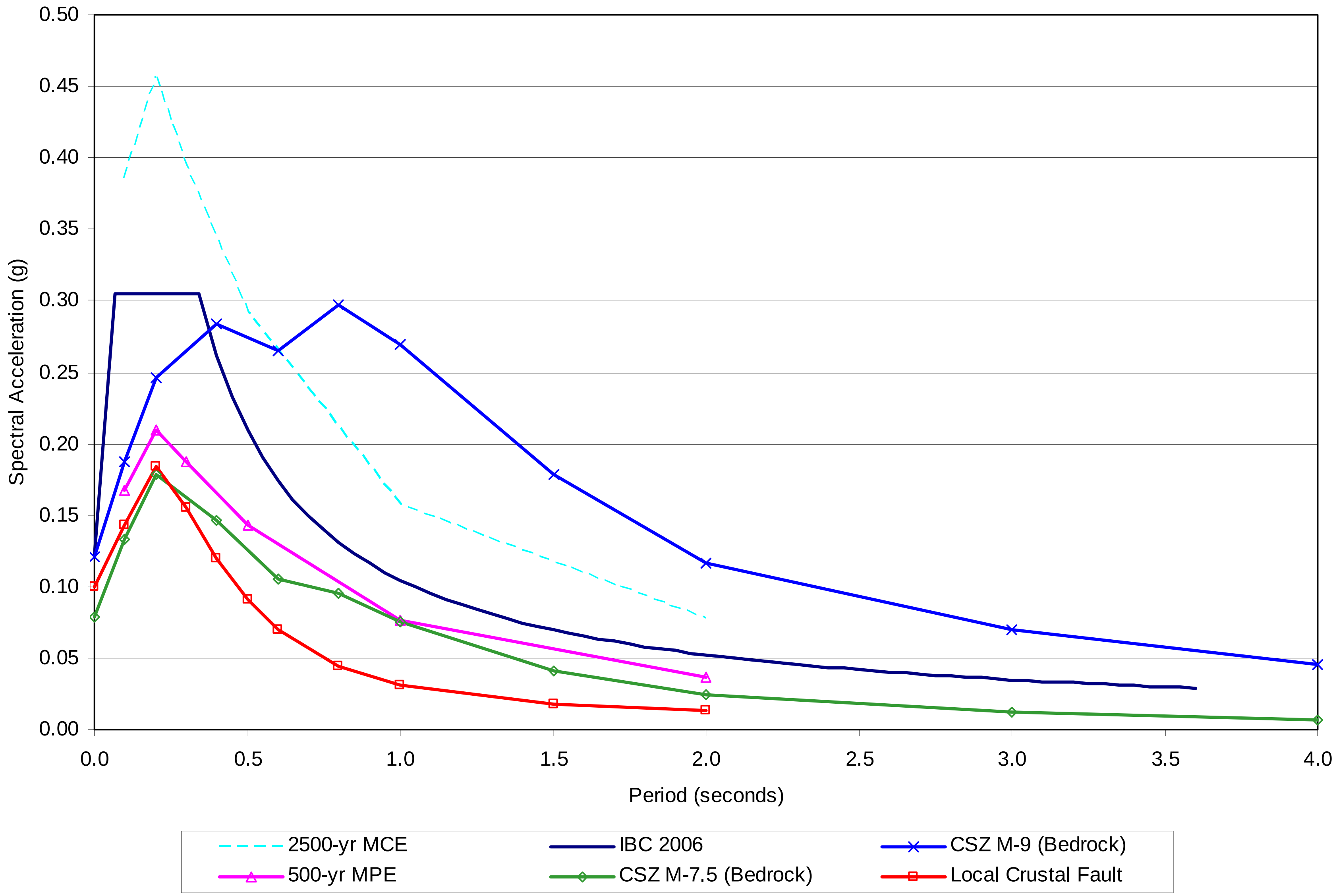
Golden Hills Wind Project
Sherman County, Oregon

2% in 50 Years (MCE)
Mapped Deaggregation

Figure H-7



GeoEngineers	Golden Hills Wind Project Sherman County, Oregon	**2% in 50 Years (MCE) Probabilistic Deaggregation**	**Figure H-8**



GeoEngineers	Golden Hills Wind Project Sherman County, Oregon	**Ground Response Spectra**	**Figure H-9**

EXHIBIT I

SOILS
OAR 345-021-0010(1)(i)

TABLE OF CONTENTS

Page

ATTACHMENT

I.1 INTRODUCTION

OAR 345-021-0010(1)(i) *Information from reasonably available sources regarding soil conditions and uses in the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0022, including*:

I.2 IDENTIFICATION AND DESCRIPTION OF SOIL TYPES

OAR-345-021-0010(1)(i)(A) *Identification and description of the major soil types in the analysis area.*

Response: The near surface soils at the project site and in its vicinity were identified using the U.S. Natural Resources Conservation Service (NRCS) Soil Survey of Sherman County, Oregon (NRCS, 1999). The soils in the project area are grouped into five General Soil Units(GSU) – Walla Walla-Anderly, Wato Anders, Wrentham-Lickskillet-Rock Outcrop, Lickskillet-Nansene, and Mikkalo-Ritzville. Each of these general soil units is comprised of several soil series units, which are mapped at a greater level of detail but share relatively similar spatial coverage and engineering properties as the more General Soil Unit. Figure J-5 of Exhibit J shows the soil series map and Table I-1 provides a list of soil series within the project site and vicinity.

The Walla Walla-Anderly series soils are extensive on mesas in the north-central part of Sherman County in mostly flat and gently sloping areas. They have formed from loess over basalt in a 12- to 13-inch precipitation zone. This GSU is approximately 73 percent Walla Walla soils and 22 percent Anderly soils. The rest is soils of minor extent. Walla Walla soils are very deep or deep and are well drained. The surface layer is very dark brown silt loam. The subsoil is dark brown silt loam. Anderly soils are moderately deep and well drained. The surface layer is very dark grayish brown silt loam. The subsoil is dark brown silt loam. Of minor extent in this unit are very deep Endersby soils on terraces, very deep Hermiston soils on flood plains, and shallow Kuhl soils on north-facing canyonsides. The soils in this unit are used mainly for wheat, barley, alfalfa hay, and as pasture. Areas too steep for cultivation are used for livestock grazing and as wildlife habitat (NRCS, 1999).

The Wato Anders series soil are extensive on mesas in the northwestern part of Sherman County in gently sloping and steep areas. They have formed from loess over basalt in a 12- to 13- inch precipitation zone. This GSU is approximately 82 percent Wato soils and 10 percent Anders soils. The rest is soils of minor extent. Wato soils are very deep and well drained. The surface layer is very dark brown very fine sandy loam. The subsoil is dark brown very fine sandy loam. Anders soils are moderately deep and well drained. The surface layer is very dark grayish brown very fine sandy loam. The subsoil is dark brown very fine sandy loam, silt loam, or gravelly silt loam. Of minor extent in this unit are very deep Quincy soils on dunes and terraces adjacent to the Columbia River and its tributaries. The soils in this unit are used mainly for wheat and barley grown in a grain-summer fallow system and for alfalfa hay. Areas too steep for cultivation are used for livestock grazing and as wildlife habitat (NRCS, 1999).

Wrentham-Lickskillet-Rock Outcrop series soils are moderately deep to shallow, well drained silt loam and very stony loam that formed over basalt and in residuum derived from basalt in an 11- to 12-inch precipitation zone. They occur mainly in canyons. This map unit is adjacent to the Deschutes and John Day Rivers, in the southern part of the county. This map unit consists of about 30 percent Wrentham soils, 30 percent Lickskillet soils, and 26 percent Rock outcrop. Wrentham soils are moderately deep and well drained. The surface layer is very dark brown silt loam. The subsoil is dark brown extremely cobbly silt loam. Lickskillet soils are shallow and well drained. The surface layer is very dark grayish brown very stony loam. The upper part of the subsoil is dark brown very gravelly loam, and the lower part is dark brown very gravelly clay loam, very gravelly loam, or very cobbly loam. Rock outcrop consists of areas of exposed bedrock on the shoulders and convex side slopes of very steep canyons. The soils in this unit are used mainly for livestock grazing and as wildlife habitat (NRCS, 1999).

Lickskillet-Nansene series soils are composed of shallow to deep, well drained, very stony loam and silt loam that have formed in residuum derived from basalt and in loess over basalt in a 12- to 13-inch precipitation zone. This map unit is located in the northern part of Sherman County. It is about 45 percent Lickskillet soils and 12 percent Nansene soils. The rest consists of soils of minor extent. Lickskillet soils are shallow and well drained. The surface layer is very dark grayish brown very stony loam. The upper part of the subsoil is dark brown very gravelly loam, and the lower part is dark brown very gravelly clay loam, very gravelly loam, or very cobbly loam. Nansene soils are deep and well drained. The surface layer and subsoil are very dark brown silt loam. The substratum is dark brown silt loam. Of minor extent in this unit are very shallow Bakeoven soils on ridgetops and benches of canyons, very deep Sagemoor soils on dissected terraces, and moderately deep Wrentham soils on north-facing canyonsides. The soils in this unit are used mainly for livestock grazing and as wildlife habitat (NRCS, 1999).

The Mikkalo-Ritzville GSU consists of moderately deep and deep, well-drained silt loam that has formed in loess over basalt in a 9- to 11-inch precipitation zone, typically on mesas. This map unit is in the northeastern corner of the survey area. It is about 56 percent Mikkalo soils and 38 percent Ritzville soils. The rest is soils of minor extent. Mikkalo soils are moderately deep and well drained. The surface layer is very dark grayish brown silt loam. The subsoil is dark brown, calcareous silt loam. Ritzville soils are deep and well drained. The surface layer is dark brown silt loam. The subsoil is dark yellowish brown, calcareous silt loam. Of minor extent in this unit are shallow Lickskillet Soils. The soils in this unit are used mainly for wheat and barley grown in a grain-summer fallow system. Areas too steep for cultivation are used for livestock grazing and as wildlife habitat (NRCS, 1999).

I.3 IDENTIFICATION AND DESCRIPTION OF LAND USES

OAR-345-021-0010(1)(i)(B) *Identification and description of current land uses in the analysis area, such as growing crops, that require or depend on productive soils.*

Response: Land uses within and surrounding the site consist of private agricultural land generally used for dryland wheat production. Permanent project facilities will occupy approximately 96 acres of agricultural land and 8 acres of non-agricultural land. Temporary impacts from construction will disturb an additional 709 acres of agricultural land and 334 acres of non-agricultural land.

I.4 IDENTIFICATION AND ASSESSMENT OF IMPACTS TO SOILS

OAR 345-021-0010 (1)(i)(C) *Identification and assessment of significant potential adverse impact to soils from construction, operation, and retirement of the facility, including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.*

Response: Unavoidable impacts to soils within the site boundary will result from placement of permanent project facilities such as gravel roads and concrete pads on approximately 104 acres. Additionally, facility construction will temporarily disturb soils on up to 1040 acres. These soil impacts will be limited according to the same methods identified in the ASC. Where temporary impacts would occur in cultivated areas, the approximately three feet of top soil would be salvaged and stockpiled in windrows. The windrows would be protected with plastic sheeting or mulch. Upon removal of temporary features, subsoils would be cultivated to a depth of at least 12 inches (except where bedrock prohibits archiving this depth), then salvaged topsoil would be redistributed to match adjacent grades. There are no cooling towers or land application of effluent. Because the quantities of chemical use will be minimal, the risk of spills is minor; appropriate measures will be taken to clean up and restore the area if any spill should occur.

I.5 DESCRIPTION OF PROPOSED MITIGATION MEASURES

OAR 345-021-0010(1)(i)(D) *A description of any measures the Applicant proposes to avoid or mitigate adverse impact to soils.*

Response: Direct permanent impacts to soils due to construction of access roads, turbine foundations, laydown areas, underground collectors and other features will be unavoidable. Construction of all features of the Project will be in compliance with an amended NPDES 1200-C construction permit (see Attachment I-1 for the Application). Measures outlined in the existing Erosion Control Plan submitted with the ASC will be implemented to minimize soil impacts and erosion. During retirement activities, turbines and turbine pads and unwanted roads will be removed, and the soils restored to farmable condition or habitat. This may require the import of appropriate topsoil as it is not practical to stockpile topsoil for the duration of the facilities operation.

I.6 MONITORING PROGRAM

OAR 345-021-0010(1)(i)(E) *The Applicant's proposed monitoring program, if any, for adverse impact to soils during construction and operation.*

Response: Monitoring of soil-disturbing activities during construction will be in accordance with the 1200-C permit; during operations, the Applicant will visually inspect project facilities periodically.

ATTACHMENT I-1

NPDES Permit Application

NPDES #1200-C Permit Application Form

Oregon Department of Environmental Quality
APPLICATION FOR NEW NPDES GENERAL PERMIT #1200-C
For stormwater discharges to surface waters from construction activities disturbing 1 acre or more.

Please answer all questions. No line may be left blank. An incomplete application will not be processed and will be returned. If the information requested is not applicable or not yet available, please indicate as such.

A. PROJECT INFORMATION

1. BP Alternative Energy North America Inc.
Applicant (Owner, Developer, or General Contractor)
Kelly O'Brien
Contact Name
700 Louisiana St. Suite 3300
Address
Houston | Texas | 77002
City | State | Zip
(713) 354-2157 |
Telephone | E-Mail Address

2. If fee invoicing is different than Applicant, provide contact info:
BP Alternative Energy North America Inc.
Attn Scanning Dept.
Invoice Name
P. O. Box 22024
Address
Tulsa | OK | 74121
City | State | Zip
Telephone | E-Mail Address

3. David Evans and Associates, Inc
Architect/Engineering Firm (Erosion & Sediment Control Plan)
Dana Siegfried
Project Manager
(503) 499-0369 | dns@deainc.com
Telephone | E-Mail Address

4. the inspector will be selected by the contractor
Applicant's Designated Erosion and Sediment Control Inspector
Contact Name
Telephone | E-Mail Address

5. Golden Hills Wind Project
Name of Project
Address or Cross Street
Wasco | Oregon |
City | State | Zip
Sherman County
County

6. Nature of the Construction Activity
- ☐ Single Family (SIC Code 1521)
- ☐ Multi-Family Residential (SIC Code 1522)
- ☐ Commercial (SIC Code 1542)
- ☒ Industrial (SIC Code 1541)
- ☐ Highway (SIC Code 1611)
- ☐ Utilities (SIC Code 1623):
- ☐ Other:

7. Site Location by Latitude and Longitude:
Latitude: 45 Degrees / 58 Minutes / 0.98N Seconds
Longitude: 120 Degrees / 56 Minutes / 1.46W Seconds

8. Project Size:
Total Site Acreage (acres): approximately 30,100
Total Construction Area (acres): 1147 acres
Disturbed Area for this phase, if multiple phases: 1147 acres
Total Number of Lots:

DEQ USE ONLY

App. #: | File #: | LLID #: | River Mile:
Date Received: | Amount: | Check Name: | Check #:
Deposit #: | Receipt #: | Legal Name Confirmed: ☐

A. PROJECT INFORMATION Continued

9. Runoff from proposed construction activities goes to:
   - ☐ Creek/Stream: ______________
   - ☐ Municipal Storm Sewer or Drainage System
   - ☐ Infiltration device
   - ☐ Ditch: ______________
   - ☐ Other: ______________

10. ☐ Proposed site runoff discharges directly to, or into a storm sewer or drainage system that discharges to, a Total Maximum Daily Load (TMDL) or 303(d) listed water body for turbidity or sedimentation *(if applicable).*

B. LAND USE COMPATIBILITY STATEMENT

Attach the *original* and complete Land Use Compatibility Statement (LUCS) signed by the local land use authority. The application will not be processed unless the local land use authority approves it and it meets statewide planning goals. (See Attachment C for the LUCS statement)

C. SIGNATURE OF LEGALLY AUTHORIZED REPRESENTATIVE

The legally authorized representative *must* sign the application. The following are authorized to sign the document:

- **Corporation** — president, secretary, treasurer, vice-president, or any person who performs principal business functions; or a manager of one or more facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million that is assigned or delegated in accordance to corporate procedure to sign such documents
- **Partnership** — General partner
- **Sole Proprietorship** — Owner. If more than one person is the sole proprietor, each person must sign the form.
- **City, County, State, Federal, or other Public Facility** — Principal executive officer or ranking elected official
- **Limited Liability Company** — Member
- **Trusts**— Acting trustee

Please see 40 CFR 122.22 for more detail, if needed.

I hereby certify that the information contained in this application is true and correct to the best of my knowledge and belief. In addition, I agree to pay all permit fees required by Oregon Administrative Rules 340-045. This includes a renewal application fee to renew the permit and a compliance determination fee invoiced annually by DEQ to maintain the permit.

Robert L. Lukefahr
Name of Legally Authorized Representative (Type or Print)

President
Title

[signature]
Signature of Legally Authorized Representative

July 14, 2007
Date

In order to authorize permit registration, the following must be completed and submitted to DEQ office listed below or to a DEQ Agent (see Attachment A for list of Agents):

- ☐ Signed Application form.
- ☐ Land Use Compatibility Statement with signature of the local land use authority
- ☐ Stormwater Erosion and Sediment Control Plan Narrative
- ☐ Stormwater Erosion and Sediment Control Plan Drawings
- ☐ $670 fee to the appropriate DEQ regional office and make the check payable to DEQ of Environmental Quality. If you are sending your application to a DEQ Agent, check with the DEQ Agent for the appropriate fees and make check payable to the DEQ Agent.

DEQ Northwest Region	**DEQ Western Region**	**DEQ Eastern Region**
2020 SW 4th Ave., Suite 400 Portland, OR 97201-4987 503-229-5263 or 1-800-452-4011	750 Front St. NE, Suite 120 Salem, OR 97301-1039 503-378-8240 or 1-800-349-7677	700 SE Emigrant, Suite 330 Pendleton, OR 97801 541-276-4063 or 1-800-452-4011

DEQ AGENT
(Note: See Table A-2 for appropriate local Agent contact information.)

NPDES General Permit 1200-C Application Instructions For Construction Activities

A. PROJECT INFORMATION

A1 Enter the legal name of the applicant. Permit coverage will be issued to this entity. This is the person, business, public organization, or other entity responsible for assuring that erosion and sediment controls are in place and in working order through the life of the project. This must be the **legal** Oregon name (i.e., Acme Products, Inc.) or the **legal** representative of the company if it operates under an assumed business name (i.e., John Smith, dba Acme Products). The name must be a legal, active name registered with the Oregon Department of Commerce, Corporation Division in Salem at 503-378-4752 or http://egov.sos.state.or.us/br/pkg_web_name_srch_inq.login, unless otherwise exempted by their rules. If the name of the applicant is not registered with the Corporation Division and the applicant is a partnership or doing business as a corporate entity, attach legal documents that verify the entity's existence with the application. The applicant may not an assumed business name.

To streamline administration and provide continuous permit coverage, the permit may be transferred from one party to another. For example, if a contractor feels that they will not be able to get a permit before the projected start date, the developer may apply for a permit and then transfer the permit over to the contractor. The transfer fee is $60. Transfer forms are available from DEQ or at http://www.deq.state.or.us/wq/wqpermit/PmtTfrAppl.pdf.

A2 Enter invoicing information for annual fee billing if different from the Applicant in A1 (e.g., "Invoice To: Business Office – Accounts Payable"). Provide permanent address or P.O. Box, if applicable.

A3 Provide the contact information for the Architect or Consulting Engineer who designed the Erosion and Sediment Control Plan (ESCP) so that they may be contacted should questions concerning the ESCP Drawings or Narrative arise.

A4 Provide information on the Erosion and Sediment Control Inspector. This is a person that works for the applicant and not a government employee. If the inspector has not been selected yet, please provide the name of consultant who prepared the Erosion and Sediment Control Plan (ESCP). Upon designating an inspector(s), submit to the DEQ or the Agent an Action Plan, which is an addendum to the ESCP, that identifies their name(s), contact information and training and experience as required in Schedule A, condition 6(b) of the permit.

A5 Provide the common name of the site. What is it to be called? Provide the location of the site with respect to cross roads in the area or a street address if appropriate.

A6 Place a check mark in the box that best describes the use for which the site is being constructed. If other is selected, describe the use.

A7 Enter the latitude and longitude of the approximate center of the facility or site in degrees/minutes/seconds to the nearest 15 seconds. Latitude and longitude can be obtained from United States Geological Survey (USGS) quadrangle topographic maps by calling toll-free at 1-888-ASK-USGS (1-888-275-8747) or by using DEQ's location finder web site at http://deq12.deq.state.or.us/website/findLoc/data.asp. In using DEQ's location finder web site, if you do not know your address, go to "locate place" on the left side of the page and click on "latitude and longitude" and then click on "map it." To get the longitude and latitude to appear you may have to zoom in and re-center until you find the area. You may want to turn off DEQ interests to eliminate the yellow dots and you may want to turn on the Aerial Photos to help you locate the site. The latitude and longitude will be indicated on the left side of the page. Instructions for obtaining latitude and longitude from topographic maps may be obtained at http://www.deq.state.or.us/wq/wqpermit/LatLongInstr.pdf.

A8 Provide property size information. What is the total acreage of the site? Provide an estimate, in the case of a multi-phased project, or if all of the property has not yet been purchased.

A9 Indicate where the runoff goes after leaving the site during construction. If it goes in to the City storm drain system, provide best estimate of the receiving stream in addition to checking the Municipal Storm Sewer box.

A10 Indicate whether stormwater runoff will be discharging directly to, or into a storm sewer or drainage system that discharges to "impaired" waters listed on the 303(d) list or are covered by a Total Maximum Daily Load (TMDL) for sediment or turbidity. A map and table identifying "impaired" water bodies and affected river miles for sediment or turbidity is available on DEQ's web site at: http://www.deq.state.or.us/wq/stormwater/docs/tmdl303dsedturblist.pdf.

B. LAND USE COMPATIBILITY STATEMENT

Land Use Compatibility Statement (LUCS) must be signed by local planning department. If there are any conditions placed on the land use approval, the findings must be included. The LUCS form may be obtained from DEQ at http://www.deq.state.or.us/pubs/permithandbook/lucs.htm.

C. SIGNATURE

The legally authorized representative for the applicant must sign the application. The following are authorized to sign the document

- **Corporation** — president, secretary, treasurer, vice-president, or any person who performs principal business functions; or a manager of one or more facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million that is assigned or delegated in accordance to corporate procedure to sign such documents.
- **Partnership** — General partner.
- **Sole Proprietorship** — Owner. If more than one person is the sole proprietor, each person must sign the form.
- **City, County, State, Federal, or other Public Facility** — Principal executive officer or ranking elected official.
- **Limited Liability Company** — Member
- **Trusts**— Acting trustee

APPLICATION SUBMITTAL AND FEES

If you have a DEQ Agent in the area where your project is located, send the application to the DEQ Agent (See the DEQ Agent list in Attachment A). Otherwise, send the application to the DEQ office in your area (See DEQ office locations in Attachment B).

The permit application fee is **$670**, which includes a $60 filing fee, $280 application processing fee, and $330 annual fee. The permittee will also be billed an annual fee for every year the permit is in effect. If you have a DEQ Agent in the area, where your project is located contact them and verify fees. (See Attachment A for list of Agents)

In order to authorize permit registration, the following must be completed and submitted to DEQ office or a DEQ Agent (see Attachment A for list of Agents):

- ☐ Application form with original signature
- ☐ Land Use Compatibility Statement with original signature of the local land use authority
- ☐ Stormwater Erosion and Sediment Control Plan Narrative
- ☐ Stormwater Erosion and Sediment Control Plan Drawings
- ☐ $670 fee to the appropriate DEQ regional office and make the check payable to the Department of Environmental Quality. If you are sending your application to a DEQ Agent, check with the Agent for the appropriate fees.

Erosion and Sediment Control Plan Worksheet

Project Name: **Golden Hills Wind Farm**

Prepared By: **Sean P. Sullivan, L.A. (Oregon No. 412)**

Company Name: **David Evans and Associates, Inc.**

Telephone: **503-223-6663**

Please answer the following questions as indicated. If needed, additional space is provided for you at the end of this form. You may also attach any information you feel is pertinent to the project.

1. Is your Erosion and Sediment Control Plan for an activity that covers 20 acres or more of disturbed land?
☒ YES ☐ NO

If yes, the plan must be prepared by an Oregon Registered Professional Engineer, Oregon Registered Landscape Architect, or Certified Professional in Erosion and Sediment Control (Soil and Water Conservation Society). Please complete question #4.

2. Does your Erosion and Sediment Control Plan require engineered facilities such as settling basins and/or diversion structures?
☐ YES ☒ NO

If yes, the plan must be prepared by an Oregon Registered Professional Engineer.

3. If you answered "YES" to question #1 or 2, please provide the following information and use the space provided to imprint your seal.

Name: Sean P. Sullivan, L.A. (Oregon No. 412)

Address: David Evans and Associates, Inc.

2100 SW River Parkway

Portland, OR 97201

Telephone: 503.223.6663

Imprint Seal Above

4. Describe the nature of the construction activity: The Applicant proposes to construct a wind generation project in Sherman County, Oregon. The proposed project will involve construction of up to 267 turbines and generate up to 400 MW of power.

5. Describe in detail the phases of construction and the erosion control measures to be implemented during each phase. Also complete the table on the next page to assist with the narrative description.

See Attached.

Fill in the year(s) and the month(s) at the top of the chart during which the project will occur, and check the appropriate boxes to indicate when the items in the left column will be performed and/or installed. You may photocopy the chart if your project will last longer than 12 months.

YEAR: 2008	**2008**											
MONTH:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CLEARING				x								
EXCAVATION				x	x							
GRADING				x	x	x	x	x				
CONSTRUCTION				x	x	x	x	x	x	x	x	x
EROSION CONTROLS:												
Vegetative Buffer Strips				x	x	x	x	x	x	x	x	x
Mulching				x	x	x	x	x	x	x	x	x
Netting/Mats/Blankets												
Temporary Seeding												
Permanent Seeding										x	x	x
Sod Stabilization												
Other: Graveling				x	x	x	x	x	x	x	x	x
SEDIMENT CONTROLS:												
Silt Fencing				x	x	x	x	x	x	x	x	x
Straw Bales				x	x	x						
Sediment Traps				x	x	x						
Sediment Basins												
Storm Inlet Protection												
Drainage Swales												
Check Dams												
Contour Furrows												
Terracing												
Pipe Slope Drains												
Rock Outlet Protection												
Other: Sediment moat				x	x	x						

6. Describe the origin and nature of fill material to be used:

Native soils will be excavated for construction of the concrete turbine pads and temporary staging areas. These soils will be stockpiled until after construction when they will be redistributed over the temporarily disturbed areas.

7. Describe the soils present on the site and erosion potential of the soils.

Soil type(s): The near surface soils at the project area were identified using the U.S. Soil Conservation Service (SCS) Soil Survey of Sherman County, Oregon. The near surface soils in the project area are grouped into five General Soil Units: Walla Walla-Anderly, Wato Anders, Wrentham-Lickskillet-Rock Outcrop, Lickskillet-Nansene, and Mikkalo-Ritzville.

The Walla Walla-Anderly series soils are extensive on mesas in the north-central part of Sherman County in mostly smooth and gently sloping areas. They have formed from loess over basalt in a 12- to 13-inch precipitation zone. This General Soil Unit is approximately 73 percent Walla Walla soils and 22 percent Anderly soils. The rest is soils of minor extent. Walla Walla soils are very deep or deep and are well drained. The surface layer is very dark brown silt loam. The subsoil is dark brown silt loam. Anderly soils are moderately deep and well drained. The surface layer is very dark grayish brown silt loam. The subsoil is dark brown silt loam. Of minor extent in this unit are very deep Endersby soils on terraces, very deep Hermiston soils on flood plains, and shallow Kuhl soils on north-facing canyonsides. The soils in this unit are used mainly for wheat and barley grown in a grain-summer fallow system, for alfalfa hay, and as pasture. Areas too steep for cultivation are used for livestock grazing and as wildlife habitat.

The Wato Anders series soil are extensive on mesas in the northwester part of Sherman county in gently sloping and steep areas. They have formed from loess over basalt in a 12- to 13- inch precipitation zone. This General Soil Unit is approximately 82 percent Wato soils and 10 percent Anders soils. The rest is soils of minor extent. Wato soils are very deep and well drained. The surface layer is very dark brown very fine sandy loam. The subsoil is dark brown very fine sandy loam. Anders soils are moderately deep and well drained. The surface layer is very dark grayish brown very fine sandy loam. The subsoil is dark brown very fine sandy loam, silt loam, or gravelly silt loam. Of minor extent in this unit are very deep Quincy soils on dunes and terraces adjacent to the Columbia River and its tributaries. The soils in this unit are used mainly for wheat and barley grown in a grain-summer fallow system and for alfalfa hay. Areas too steep for cultivation are used for livestock grazing and as wildlife habitat.

Wrentham-Lickskillet-Rock Outcrop series soils are moderately deep and shallow, well drained silt loam and very stony loam that formed in loess over basalt and in residuum derived from basalt in an 11- to 12-inch precipitation zone. They occur mainly in canyons. This map unit is adjacent to the Deschutes and John Day Rivers, in the southern part of the county. This map unit consists of about 30 percent Wrentham soils, 30 percent Lickskillet soils, and 26 percent Rock outcrop. Wrentham soils are moderately deep and well drained. The surface layer is very dark brown silt loam. The subsoil is dark brown extremely cobbly silt loam. Lickskillet soils are shallow and well drained. The surface layer is very dark grayish brown very stony loam. The upper part of the subsoil is dark brown very gravelly loam, and the lower part is dark brown very gravelly clay loam, very gravelly loam, or very cobbly loam. Rock outcrop consists of areas of exposed bedrock on the shoulders and convex side slopes of very steep canyons. The soils in this unit are used mainly for livestock grazing and as wildlife habitat.

Lickskillet-Nansene series soils are composed of shallow and deep, well drained very stony loam and silt loam that have formed in residuum derived from basalt and in loess over basalt in a 12- to 13-inch precipitation zone. This map unit is located in the northern part of Sherman County. It is about 45 percent Lickskillet soils and 12 percent Nansene soils. The rest consists of soils of minor extent. Lickskillet soils are shallow and well drained. The surface layer is very dark grayish brown very stony loam. The upper part of the subsoil is dark brown very gravelly loam, and the lower part is dark brown very gravelly clay loam, very gravelly loam, or very cobbly loam. Nansene soils are deep and well drained. The surface layer and subsoil are very dark brown silt loam. The substratum is dark brown silt loam. Of minor extent in this unit are very shallow Bakeoven soils on ridgetops and benches of canyons, very deep Sagemoor soils on dissected terraces, and moderately deep Wrentham soils on north-facing canyonsides. This soil unit is used mainly for livestock grazing and as wildlife habitat.

The Mikkalo-Ritzville General Soil Unit consists of moderately deep and deep, well drained silt loam that has formed in loess over basalt in a 9- to 11-inch precipitation zone, typically on mesas. This map unit is in the northeastern corner of the survey area. It is about 56 percent Mikkalo soils and 38 percent Ritzville soils. The rest is soils of minor extent. Mikkalo soils are moderately deep and well drained. The surface layer is very dark grayish brown silt loam. The subsoil is dark brown, calcareous silt loam. Ritzville soils are deep and well drained. The surface layer is dark brown silt loam. The subsoil is dark yellowish brown, calcareous silt loam. Of minor extent in this unit are shallow Lickskillet Soils. The soils in this unit are used mainly for wheat and barley grown in a grain-summer fallow system. Areas too steep for cultivation are used for livestock grazing and as wildlife habitat.

b) Erosion Potential: Based on the soil types present, soil erosion potential at the facility site varies, being high in some areas and not high in others (USDA 1964; Table 2).

Table 2. Detailed soil map units present on project site and their properties.

Soil Series	Drainage Class	Erosion Potential
Anderly silt loam, 1 to 7 percent slopes	Well drained	Highly
Anderly silt loam, 7 to 15 percent slopes	Well drained	Highly
Anderly silt loam, 15 to 35 percent south slopes	Well drained	Highly
Anderly silt loam, 15 to 35 percent north slopes	Well drained	Highly
Anders very fine sandy loam, 15 to 35 percent slopes	Well drained	Highly
Endersby fine sandy loam, 0 to 3 percent slopes	Somewhat excessively drained	Not highly
Endersby-Hermiston complex, 0 to 3 percent slopes	Well drained	Not highly
Kuhl very stony very fine sandy loam, 3 to 20 percent slopes	Well drained	Highly
Kuhl-Rock outcrop complex, 20 to 40 percent north slopes	Well drained	Highly
Lickskillet-Rock outcrop complex, 40 to 70 percent south slopes	Well drained	Not highly
Lickskillet very stony loam, 7 to 40 percent south slopes	Well drained	Not highly
Lickskillet-Bakeoven complex, 2 to 20 percent slopes	Well drained	Not highly
Mikkalo silt loam, 2 to 7 percent slopes	Well drained	Highly
Mikkalo silt loam, 7 to 15 percent slopes	Well drained	Highly
Nansene-Rock outcrop complex, 35 to 70 percent north slopes	Well drained	Not highly
Rock outcrop-Rubble land-Lickskillet complex, 50 to 80 percent south slopes	Well drained	Not highly
Walla Walla silt loam, 1 to 7 percent slopes	Well drained	Not highly
Walla Walla silt loam, 7 to 15 percent slopes	Well drained	Not highly
Walla Walla silt loam, 15 to 35 percent north slopes	Well drained	Not highly
Walla Walla silt loam, 15 to 35 percent south slopes	Well drained	Not highly
Wato very fine sandy loam, 3 to 7 percent slopes	Well drained	Not highly
Wato very fine sandy loam, 7 to 15 percent slopes	Well drained	Not highly
Wato very fine sandy loam, 15 to 35 percent north slopes	Well drained	Not highly
Riverwash*		

8. Submit two copies of site maps and constructions plans. The following checklist is provided for your convenience:

IS THE FOLLOWING INFORMATION PROVIDED AND DETAILED ON THE MAPS SUBMITTED TO THE DEQ?	YES	NO	NOT APP.	EXHIBIT
a. The complete development, including any phases.	x			Figure C-2
b. The areas of soil disturbance on the site, including areas that will be cleared, graded or excavated.	x			Figure C-2
c. The areas of cut and fill.	x			Figure C-2
d. The drainage patterns and slopes of the land both before and after major grading activities.	x			Figure C-2
e. The location of existing and proposed storm drains and outfalls.			x	
f. The receiving water body for drainage from the site.	x			Figure C-2
g. The areas used for storage of soils or wastes. (laydown areas)	x			Figure C-2
h. The location of all erosion and sediment control facilities and/or structures.			x	
i. The areas on the site where vegetative practices will be used.			x	
j. The location of existing and future impervious structures and areas.	x			Figure C-2
k. The location and name of all springs, wetlands, and surface waterbodies near the project.	x			Figure C-2
l. The boundaries of the 100 year flood plain if known.			x	
m. The location of graveled access entrance and exit drives and graveled parking areas to be used by construction vehicles. (at each turbine string entrance)	x			Figure C-2
n. The locations of graveled roads traveled by more than 25 vehicles per day.	x			Figure C-2
o. Installation details of vegetative and other erosion control practices (vegetative buffer strips, seeding, mulching, erosion blankets, etc.).			x	
p. Installation details of sediment control practices (silt fences, straw bale dikes, storm drain inlet protection, etc.). (per DEQ BMP for Stormwater Discharges Associated with Construction Activities guide)	x			
q. List the temporary and permanent vegetative seed in the seed mix. *	x			
r. If concrete work is done on site, then note the concrete truck washout procedure used and locate any sump, if used, on the drawing.			x	

* No temporary seeding is proposed because of arid conditions during construction period. Mulch will be used instead. Permanent seeding will be completed in Fall 2008.

9. Describe the truck drippage precautions you will take to prevent discharge of water from trucks hauling wet soils or stone excavated from the site: See Attached.

10. Describe the procedures you will use to assure prompt maintenance and repair of graded surfaces and erosion and sediment control measures: See Attached.

Attachments

5. Describe in detail the phases of construction and the erosion control measures to be implemented during each phase. Also complete the table on the next page to assist with the narrative description.

Response: Construction activities for the project are anticipated to begin in the second quarter of 2008 and conclude in the fourth quarter of 2008. Phases of construction and the erosion control measures (best management practices or "BMPs") to be implemented during each phase are generally as follows:

Mobilization, Staging, and Laydown

It is anticipated that one or more general contractors would mobilize to the project area and would require staging areas for temporary construction offices, temporary laydown facilities, and materials staging (Figure C-2). These staging areas would be used to park construction vehicles, construction employees' personal vehicles, and other construction equipment.
Laydown areas will be required during tower construction and turbine installation. Tower sections, nacelles, blades, and appurtenances would be temporarily stored in laydown facilities as each turbine is constructed. Fueling and chemical/solvent storage will occur at staging areas at each turbine string. At the end of the turbine string, an area approximately 300 feet in diameter (1.6 acres) would be needed to allow construction equipment to turn around.

BMPs anticipated for use during this phase include silt fences placed on the down slope side of the staging areas, gravel construction entrances, gravel laydown facilities, and container and waste storage bins/dumpsters. Additionally, the following BMPs would also be developed to prevent or minimize the mixing of runoff with pollutants such as hydraulic fluid, fuel, and lubricants: written spill prevention and response procedures, employee training on spill prevention and proper disposal, emergency spill kits, and regular maintenance schedule for vehicles and equipment.

After completion of construction within the expanded site boundary, these temporary staging/laydown areas would be restored to their pre-construction conditions. Disturbed areas would be re-seeded to wheat or native grasses as appropriate to establish permanent vegetation. Silt fences and other BMPs would be removed once vegetation provides soil stabilization.

Road Construction

To the extent possible, existing roads would be used to minimize the need to construct new roads. New roads would be constructed to provide access to the turbine locations (Figure C-2). All unpaved roads used for construction purposes would be graveled or paved as appropriate, or effective BMPs would be placed on the road or down slope of the road to prevent the discharge of fugitive sediment in lieu of graveling.

A variety of BMPs would be used during road construction to control erosion and sedimentation. These BMPs may be used individually or in concert as site conditions and levels of disturbance warrant. BMPs for road construction include graveling, watering or applying other dust palliatives, preserving existing vegetation, silt fence, mulching, and reestablishing permanent vegetation. Silt fences would be removed once vegetation stabilized soils.

Underground Utility Construction

Underground electrical and communications cables would be placed in a trench approximately 2 feet wide and at least 3 feet deep, generally along the length of the proposed turbine access roads and County roads linking turbine strings to two collector substations within the Project. Topsoil would be stripped and stockpiled adjacent to the work area. The remaining trench excavation would be sidecast adjacent to the trench and later used as backfill. Upon the installation of electrical cables, and communications cables, the trench would be backfilled with native material and then top-dressed with the salvaged topsoil. The trench excavation would be reseeded with wheat or native seed as appropriate.

BMPs for underground utility construction include phasing the work as practical to minimize disturbance at any given time, preserving existing vegetation, and reestablishing permanent vegetation. If construction persists in the wet season, additional BMPs such as covering the sidecast and topsoil stockpiles would be considered.

Turbine Foundation Construction

It is anticipated that up to 267 turbine foundations would be designed by conventional methods including: (1) spread foundations below the loess (i.e., wind-formed soils), (2) drilled shaft foundations that support in the materials below the loess, (3) removal of the loess and replacement with compacted fill, and/or (4) in situ improvements of the loess soils. One or more of these approaches have been used in the design and construction of the foundations at nearby projects and will be used to design the foundations for the project.

Construction would likely require excavation approximately nine to ten feet deep and approximately 50 feet in diameter. Excavated material would be stockpiled for use as backfill adjacent to the turbine pad for approximately 14 to 28 days while the concrete cures. Silt fences or sediment moats would be installed on the downslope side of stockpiles. Sediment moats are ditches dug around the perimeter of the stockpile with the excavation sidecast to the outboard side of the ditch to form a temporary dike. The temporary dike provides a physical barrier that traps sediment “in the moat” and prevents its discharge. Once the concrete cures, the stockpiled materials would be used for backfilling. The contractor would be responsible for locating a disposal site, which may include placing and cultivating the excess material on upland agricultural lands within the lease boundary for excess materials if saturated soils are encountered and must be hauled away from the site, loads would be drained on-site until dripping is reduced to minimize spillage on roads. Disturbed areas resulting from foundation and crane pad construction would be seeded to establish crops or native species as appropriate.

BMPs used as part of turbine foundation construction would include phasing the work as practical to minimize disturbance at any given time, preserving existing vegetation, graveled access road, draining saturated soils on site, silt fences, sediment moats, and reestablishing permanent vegetation. If construction persisted in the wet season, additional BMPs such as covering the stockpiles and heavy mulching would be considered. Silt fences would be removed once the stockpile has been removed and the disturbed areas stabilized with vegetation.

Tower and Rotor Assembly

Turbine tower pieces, nacelle, hub, blades and appurtenances would be transported by trucks to each turbine location and erected using a construction crane. The base tower section would be bolted to the foundation pedestal, the middle section would then be bolted to the base section, and the top section would then be bolted to the middle section. The nacelle is then lifted to the top of the tower and bolted in place. The rotor (hub and three blades) is assembled on the ground and then the rotor assembly is hoisted and attached to the turbine nacelle.

No additional BMPs would be required for this phase of construction. BMPs previously installed as part of road construction and/or turbine foundation construction should provide adequate erosion and sedimentation control.

Mitigation Site

Portions of the mitigation site may be plowed in preparation of habitat mitigation. A 100-foot wide vegetated filter strip will be left on the downslope side of the mitigation site, to prevent exposed soils from eroding.

Stormwater Management

Stormwater management will be ongoing through the life of the project. The use of water for construction practices (*e.g.*, dust suppression, road compaction) is not anticipated to generate runoff. Wastewater would not be discharged into wetlands or other adjacent resources. The area receives approximately 12 inches of precipitation annually, most of which occurs between October 1 and March 31. Stormwater runoff resulting from precipitation is anticipated to be minimal and would infiltrate onsite.

Demobilization

Demobilization would include final road grading, site cleanup, and decommissioning the erosion and sedimentation BMPs among other activities. The Applicant will remove all silt fences and other BMPs as appropriate and would end 1200-C permit coverage once all soil disturbance activities have been completed and final stabilization of exposed soils has occurred.
Table 1 lists construction equipment typically used during wind project construction.

Table 1.- Equipment Typically Used for Wind Facility Construction

Equipment	Use
Bulldozer	Road and pad construction
Grader	Road and pad construction
Water trucks	Compaction, erosion and dust control

Table 1.- Equipment Typically Used for Wind Facility Construction

Roller/compactor	Road and pad compaction
Backhoe/trenching machine	Digging trenches for underground utilities
Excavator	Foundation excavation
Heavy duty rock trencher	Underground trenching
Truck-mounted drilling rig	Drilling power pole holes
Concrete trucks/concrete pumps	Pouring tower and other structure foundations
Cranes	Tower/turbine erection
Dump trucks	Hauling road and pad material
Flatbed & Low-bed trucks	Hauling towers, turbines and components, and construction equipment
Pickup trucks	General use and hauling minor equipment
Small hydraulic cranes/forklifts	Loading and unloading equipment
Four-wheel-drive all-terrain vehicles	Rough grade access and underground cable installation
Rough-terrain cranes / forklifts	Lifting equipment and pre-erection assembly

Additional Information

A revegetation plan describing revegetation methods and seedmixes is attached. Erosion and Sediment Control (ESC) BMPs will be installed according to the guidance provided in NPDES Storm Water Regulations for Construction Projects, December 2002.

In addition to the NPDES guidance, practices that can be used to control erosion of loess soils include seeding early in the spring, stubble-mulch tillage, and construction of terraces, diversions, and grassed waterways. Leaving crop residue near the surface helps conserve moisture, maintain tilth, and control erosion.

9. *Describe the truck drippage precautions you will take to prevent discharge of water from trucks hauling wet soils or stone excavated from the site:*

Because of the climate and soil types in the area, excessively wet soils and/or stone excavation are not anticipated. Therefore, truck drippage is not expected to be an issue. In the unlikely event of hauling wet soils or stone, trucks would be allowed to drain on-site before entering public right-of-way (i.e., county road system). If draining on-site is determined to be inadequate, the ESC Lead would coordinate additional BMPs to minimize truck drippage.

10. *Describe the procedures you will use to assure prompt maintenance and repair of graded surfaces and erosion and sediment control measures.*

Response: A copy of the ESC Plan (Plan) and all inspection reports (described below) for the Project would be retained on-site and made available to the Department of Environmental Quality, its agent, or the local municipality upon request. The contractor would designate an ESC Lead who would be responsible for implementing the ESC Plan and following through on all maintenance requirements. The ESC Lead would be a person with knowledge and experience in construction stormwater controls and management practices. The ESC Lead's contact information, including an emergency contact number, would be provided as part of the ESC Plan.

All roads, pads, trenched areas, stockpiles and disturbed areas resulting from facility construction would be inspected regularly and maintained to minimize erosion and sedimentation. For active sites, inspections would occur daily during stormwater runoff or snowmelt runoff and at least once every seven calendar days and within 24 hours after any storm event greater than 0.5 inches of rain in a 24-hour period. For inactive periods greater than seven days, inspections would occur once every two weeks. If a site is inaccessible due to adverse weather conditions, inspections would not occur, but the adverse weather conditions would be noted on the inspection report.

The inspections would document the following:

- Inspection date, inspector's name, weather conditions, and rainfall amount in the last 24 hours.
- List observations of all BMPs.
- At representative discharge point(s), document the quality of discharge for any turbidity, color, sheen, or floating materials.
- Recommended corrective actions required, if any.

The applicant would implement the following maintenance activities and guidelines:

- Significant amounts of sediment that leave the site would be cleaned up within 24 hours and placed back on the site or disposed of in a legal manner.
- Under no circumstances would sediment be intentionally washed into storm sewers or drainages unless it was to be captured by a BMP (e.g., basin insert) before entering receiving waters.
- For silt fences, the trapped sediment would be removed before it reaches one third of the above ground height of the fence.
- All erosion and sedimentation control BMPs not directly in the path of work would be installed before any land disturbance.
- All disturbed areas that would be revegetated with native species would be reseeded at appropriate intervals until a performance standard of 70 percent cover is met.
- Fertilizers would not be used when seeding native species, and would only be used in such a way to minimize nutrient-laden runoff when seeding wheat.
- If construction activities cease for 45 days or more, all disturbed areas would be stabilized using vegetation, heavy mulch, or other appropriate BMPs as necessary.
- All temporary erosion and sediment control measures will be removed within 30 days after final stabilization of the site. Final stabilization is deemed to have occurred when the impacted areas demonstrate 70% cover and the risk of erosion has been minimized.
- Adequate stockpiles of silt fences, straw bales, spill kits, and other measures as appropriate will be maintained on site for emergency situations and to allow for the prompt response for repairs.

EXHIBIT J

WETLANDS

OAR 345-021-0010(1)(j)

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ATTACHMENTS

J.1 INTRODUCTION

OAR 345-021-0010(1)(j) *Information based on literature and field study, as appropriate, about waters of the United States, including:*

Response: A wetland delineation was conducted that included a review of background resources as well as an on-site investigation (Attachment J-1). The wetland delineation covered the area occupied by the 900-foot turbine corridors, a 200-foot corridor for crane paths, underground collectors and transmission lines, and the substation, laydown and O&M facility locations. This area constitutes the wetland analysis area. Wetlands and other waters of the state identified within the wetland analysis area were overlain with proposed Project features to determine the potential for Project impacts. Results of this analysis are provided below.

J.2 DESCRIPTION OF ALL WETLANDS, STREAMS AND RIPARIAN AREAS

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

Response: Twelve wetlands were identified during the field investigation associated with the drainage features of Mud Hollow, Spanish Hollow, China Hollow, and Grass Valley Canyon. These drainage features are tributaries to the Columbia River and are likely jurisdictional under Section 404 of the Clean Water Act and the Oregon Removal Fill Law. The final jurisdictional determination is up to the ACOE and the Department of State Lands.

The wetlands are fully detailed in the wetland delineation in Attachment J-1. The report includes data sheets and maps of wetlands and other waters of the state within the wetland analysis area (Figure J-1, sheets 1-5), and summarized as follows.

J.2.1 Wetlands

Wetland A is located at the north extremity of the Project along China Hollow. It is six feet wide with a vegetated stream channel and has been determined to be a palustrine emergent wetland.

Wetland B is located about three miles northeast of the City of Moro, associated with Goose Creek, a tributary of Grass Valley Canyon. The wetland is an irregular complex of associated rivulets. Wetland B is determined to be palustrine emergent wetland.

Wetland C is located about three miles northwest of the City of Wasco adjacent to Highway 97 in a steep drainage feature of Spanish Hollow. Wetland C is determined to be a palustrine emergent wetland.

Wetland D is located about four miles northwest of the City of Wasco adjacent to Highway 97. The wetland is about six feet wide with a vegetated stream channel of Spanish Hollow. Wetland D is determined to be a palustrine emergent wetland.

Wetland E is located about three miles northeast of the City of Moro southeast of Wetland B and is associated with another fork of Grass Valley Canyon. The wetland about ten feet wide and is determined to be a palustrine emergent wetland.

Wetland F is located about three miles northwest of the City of Wasco and is associated with a spring of Mud Hollow. Wetland F is determined to be a palustrine emergent wetland.

Wetland G is located about four miles northeast of the City of Moro, downstream and north of Wetland E along the same tributary of Grass Valley Canyon. The wetland is about ten-feet wide and determined to be a palustrine emergent wetland.

Wetland H is located about two miles south of the City of Wasco, a drainage feature of Spanish Hollow along the west side of Highway 97. The wetland is in a low area near a culvert. Wetland H is determined to be a palustrine emergent wetland.

Wetland I is located between Highway 97 and Highway 206. It is located downstream and northeast from wetlands B, C, and G in Grass Valley Canyon. Wetland I is determined to be a palustrine emergent wetland.

Wetland K is located between Highway 97 and Highway 206, about one half mile west of where Highway 206 crosses Grass Valley Canyon, along unnamed tributary of Grass Valley Canyon. It is in a drainage feature with a spring and determined to be a palustrine emergent wetland.

Wetland M is located two miles northeast of the City of Moro, near Monkland Road. The wetland is associated with the creek and open water of Grass Valley Canyon. Wetland M is determined to be a palustrine emergent wetland.

Wetland N is located nearly six miles southeast of the City of Wasco, along the creek of Grass Valley Canyon east side of Highway 206. Wetland N is determined to be a palustrine emergent wetland.

J.2.2 Other Waters of the State

The major drainage features (water of the state) identified within the wetland analysis area include Locust Grove Canyon, China Hollow, Mud Hollow, Spanish Hollow, and Grass Valley Canyon. These major drainage features are all tributaries of the Columbia River and considered jurisdictional waters. Mud Hollow joins Spanish Hollow and heads north out of the wetland analysis area to the Columbia River as does Locust Grove Canyon. The Grass Valley Canyon heads eastward and continues out of the wetland analysis area to join the John Day River north to the Columbia River.

During June site visits, water was observed within the wetland analysis area in the drainage features of China Hollow, Mud Hollow, and Grass Valley Canyon. The Locust Grove drainage feature within the wetland analysis area either flows intermittently (i.e. for only a portion of the year) or ephemerally (i.e. only once every several years). No water was observed in this feature within the wetland analysis area. Spanish Hollow had water observed only at the north extent by Wetland C; none was observed upstream within the wetland analysis area, but there were indicators that it flows either intermittently or ephemerally.

J.3 EFFECT ON WATERS OF THE STATE AND WETLANDS

OAR-345-021-0010(1)(j)(B) *An analysis of whether construction or operation of the proposed facility would adversely affect any waters of the state, as defined under OAR 141-085-0010, or waters of the United States, as defined under Section 404 of the Clean Water Act.*

Response: Based on the wetland delineation results, no impacts to wetlands and other waters of the state are anticipated as a result of the proposed project.

Four potential impact locations occur where the connection corridor has aboveground transmission lines and crosses the drainage channel and/or an associated wetland. These are at wetlands A, C, D, and N. Impacts to these wetlands will be avoided by siting the transmission line towers outside of the drainage channel and wetland.

One of the potential impact locations occurs where the road improvement and a new road will be constructed near wetland F. Impacts will be avoided by siting the roadway outside of the wetland.

One of the potential impact locations occurs at wetland H where a laydown area is adjacent to the drainage channel. Impacts will be avoided by reducing the size of the laydown area.

Four potential impact locations occur where the collector system will cross drainage channels. Impacts at these wetlands – E, G, I, and K - will be temporary and total approximately 0.05 acres. Impacts will be restored by re-establishing the channel to preconstruction contours and re-vegetating with native wetland shrubs and grasses.

Table J-1

Wetland	Project Feature(s)	Impact
A	Overhead Transmission Line	Avoid by proper pole placement
B	Underground transmission Line	Avoid by boring under state highway and wetland
C	Overhead Transmission Line	Avoid by proper pole placement
D	None	None
E	Underground Collector	0.01 acres of temporary impact
F	Underground Collector, new access road	Avoid wetland by routing road and collector around it
G	Underground Collector	0.01 acres of temporary impact
H	None	None
I	Underground Collector	0.01 acres of temporary impact
K	Underground Collector	0.01 acres of temporary impact
M	None	None
N	Overhead Transmission Line	Avoid by proper pole placement

J.4 SIGNIFICANT POTENTIAL IMPACTS TO WETLANDS

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).*

Response: A total of approximately 0.05 acres of palustrine emergent wetland will be temporarily impacted by construction activities when installing the underground collector system at five locations. Less than 350 cubic yards of native soil material will be removed from the wetlands, and replaced at the same location when collector system installation is complete. This does not represent a significant impact because these wetlands are relatively common, degraded by surrounding activities, and will be restored to their preconstruction condition or better. Therefore, the same amount and type of wetlands as currently exists will be maintained after construction.

J.5 EVIDENCE THAT FILL AND REMOVAL PERMIT NEED NOT BE ISSUED

OAR 345-021-0010(1)(j)(D) *If the proposed facility would not need a removal-fill authorization as described under OAR 141-085-0018, an explanation of why no such authorization is required for the construction and operation of the proposed facility.*

Response: An application for the removal and filling activities in the wetlands will be submitted. See Section J.6

J.6 EVIDENCE THAT FILL AND REMOVAL PERMITS CAN BE ISSUED

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.*

Response: A joint permit application for temporary impacts to wetlands is included as Attachment J-2. The application demonstrates compliance with the criteria of the Removal-Fill Law. Impacts have been minimized, and restoration of the temporary impacts in wetlands will be accomplished by returning the areas to their preconstruction contours and replanting with native grasses and shrubs.

J.7 MONITORING PROGRAM, IF ANY, FOR IMPACTS TO WETLANDS

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.*

Response: Monitoring will be conducted for three years to ensure that restoration of temporary impacts results in equal or better wetlands conditions at those sites. The detailed monitoring program is included in the joint permit application.

J.8 REFERENCES

References utilized in the preparation of Exhibit J are listed as part of the wetland delineation in Attachment J-1.

ATTACHMENT J-1

Wetland Delineation Report

Wetland Delineation Report

Golden Hills Wind Farm Project

Prepared for:

BP Alternative Energy, Inc.

Prepared by:

David Evans and Associates, Inc.

June 2007

Wetland Delineation Report

Golden Hills Wind Farm Project

Prepared for:

BP Alternative Energy, Inc.
700 Louisiana St, 33 Fl
Houston, TX 77002

Prepared by:

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2007

PREFACE

David Evans and Associates, Inc. (DEA) prepared this wetland delineation report for BP Alternative Energy. The findings of this report are based upon information gathered during the field investigation and upon DEA's understanding of state and federal law relating to the regulation of wetland areas. DEA staff used the *U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Environmental Laboratory, 2006) in completing the wetland delineation.

The wetland boundaries and classifications described in this document represent the best professional judgment of DEA staff. The decisions were based on the circumstances and site conditions at the time of the field investigation. Final verification of this wetland delineation is to be made as part of the Oregon Energy Facility Siting Council process.

This report documents the investigation, best professional judgment, and conclusions of the investigator. It should be considered a Preliminary Jurisdictional Determination until it has been reviewed and approved by the Oregon Energy Facility Siting Council as part of the energy facility siting process.

EXECUTIVE SUMMARY

David Evans and Associates Inc. (DEA) conducted a wetland delineation on June 11, 12, 13, and 14, 2007 for the Golden Hills Wind Farm. The Project site is located in rural north Sherman County (Figure 1). It is roughly three miles south of the Columbia River, six miles west of the John Day River, and four miles east of the Deschutes River. The project site is a roughly triangular-shaped area beginning near Thornberry, Oregon, extending south to Moro, Oregon, then bordered six miles to the east on a diagonal by Highway 206.

Wetland delineation results found that, in general, the wetland analysis area consists almost entirely of upland areas under agricultural production, and to a lesser extent, upland plant communities. The main drainage features include Locust Grove Canyon, Mud Hollow, Spanish Hollow, China Hollow, Hay Canyon, and Grass Valley. These features include intermittent unnamed tributaries. Mud Hollow joins Spanish Hollow and heads north out of the wetland analysis area to the Columbia River, as does Locust Grove Canyon. Grass Valley Canyon heads eastward, joins Hay Canyon, and continues out of the wetland analysis area to join the John Day River north to the Columbia River.

Topography within the project vicinity is typified by gently rolling to level ground located along a high plateau. Areas of steep slopes are confined to the major drainage features. These areas drop rapidly from the high and relatively level plateau down to the hollows and canyon areas. Elevations range between approximately 1,000 to 2,100 feet.

The vast majority of the project site is under dry land wheat production. Very little acreage of native plant communities remains within the project site, occurring predominantly along the plateau margins and steep side slopes. These communities consist of sagebrush (*Artemisia tridentata*) and rabbit brush (*Chrysothamnus* sp.), dominated shrublands and native bunchgrass grasslands, each with varying degrees of invasive species present. Agricultural areas that are enrolled under the Conservation Reserve Program (CRP) are located throughout the project site, occurring as narrow strips in previously plowed drainageways, and as large blocks in other areas. CRP areas have been planted with a mix of native and non-native bunch grasses with the primary intent of increasing wildlife habitat in the area. Wetland areas are associated with the major drainage features.

A Level 2 Routine On-Site Method was used to delineate wetland areas according to the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* herein referred to as the *Arid West Supplement*. This manual is designed as a supplement to the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987). This method requires an area to possess a prevalence of hydrophytic vegetation, hydric soils, and wetland

hydrology. Under normal circumstances, positive indicators of each of these three parameters must be present for an area to satisfy the criteria for jurisdictional wetlands. Areas of relatively low disturbance, such as CRP areas, were considered to have normal circumstances. In instances where a site has been substantially disturbed and one or more parameters were not measurable, then the wetland delineation may rely solely on the remaining measurable parameter(s). Such circumstances are referred to as atypical situations. For this Project, areas within the wetland analysis area consisting of cultivated wheat were considered atypical situations with “normal circumstance.” In these instances, only soil conditions and wetland hydrology indicators were used to determine if an area should be classified as a jurisdictional wetland.

Twelve wetlands were identified during the field investigation associated with the drainage features of Mud Hollow, Spanish Hollow, China Hollow, and Grass Valley Canyon. Wetlands or other waters of the U.S. are under the jurisdiction of either the U.S. Army Corps of Engineers (USACE) or the Oregon Department of State Lands (DSL). These agencies authorize permits involving removal and fill activities in jurisdictional wetlands. DSL requires a Removal/Fill Permit when the total removal or fill in a water of the state, including wetlands, is equal to or exceeds 50 cubic yards. In essential salmonid habitat (ESH), a permit is required for any fill amount. No areas within the wetland analysis area are mapped as essential salmonid habitat by DSL.

USACE administers Section 404 of the Clean Water Act, which regulates the discharge of fill materials into waters of the U.S., including wetlands. USACE issues Nationwide or Individual permits depending on the amount of impact to wetland resources and the purpose for which the discharge of fill materials is proposed.

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APPENDICES

1 INTRODUCTION

David Evans and Associates, Inc. (DEA) conducted a wetland delineation on June 1, 12, 13, and 14, 2007 for the Golden Hills Wind Farm (Applicant). The project site is located in rural, north Sherman County (Figure 1). It is roughly three miles south of the Columbia River, six miles west of the John Day River, and four miles east of the Deschutes River. The project site is triangular shaped area beginning near Thornberry, Oregon, extending south to Moro, Oregon, roughly six miles east, then bordered on the east diagonal by Highway 206. The project site is located in the following Township, Range, and Sections:

- Township 2 North, Range 16 East, Sections 7,12,13,14, 23,24, 25, 26, 27, 34, 35 and 36
- Township 2 North, Range 17 East, Sections 29, 30, 31, and 32
- Township 1 North, Range 16 East, Sections 1, 2, 3, 13, 24, 25, and 36
- Township 1 North, Range 17 East, Sections 5 through 8, Sections 15 through 23, and Sections 27 through 36
- Township 1 North, Range 18 East, Sections 30 and 31
- Township 1 South, Range 17 East, Sections 1 through 5, 6 through 14,16, and
- Township 1 South, Range 18 East, Section 5 and 6

The purpose of this delineation is to determine the current presence, location, and size of federal and state jurisdictional wetlands and other "waters of the U.S." Once verified by the appropriate agencies, this wetland delineation will allow BP Alternative Energy to accurately understand specific impacts to waters of the U.S. and/or waters of the state, including wetlands associated with the proposed project.

2 PROJECT DESCRIPTION

Golden Hills proposes to construct an approximately 400 megawatt (MW) wind generation project in Sherman County, Oregon (Figure 2). The proposed project is located on lands adjacent to the Klondike I, II, and III projects. The Project is expected to provide approximately 133 average megawatts (aMW) of energy. The Project will interconnect with the Bonneville Power Administration's (BPA) transmission system at two locations – one near Klondike Schoolhouse Substation (200 MW) and one at John Day Substation (200 MW).

All project facilities will be located on private agricultural land; BPAE has negotiated long-term wind energy leases with the landowners to construct and operate the facility on those lands. The leases allow landowners to continue their farming operations in and around the project facilities where farming activities would not impact the operation and maintenance of the wind generation equipment.

Project construction is targeted to begin in spring of 2008 with a completion of construction by the end of 2008, when commercial operations will begin. Substations, access roads, and O&M building will also be constructed as part of the Project.

3 SITE BOUNDARY AND WETLAND ANALYSIS AREA

The “site boundary” for the proposed Project includes all areas of proposed permanent and temporary construction and other ground disturbing activities that would result from the Project (Figure 2). The site boundary was derived using the following protocols:

- 100 feet on each side of the centerline for the following project elements: proposed new roads, underground collector system (within road prism and not within road prism).
- 900 feet from the centerline of the turbine strings.
- Actual footprint (i.e. no buffer) of all proposed laydown areas, new substations, and habitat mitigation areas and existing roads.

The wetland analysis area is within this site boundary.

4 SITE DESCRIPTION

Located on the eastern side of the Cascade Mountains, the project site predominantly exhibits the continental climate of the Intermountain Region – extreme temperatures and low rainfall (Orr, et al., 1992). However, the Columbia River Gorge provides a passageway for the normal eastward migration of ocean-conditioned air masses from the Pacific. These currents usually lead to shorter hot or cool periods than those typical of the Intermountain Region. For the period 1971 to 2000, mean minimum and maximum temperatures for the month of January, the coldest month of the year, were 24.7°F and 38.3°F, respectively (Oregon Climate Center 2007). For the month of August, the warmest month of the year, mean minimum and maximum temperatures were 52.6°F and 81.8°F, respectively. However, temperature extremes are known to range from -16°F to 106°F. Most of the annual rainfall in Sherman County occurs between November and February, reflecting the strong influence of marine air masses entering from the Pacific Ocean. Mean monthly rainfall (measured 1971 – 2000 at Moro, Oregon) ranges from 0.31 inches in July to 1.57 inches in January. Between 1910 and 1995, mean total annual precipitation was 11.76 inches in Wasco, Oregon.

Sherman County is on the Deschutes-Columbia Plateau, a lava-floored plain that has experienced uplifting. This is predominantly a volcanic province sloping gently northward to the Columbia River. Topography within the project site is typified by gently rolling to level ground located along the high plateau. Areas of steep slopes are confined to the major drainage features of Locust Grove Canyon, China Hollow, Mud Hollow, Spanish Hollow, Hay Canyon, and Grass Valley. In these areas, elevations drop rapidly from the high and relatively level plateau of approximately 1,300 feet to 2,100 feet to the hollows and canyon areas with 1,000- to 1,200-foot elevation.

These major drainage features are tributaries of the Columbia River. Mud Hollow joins Spanish Hollow and heads north out of the wetland analysis area to the Columbia River as does Locust Grove Canyon. The Grass Valley Canyon heads eastward, joins Hay Canyon, and continues out of the wetland analysis area to join the John Day River north to the Columbia River.

The vast majority of the project site is under dry land wheat production. Very little acreage of native plant communities remains, occurring predominantly along the plateau margins and steep side slopes. These communities consist of sagebrush (*Artemisia tridentata*) and rabbit brush (*Chrysothamnus* sp.), dominated shrublands and native bunchgrass grasslands, each with varying degrees of invasive species present. Agricultural areas that are enrolled under the Conservation Reserve Program (CRP) are located throughout the project site, occurring as narrow strips in previously plowed drainageways, and as large blocks in other areas. CRP areas have been planted with a mix of native and non-native bunch grasses with the primary intent of increasing wildlife habitat in the area. Hybrid Lombardy poplar (*Populus X niger)* and black locust *(Robinia pseudoacacia*) have been introduced along some drainage features and farmsteads.

5 METHODS

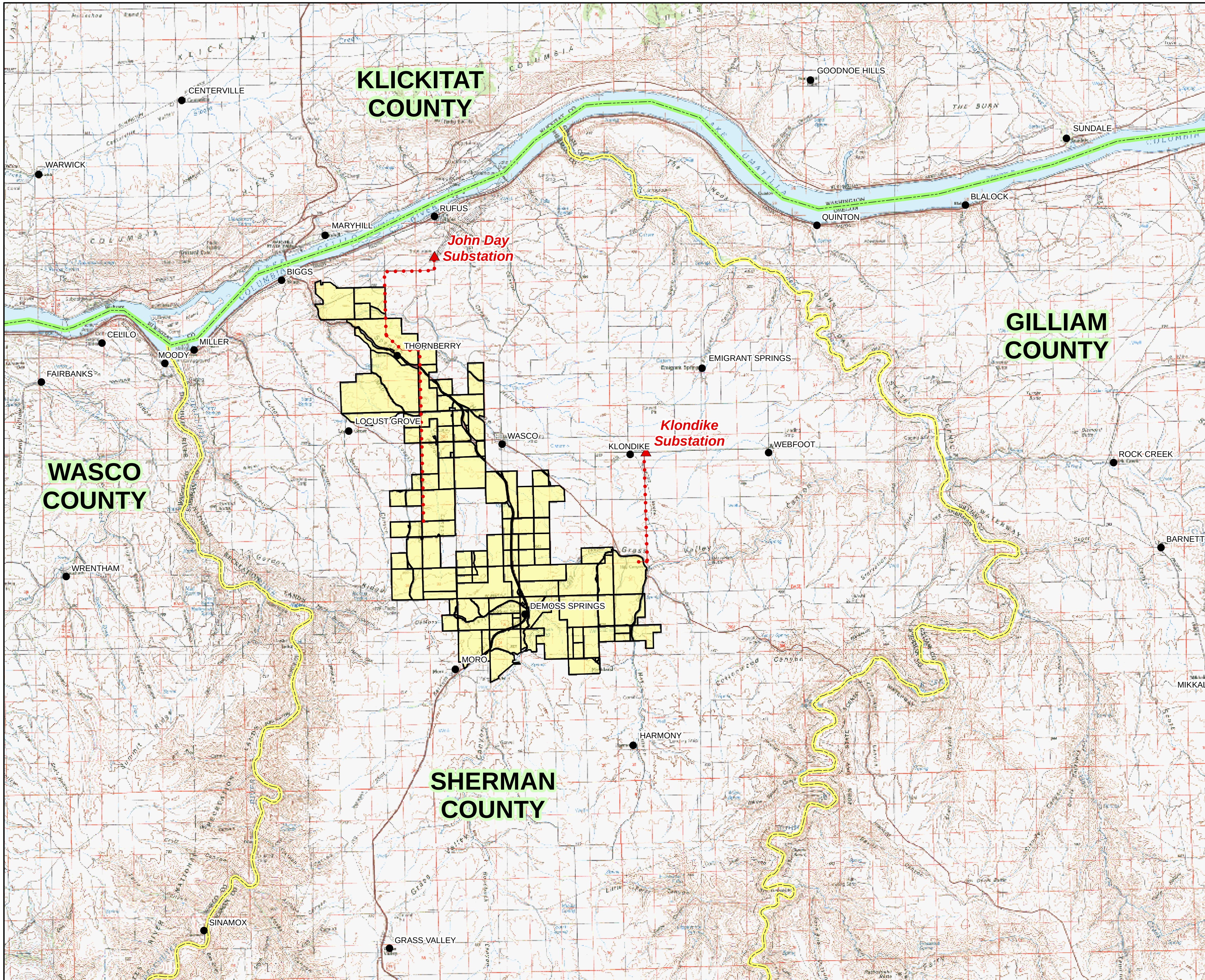
5.1 PRELIMINARY RESOURCE REVIEW

Reference materials were reviewed prior to the field investigation to provide information regarding the possible presence of wetlands, water features, hydric soils, wetland hydrology, and site topography. The materials reviewed included:

- Precipitation data for Pendleton, Oregon (Oregon Climate Service, 2007)
- Wasco, Oregon, 7.5 minute Quadrangle, U.S. Geological Survey (USGS 1987)
- Sherman, Oregon, 7.5 minute Quadrangle, U.S. Geological Survey (USGS 1971)
- Wasco, Oregon, National Wetlands Inventory (NWI) 7.5 minute quadrangle maps, U.S. Fish and Wildlife Service (USFWS 1981)
- Sherman, Oregon, National Wetlands Inventory (NWI) 7.5 minute quadrangle maps, U.S. Fish and Wildlife Service (USFWS 1981)
- On-line Soil Survey of Sherman County Area, Oregon, U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS), (USDA 2005)

Golden Hills Wind Project

FIGURE J-1
Project Vicinity



Legend

- Approximate Substation Locations
- Transmission Line
- State Boundary
- County Boundary
- Lease Area

N

0 2 4 6 8
Miles

Data Sources:

30x60 USGS Quadrangles:
Condon, OR 1981
Goldendale, OR-WA 1980
Hood River, OR-WA 1982
Toppenish, WA 1979

Oregon Geospatial Enterprise Office (GEO)

Map Document: (P:\B\BPOC00000005\0600INFO\GS\arcmap\Fig_C-1_ProjectVicinity.mxd)
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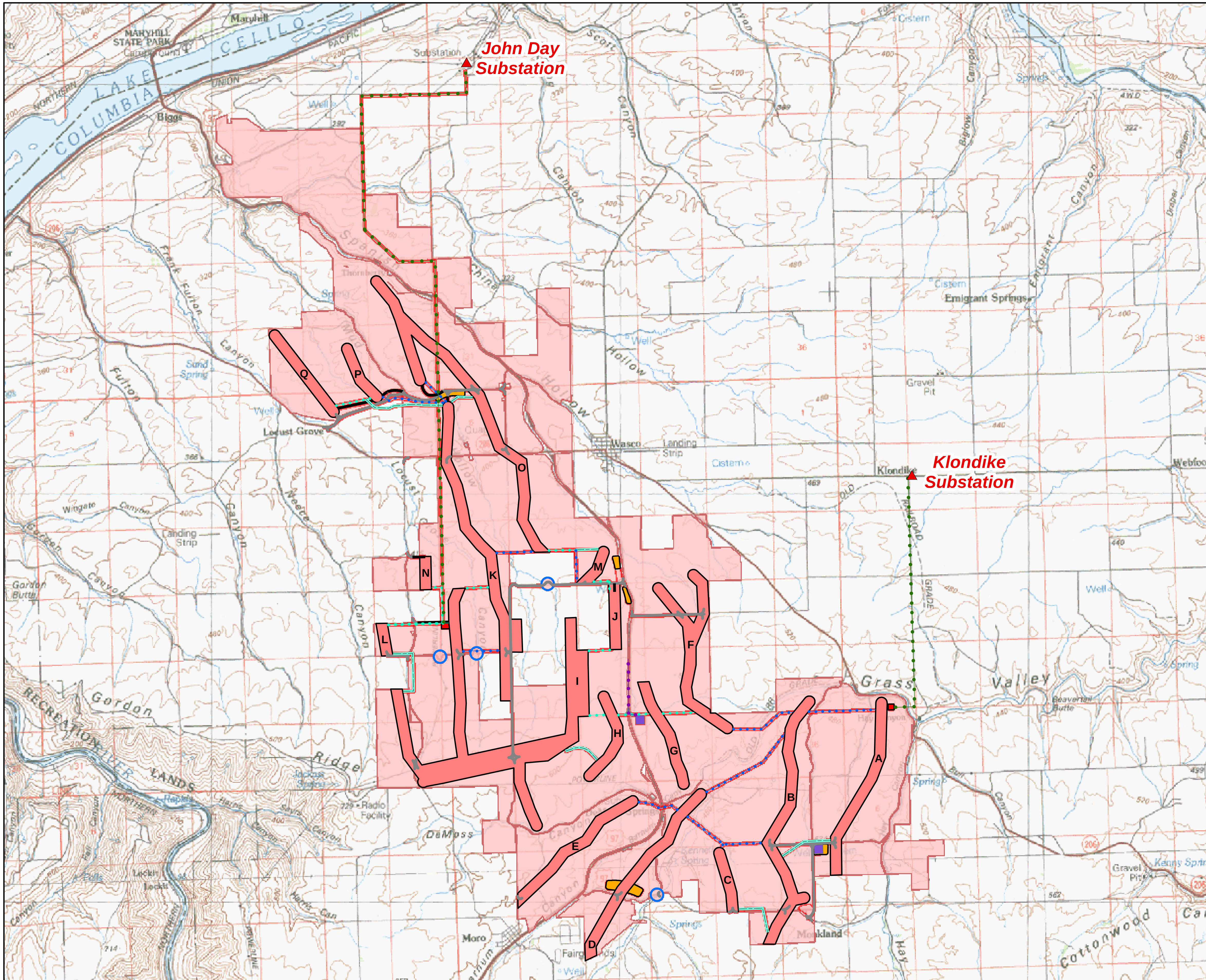
Golden Hills Wind Project

FIGURE J-2

Project Basemap



Legend

- Approximate BPA Substation Locations
- Transmission Line
- Underground Collector
- Crane Path and Underground Collector
- Crane Path
- New Road
- Existing Road Improvement
- Wasco Electric Distribution Lines
- Connector Corridors
- Bridge area
- Laydown
- O&M Building
- Substation
- Survey Corridors

Data Sources:

30x60 USGS Quadrangles:
Condon, OR 1981
Goldendale, OR-WA 1980
Hood River, OR-WA 1982
Toppenish, WA 1979

Oregon Geospatial Enterprise Office (GEO)

6 FIELD METHODS

Wetland areas were delineated according to the Level 2 Routine On-Site Method described in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Environmental Laboratory 2006). The project site is located within the Columbia/ Snake River Plateau of Land Resource Region (LRR B) as described in the *Arid West Supplement*, applicable to significant portions of Oregon that are dominated mainly by grasslands, shrublands, hardwood savannas, deciduous woodlands, and pinyon/juniper woodlands (Environmental Laboratory, 2006).

This method requires an area to possess a prevalence of hydrophytic vegetation, hydric soils, and wetland hydrology. Under normal circumstances, positive indicators of each of these three parameters must be present for an area to satisfy the criteria for jurisdictional wetlands. For this Project, areas of relatively low disturbance, such as CRP areas, were considered to have normal circumstances. In instances where a site has been substantially disturbed and one or more parameters are not measurable, then the wetland delineation may rely solely on the remaining measurable parameter(s). Such circumstances are referred to as atypical situations. Areas consisting of cultivated wheat were considered atypical situations. Although vegetative cover data was recorded for these areas, only soil conditions and wetland hydrology indicators were used to determine if an area should be classified as a jurisdictional wetland.

6.1.1 Hydrology

When delineating wetlands, an area is considered to possess wetland hydrology when the soil is saturated to the surface for a sufficient period of time during the growing season to develop anaerobic conditions. The USDA Natural Resource Conservation Service WETS Table database for Sherman County (USDA 2005) identifies the growing season for Moro, Oregon as occurring from April 19 to October 15 with a 50% probability.

Field indicators of wetland hydrology are divided into two categories: primary and secondary. Primary indicators include surface water, high water table, saturation, non-riverine watermarks, non-riverine sediment deposits, non-riverine drift deposits, surface soil cracks, inundation visible on aerial imagery, water-stained leaves, salt crust, biotic crust, aquatic vertebrates, hydrogen sulfide odor, oxidizes rhizospheres, or presence of reduced iron. Two secondary field indicators are required; they include riverine watermarks, riverine sediment deposits, riverine drift deposits, drainage patterns, dry season water table, thin muck surface, crayfish burrows, saturation visible on aerial imagery, shallow aquitard, or a FAC-neutral test. At each sample plot, the surrounding area was examined for the presence of primary and secondary indicators of wetland hydrology. Data on hydrology is best collected during the early growing season because primary field indicators can be used. Later in the season a combination of primary and secondary indicators can be used as is the case for this delineation,.

6.1.2 Soils

The project site was examined for the presence of hydric soils. Hydric soils are soils which are saturated, flooded, or ponded long enough (usually a week or more) during the growing season to develop anaerobic conditions in the upper part (Environmental Laboratory 1987). Soil pits were dug and profiled. The *Munsell Soil Color Chart* (Munsell Color 1990) was used for color analysis based on hue, value, and chroma. All mineral layers above any of the indicators must have a dominant chroma of 2 or less, or the layers with dominant chroma of more than 2 must be less than six inches thick to meet any hydric soil indicator. There are 17 hydric soil indicators, plus several that are region specific. Generally, they include hystic soils, depletion, muck, redox, and gleying. Low soil chroma and redox are indicators of reduced soil conditions caused by anaerobic, wet environments. Redox indicates a fluctuating water table. The *Soil Survey of Umatilla County Area, Oregon* (USDA 1988) was consulted prior to fieldwork to determine if hydric soils were mapped in the analysis area.

6.1.3 Vegetation

USFWS has classified vegetation according to its frequency of occurrence in wetlands (USFWS 1988). Many plant species have been given wetland indicator status of either obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), or upland (UPL) based on their probabilities for occurring in wetlands. Table 1 provides the definitions of plant indicators used to determine wetland status. Many species are not listed (NL) in regional or national lists.

Table 1. Plant Indicators Used to Determine Wetland Status

Indicator Symbol	Indicator Status	Definition
OBL	Obligate	Species that occur almost always (estimated probability >99%) in wetlands under natural conditions.
FACW	Facultative wetland	Species that occur in wetlands (estimated probability 67 to 99%), but occasionally are found in non-wetlands.
FAC	Facultative	Species that are equally likely to occur in wetlands or non-wetlands (estimated probability 34-66%).
FACU	Facultative upland	Species that usually occur in non-wetlands (estimated probability 67-99%), but occasionally are found in wetlands.
UPL	Upland	Species that occur almost always in non-wetlands under normal conditions (estimated probability >99%).
NI	No indicator	Species for which insufficient information was available to determine an indicator status.

Source: National List of Plant Species that Occur in Wetlands: Northwest (Region 9) (USFWS 1988).

In accordance with the *USACE 1987 Manual and Arid West Supplement*, vegetation plots were established in areas supporting a single plant community. Plant species observed were identified using *The Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973) and assigned their indicator status using the *National List of Plant Species that Occur in Wetlands, Northwest - Region 9* (USFWS 1988) and the 1993 supplement (USACE 1993). Percent cover of each plant species was visually estimated. Plots with a 5-foot radius were used to estimate percent cover of herbaceous vegetation. The same plot was enlarged to a 30-foot radius to estimate percent cover of shrubs, saplings, vines, and trees. Plot sizes were adjusted in size and shape, as necessary, to encompass only one plant community.

Dominant species were determined for each of the three vegetative strata found on site (herb, sapling/shrub, and tree) using percent area cover. There were no woody vine strata present. The dominant species in each of the three strata are determined separately. The species within each stratum are ranked in descending order of estimated percent cover. The species that provide the most cover are totaled until 50% of the total coverage is exceeded; these are considered dominant species. If any additional species comprise at least 20% of the total coverage in each stratum, they are also considered dominant species. When more than 50% of the dominant species have wetland indicators of OBL, FACW, or FAC, the area is considered to support hydrophytic (wetland) vegetation.

6.1.4 Plot Location, Boundary Determination, and Mapping Accuracy

Due to the arid and well-drained nature of the site, few areas would be expected to contain wetlands or other waters of the state and/or U.S. Although the entire wetland analysis area was reviewed for the presence of these features, this delineation took a focused approach when determining sample plot locations. Ravine bottoms, depressions, and other areas that could potentially collect water were purposely investigated, as these areas would have the highest probability of containing waters of the state or wetlands. This included areas mapped as wetlands by the NWI and areas mapped as intermittent or perennial drainages by the USGS. These areas had the highest probability of containing wetlands or other waters of the state, and U.S. Sample data plots were conducted and data sheets were completed at each sample plot, which document the vegetation, soils, and hydrology.

Areas in which wetland hydrology, hydric soils, and hydrophytic vegetation were all present were considered wetlands. In areas experiencing atypical situations, only the combined presence of hydric soils and hydrology were required to delineate an area as jurisdictional wetland. Areas where a defined channel was present, regardless of presence of flowing water, were considered to be other waters of the state and/or U.S. Areas where such features may have existed in the past but have since been plowed through and no channel exists, were not delineated as other waters of the state and/or U.S. Photographs were taken to document field conditions.

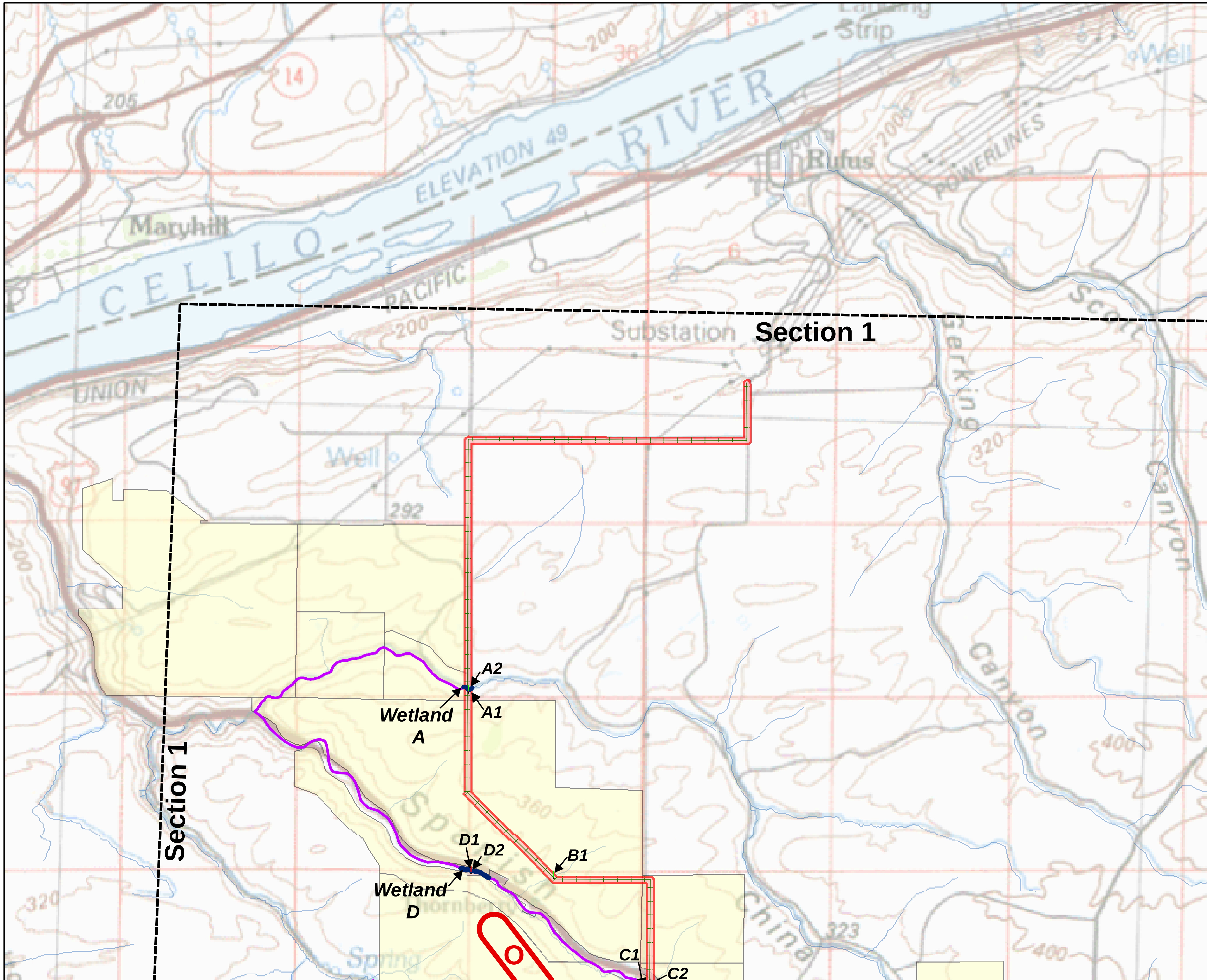
Wetland data plot locations, wetland boundaries, and potential crossings of jurisdictional waters were collected using a Trimble GeoExplorer Global Positioning System (GPS) receiver. Wetland boundaries were delineated at the demarcation of hydrophytic vegetation. Post processing of GPS data was used to increase the accuracy of collected data. Accuracy of the GPS collected data is estimated at plus or minus three feet.

7 RESULTS

Preliminary research results are graphically displayed on Figures 3 through 5. Text description of the delineation results follows thereafter.

Golden Hills Wind Project

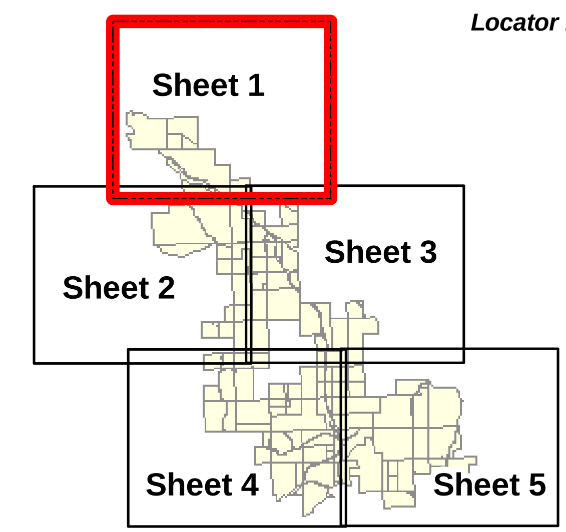
Figure J-3 (Sheet 1 of 5)
Data Plots and Wetland Delineation



Legend

- Transmission Line
- Underground Collector
- Crane Path and Underground Collector
- Crane Path
- New Road
- Existing Road Improvement
- Waters of the U.S./State
- Bridge area
- Laydown
- OM Building
- Substation
- Survey Corridors 062907
- Connector Corridors 062907
- Lease Area 051107
- Wetland
- Bridge
- G Culvert
- ! Wetland Data Plots
- ! Upland Data Plots

Locator Map



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Feet

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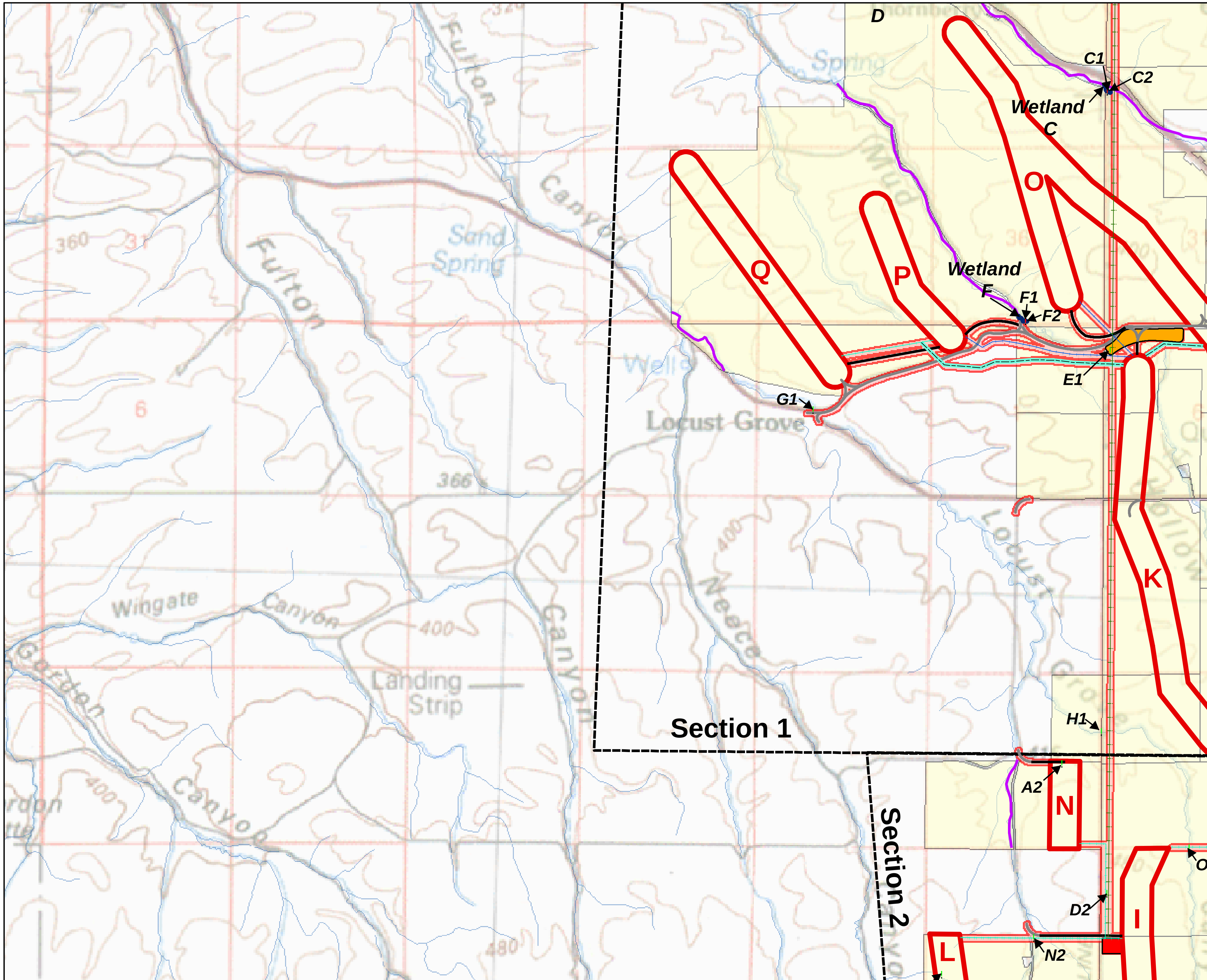
Golden Hills Wind Project

Figure J-3 (Sheet 2 of 5)

Data Plots and
Wetland Delineation



Legend

- Transmission Line
- Underground Collector
- Crane Path and Underground Collector
- Crane Path
- New Road
- Existing Road Improvement
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- Laydown
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- Bridge
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- ! Wetland Data Plots
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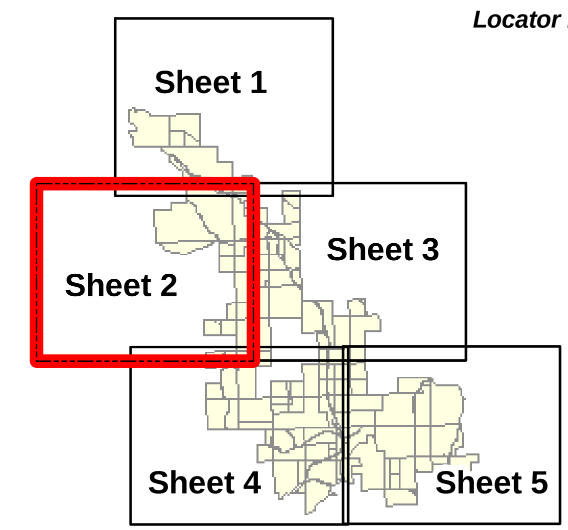
Locator Map



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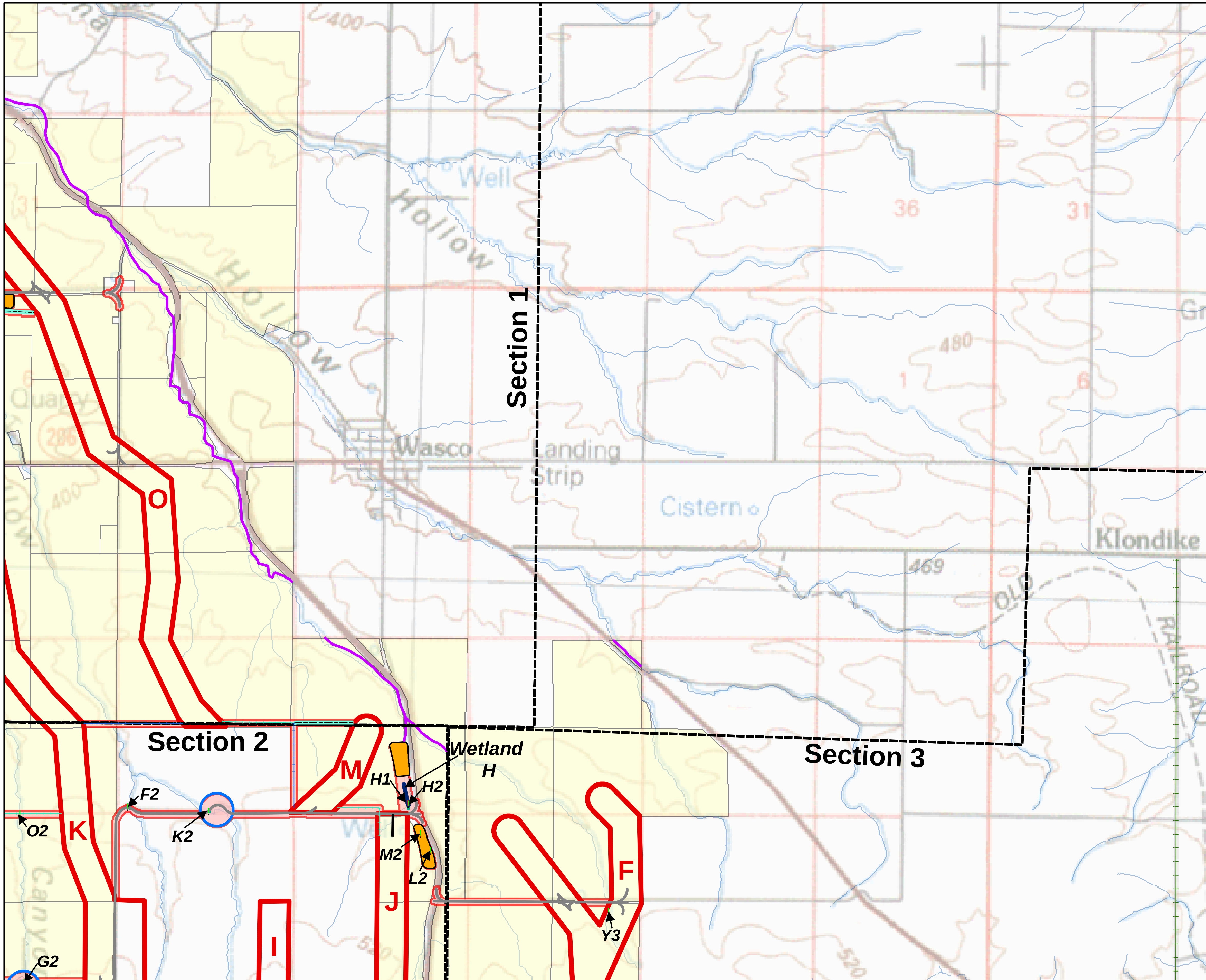

Golden Hills Wind Project

Figure J-3 (Sheet 3 of 5)

Data Plots and Wetland Delineation

Legend

- Transmission Line
- Underground Collector
- Crane Path and Underground Collector
- Crane Path
- New Road
- Existing Road Improvement
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- Bridge area
- Laydown
- OM Building
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- Lease Area 051107
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- Bridge
- G Culvert
- ! Wetland Data Plots
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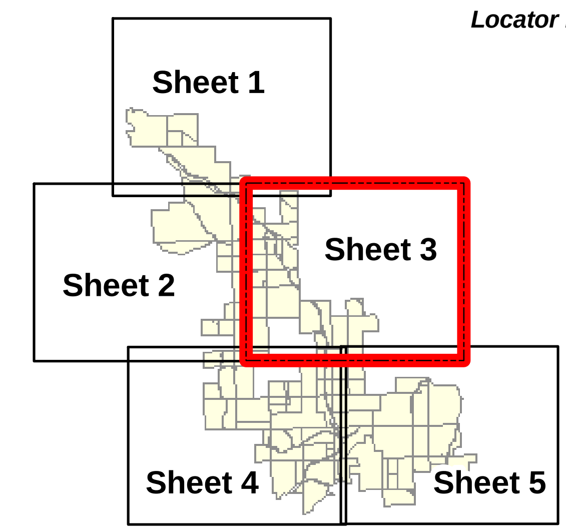
Locator Map



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Feet

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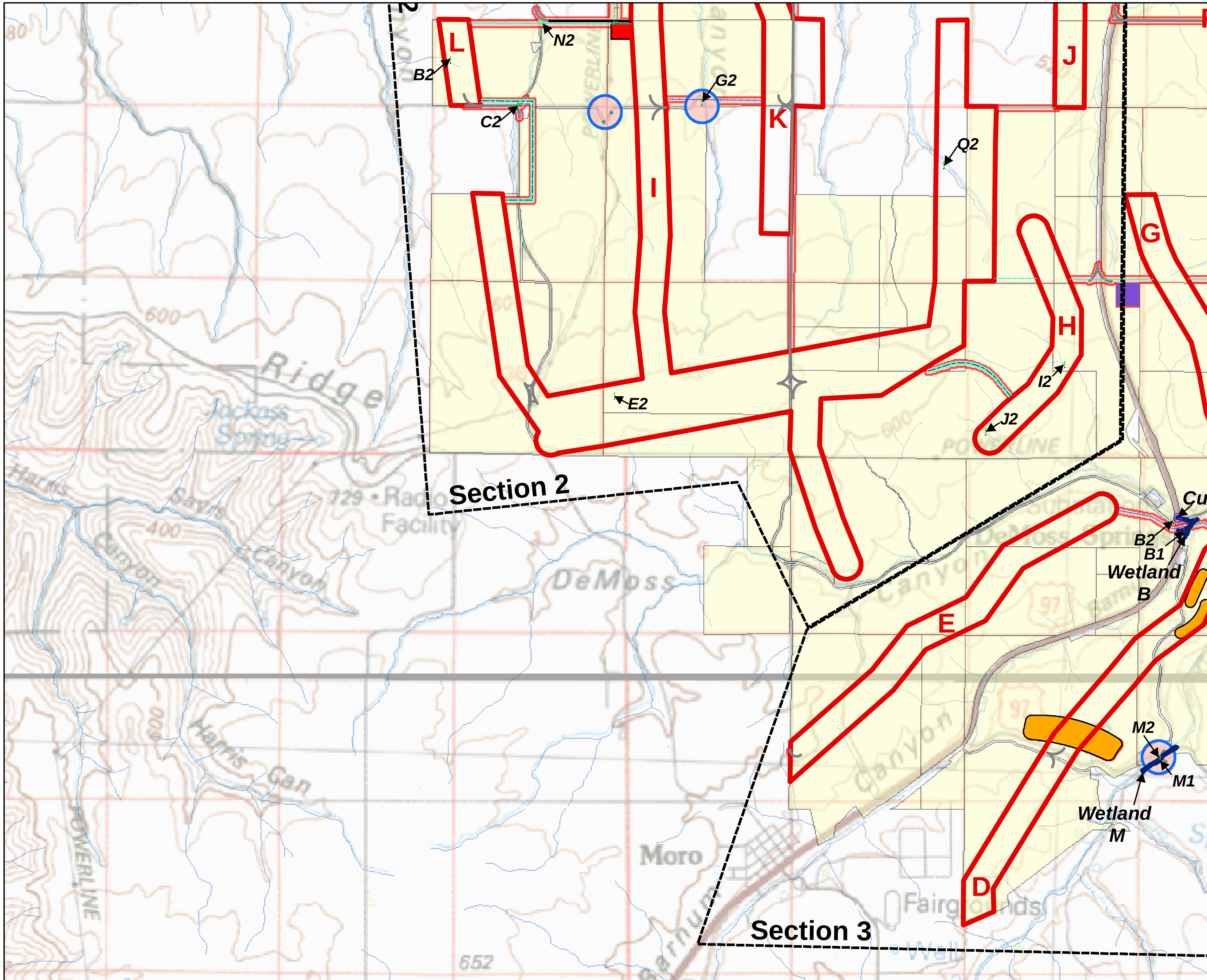


Golden Hills Wind Project

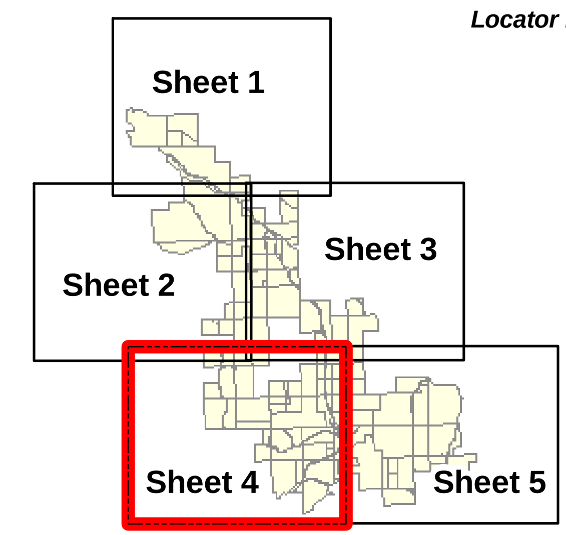
Figure J-3 (Sheet 4 of 5)

Data Plots and
Wetland Delineation

Legend

- Transmission Line
- Underground Collector
- Crane Path and Underground Collector
- Crane Path
- New Road
- Existing Road Improvement
- Waters of the U.S./State
- Bridge area
- Laydown
- OM Building
- Substation
- Survey Corridors 062907
- Connector Corridors 062907
- Lease Area 051107
- Wetland
- Bridge
- Culvert
- Wetland Data Plots
- Upland Data Plots

Locator Map



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Feet

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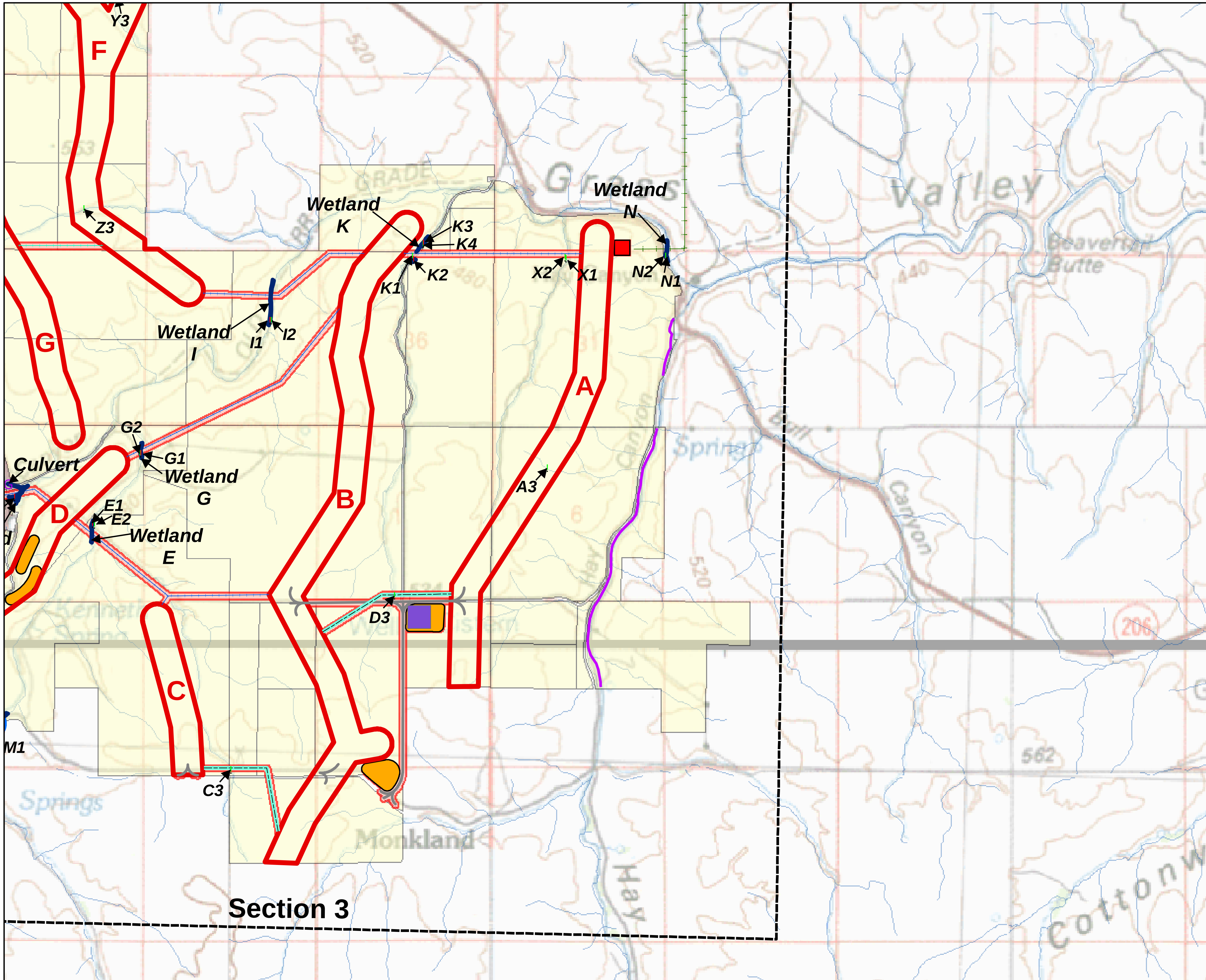


Golden Hills Wind Project

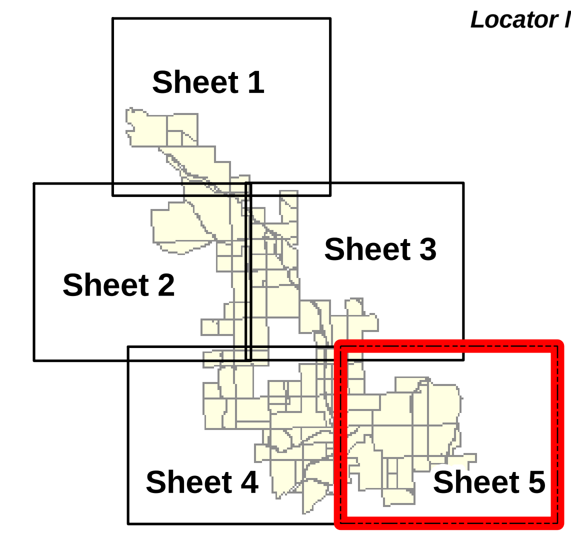
Figure J-3 (Sheet 5 of 5)

Data Plots and
Wetland Delineation

Legend

- Transmission Line
- Underground Collector
- Crane Path and Underground Collector
- Crane Path
- New Road
- Existing Road Improvement
- Waters of the U.S./State
- Bridge area
- Laydown
- OM Building
- Substation
- Survey Corridors 062907
- Connector Corridors 062907
- Lease Area 051107
- Wetland
- Bridge
- Culvert
- Wetland Data Plots
- Upland Data Plots

Locator Map



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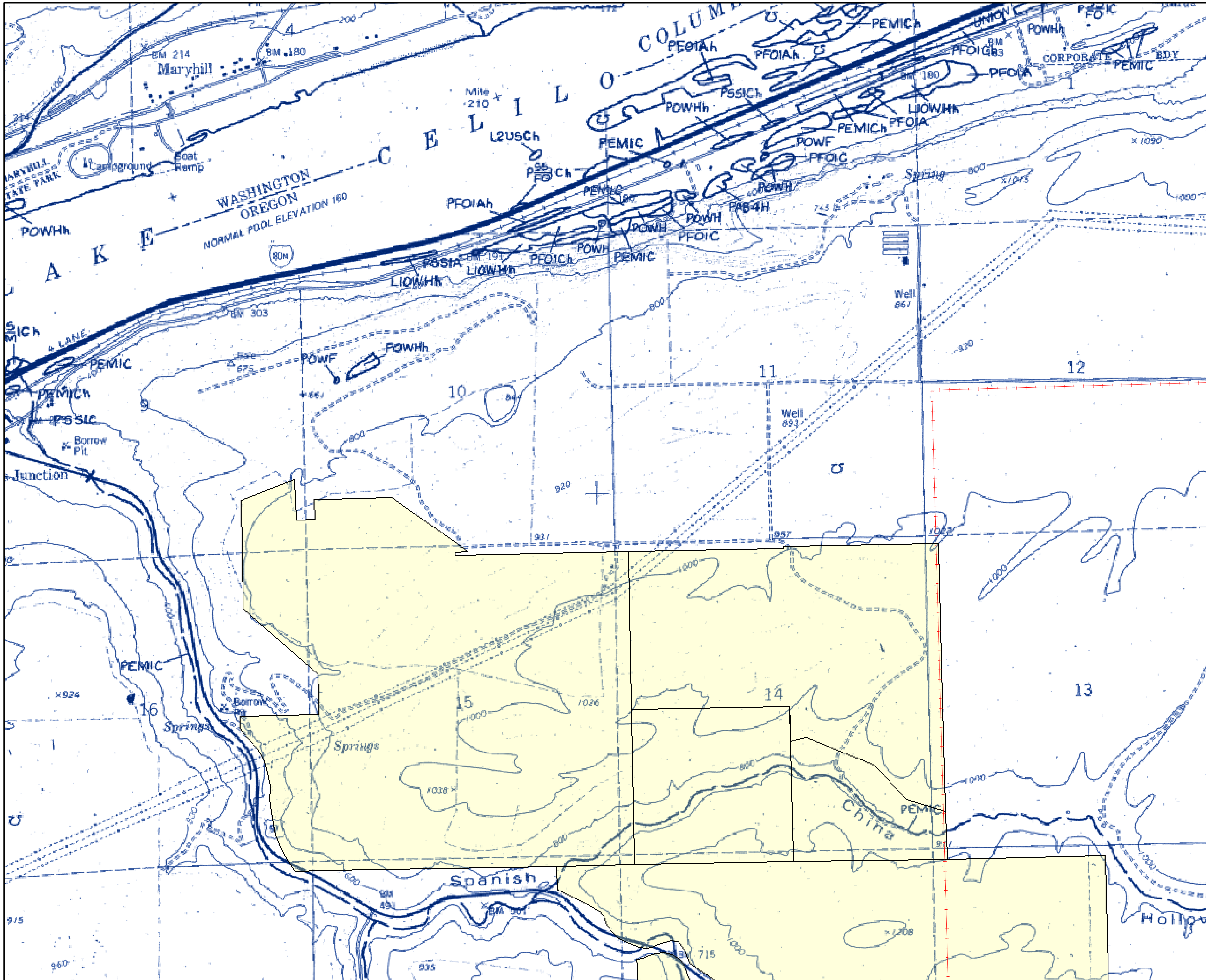


Golden Hills Wind Project

Figure J-4 (Sheet 1 of 14)

National Wetlands Inventory

Legend

Approximate Substation Locations

Transmission Line

Lease Area

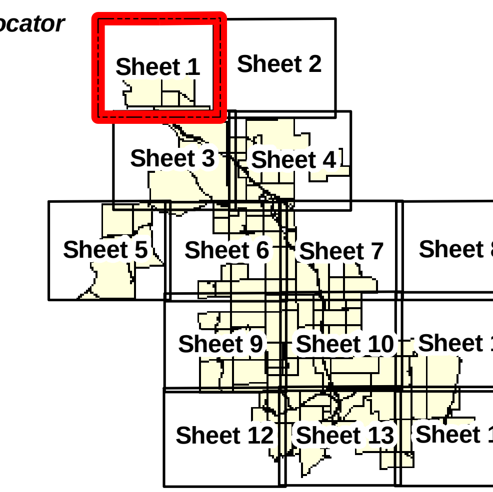
Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
PEM1Fh	Palustrine, emergent, persistent, semipermanently flooded, diked/impounded
PEMC	Palustrine, emergent, seasonally flooded
PFOA	Palustrine, forested, broad-leaved deciduous, seasonally flooded
PFO1C	Palustring, forested, temporarily flooded
POWFh	Palustrine, open water, semipermanently flooded, diked/impounded
POWHh	Palustrine, open water, Permanently flooded, diked/impounded
PUSAh	Palustrine, unconsolidated shore, temporarily flooded, diked/impounded
R4SBC	Riverine, intermittent, streambed, seasonally flooded
R4SBF	Riverine, intermittent, streambed, semipermanently flooded

0 0.5

Miles

Map Locator



Data Sources:

National Wetlands Inventories:

Biggs Junction, OR-WA 1981
Erskine, OR 1990
Esau Canyon, OR 1990
Harmony, OR 1990
Klondike, OR 1981
Locust Grove, OR 1981
McDonald, OR 1981
Moro, OR 1990
Quinton, OR-WA 1981
Rufus, OR-WA 1981
Wasco, OR 1981

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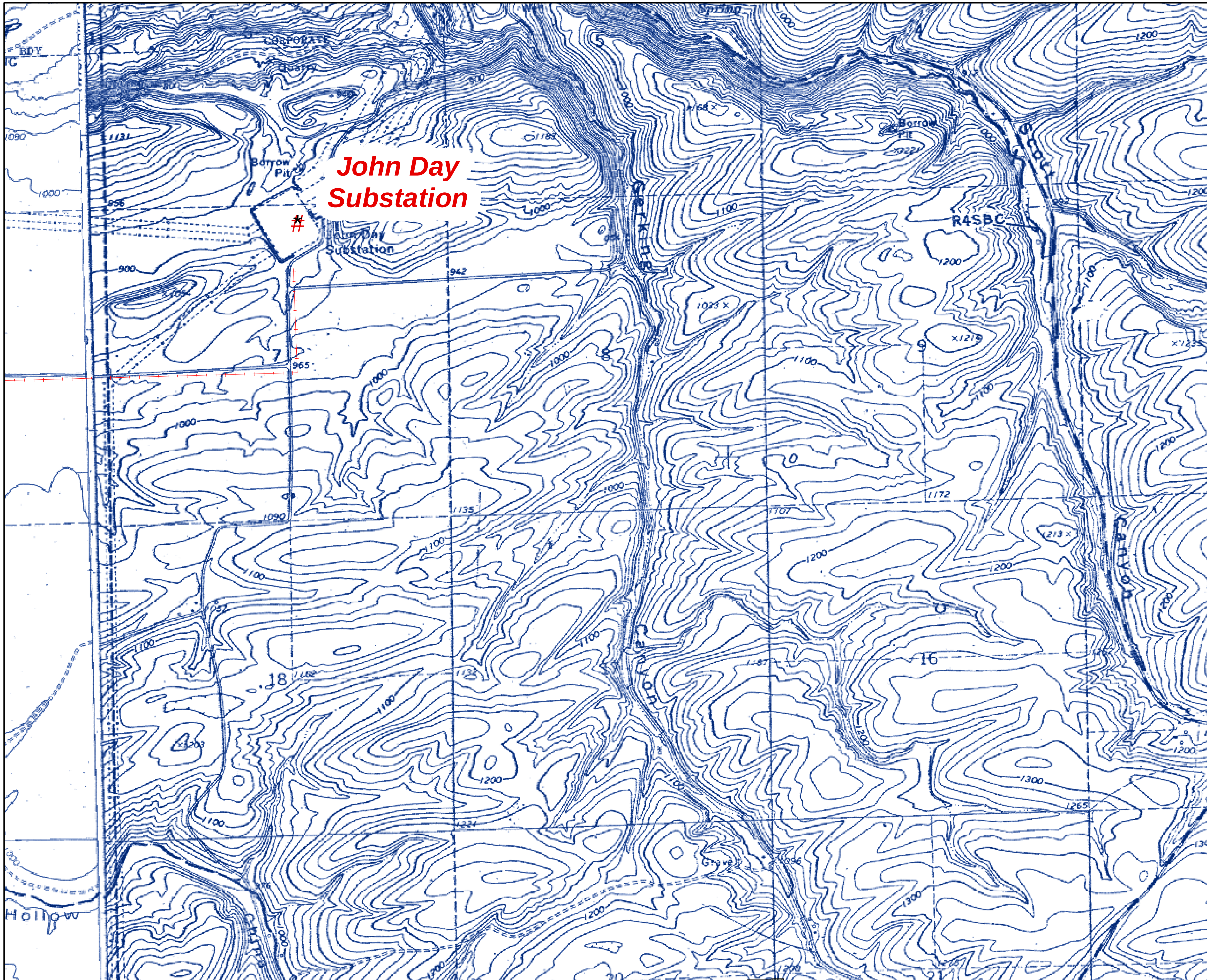

Golden Hills Wind Project

Figure J-4 (Sheet 2 of 14)

National Wetlands Inventory

Legend

- Approximate Substation Locations
- Transmission Line
- Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
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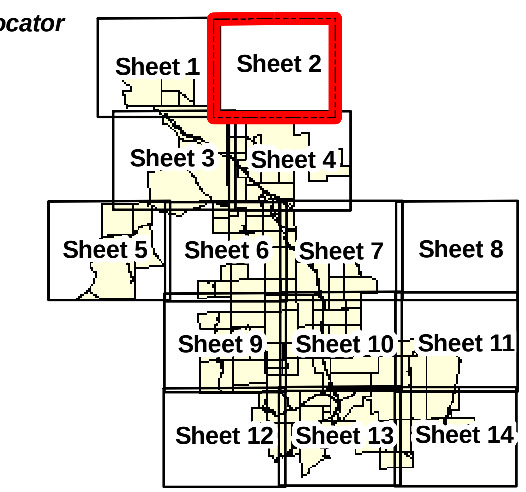
Miles

Map Locator



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- Klondike, OR 1981
- Locust Grove, OR 1981
- McDonald, OR 1981
- Moro, OR 1990
- Quinton, OR-WA 1981
- Rufus, OR-WA 1981
- Wasco, OR 1981

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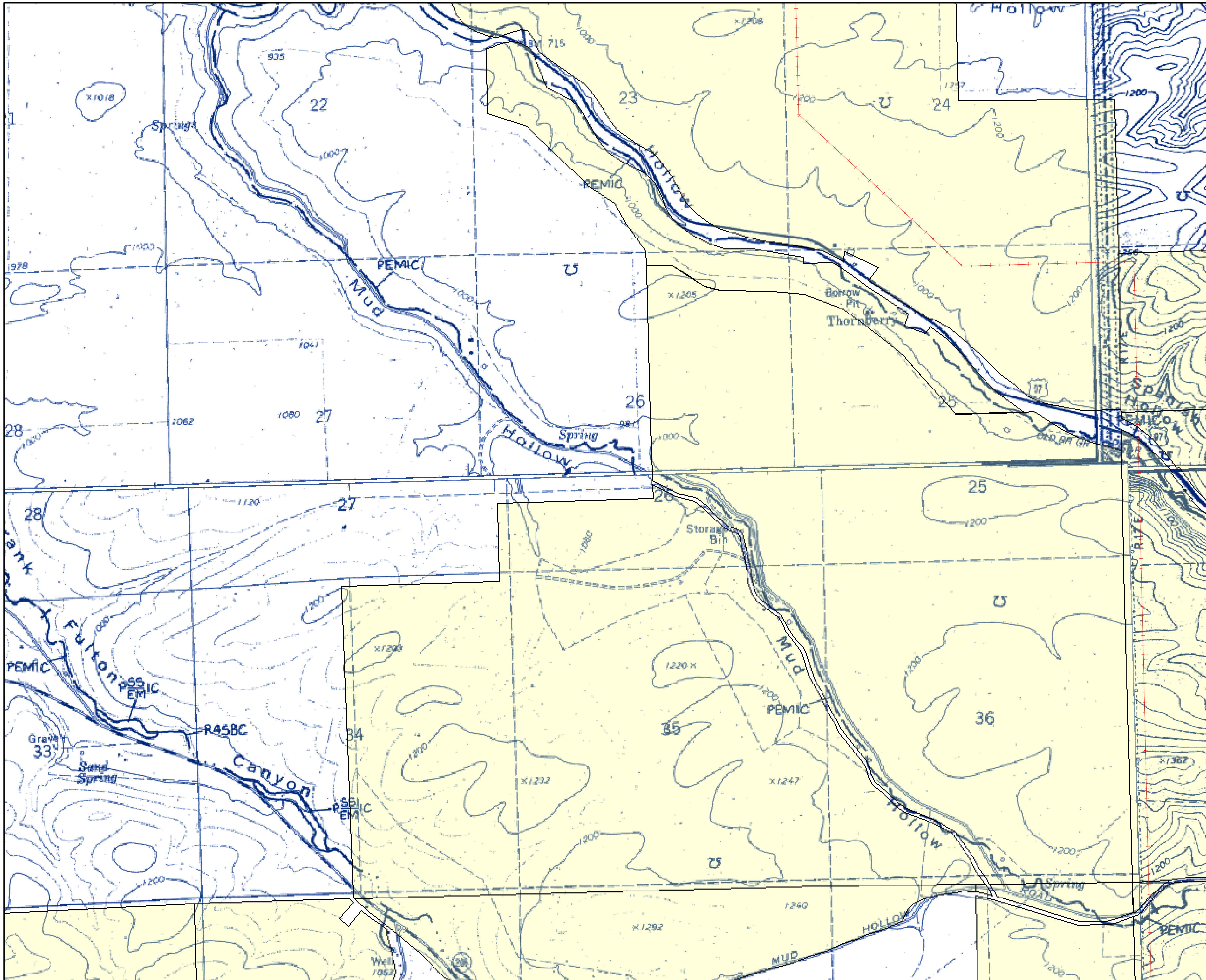

Golden Hills Wind Project

Figure J-4 (Sheet 3 of 14)

National Wetlands Inventory

Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

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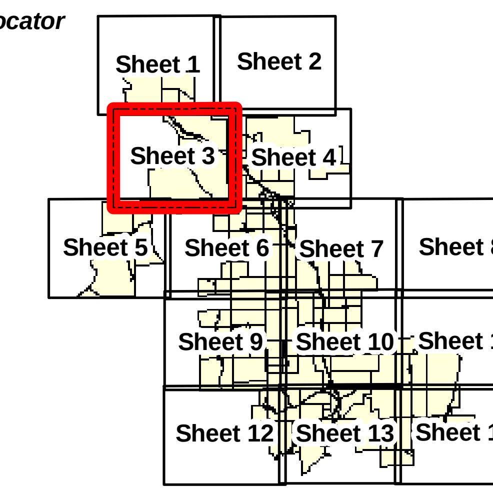
0 0.5

Miles

Map Locator



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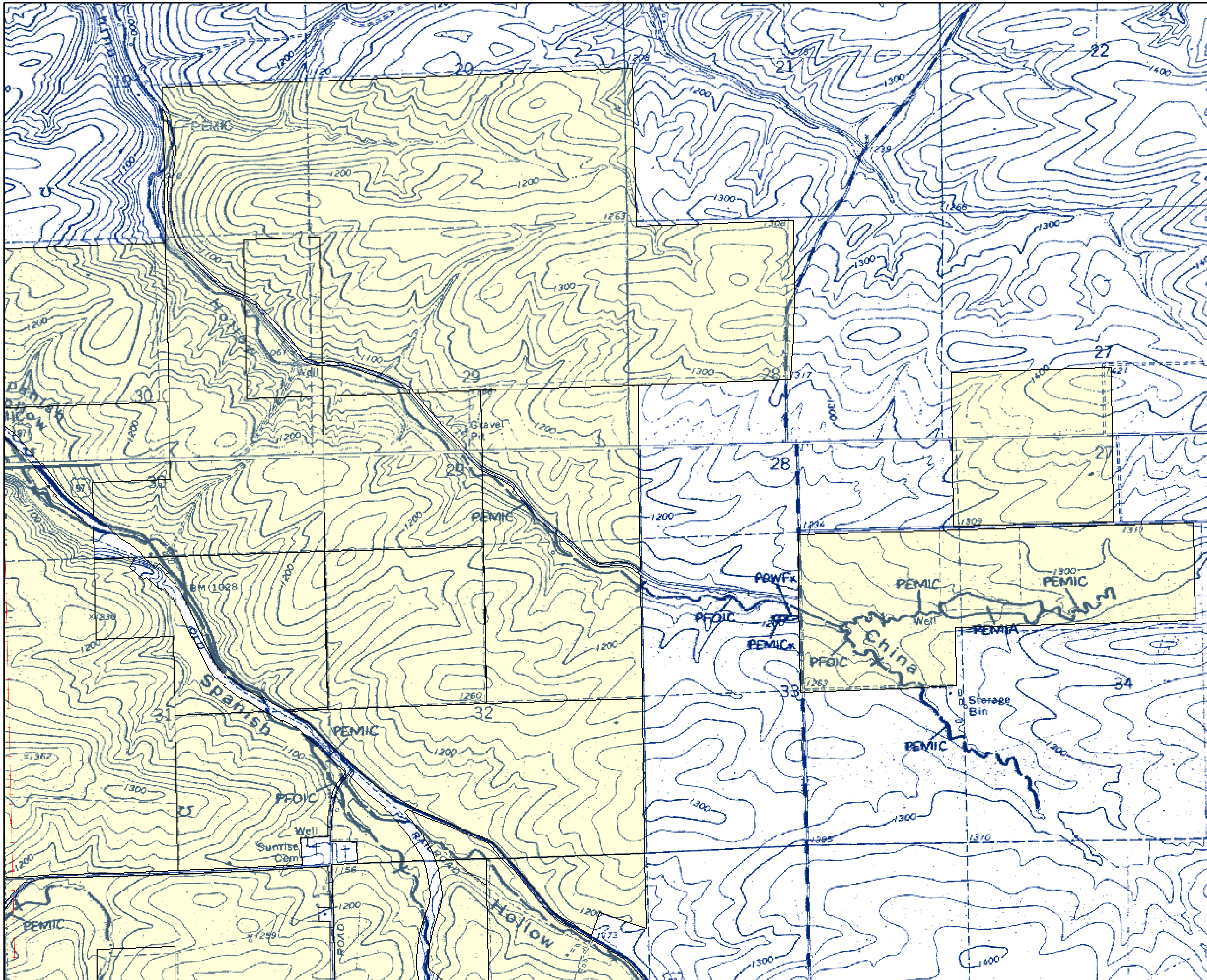

Golden Hills Wind Project

Figure J-4 (Sheet 4 of 14)

National Wetlands Inventory

Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

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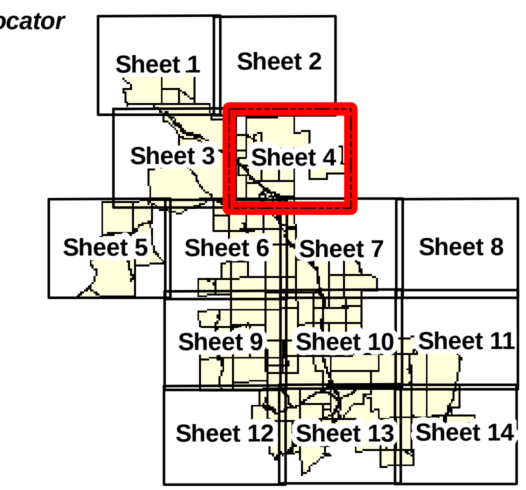
0 0.5

Miles

Map Locator



Data Sources:

National Wetlands Inventories:
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- Harmony, OR 1990
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- Locust Grove, OR 1981
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- Moro, OR 1990
- Quinton, OR-WA 1981
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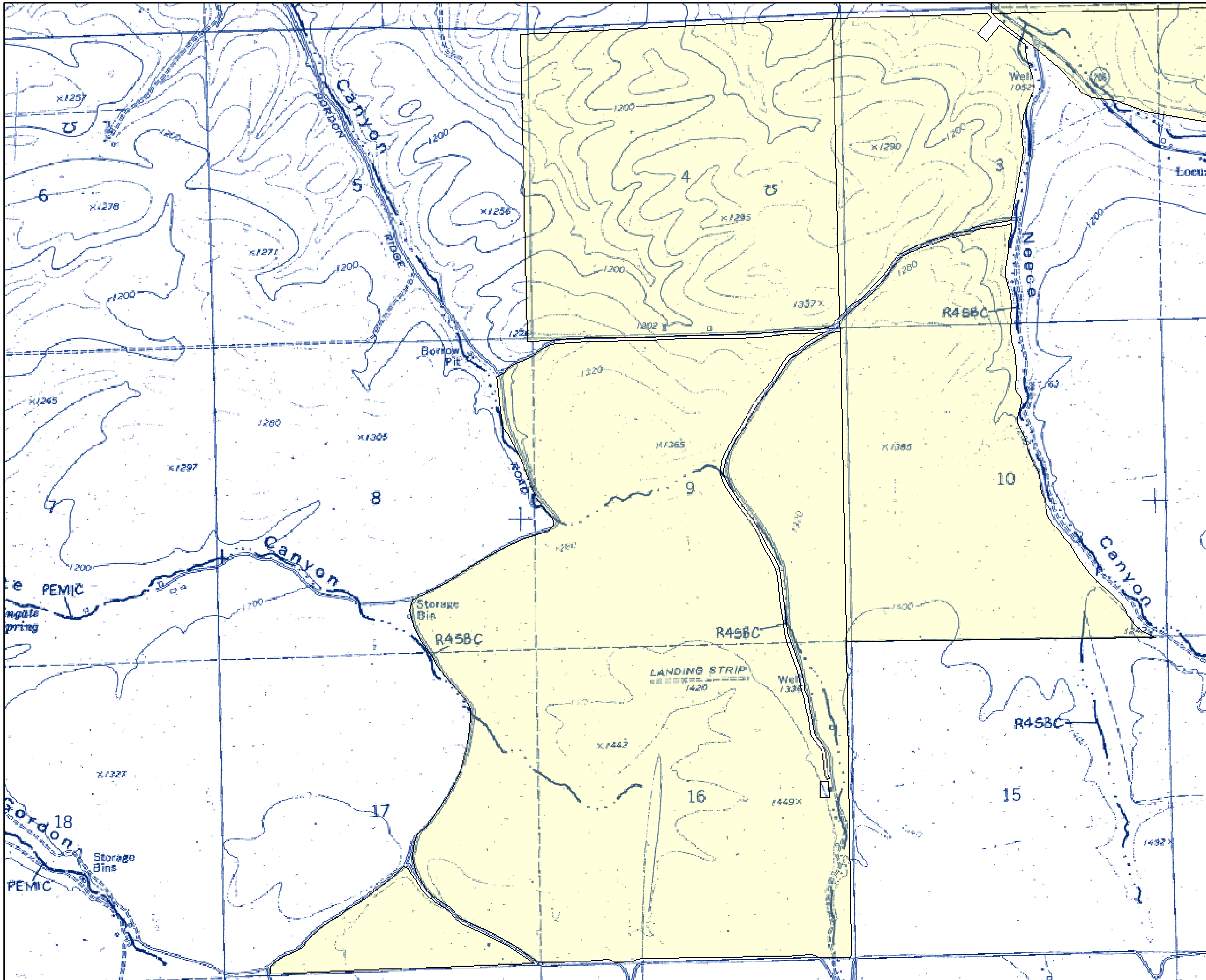
Golden Hills Wind Project

Figure J-4 (Sheet 5 of 14)

National Wetlands Inventory



Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
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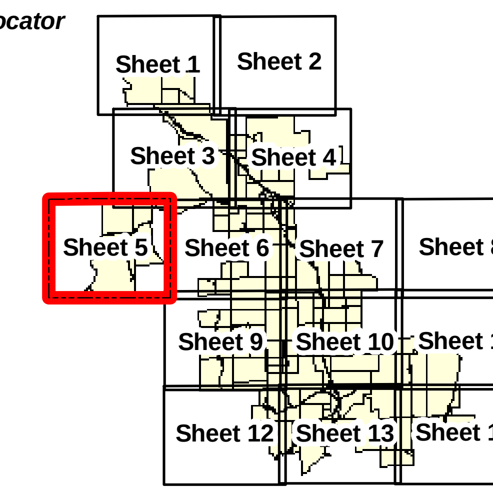
0 0.5

Miles

Map Locator



Data Sources:

National Wetlands Inventories:
- Biggs Junction, OR-WA 1981
- Erskine, OR 1990
- Esau Canyon, OR 1990
- Harmony, OR 1990
- Klondike, OR 1981
- Locust Grove, OR 1981
- McDonald, OR 1981
- Moro, OR 1990
- Quinton, OR-WA 1981
- Rufus, OR-WA 1981
- Wasco, OR 1981

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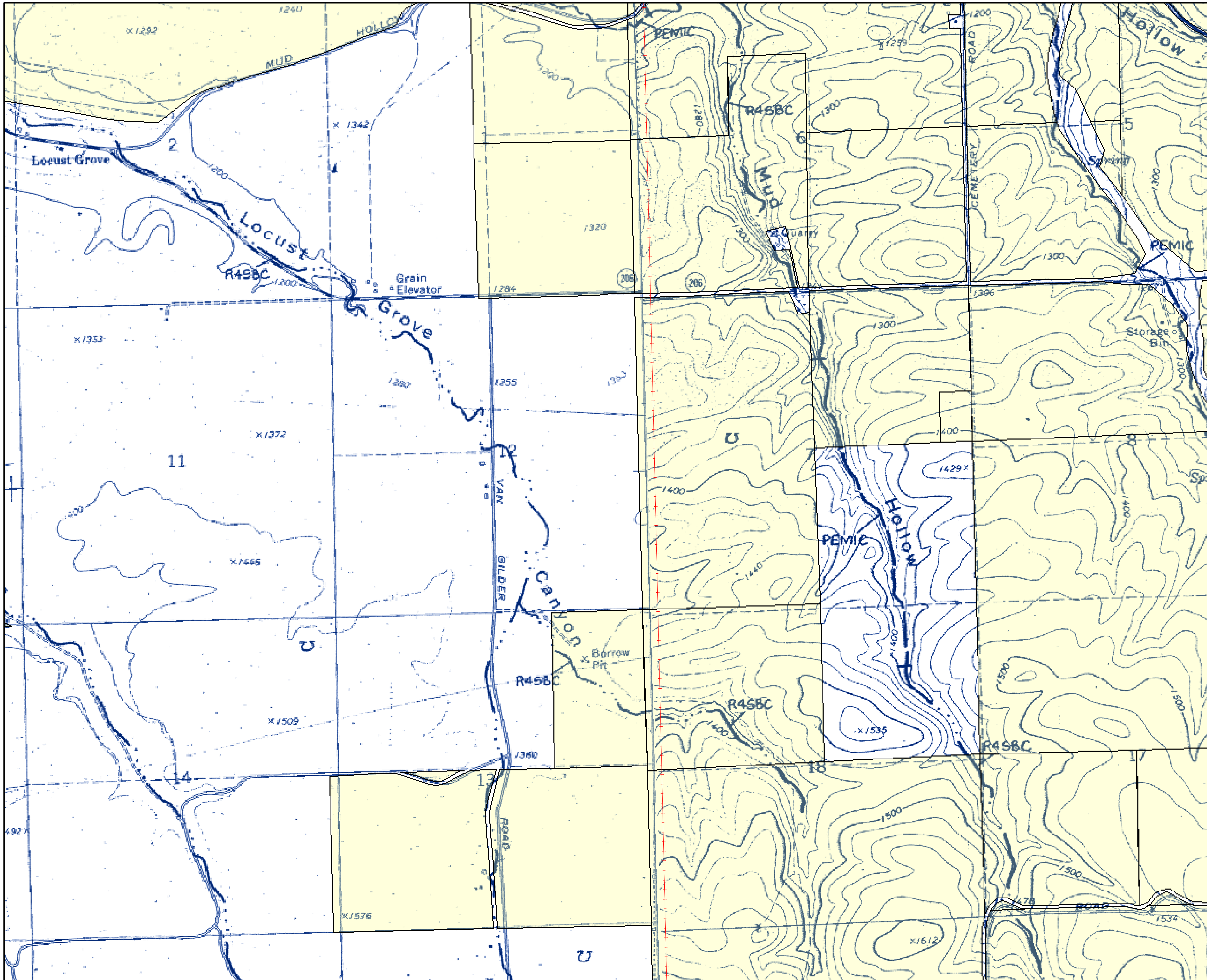

Golden Hills Wind Project

Figure J-4 (Sheet 6 of 14)

National Wetlands Inventory

Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
PEM1Fh	Palustrine, emergent, persistent, semipermanently flooded, diked/impounded
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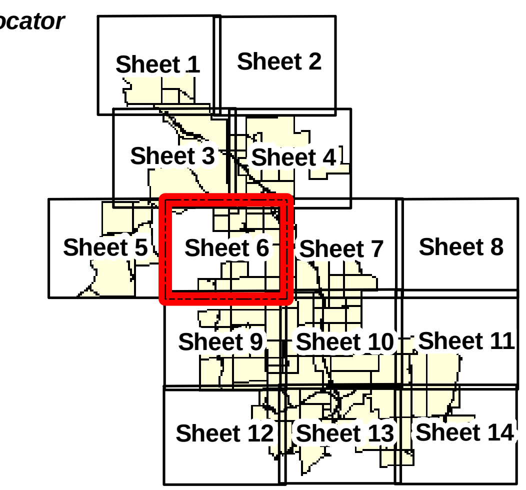
0 0.5
Miles

Map Locator



Data Sources:

National Wetlands Inventories:
- Biggs Junction, OR-WA 1981
- Erskine, OR 1990
- Esau Canyon, OR 1990
- Harmony, OR 1990
- Klondike, OR 1981
- Locust Grove, OR 1981
- McDonald, OR 1981
- Moro, OR 1990
- Quinton, OR-WA 1981
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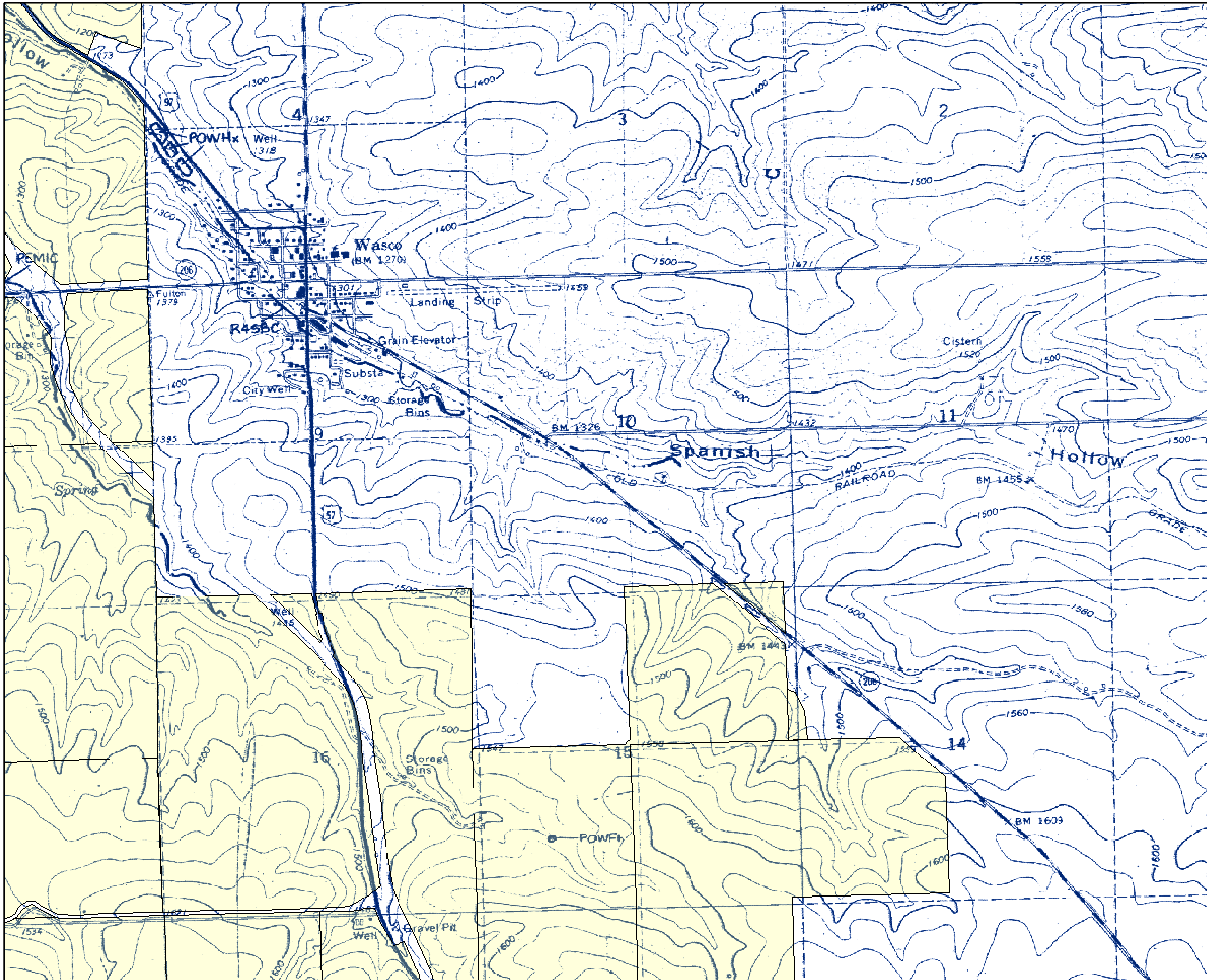

Golden Hills Wind Project

Figure J-4 (Sheet 7 of 14)

National Wetlands Inventory

Legend

- Approximate Substation Locations
- Transmission Line
- Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
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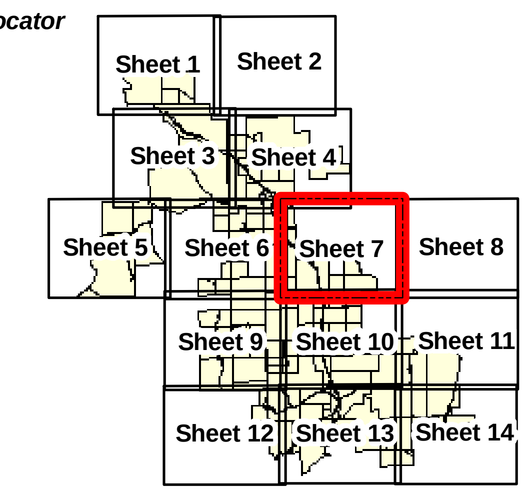
0 0.5
Miles

Map Locator



Data Sources:

National Wetlands Inventories:
- Biggs Junction, OR-WA 1981
- Erskine, OR 1990
- Esau Canyon, OR 1990
- Harmony, OR 1990
- Klondike, OR 1981
- Locust Grove, OR 1981
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- Quinton, OR-WA 1981
- Rufus, OR-WA 1981
- Wasco, OR 1981

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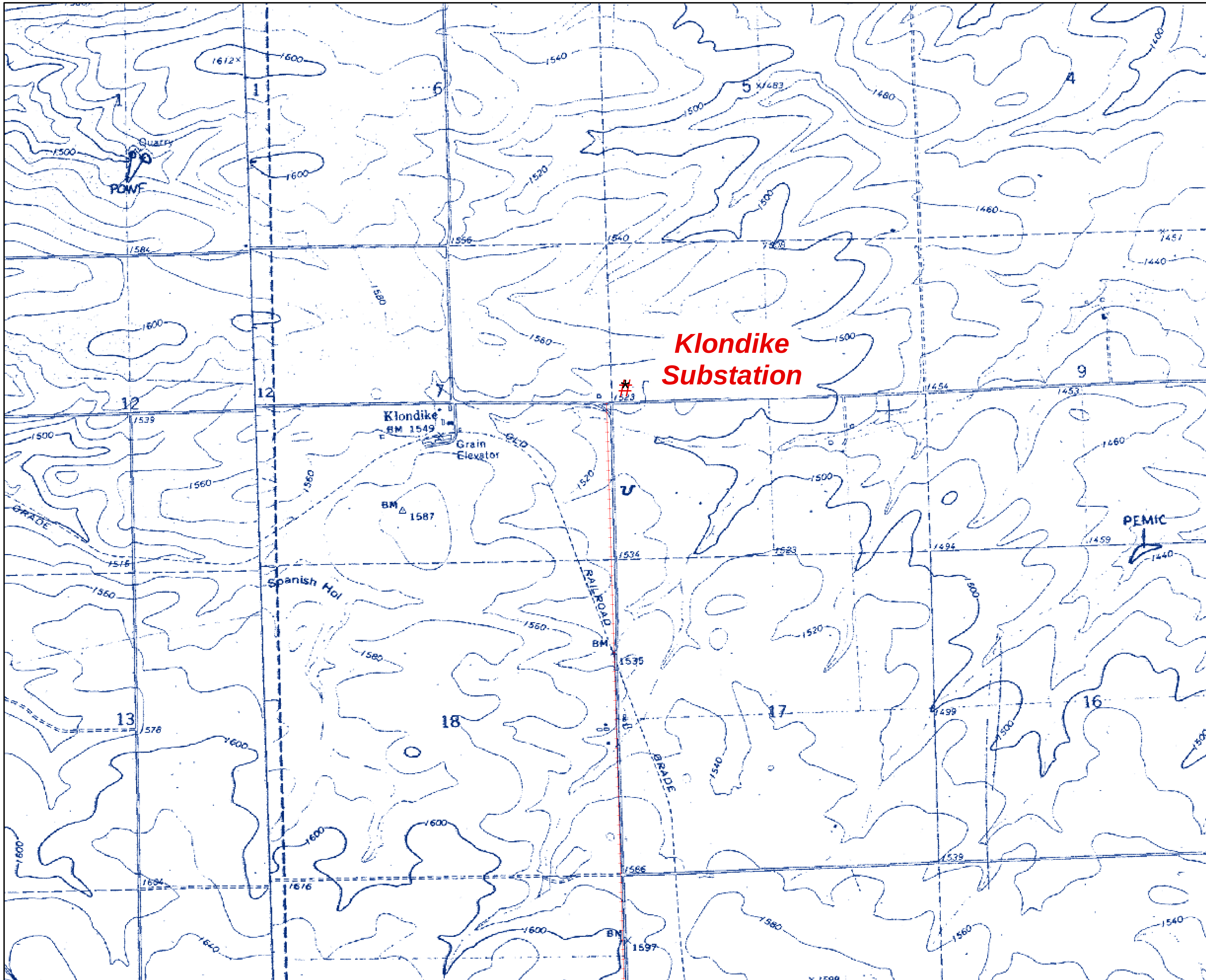

Golden Hills Wind Project

Figure J-4 (Sheet 8 of 14)

National Wetlands Inventory

Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
PEM1Fh	Palustrine, emergent, persistent, semipermanently flooded, diked/impounded
PEMC	Palustrine, emergent, seasonally flooded
PFOA	Palustrine, forested, broad-leaved deciduous, seasonally flooded
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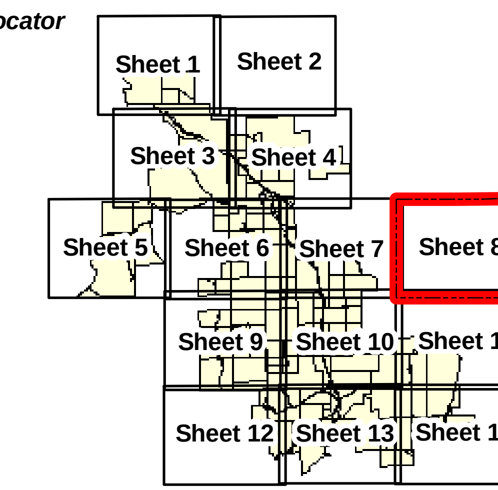
0 0.5

Miles

Map Locator



Data Sources:

National Wetlands Inventories:

- Biggs Junction, OR-WA 1981
- Erskine, OR 1990
- Esau Canyon, OR 1990
- Harmony, OR 1990
- Klondike, OR 1981
- Locust Grove, OR 1981
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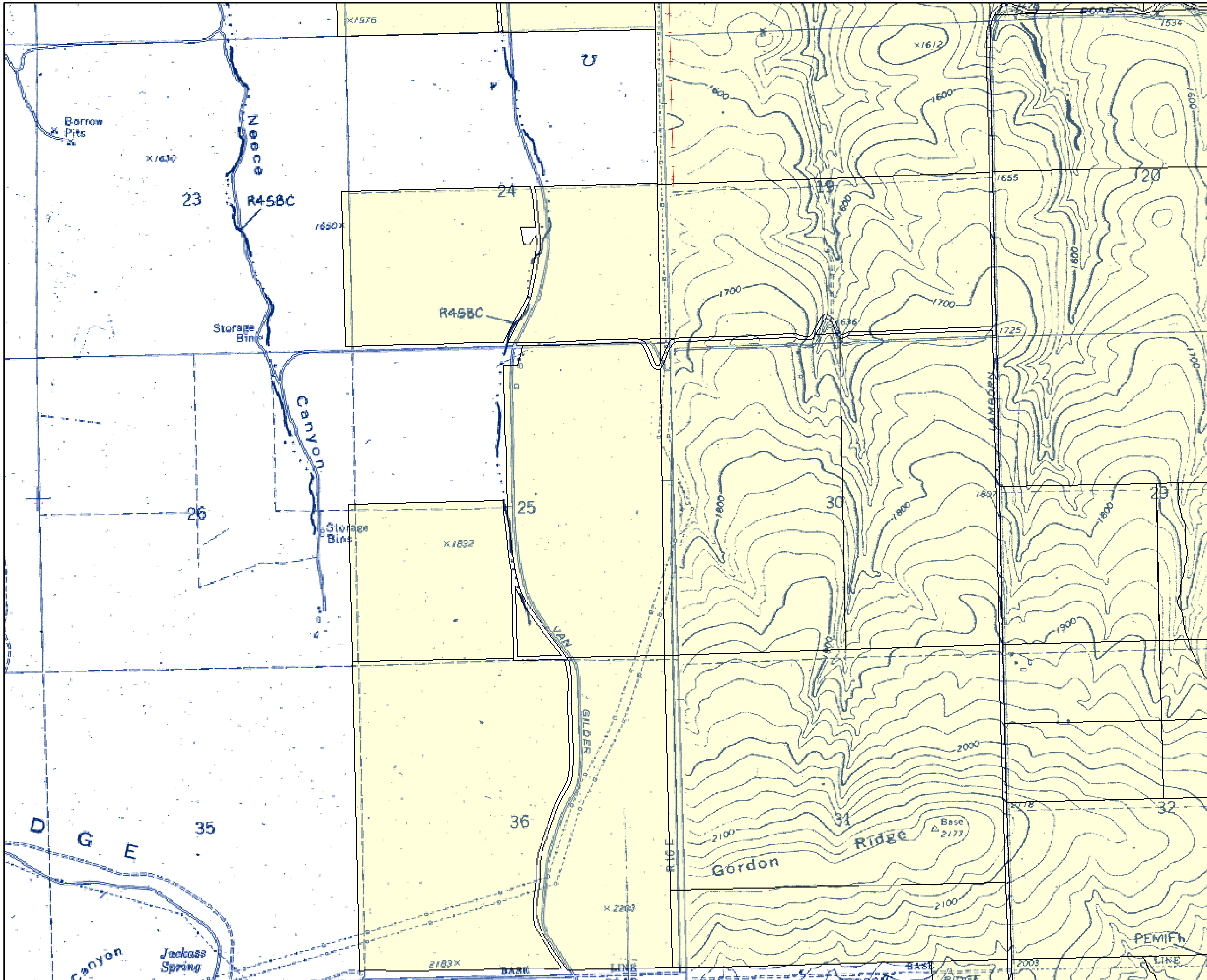


Golden Hills Wind Project

Figure J-4 (Sheet 9 of 14)

National Wetlands Inventory

Legend

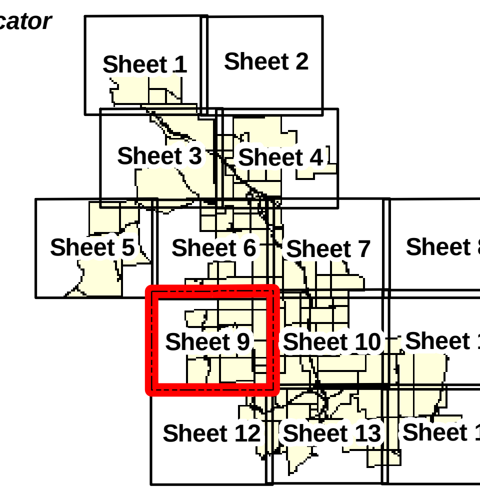
- Approximate Substation Locations
- Transmission Line
- Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
PEM1Fh	Palustrine, emergent, persistent, semipermanently flooded, diked/impounded
PEMC	Palustrine, emergent, seasonally flooded
PFOA	Palustrine, forested, broad-leaved deciduous, seasonally flooded
PFO1C	Palustring, forested, temporarily flooded
POWFh	Palustrine, open water, semipermanently flooded, diked/impounded
POWHh	Palustrine, open water, Permanently flooded, diked/impounded
PUSAh	Palustrine, unconsolidated shore, temporarily flooded, diked/impounded
R4SBC	Riverine, intermittent, streambed, seasonally flooded
R4SBF	Riverine, intermittent, streambed, semipermanently flooded

0 0.5
Miles

Map Locator



Data Sources:

National Wetlands Inventories:
- Biggs Junction, OR-WA 1981
- Erskine, OR 1990
- Esau Canyon, OR 1990
- Harmony, OR 1990
- Klondike, OR 1981
- Locust Grove, OR 1981
- McDonald, OR 1981
- Moro, OR 1990
- Quinton, OR-WA 1981
- Rufus, OR-WA 1981
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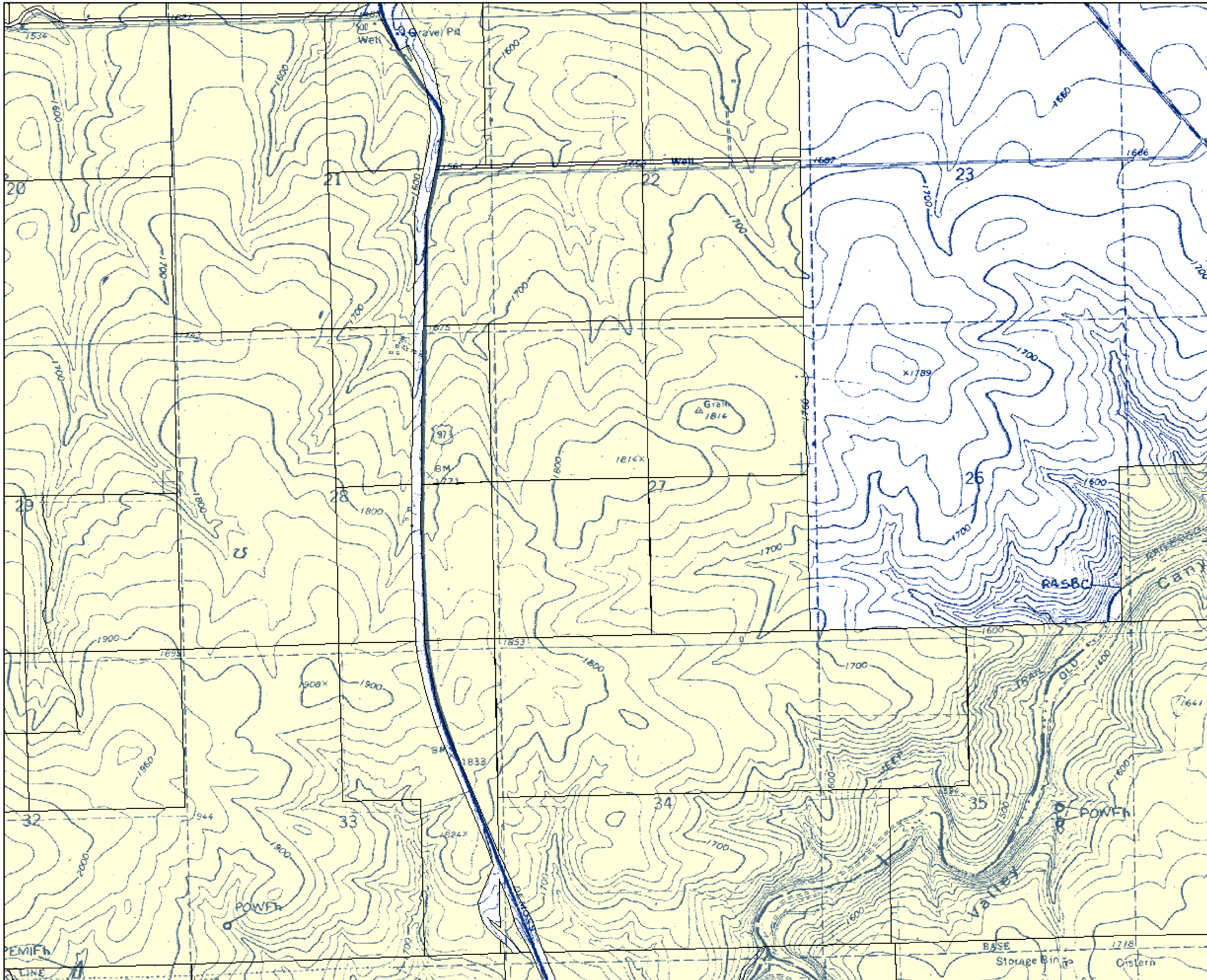

Golden Hills Wind Project

Figure J-4 (Sheet 10 of 14)

National Wetlands Inventory

Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
PEM1Fh	Palustrine, emergent, persistent, semipermanently flooded, diked/impounded
PEMC	Palustrine, emergent, seasonally flooded
PFOA	Palustrine, forested, broad-leaved deciduous, seasonally flooded
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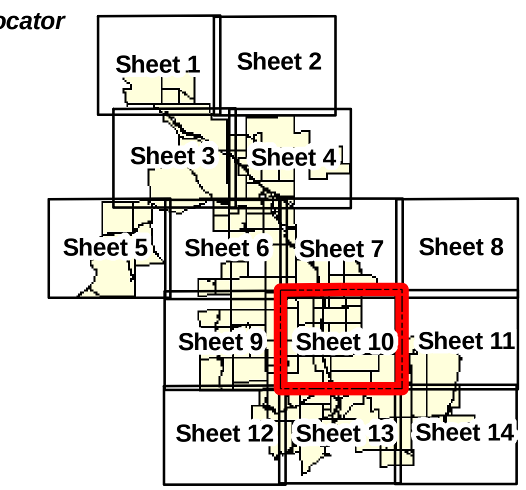
POWHh	Palustrine, open water, Permanently flooded, diked/impounded
PUSAh	Palustrine, unconsolidated shore, temporarily flooded, diked/impounded
R4SBC	Riverine, intermittent, streambed, seasonally flooded
R4SBF	Riverine, intermittent, streambed, semipermanently flooded

0 0.5

Miles

Map Locator



Data Sources:

National Wetlands Inventories:

- Biggs Junction, OR-WA 1981
- Erskine, OR 1990
- Esau Canyon, OR 1990
- Harmony, OR 1990
- Klondike, OR 1981
- Locust Grove, OR 1981
- McDonald, OR 1981
- Moro, OR 1990
- Quinton, OR-WA 1981
- Rufus, OR-WA 1981
- Wasco, OR 1981

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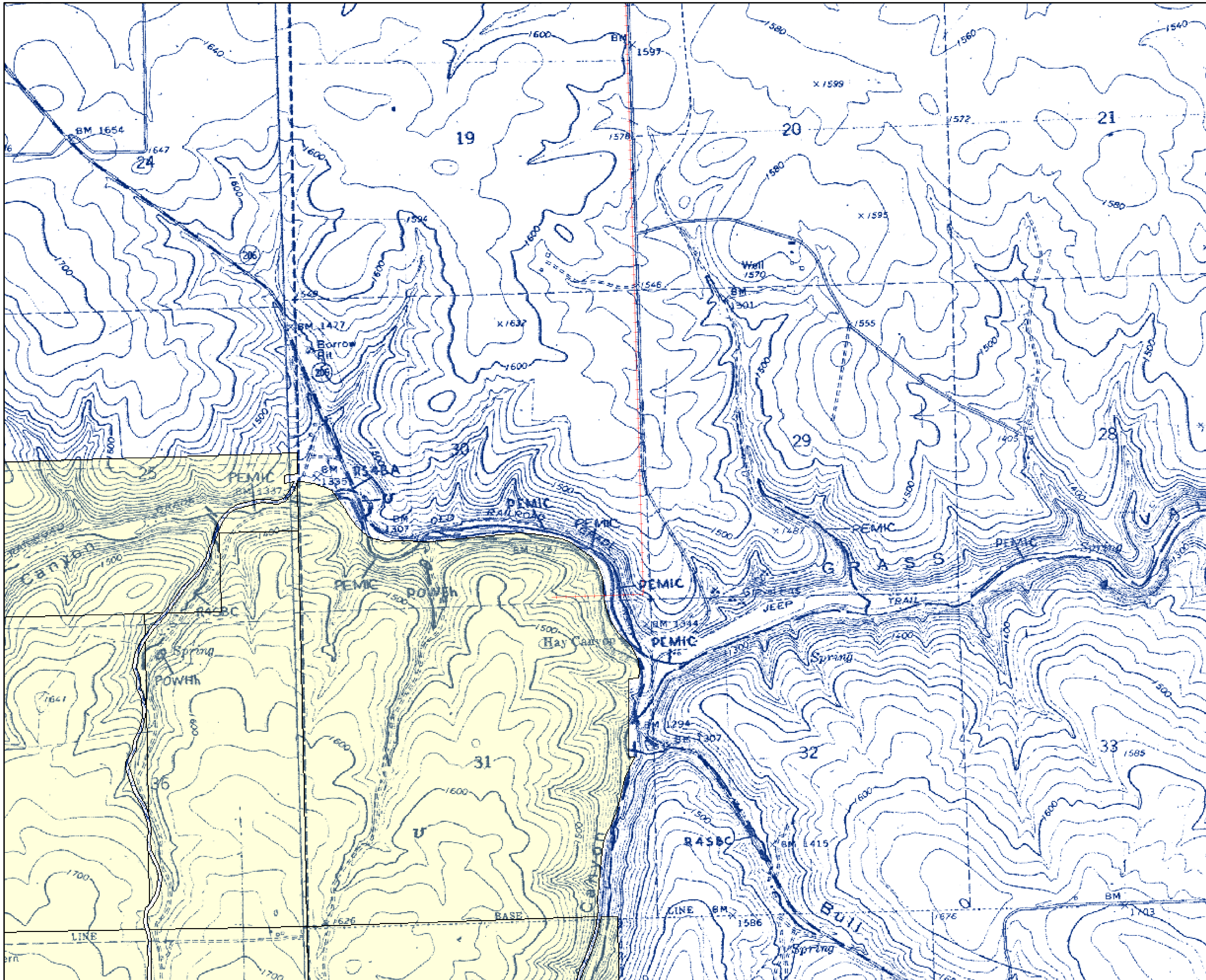

Golden Hills Wind Project

Figure J-4 (Sheet 11 of 14)

National Wetlands Inventory

Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
PEM1Fh	Palustrine, emergent, persistent, semipermanently flooded, diked/impounded
PEMC	Palustrine, emergent, seasonally flooded
PFOA	Palustrine, forested, broad-leaved deciduous, seasonally flooded
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POWHh	Palustrine, open water, Permanently flooded, diked/impounded
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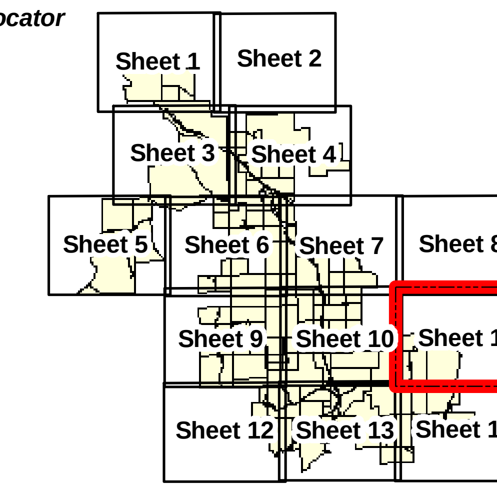
R4SBC	Riverine, intermittent, streambed, seasonally flooded
R4SBF	Riverine, intermittent, streambed, semipermanently flooded

0 0.5

Miles

Map Locator



Data Sources:

National Wetlands Inventories:

- Biggs Junction, OR-WA 1981
- Erskine, OR 1990
- Esau Canyon, OR 1990
- Harmony, OR 1990
- Klondike, OR 1981
- Locust Grove, OR 1981
- McDonald, OR 1981
- Moro, OR 1990
- Quinton, OR-WA 1981
- Rufus, OR-WA 1981
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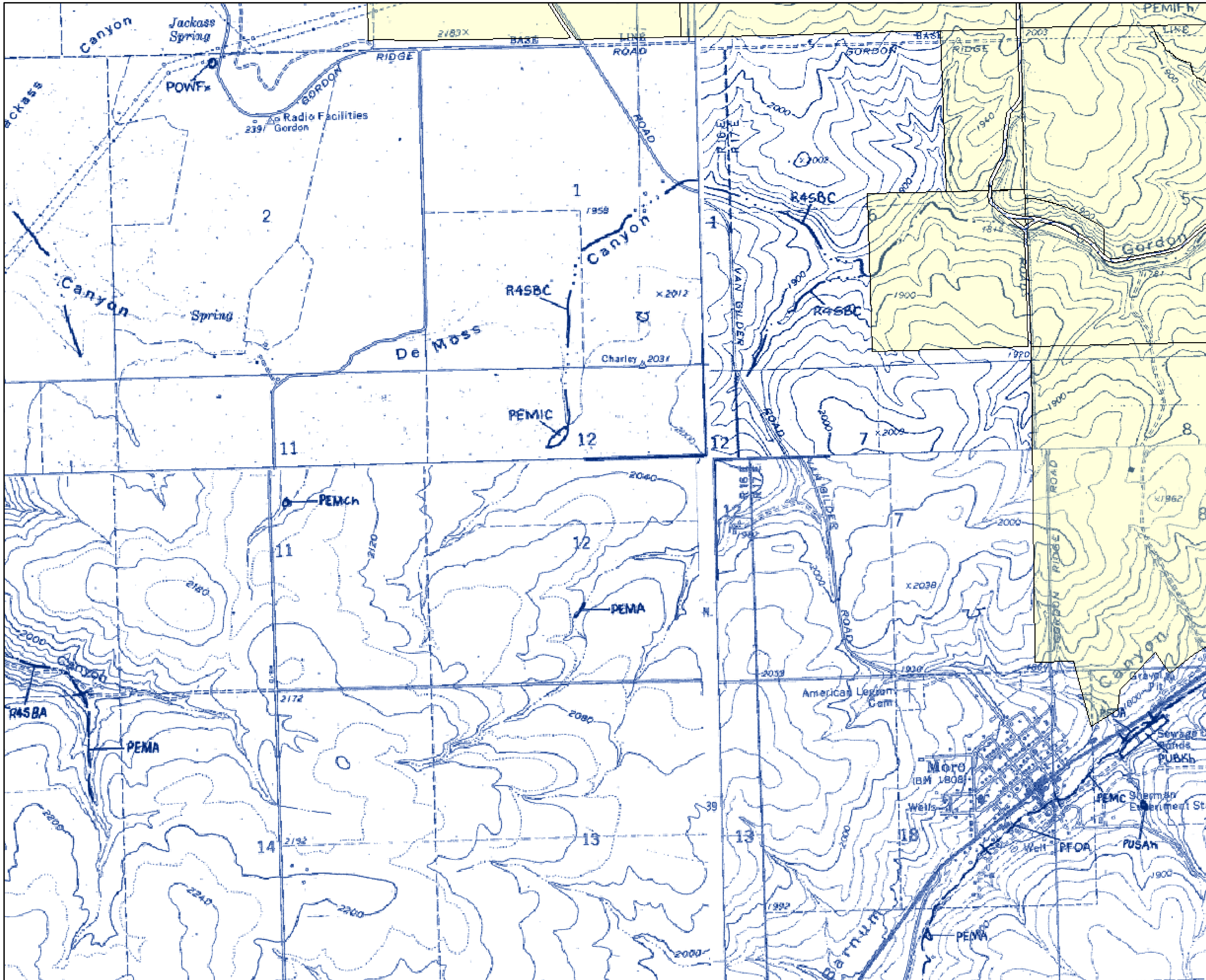
Golden Hills Wind Project

Figure J-4 (Sheet 12 of 14)

National Wetlands Inventory



Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
PEM1Fh	Palustrine, emergent, persistent, semipermanently flooded, diked/impounded
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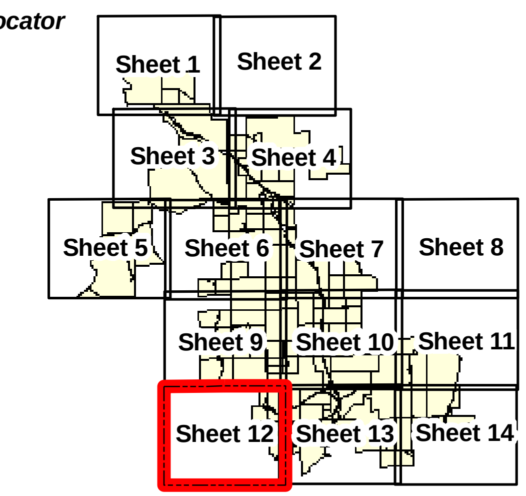
R4SBF	Riverine, intermittent, streambed, semipermanently flooded

0 0.5

Miles

Map Locator



Data Sources:

National Wetlands Inventories:
- Biggs Junction, OR-WA 1981
- Erskine, OR 1990
- Esau Canyon, OR 1990
- Harmony, OR 1990
- Klondike, OR 1981
- Locust Grove, OR 1981
- McDonald, OR 1981
- Moro, OR 1990
- Quinton, OR-WA 1981
- Rufus, OR-WA 1981
- Wasco, OR 1981

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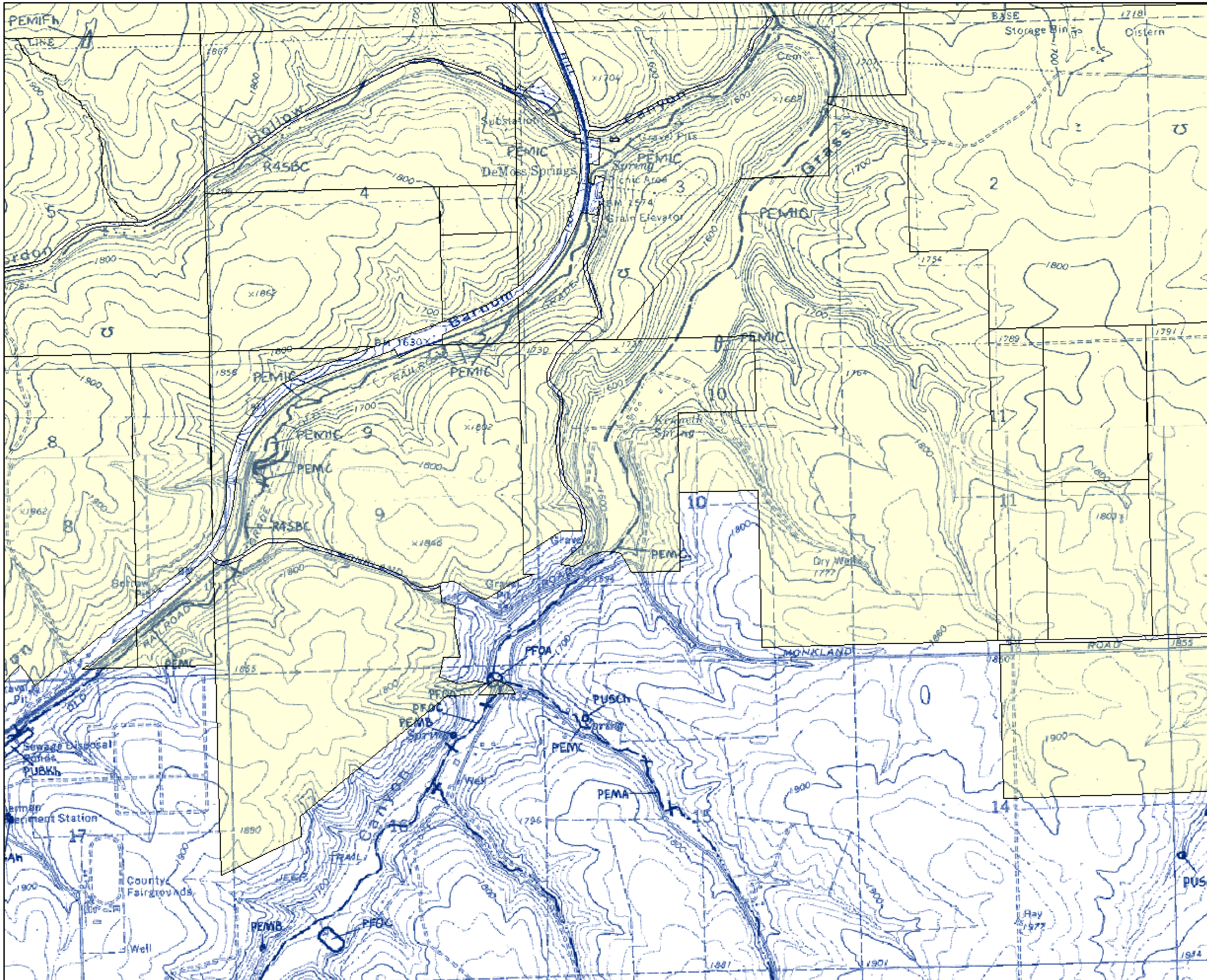

Golden Hills Wind Project

Figure J-4 (Sheet 13 of 14)

National Wetlands Inventory

Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
PEM1Fh	Palustrine, emergent, persistent, semipermanently flooded, diked/impounded
PEMC	Palustrine, emergent, seasonally flooded
PFOA	Palustrine, forested, broad-leaved deciduous, seasonally flooded
PFO1C	Palustring, forested, temporarily flooded
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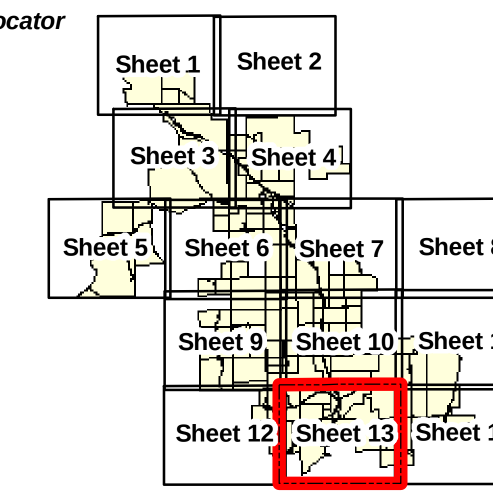
R4SBC	Riverine, intermittent, streambed, seasonally flooded
R4SBF	Riverine, intermittent, streambed, semipermanently flooded

0 0.5

Miles

Map Locator



Data Sources:

National Wetlands Inventories:

Biggs Junction, OR-WA 1981
Erskine, OR 1990
Esau Canyon, OR 1990
Harmony, OR 1990
Klondike, OR 1981
Locust Grove, OR 1981
McDonald, OR 1981
Moro, OR 1990
Quinton, OR-WA 1981
Rufus, OR-WA 1981
Wasco, OR 1981

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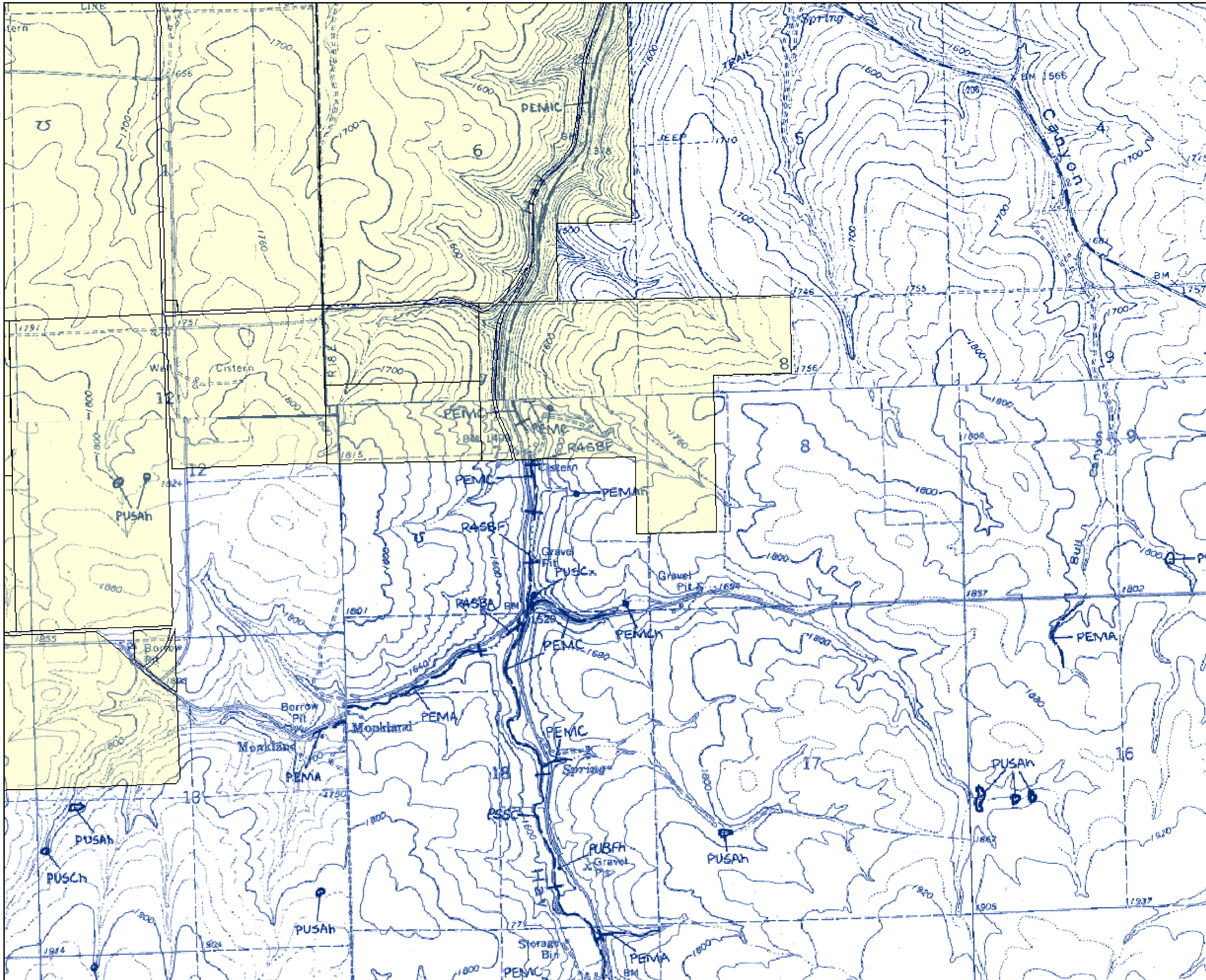

Golden Hills Wind Project

Figure J-4 (Sheet 14 of 14)

National Wetlands Inventory

Legend

Approximate Substation Locations

Transmission Line

Lease Area

Types of Wetlands

PEM1A	Palustrine, emergent, persistent, temporarily flooded
PEM1C	Palustrine, emergent, persistent, seasonally flooded
PEM1Fh	Palustrine, emergent, persistent, semipermanently flooded, diked/impounded
PEMC	Palustrine, emergent, seasonally flooded
PFOA	Palustrine, forested, broad-leaved deciduous, seasonally flooded
PFO1C	Palustring, forested, temporarily flooded
POWFh	Palustrine, open water, semipermanently flooded, diked/impounded
POWHh	Palustrine, open water, Permanently flooded, diked/impounded
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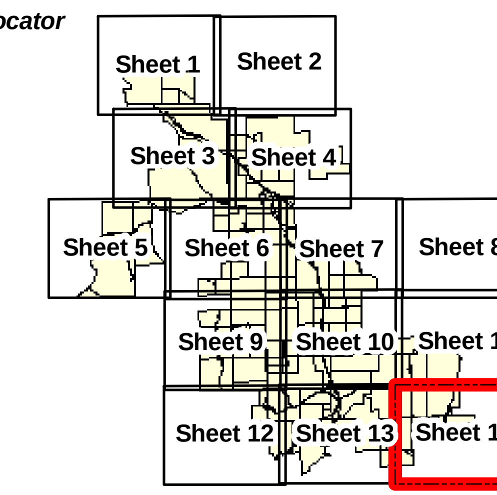
R4SBC	Riverine, intermittent, streambed, seasonally flooded
R4SBF	Riverine, intermittent, streambed, semipermanently flooded

0 0.5

Miles

Map Locator



Data Sources:

National Wetlands Inventories:

- Biggs Junction, OR-WA 1981
- Erskine, OR 1990
- Esau Canyon, OR 1990
- Harmony, OR 1990
- Klondike, OR 1981
- Locust Grove, OR 1981
- McDonald, OR 1981
- Moro, OR 1990
- Quinton, OR-WA 1981
- Rufus, OR-WA 1981
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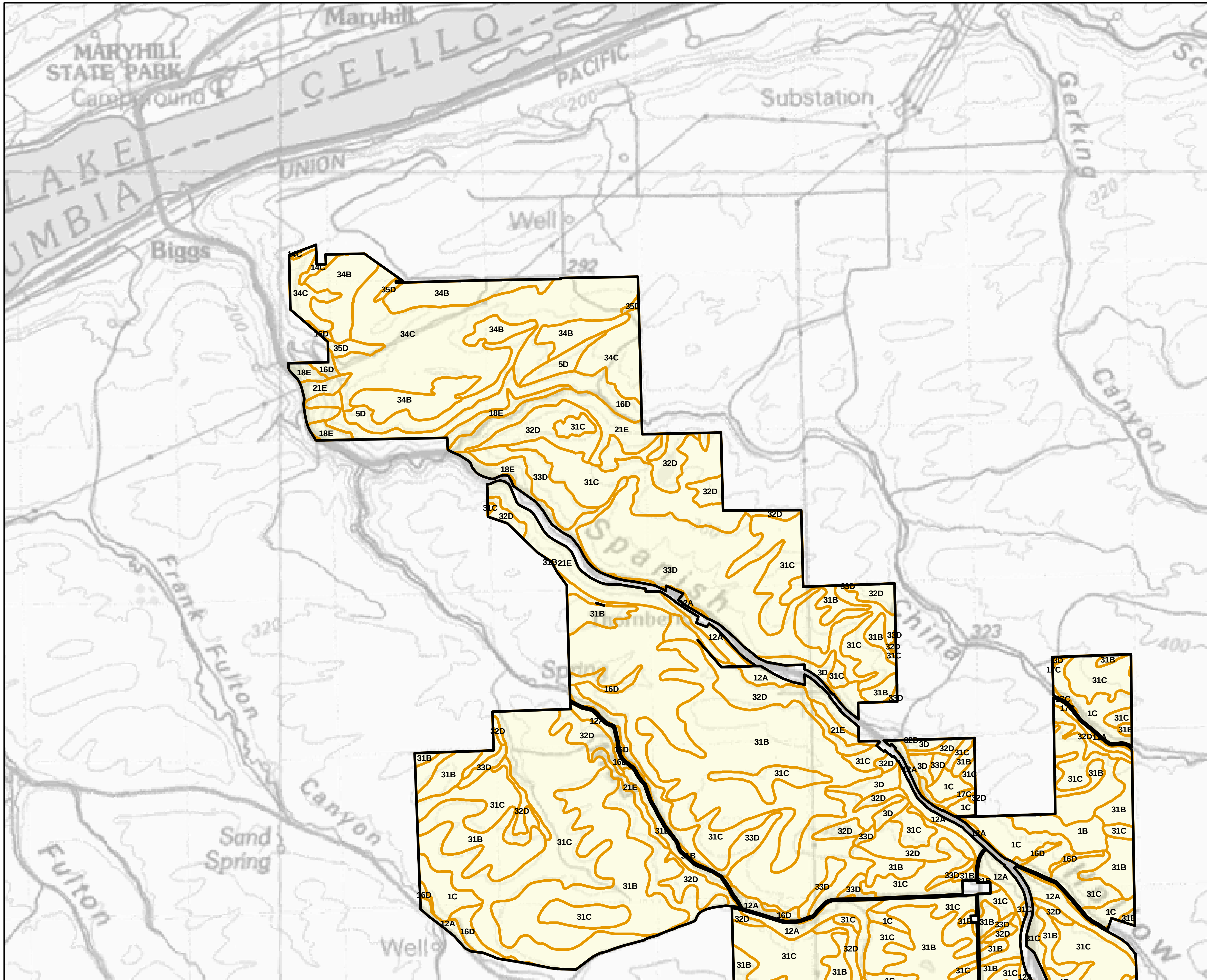


Golden Hills Wind Project

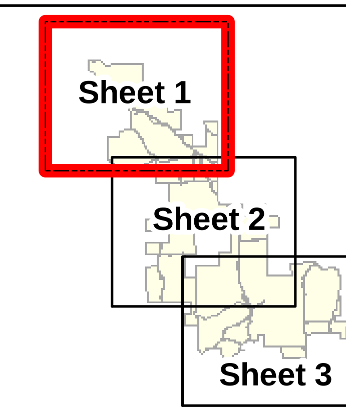
Figure J-5 (Sheet 1 of 3)

Soil Survey

Legend

- Lease Area
- Soil Series

1B Anderly silt loam, 1 to 7 percent slopes
1C Anderly silt loam, 7 to 15 percent slopes
2D Anderly silt loam, 15 to 35 percent north slopes
3D Anderly silt loam, 15 to 35 percent south slopes
5D Anders very fine sandy loam, 15 to 35 percent slopes
11A Endersby fine sandy loam, 0 to 3 percent slopes
12A Endersby-Hermiston complex, 0 to 3 percent slopes
14C Kuhl very stony very fine sandy loam, 3 to 20 percent slopes
15D Kuhl-Rock outcrop complex, 20 to 40 percent north slopes
16D Lickskillet very stony loam, 7 to 40 percent south slopes
17C Lickskillet-Bakeoven complex, 2 to 20 percent slopes
18E Lickskillet-Rock outcrop complex, 40 to 70 percent south slopes
21E Nansene-Rock outcrop complex, 35 to 70 percent north slopes
25A Riverwash
27E Rock outcrop-Rubble land-Lickskillet complex, 50 to 80 percent south slopes
31B Walla Walla silt loam, 1 to 7 percent slopes
31C Walla Walla silt loam, 7 to 15 percent slopes
32D Walla Walla silt loam, 15 to 35 percent north slopes
33D Walla Walla silt loam, 15 to 35 percent south slopes
34B Wato very fine sandy loam, 3 to 7 percent slopes
34C Wato very fine sandy loam, 7 to 15 percent slopes
35D Wato very fine sandy loam, 15 to 35 percent north slopes



Data Sources:

30x60 USGS Quadrangles:
Condon, OR 1981
Goldendale, OR-WA 1980

Natural Resources Conservation Service
(Soil Survey Sherman County)

0 0.25 0.5 0.75 1
Miles

Map Document: (P:\B\BPOC00000005\0600INFO\GS\arcmap\Fig_J-5_Soils.mxd)
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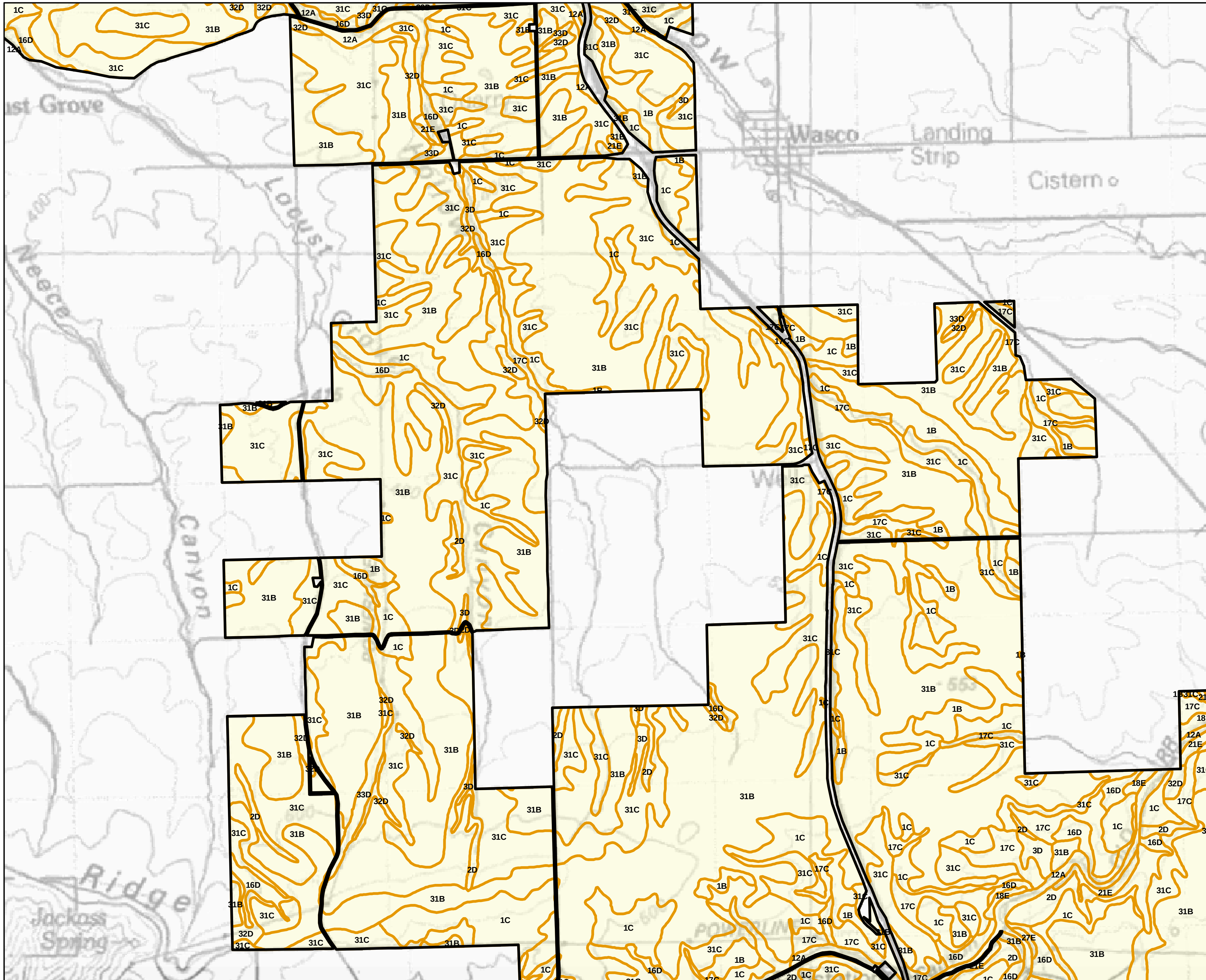


Golden Hills Wind Project

Figure J-5 (Sheet 2 of 3)

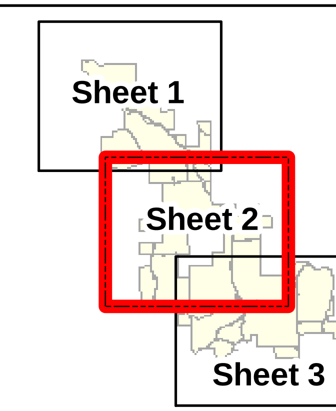
Soil Survey

Legend

Lease Area

Soil Series

1B Anderly silt loam, 1 to 7 percent slopes
1C Anderly silt loam, 7 to 15 percent slopes
2D Anderly silt loam, 15 to 35 percent north slopes
3D Anderly silt loam, 15 to 35 percent south slopes
5D Anders very fine sandy loam, 15 to 35 percent slopes
11A Endersby fine sandy loam, 0 to 3 percent slopes
12A Endersby-Hermiston complex, 0 to 3 percent slopes
14C Kuhl very stony very fine sandy loam, 3 to 20 percent slopes
15D Kuhl-Rock outcrop complex, 20 to 40 percent north slopes
16D Lickskillet very stony loam, 7 to 40 percent south slopes
17C Lickskillet-Bakeoven complex, 2 to 20 percent slopes
18E Lickskillet-Rock outcrop complex, 40 to 70 percent south slopes
21E Nansene-Rock outcrop complex, 35 to 70 percent north slopes
25A Riverwash
27E Rock outcrop-Rubble land-Lickskillet complex, 50 to 80 percent south slopes
31B Walla Walla silt loam, 1 to 7 percent slopes
31C Walla Walla silt loam, 7 to 15 percent slopes
32D Walla Walla silt loam, 15 to 35 percent north slopes
33D Walla Walla silt loam, 15 to 35 percent south slopes
34B Wato very fine sandy loam, 3 to 7 percent slopes
34C Wato very fine sandy loam, 7 to 15 percent slopes
35D Wato very fine sandy loam, 15 to 35 percent north slopes



Data Sources:

30x60 USGS Quadrangles:
Condon, OR 1981
Goldendale, OR-WA 1980

Natural Resources Conservation Service
(Soil Survey Sherman County)

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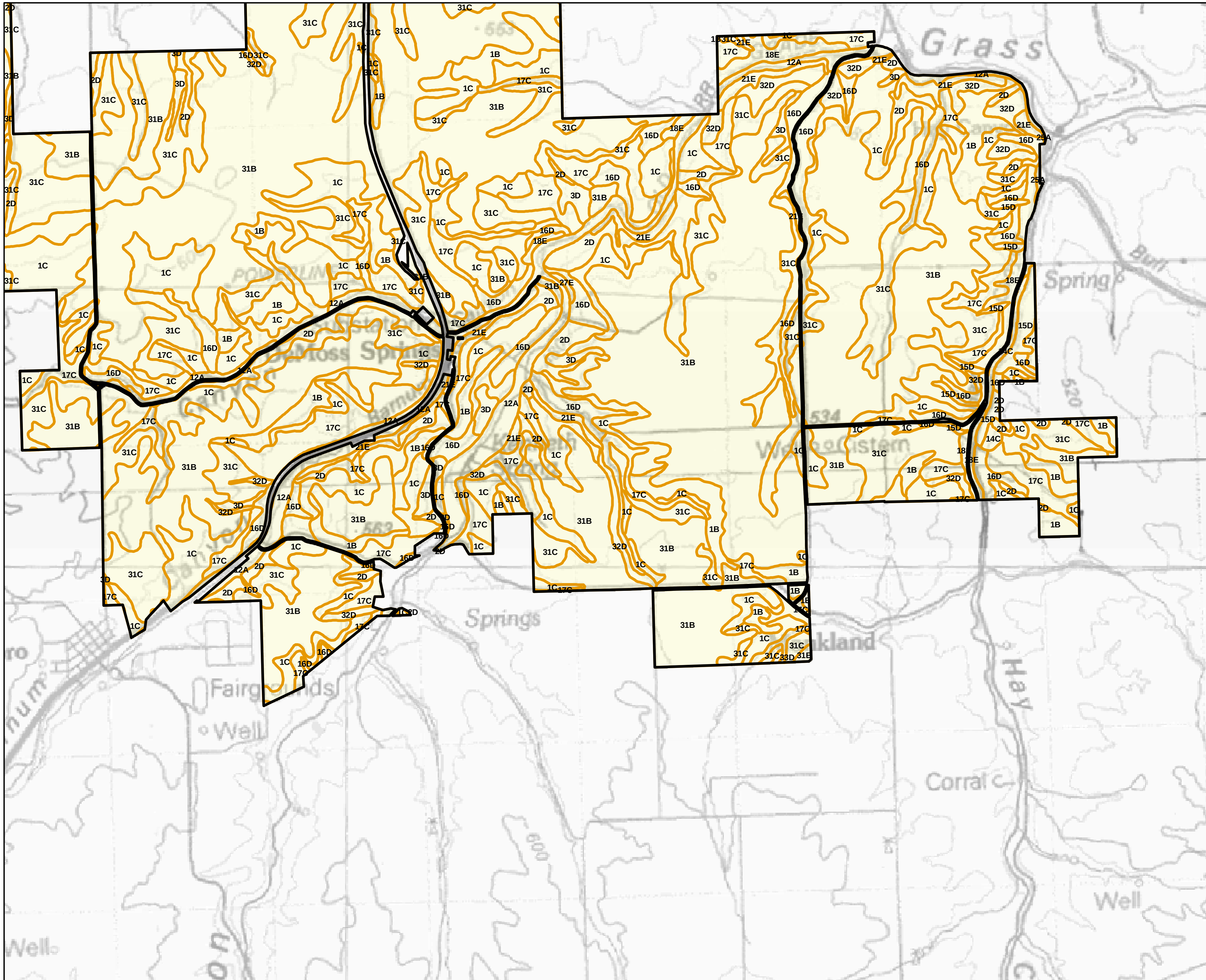


Golden Hills Wind Project

Figure J-5 (Sheet 3 of 3)

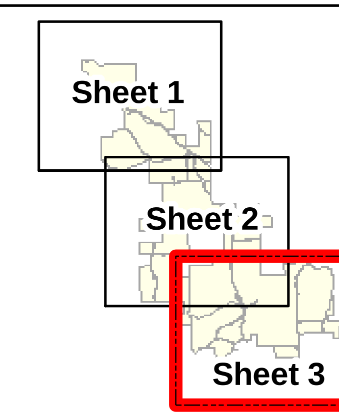
Soil Survey

Legend

Lease Area

Soil Series

1B Anderly silt loam, 1 to 7 percent slopes
1C Anderly silt loam, 7 to 15 percent slopes
2D Anderly silt loam, 15 to 35 percent north slopes
3D Anderly silt loam, 15 to 35 percent south slopes
5D Anders very fine sandy loam, 15 to 35 percent slopes
11A Endersby fine sandy loam, 0 to 3 percent slopes
12A Endersby-Hermiston complex, 0 to 3 percent slopes
14C Kuhl very stony very fine sandy loam, 3 to 20 percent slopes
15D Kuhl-Rock outcrop complex, 20 to 40 percent north slopes
16D Lickskillet very stony loam, 7 to 40 percent south slopes
17C Lickskillet-Bakeoven complex, 2 to 20 percent slopes
18E Lickskillet-Rock outcrop complex, 40 to 70 percent south slopes
21E Nansene-Rock outcrop complex, 35 to 70 percent north slopes
25A Riverwash
27E Rock outcrop-Rubble land-Lickskillet complex, 50 to 80 percent south slopes
31B Walla Walla silt loam, 1 to 7 percent slopes
31C Walla Walla silt loam, 7 to 15 percent slopes
32D Walla Walla silt loam, 15 to 35 percent north slopes
33D Walla Walla silt loam, 15 to 35 percent south slopes
34B Wato very fine sandy loam, 3 to 7 percent slopes
34C Wato very fine sandy loam, 7 to 15 percent slopes
35D Wato very fine sandy loam, 15 to 35 percent north slopes



Data Sources:

30x60 USGS Quadrangles:
Condon, OR 1981
Goldendale, OR-WA 1980

Natural Resources Conservation Service
(Soil Survey Sherman County)

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Miles

Map Document: (P:\B\BPOC00000005\0600INFO\GS\arcmap\Fig_J-5_Soils.mxd)
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PRELIMINARY RESOURCE REVIEW

7.1.1 Precipitation Record

Historic average daily precipitation data for the days of the site visits June 11, 12, 13, and 14, 2007, as well as the 14 days prior to each visit is 0.03 based on historic data from 1928 through 2005. Historic average total precipitation recorded for the month of June is 0.78 inches based on historic data from 1971 through 2000 (Oregon Climate Center, 2007).

7.1.2 Wetland Inventory Maps

The NWI shows several wetland types within the wetland analysis area, the most common are palustrine emergent, persistent, seasonal wetlands (PEM1C) and palustrine emergent, seasonal wetlands (PEMC). Also listed were riverine, intermittent, streambed seasonably flooded wetland (R4SBC); palustrine open water, semi- permanently, diked/impounded flooded wetlands (POWFh); and palustrine, open water, permanently flooded, diked/impounded wetlands (POWHh). Most wetlands are associated with a drainage feature as indicated on the USGS quadrangle map. The USGS drainage features of the wetland analysis area include Locust Grove Canyon, China Hollow, Mud Hollow, Spanish Hollow, Hay Canyon, and Grass Valley.

7.1.3 Soils

Figure 5 shows soil types within the project area, as mapped by the County soil survey. Table 3 provides a list of soils mapped by the Soil Survey of Sherman County Area (USDA 1988) that occurs within the wetland analysis area and overall project area. There are no hydric soils mapped within the wetland analysis area or the greater project area.

Table 3. Soils mapped by Soil Survey of Sherman County Area that occur within the wetland analysis area.

Soil Series	Hydric Status	Hydric Inclusions
1B - Anderly silt loam, 1 to 7 percent slopes	Non-hydric	None
1C - Anderly silt loam, 7 to 15 percent slopes	Non-hydric	None
2D - Anderly silt loam, 15 to 35 percent south slopes	Non-hydric	None
3D – Anderly silt loam, 15 to 35 percent south slopes	Non-hydric	None
5D – Anderly very fine sandy loam, 0-3 percent slopes	Non-hydric	None
11A - Endersby fine sandy loam, 0 to 3 percent slopes	Non-hydric	Riverwash
12A - Endersby-Hermiston complex, 0 to 3 percent slopes	Non-hydric	Riverwash
14C - Kuhl very stony very fine sandy loam, 3 to 20 percent slopes	Non-hydric	None
15D – Kuhl-Rock outcrop complex, 20 to 40 pecent north slopes	Non-hydric	None

Soil Series	Hydric Status	Hydric Inclusions
16D - Lickskillet very stony loam, 7 to 40 percent south slopes	Non-hydric	None
17C - Lickskillet-Bakeoven complex, 2 to 20 percent slopes	Non-hydric	None
18E- Lickskillet-Rock outcrop complex, 40 to 70 percent south slopes	Non-hydric	None
21E - Nansene-Rock outcrop complex, 35 to 70 percent north slopes	Non-hydric	None
25A - Riverwash	Non-hydric	Riverwash
27E - Rock outcrop-Rubble land-Lickskillet complex, 50 to 80 percent south slopes	Non-hydric	None
31B - Walla Walla silt loam, 1 to 7 percent slopes	Non-hydric	None
31C - Walla Walla silt loam, 7 to 15 percent slopes	Non-hydric	None
32D - Walla Walla silt loam, 15 to 35 percent north slopes	Non-hydric	None
33D – Walla Walla silt loam 15 to 35 percent south slopes	Non-hydric	None
34B - Wato very fine sandy loam, 3 to 7 percent slopes	Non-hydric	None
34C - Wato very fine sandy loam, 7 to 15 percent slopes	Non-hydric	None
35D - Wato very fine sandy loam, 15 to 35 percent north slopes	Non-hydric	None

7.2 FIELD RESULTS

Site visits were conducted on June 11, 12, 13, and 14, 2007. Drainage features, depressions, and other areas that could potentially collect water were purposely investigated, as these areas would have the highest probability of containing waters of the state or wetlands. According to protocol, a total of 51 sample plots were conducted. Data forms are contained in *Appendix 1*; photographs of the wetland data plots are contained in *Appendix 2.*

7.2.1 Vegetation

Five general plant communities were identified within the wetland analysis area. Plant communities were as follows:

- Cultivated Wheat (*Triticum aestivum*) Community
- CRP Community
- Upland Grass and CRP Community
- Upland Shrub (non-CRP) Community
- Emergent Wetland Community

All communities, with the exception of the emergent wetland community, were considered to be non-hydrophytic plant communities. As would be expected, the Cultivated Wheat Community was dominated by cultivated wheat. These areas were considered to fall under the atypical situation category and so the plant community parameter was not factored in when determining wetland status for these areas. Only soils and hydrology were used. Nonetheless, no area containing the cultivated wheat community was delineated as wetland.

7.2.1.1 CRP Community

The CRP community consisted of planted bunch grasses, as well as more weedy species. Sage and rabbitbrush were occasionally found within this community, but not at high enough percentages to be considered dominant species. Table 4 provides a listing of dominant plant species found within the CRP community. This community was considered to be non-hydrophytic.

Table 2. CRP Community

Common Name	Scientific Name	Indicator Status
Intermediate wheatgrass	*Agropyron intermedium*	NL
Sandberg bluegrass	*Poa secunda*	NL
Bulbous bluegrass	*Poa bulbosa*	FAC

Upland Grass and CRP Community

The upland grass community was primarily found in uncultivated areas. This community was comprised of native and non-native upland species. Table 5 provides a listing of dominant plant species found within the upland grass community. This community was considered to be non-hydrophytic.

Table 3. Upland Grass and CRP Community

Common Name	Scientific Name	Indicator Status
Bulbous bluegrass	*Poa bulbosa*	FAC
Redstem stork's bill	*Erodium cicutarium*	NL
Basin wildrye	*Elymus cinereus*	FAC
Cheat grass	*Bromus tectorum*	NL
Carey's balsamroot	*Balsamorhiza careyana*	NL
Dusty maidens	*Chaenactis douglassii*	NL
Cultivated wheat	*Triticum aestivum*	NL

7.2.1.2 Upland Shrub (Non-CRP) Community

The upland shrub community was identified in a few small patches primarily along the banks of the drainage that runs in close proximity to Klondike Lane. This community was comprised of a mix of native and non-native shrub and herbaceous species. Table 6 provides a listing of dominant plant species found within the upland shrub community. This community was considered to be non-hydrophytic.

Table 4. Upland Shrub (Non-CRP) Community

Common Name	***Scientific Name***	***Indicator Status***
Big sagebrush	*Artemisia tridentata*	NL
Lupine sp.	*Lupinus sp.*	UPL
Russian thistle	*Salsola kali*	UPL
Russian olive	*Elaeagnus angustifolia*	FAC
Tall tumblemustard	*Sisymbrium altissimum*	FACU
Black locust	*Robinia pseudoacacia*	FACU
Sandberg bluegrass	*Poa secunda*	NL
Bulbous bluegrass	*Poa bulbosa*	FAC
Cheat grass	*Bromus tectorum*	NL
Basin wildrye	*Elymus cinereus*	FAC
Prickly lettuce	*Lactuca serriola*	FACU
Cultivated wheat	*Triticum aestivum*	NL
Bedstraw	*Galium aparine*	FAC

7.2.1.3 Emergent Wetland Community

Emergent wetland communities were identified at most wetland locations. These were comprised of both hydrophytic and non-hydrophytic herbaceous species with hydrophytic species dominating. Table 6 provides a listing of dominant plant species found within the emergent wetland community. This community was considered to be hydrophytic.

Table 5. Emergent Wetland Community

Common Name	***Scientific Name***	***Indicator Status***
Spikerush	*Eleocharis palustris*	OBL
Intermediate wheatgrass	*Agropyron intermedium*	NL
Hybrid Lombardy poplar	*Populus X niger*	NL
Black locust	*Robinia pseudoacacia*	FACU
Reed canarygrass	*Phalaris arundinadea*	FACW
Cattail	*Typha latifolia*	OBL
Stinging nettle	*Urtica dioica*	FAC
Curly dock	*Rumex crispus*	FAC
Rabbitfoot grass	*Polypogon mospeliensis*	FACW
Dense silkybent	*Agrostis(Apera) interrupta*	NL

Common Name	Scientific Name	Indicator Status
Meadow horsetail	*Equisetem pratensis*	FACW
Rush	*Juncus sp.*	FAC
Baltic rush	*Juncus balticus*	FACW
Canada thistle	*Circium arvense*	FAC
Thistle	*Cirsium sp.*	NL
Wavy-leaved thistle	*Cirsium undulatum*	FACU
Willow sp.	Salix sp.	FAC
American speedwell	*Veronica americana*	OBL

7.2.2 Soils

Soils were relatively homogeneous throughout the project site area. The typical soil profile consisted of light brown (10YR 3/2) loams from 0 to 16 inches depth, with no primary or secondary indicators of hydric soils present. This profile was observed throughout the project site. These soils have no appearance of having been formed under conditions of saturation, flooding, or ponding long enough to develop anaerobic conditions. These soils were determined to be non-hydric.

In areas where hydric soils were identified, these soils consisted generally of 10 YR 2/1 or 10 YR 3/2 silt loams with redox features. Hydric soil indicators were typically Depleted Matrix (F3) and Hydrogen Sulfide (A4).

7.2.3 Hydrology

With the exception of the major drainage features of China Hollow, Locust Grove, Spanish Hollow, Mud Hollow, and Grass Valley Canyon, field observations of wetland hydrology were absent from the wetland analysis area. Most drainage features mapped on the USGS quadrangle maps within the wetland analysis area either have been plowed through or have no channel; wetland hydrology indicators such as surface water, the water table, or saturation was not observed.

7.3 WETLAND DETERMINATIONS

Wetland determinations were typically based on the presence of hydrophytic vegetation, hydric soils, and positive indicators of wetland hydrology. In atypical situations, wetland determinations were based on positive indicators of hydric soils and wetland hydrology.

Twelve wetlands were identified during the field investigation. All the wetlands identified within the project area are described and summarized below. The data forms of wetland plots are located in *Appendix 1*. Prospective wetland areas that were determined to be upland sites are also included. Photographs of the wetlands are located in *Appendix 2.* Two NWI wetland sites that were determined to be upland sites are also included along with typical photographs of prospective wetlands that were determined to be upland sites.

7.3.1 Wetland A

Wetland A is located at the north extremity of the Project along China Hollow, southwest of the John Day substation and one mile east of Highway 97. The wetland extends about six feet wide with a vegetated stream channel. Two data plots were set up: DP A1 at the north edge of the wetland and DP A2 located about fifteen feet north, upland from the edge of the wetland.

Vegetation. Dominant species in Wetland A, DP A1, includes big sagebrush, stinging nettle, and curly dock. Seventy-five percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation (greater than 50%).

Soils. Soils at DP A1 include a 10YR 3/1 silt loam at a depth of 0 to 6 inches and a restrictive layer at six inches. This soil has hydric indicators of Hydrogen Sulfide (A4) and Thick Dark Surface (A12). It meets the criteria of hydric soils.

Hydrology. Hydrology for Wetland A is associated with the stream and overland flow from surrounding areas. DP A1 was located about two feet from the water channel. Surface water was at a depth of zero inches. The water table was located at a depth of four inches. These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland A is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils. The NWI has classified this as a PEMIC wetland.

DP A2, the upland site, was dominated by big sagebrush, cheatgrass, and Sandberg bluegrass. None of these species are FAC or wetter vegetation. Soils were 10YR 5/3 sandy loam at 0-10 inches. A hydric soil was not present. DP A2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland A is adjacent to China Hollow, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.2 Wetland B

Wetland B is located about three miles northeast of the City of Moro, east of Highway 97. Located north of DeMoss Park, it is associated with Goose Creek, a tributary of Grass Valley Canyon. The wetland is an irregular complex of associated rivulets. Two data plots were set up, DP B1 at the south edge of the wetland and DP B2 located west of the wetland.

Vegetation. Dominant species in Wetland B, DP B1, includes hybrid Lombardy poplar, black locust, and reed canarygrass. Sixty-six percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soils at DP B1 include a 10YR 3/1 silt clay loam at a depth of 0 to 11 inches. This soil has hydric indicators of Hydrogen Sulfide (A4) and Depleted Matrix (F3). It meets the criteria of hydric soils. Additionally, the soil map unit for this area is Endersby-Hermiston complex (12A) where floodplains may meet hydric criteria.

Hydrology. Hydrology for Wetland B is associated with the streams and overland flow from surrounding areas. DP B1 was located about two feet from the water channel. Saturation was at a depth of six inches. Indicators also included Water-stained Leaves (B9), Hydrogen sulfide Odor (C1), and Oxidized Rhizospheres (C3). These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland B is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils. The NWI has classified this as a PEMIC wetland.

DP B2, the upland site located west of Highway 97, was dominated by wild caraway. This species is not listed as a wetland plant. Soils were 10YR 4/3 sandy loam at 0 to7 inches. A hydric soil was not present. DP A2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland. Incidentally, the location of this data plot was shown as a PEMIC wetland according to the NWI, but the field investigation did not verify wetland vegetation, soils, or hydrology. It likely was a historical floodplain but no longer has hydrolic connection. A photograph is included in *Appendix 2*.

Jurisdictional Determination. Because Wetland B is adjacent to Goose Creek, a tributary of Grass Valley Canyon, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.3 Wetland C

Wetland C is located about three miles northwest of the City of Wasco along and west of Highway 97. It is associated with Spanish Hollow, located in a steep drainage feature. Two data plots were set up, DP C1 within the wetland and DP C2 located upland of the wetland about six feet from the creek.

Vegetation. Dominant species in Wetland C, DP C1, includes poison hemlock (*Conum maculatum)*, Wood's rose, and eighty percent reed canarygrass. Sixty-six percent of the dominant species were FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soils at DP C1 include a 10YR 2/1 loam with redox at a depth of 0 to 14 inches and a 10YR 2/1 loamy sand with redox at a depth of 14 to 18 inches. This soil has hydric indicators of a Depleted Matrix (F3). It meets the criteria of hydric soils. Additionally, the soil map unit for this area is Endersby-Hermiston complex (12A) where floodplains may meet hydric criteria.

Hydrology. Hydrology for Wetland C is associated with the stream of Spanish Hollow and overland flow from surrounding areas. DP C1 had saturation at a depth of three inches and the water table was present at 12 inches. Indicators also included Water Marks (B1), Sediment deposits (B2), and Drift Deposits (B3). These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland C is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils. The NWI has classified this as a PEMIC wetland.

DP C2, the upland site, was dominated by black locust, Wood's rose, cheatgrass, and Canada thistle. It did not meet the criteria of FAC or wetter for wetland vegetation. Soils were 10YR 3/3 loam at 0 to 5 inches and 10YR 3/4 sandy loam at 5 to 15 inches. A hydric soil was not present. DP C2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland C is adjacent to Spanish Hollow, a tributary of the Columbia River, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.4 Wetland D

Wetland D is located about four miles northwest of the City of Wasco along the west side of Highway 97. It is associated with Spanish Hollow. The wetland extends about six feet wide with a vegetated stream channel. Two data plots were set up, DP D2 within the wetland and DP D1 located upland from the edge of the wetland.

Vegetation. Dominant species in Wetland D, DP D2, includes reed canary grass, cattails, curly dock, and Canada thistle. One hundred percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soils at DP D2 include a 10YR 2/1 loamy sand with redox at a depth of 0 to 6 inches and a 10YR 2/1 sandy gravely muck, at 6 to 9 inches, and a restrictive layer of rocks at nine inches. This soil has hydric indicators of Hydrogen Sulfide (A4), Thick Dark Surface (A12), and Sandy Mucky Mineral (S1). It meets the criteria of hydric soils. Additionally, the soil map unit for this area is Endersby-Hermiston complex (12A) where floodplains may meet hydric criteria.

Hydrology. Hydrology for Wetland D is associated with the stream of Spanish Hollow and overland flow from surrounding areas. Surface water was observed nearby. The water table was located at a depth of seven inches, and saturation was at three inches. These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland D is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils.

DP D1, the upland site, was dominated by reed canary grass and willow. One hundred percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation. Soils were 10YR 3/2 silty sandy loam at 0-10 inches. Hydric soil indicators were not present. DP A2 had a dry soil pit and no indicators of wetland hydrology. Therefore, although it has hydrophytic vegetation, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland D is adjacent to Spanish Hollow, a tributary of the Columbia River, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.5 Wetland E

Wetland E is located about three miles northeast of the City of Moro along and about one half mile east of Highway 97. It is southeast of Wetland B and is associated with another fork of Grass Valley Canyon. The wetland is linear, ten feet wide along both sides of the 5 foot wide creek. Two data plots were set up.

Vegetation. Dominant species in Wetland E, DP E1, includes Baltic rush, meadow horsetail, and small-flowered rush. One hundred percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soils at DP E1 include a 10YR 3/2 silt clay loam with dark and abundant mottles at a depth of 0 to 14 inches. This soil has hydric indicators of Redox Dark Surface (F6). It meets the criteria of hydric soils. Additionally, the soil map unit for this area is Endersby-Hermiston complex (12A) where floodplains may meet hydric criteria.

Hydrology. Hydrology for Wetland E is associated with the stream and overland flow from surrounding areas. DP E1 had saturation was at a depth of three inches. Indicators also included Drift Deposits (B3). These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland E is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils. The NWI has classified this as a PEMIC wetland.

DP E2, the upland site, was dominated by big sagebrush and intermediate wheatgrass. These species are not listed as a wetland plants. Soils were 10YR 3/2 sandy loam at 0-7 inches and a rock restrictive layer at seven inches. A hydric soil was not present. DP E2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland E is adjacent to a tributary of Grass Valley Canyon, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.6 Wetland F

Wetland F is located about three miles northwest of the City of Wasco and is associated with Mud Hollow. Two data plots were set up, DP F1 within the wetland, and DP F2 located three feet upslope.

Vegetation. Dominant species in Wetland B, DP F1, includes reed canarygrass and Baltic rush. One hundred percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soils at DP F1 include a 10YR 2/1 sandy muck at a depth of 0 to 10 inches with redox. This soil has hydric indicators of Hydrogen Sulfide (A4) and Sandy muck mineral (S1). It meets the criteria of hydric soils. Additionally, the soil map unit for this area is Endersby-Hermiston complex (12A) where floodplains may meet hydric criteria.

Hydrology. Hydrology for Wetland F is associated with a spring located to the southwest by the tree line and overland flow from surrounding areas. Surface water was present nearby, saturation was at the surface, and the water table was present at four inches. Indicators also included Hydrogen Sulfide Odor (C1). These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland F is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils.

DP F2, the upland site, was dominated by cheatgrass. This species is not listed as a wetland plant. Soils were 10YR 3/3 loam at 0 to 12 inches. A hydric soil was not present. DP A2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland F is adjacent to Mud Hollow, a tributary of Spanish Hollow, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.7 Wetland G

Wetland G is located about four miles northeast of the City of Moro, one mile east of Highway 97. It is located downstream and north of Wetland E along the same tributary of Grass Valley Canyon. The wetland is linear, averaging ten feet wide along both sides of the five foot wide creek. Two data plots were set up, DP G1 at the west edge of the wetland and DP G2 located fourty feet west of the wetland.

Vegetation. The dominant species in Wetland G, DP G1, is reed canarygrass. One hundred percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soil at DP G1 includes a 10YR 2/1 silt at a depth of 0 to 16 inches. This soil has hydric indicator of Depleted Matrix (F3). It meets the criteria of hydric soils. Additionally, the soil map unit for this area is Endersby-Hermiston complex (12A) where floodplains may meet hydric criteria.

Hydrology. Hydrology for Wetland G is associated with the stream and overland flow from surrounding areas. DP G1 was located about two feet from the water channel. Saturation was at a depth of three inches. Indicators also included Drift Deposits (B3) and Drainage Patterns (B10). These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland G is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils.

DP G2, the upland site, was dominated by big sagebrush and cheatgrass. These species are not listed as a wetland plant. Soils were 10YR 3/2 silt loam at 0-11 inches. A hydric soil was not present. DP G2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland G is adjacent to a tributary of Grass Valley Canyon it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.8 Wetland H

Wetland H is located about two miles south of the City of Wasco, along the west side of Highway 97. The wetland is in a low area of Spanish Hollow. Two data plots were set up, DP H1 within the wetland and DP H2 located upslope of DP H1.

Vegetation. Dominant species in Wetland H, DP H1, includes rabbitfoot grass and toad rush. One hundred percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soil at DP H1 includes a 10YR 3/2 clay loam at a depth of 0 to 1 inches; a 10YR3/2 sand ant 2 to 4 inches: a 10YR 3/2 clay loam with redox features at 4-8 inches, and a restrictive rock layer at eight inches. This soil has a hydric indicator of Loamy Gleyed Matrix (F2). It meets the criteria of hydric soils.

Hydrology. Hydrology for Wetland H is associated with low spot ponding, overland flow from surrounding areas, and a drainage feature of a nearby culvert. Indicators include Drift Deposits (B3), Oxidized Rhizospheres (C3), and Drainage Patterns (B10).These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland H is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils.

DP H2, the upland site, was dominated by big sagebrush, cheatgrass, Sandbergs bluegrass, and intermediate wheatgrass. These species are not listed as wetland plants. Soils were 10YR 3/2 sandy loam at 0 to 6 inches, with a restrictive rock layer at six inches. A hydric soil was not present. DP H2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland H is adjacent to Spanish Hollow, a tributary of the Columbia River, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.9 Wetland I

Wetland I is located northeast of the City of Moro, between Highway 97 and Highway 206. It is located downstream and northeast from wetlands B, C, and G in Grass Valley Canyon. The wetland is linear along both sides of the creek. Two data plots were set up east of the creek, DP I1 within the wetland and DP I2 located upslope of DP I1 about fifteen feet.

Vegetation. Dominant species in Wetland I, DP I1, includes spike rush, American speedwell, and another unidentified rush species. One hundred percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soil at DP I1 includes a 10YR 2/1 silt at a depth of 0 to 8 inches with a restrictive layer at eight inches. This soil has a hydric indicator of Depleted Matrix (F3). It meets the criteria of hydric soils. Additionally, the soil map unit for this area is Endersby-Hermiston complex (12A) where floodplains may meet hydric criteria.

Hydrology. Hydrology for Wetland I is associated with the creek and overland flow from surrounding areas. Saturation occurred at surface level. Indicators also included Drift Deposits (B3) and Drainage Patterns (B10).These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland I is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils.

DP I2, the upland site, was dominated by big sagebrush, cheatgrass, and intermediate wheatgrass. These species are not listed as a wetland plants. Soils were 10YR 3/2 silt at 0 to 10+ inches. A hydric soil was not present. DP H2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland I is adjacent to Grass Valley Canyon, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.10 Wetland K

Wetland K is located between Highway 97 and Highway 206, five miles southeast of the City of Wasco. It is about one-half mile west of where Highway 206 crosses Grass Valley Canyon. It is located along another unnamed tributary of Grass Valley Canyon. The wetland is on both sides of a narrow unimproved road. Four data plots were set up DP K2 and K3 were within the wetland and DP K1 and K 4 were upland.

Vegetation. Dominant species in Wetland K, DP K2 includes cattails and reed canarygrass: in DP K3, they include American speedwell, Canada thistle, and cattails. Both data plots had one hundred percent of dominant species FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soil at DP K2 includes a 10YR 2/1 muck at 0 to 12 inches with a restrictive layer at 12 inches. This soil has a hydric indicator of Hydrogen Sulfide (A2). Soil at DP K3 includes a 10 YR 2/1 at 0 to 16 inches with indicators of Hydrogen Sulfide (A4) and Depleted Matrix (F3). Both data plots meet the criteria of hydric soils.

Hydrology. Hydrology for Wetland K is associated with the drainage feature and a spring originating at the southeast end of the wetland. DP K2 had surface water, the water table at 1 inch, and surface saturation. DP K3 had surface water at a depth of one inch and saturation to the surface. These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland K is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils. The NWI classified a POWHh and a R45BC wetland near this location. Field observations did not verify impoundments or riverine conditions at this delineation site.

DP K1, an upland site, was dominated by cattails and Canada thistle. These species met the dominance criteria for wetland vegetation. However, soils were 10YR3/2 at 0 to 8 inches but without redox features. A restrictive layer was at eight inches. A hydric soil was not present. DP K1 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland.

DP K4, another upland site, was dominated by big sagebrush, cheatgrass, and intermediate wheatgrass. These species are not listed as a wetland plants. Soils were 10YR 3/2 silt at 0 to 18 inches. A hydric soil was not present. DP H2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland

Jurisdictional Determination. Because Wetland K is adjacent to Grass Valley Canyon, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.11 Wetland M

Wetland M is located two miles northeast of the City of Moro, near Monkland Road. The wetland is associated with the drainage feature of Grass Valley Canyon. Two data plots were set up east of the creek, DP M1 within the wetland and DP M2 located upslope and south.

Vegetation. Dominant species in Wetland M at DP M1 includes Wood's rose, reed canarygrass, and cattails. Seventy-five percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soil at DP M1 includes a 10YR 3/1 silty muck at a depth of 0 to 14 inches with a restrictive layer of gravel at 14 inches. Gravel may be fill material from the bridge. This soil has a hydric indicator of Depleted Matrix (F3). It meets the criteria of hydric soils.

Hydrology. Hydrology for Wetland M is associated with open water, the creek, and overland flow from surrounding areas. At DP M1, saturation occurred at surface level. Surface water was observed nearby. Indicators also included Water Marks (B1). These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland M is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils. NWI classified this wetland as PEMC.

DP M2, the upland site, was dominated by reed canary grass and intermediate wheatgrass. Soils were 10YR 3/3 loam at 0 to 14 inches. A hydric soil was not present. DP M2 had a dry soil pit and no indicators of wetland hydrology. Although nearly 50 percent of the vegetation was FAC or wetter, the prevalence index was not utilized as hydric soils and wetland hydrology was not present. Therefore, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland M is adjacent to Grass Valley Canyon, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

7.3.12 Wetland N

Wetland N is located nearly six miles southeast of the City of Wasco, along the east side of Highway 206 in Grass Valley Canyon. The wetland is linear along both sides of the creek. Two data plots were set up east of the creek, DP N1 within the wetland and DP N2 located upslope and west.

Vegetation. Dominant species in Wetland N at DP N1 includes reed canarygrass, cattails, and intermediate wheatgrass. Sixty-six percent of dominant species are FAC or wetter, meeting the criteria for hydrophytic vegetation.

Soils. Soil at DP N1 includes a 10YR 4/2 loam at a depth of 0 to 8 inches and a 10YR 4/2 loam with depleted features at 8 to 18 inches. This soil has a hydric indicator of Depleted Matrix (F3). It meets the criteria of hydric soils. Additionally, the soil map unit for this area is Endersby-Hermiston complex (12A) where floodplains may meet hydric criteria.

Hydrology. Hydrology for Wetland N is associated with the creek, and overland flow from surrounding areas. At DP M1, saturation occurred at 16 inches. Indicators also included Sediment (B2) and Drift Deposits (B3). These indicators meet the criteria for wetland hydrology.

Wetland Classification. Wetland N is determined to be a palustrine emergent wetland following the USFWS classification system (Cowardin et. al., 1979). It meets the criteria through vegetation, hydrology, and soils. NWI classified this wetland as PEMIC.

DP N2, the upland site, was dominated by intermediate wheatgrass. This species is not listed as a wetland plant. Soils were 10YR loam at 0 to 16 inches. Redox concretions were present at 10 to 16 inches. There were no hydric indicators; therefore, hydric soil was not present. DP N2 had a dry soil pit and no indicators of wetland hydrology. Therefore, it did not meet the criteria as a wetland.

Jurisdictional Determination. Because Wetland N is adjacent to Grass Valley Canyon, it is likely jurisdictional under Section 404 of the Clean Water Act. The final jurisdictional determination is up to the ACOE.

8 DISCUSSION

The wetland analysis area is almost entirely under agricultural production except areas associated with the major drainage features. Twelve wetlands were identified during the field investigation associated with the drainage features of Mud Hollow, Spanish Hollow, China Hollow, and Grass Valley Canyon.

No other wetlands were delineated within the wetland analysis area. Other wetlands mapped by the NWI fell outside of the wetland analysis area with the exception of a mapped POWFh wetland in Section 33 T01N, R17E. This location of the NWI unit did not meet the criteria of a wetland, as detailed in data plot 2J in Appendix 1 of this report. A photograph of the site is contained in has been plowed through and no channel exists (see photograph in Appendix 2.)

No other waterways were identified, with the exception of the drainage features discussed in the above report. Other drainage features mapped on the USGS quadrangle maps that occur within the wetland analysis area were lacking in positive indicators to meet the criteria for jurisdictional wetlands. These features were often plowed through, lacking a channel, or wetland hydrology indicators. Photographs depicting these circumstances are also included in Appendix 2.

9 REGULATORY REQUIREMENTS AND IMPLICATIONS

Federal, state, and local governmental regulations control activities in and near wetlands and other water bodies. Therefore, the wetland analysis was undertaken to determine the location and extent of wetlands within the proposed project site (wetland analysis area specifically) that may be regulated. This analysis is intended to facilitate review of project plans by the applicant and the appropriate regulatory authorities in conjunction with any applicable permit applications.

This report documents the investigation, best professional judgment, and conclusions of the investigator. It should be considered a Preliminary Jurisdictional Determination until it has been reviewed and approved by the Oregon Energy Facility Siting Council as part of the energy facility siting process.

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APPENDIX 1 - WETLAND DELINEATION DATA FORMS

wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6-11-07

Applicant/Owner: BP State: OR Sampling Point: DP 1A

Investigator(s): All, lyst, slpa, oar, jash, sm Section, Township, Range: 13 and 14, T02N, R16E

Landform (hillslope, terrace, etc.): riverine Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet very stony loam 7-40%-16D NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: wetland, stream channel 6' wide + wetland 6' wide, vegetated

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix spp	<5		
2. ~~Artemisia tridentata~~	~~65~~		
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Artemisia tridentata	40 65	✓	NL
2.			
3.			
4.			
5.			
Total Cover:	40		
Herb Stratum			
1. Festuca spp (rough) FECA	10	(✓)	NL
2. ELCi Basin Wildrye	5		FAC
3. UTOdi Stinging nettle UTDI	25	✓	FAC
4. menthos spp Spearmint MESP	10		OBL
5. Rumex (curly lock) RUCR	20	✓	FAC
6. Scirpus sp. bullrush SCp	10	✓	OBL
7. Duckweed Lemi	10	(✓)	OBL
8. mentha spicata Ch			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: DP-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1						silty loam	
6+	rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR C)**
___ 1 cm Muck (A9) **(LRR D)**
___ Depleted Below Dark Surface (A11)
X Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR C)**
___ 2 cm Muck (A10) **(LRR B)**
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: bedrock
Depth (inches): 6"

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

X Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) **(Nonriverine)**
___ Sediment Deposits (B2) **(Nonriverine)**
___ Drift Deposits (B3) **(Nonriverine)**
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) **(Riverine)**
___ Sediment Deposits (B2) **(Riverine)**
___ Drift Deposits (B3) **(Riverine)**
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0
Water Table Present? Yes X No ___ Depth (inches): 4
Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks: vegetated stream
wetland 6' wide
China Hollow

upland DP A2

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: ~~DP1B~~

Applicant/Owner: BP State: WA Sampling Point: 6/11/07

Investigator(s): ALL, lvst, slpa, ogr, jash, SWM Section, Township, Range: 13 and 14, T02N, R16E

Landform (hillslope, terrace, etc.): ______ Local relief (concave, convex, none): ______ Slope (%): 0–5

Subregion (LRR): LLRB Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet very stony loam - 16D, 7-40% NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? NO (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ______	No ✓	Is the Sampled Area within a Wetland?	Yes ______ No ✓
Hydric Soil Present?	Yes ______	No ✓		
Wetland Hydrology Present?	Yes ______	No ✓		

Remarks:

VEGETATION 50

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Big Sage (ARTR)	50	✓	NL
2. ~~Sandbergs Bluegrass (POSA)~~			
3. ~~Cheatgrass (BRTE)~~			
4. ~~Basin wildrye (ELCI)~~			
5. Green Rabbit (CRNA)	TR		NL
Total Cover:			
Herb Stratum			
1. POSA	40	✓	NL
2. BRTE	45	✓	NL
3. ELCI	10		FAC
4.			
5. Yarrow (ACMI)	TR		
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ______ No ✓

Remarks:

SOIL

Sampling Point: DP1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 5/3						Sandy loam	Dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: ___
Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators: none

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes ___ No ✓ Depth (inches): ___
Water Table Present? Yes ___ No ✓ Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

CHINA Hollow

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: 1B-1

Investigator(s): S. Pattinson & S. Walkey Section, Township, Range: 25, T02N, R16E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Slope (%): 30

Subregion (LRR): B Lat: Long: Datum:

Soil Map Unit Name: Walla Walla silt loam 33 D NWI classification: NO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks: dry wash on steep SW facing slope

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. tumble weed SAKA	30	✓	FACU
2. Groundsel Senecio sp.	20	✓	NL
3. weedy prickly lettuce LASE	5		FACU
4. Cheat grass BRTE	40	✓	NL
5. pig weed AMRE	1		FACU
6.			
7.			
8.			
Total Cover:	20		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: 1B1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/3						Stony silt loam	(large rocks)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 11 inches

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators: none

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

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

Remarks: Data Plot located in a dry wash.

Spanish Hollow

wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: 1C-1

Investigator(s): S. Pattinson & S. Walkey Section, Township, Range: 35, T02N R16E and 30, T02N, R17E

Landform (hillslope, terrace, etc.): bottom of steep drainage Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby - Hermiston complex 0-3% - 12 A, also 33D, 21E NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ______ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ______	Is the Sampled Area within a Wetland?	Yes X No ______
Hydric Soil Present?	Yes X No ______		
Wetland Hydrology Present?	Yes X No ______		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
Total Cover:		0		
Sapling/Shrub Stratum				
1. poison hemlock	COMA	10	✓	FAC
2. Woods Rose	ROWO	5	✓	
3.				
4.				
5.				
Total Cover:		15		
Herb Stratum				
1. curly dock	RUCR	2		FAC
2. reed canary	PHAR	80	✓	FACW
3. cattails	TYLA	32		OBL
4. wavy leaf thistle	CIUN	2		FACU
5. watercress	RONA	5		OBL
6. duckweed	LEMI	5		OBL
7. small flowered forget-me-not	MOLA	10		OBL
8. Nettle	URDI	5		FAC
Total Cover:		75		
~~Woody~~ Vine Stratum				
1. [illegible]	SODU	10	✓	FAC
2. bedstraw	GAAP	5		FAC
- Solanum dulcamara Total Cover:		10		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ______

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ______

Remarks:

SOIL

Sampling Point: DP1C1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	50	10YR 2/2.5	50			Loam	
16-18	10YR 2/1	70	10YR 2/2.5	30			Lamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [x] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [x] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1) (**Nonriverine**)
- [x] Sediment Deposits (B2) (**Nonriverine**)
- [x] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______

Water Table Present? Yes X No ___ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 3"

Wetland Hydrology Present? Yes X No ___

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

Remarks:

bottom of very steep drainage
water flowing in creek

Spanish Hollow

6-12-07

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: 1-C-2

Investigator(s): S. Pattinson & S. Walker Section, Township, Range: 25 T2N R16E and 30 T2N, R17E

Landform (hillslope, terrace, etc.): bottom, steep drainage Local relief (concave, convex, none): Concave Slope (%): 60

Subregion (LRR): B Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: Endersby-Hermiston Complex 0-3% 12A, also 33D, 21E NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks: ~6' above water – 4' vertical

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
1. Black Locust	ROPS	100%	✓	FACU
2.				
3.				
4.				
Total Cover:		20%		
Sapling/Shrub Stratum				
1. Wood rose	ROWO	50	✓	FACU
2.				
3.				
4. sage	ARTR	5		NL
5.				
Total Cover:		60		
Herb Stratum				
1. Poison hemlock	COMA	10		FAC
2.				
3. Canada thistle	CIAR	30	✓	FAC
4. Common thistle	CIUN	10		FACU
5. Bromus tectorum	cheat	40	✓	NL
6. Hordeum leporinum	squirreltail	5		
7. Nettle	URDI	10		FAC
8.				
Total Cover:		90		
Woody Vine Stratum				
1.				
2.				
Total Cover:				

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: Scirpus (sp) predominant @ west side of wetland

SOIL

Sampling Point: 1-C-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/3		—	—	—	—	loam	
5-15	10YR 3/4		—	—	—	—	Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No X

Remarks:

Rocky 5" size

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes ______ No X

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

Remarks:

Spanish Hollow

Wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: 1-D-2

Investigator(s): S. Pattinson & S. Walkey Section, Township, Range: 23, 24, 25, 26; T02N, R16E

Landform (hillslope, terrace, etc.): drainage bottom Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): B Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: Endersby-Hermiston Complex 0-3%, 12A NWI classification: near PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? no Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? no (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
	Total Cover:			
Sapling/Shrub Stratum				
1. Reed Canary grass	PHAR	60	✓	FACW
2. Cattail	TYLA	40	✓	OBL
3.				
4.				
5.				
	Total Cover:	40		
Herb Stratum				
1. forget-me not (Small flowered)	MOLA	20		OBL
2. mint	MEAR	5		OBL
3. dock curly	RUCR	25	✓	OBL
4. Small bedstraw	GAAP	20	✓	FAC
5. Canada Thistle	CIAR	30	✓	FAC
6. horse weed	COCA	5		NL
7.				
8.				
	Total Cover:	60		
Woody Vine Stratum				
1.				
2.				
	Total Cover:			

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- __ Prevalence Index is ≤3.0[1]
- __ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:
a few scattered small (3") grass species

SOIL

Sampling Point: 102

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	70	10YR 2/2	30			loamy sand	
6-9	10YR 2/1	100					sandy gravely muck	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ✓ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: large rocks
Depth (inches): 9"

Hydric Soil Present? Yes X No ___

Remarks:
large Rock@ nine inches Shovel refusal

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	✓		(nearby) (18")
Water Table Present?	✓		7
Saturation Present? (includes capillary fringe)	✓		3

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Spanish Hollow

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: 1-D-1

Investigator(s): S. Pattinson & S. Walker Section, Township, Range: 23,24,25,26; T02N, R16E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 20

Subregion (LRR): B Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: Endersby - Hermiston Complex 0-3%, - 12A NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks: Area located near edge of wetland

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Willow sp Salix sp.	100	✓	(FAC)
2.			
3.			
4.			
Total Cover:	10		
Sapling/Shrub Stratum			
1. ~~Poison hemlock~~			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Reed Canary grass PHAR	80	✓	FACW
2. Canada thistle CIAR	10		FAC
3. Poison hemlock COMA	10		FAC
4. bedstraw GAAP	tr		
5.			
6.			
7.			
8.			
Total Cover:	90		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ___

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 1D1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR3/6							Silty Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: ___
Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

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

Remarks: No Hydrology Indicators

SPANISH HOLLOW

6/12/07

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 1-E-1

Applicant/Owner: BP State: OR Sampling Point: ____

Investigator(s): S. Pattinson & S. Walkey Section, Township, Range: 6, T01N, R17E

Landform (hillslope, terrace, etc.): relatively flat Local relief (concave, convex, none): ____ Slope (%): 0

Subregion (LRR): B Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Lickskillet very stony loam 7-40% -16 D NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: data plot was located in a dry wash

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. quack grass AGRE	30	✓	FAC
2. tumbleweed SACA	10		FACU
3. cheat grass BRTE	40	✓	NL
4. tumble mustard SIAL	10		FACU
5. sage ARSP.	5		
6.			
7.			
8.			
Total Cover:	80		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust ____

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	—	x 1 =
FACW species	—	x 2 =
FAC species	30	x 3 = 90
FACU species		x 4 =
UPL species	40 (BRTE)	x 5 = 200
Column Totals:	70 (A)	290 (B)

Prevalence Index = B/A = 4.1

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: blue line stream on map. Very dry.

SOIL

Sampling Point: 1E1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3							~~[illegible]~~ Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock layer

Depth (inches): 6"

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______________

Water Table Present? Yes ______ No ______ Depth (inches): ______________

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ______________

Wetland Hydrology Present? Yes ______ No X

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

Remarks:

No hydrology indicators present

Mud Hollow

wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: 1 F 1

Investigator(s): S. Pattinson & S. Walker Section, Township, Range: 1, T01N, R16E and 36, T02N, R16E

Landform (hillslope, terrace, etc.): drainage bottom Local relief (concave, convex, none): concave Slope (%): —

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby-Hermiston Complex 0-3% / 12A NWI classification: Near a PEMIC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ______
Hydric Soil Present?	Yes X	No ______
Wetland Hydrology Present?	Yes X	No ______

Is the Sampled Area within a Wetland? Yes X No ______

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
Total Cover:				
Sapling/Shrub Stratum				
1.				
2.				
3.				
4.				
5.				
Total Cover:				
Herb Stratum				
1. Reed canary grass	PHAR	65	✓	FACW
2. bedstraw	GAAP	>5		FAC
3. prickly lettuce	LASE	>5		FACU
4. canada thistle	CIAR	>5		FAC
5. nettles	URDI	>5		
6. juncus balticus	JUBA	15	✓	FACW
7.				
8.				
Total Cover:		100		
Woody Vine Stratum				
1.				
2.				
Total Cover:				

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ______

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ______

Remarks:

SOIL

Sampling Point: 1F1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1		10YR 2/2	20 large clumps				Slightly Sandy Muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

but nearby same elevation

Surface Water Present? Yes X No ___ Depth (inches): ______

Water Table Present? Yes X No ___ Depth (inches): 4"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

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

Remarks: Hydrology starts from Springs at begining of treeline to the SW.

MUD HOLLOW

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/12/07

Applicant/Owner: ______ State: ______ Sampling Point: 1-F-2

Investigator(s): S. Pattinson & S. Walker Section, Township, Range: 1, T01N, R16E and 36, T02N, R16E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 35

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby Hermiston Complex 0-3% / 12A NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ______	No ✓
Hydric Soil Present?	Yes ______	No ✓
Wetland Hydrology Present?	Yes ______	No ✓

Is the Sampled Area within a Wetland? Yes ______ No X

Remarks: Plot ~ 3' higher in elevation (up slope) from 1-F-1. Reed Canary grass does not go past this point.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. reed canary grass PHAR	10	✓	FACW
2. Bromus tectorum BRTE	60	✓	NL
3. Giant Cheat grass	10	✓	NL
4. Hordeum	5		NL
5.			
6. crested wheat grass	5		NL
7.			
8.			
Total Cover:	90		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ______

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 30 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ______ No ✓

Remarks:

SOIL

Sampling Point: F2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100	—	—	—	—	loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks: Dry hole, No hydrology indicators

Mud Hollow

6/12/07

WETLAND DETERMINATION DATA FORM – Arid West Region

upland

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: 1-G-1

Investigator(s): slpa, SW Section, Township, Range: 2, T01N, R16E

Landform (hillslope, terrace, etc.): drainage feature Local relief (concave, convex, none): Slope (%): 5

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: Endersby Hermiston Complex 0-3%/12A NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___	No X	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___	No ___	
Wetland Hydrology Present?	Yes ___	No X	

Remarks: see remarks below

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
1. [illegible] willow	Salix	1		
2.				
3.				
4.				
	Total Cover:			
Sapling/Shrub Stratum				
1. Sage	ARTR	100	✓	NL
2.				
3.				
4.				
5.				
	Total Cover:	30		
Herb Stratum				
1. cheatgrass	BRIZ	90	✓	NL
2. tumble mustard	SIAL	10		FACU
3.				
4.				
5.				
6.				
7.				
8.				
	Total Cover:	90		
Woody Vine Stratum				
1.				
2.				
	Total Cover:			

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: Did Not [illegible] [illegible]. No [illegible] [illegible] [illegible]
actual creek bed [illegible]

SOIL

Sampling Point: 1-6-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___________

Depth (inches): ___________

Hydric Soil Present? Yes ______ No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators: none

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ___________
Water Table Present? Yes ______ No ______ Depth (inches): ___________
Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ___________

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

wetland

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6-14-07

Applicant/Owner: BP State: OR Sampling Point: 3-M1

Investigator(s): S. Pattinson & S. Walker Section, Township, Range: 10, T01S, R17E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet very stony loam/16D NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil possibly, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
	Total Cover:			
Sapling/Shrub Stratum				
1. woods rose	ROWO	100	✓	FACU
2.				
3.				
4.				
5.				
	Total Cover:	<5		
Herb Stratum				
1. cattails	TYLA	10	✓	OBL
2. reed canary	RHAR	70	✓	FACW
3. canada thistle	CIAR	~~<5~~		FAC
4. alfalfa	MESA	<5		NI
5. equisetum arvense	EQAR	5		FAC
6. intermediate wheatgrass	AGIN	tr		NL
7.				
8.				
	Total Cover:	95		
Woody Vine Stratum				
1. duckweed (in water)	LEMI	10	✓	OBL
2.				
	Total Cover:			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ______

Remarks: grazing occurs in area

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B) ok

Prevalence Index worksheet: ok

Total % Cover of:		Multiply by:
OBL species	20	x 1 = 20
FACW species	70	x 2 = 140
FAC species	10	x 3 = 30
FACU species	5	x 4 = 20
UPL species	2 (NL)	x 5 = 10
Column Totals:	107 (A)	220 (B)

Prevalence Index = B/A = 220/107

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

SOIL

Sampling Point: 3M-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/1							~~muck~~ silty muck
14+	shovel refusal, gravel							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: large gravel

Depth (inches): 14"

Hydric Soil Present? Yes X No ___

Remarks: suspect gravel to be fill material from bridge

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)* Nearby
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X* nearby Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

GRASS Valley

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: 3-M-2

Investigator(s): S. Pattinson & S. Walker Section, Township, Range: 10, T 01S, R17E

Landform (hillslope, terrace, etc.): Riverine Local relief (concave, convex, none): ______ Slope (%): 30

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet very stony loam/16D NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ______ No ✓	Is the Sampled Area within a Wetland? Yes ______ No X
Hydric Soil Present?	Yes ______ No ✓	
Wetland Hydrology Present?	Yes ______ No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Reed Canary Grass PHAR	49	✓	FACW
2. Great Basin Rye	2		FAC
3. Agropyron intermedius	49	✓	NL
4.			
5.			
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet: NA

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1] NA
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ______ No ✓

Remarks:

Cattle have been in This area · Trails Through Veg

SOIL

Sampling Point: 3-M-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/3		—	—	—	—	loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: Rock
Depth (inches): 14"

Hydric Soil Present? Yes ___ No ✓

Remarks: Rock / Shovel refusal @ 14"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): >14"
Water Table Present? Yes ___ No ✓ Depth (inches): >14"
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >14"

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks: Soil moist - not saturated at 14"

GRASS Valley

wetlands 6/14/07

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: 3-N-1

Investigator(s): S. Pattinson & S. Walkey Section, Township, Range: 30 and 31, T01N, R18E

Landform (hillslope, terrace, etc.): drainage bottom Local relief (concave, convex, none): ______ Slope (%): 0

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby-Hermiston Complex 0-3% / 12A NWI classification: PEMIC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ______	Is the Sampled Area within a Wetland? Yes ✓ No ______
Hydric Soil Present?	Yes ✓ No ______	
Wetland Hydrology Present?	Yes ✓ No ______	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. None			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Reed canary PHAR	40	✓	FACW
2. Agropyron intermedium	50	✓	NL
3. alfalfa medica	5		NI
4. canada thistle CIAR	<5		FAC
5. horseweed COCA	<5		NL
6. Juncus spp (large) JUsp	5		(FAC)
7. Cattails	20	✓	OBL
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ______

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ______

Remarks:

SOIL

Sampling Point: 3N1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
8-18	10YR 3/2		7.5YR 4/6	10	C	M	loam	
			10YR 2/1	15	C	M	loam	
0-8	10YR 3/2						loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- _✓_ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes _X_ No ___

Remarks: mottles increase in depth

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- _X_ Sediment Deposits (B2) (**Riverine**)
- _X_ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No _X_	Depth (inches): ___
Water Table Present?	Yes ___	No _X_	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes _X_	No ___	Depth (inches): 16

Wetland Hydrology Present? Yes _✓_ No ___

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

Remarks: Riverine, steep slopes.

Grass Valley Canyon

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: 3N-2

Investigator(s): S. Pattinson & S. Walker Section, Township, Range: 30 and 31, T01N, R18E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby-Hermiston Complex /12A NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Sage ARTR	5	✓	NL
2.			
3.			
4.			
5.			
Total Cover:	5		
Herb Stratum			
1. Agropyron intermedius	57	✓	NL
2. Reed canary grass	5		FACW
3. alfalfa	2		
4. horseweed	1		
5.			
6.			
7.			
8.			
Total Cover:	70		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 3N2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/2		~~[illegible]~~				loam	loam
10-16	10YR 4/2		~~7.5YR~~ 3/4	20	C	M	loam	
			10YR 2/1	10	C	M	~~hard~~	charcol ~~[illegible]~~

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks: charcol possibly from old roadside fire. Data plot taken next to Hwy 206.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ______

Water Table Present? Yes ____ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ______

Wetland Hydrology Present? Yes ______ No X

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

Remarks:

Grass Valley Canyon

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman County Sampling Date: 6/12/07

Applicant/Owner: BP Alternative Energy State: OR Sampling Point: DP-21-A

Investigator(s): G. Rand / I. Shannon Section, Township, Range: 13, T01N, R16E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): rolling hills Slope (%): —

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla silt loam <7% / 31B NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? no Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? n (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ✓	
Wetland Hydrology Present?	Yes ____ No ____	

Remarks: Drainage bottom within wheat field. Turbine Run 13, section 2

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Triticum aestivum TRAE	95%	✓	NL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: cultivated wheat field.

SOIL

Sampling Point: DP 2 A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16"+	10YR 3/2						silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks: Shallow drainage in

LOCUST GROVE

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: DP-2-B

Investigator(s): OLR, JASH Section, Township, Range: 24, T01N, R16E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): concave Slope (%): ~5%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Anderly silt loam 1-7%, 1B NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ✓

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓	
Hydric Soil Present? Yes ____ No ✓		
Wetland Hydrology Present? Yes ____ No ✓		

Remarks: Data plot located in Survey Area 14, in "blue line" drainage, within cultivated wheat field

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Trit. aest. (wheat)	95%		NL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	95%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust ______

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Cultivated wheat field.

SOIL

Sampling Point: DP 2 B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 3/2						Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks: Drainage with check dams.

LOCUST GROVE

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: DP-2-C

Investigator(s): G. Rand, J. Shannon Section, Township, Range: 24, T01N, R16E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Flat Slope (%): —

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla silt loam 1-7% / 31B NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? no Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? no (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓
Is the Sampled Area within a Wetland?	Yes ___	No ✓

Remarks: Data plot located in drainage along connector crossing between survey areas 14 and 11 middle, NW of the intersection of Foss Lane and Van Gilder Road

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Sisy. alti.	40%		FACU
2. Lactuca serriola	20%		FACU
3. Amsinckia intermedia	10%		NI
4. Agro? intor.	10%		NI
5.			
6.			
7. Common fiddleneck			
8.			
Total Cover:	80%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 20% % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: Ephemeral wash.

SOIL

Sampling Point: DP2C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR3/2						silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks: Dry ephemeral channel

LOCUST GROVE

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/12/09

Applicant/Owner: BP State: OR Sampling Point: DP-2-D

Investigator(s): G. Reed, J. Shannon Section, Township, Range: 19, T01N, R12E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Rolling Slope (%): 5%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla Silt loam 31B NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No ✓	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ___	

Remarks: Located in narrow drainage below 500 KV line ... of North end of 11 middle survey area, at edge of section.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Trit. aest.	30%		NI
2. Polygonum sp. (avic?)	5%		FACW-
3. Gnaphalium sp.	5%		
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 60% % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: Flat are at bottom of drainage that receives periodic runoff.

SOIL

Sampling Point: DP2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR3/2						silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks: Ephemeral dry wash

Locust Grove

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman County Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: DP-2-E

Investigator(s): G. Rael, I. Shannon Section, Township, Range: 21, T01N, R16E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Slope-Unsped Slope (%): ~10%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla silt loam 7-15%, /31C NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ✓	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks: Cultivated wheat field along north side of Gordon Ridge, east of VanGilder Road, in survey Area 11.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Trit. aest. TRAE	80%		NL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 20% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Cultivated wheat field.

SOIL

Sampling Point: DP 20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	10YR 3/2						Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks:

Drainage broken by check dam.

Locust grove & ridge

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: DP-2-N

Investigator(s): G. Rand, J. Shannon Section, Township, Range: 24, T01N, R16E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla silt loam 7-15%/31 C NWI classification: ——

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation Yes, Soil no, or Hydrology yes significantly disturbed? Are "Normal Circumstances" present? Yes ___ No ✓

Are Vegetation yes, Soil no, or Hydrology yes ~~naturally~~ problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No ✓	Is the Sampled Area within a Wetland? Yes ✓ No ___
Hydric Soil Present?	Yes ✓ No ___	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks: Data plot in drainage in front of Herbert Tiffany's house imm. east of Van Gilder Road. Vegetation not hydrophytic, hydrology by lawn sprinklers

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Rosa sp.	20	✓	FAC
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Thistle Cl. sp	2		NL
2. Bromus tect. Cheatgrass	10	✓	NL
3. Festuca megalura foxtail	20	✓	NL
4. Pigweed - Amaranthus ret	20	✓	FACU
5. Polypogon mons. rabbitfoot grass	2		FACW
6. Mentha spicata spearmint	2		FACW
7.			
8.			
Total Cover:	60		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 40% % Cover of Biotic Crust ______

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

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

No hydrology

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: Vegetation problematic
Data plot near crossing point of connector, out wetland conditions with more hydrophytic plants just upstream.
- plants disturbed by mowing. Rose rooted outside channel.

SOIL

Sampling Point: ______

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2						silt loam	
6-16	10YR3/1						clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ✓ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ______

Remarks:

fill on farm property

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No ✓	Depth (inches): ______
Water Table Present?	Yes ______	No ✓	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ______	No ✓	Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

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

Remarks: Saturation present ~100 feet upstream. Hydrology likely provided by regular irrigation of adjacent lawn.

Locust Grove

Hydrology stops a bit downstream past culvert

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/12/09

Applicant/Owner: BP State: OR Sampling Point: DP-2-F

Investigator(s): G. Rand, J. Shannon Section, Township, Range: 12, T01N, R 19E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): flat Slope (%): 10%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet-Bakeoven 2-20% and Walla Walla silt loam 7-15 NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No ✓	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks: Data plot is located in drainage adjacent to Haven Road, where Lamborn (Sawtooth) turns east toward US-97.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Arte trid	15%	✓	NI
2.			
3.			
4.			
5.			
Total Cover:	15%		
Herb Stratum			
1. Unknown weed (no flower)	20%		?
2. Bromus tectorum	10%		NI
3. Amsinckia intermedia	5%		NI
4. Carum carvi	15%		NI
5.			
6.			
7.			
8.			
Total Cover:	45%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 40% % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: Unid. herb resembled fireweed, but had no inflorescences (too young). Likely not a wetland plant, since it was observed in many disturbed roadside areas.

SOIL

Sampling Point: DP 2F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR3/2						loamy silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: Ephemeral drainage

LOCUST GROVE

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/13/07

Applicant/Owner: SP State: OR Sampling Point: DP-2-6

Investigator(s): G. Rand, J. Shannon Section, Township, Range: 19, T01N, R10E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): rolling Slope (%): ____

Subregion (LRR): B Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Walla Walla silt loam 7-15 / 31 C NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✓
Hydric Soil Present?	Yes ____	No ✓
Wetland Hydrology Present?	Yes ✓	No ____

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Drainage crossing connector along Bess Road between survey areas 11 middle + 12.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus tectorum	30%		NI
2. Lactuca serriola	10%		FACU
3. Agro. inte.	10%		NI
4.			
5.			
6.			
7.			
8.			
Total Cover:	50%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 50% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Ephemeral drainage

SOIL

Sampling Point: DP 26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8"	10YR4/2						silt loam	
8"+	Rock							impenetrable

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: rock
Depth (inches): 8 inches

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ___	No ✓	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: Ephemeral drainage ~ 6-8 feet wide w/ 5' high banks

Locust Grove

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman County Sampling Date: 6/14/07
Applicant/Owner: BP State: OR Sampling Point: ~~DP-2-K-1~~ Wetland H-1
Investigator(s): G. Rand, J. Shannon Section, Township, Range: 16, T01N, R17E
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): level Slope (%): ______
Subregion (LRR): B Lat: ______ Long: ______ Datum: ______
Soil Map Unit Name: Lickskillet Bakeoven/17C and Walla Walla silt loam 31 NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ______ (If no, explain in Remarks.)
Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ______
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ______
Hydric Soil Present?	Yes ✓	No ______
Wetland Hydrology Present?	Yes ✓	No ______

Is the Sampled Area within a Wetland? Yes ✓ No ______

Remarks: Plot located in drainage west of Highway 97 & Northrock ~~Hmm Road~~. Plot located in low area b/n new 97 + old pavement ~~Wetland H~~

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Polypogon monspeliensis rabbitfoot grass	50%	✓	FACW
2. Juncus bufonius	60%	✓	FACW
3. Agrostis (Apera) interrupta	10%		NL
4. Agropyron intermedia int. wheat	15%		NI
5. Trit. aest. wheat	2%		NI
6. Wild caraway CACA	10%		NL
7. Lactuca serriola lettuce	5%		FACU
8. Agropyron repens quick grass	5%		FAC
Total Cover:	110+%		
Woody Vine Stratum			
1. dense silt...			
2.			
Total Cover:			

% Bare Ground in Herb Stratum / % Cover of Biotic Crust ______

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ______

Remarks:

SOIL

Sampling Point: H1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR3/2						clay loam	
2-4	↓						sand	
4-8"	↓	98%	10YR 6/6	8%	C	M	clay loam	
8"+	Rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ✓ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: Rock
Depth (inches): 8 inches

Hydric Soil Present? Yes ✓ No ___

Remarks: Oxidized Rhizospheres

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- X Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	___	✓	___
Water Table Present?	___	✓	___
Saturation Present? (includes capillary fringe)	___	✓	___

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: Water ponds in low spot in drainage. Water also ponds in box colvert nearby Spanish Hollow drainage

Spanish Hollow

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: ~~[illegible]~~ A-2

Investigator(s): G. Rand, J. Shannon Section, Township, Range: 16, T01N, R17E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Slope Slope (%): 10%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet Bakeoven complex/17c and 31c NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No ✓	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks: Upland plot for wetland A ~ 5 feet East of Wetland boundary

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. BRTE - cheatgrass	30	✓	NI
2. Art. trid. / Sage	20	✓	NI
3. Poa secu Sandberg b-g	20	✓	NI
4. Agro. inte. Int. wheat-g	20	✓	NI
5.			
6.			
7.			
8.			
Total Cover:	90		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10% % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: H-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR3/2						Sandy loam	
6"+	Rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 6 inches

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ___	No ✓	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks: Slope above wetland

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/13/07

Applicant/Owner: BP State: OR Sampling Point: DP-2-Q

Investigator(s): G. Rand / J. Shannon Section, Township, Range: 29, T01N, R19E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): rolling Slope (%): 5%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet Bakeoven/17C and WallaWalla siltloam 31B NWI classification: –

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✓
Hydric Soil Present?	Yes ____	No ✓
Wetland Hydrology Present?	Yes ____	No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Data plot located in drainage that crosses middle of 11 Bgst survey area

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Verbascum thapsus	2%		NI
2. Lactuca serriola	30%	✓	FACW
3. Sisy. alti.	70%	✓	FACU
4. Bromus tectorum	10%	✓	NI
5. Poa secunda	10%	✓	UI
6. Bromus japonicus	10%	✓	UPL
7. Meli. officianalis	2%		FACU
8.			
Total Cover:	~75%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ~25% % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Dry drainage.

SOIL

Sampling Point: DP2H

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR3/2						sandy loam	
12+	Rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 12 inches

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks: Dry wash / rock-lined bottom

Spanish Hollow

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Wasco / Sherman Sampling Date: 061307

Applicant/Owner: BP State: OR Sampling Point: DP-2-I

Investigator(s): J. Shannon, G. Rand Section, Township, Range: 33, T01N, R17E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: 'Anderly silt loam' 7-15% / IC NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: drainage ditch in Run 7. Ditch ~4 wide @ toe + 6' wide at top of bank. Banks 2' high. Cultivated wheat on west side to edge. East side uncultivated. DP is at junction of 2 drainage ditches.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Jim Hill Mustard STAL	40	Y	FACU
2. Cheat Grass BRTE	30	Y	NI
3. Fiddleneck AMIN	1	n	
4. cultivated wheat TRAE	1	n	
5. prickly lettuce LASE	1	n	
6. leafy spurge	1	n	
7. Russian star thistle	1	n	
8.			
Total Cover:	~75		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: DP-2-I

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	–	no					uniform soil silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No ✓

Remarks: no hydric soil indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks: only sign of hydrology is drainage patterns in ditch.

Locust Grove

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/13/07

Applicant/Owner: BP State: OR Sampling Point: DP-2-J

Investigator(s): J. Shannon, G. Rand Section, Township, Range: 33, T01N, R17E

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): ______ Slope (%): —

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla silt loam 1-7% / 31B NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ✓	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks: flat area behind check dam at junction of 2 drainages. At top of gamebird hunting area north of Gordon Hollow Road in Survey Area 2, southwest end

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Lactuca serriola?	15%		FACU
2. Agropyron caninum?	60%	✓	NI
3. Brom tectorum	20%	✓	NI
4.			
5.			
6.			
7.			
8.			
Total Cover:	95		
Woody Vine Stratum			
1.			
2.			
Total Cover:	/		

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: DP 2J

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2"	—						duff	
2-14"	10YR 3/2						silt loam	
14+	10YR 2/2						clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5) **(LRR C)**
__ 1 cm Muck (A9) **(LRR D)**
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Loamy Mucky Mineral (F1)
__ Loamy Gleyed Matrix (F2)
__ Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)
__ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

__ 1 cm Muck (A9) **(LRR C)**
__ 2 cm Muck (A10) **(LRR B)**
__ Reduced Vertic (F18)
__ Red Parent Material (TF2)
__ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

__ Surface Water (A1)
__ High Water Table (A2)
__ Saturation (A3)
__ Water Marks (B1) **(Nonriverine)**
__ Sediment Deposits (B2) **(Nonriverine)**
__ Drift Deposits (B3) **(Nonriverine)**
__ Surface Soil Cracks (B6)
__ Inundation Visible on Aerial Imagery (B7)
__ Water-Stained Leaves (B9)
__ Salt Crust (B11)
__ Biotic Crust (B12)
__ Aquatic Invertebrates (B13)
__ Hydrogen Sulfide Odor (C1)
__ Oxidized Rhizospheres along Living Roots (C3)
__ Presence of Reduced Iron (C4)
__ Recent Iron Reduction in Plowed Soils (C6)
__ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

__ Water Marks (B1) **(Riverine)**
__ Sediment Deposits (B2) **(Riverine)**
__ Drift Deposits (B3) **(Riverine)**
+ Drainage Patterns (B10)
__ Dry-Season Water Table (C2)
__ Thin Muck Surface (C7)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
__ Shallow Aquitard (D3)
__ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___
Water Table Present? Yes ___ No ___ Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:
Junction of 2 ephemeral drainages

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6-13-07

Applicant/Owner: BP State: OR Sampling Point: DP-2-K

Investigator(s): J. Shannon, G. Rand Section, Township, Range: 20, T 01N, R17E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Flat Slope (%): 4

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla silt loam 7-15% / 31C NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: channel likely carries a lot of H_2O for a short period of time. Data plot located along Haren Road (Lamborn) in and drainage going East from where Lamborn Road turns sharply East toward US-97

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. unid grass (No inflorescence)	Trace		NI
2. Arte trid	trace		NI
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:	/		

% Bare Ground in Herb Stratum 99 % Cover of Biotic Crust –

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: No vegetation of 5% or more, total too. Very small wild plants in channel %

SOIL

Sampling Point: DP 2K

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100	no					clay loam
2-4	10YR 3/2	100						fine gravel
4+	rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: rock @ 4"

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 2"

Wetland Hydrology Present? Yes ✓ No ___

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

—

Remarks: Area of saturation 4 ft²

LOCUST GROVE

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: DP-2-L

Investigator(s): G. Rand, J. Shannon Section, Township, Range: 21, T01N, R17E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): flat Slope (%): 2

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet Bakeoven Complex 2-20%/17C NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✓
Hydric Soil Present?	Yes ____	No ✓
Wetland Hydrology Present?	Yes ____	No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Data plot in drainage adjacent to and west of OS-97, 6/m highway and unit 9.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Agro. inte. Int. wheatgrass	15	✓	NI
2. Brom. tect. cheatgrass	5		NI
3. Poa secunda Sandbergs bg	10	✓	NI
4. Sisy. alti. tumble mustard	<2		FACU
5.			
6.			
7.			
8.			
Total Cover:	30		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 70% % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Rock-lined ephemeral wash

SOIL

Sampling Point: 2-L

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 4/2						sandy loam	
1+	Rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 1 inch

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No ✓	Depth (inches): ______
Water Table Present?	Yes ______	No ✓	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ______	No ✓	Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks: Ephemeral wash

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: DP-2-M

Investigator(s): G. Rand, J. Shannon Section, Township, Range: 21, T01N, R19E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): flat Slope (%): 2

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet Bakeoven Complex 2-20% / 17C NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No ✓	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ✓ No ___	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks: DP near culvert under 97, just upstream of DP-2-L.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus tectorum	40%	✓	NI
2. Agrostis capi.	10	✓	FAC
3. Arte. dra.	5		NI
4. Unknown 1	20%		NI
5. ↳ Agropyron caninum?			
6.			
7.			
8.			
Total Cover:	75		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: /

SOIL

Sampling Point: 2-M

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	100					sand	
7-12+/-	"	90	5YR 4/6	10%	C	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ~~✓~~ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ✓ No ______

Remarks: problematic w/ redox starting at 7", but will be accepted as hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): __________

Water Table Present? Yes _____ No ✓ Depth (inches): __________

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): __________

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks: Dry drainage at end of large (36") CMP culvert

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: DP-2-0

Investigator(s): G. Rand, J. Shannon Section, Township, Range: 18, T01N, R17E

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): rolling Slope (%): 2%

Subregion (LRR): B Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Walla Walla silt loam 7-15%, 31C NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ✓	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks: Data plot located in drainage between Survey Area 12 and north end of survey area 11 Middle. Cultivated wheat on both sides

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Trit. aest. wheat	10	✓	NI
2. Brom. tect. wheatgrass	15	✓	NI
3. POA secu. Sandberg bg	20	✓	NI
4.			
5.			
6.			
7.			
8.			
Total Cover:	45		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 55 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Ephemeral dry wash

SOIL

Sampling Point: 2-0

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR3/2						Silt loam	
2+	Rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: Rock
Depth (inches): 2 inches

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ✓ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): __________
Water Table Present? Yes _____ No ✓ Depth (inches): __________
Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): __________

Wetland Hydrology Present? Yes ✓ No ______

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

Remarks: Ephemeral wash

Locust Grove

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Co. Sampling Date: 6/14/09

Applicant/Owner: BP State: OR Sampling Point: DP-1-A

Investigator(s): G. Rand, J. Shannon Section, Township, Range: 6, T1S, R18E (section 3)

Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Slope Slope (%): 5%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla silt loam / 31B, 31C NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No ✓	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks: Drainage southeast of Carol Thompson's place. Recently plowed field in Survey Area 3, west of Hay Canyon Road.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ______

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: No veg – plowed earth.

SOIL

Sampling Point: DPA1

section 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR3/2						loam	recently plowed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

Drainage bottom. (Blue line)

wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Goldenhills City/County: Sherman Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: DP3-B-1

Investigator(s): LXST and SASW Section, Township, Range: 3, T01S, R17E

Landform (hillslope, terrace, etc.): floodplain, Riv Local relief (concave, convex, none): concave Slope (%): 2%

Subregion (LRR): B Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Endersby Hermiston complex 0-3/12A NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ____	Is the Sampled Area within a Wetland?	Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____		
Wetland Hydrology Present?	Yes ✓ No ____		

Remarks: east side of 97

two photos

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus sp. hybrid PONI-X	40	✓	(FAC)
2. Black locust ROPS	30	✓	FACU
3. Pacific willow Salix sp.	<1		
4.			
Total Cover:	70		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1.			
2. Reed Canary Grass PHAR	80	✓	FACW
3. Stinging Nettle URDI	5		FAC
4. Am Speedwell VEAM	5		OBL
5.			
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: DP 3-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 2/1						silt/clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ✓ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? Yes ✓ No ___

Remarks: Redox small quantity - problematic, but area is in volcanic region and other two indicators fulfilled.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): -

Water Table Present? Yes ✓ No ✓ Depth (inches): >11

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 6

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: several small rivulets to the creek.

Grass Valley

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Goldenhills City/County: Sherman Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: DP 3-B2

Investigator(s): IXST and SASW Section, Township, Range: 3 T01S, R17E

Landform (hillslope, terrace, etc.): (old floodplain?) Local relief (concave, convex, none): Slope (%): 1%

Subregion (LRR): B Lat: Long: Datum:

Soil Map Unit Name: Endersby-Hermiston complex 0-3%/12A NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ____
Hydric Soil Present?	Yes ____	No ✓
Wetland Hydrology Present?	Yes ____	No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: west side of 97
Photo # 4
upland for DP3B
shown as NWI wetland, all weeds, no hydrogy, or soils, remnant lombardy pople

VEGETATION 20' Radius

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ∅			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. ∅			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Wild Caraway Carum carvi	70%	✓	NL
* 2. Fiddle Neck (AMIN) rigid	20%		NL
3. Common Fiddle Neck			
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1. ∅			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:
Bordered by Populus - lombard or deltoy

SOIL

Sampling Point: DP3-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7"	10YR 4/3							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

Grass Valley

Upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Goldenhills City/County: Sherman Sampling Date: 6/12/07

Applicant/Owner: BP State: OR Sampling Point: DP3C

Investigator(s): LXST and SASW Section, Township, Range: 11, T01S, R17E

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): concave Slope (%): <5

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla siltloam / 31 B NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ______	No X
Hydric Soil Present?	Yes ______	No X
Wetland Hydrology Present?	Yes ______	No X

Is the Sampled Area within a Wetland? Yes ______ No X

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ø			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Ø			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Crested wheatgrass (Agcr)	15		NL (UPL)
2. Boulbas bluegrass (Pobu)	20	✓	FAC
3. Cheatgrass (Brte)	30	✓	NL (UPL)
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ______

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present. not met

Hydrophytic Vegetation Present? Yes ______ No ✓

Remarks: CRP Area ~300 Ft. north of road.

SOIL

Sampling Point: DP3C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3						silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR C)**
___ 1 cm Muck (A9) **(LRR D)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR C)**
___ 2 cm Muck (A10) **(LRR B)**
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Ø

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) **(Nonriverine)**
___ Sediment Deposits (B2) **(Nonriverine)**
___ Drift Deposits (B3) **(Nonriverine)**
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) **(Riverine)**
___ Sediment Deposits (B2) **(Riverine)**
___ Drift Deposits (B3) **(Riverine)**
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______
Water Table Present? Yes ___ No X Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ______

Wetland Hydrology Present? Yes ___ No X

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

Remarks:
Blue line ~ but "Feature" not really present as we are at top and field access road present.
Grass Valley

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Goldenhills City/County: Sherman Sampling Date: 6/12/07

Applicant/Owner: LXST and SASW State: OR Sampling Point: DP3D

Investigator(s): ______ Section, Township, Range: 1, T01S, R17E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): ______ Slope (%): 3

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Walla Walla Silt loam 7-15% / 31 C NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ø			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Ø			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Cheatgrass BRTE	50	✓	NL
2. Creasted wheatgrass AGCR	10		NL
3. wall lettuce LAMU	<5		NL
4. wheat TRAE	30	✓	NL
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

CRP wedge

SOIL

Sampling Point: DP3D

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/3							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR C)**
___ 1 cm Muck (A9) **(LRR D)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR C)**
___ 2 cm Muck (A10) **(LRR B)**
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______ Ø

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) **(Nonriverine)**
___ Sediment Deposits (B2) **(Nonriverine)**
___ Drift Deposits (B3) **(Nonriverine)**
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) **(Riverine)**
___ Sediment Deposits (B2) **(Riverine)**
___ Drift Deposits (B3) **(Riverine)**
X Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___
Water Table Present? Yes ___ No ✓ Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks: Drainage feature where/near Woods road and Micke road intersect. NW corner. ~~E~~

Grass Valley

Wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden hills City/County: Sheran Sampling Date: 6/13/07

Applicant/Owner: BP State: OR Sampling Point: DP3E

Investigator(s): LXST and SASW. Section, Township, Range: 3, T01S, R17E

Landform (hillslope, terrace, etc.): Riverine Local relief (concave, convex, none): bench Slope (%): 1-2

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby-Hermiston Complex 0-3% /12A NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?**	Yes X No ___
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___		

Remarks: Riverine ~ Goose Creek

Photo ~ first of today under power lines

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ø			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Ø			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Small flowered rush	20	✓	FAC
2. Smooth brome BRIN	5		FAC
3. rough fescue (scabrella) FESC	5		NL
4. ~~Sc~~ Juncus balticus JUBA	25		FACW
5. Scouring rush	<1		
6. Spearmint MESP	10		OBL
7. horsetail (meadow) EQPR	35	✓	FACW
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point: OP3 E

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/2		2.5YR 2.5/4	20			silt loam	mottles dark and abundant

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ~14 inches variable - rock

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- / Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______

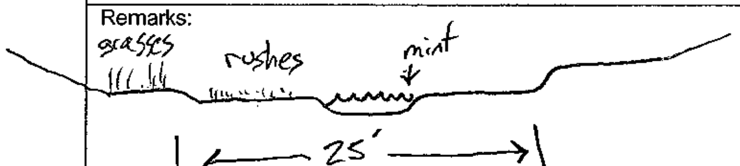
Water Table Present? Yes ___ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 3"

Wetland Hydrology Present? Yes X No ___

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

Remarks:



Flowing North
goose creek tributary.

Grass Valley 1-5'-1

Upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Goldenhills City/County: Sherman Sampling Date: 6/13/07

Applicant/Owner: BP State: WA Sampling Point: DP3E2 (3F)

Investigator(s): LXST and SASW Section, Township, Range: 3, T01S; R17E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Slope (%): 1-2

Subregion (LRR): B Lat: Long: Datum:

Soil Map Unit Name: Endersby-Hermiston Complex 0-3% 12 NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No X	Is the Sampled Area within a Wetland?	Yes ___ No X
Hydric Soil Present?	Yes ___ No X		
Wetland Hydrology Present?	Yes ___ No X		

Remarks: Upland data plot ~5' upland of DP3E
Second photo.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Intermediate wheatgrass AGIN	85		NL
2. Big Sage ARTR	12		NV
3. Wooley Vetch VIVI	trace		NL
4. Mullen VETH	trace		NI
5. Cheatgrass BRTE	trace		NL
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: DP3F

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): ~ 7 inches

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______

Water Table Present? Yes ______ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): ______

Wetland Hydrology Present? Yes ______ No X

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

Remarks:

Grass Valley

Wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Goldenhills City/County: Sherman Sampling Date: 6/13/07

Applicant/Owner: BP State: OR Sampling Point: DP3G1

Investigator(s): LXST and SASW Section, Township, Range: 2 and 3, T01S, R17E

Landform (hillslope, terrace, etc.): Riverine Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby-Hermiston Complex 0-3% /12A NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland? Yes ✓ No ___
Hydric Soil Present?	Yes ✓ No ___	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ø			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Ø			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Reed Canarygrass PHAR	100	✓	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ______

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: DP 361

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0–16	10YR 2/1		—				Silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: Rock
Depth (inches): ~7" variable

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

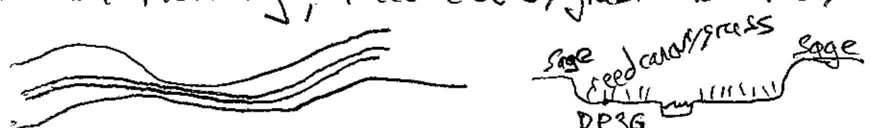
Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 3"

Wetland Hydrology Present? Yes X No ___

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

Remarks: stream flowing, reed canarygrass is very thick.



Grass Valley

Upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden hills City/County: Sherman Sampling Date: 6/13/07

Applicant/Owner: BP State: OR Sampling Point: DP3G2

Investigator(s): LXST and SASW Section, Township, Range: 2 and 3, T01S, R17E

Landform (hillslope, terrace, etc.): bench Local relief (concave, convex, none): none Slope (%): 1%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby-Hermiston Complex 0-3% / 12A NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✓
Hydric Soil Present?	Yes ____	No ✓
Wetland Hydrology Present?	Yes ____	No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Upland of DP3G ~ 40 ft.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ø			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Big Sage	30	✓	NL
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Cheatgrass BRTE	65	✓	NL
2. Thistle Ci sp	<5		FAC
3. Wooly Vetch VIVI	<5		NL
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: DP362

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11+	10YR 3/2						Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ____________

Water Table Present? Yes ______ No ✓ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ____________

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks:

GRASS Valley

Wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Goldenhills City/County: Sherman Sampling Date: 6/13/07

Applicant/Owner: ______ State: OR Sampling Point: DP3 I 1

Investigator(s): LXST and SASW Section, Township, Range: 35 T01N, R 17E

Landform (hillslope, terrace, etc.): Riverine Local relief (concave, convex, none): Bench Slope (%): 1

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby-Hermiston Complex 0-3% /12A NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? NO Are "Normal Circumstances" present? Yes ✓ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? NO (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ______	Is the Sampled Area within a Wetland?	Yes ✓ No ______
Hydric Soil Present?	Yes ✓ No ______		
Wetland Hydrology Present?	Yes ✓ No ______		

Remarks: 2 photos

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ø			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Ø			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Spike Rush Eleocharis palustris ELPA	50	✓	OBL
2. Wooly Vetch VIVI	Trace		NL
3. Galleum - Bed straw - small GAAP	trace		FAC
4. Rush (soft rush?) JU sp	30	✓	FAC
5. Curley dock RUCR	trace		FAC
6. American speedwell VEAM	10	✓	OBL
7.			
8.			
Total Cover:	95		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ______

Remarks:

SOIL

Sampling Point: DP3I 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8"	10YR 2/1						Silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): ~ 8"

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ___	No ✓	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ✓	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:
DP3I is near stream channel.

Grass Valley

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Goldenhills City/County: Sherman Sampling Date: 6/13/07

Applicant/Owner: BP State: OR Sampling Point: DP3 I 2

Investigator(s): LXST and SASW Section, Township, Range: 35 T01N, R17E

Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): none Slope (%): Flat

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Endersby-Hermiston complex 0-3% / 12A NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ______ No ✓	Is the Sampled Area within a Wetland?	Yes ______ No ✓
Hydric Soil Present?	Yes ______ No ✓		
Wetland Hydrology Present?	Yes ______ No ✓		

Remarks:
Upland plot for DP3 I, 15'

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Big Sage ARTR	40	✓	NL
2. ~~Cheatgrass~~			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Cheatgrass BRTE	65	✓	NL
2. Lupine Lupinus sp.	trace		UPL
3. Intermediate wheatgrass AGIN	30	✓	NL
4.			
5.			
6.			
7.			
8.			
Total Cover:	95		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ______ No ✓

Remarks:

SOIL

Sampling Point: DP 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10 +	10YR 3/2						Silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

Grass Valley

WETLAND DETERMINATION DATA FORM – Arid West Region

Wetland

Project/Site: Golden Hills City/County: Sherman Co Sampling Date: 6/13/07

Applicant/Owner: ______ State: OR Sampling Point: 3K-2

Investigator(s): S. Pattinson & S. Walker Section, Township, Range: 25 and 36, T01N, 17E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): ______ Slope (%): 20

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet very stony loam /16 D NWI classification: POWHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ______	Is the Sampled Area within a Wetland?	Yes X No ______
Hydric Soil Present? Yes X No ______		
Wetland Hydrology Present? Yes X No ______		

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Cattail TYLA	50	✓	OBL
2. reed canary grass PHAR	30	✓	FACW
3. nettles UTDI	10		FAC
4. Canada thistle CIAR	10		FAC
5. woodrose ROWO	2%		FACU
6.			
7.			
8.			
Total Cover:	100+		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ______

Remarks:

SOIL Sampling Point: 3K2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1		—	—	—	—	muck	
6-12	10YR 2/1		—	—	—	—	Clayey	muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: Rock - large
Depth (inches): 12"

Hydric Soil Present? Yes X No ___

Remarks:
Muck rock @ 12" shovel refusal

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): @ 1 cm
Water Table Present? Yes ✓ No ___ Depth (inches): 1 inch
Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks: Hydrology comes from Spring just S of wetland

Grass Valley

wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6/13/07

Applicant/Owner: BP State: OR Sampling Point: DP 3K3

Investigator(s): kxst, sasw Section, Township, Range: 25 and 36, T01N, R17E

Landform (hillslope, terrace, etc.): drainage feature Local relief (concave, convex, none): concave Slope (%): 10%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet very stony loam 7-40% / 16D NWI classification: POWHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? no Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? no (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:
2 photos

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Am. Speedwell Veronica americana	50	✓	OBL
2. Thistle CIAR	15	✓	FAC
3. Reed Canarygrass PHAR	5		OBL
4. Monkey flower MIGU	>5		OBL
5. Cattails TYLA	10	✓	OBL
6. Curly Dock RU	>5		FAC
7. Nettle URDI	tr		FAC
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum Ø % Cover of Biotic Crust Ø

Remarks:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

SOIL

Sampling Point: 0P3K3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1						silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR C**)
- __ 1 cm Muck (A9) (**LRR D**)
- __ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR C**)
- __ 2 cm Muck (A10) (**LRR B**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ✓ Surface Water (A1)
- __ High Water Table (A2)
- ✓ Saturation (A3)
- __ Water Marks (B1) (**Nonriverine**)
- __ Sediment Deposits (B2) (**Nonriverine**)
- __ Drift Deposits (B3) (**Nonriverine**)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Plowed Soils (C6)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (**Riverine**)
- __ Sediment Deposits (B2) (**Riverine**)
- __ Drift Deposits (B3) (**Riverine**)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Thin Muck Surface (C7)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ____ Depth (inches): 1

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks: spring fed

Grass Valley

WETLAND DETERMINATION DATA FORM – Arid West Region

upland

Project/Site: Golden Hills City/County: Sherman Co Sampling Date: 6/18/07

Applicant/Owner: BP State: OR Sampling Point: 3-K-1

Investigator(s): S. Pattinson & S. Walkey Section, Township, Range: 25 and 36, T01N, R17E

Landform (hillslope, terrace, etc.): Slight slope Local relief (concave, convex, none): concave Slope (%): 20

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Licksklllet very stony loam/ILD NWI classification: nearby POWHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓	No ___	Is the Sampled Area within a Wetland?	Yes ___ No X
Hydric Soil Present?	Yes ___	No ✓		
Wetland Hydrology Present?	Yes ___	No ✓		

Remarks: area of vegetation is only 3' feet wide. No soils. Very Rocky Water comes from culvert under road

VEGETATION

Tree Stratum (Use scientific names.)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
Total Cover:				
Sapling/Shrub Stratum				
1.				
2.				
3.				
4.				
5.				
Total Cover:				
Herb Stratum				
1. Monkeyflower	MIGU	5		OBL
2. Cattail	TYLA	70	✓	OBL
3. Curly dock	RUCR	5		FAC
4. Canada Thistle	CIAR	20	✓	FAC
5.				
6.				
7.				
8.				
Total Cover:		100		
Woody Vine Stratum				
1. None				
2.				
Total Cover:				

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 3K1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2						Sandy loam	gravel increases @ depth

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR C)**
___ 1 cm Muck (A9) **(LRR D)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR C)**
___ 2 cm Muck (A10) **(LRR B)**
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: Rock layer (very large)
Depth (inches): 8"

Hydric Soil Present? Yes ______ No X

Remarks:
Rocky - large rocks - shovel refusal
No mottles

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) **(Nonriverine)**
___ Sediment Deposits (B2) **(Nonriverine)**
___ Drift Deposits (B3) **(Nonriverine)**
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) **(Riverine)**
___ Sediment Deposits (B2) **(Riverine)**
✓ Drift Deposits (B3) **(Riverine)** *
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks: (drift deposits - faint & inconsistent)

Grass Valley Canyon (Goose Creek)

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6/13/07

Applicant/Owner: BP State: OR Sampling Point: DP 3K4

Investigator(s): SASW LXST Section, Township, Range: 25 and 36 T01N, R17E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5-10

Subregion (LRR): B Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: lickskillet very stoney loam 7-40% / 16 D NWI classification: POW Hh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:
Upslope of DPK3

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Big Sage ARTR	20	✓	NL
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Cheatgrass BRTE	45	✓	NL
2. Int Wheatgrass AGIN	35	✓	NL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	85		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15% Some Rock % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: DPK4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2		3/				silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

Grass Valley

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: DP 3X1

Investigator(s): SAS W, LXST Section, Township, Range: 30 and 31, T01N, R18E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 20%

Subregion (LRR): B Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Lickskillet very stony loam /16D NWI classification: above a POWA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No ✓
Hydric Soil Present?	Yes ____	No ✓
Wetland Hydrology Present?	Yes ____	No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:
W of NW tip of Line #1, in crane line, within forested ravine immediately above old homested. 2 photos – log. Wildlife Mecca

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Lombard poplar hybrid PONIX	30%	yes	FACW
2.			
3.			
4.			
Total Cover:	30		
Sapling/Shrub Stratum			
1.			
2.			
3. ∅			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus tectorum cheatgrass	60	yes	NL
2. Canary reedgrass PHAR	1/2%		FACW
3. Wild caraway CACO Carum carvi	20	yes	NL
4. thistle Cirsium sp	5		NI
5. Bluebunch wheatgrass	15		UPL
6. Agropyron spicata			
7.			
8. no blossom			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ____

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 30 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	31	x 2 = 62
FAC species		x 3 =
FACU species		x 4 =
UPL species	60	x 5 = 300
Column Totals:	BRTE 91 (A)	362 (B)

Prevalence Index = B/A = 362/91 NA

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:
Lombardy hybrid – rated as FACW, as most poplars, found stream side plantings

SOIL Sampling Point: DP3X1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2						silt loam	
10-13	10YR 3/2	98%	2.5YR 3/6	tr	C	PL	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix. ?

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: rock

Depth (inches): 13"

Hydric Soil Present? Yes ___ No ✓

Remarks: Trace redox between 10-13"
may be a problematic soil due to volcanic ash in area,
but there was not wetland Veg or wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators: none

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

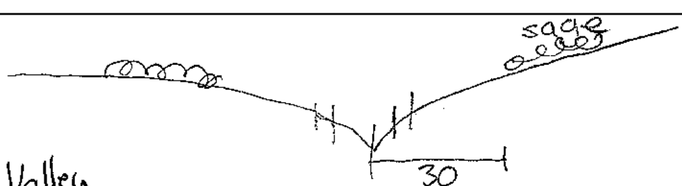
Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No no

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

Remarks:



appears to have seasonal/flashy hydrology

vegetated wash

Grass Valley

upland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Golden Hills City/County: Sherman Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: DP3X2

Investigator(s): SASW, LKST Section, Township, Range: 30 and 31 T01N, R 18E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): slope Slope (%): 20%

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet very stony loam/ 16 D NWI classification: — above a POWR

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___	No ✓	**Is the Sampled Area within a Wetland?** Yes ___ No ✓
Hydric Soil Present?	Yes ___	No ✓	
Wetland Hydrology Present?	Yes ___	No ✓	

Remarks:
Above ~ further upslope of DP3X1 ~ 30ft W

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Poplar hybrid PONI x	80	yes	FACW
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bluebunch wheatgrass PSSP40	40	yes	UPL
2. Cheatgrass BRTE	40	yes	NL
3. wildrye LECI	5		FAC
4. Bedstraw GAAP Galium aparine	trace		FAC
5. Wild Caraway CACO	10		NI
6.			
7.			
8.			
Total Cover:	95		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ______

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 30 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ~~Dominance Test is >50%~~
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: DP 3X2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2						Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

Grass Valley

WETLAND DETERMINATION DATA FORM – Arid West Region

upland

Project/Site: Goldan Hills City/County: Sherman Sampling Date: 6/14/07

Applicant/Owner: BP State: OR Sampling Point: DP34

Investigator(s): sasw, lxst Section, Township, Range: 22, T01N, R17E

Landform (hillslope, terrace, etc.): drainage feature Local relief (concave, convex, none): concave + convex Slope (%): 3%

Subregion (LRR): B Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Alderly Silt loam 7-15% / 1C NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes ___ No ✓

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___	No ✓	Is the Sampled Area within a Wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___	No ✓	
Wetland Hydrology Present?	Yes ___	No ✓	

Remarks: photo 31
wide CRP
Turbine run #5

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. wheat TRAE Triticum aestivum	40	✓	NL
2. cheat grass BRTE	10		NL
3. int. wheat BRIN	30	✓	NL
4.			
5.			
6.			
7.			
8.			
Total Cover:	80%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 20% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: DP 3 Y

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR3/2						silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Ø

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient) Ø

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

drainge feature w/ two ditches ~~as~~ each separating wheat from CRP

NORTH VIEW

wheat | 25' CRP | Wheat

North of drainage feature (Arm), fully cultivated

Spanish Hollow

WETLAND DETERMINATION DATA FORM – Arid West Region

upland

Project/Site: Golden Hills City/County: Sherman Sampling Date: 06/14/07

Applicant/Owner: BP State: OR Sampling Point: DP 37

Investigator(s): sasw, lxst Section, Township, Range: 27, T01N, R17E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): B Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Lickskillet-Bakeoven complex 2-20%/17C NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ✓	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks: cultivated wheat south side, but CRP on northside
photo #38 South 5 turbine rw

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ø			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Ø			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. wheat TRAE	40	✓	NL
2. cheatgrass BRTE	30%	✓	NL
3. morning glory COAR	20%	✓	NL
4. yarrow ACMI	5%		FACU
5.			
6.			
7.			
8.			
Total Cover:	85%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: base of channel 80% bareground

SOIL

Sampling Point: DP37

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2						silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

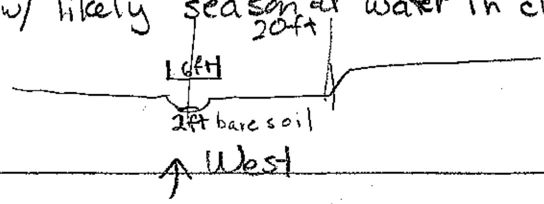
Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______
Water Table Present? Yes ___ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks: drainage feature w/ likely seasonal water in channel



Grass Valley

APPENDIX 2 - DATA PLOT PHOTOS

Delineated Wetlands

Figure 1.Wetland A, View to East.

Figure 2. Wetland B, View to West

Figure 3. Wetland C, View to East

Figure 4. Wetland D, View to West

Figure 5. Wetland E, View to Northwest

Figure 6. Wetland F, View to Northwest

Figure 7. Wetland G. View to East

Figure 8. Wetland H. View to South

Figure 9. Wetland I, View to South

Figure 10. Wetland K, View to North

Figure 11. Wetland M, View to Northeast

Figure 12. Wetland N, View to North

Typical Blue line Drainage Features with Upland Determinations

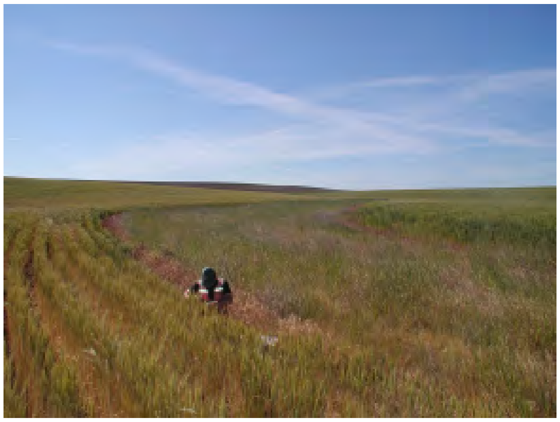


Figure 13. Upland CRP, DPY.

Figure 14. Upland fallow field

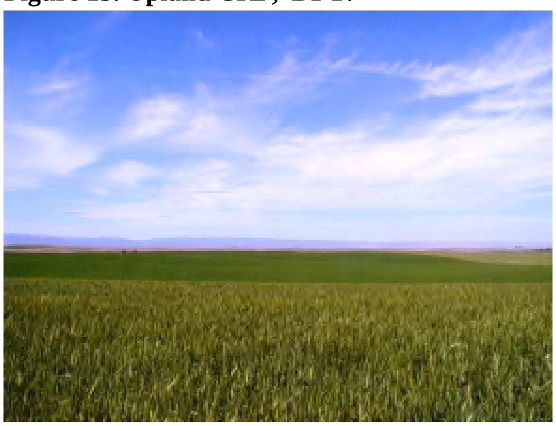


Figure 15. Upland wheat production

Figure 16. Upland, DP D.

Figure 17 Upland, DP X.

Figure 18. Upland dry wash

Upland Determinations at NWI Sites.

Figure 19. Upland DP B2.

Figure 20. Upland DP 2J.

ATTACHMENT J-2

Joint Application Form

US Army Corps
Of Engineers (Portland District)

Joint Permit Application Form

DATE STAMP

AGENCIES WILL ASSIGN NUMBERS

Corps Action ID Number | Oregon Department of State Lands No

SEND ONE SIGNED COPY OF YOUR APPLICATION TO EACH AGENCY

District Engineer ATTN: CENWP-OD-GP PO Box 2946 Portland, OR 97208-2946 503-808-4373	**AND**	*West of the Cascades:* State of Oregon Department of State Lands PO Box 4395, Unit 18 Portland, OR 97208-4395 503-378-3805	**OR**	*East of the Cascades:* State of Oregon Department of State Lands 1645 NE Forbes Road, Suite 112 Bend, Oregon 97701 541-388-6112

(1) Applicant Name and Address	Attn: Kelly O'Brien BP Alternative Energy North America Inc. 700 Louisiana Street, 33rd Floor Houston, TX 77002	Business Phone # Home Phone# FAX # E-mail:	(713) 354-2153 (713) 354-2120 Kelly.obrien@bp.com
Authorized Agent Name and Address ☒Consultant ☐Contractor	Dana Siegfried David Evans and Associates, Inc. 2100 SW River Parkway Portland, OR 97201	Business Phone # Home Phone# FAX # E-mail:	(503) 223-6663 (503) 223-2701 dns@deainc.com
Property Owner Name and Address (If different than applicant)1	See list in Exhibit F. BPAE leases the subject lands	Business Phone # Home Phone# FAX # E-mail:	

(2) PROJECT LOCATION

Street, Road or other descriptive location	Legal Description *(attach tax lot map*)*			
Near Wasco, Sherman County Oregon	Quarter/Quarter **See**	Section **Attached**	Township **Sheet**	Range

In or Near (City or Town) Wasco	County Sherman	Tax Map # See Exhibit F	Tax Lot #[2] See Exhibit F
Wetland/Waterway Name (pick one) Wetland	River Mile (if known) NA	Latitude (in DD.DDDD format) 45.53 N	Longitude (in DD.DDDD format) 120.65 W

Directions to the site: I-84 east, Hwy 97 south, Hwy 206 east.

(3) PROPOSED PROJECT INFORMATION

Type: ☒Fill ☒Excavation (removal) ☐In-Water Structure ☐Maintain/Repair an Existing Structure

Brief Description: Install power collection cables as part of the 400 MW Golden Hills Wind Farm

Fill

☐Riprap ☐Rock ☐Gravel ☐Sand ☒Silt ☐Clay ☐Organics ☐Other:

Wetlands	Permanent (cy)	0	Temporary (cy)	<350			Total cubic yards for project (including outside OHW/wetlands)	500,000 Approx.
	Impact Area in Acres	0.07	Dimensions (feet)	L' 15 ave	W' 50	H' 3		
Waters below OHW	Permanent (cy)	0	Temporary (cy)	0				
	Impact Area in Acres	0	Dimensions (feet)	L'	W'	H'		

Removal

☐Riprap ☐Rock ☐Gravel ☐Sand ☒Silt ☐Clay ☐Organics ☐Other:

Wetlands	Permanent (cy)	0	Temporary (cy)	<350			Total Cubic yards for project (including outside OHW/wetlands)	150,000
	Impact Area in Acres	0.07	Dimensions (feet)	L' 15 ave	W' 50	H' 3		
Waters below OHW	Permanent (cy)	0	Temporary (cy)	0				
	Impact Area in Acres	0	Dimensions (feet)	L'	W'	H'		

[1] **If applicant is not the property owner, permission to conduct the work must be attached.**
[2] **Attach a copy of all tax maps with the project area highlighted.**
** Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.*

Total acres of construction related ground disturbance: 1147 acres (If 1 acre or more a 1200-C permit may be required from DEQ)

Is the disposal area upland? ☒Yes ☐No		Impervious surface created? ☐<1 acre? ☒>1 acre?	
Are you aware of any state or federally listed species on the project site?	☒Yes ☐No	If yes, please explain in the project description (in block 4)
Are you aware of any Cultural/Historic Resources on the project site?	☒Yes ☐No	
Is the project site within a national Wild & Scenic River?	☐Yes ☒No	
*Is the project site within a State Scenic Waterway ?**	☐*Yes* ☒*No*	

(4) PROPOSED PROJECT PURPOSE & DESCRIPTION

Project Purpose and Need:

*Provide a description of the public, social, economic, or environmental benefits of the project along with any supporting formal actions of a public body (e.g. city or county government), as appropriate.**

The purpose of the project is to generate electric power from a renewable source. The project will general up to 400 MW of electricity for delivery into the grid at two facilities owned and operated by Bonneville Power Administration. This will help meet the growing demand for renewable energy and decreasing overall reliance on sources that generate greenhouse gases. The project will also provide income to farmers, improve local roadways, and general substantial tax revenue or in-lieu payments to Sherman County. Environmental impacts will be minimal. Approximately 3000 square feet of wetland will be temporarily disturbed and restored as a result of the project.

Cultural resources have been surveyed and will be avoided (see Exhibit S of the Application for Site Certificate (ASC)).
No threatened or endangered species will be affected as a result of the project (see Exhibit Q of the ASC).
The Deschutes River and John Day River lie within 10 miles of the project site, but no part of the project development will be within these areas.

Project Description:

Please describe in detail the proposed removal and fill activities, including the following information:

- ❑ Volumes and acreages of all fill and removal activities in waterway or wetland separately
- ❑ Permanent and temporary impacts
- ❑ Types of materials (e.g., gravel, silt, clay, etc.)
- ❑ How the project will be accomplished (i.e., describe construction methods, equipment, site access)
- ❑ *Describe any changes that the project may make to the hydraulic and hydrologic characteristics (e.g., general direction of stream and surface water flow, estimated winter and summer flow volumes.) of the waters of the state, and an explanation of measures taken to avoid or minimize any adverse effects of those changes.*
- ❑ Is any of the work already complete? ☐yes ☒no If yes, please describe the completed work.

In addition, for fish habitat or wetland restoration or enhancement activities, complete the information requested in supplemental Fish Habitat or Wetland Restoration and Enhancement form.

Underground collector lines will cross wetland areas at 4 locations. Because the collector lines have limited power carrying capacity, several parallel lines may be placed at any given crossing, for a total width of 50 feet of disturbance. The wetlands average 15 feet wide. (4 x 50' x 15' = 3000 sq ft, 0.07 acres) Collectors will be placed at least 3 feet below the ground surface, so that farming activities can continue to occur over them. (9000 cu ft/27 cu ft/yd = 333 cu yd). There will be no fill in other waters of the state or US. Native material will be excavated from the crossings, and temporarily stored on adjacent uplands. Then this native material will be re-deposited back into the crossing trenches. No hydraulic or hydrologic changes are expected to occur, as the crossing area will be restored to their pre-construction contours and condition.

*** *Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***

Please describe in detail the proposed removal and fill activities, including the following information:

- ❑ Volumes and acreages of all fill and removal activities in waterway or wetland separately
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**** Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***

Project Drawings:

State the number of project drawing sheets included with this application: __3____

A complete application must include a location map, site plan, cross-section drawings and recent aerial photo as follows and as applicable to the project:

- ❑ **Location map** (must be legible with street names)

- ❑ **Site plan** including;
  - ❑ Entire project site and activity areas
  - ❑ Existing and proposed contours
  - ❑ Location of ordinary high water, wetland boundaries or other jurisdictional boundaries
  - ❑ Identification of temporary and permanent impact areas within waterways or wetlands
  - ❑ Map scale or dimensions and north arrow
  - ❑ Location of staging areas
  - ❑ Location of construction access
  - ❑ Location of cross section(s), as applicable
  - ❑ Location of mitigation area, if applicable

- ❑ **Cross section drawing(s)** including;
  - ❑ Existing and proposed elevations
  - ❑ Identification of temporary and permanent impact areas within waterways or wetlands
  - ❑ Ordinary high water and/or wetland boundary or other jurisdictional boundaries
  - ❑ Map scale or dimensions

- ❑ **Recent Aerial photo** (1:200, or if not available for your site, the highest resolution available)

Will any construction debris, runoff, etc., enter a wetland or waterway? ☐Yes ☒No
If yes, describe the type of discharge and show the discharge location on the site plan.

Estimated Project Start Date: Spring 2008 Estimated Project Completion Date: December 31, 2008

** Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.*

(5) PROJECT IMPACTS AND ALTERNATIVES

Alternatives Analysis:

Describe alternative sites and project designs that were considered to avoid or minimize impacts to the waterway or wetland. *(Include alternative design(s) with less impact and reasons why the alternative(s) were not chosen. Reference OAR 141-085-0025 (3(j)) and 141-085-0029 (4 through 6) for more information.*)*

Overhead crossings were considered in order to avoid the wetland impacts. However, overhead lines are extremely dangerous to crop dusters, which fly within 10 to 12 feet of the ground. This option was not selected for logistical and safety reasons.

Boring under these small wetlands is prohibitively expensive when compared to the small level of disturbance to these small, readily restored wetland drainages. Moreover, bedrock conditions may not allow boring and would make it even more expensive.

Measures to minimize impacts:

Describe what measures you will use (before and after construction) to minimize impacts to the waterway or wetland. These may include but are not limited to the following:

- ❑ *For projects with ground disturbance include an erosion control plan or description of other best management practices (BMP's) as appropriate. (For more information on erosion control practices see DEQ's Oregon Sediment and Erosion Control Manual)*
- ❑ *For work in waterways where fish or flowing water are likely to be present, discuss how the work area will be isolated from the flowing water.*
- ❑ *If native migratory fish are present (or were historically present) and you are installing, replacing or abandoning a culvert or other potential obstruction to fish passage, complete and attach a statement of how the Fish Passage Requirements, set by the Oregon Department of Fish and Wildlife will be met.*

- Excavated material will be stockpiled in uplands prior to replacing within the wetland crossings
- All best management practices, including silt fences, hay bales, construction timing and housekeeping measures will be implemented in accordance with the 1200-C permit (see Exhibit I of the ASC)
- Wetlands that will not be disturbed will be fenced with orange construction fencing to prevent inadvertent disturbance in these areas
- No work will occur in the wetlands when there is flowing water present

The wetlands and drainages in this area are all non-fish bearing. No fish passage is required or proposed.

** Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.*

Description of resources in project area

Impact area is: ☐ Ocean ☐ Estuary ☐ River ☐ Lake ☐ Stream ☒ Freshwater Wetland

Describe the existing **physical and biological characteristics** of the wetland/waterway site by area and type of resource (Use separate sheets and photos, if necessary).

For wetlands, include, as applicable:

- *Cowardin and Hydrogeomorphic(HGM) wetland class(s)**
- *Dominant plant species by layer (herb, shrub, tree)**
- Whether the wetland is freshwater or tidal
- *Assessment of the functional attributes of the wetland to be impacted**
- Identify any vernal pools, bogs, fens, mature forested wetland, seasonal mudflats, or native wet prairies in or near the project area.)

For waterways, include a description of, as applicable:

- *Channel and bank conditions**
- *Type and condition of riparian vegetation**
- *Channel morphology (i.e., structure and shape)**
- *Stream substrate**
- Fish and wildlife (type, abundance, period of use, significance of site)
- *General hydrological conditions (e.g. stream flow, seasonal fluctuations)**

For complete wetland information, see Attachment J-1 of Exhibit J of the ASC

All wetlands delineated were Palustrine Emergent, dominated by reed canarygrass, cattails, intermediate wheatgrass, spike rush, American speedwell, rabbitfoot grass, and toad rush Baltic rush.

*Describe the existing **navigation, fishing and recreational** use of the waterway or wetland.**

Because these are palustrine headwater wetlands on private property, no navigation, fishing ore recreational use occurs in these wetlands.

**** Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***

Site Restoration/Rehabilitation

- ❑ *For temporary disturbance of soils and/or vegetation in waterways, wetlands or riparian areas, please discuss how you will restore the site after construction including any monitoring, if necessary**

Upon completion of installation of underground collector system across wetlands, subsoils would be cultivated to a depth of about 12 inches, then salvaged topsoil would be redistributed to match adjacent grades. Revegetation in wetland areas would occur by applying a native seed mix to disturbed areas using common application methods such as broadcasting and drilling.

Mitigation

*Describe the reasonably expected adverse effects of the development of this project and how the effects will be mitigated.**

- ❑ *For permanent impact to wetlands, complete and attach a Compensatory Wetland Mitigation (CWM) Plan. (See OAR 141-085-0121 to OAR 141-085-0176 for plan requirements)**
- ❑ *For permanent impact to waterways or riparian areas, complete and attach a Compensatory Mitigation (CM) plan (See OAR 141-085-0115 for plan requirements)**
- ❑ *For permanent impact to estuarine wetlands, you must submit an Estuarine Resource Replacement Plan. (See OAR 141-085-0240 to OAR 141-085-0257 for plan requirements)**

All project impacts in waters of the state/US will be temporary; therefore, no compensatory mitigation is required.

Mitigation Location Information *(Fill out only when mitigation is proposed or required)* NOT APPLICABLE

Proposed mitigation: (Check all that apply)	☐ *Onsite Mitigation* ☐ *Offsite Mitigation* ☐ *Mitigation Bank* ☐ *Payment to Provide*	*Type of mitigation:* ☐ *Wetland Mitigation* ☐ *Mitigation for impacts to other waters* ☐ *Mitigation for impacts to navigation, fishing, or recreation*			
Street, Road or other descriptive location		*Legal Description (attach tax lot map*)*			
		Quarter/Quarter	*Section*	*Township*	*Range*
In or Near (City or Town)	*County*	*Tax Map #*		*Tax Lot #*[3]	
Wetland/Waterway Name (pick one)	*River Mile (if known)*	*Latitude (in DD.DDDD format)*		*Longitude (in DD.DDDD format)*	
Name of waterway/watershed/HUC		*Name of mitigation bank (if applicable)*			

[3] **Attach a copy of all tax maps with the project area highlighted.**

*** Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***

(6)	ADDITIONAL INFORMATION

Adjoining Property Owners and Their Address and Phone Numbers *(if more than 5, attach printed labels*)*

See Exhibit F of the ASC.

Has the proposed activity or any related activity received the attention of the Corps of Engineers or the Department of State Lands in the past, e.g., wetland delineation, violation, permit, lease request, etc.? ☐Yes ☒No

If yes, what identification number(s) were assigned by the respective agencies:
Corps # State of Oregon #

Has a wetland delineation been completed for this site? ☒*Yes* ☐*No*
*If yes, by whom** David Evans and Associates, Inc.
Has the wetland delineation been approved by DSL or the COE? ☐*Yes* ☒*No*
*(If yes, attach concurrence letter.)**

7)	***CITY/COUNTY PLANNING DEPARTMENT AFFIDAVIT*** *(to be completed by local planning official)* *

I have reviewed the project outlined in this application and have determined that:

☐This project is not regulated by the comprehensive plan and land use regulations.
☐This project is consistent with the comprehensive plan and land use regulations.
☐This project will be consistent with the comprehensive plan and land use regulations when the following local approval(s) are obtained.
☐Conditional Use Approval ☐Development Permit ☐Other

☐This project is **not** consistent with the comprehensive plan. Consistency requires a
☐Plan Amendment ☐Zone Change ☐Other

An application ☐has ☐has not been filed for local approvals checked above.

Local planning official name (print)	Signature	Title	City / County	Date

Comments:

(8)	***COASTAL ZONE CERTIFICATION****

If the proposed activity described in your permit application is within the Oregon coastal zone, the following certification is required before your application can be processed. A public notice will be issued with the certification statement, which will be forwarded to the Oregon Department of Land Conservation and Development for its concurrence or objection. For additional information on the Oregon Coastal Zone Management Program, contact the department at 635 Capitol Street NE, Suite 150, Salem, Oregon 97301 or call 503-373-0050.

CERTIFICATION STATEMENT

I certify that, to the best of my knowledge and belief, the proposed activity described in this application complies with the approved Oregon Coastal Zone Management Program and will be completed in a manner consistent with the program.

NOT APPLICABLE	
Print /Type Name	Title
Applicant Signature	Date

* ***Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***

(9)	SIGNATURES FOR JOINT APPLICATION

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. By signing this application I consent to allow Corps or Dept. of State Lands staff to enter into the above-described property to inspecting the project location and to determine compliance with an authorization, if granted. I herby authorize the person identified in the authorized agent block below to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. *I understand that payment of the required state processing fee does not guarantee permit issuance. The fee for the state application must accompany the application for completeness. Amount enclosed $____.**

	I certify that I may act as the duly authorized agent of the applicant.
Robert L. Lukefahr — President Print /Type Name — Title	________ — ______ Print /Type Name — Title
[signature] — 7/30/07 **Applicant** Signature — Date	________ — ______ **Authorized Agent** Signature — Date

Landowner signatures: *For projects and /or mitigation work proposed on land not owned by the applicant, including state-owned submerged and submersible lands, please provide signatures below.* NOT APPLICABLE

*I certify that the applicant has my permission to conduct the project on my property.**	*I certify that the applicant has my permission to conduct the proposed mitigation on my property. I also understand this may involve long term protection and monitoring of the mitigation area.**
Print /Type Name — Title	Print /Type Name — Title
Property Owner Signature — Date	***Mitigation Property Owner*** Signature — Date

* *Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.*

The project site is located in the following Township, Range, and Sections:

- Township 2 North, Range 16 East, Sections 7, 12, 13, 14, 23, 24, 25, 26, 27, 34, 35 and 36
- Township 2 North, Range 17 East, Sections 29, 30, 31, and 32
- Township 1 North, Range 16 East, Sections 1, 2, 3, 13, 24, 25, and 36
- Township 1 North, Range 17 East, Sections 5 through 8, Sections 15 through 23, and Sections 27 through 36
- Township 1 North, Range 18 East, Sections 30 and 31
- Township 1 South, Range 17 East, Sections 1 through 5, 6 through 14, 16, and
- Township 1 South, Range 18 East, Section 5 and 6


Wetland E

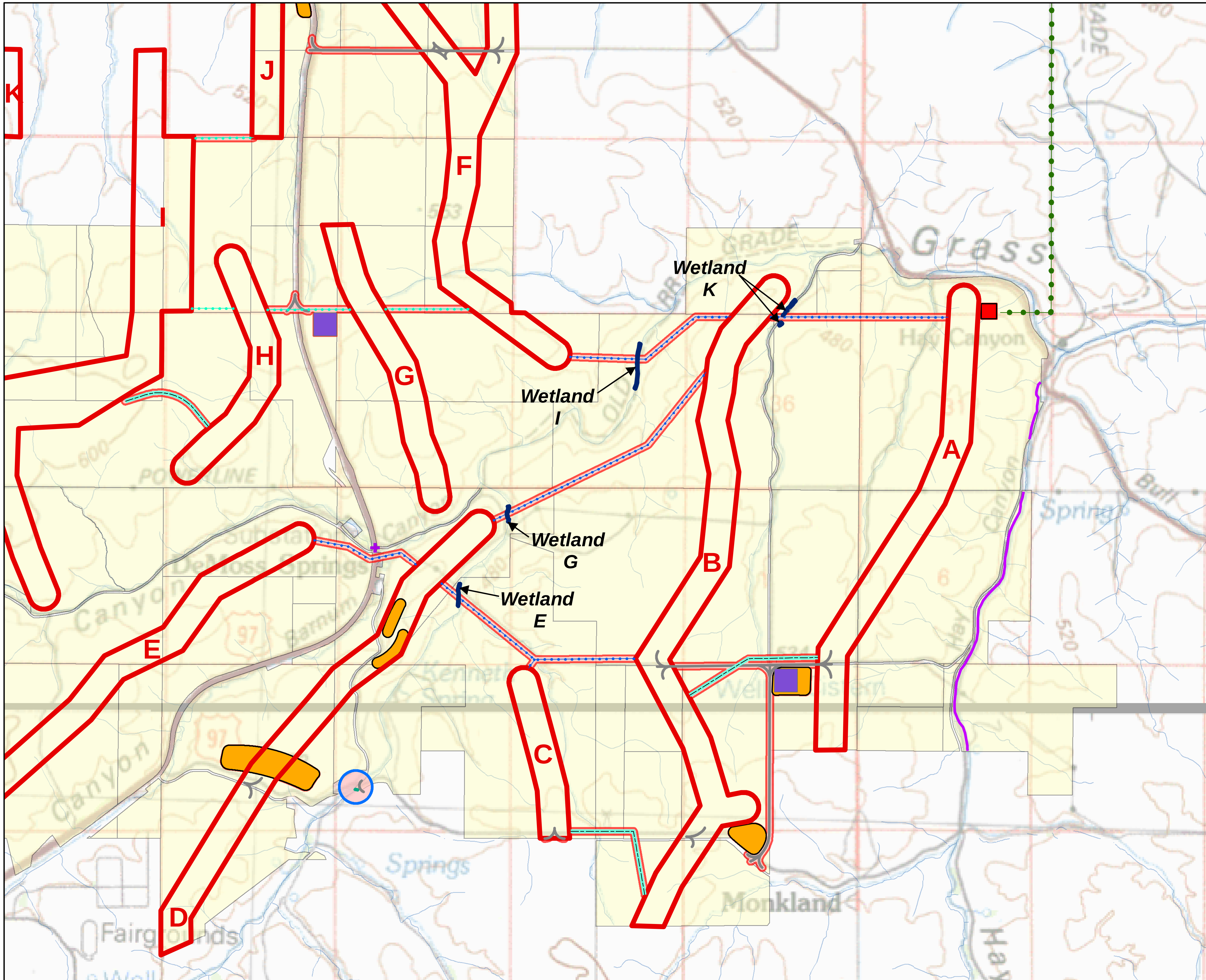

Wetland G


Wetland I


Wetland K

Golden Hills Wind Project

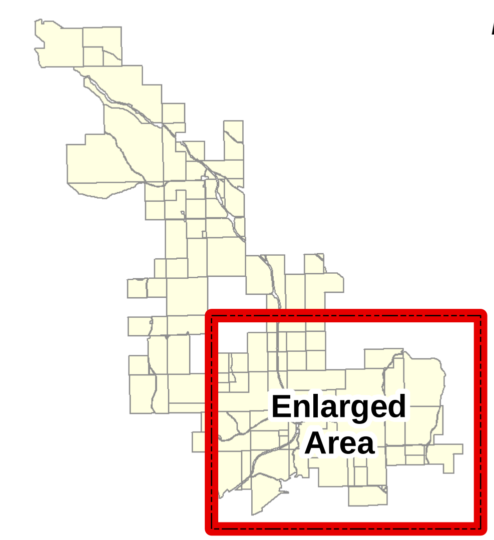
Wetland Location Map



Legend

- Transmission Line
- Underground Collector
- Crane Path and Underground Collector
- Crane Path
- New Road
- Existing Road Improvement
- Waters of the U.S./State
- Bridge area
- Laydown
- OM Building
- Substation
- Survey Corridors 062907
- Connector Corridors 062907
- Lease Area 051107
- Wetland
- Bridge
- Culvert
- Wetland Data Plots
- Upland Data Plots

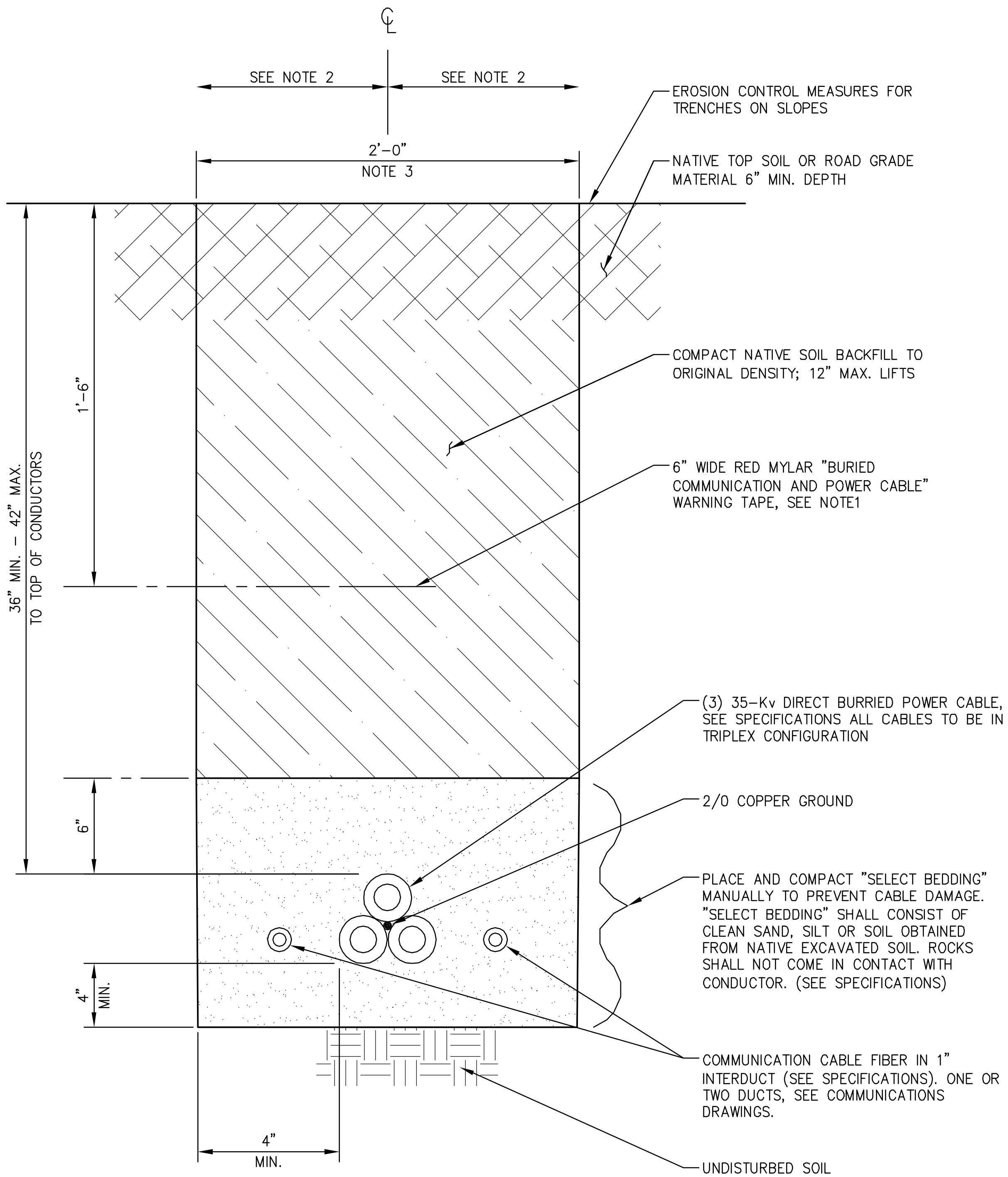
Locator Map



N

0 3,000 6,000

Feet

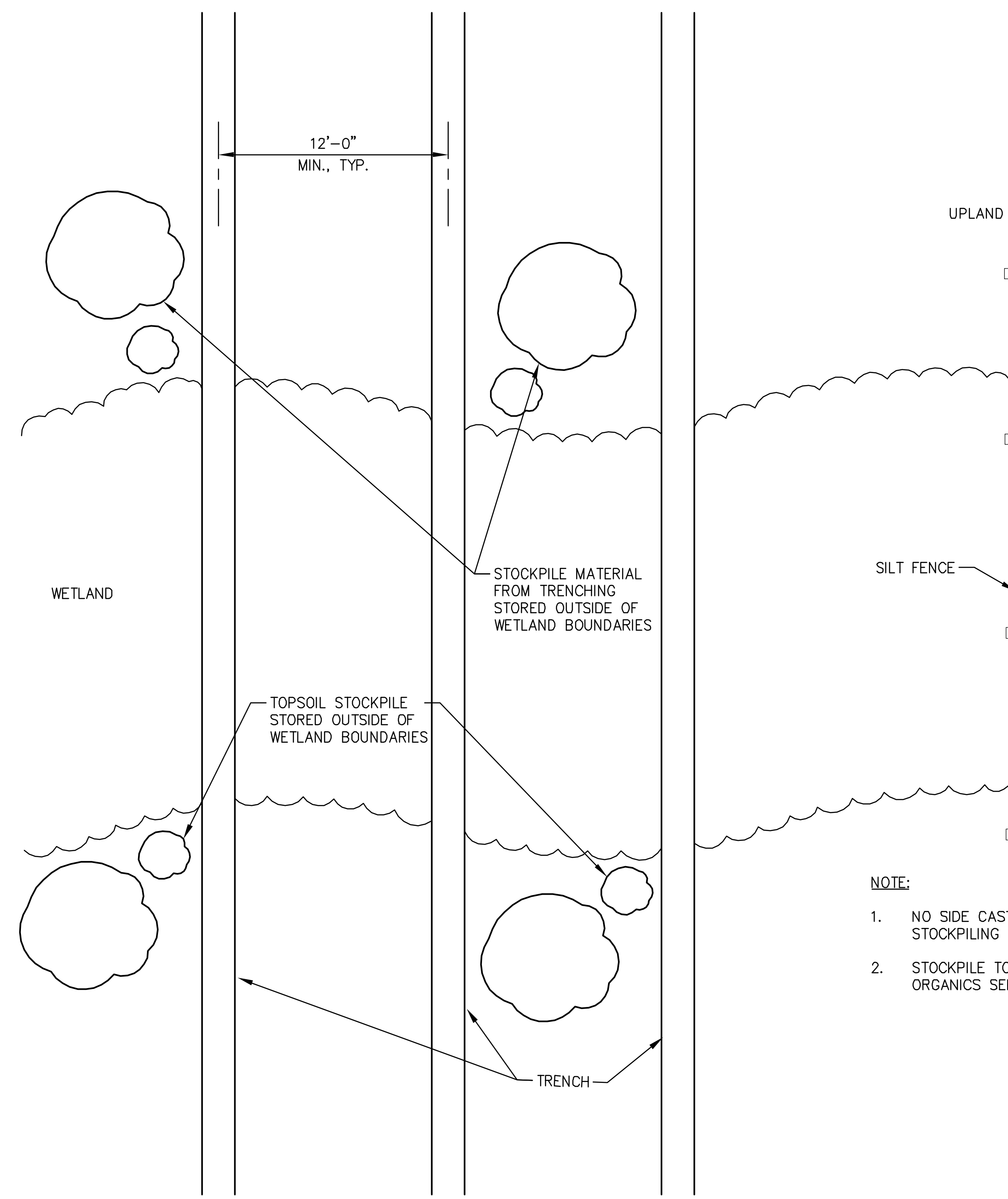


NOTE:

1. ANCHOR WARNING TAPE IN NATIVE SOIL BACKFILL WITH WIRE HOOPS OR OTHER EFFECTIVE MEANS TO AVOID DISRUPTION AND MISALIGNMENT OF TAPE DURING BACKFILLING OPERATION.
2. EACH 3-PHASE CIRCUIT TRENCH SHALL BE SEPARATED FROM ALL OTHER CIRCUIT TRENCHES BY 12-FEET MINIMUM CENTERLINE TO CENTERLINE.
3. BASE BID TO INCLUDE 24" WIDE TRENCH. ALTERNATE TRENCH WIDTHS MAY BE CONSIDERED BY OWNER.

TYPICAL 35-kV, 3 PHASE, CABLE TRENCH (WITH COMMUNICATION CABLE)

SCALE: N.T.S.



NOTE:

1. NO SIDE CASTING OR STOCKPILING WITHIN WETLAND.
2. STOCKPILE TOPSOIL AND ORGANICS SEPARATELY.

CABLE TRENCH DETAIL

SCALE: N.T.S.

SHERMAN COUNTY SOUT WIND FARM
SHERMAN COUNTY, OREGON

TURBINE CORRIDOR WORKSHEET
E03 - PLAN AND ROFILE

REVISIONS:	APPD.

DATE:
DESIGN: JOJF
DRAWN: JTH
CHECKED:
REVISION NUMBER:

SCALE: AS SHOWN

PROJECT NUMBER:

DRAWING FILE:

SHEET NO. 1 OF 2

EXHIBIT K

LAND USE
OAR 345-021-0010(1)(k)

TABLE OF CONTENTS

Page

FIGURE

ATTACHMENTS

K.1 INTRODUCTION AND LAND USE REVIEW PATH

OAR 345-021-0010(1)(k) *Information about the proposed facility's compliance with the statewide planning goals adopted by the Land Conservation and Development Commission, providing evidence to support a finding by the Council as required by OAR 345-022-0030. The applicant shall state whether the applicant elects to address the Council's land use standard by obtaining local land use approvals under ORS 469.504(1)(a) or by obtaining a Council determination under ORS 469.504(1)(b). An applicant may elect different processes for an energy facility and a related or supporting facility but may not otherwise combine the two processes. Notwithstanding OAR 345-021-0090(2), once the applicant has made an election, the applicant may not amend the application to make a different election. In this subsection,"affected local government" means a local government that has land use jurisdiction over any part of the proposed site of the facility.*

Response: To issue a site certificate, the Oregon Energy Facility Siting Council (Council) must find that the proposed facility complies with the statewide land use planning goals (goals) adopted by the Land Conservation and Development Commission (LCDC). OAR 345-022-0030(1). The Applicant hereby elects to seek a Council determination of compliance with the Council's land use standard under ORS 469.504(1)(b). Under ORS 469.504(1)(b)(A)-(C), the application complies with the Council's land use standard if the Council determines that:

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

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

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

Pursuant to ORS 469.504(1)(B)(A) above, this Exhibit K demonstrates that the Project complies with the applicable substantive criteria from the Sherman County (County) acknowledged comprehensive plan and land use ordinances, with applicable LCDC administrative rules and goals, and with any land use statutes directly applicable to the facility. Pursuant to ORS 469.504(1)(b)(B) above, this Exhibit K also demonstrates that an exception to statewide planning goal 3, agriculture, is justified under ORS 469.504(2).

K.2 LAND USE ANALYSIS AREA AND MAP

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

Response: Figure K-1 is a map that shows the facility's location, the Sherman County Comprehensive Plan (SCCP or Comprehensive Plan) designations and County land use zone of the project site, all areas of the site that may be temporarily disturbed during the design, construction or operation of the proposed Project, property adjacent to the site, and a half-mile study corridor around all of the proposed facilities. Land use designations within the analysis area are described in Section K.3.

The Project's disturbance area is shown on Figure B-3 in Exhibit B. The project component map is Figure C-2 in Exhibit C.

K.2.1 ENERGY FACILITY AND RELATED OR SUPPORTING FACILITIES

The Project is a wind energy facility with a peak electric generating capacity of approximately 400 megawatts (MW) and an average electric generating capacity of approximately 133 MW. The project site is located in unincorporated Sherman County approximately 1- to 10-miles from Wasco, Oregon, on private land that has been leased by the Applicant to develop the Project. The Project will consist of:

- Up to 267 wind turbines that have an aggregate nominal nameplate generating capacity of up to 400 MW. The turbines will most likely consist of one of the following turbines:
  - 1.65 MW turbine with hub height of 78 meters and rotor diameter of 82 meters.
  - 2.5 MW turbine with a hub height of 80 meters and rotor diameter of 96 meters.
- Approximately 50 miles of newly constructed access roads and turnaround areas.
- Up to six permanent meteorological towers and a supervisory control and data acquisition ("SCADA") system.
- A 34.5-kilovolt (kV) power collection system linking each turbine to the next and to the project substation. The 62-mile long power collection system will be underground.
- Two substations - one at the eastern section of the site and one in the western section of the site. As noted above, 4 and 11-mile long overhead transmission lines will be constructed from each substation to the points of interconnection with BPA.
- An O&M facility, including shop facilities, a control room, a maintenance yard, a kitchen, an office, a washroom, and other facilities typical of this type of project.

The project site consists of relatively level privately owned agricultural land, primarily in dry land wheat production. Farming operations will continue directly adjacent to the turbines and access roads. The turbines and related or supporting facilities will be sited in a manner that minimizes disruption to existing farm operations. The Project will preclude farming on approximately 96 acres of farmland.

The following table shows the loss of agricultural land during the life of the Project caused by each project component:

Principal Use	Acres
Turbines/turbine towers/turbine pads:	12
O&M facility	5
Access roads and upgrades/associated underground collector lines:	75
Subtotal	*92*
Substations	4
Transmission lines	0.1
Subtotal	*4*
TOTAL:	**96**

The project components are described individually below.

Principal Facility

As is noted above, the energy facility will consist of up to 267 turbines, most likely with an installed peak generating capacity of either 1.65 MW or 2.5 MW per turbine, associated turbine towers, turbine pads and related equipment. See Exhibit B for detailed information about the components and dimensions of the turbines. Each turbine will be mounted on a tapered monopole supported by a reinforced concrete foundation.

Related or Supporting Facilities

Operations and Maintenance (O&M) Facility

An O&M facility located on up to a 5-acre site will be constructed for the Project. An on-site well, from which the Project will draw less than 5,000 gallons of water per day, and an on-site subsurface sewage disposal system to serve the new O&M building will be located adjacent to the new O&M building. A graveled parking area for employees, visitors, and equipment will be located in the vicinity of the building.

Temporary Staging Areas

There will be up to six principal, temporary laydown areas for the staging of construction equipment, wind turbines and their components, towers, and other parts, facilities, and equipment. Each laydown area will be covered with gravel. The gravel will be removed and the area restored after construction has been completed.

Before finalizing the location of the staging areas, the Project will discuss the proposed locations of these temporary areas with involved landowners to help mitigate any adverse impacts to farmland. After the Project is constructed, the staging areas will be removed and restored to wheat or native grasses.

Meteorological Stations

Up to six meteorological towers will be placed throughout the project site. The meteorological towers will collect wind resource data. These towers will be un-guyed tubular structures up to approximately 85 meters (279 feet) tall.

In addition, a supervisory control and data acquisition (SCADA) system will be installed at the Project. The SCADA system will assist with the remote operation of the wind turbines, collect operating data from each wind turbine, and archive wind and performance data from various sources. The SCADA system will be linked (via fiber optic cables or other means of communication) to a central computer in the O&M facility. Where linked via fiber optic or other type of cables, those cables will generally be installed underground alongside the power collection conductors.

Access Roads

To the extent possible, existing roads will be used by the Project to minimize the need to construct new roads. Project construction vehicles and vehicles of project employees will travel to and from the site on existing federal, state, and local highways and roads.

Project workers will access some of the project construction areas via existing roads. In areas where there are no roads near proposed wind turbine strings, new access roads will be constructed with permanent turnaround areas at the end of each turbine string. Approximately 50 miles of new private roads and turn around areas will be constructed within the project site. In general, these roads will be up to approximately 36-feet wide during construction, and up to approximately 16-feet wide for operation, with an additional 4 feet of shoulders.. The location of the existing and proposed new access roads are shown on the project component map in Figure C-2 in Exhibit C. To the extent reasonably possible, the proposed new access roads will be located adjacent to the turbine towers. These roads will provide the Project with access to the turbines and related or supporting facilities, and will provide area farmers with improved, all-weather roads to access their fields.

Some improvements to existing roads will be required to accommodate construction equipment for the Project. Existing roads are typically 16- to 20-feet wide. Improvements for construction vehicles will involve providing an all-weather gravel surface for roads. Some existing roads will be widened up to approximately 36-feet for construction, and up to approximately 16-feet wide for operation, with an additional 4-feet of shoulders. Existing intersections will be widened as needed to allow trucks to maneuver long loads into the construction area. A turning radius of 130 to 150 feet is needed.

A final transportation plan describing these routes will be submitted to the County prior to the commencement of project construction.

Transmission Lines and Substations

Turbines will be linked by underground and above ground collector lines devoted solely to transmitting electrical energy generated by the Project to the project's substations. There will be two project substations that will deliver power to the BPA high-voltage transmission system.

The Project will interconnect with the BPA system by constructing a new substation in the eastern section of the project site on a graveled and fenced area of up to 2 acres, with a transformer, switching equipment and parking area. A transmission line approximately 4-miles long (see Figure C-2 in Exhibit C), will be built to the north side of the Klondike

Schoolhouse Substation. This transmission line is proposed to be located adjacent to Sandon Road.

The second project substation would be located in the western portion of the project site and will also be approximately 2 acres, with a transformer, switching equipment and parking area. A transmission line approximately 11-miles long (see Figure C-2 in Exhibit C) will be constructed from this substation to BPA's John Day substation. The right-of-way for the transmission line to the John Day substation will be 200 feet wide for the 500 kV transmission line. Approximately 6 miles of this transmission line will be parallel to existing BPA 500 kV transmission line right-of-way.

The proposed transmission lines will be have a load carrying capacity adequate for the peak capacity of all of the connected turbines. The transmission line to John Day substation will be 11 miles long, on 120-foot high tubular steel or concrete towers; the 230 kV transmission line to Klondike Schoolhouse substation will be 4 miles long within an 150-foot right-of-way, on 100 to 110-foot high tubular steel or concrete towers.

K.3 COUNCIL DETERMINATION ON LAND USE

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

i. Identify the affected local government(s);

Response: The proposed Project will be sited solely in Sherman County, which is the affected local government.

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

Response: The proposed Project complies with the applicable review criteria set forth in the SCCP and in the County Zoning Ordinance (SCZO or Zoning Ordinance) in the manner described in response to the County Zoning Ordinance development criteria and applicable County Comprehensive Plan goals and policies.

The proposed Project and all related or supporting facilities will be located within the Exclusive Farm Use (F-1) base zone (EFU zone). *See* Figure K-1. The Natural Hazards Combining District (Combining District) associated with Grass Canyon extends slightly into the analysis area south of Wasco near Moro. While portions of the micrositing corridors cross the Combining District, they are sufficiency wide enough that it is assumed the turbines will be placed outside of the Combining District because the turbines would be placed on the higher plateaus rather than in the steeper valleys where the Combining District is located. Therefore, it is assumed that the Project would not be built on any identified hazard area and the Combining District would not apply. *See* also Exhibit H, which indicates that the proposed wind turbines and other major project improvements appear to have been sited to avoid potential geologic hazard areas that could become destabilized by a seismic event**.** In addition, rock is present at shallow depths, and the groundwater table is deep. Considering these site conditions, the potential for earthquake-induced landslides, lateral spreading, liquefaction and settlement/subsidence at the site are low. Moreover, Exhibit H also concludes that non-seismic geologic hazards, including slope instability and landslides, are not geologic hazards that will impact the project due to site conditions.

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

Response: The acknowledged Comprehensive Plan and Zoning Ordinance incorporate all of the LCDC administrative rules, goals and statutes that are applicable to the Project.

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

Response: The Sherman County Comprehensive Plan and Zoning Ordinance criteria have been acknowledged by LCDC and implement the statewide planning goals. As is described below, the Project complies with all applicable local substantive except that the size of the proposed Project exceeds the 20-acre maximum for development within the F-1 zone and will require an exception to statewide land use goal 3. The Project provides evidence in Section K.8 that justifies the exception.

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

Response: The Project complies with all of the applicable substantive criteria and applicable goals, except that the Project will occupy more than 20 acres of non-high value farm land proposes an exception to goal 3 because the project. The Project provides evidence in Section K.8 that justifies the exception.

K.4 SHERMAN COUNTY ZONING ORDINANCE CRITERIA

1. SCZO Section 3.1.3—Conditional Uses Permitted in County EFU Zone

SZCO Section 3.1.3(e) and (f), respectively, allow commercial utility facilities and transportation improvements to be developed in the EFU zone as conditional uses. Specifically, these sections provide as follows:

3.1.3. Conditional Uses Permitted*. In an F-1 zone the following uses are permitted when authorized in accordance with the requirements of Article 5 of this Ordinance and this Section:*

** * *.*

(e) Operations conducted for the following uses:

** * *.*

17 Commercial utility facilities.

** * *.*

24 Transmission Towers over 200 feet in height

(f) Transportation Improvement.

1 Construction, reconstruction, or widening of highways, roads, bridges or other transportation projects that are (1) not improvements designated in the Transportation System Plan; or (2) not designed and constructed as part of a subdivision or planned development subject to site plan and/or conditional use review. Transportation projects shall comply with the Transportation System Plan and applicable standards, and shall address the following criteria.

A The project is designed to be compatible with existing land use and social patterns including noise generation, safety, and zoning.

B. The project is designed to minimize unavoidable environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities.

C. The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.

D. The project includes provision for bicycle and pedestrian circulations as consistent with the comprehensive plan and other requirements of this ordinance.

** * *.*

The SCZO does not contain any provisions adopting "utility facilities necessary for public service," ORS 215.283(1)(d). As discussed below, given the lack of any County code provisions implementing the statute, ORS 215.275(1)(d) and ORS 215.275 are directly applicable to the elements of the Project proposed under these provisions.

<u>Response:</u> The Project proposes development of the turbine facilities and the following related or supporting facilities, which would be considered a conditional use under SCZO 3.1.3(e)(17), Commercial Utility Facilities:

- Underground collector lines with a capacity of 34.5 kV to transmit electric power generated by the wind turbines to two collector substations located within the project boundary;
- New private access roads;
- Up to six permanent meteorological ("met") towers with accompanying SCADA system; and
- An O&M facility to serve the Project.

The Project further proposes the following related or supporting facilities that would be considered a permitted use under ORS 215.283(1)(d):

- One above ground 230 kV transmission line to transmit power between the eastern collector substation and the BPA interconnection point on the north side of the Klondike Schoolhouse substation;

- One above ground 500 kV transmission line to transmit power between the western collector substation and the BPA John Day substation; and
- Two collector substations;

All of the project facilities will be located on land zoned EFU by the County. With the exception of the new access roads, which will be used by project personnel and by farmers in the area, all of these related or supporting facilities will be used exclusively by the Project.

Commercial Utility Facilities: SCZO 3.1.3(e)(17) allows “commercial utility facilities” located on EFU zoned land to be permitted as conditional uses. This section appears to implement ORS 215.283(2)(g), which provides that “commercial utility facilities for the purpose of generating power for public use by sale” are conditionally permitted on EFU land in Oregon subject to ORS 215.296. The requirements of ORS 215.296 are discussed later in this Exhibit K.

In prior cases, the Council has determined that related or supporting facilities determined to be a part of a facility evaluated under ORS 215.283(2)(g) include the underground collector system, met towers, and O&M facility because they do not have a use independent of the primary facility. The proposed turbine facilities and related or supporting facilities, other than the proposed new access roads, will not be used by others or made available to others for use. These facilities are necessary, accessory components of the generation and transmission of electricity by the Project, and have no independent utility beyond their use in connection with the proposed energy generating facilities. Accordingly, the proposed turbine facilities and the related or supporting facilities, other than the proposed new roads, transmission lines and collector substations are commercial utility facilities for purposes of both SCZO 3.1.3(e)(17) and ORS 215.283(2)(g) and are conditionally permitted under both state law and the Zoning Ordinance.

Utility Facilities Necessary for Public Service: The Council has determined in recent cases that private transmission lines and collector substations required for interconnection to the BPA substations are related and supporting facilities, but are evaluated separately under ORS 215.283(1)(d), which provides for “Utility facilities necessary for public service…not including commercial facilities for the purpose of generating electrical power for public use by sale or transmission towers over 200 feet in height. A utility facility necessary for public service may be established as provided in ORS 215.275.” The transmission towers will be approximately 80 feet to 120 feet tall, less than the 200-foot height limit identified in ORS 215.283(1)(d) and under SCZO 3.1.3(e)(24), meeting the height limit requirement under ORS 215.283(1)(d).

As noted above, the Sherman County Zoning Ordinance does not include provisions implementing ORS 215.283(1)(d). With a few exceptions, it appears that the exclusive farm use provisions in the SCZO have not been significantly updated since 1994. The COB Energy Facility Final Order (2005) (“COB”), p. 305 describes a similar problem encountered with the Klamath County Code, related to portions of the proposed overhead electric transmission line located on lands zoned for exclusive farm use. In COB, the county code provisions for the EFU zone were not amended to implement a number of changes that had been made to the state laws for EFU zones. In particular, the code section for "utility facilities necessary for public service," categorized such facilities as a conditional rather than a permitted use. As noted in the COB Final Order:

> "Under ORS 215.283(1)(d), "utility facilities necessary for public service" must be allowed on EFU-zoned lands if they meet the criteria in ORS 215.275. Klamath County LDC § 54.030.O treats the use as a *conditional use* rather than a use allowed outright. As a result, the Klamath County LDC subjects such uses to additional standards found in either Klamath County LDC § 54.020 (permitted uses) or ORS 215.275. The County may not impose additional criteria for uses allowed under ORS 215.283(1). ***Brentmar v. Jackson County***, 321 Or 481, 900 P2d 1030 (1995). Due to the fact that Klamath County has not adopted land use regulations required under state law, the statutory and rule provisions of state law are directly applicable to the proposed transmission line, and to the other elements of the proposed facility that are classified as "utility facilities necessary for public service."[1]

The Golden Hills overhead collector transmission lines and collector substations are addressed separately below. Similar to the situation in COB, the statutory and rule provisions related to "utility facilities necessary for public service" are directly applicable to the Golden Hills project. The "utility facilities" (transmission towers and substations) meet the criteria under ORS 215.275 (see Section K.7) because the facilities are necessary for public service to connect the "primary facility" to the BPA substations to distribute power to the regional grid system

<u>Access Roads:</u> Transportation Improvements as identified in SCZO 3.1.3(f), include the "construction, reconstruction, or widening of highways, roads, bridges or other transportation projects that are (1) not improvements designated in the Transportation System Plan; or (2) not designated and constructed as part of a subdivision or planned development subject to site plan and/or condition use review . . . " Transportation projects must comply with the Transportation System Plan (TSP) and applicable standards, which includes items such as roadway and pavement width. Construction methods etc., and must address four criteria: (i) the project's compatibility with existing land use and social patterns including noise generation, safety and zoning; (ii) the project's design must minimize unavoidable environmental impacts to wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities; (iii) the project must preserve or improve the safety and function of the facility through access management, traffic calming, or other design features; and (iv) the inclusion of bicycle and pedestrian circulations as consistent with the Comprehensive Plan and other requirements of the Zoning Ordinance.

The proposed new private access roads and the proposed reconstruction of existing roads are not improvements designated in the TSP, and are not being constructed as part of a

[1] *See also* ORS 197.646(3).

subdivision or planned development. The Project is compatible with existing land uses and social patterns including with respect to its level of noise generation, its safety and its zoning. As discussed in this Exhibit K, the Project is designed to minimize environmental impacts to identified wetlands, wildlife habitat, water quality, cultural resources, and scenic qualities. The Project preserves or improves the safety and function of the existing roads by resurfacing or restructuring selected area roads and highways. The public will benefit from the improved public road system. No bicycle or pedestrian circulations are appropriate for the project area roads and, therefore, none are proposed.

2. Provisions Applicable to All Permitted and Conditionally Permitted Uses (All Facility Components)

The SCZO contains provisions that are applicable to all development proposals. The Project complies with these provisions as provided below.

A. SCZO § 3.1.4(c) Dimensional Standards/Setback Requirements

In an F-1 (EFU) Zone, the minimum setback requirements shall be as follows:

1) The front and rear setbacks from the property line shall be 30 feet, except that the front yard setback from the right-of-way of an arterial or major collector or road shall be 50 feet unless approved otherwise by the Planning Commission.

2) Each side yard setback from a property line shall be a minimum of 25 feet, and for parcels or lots involving a non-farm residential use with side yard(s) adjacent to farm lands, said adjacent side yards shall be a minimum of 50 feet unless approved otherwise by the Planning Commission.

Response: No new lots will be created by the Project. As depicted on Figure C-2, all project structures will comply with the setback requirements set forth in SCZO 3.1.4(c). All of the wind energy generating turbines and other above ground elements of the Project with the exception of the transmission lines and poles will be located at least 50 feet from all property lines.

B. SCZO § 4.9(1) Compliance with State and Federal Agency Rules and Regulations

Approval of any use or development proposal pursuant to the provisions of this Ordinance shall require compliance with and consideration of all applicable State and Federal agency rules and regulations.

Response: The Council's rules governing this application are designed to identify all applicable permits, approvals and regulations needed for construction of the Project. In particular, Exhibit E identifies all of the federal, state and local permits and approvals needed to construct the Project. Exhibit E provides evidence demonstrating that the construction and operation of the Project will comply with all state and local statutes, rules and standards applicable to the permit. Exhibit E also provides evidence that for federal permits, the relevant federal agencies have received or will receive the information needed to allow the Project to comply with all applicable federal rules and regulations. Set forth below are the most notable requirements identified in Exhibit E.

With respect to applicable federal rules and regulations, the Federal Aviation Administration (FAA) requires the Project to provide the FAA with a Notice of Proposed Construction or Alteration. The Project will file this notice with the FAA and will notify the Council as soon as the FAA's response has been received.

A Clean Water Act, Section 404 permit from the U.S. Army Corps of Engineers may be required because fill may be placed in the waters of the US, including wetlands. An Oregon Department of State Lands Removal-Fill permit application will be required if fill within wetlands is required for the Project (see Exhibit J). As such, consultation with the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act be required. *(*see Exhibit Q). The Oregon Department of Environmental Quality's (DEQ's) noise regulations apply to the Project. *See* Exhibit X.

With respect to state agency rules and regulations, the Project is pursuing an Energy Facility Site Certificate from the Oregon Energy Facility Siting Council. In addition, as described in Exhibits E and I, the Project will apply for and obtain a National Pollutant Discharge Elimination System (NPDES) General Construction Stormwater (1200-C) Permit from the DEQ before constructing the Project. The new O&M facility will require an onsite sewage permit from the Wasco-Sherman Public Health Department. A permit to appropriate groundwater will not be required because the groundwater well will be exempt from permitting requirements because it will supply less than 5,000 gallons per day (See Exhibit O). Finally, the Project will meet state noise standards, as outlined in Exhibit X. In particular, noise levels are not projected to exceed DEQ noise impact criteria. Where necessary, the Project intends to obtain easements from property owners to allow for a greater than 10 dBA increase over ambient noise levels, as provided for in DEQ rules.

C. SCZO § 4.13 Additional Conditions to Development Proposals

The County may require additional conditions for development proposals

1) *The proposed use shall not reduce the level of service (LOS) below a D rating for the public transportation system. For developments that are likely to generate more than a V/C ratio of 75 or greater, the applicant shall provide adequate information, such as a traffic impact study or traffic counts, to demonstrate the level of impact to the surrounding road system. The developer shall be required to mitigate impacts attributable to the project.*

2) *The determination of the scope, area, and content of the traffic impact study shall be coordinated with the provider of the affected transportation facility, i.e., city, county, state.*

3) *Dedication of land for roads, transit facilities, sidewalks, bikeways, paths or accessways shall be required where necessary to mitigate the impacts to the existing transportation system caused by the proposed use.*

4) *Construction of improvements such as paving, curbing, installation or contribution to traffic signals, construction of sidewalks, bikeways, accessways, paths or roads that serve the proposed use where necessary to mitigate the impacts to the existing transportation system caused by the proposed use.*

Response: the Project will comply with all conditions of approval imposed by the Council. The Project addresses the transportation and access provisions under the applicable review criteria set forth below. The Project will not reduce the level of service for public transportation below a D rating, or generate a volume-to-capacity (V/C) ratio of 0.75 or greater. It is not necessary for the Project to dedicate any land for transportation facilities, nor for any road mitigation improvements other than the reconstruction of existing roads proposed in the application.

D. SCZO § 11.1 Design & Improvement Standards and Requirements, Compliance Required

Any land division or development and the improvements required, whether by subdivision, partitioning, creation of a street or other right of way, zoning approval, or other land development requiring approval pursuant to the provisions of this Ordinance, shall be in compliance with the design and improvement standards and requirements set forth in this Article, in any other applicable provisions of this Ordinance, in any other provisions of any other applicable County or affected City ordinance, and in any applicable provision of State statutes or administrative rules.

Response: The Council's rules governing the application are designed to identify all applicable design and improvement standards, permits, approvals, and regulations needed for construction of the facility. In particular, Exhibit E identifies all of the federal, state, and local permits and approvals needed to construct the Project, and elsewhere in this Exhibit K all of the applicable County design standards are identified. No land division, subdivision, or partition approval or creation of a public street is required in order to site the Project. For the reasons described in this Exhibit K and in the application, the facility complies with this provision.

E. SCZO § 11.2 Design & Improvement Standards and Requirements, Zoning or Other Land Development Permit or Approval

Prior to the construction, alteration, reconstruction, expansion or change of use of any structure, lot or parcel for which a permit or other land development approval is required by this Ordinance, a permit or approval shall be obtained from the County or the designated official.

Response: The Council has exclusive jurisdiction to issue site certificates for energy facilities that are under its jurisdiction, such as the proposed facility. The Project has elected to seek a Council determination of compliance with the Council's land use standard. This Exhibit K demonstrates compliance with that standard. Upon the Council's approval of a site certificate for the Project and prior to any development activities, the Council will direct the County to issue all necessary land use permits approved by the Council. *See* ORS 469.401(3). No construction, alteration, reconstruction, expansion or change of use of any structure, lot or parcel will occur until the County issues the required permits.

F. SCZO Section 5.2 General Conditional Use Provisions (Energy Facility, Access Roads, and Associated Equipment)

In determining whether or not a Conditional Use proposal shall be approved or denied, it shall be determined that the following criteria are either met or can be met through compliance with specific conditions of approval.

1) The proposal is compatible with the applicable provisions of the County Comprehensive Plan and applicable Policies.

2) The proposal is in compliance with the requirements set forth by the applicable primary zone, by any other applicable combining zone, and other provisions of this Ordinance that are determined applicable to the subject use.

3) That, for a proposal requiring approval or permits from other local, state and/or federal agencies, evidence of such approval or permit compliance is established or can be assured prior to final approval.

4) The proposal is in compliance with specific standards, conditions and limitations set forth for the subject use in this Article and other specific relative standards required by this or other County Ordinance.

5) That no approval be granted for any use which is or expected to be found to exceed resource or public facility carrying capacities, or for any use which is found to not be in compliance with air, water, land, and solid waste or noise pollution standards.

6) That no approval be granted for any use violation of this Ordinance.

Response: Each criterion is addressed separately in Section K.5.

K.5 COMPLIANCE WITH APPLICABLE COMPREHENSIVE PLAN PROVISIONS

1. SCZO § 5.2.1. Compliance with Applicable Comprehensive-Plan Goals and Policies

The proposal is compatible with the applicable provisions of the County Comprehensive Plan and applicable policies.

Response: The Project complies with all relevant provisions of the Comprehensive Plan as set forth below.

A. SCCP § VIII Planning Process and Citizen Involvement

Finding I. This Plan was drafted to conform with the State-wide planning goals relating to citizen involvement (goal 1) and land use planning (goal 2).

Response: As is described in detail below, the Council's process for considering and approving a site certificate application provides significant opportunity for citizen involvement that comply with statewide goals 1 and 2.

Goal II. To provide the opportunity for all citizens and effected [sic] agencies to participate in the planning process.

Policy I. All land use planning meetings shall be advertised in a general circulation newspaper and be open to the public.

Policy II. All affected [sic] agencies and effected [sic] landowners shall be notified by written notice of any proposed site specific land use change.

<u>Response</u>: Because the Project has elected to seek a Council determination of compliance with the land use standard, the Council's procedures (rather than the County's specific procedures at SCZO § 5.6) will apply to the land use determination. The Council's process includes opportunities for interested persons and governmental agencies to comment on the application. Following the submittal of the application, determination of completeness, and public notice in local newspapers, the Oregon Department of Energy will conduct a public information meeting concerning the application that will provide an opportunity for public comment. Thereafter, a noticed public hearing will be held on the Council's proposed order, offering another opportunity for public input. The Council's process also provides affected public agencies and area landowners with notice of the application and an opportunity to comment. See e.g., ORS 469.370; ORS 469.505; OAR Chapter 345, Divisions 15 and 21.

The Applicant has consulted with the USFWS, the Sherman County Historical Society (SCHS), the Sherman County Planning Department (County Planning Department), the U.S. Bureau of Land Management (BLM), the Oregon State Historical Preservation Office (SHPO) and the Oregon Natural Heritage Information Center (ONHIC). These agencies, offices and organizations have provided information regarding the project site and adjacent lands, including whether listed and sensitive species occur within the analysis area. The Applicant also contacted the Oregon Department of Agriculture (ODA) for information about plant distribution and protection and conservation programs, and the Oregon Department of Fish and Wildlife (ODFW) for information on fish and wildlife habitat regulations and requirements.

B. SCCP § XI Physical Characteristics

Goal V. Improve or maintain the existing quality of the physical environment within the County.

Policy I. The County Court recognizes the Policy Advisory Committee and the Agricultural Sub-Committee recommendations for a state-wide non-point source pollution control program as the appropriate implementation technique to achieve the intent of Public Law 95.217.

Policy II. Erosion control provisions shall be incorporated into the subdivision ordinance. These shall require that the best practical methods be used to control erosion from road and *building construction sites as well as other changes in land use which may degrade the quality of the land, air and water.*

Response: The Project will maintain the existing quality of the physical environment within the County. Construction of the Project will not create a pollution source. The majority of the project site consists of agricultural fields where bare soils are often exposed to wind and water. The Project will not significantly increase the amount of exposed soils in the project area. *See* Exhibit I.

Temporary impacts to land within the project area will occur with the creation of the staging areas and excavation for underground collector lines. To minimize soil exposure during installation of the collector lines, the Project will endeavor to open only as much trench in a day as can be excavated and backfilled; in no case will a trench remain open for more than the 7 days allowed by the general NPDES Construction Stormwater (1200-C) Permit issued by DEQ.

Establishing the proposed staging areas will involve stripping and temporarily stockpiling topsoil before placing gravel on the laydown areas. Because stockpiling will occur during the time of year when rainfall is lowest, very little erosion will result from precipitation. Construction of the Project will be conducted pursuant to a NPDES General Construction Stormwater (1200-C) Permit issued by the DEQ. The NPDES permit will require the use of best management practices to minimize the potential for erosion.

Best management practices will include a variety of means to minimize the impacts of wind erosion. In actively farmed areas, the wheat crop will protect the stockpiles from wind erosion. In other areas, hay bales or other similar containment features will be used during construction of the Project. As needed, water from water trucks will be sprayed on disturbed areas to keep wind borne erosion losses to a minimum. After the need for the staging areas ends, the staging area locations will be brought back to their original contours, topsoil will be spread in these areas, and they will be revegetated or prepared for planting of wheat or barley, or for use as range land. Any disturbed Conservation Reserve Program (CRP) areas and other non-cropped vegetated areas will be revegetated with the appropriate species.

No non-point source pollution control or erosion control is required for wastewater, as the only wastewater generated during construction will be from washdown of concrete trucks after concrete loads have been emptied. Washdown will be done by the contractor and will occur at a contractor-owned batch plant.

No industrial wastewater will be generated during operations. See further discussion in Exhibit V.

Goal VI. To protect life and property from natural disasters and hazards.

Response: The project site involves no designated hazard areas. Exhibit H provides an analysis of the local geology and the Applicant's efforts to address geotechnical issues in project siting and design.

Goal VII. Provide for the rational development and conservation of the aggregate resources within the County.

Response: The Project does not propose to develop aggregate resources. Aggregate will be purchased from local gravel operations that already have applicable permits and developed resources in accordance with Sherman County standards.

Goal VIII. To provide a detailed investigation of the County's groundwater resources.

Response: The Project will use a small amount of groundwater. The new O&M facility will be served by a new well. No permit is required to draw from this well because Oregon law allows the project to use up to 5,000 gallons of water per day from a groundwater well without a water right or permit.

Goal IX. To maintain the multiple use management concept on Bureau of Land Management Lands within Sherman County.

Response: The project site does not include any BLM lands.

Goal X. Preserve the integrity of the Sherman County Landscape.

Policy I. Trees should be considered an important feature of the landscape and therefore the County Court shall encourage the retention of this resource when practical.

Response: The Project site occurs in a largely treeless landscape and is not expected to impact trees. Development of the Project will not require the removal of any trees. *See* Exhibit P.

Goal XI. To maintain all species of fish and wildlife at optimum levels and prevent the serious depletion of any indigenous species.

Policy I. Fish and Wildlife management policies should be implemented to enhance the public enjoyment of wildlife and fish in a manner that is compatible with the primary uses of the lands and waters.

Response: The Energy Facility Siting process requires the applicant to consider and comply with the ODFW Fish and Wildlife Habitat Mitigation Policy as set forth in OAR 635-415-0000 through -0025. As part of the process, the Project identified and categorized all fish and wildlife habitats within the habitat analysis area, which are described in Exhibit P. There are approximately 2.9 acres of Category 1 habitat in the analysis area, none of which will be permanently affected by the Project. The bulk of the habitat within the analysis area and the majority of Project impacts would be to Category 6 habitat, which accounts for 68% of the habitat to be impacted temporarily during construction and 92% of the habitat to be impacted permanently. The Applicant has proposed to mitigate for all impacts in accordance with the ODFW Policy, as set forth in Exhibit P. Based on field reviews and the fish and wildlife habitat analysis described in Exhibit Q, no impacts are anticipated to threatened and endangered species from the construction, operation, and retirement of the Project. As described in Exhibit Q, the turbines are sited approximately 4-miles from both the Columbia River and the Deschutes River, in part, to avoid and minimize impacts to wildlife including bald eagles and peregrine falcons, which are much more concentrated along these features. With this mitigation, there are no anticipated impacts to the bald eagle from the construction and operation of the wind power facility.

> *Policy III.* *Fence rows, ditch banks and brush patches should be considered for retention of wildlife use.*

Response: No fence rows, ditch banks or brush patches would be affected by this Project as the project site is primarily in large-scale wheat crop production.

> *Policy IV.* *The existing habitat plantings and water developments constructed for wildlife use shall be maintained by the Oregon Department of Fish and Wildlife. Additional planting and guzzler developments will be encouraged. Long-term agreements between landowners and the Department of Fish and Wildlife for the maintenance of such sites shall be encouraged.*

> *Policy V.* *The County Extension agent shall encourage the use of pesticides, which have a low toxicity to wildlife, fish and people.*

Response: As described in Exhibit P, the study area provides only limited wildlife habitat. Therefore the Project is not expected to have a significant impact on wildlife populations. A monitoring plan will be developed in consultation with ODFW to evaluate actual project impacts.

These policies concern the protection of fish and wildlife in the County. One issue of potential concern can be the use of pesticides to control weeds in crop fields. Construction equipment is a source of the dispersal of weed seed that may not otherwise be found in the area, and disturbed ground offers an opportunity for weeds to establish themselves. The Project will develop a weed management plan to prevent the establishment of weeds, as described in Exhibit P, Mitigation Measures. The plan will be developed in consultation with the Sherman County Soil and Water Conservation District and will likely include a restoration effort to clear weeds through a combination of burning (if possible), spraying, and mowing. Additional steps may include the use of Roundup on newly emerging weeds, the planting of a native grass seed mix (certified weed free) with a no-till drill in the fall, followed by application of broadleaf-specific and post-emergent herbicides as needed.

> *Goal XII.* *Provide for the rational use of all resources within the designated Deschutes and John Day Oregon State Scenic Waterways.*

Response: Exhibit T evaluates impacts to recreation resources. The project site is not located in or near either the Deschutes or John Day scenic waterway. *See* all Exhibit R, which does not identify any visual impacts to either the Deschutes or John Day Oregon State Scenic Waterways. Primary traffic routes for construction will originate near the I-84/US 97 Biggs Junction. Increased construction traffic would likely result in short-term traffic delays on these roads, particularly on hill climbs on US 97, but would not be detrimental to recreational opportunities near the Deschutes or the John Day scenic waterway. Long-term detrimental impacts (i.e., increased traffic as a result of operation) are not anticipated.

Goal XIII. Attempt to maintain the diversity of plan[t] and animal species within the County.

Policy I. The following sites or areas shall be considered as critical habitat, unique vegetative and/or natural areas: Department of Fish and Wildlife plantings and guzzlers; and areas containing plant species listed on either the Provisional List of Endangered or Threatened Plant Species or the listing of Endangered and Threatened Plant Species in the United States.

*Policy II. The County Court shall encourage the preservation of these critical habitats, unique vegetative and/or natural areas. Landowners will be encouraged to provide long term protection to these areas. * * *.*

<u>Response</u>: As described in Exhibits P and Q, the Project is not expected to significantly affect any listed endangered or threatened species or adversely affect fish and wildlife species or habitat. As described in Exhibit Q, there are no direct project-related impacts to any federal or state listed species, and there is little or no habitat in the project area to support such species. A monitoring plan will be developed in coordination with ODFW to evaluate actual project impacts.

C. SCCP § XII Social Characteristics

Goal XIV. To improve or maintain the current level of social services available within the County and to assure the provision of public facilities consistent with the intensity of land use.

Policy I. The County Court shall encourage the location of industries, businesses and commercial service agricultural developments within the County consistent with the desired population growth and other goals and policies herein contained.

* * *

Policy XIX The continuing loss of economic opportunities for residents of the County is of great concern to the citizenry. The reduction of need for agricultural based jobs due to improved farming technology and practices, the inability to keep families employed or offer employment opportunities to attract new citizens or the children of existing residents results in a stagnant or declining population. It is therefore a matter of great urgency that the County Court make every effort to streamline its land use approval and amendment process. It is likewise a matter of great urgency that the Court give increased consideration to land use applications which will *increase economic diversity and employment opportunities. This increased consideration shall not be made to the detriment of existing residential structures. This consideration should focus on long term job creation and should not be used as a means to allow residential and commercial uses to locate outside urban growth and rural service center (communities) boundaries.*

Response: Regarding Policy I, Exhibit U indicates that the personnel necessary to operate the Project who move to the Sherman County area from other areas would not have a significant impact on the local population. During its anticipated 20 to 30-year operation, the project would employ 10 to 15 full-time and part-time employees.

Project construction is anticipated to take about 9 months and employ an estimated 175 workers at peak construction periods, with preference given to local employees as skills are available. Construction workers will include locally hired workers for road and turbine pad construction as local expertise and availability allows. The remaining workers used to construct the Project will be in-migrant. When feasible, preference will be given to local workers.

Development of the Project will increase economic diversity within the County and offer non-agricultural employment opportunities for local residents. The Project will provide agricultural property owners with an additional revenue stream to supplement farming income, and insulate agricultural owners from market and weather fluctuations. The Project therefore should better enable farmers to continue farming operations. Operation of the Project is projected to produce additional tax revenue for the County. This additional tax revenue would contribute to improved local services like roads, schools, police and fire, that benefit the entire area while the Project is not anticipated to have any significant new impact to public facilities or services.

[Goal XIV] Policy IV. The County will support and assist efforts to secure adequate hospital or emergency clinic facilities to serve the needs of the local residents.

* * *

Policy VI. The County Court shall continue to cooperate with the school districts within the County to assure the provision of educational facilities in an efficient manner consistent with the demands of the Sherman County populace.

* * *

Policy VIII. Sanitary landfills shall continue to be provided for the use of the County citizenry. The County will continue to provide the leadership in the location and development of such sites.

Response: The Project is not expected to have any adverse impacts on the availability of social services, such as hospital or emergency service facilities, educational facilities or sanitary landfills. Exhibit U evaluates the capacity of service providers in the project area. The Dalles Disposal Company provides solid waste service for all of Sherman County and portions of Gilliam County. The Dalles Disposal Company also operates a transfer station that is open to the public on the second and fourth Saturdays of each month. 20, 30, and 40-yard construction waste disposal boxes are also available. Following pickup, refuse is transported via truck to the Columbia Ridge Recycling and Landfill site located near Arlington. Columbia Ridge is a large regional facility that accepts refuse from the northwest and Canada.

Solid waste generated in the construction and operation of the proposed Project is described in Exhibit V. The Project will generate minimal construction waste and very little solid waste that would require off-site disposal. The nearest landfill is the Columbia Ridge Recycling and Landfill Center located near Arlington. The landfill is not projected to reach capacity for at least 56 years and conversations with landfill operators did not identify any concerns regarding solid waste generation from construction or operation of the Project.

[Goal XIV] Policy X. The County road system shall be maintained and improved consistent with the needs of the Sherman County citizenry.

Policy XII. The construction of new public roads and highways shall be located whenever possible to avoid dividing existing farming units.

Response: No new public roads or highways will be constructed as part of the project. The design for the private access roads and for the improvements to existing public roads have been developed by the Applicant and will meet or exceed road standards for the road classifications in the County's TSP and Zoning Ordinance because roads will require a more substantial section to bear the weight of the vehicles and turbine components than would usually be constructed by the County. The improved public and new private roads will enhance access by land managers and farmers to their fields and will improve conditions for all users of the public road system. The new private access roads will be designed and constructed to minimize dividing existing farming units.

[Goal XIV] Policy XX. Transportation Planning Policies (Ord No. 21-05-2003

A. The Transportation System Plan and Land Use Review Policies.

** * **

2. All development proposals, plan amendments, or zone changes shall conform with the adopted Transportation System Plan.

3.Operation, maintenance, repair, and preservation of existing transportation facilities shall be allowed without land use review, except where specifically regulated.

* * *.

Response: No new public roads are proposed with this application. The proposal will result in upgrades to existing public and private roads, that either meet or exceed the road classification standards for the roads that have a classification.

B. Local-State Coordination Policies

* * *.

2. The County shall provide notice to ODOT of land use applications and development permits for properties that have direct frontage or direct access onto a state highway. Information that should be conveyed to reviewers includes project location, proposed land use action, and location of project access points.

* * *.

C. Protection of Transportation Facilities Policies

* * *.

2. The County shall include a consideration of a proposal's impact on existing or planned transportation facilities in all land use decisions.

3. The County shall protect the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.

Response: The Applicant is coordinating with the Oregon Department of Transportation (ODOT) about one (1) proposed new and improvements to two (2) existing access points along OR 206, and one (1) new and improvements to one (1) existing access points on US 97.

Construction vehicles that must access the project site will use public roads. The primary travel routes that will be used by the Project during construction activities begins at the I-84/OR 206 interchange east of Celilo Village or the I-84/US 97 interchange at Biggs Junction depending on the location of construction. Construction vehicles would then proceed south on OR 206 or US 97 to county roads or the proposed new access points along the highway. Traffic may also approach the project site on US 97 from the south. The County's roads are generally composed of a pavement or gravel surface. Traffic on these roads is light and generally consists of local residential or farm equipment traffic.

Some of the local roadways will require a 6-inch gravel overlay prior to use by project construction vehicles. These improvements are necessary to accommodate the length and weight of vehicles that will deliver the turbines and other machinery necessary to construct the project. Sections of local roads in poor condition will be completely reconstructed. Areas anticipated to require reconstruction or substantial improvement are shown on Figure C-2 in Exhibit C. Reconstructed roadways will be improved as described in K.2.1.

Project construction vehicles may cause brief traffic delays when trucks deliver the turbines and other project equipment, but the delays are unlikely to significantly impair through-traffic movements on area highways and roads. Once the Project is constructed, trips generated by the 10-15 permanent employees will not have any effect on the functioning of the area roads or highways in the vicinity of the Project.

New private access roads will be constructed to access the project turbines and will extend from the County roads as show in the Project Component map at Figure C-2. In general, these roads will be up to approximately 6-feet wide during construction, and up to approximately 16-feet wide during operation, with an additional 4-feet of shoulders. Where feasible, these roads will be located adjacent to the turbine towers to minimize the length.

All road work will be conducted in compliance with the project's erosion control plan as part of the Project's NPDES Construction Stormwater (1200-C) Permit. The erosion control plan will include "best management practices" for erosion control during and after construction, and permanent drainage and erosion control facilities as necessary to allow stormwater passage without damage to local roads or to adjacent areas and without increasing sedimentation to any intermittent streams in the vicinity of the project.

Constructing project roads will require substantial amounts of sand and gravel. The Applicant will contract with one or more construction companies to improve existing and construct new access roads. The construction contractor will be responsible for locating and providing aggregate for construction.

Goal XV. To protect historical, cultural and archeological resources from encroachment by incompatible land uses and vandalism.

Policy I. The following areas and structures shall be considered historically, archaeologically or culturally significant: all archeological sites; the Sherman County Courthouse; portions of the Old Oregon Trail which are visible and pass over rangeland; and the old Union Pacific Railroad bed through DeMoss Park.

Policy II. The County Court shall encourage the preservation of these archaeologically or culturally significant areas. Landowners will be encouraged to provide long term protection to these areas.

Response: As discussed in Exhibit S, results of the cultural resource survey conducted for the Project identified eight (8) archeological sites including two (2) prehistoric-period sites and six (6) historic-period sites. In addition, seven (7) isolated finds were identified, including two (2) prehistoric isolate and five (5) historic isolates. A Cultural Resource Management Plan (CRMP) will be developed by the Applicant in coordination with the with the Oregon State Historic Preservation Office (OSHPO). The CRMP will include specific protocols and procedures for protecting cultural resources, including any additional archeological sites and possible human remains (pursuant to ORS 97.745(4)) accidentally discovered during construction.

All of the archeological sites are recommended for avoidance during construction, operation, and retirement of the proposed facilities. Archaeological sites and historic homesteads will be temporarily flagged in the field and on project construction maps before and during construction. Archaeological construction monitors will be present during construction in selected locations to prevent accidental damage to these cultural resources. Additional consultations will be conducted with OSHPO concerning approved avoidance and/or mitigation measures for the Oregon Trail and Barlow Cutoff.

During construction in archeologically sensitive locations, such as near recorded archeological sites, on-site archaeological monitors will be present to ensure that no accidental damage to known cultural resources occurs, if required by OSHPO. The CRMP will address long-term management of the known/recorded resources and will include a section on accidental discovery of cultural resources. This section will provide a detailed plan of protocols and procedures (measures) to be followed if cultural resources are accidentally discovered during construction or operation of the facilities.

D. SCCP § XIII Housing

Goal XVI. To encourage the provision of sound affordable housing units for the citizenry of the County.

Response: As described in Exhibit U, the Project is not expected to affect long-term housing availability in the County. The housing vacancy rate is sufficient to accommodate the project’s permanent employees. Temporary housing needs during construction can be accommodated by existing housing stock or hotel and motel rooms available in Wasco, The Dalles, and other nearby communities. No impacts on the supply of affordable housing are expected to occur as a result of construction personnel moving to the local area during the development of the Project. Temporary construction employees are likely to use hotels or rental housing for the short-term housing needs, but the numbers are not significant enough to pose a concern, given the number of communities nearby. Permanent employees are likely to be able to afford housing in the median price housing market.

E. SCCP § XIV Economics

Goal XVII. Diversify the economic base of the County and maintain the viability of the agricultural sector.

* * *.

Policy II. Appropriate provisions shall be incorporated into the zoning, subdivision and other necessary ordinances to assure *conservation and retention of agricultural lands in agricultural uses. At a minimum, agricultural lands shall be zoned as exclusive farm use and taxed accordingly.*

Response: This Goal and Policy are principally aimed at directing County land use and regulatory policy development to encourage economic development. The Project will substantially contribute to the diversification of the County's economic base. The development of the Project is consistent with the purposes of the F-1 (EFU) zone, which allows for the development of commercial utility facilities as a conditional use. Further, the Project will result in a net benefit to farm incomes. The minimal loss of farm income based on the limited amount of land that the Project proposes to withdraw from farm production will be more than offset by revenue to local farmers from wind turbine leases. An average of 50 bushels of wheat per acre is harvested in this area that, as of July 2007, sells for an average of $6.25 per bushel for a revenue of approximately $315 per acre. The Project will permanently remove approximately 96 acres of land from farm production. Revenues from 96 acres of wheat sold at $315 per acre would be $30,240 annually. Royalty payments to landowners and operators vary, but typically range from $2,000 to $4,000 per turbine, per year. If the project consists of 267 turbines, the total in annual lease payments that would be paid by the Project would be between $534,000 and $1,068,000, which will more than offset the annual losses in revenue from growing wheat. The additional revenues received by farmers from wind project lease payments will provide a stable and predictable source of income that will supplement farm revenues and help assure that lessor-landowner's farming operations can remain viable in years with lower crop yields or prices.

F. SCCP § XV Energy

Goal XVIII. *Conserve energy resources.*

Policy I. *Cooperate with public agencies and private individuals in the use and development of renewable resources.*

Policy III. *New high voltage electrical transmission lines with nominal voltage in excess of 230 kV and gas transmission line shall be constructed within or adjacent to the existing electrical and gas transmission line right-of-way, respectively. Upon approval of the County Court, the General Standards for Issuance of Site Certificates, Energy Facility Siting Council (OAR 345-80-010 through OAR 345-80- 051) may be utilized for proposals deviating from the existing rights-of-way will be considered a plan amendment and subject to the approval of the Sherman County Court.*

Response: The Project is a renewable wind resource project. The County has recognized that it has "solar and wind resources which have not been utilized since widespread use of electricity was introduced." Comprehensive Plan § XV Finding III. This application represents a new opportunity to develop those resources, and directly implements this land use plan policy.

Wind power is a clean and renewable source of energy. Wind facilities do not emit greenhouse gases or particulates, do not produce hazardous wastes, and do not deplete other natural resources. The construction of the Project represents an implementation of Policy I.

SCCP Goal XVIII, Policy III, addresses "high voltage electrical transmission lines" but does not incorporate the definition as it is defined in ORS 469.300(11)(a)(C), which defines a high voltage transmission line as a line "…of more than 10 miles in length with a capacity of 230,000 volts or more to be constructed in more than one city or county in this state. This application does not propose high voltage electrical transmission lines as that term is defined at ORS 469.300(11)(a)(C) because both transmission lines would be located entirely within Sherman County and would not cross more than one jurisdiction. However, Energy Facility Siting Council standards in OAR 345-024-0090, which address "any high voltage transmission line under Council jurisdiction," including transmission lines considered related and supporting facilities as defined in OAR 345-001-0010(47) to include transmission lines proposed to be built in connection with the construction or operation of an energy facility, would apply to the Project.

OAR 345-024-0090 requires that the Applicant can (1) design, construct and operate the proposed transmission line so that alternating current electric fields do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public; and (2) can design, construct and operate the proposed transmission line so that induced currents resulting from the transmission line and related or supporting facilities will be as low as reasonably achievable. As described in Exhibit AA, the electric field within the transmission line rights-of-way of the proposed 230kV and 500 kV lines will not exceed 2.5 and 7.3 kV per meter, respectively, meeting standard (1). The 230 kV and 500 kV transmission lines will be designed in accordance with current NESC codes and will provide appropriate grounding of fences that parallel the transmission line. Any metal-roofed buildings in proximity to the line will be similarly grounded. This grounding practice is commonly done for transmission lines and will mitigate the shock hazard associated with the induced voltage, meeting standard (2).

The Project's transmission lines and substations are also described in K.7 in response to ORS 215.275, which demonstrates the Project's compliance for siting utility facilities necessary for public services within an EFU zone.

G. SCCP § XVI Land Use

Goal XIX. To provide an orderly and efficient use of the lands within Sherman County.

* * *.

Policy IV. Commercial businesses, except those related to agricultural uses, should be located within the incorporated cities or within areas served by the Biggs or Kent special service districts.

<u>Response</u>: The County's EFU zone expressly permits the proposed Project as a conditional use. The Project is locationally dependent and, accordingly, cannot be

located within any of the area's incorporated cities. Furthermore, the Project will not have a large impact on services in the County. Its co-location and compatibility with existing and ongoing agricultural activities provides an example of orderly and efficient land use.

H. Section XVII Comprehensive Land Use Plan Map

Cropland. Cropland is the "prime agricultural" lands within the County. Lands so designated shall be preserved for exclusive farm use. All uses, which are not directly or indirectly related to farm use shall be limited to those, which provide public service and could not be provided for within other lands.

Response: As noted above, the County's F-1 (EFU) zone expressly permits the Project as a conditional use in the F-1 zone. The Project is dependent on optimal wind resources and proximity to transmission facilities. Accordingly, it cannot be located within any of the nearby cities. The Project will be co-located and compatible with existing and ongoing agricultural activities and other wind energy generating facilities. Although the Project will permanently remove (i.e. for the life of the facility) approximately 96 acres from agricultural enterprises, an exception to Goal 3 is warranted as described in this Exhibit K.

K.6 COMPLIANCE WITH ADDITIONAL ZONING ORDINANCE PROVISIONS

1. SCZO § 5.2.2 Compliance with Applicable Zoning Ordinance Provisions
The proposal is in compliance with the requirements set forth by the applicable primary Zone, by any other applicable combining zone, and other provisions of this Ordinance that are determined applicable to the subject use.

Response: The following criteria are applicable to the Project as described below.

A. SCZO § 3.1.3(f)(1)—Transportation Standards (Access Roads)

*1) Construction, reconstruction, or widening of highways, roads, bridges or other transportation projects that are (1) not improvements designated in the Transportation System Plan; or (2) not designed and constructed as part of a subdivision or planned development subject to site plan and/or conditional use review. Transportation projects shall comply with the Transportation System Plan and applicable standards, and shall address the following criteria. * * **

a. The project is designed to be compatible with existing land use and social patterns including noise generation, safety, and zoning.

Response: The proposed private access roads are a conditionally permitted use in the EFU zone and will be compatible with the existing agricultural uses in the project area. SCZO 3.1.3(f). The new private access roads will be constructed to access the project facilities and will extend from the County roads as shown in the map at Figure C-2. In general, these roads will be up to approximately 36-feet wide during construction, and up to approximately 16-feet wide during operation, with an additional 4-feet of shoulders. The additional width of the roadway required for construction will be returned to its prior vegetated condition upon completion of road construction. To the extent reasonably possible, these roads will be located adjacent to the turbine towers to minimize the length of these roads. The private access roads will not increase traffic in the area but will provide improved access by land managers and farmers to their fields.

The primary travel routes that will be used by the Project during construction activities begins at the I-84/OR 206 interchange east of Celilo Village or the I-84/US 97 interchange at Biggs Junction depending on the location of construction. Construction vehicles would then proceed south on OR 206 or US 97 to county roads or the proposed new access points along the highway. Traffic may also approach the project site on US 97 from the south. The County's roads are generally composed of a pavement or gravel surface and carry light traffic consisting of local residential or farm equipment traffic.

Some of the local roadways will require a 6-inch gravel overlay prior to use by project construction vehicles. These improvements are necessary to accommodate the length and weight of vehicles that will deliver the turbines and other machinery necessary to construct the project. Sections of local roads in poor condition will be completely reconstructed. Areas anticipated to require reconstruction or substantial improvement are shown on Figure C-2 in Exhibit C. Reconstructed roadways will be improved as described in K.2.1. Construction-related traffic may cause brief traffic delays when trucks deliver the turbines and other project equipment but these delays are unlikely to impair the function of the public roadways. Once the Project is constructed, trips generated by the 10-15 operational staff will not have any perceptible effect on the functioning of the roads or highways in the vicinity of the project because general usage of these highways and roads will remain low.

b. *The project is designed to minimize unavoidable environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities.*

Response: Based on the wetland assessment (see Exhibit J) no permanent impact would occur. Temporary impacts would occur to approximately 0.05 acres of four wetlands as a result of the proposed project all will be restored when construction is completed. Other locations within the project boundary were noted as having wetlands or other waters of the state, but potential impacts to these areas will be avoided through appropriate siting and construction techniques. As demonstrated in Exhibits P and Q, there is little suitable habitat for federal or state listed species.

As discussed in Exhibit S, results of the cultural resource survey conducted for the Project identified eight (8) archeological sites were identified including two (2) prehistoric-period sites and six (6) historic-period sites. In addition, seven (7) isolated finds were identified, including two (2) prehistoric isolate and five (5) historic isolates. A Cultural Resource Management Plan (CRMP) will be developed by the Applicant in coordination with the Oregon State Historic Preservation Office (OSHPO). The CRMP will include specific protocols and procedures for protecting cultural resources, including any additional archeological sites and possible human remains (pursuant to ORS 97.745(4)) accidentally discovered during construction.

All of the archeological sites are recommended for avoidance during construction, operation, and retirement of the proposed facilities. Archaeological sites and historic homesteads will be temporarily flagged in the field and on project construction maps before and during construction. Archaeological construction monitors will be present during construction in selected locations to prevent accidental damage to these cultural resources. Additional consultations will be conducted with OSHPO concerning approved avoidance and/or mitigation measures for the Oregon Trail and Barlow Cutoff.

During construction in archeologically sensitive locations, such as near recorded archeological sites, on-site archaeological monitors will be present to ensure that no accidental damage to known cultural resources occurs, if required by OSHPO. The CRMP will address long-term management of the known/recorded resources and will include a section on accidental discovery of cultural resources. This section will provide a detailed plan of protocols and procedures (measures) to be followed if cultural resources are accidentally discovered during construction or operation of the facilities.

There will be no substantial adverse impacts on air quality from the construction or operation of the Project. The construction activities for the Project will create dust but this would not be significant in a rural area where farming also creates dust. Standard best management practices to control dust and wind erosion will be used, such as spraying areas of the site with water periodically. See Exhibit I.

c. The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.

Response: Several local roadways will be improved or completely reconstructed to accommodate project construction vehicles. Many of the existing local roads are in poor condition, so the proposed improvements to existing roads will have a long-term beneficial effect for all of those who use these roads. There is little traffic on roads in the area, so access management, traffic calming or other such features designed to reduce traffic conflicts are not necessary.

d. The project includes provision for bicycle and pedestrian circulations as consistent with the comprehensive plan and other requirements of this ordinance.

Response: No bicycle or pedestrian facilities are required by the County to permit the Project and none are appropriate for the project area. The access roads will be located in a rural agricultural area where pedestrian and bicycle facilities are not appropriate, safe, or required by the County's ordinances or plans.

B. SCZO § 4.13 Additional Conditions to Development Proposals (Access Roads)

The County may require additional conditions for development proposals.

1) The proposed use shall not reduce the level of service (LOS) below a D rating for the public transportation system. For developments that are likely to generate more than a V/C ratio of 75 or greater, the applicant shall provide adequate *information, such as a traffic impact study or traffic counts, to demonstrate the level of impact to the surrounding road system. The developer shall be required to mitigate impacts attributable to the project.*

2) *The determination of the scope, area, and content of the traffic impact study shall be coordinated with the provider of the affected transportation facility, i.e., city, county, state.*
3) *Dedication of land for roads, transit facilities, sidewalks, bikeways, paths or accessways shall be required where necessary to mitigate the impacts to the existing transportation system caused by the proposed use.*
4) *Construction of improvements such as paving, curbing, installation or contribution to traffic signals, construction of sidewalks, bikeways, accessways, paths or roads that serve the proposed use where necessary to mitigate the impacts to the existing transportation system caused by the proposed use.*

Response: The Project will comply with all conditions of approval necessary to achieve compliance with the SCZO and the Council's land use standard. Once completed, the Project will not generate a significant number of trips. Traffic levels on area roads are low and will not increase beyond the network capacity with the addition of project traffic. Thus, the project will not reduce the LOS in the area, will not generate V/C ratios of 75 or greater, and will not require the dedication of land for transportation facilities or the construction of mitigation improvements, other than the reconstruction and resurfacing of existing roadways. According to the County, no traffic analysis is required due to the small expected impact on the transportation system.

C. SCZO § 4.14 Access Management (Access Roads)

Response: The access management provisions of the Zoning Ordinance do not apply to the proposed Project.

D. SCZO § 11.8 Design & Improvement Standards and Requirements, Streets and Other Public Facilities (Access Roads)

Response: The Council's rules governing the application are designed to identify all applicable design and improvement standards, permits, approvals and regulations needed for construction of the Project. In particular, Exhibit E identifies all of the federal, state and local permits and approvals needed to construct the facility, and elsewhere in this Exhibit K all of the applicable County design standards are identified. No land division, subdivision or partition approval, or zone change is required in order to site the Project. For the reasons described in this Exhibit K and in the application, the Project complies with this provision.

E. SCZO § 5.2.3 Other Permits

That, for a proposal requiring approval or permits from other local, state and/or federal agencies, evidence of such approval or permit compliance is established or can be assured prior to final approval.

Response: The Council's rules governing the application are designed to identify all applicable permits, approvals and regulations needed for construction of the Project. In particular, Exhibit E identifies all of the federal, state and local permits and approvals needed to construct the project. Exhibit E provides evidence demonstrating the construction and operation of the Project will comply with all state and local statutes, rules and standards applicable to the permit. Exhibit E also provides evidence that for federal permits, approvals and regulations the responsible agency has received that permit information.

The Applicant will send the following required notice to the FAA:

1. **Federal Aviation Administration Notice.** Prior to beginning construction of the Project, the Applicant will send the FAA a Notice of Proposed Construction or Alteration to the FAA with the proposed location of the turbines and related or supporting facilities.

   The Applicant is likely to receive the following state and local approvals for construction of the Project:

2. **Oregon Department of Environmental Quality**. The Applicant will apply for a NPDES General Construction Stormwater (1200-C) Permit before beginning the construction of the project.

3. **Sherman County Sanitarian**. The Applicant will obtain an on-site sewage permit from the County sanitarian for the subsurface sewage disposal system at the new O& M building.

F. SCZO § 5.2.3 Compliance with Specific Standards

The proposal is in compliance with specific standards, conditions and limitations set forth for the subject use in this Article and other specific relative standards required by this or other County Ordinance.

Response: The Project complies with this criterion as described below.

2. SCZO § 5.8(14) Specific Requirements for Nonfarm Uses in F-1 Zone, Public Facilities and Services (Energy Facility, Access Roads)

*(a) Public facilities including, but not limited to, utility substations, * * * electrical generation and transmission devices * * * shall be located so as to best serve the County or area with minimum impact on neighborhoods, and with consideration for natural or aesthetic values.*

(b) Structures shall be designed to be as unobtrusive as possible. Wherever feasible, all utility components shall be placed underground.

(c Public facilities and services proposed within a wetland or riparian area shall provide findings that: Such location is required and a public need exists; and Dredge, fill and adverse impacts are avoided or minimized.

Response: For the reasons stated elsewhere in this Exhibit K, the substations, energy generating facilities, collector lines, and transmission lines will be located to best serve the County with minimum impacts to surrounding uses, natural features and values. All of the collector lines will be located underground, which will cross four small linear wetlands. Impacts to wetlands will be temporary in nature and restored to their original condition when construction is complete. See Exhibit J.

3. SCZO § 5.8(16)—Specific Requirements for Nonfarm Uses in F-1 Zone, Nonfarm Uses (Energy Facility, Access Roads and associated construction areas)

*Nonfarm uses * * * may be approved upon a findings [sic] that each such use:*

(a) Is compatible with farm uses described in ORS 215.203(2);

Response: SCZO section 5.8(16) provides criteria for conditional uses.

As previously noted, the Project is consistent with the purposes of the F-1 (EFU) zone, which allows for the development of commercial utility facilities as a conditional use.

Based on interviews with the farm owners and operators of parcels directly impacted by the Project, the Project would not be incompatible with farm uses. A technical memorandum included as Appendix K-1 identifies adjacent agricultural crops, practices, impacts and mitigation measures. The current farm use is dry land wheat and barley farming.

Two common sources of conflict between farm and non-farm uses are the ability of farmers to maneuver equipment or vehicles around obstacles (like turbines), and timely access to parcels without conflicts with construction-related delays. For this Project, access roads will be located to minimize disturbance and maximize transportation efficiency. Existing public and private farm roads will be used to the extent feasible.

Minimizing conflict with the turbines as obstacles depends to a large part on the size and configuration of the parcel they are on, the topography, and proximity to property lines or fences. The Project, to maximize energy generation, is very limited in where it can place turbines in the project area. The turbine strings are planned for locations well outside the minimum width of the largest farm equipment such as 50-foot-wide rod weeder. However, manipulating around the tight radius of a wind turbine may be difficult and may increase the opportunity for weeds to grow and infest crops. These on-the-ground conflicts in compatibility are significantly offset by the lease revenue to local farmers, which will exceed historic revenue from the land being displaced and will stabilize a portion of farm revenues as long as the Project is in operation. The Applicant will contact with the County weed officer to work with him to develop a plan to minimize potential invasion by weed species. This plan will include parameters for reseeding bare ground areas and for vegetation management.

The Project will have minimal impact on farm uses, and the Applicant will take steps to minimize any disruption to farming practices. Wherever feasible, turbines and transmission interconnection lines will be placed along the margins of cultivated areas to reduce the potential for conflict with farm operations. The Project will require approximately 96 acres of land to be permanently removed from farm use while 709 acres of farmland will be affected temporarily by construction laydown sites. Approximately 30,310 acres are within the project lease area and assuming conservatively that 50 percent is actively farmed; the amount removed from production is about 0.3 percent of the farm land in the vicinity of the proposed Project. If comparing the loss of production to all of Sherman County where there are approximately 129,000 acres in wheat and barley production, the total amount of land removed from production would amount to 0.08 percent of the land devoted to barley and wheat production in Sherman County. Due to the minimal amount of land being permanently disturbed and the proposed mitigation measures, the Project is compatible with the farm uses of the property.

(b) Does not interfere seriously with accepted farming practices on adjacent lands devoted to farm use;

Response: Adjacent EFU lands contain primarily dry land wheat and barley crop farming. The Project will not "seriously interfere" with accepted farming practices on adjacent lands. "Accepted farming practices" is defined at ORS 215.203(2)(c) as "a mode of operation that is common to farms of a similar nature, necessary for the operation of such farms to obtain a profit in money, and customarily utilized in conjunction with farm use." Farm practices for farming wheat and barley in the area are described in the technical memorandum at Appendix K-1.

The land adjacent to the sites where the turbines, access roads, and construction areas will be located is devoted to the production of wheat or barley crops. While the presence of the turbine pads and turbines may have a minor impact on the use of adjacent land, the Project will not seriously interfere with farm practices, based on interviews with the farm owners and operators. Farmers noted that some minor changes to plowing and harvesting patterns will be required, but none will seriously interfere with accepted farming practices on adjacent farmland.

Weed control is anticipated to occur in the same fashion as today. Crop dusters are accustomed to avoiding similar wind power facilities within the County, including power transmission lines. In addition, the local landowners already manually spray around fence lines to cover surface areas missed during crop dusting. A similar method will be used for areas missed by crop dusters due to the presence of the turbines.

Weed management will be undertaken by the Applicant during construction and will also closely coordinate with farmers to ensure adequate and timely access to properties during critical periods in the farming cycle, such as during harvest.

(c) Does not materially alter the overall land use pattern of the area;

Response: The overall land use pattern of the area consists of wheat or barley crops with some rangeland. The analysis area for the Project is described in Section K.2 as a one-half mile from the project facilities. Beyond the analysis area, and except for incorporated towns and rural nodes, the topography consists of similar rolling hills and drainages with wheat farming as the main use. In 1997, 80 percent of the land in Sherman County was in farmland, with 30 percent in harvested cropland (*Source: Atlas of Oregon).* Agricultural areas that are enrolled in the CRP are found throughout the analysis area, occurring as narrow strips in previously plowed drainageways and as large blocks in other areas. CRP areas have been planted with a mix of native and non-native bunchgrasses with the primary intent of increasing wildlife habitat in the area. Similarly, proposed access roads, turbine facilities, staging areas, the new O&M building, and under ground and above ground collector lines and access roads will not materially alter the land use pattern in the area, which already includes other wind energy facilities either operating, under construction, or planned for construction located to the east of Wasco.

The Project will not materially alter the overall land use pattern in the area. The Project will require approximately 96 acres of land to be permanently removed from farm use while 709 acres of farmland will be affected temporarily (by construction laydown sites). The amount removed from production is about 0.3 percent of the total lease area, a very small amount of agricultural land. Any financial impacts on the affected farmers resulting from removal of lands from farm production will be offset by the lease payments they will receive for use of their land to site the Project, as demonstrated in the technical memorandum supporting this exhibit (Appendix K-2) and elsewhere in the site certificate application.

The Project and private access roads will not materially alter the stability of the existing land use pattern that prevails over this area and much of the County. Local farmers will be able to maneuver around the turbine strings and transmission towers and across the gravel access roads, although minor changes in sowing and harvesting patterns in the immediate vicinity of the strings will be necessary. Since the farming in the area is dry land farming, no irrigation patterns will be affected

The Project will not materially alter the stability of the existing land use pattern because the Project and all of the related or supporting facilities are compatible with farming when they are limited to a reasonably small percentage of the area farmed. Land uses may be induced to change by altering factors that affect value, either lowering or raising it. In this case, some of the optimum sites for the wind energy generation will be taken by this Project and will maximize the value of this land for energy generation. The land leases provide an additional source of private income without creating major obstacles to farming. The stability of this lease income will help stabilize the inherent volatility associated with farming.

(d) Is situated upon generally unsuitable land for the production of farm crops and livestock, considering the terrain, adverse soil or land conditions, drainage and flooding, vegetation, location and size of the tract, and the availability of necessary support resources for agriculture;

<u>Response</u>: The roads, turbines, and associated construction areas are proposed on land that is currently being farmed for wheat and barley. The soils in the area, absent sufficient rainfall or irrigation, would not support any other crops except perhaps hay. Soils that support the wheat and barley farming are not top quality soils; they are Class IIc soils. The chief positive characteristics of these soils is their depth and that they are well drained. These soils, however, do not support a diversity of crops, nor crops that are high value. They also do not generally support livestock in the County. With the exception of recent price increases in wheat, due to drought overseas, the price of wheat has dropped steadily over the last 10 years. The wind turbines displace minor amounts of land on parcels that vary in size, but are generally large enough to accommodate both farm and wind energy uses. As a

result the displacement impacts are minor and are offset by the lease allowances, which create stability in the economy of each farmer and compensate for the volatility of crop production and prices. Thus, the Applicant submits that the Project would be sited on property that is "generally unsuitable" for the production of farm crops and livestock. In the alternative, the Applicant has submitted a proposal for a goal 3 exception to allow the project to be located on EFU land in the County.

(e) Complies with other applicable significant resource provisions; and

Response: There are no known other significant resource provisions applicable to the Project.

(f) Complies with such other conditions as deemed necessary.

Response: The Project will comply with all conditions of approval imposed by the Council in granting the site certificate.

4. SCZO § 5.2.5. Resource Carrying Capacities
That no approval be granted for any use which is or expected to be found to exceed resource or public facility carrying capacities, or for any use which is found to no be in compliance with air, water, land, and solid waste or noise pollution standards.

Response: As described in this application, the Project will not exceed resource or public facility carrying capacities, and the Project will comply with all applicable air, water, land, solid-waste or noise-pollution standards. See Exhibit E (listing permits needed for construction and operation), Exhibit I (soils), Exhibit J (wetlands and other waters), Exhibit O (water resources), Exhibit P (fish and wildlife habitat), Exhibit Q (threatened and endangered species), Exhibit V (waste minimization), and Exhibit X (noise).

5. SCZO § 5.2.6. Violation of Ordinance
That no approval be granted for any use violation of this Ordinance.

Response: There are no use violations related to the Project.

K.7 DIRECTLY APPLICABLE STATUTES, GOALS AND LCDC RULES

1. The Principal Use and Access Roads

A. ORS 215.283(2)(g) and 215.296 – Development on EFU Land

Response: ORS 215.283(2)(g) conditionally permits commercial utility facilities for the purpose of generating power for public use by sale, subject to ORS 215.296. Similarly, the conditional use criteria in ORS 215.296 are also applicable to the access roads as required by ORS 215.283(3)(b) and OAR 660-012-0065 which are discussed below.

1). Principal Facility.

ORS 215.296(1) requires a use allowed under ORS 215.283(2), such as the proposed Project, to be approved if it does not: (i) force a significant change in accepted farm or forest practices on "surrounding lands" devoted to farm or forest use, or (ii) significantly increase the cost of accepted farm or forest practices on "surrounding lands" devoted to farm or forest use. [2] Land in the vicinity of the Project is devoted to farm use and is used to grow wheat or barley. There is no forest use within this area. Very little land in this area is irrigated, rainfall is low, and soils and terrain are consistent in type. Accepted farm practices include soil preparation in the spring and fall, sowing, fertilizing, pest and weed management, and harvesting.

The development and operation of the proposed Project has the potential to minimally and temporarily affect these practices. The development of the Project, including all related and supporting facilities as well as the transmission lines and substations addressed in responses to ORS 215.275, below, may cause small changes in harvest patterns, access to farm fields, processes for delivering and applying fertilizers and other products to crops, and the harvesting of crops. Development of the Project will also displace approximately 96 acres of actively farmed land from agricultural use during the life of the proposed Project. Ground disturbance during construction can encourage weeds that temporarily interfere with crop yields until eradicated. The development of access roads and turbine tower pads create margins in the wheat fields that may also temporarily cause the spread of weeds. In conjunction with the Sherman County Weed District, the Applicant intends to develop and implement a weed control management plan within the project boundary to minimize the growth of weed species in the areas in which the Project will be built.

Construction of the energy facility will take approximately 9 months to complete. During construction, there will be a temporary disturbance of approximately 709 acres of agricultural land. Once the Project is completed, it will preclude approximately 96 acres of actively farmed agricultural land from being used for farming during the life of the Project. As described elsewhere the size of the area taken for Project use is small in comparison to the amount of land in the project area that will otherwise be available for continued farming uses.

Upon completion of project construction, all of the staging areas used to construct the energy facility will be rehabilitated and made available for agricultural and wildlife use. Further, where necessary and feasible, the Project will provide access across construction trenches to fields within the project area. The Applicant will undertake measures to avoid or mitigate impacts to soil, such as employing dust-control and erosion-control measures. The Applicant will also consult with area landowners during construction and operation of the Project to minimize or avoid any adverse impacts to surrounding agricultural practices. To the extent reasonably possible, the Project will use existing access roads to minimize the Project's impact to resource land. Some new access roads, however, are necessary. These roads will not significantly adversely impact farming practices or increase farming costs, either during the construction or use of these roads. Instead, they will provide farmers with better access to local

[2] As described above, the County imposes similar standards in the F-1 zone. See discussion of SCZO § 5.8(16), above.

agricultural lands. Further, during operation of the Project these roads will be used infrequently by project employees, thus producing minimal, if any, impact on surrounding farming practices or costs. For these reasons the development and operation of the Project will not force a significant change in accepted farm practices on surrounding lands devoted to farm use.

The Project will also not significantly increase the cost of accepted farm practices on surrounding farmland. The Applicant surveyed area farmers to determine the impact of the Project on the cost of farming. The survey results show that, while development and operation of the Project would cause some minor change to harvesting patterns or various farming practices associated with the application of fertilizers and other products, representing some slight loss of efficiency in some cases, the changes would not significantly increase the cost of farming in the surrounding area. In fact, any slight cost increase to area farmers associated with these minor changes in farming practices would be more than offset by compensatory lease payments paid to farmers in the area in order to develop the Project.

The Applicant will mitigate any impacts to area farmers, including coordination with farmers concerning timely and adequate access during construction of the Project, weed management during construction and operation of the Project, restoration of disturbed areas during construction and after construction is completed, and lease payments to lessor-farmers.

B. Access Roads Compliance with ORS 215.283(3).

ORS 215.283(3) authorizes the proposed access roads as a conditional use. The SCZO does not expressly incorporate ORS 215.283(3). Accordingly, under ORS 197.646(3), ORS 215.283(3) applies to the application directly.

ORS 215.283(3) provides in pertinent part:

(3) Roads, highways and other transportation facilities and improvements not allowed under subsections (1) and (2) of this section may be established, . . . in areas zoned for exclusive farm use subject to:

(a) Adoption of an exception to the goal related to agricultural lands and to any other applicable goal with which the facility or improvement does not comply;

(b) ORS 215.296 for those uses identified by rule of the Land Conservation and Development Commission as provided in section 3, chapter 529, Oregon laws 1993.

LCDC rules OAR 660-033-0120 and 660-033-0130(13) identify as allowed uses “transportation improvements on rural lands allowed by OAR 660-012-0065.” OAR 660-012-0065(1) identifies transportation facilities, services and improvements that may be permitted on rural lands without a goal 3, 4, 11 or 14 exception. OAR 660-012-0065(3)(o) permits transportation facilities, services and improvements “that serve local travel needs” on rural lands without a goal 3, 4, 11 or 14 exception. Under that rule, the travel capacity and level of service of facilities and improvements serving local travel needs are limited to “that necessary to support rural land uses identified in the acknowledged comprehensive plan or to provide adequate emergency access." OAR 660-012-0065(5) requires that when such facilities or improvements are within an EFU zone, as is the case with the proposed Project, the facilities or improvements must: (a) comply with ORS 215.296; (b) identify reasonable build design alternatives, such as alternative alignments, that are safe and can be constructed at a reasonable cost; (c) assess the effects of the identified alternatives on farm and forest practices, movement of farm and forest vehicles and equipment, and effects on access to farm and forest parcels; and (d) select the alternative that will have the least impact on farm or forest lands in the immediate vicinity.

Wind energy is a rural land use identified in the Comprehensive Plan at Section XV, Finding III. The proposed access roads would serve the local travel needs of the Project and farmers who operate in the project area. ORS 215.296(1) requires a use allowed under ORS 215.283(3) to be approved if it does not: (i) force a significant change in accepted farm or forest practices on "surrounding lands" devoted to farm or forest use, or (ii) significantly increase the cost of accepted farm or forest practices on "surrounding lands" devoted to farm or forest use within this area, land that is devoted to farm use is used to grow wheat or barley. There is no forest use within this area. Very little land in this area is irrigated, rainfall is low, and soils and terrain are consistent in type. Accepted farm practices include soil preparation in the spring and fall, sowing, fertilizing, pest and weed management, and harvesting.

To the extent reasonably possible, the Project will use existing access roads to minimize the Project's impact to resource land. Some new access roads, however, are necessary. These roads will not significantly adversely affect farming practices or increase farming costs, either during the construction or use of these roads. Instead, they will provide farmers with better access to local agricultural lands. Further, during operation of the Project these roads will be used infrequently by project employees, thus producing minimal, if any, impact on surrounding farming practices or costs. For these reasons, development and use of the proposed roads will not force a significant change in accepted farm practices on surrounding lands devoted to farm use.

The proposed roads also will not significantly increase the cost of accepted farm practices on surrounding farm land. The Project surveyed area farmers to determine the impact of the Project, including the proposed roads, on the cost of farming. The survey results show that while development and operation of the Project would cause some minor change to harvesting patterns or various farming practices associated with the application of fertilizers and other products, representing some slight loss of efficiency in some cases, the changes would not significantly increase the cost of farming in the surrounding area. Any slight cost increase to area farmers associated with these minor changes in farming practices would be more than offset by compensatory lease payments paid to farmers in the area in order to develop the Project. (See Appendix K-1).

The Applicant considered alternative locations for the proposed wind turbines and related or supporting facilities, but determined that the proposed site plan would maximize the efficiency of the project and have the least possible impact on adjacent farm practices, including the movement of farm vehicles and equipment, and on access to farm parcels. The Applicant thus submits that pursuant to ORS 215.283(3), 215.296 and OAR 660-0120-0065, the proposed new private roads may be built without taking an exception to Goal 3. In the alternative, the Applicant proposes that the roads be allowed under a Goal 3 exception.

C. Compliance with OAR 660-012-0065—Transportation Improvements on Rural Lands (Access Roads)

In pertinent part, OAR 660-012-0065(3) provides:

(3) The following transportation improvements are consistent with goals 3, 4, 11, and 14 subject to the requirements of this rule:

“ * *”*

(o) Transportation facilities, services and improvements other than those listed in this rule that serve local travel needs. The travel capacity and level of service of facilities and improvements serving local travel needs shall be limited to that necessary to support rural land uses identified in the acknowledged comprehensive plan or to provide adequate emergency access.

* * *.

(5) For transportation uses or improvements listed in subsection (3)(d) to (g) and (o) of this rule within an exclusive farm use (EFU) or forest zone, a jurisdiction shall, in addition to demonstrating compliance with the requirements of ORS 215.296:

(a) Identify reasonable build design alternatives, such as alternative alignments, that are safe and can be constructed at a reasonable cost, not considering raw land costs, with available technology. Until adoption of a local TSP pursuant to the requirements of OAR 660-012-0035, the jurisdiction shall consider design and operations alternatives within the project area that would not result in a substantial reduction in peak hour travel time for projects in the urban fringe that would significantly reduce peak hour travel time. A determination that a project will significantly reduce peak hour travel time is based on OAR 660-012-0035(10). The jurisdiction need not consider alternatives that are inconsistent with applicable standards or not approved by a registered professional engineer.

(b) Assess the effects of the identified alternatives on farm and forest practices, considering impacts to farm and forest lands, structures and facilities, considering the effects of traffic on the movement of farm and forest vehicles and equipment and considering the effects of access to parcels created on farm and forest lands; and

(c) Select from the identified alternatives, the one, or combination of identified alternatives that has the least impact on lands in the immediate vicinity devoted to farm or forest use.

Response: No new public road alignments are proposed, only improvement to existing public roads to accommodate the weight and size of turbine components. No changes to road capacity would result, however some widening of these roads to include shoulders would occur to enable the transportation of project equipment and to assist farmers in maneuvering equipment without impeding traffic.

The proposed new private access roads are intended to serve local travel needs of project personnel and local farmers. In view of the location of the wind resource and of the existing public road system, there are no reasonable build design alternatives for the proposed roads. The proposed roads will have no impact on peak or non-peak travel time. Any alternative road alignments would not reduce the anticipated minor impacts, if any, to farm lands, structures and facilities, or on the movement of farm vehicles and equipment. The Applicant considered the possible locations of the new roads and has proposed them in those locations that would have the least impact to adjacent farm and other existing land uses.

2. Overhead Electric Transmission Lines and Substations

A. ORS 215.275, Utility Facilities necessary for Public Service; Criteria; mitigating impact of facility

The substations and overhead transmission lines are within the scope of ORS 215.283(1)(d), which allows "utility facilities necessary for public service" on EFU land subject to the provisions of ORS 215.275. ORS 215.275 lists factors for deciding whether a utility facility is "necessary for public service." The proposed substations are necessary to convert the voltage from the 34.5-kV collector system to voltages that can be transmitted over the interconnection lines to the BPA interconnection point north of the Klondike Schoolhouse and BPA John Day substations and ultimately to public customers.

The statute provides:

(1) A utility facility established under ORS 215.213 (1)(d) or 215.283 (1)(d) is necessary for public service if the facility must be sited in an exclusive farm use zone in order to provide the service.

(2) To demonstrate that a utility facility is necessary, an applicant for approvalunder ORS 215.213 (1)(d) or 215.283 (1)(d) must show that reasonable alternatives have been considered and that the facility must be sited in an exclusive farm use zone due to one or more of the following factors:

(a) Technical and engineering feasibility;

(b) The proposed facility is locationally dependent. A utility facility is locationally dependent if it must cross land in one or more areas zoned for exclusive farm use in order to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands;

(c) Lack of available urban and nonresource lands;

(d) Availability of existing rights of way;

(e) Public health and safety; and

(f) Other requirements of state or federal agencies.

The proposed utility facilities under ORS 215.275 include two substations and two transmission lines, all of which must be located in an EFU zone because there is no non-EFU land outside of existing urban growth boundaries in northern Sherman County near the project site, as shown on Figure K-1. The Project is not compatible with land inside UGBs because the substations and transmission lines must be located in the vicinity of the Project to minimize the length of the transmission lines necessary for interconnection at the BPA interconnection points. There are no reasonable alternatives to these locations.

ORS 215.275(2)(a-c) apply to the Project. "Technical and engineering feasibility" requires that there be substations and interconnecting transmission lines to accommodate interconnection with the BPA system. It is not feasible or technically possible to interconnect with the main transmission grid without these facilities. The proposed substations and interconnection lines are also "locationally dependent." They must be located in proximity to the proposed wind turbines, because that is where the power would be generated. They must also be located near the point of interconnection with the BPA system so that the power can be transmitted to customers. There are no urban or nonresource lands available to locate the substation and interconnection line where they could serve their purpose. For these reasons, location of the substations and interconnection lines on EFU land are "necessary for public service."

ORS 215.275(4) requires that the owner of a utility facility approved under ORS 215.283(1)(d) be responsible for restoring agricultural land and associated improvements to their former condition if they are damaged or disturbed by the siting, maintenance, repair or reconstruction of the facility. The proposed substations and support structures for the interconnection lines would be located on land that would be part of the permanent "Project footprint." When project construction is completed, lands temporarily affected by construction would be returned its original condition.

ORS 215.275(5) requires the imposition of "clear and objective conditions" on siting a utility facility under 215.283(1)(d) "to mitigate and minimize the impacts of the proposed project, if any, on surrounding lands devoted to farm use in order to prevent a significant change in accepted farm practices or a significant increase in the cost of farm practices on the surrounding farmlands." Construction of the substations and transmission lines would not substantially add to the impacts on agricultural land caused by the principal use and access roads, which would occupy a larger area of land. As described in K.2.1, permanent impacts to F-1 (EFU) land for proposed substations and transmission lines would be approximately 4 acres, compared to approximately 92 acres for the principal use and approximately 104 acres for the entire Project (approximately 8 acres of land is zoned F-1, but is reserved for habitat and is not actively farmed, see Exhibit P). Locating the proposed substations and interconnection lines on approximately 4 acres of agricultural land would not cause a significant change in accepted farm practices or significantly increase the cost of those practices.

In addition landowners and farm operators would be compensated for the loss of land for agricultural production. Landowners and farm operators surveyed for the Project did not identify any significant impacts related to the project. Some landowners did state that the location of project facilities, may slightly alter how they farm, they did not identify significant changes in farming practices.

K.8 GOAL 3 EXCEPTION

State law permits "commercial utility facilities for the purpose of generating power for public use by sale" that preclude 20 acres or less of non-high-value-farmland from commercial agricultural enterprise. OAR 660-033-0130(22). If such a project, as here, exceeds this limit, the provision permits the use of an exception to goal 3 to allow the siting of the project. The SCZO does not contain a similar criterion. Under ORS 197.646(3), the administrative rule criteria directly apply to the proposed Project.

ORS 469.504(2) provides that the Council may find goal compliance for a facility that does not otherwise comply with one or more of the statewide planning goals by taking an exception to the applicable goal. Notwithstanding the requirements of ORS 197.732, the statewide planning goal pertaining to the exception process or any rules of LCDC pertaining to an exception process goal, the Council may take an exception to a goal. In pertinent part, ORS 469.504(2)(c)(A)-(C) provides that the Council may take a "reasons" exception if the Council finds:

(A) Reasons justify why the state policy embodied in the applicable goal should not apply;

(B) The significant environmental, economic, social and energy consequences anticipated as a result of the proposed facility have been identified and adverse impacts will be mitigated in accordance with the rules of the council applicable to the siting of the proposed facility; and

(C) The proposed facility is compatible with other adjacent uses or will be made compatible through measures designed to reduce adverse impacts.

1. Exception for Energy Facility and Related or Supporting Facilities.

The general state policy embodied in Goal 3 is "to preserve and maintain agricultural lands." As discussed above, the Project will not have significant adverse effects on accepted farm or forest practices. However, the application must nonetheless demonstrate why the policy contained in the 20-acre limitations should not apply to the Project. As is explained in Exhibit I, the Project will preclude 104 acres of EFU land, of which 96 acres is actively farmed and the remaining acreage is used for habitat (see Exhibit P), from use as a commercial agricultural enterprise. As set forth below, there are several reasons for not applying the Goal 3 acreage limitation to the Project.

A. Reasons that Justify the Exception.

The Applicant has chosen the project site because it offers an optimal wind energy resource to produce the desired energy production. Extensive evaluation of wind resources in various areas within Sherman County indicates that the project site has among the best wind resources for the development of wind energy generating facilities. This conclusion is further supported by the successful operation of the nearby wind energy projects, which have collected substantial information about wind energy resources, and have determined that the project area possesses among the most optimal, accessible wind energy resources in the area.

Wind power projects by their nature require large tracts of land because each turbine must be placed several hundred feet apart. That, in addition to substation, access roads and the operation and maintenance facility will require more than 20 acres of F-1 land.

In addition, area farmers are willing to enter into land leases to allow the Project to be built and control properties of a sufficient size and appropriate configuration to accommodate the Project. Further, any alternative site in the County would involve the leasing of EFU land, because the areas of the County with the best wind resources are all located on EFU land.

The site is also located to take advantage of existing transmission facilities. The proposed collector lines, substations, transmission line, staging areas and operation and maintenance facility are all necessary to operate the Project, and must be located in the project area. The collector lines between the turbines will be built next to the access roads to minimize EFU land disturbance. All of the collector lines will be underground. The new transmission lines will occupy approximately 0.1 acres of EFU-zoned land. The new collector substations and O&M building will occupy up to 9 acres of EFU-zoned land. Overall, less than 0.3 percent of EFU-zoned land in the vicinity of the Project will be used for project related and supporting facilities.

The Project will minimize impacts from constructing new access roads by using existing roads where possible and designing the new roads for the minimum size possible that can provide safe and adequate access to the turbine string sites. The Project will improve approximately 50 miles of existing roads, minimizing the construction of new roads. The access roads must be designed for use by cranes, excavators, supply trucks and line trucks and will, therefore, be 36-feet wide. Access to and along the turbine strings for proper operation and maintenance is crucial, and the Project has located the new access roads to minimize disruption to resource lands.

The only non-EFU land in the area is located in the cities of Moro, Wasco, Rufus and Biggs Junction. None of these locations has the necessary wind resource, adequate parcels of land, or proximate transmission system necessary to build the Project. Hence, the Project must be sited on EFU land in order to provide the service.

The topography and remote location of the project site will minimize visual impacts to the surrounding community. Further, the agricultural value of the site is generally marginal because it is not irrigated and Sherman County does not consider it high value farmland. The Project will not displace highly productive agricultural activity.

As described in Applicant's responses to the applicable criteria above, the Project encourages the efficient siting of land uses. The Project will facilitate the multiple use of land. The Project will allow access to farmland on those acres occupied by turbine facilities.

The Project will benefit the local economy through employment opportunities, particularly during construction, and contributions to the local tax base. The number of construction jobs will fluctuate during the approximate 9-month construction period, ranging from 175 jobs. Operation of the Project will require 10 to 15 full-time and part-time employees at any given time. The 10 to 15 permanent jobs will provide additional salaries to contribute to the local economy. In addition, the capital investment in the Project is estimated at over five hundred million dollars, and the Project is expected to provide substantial tax revenues to the County over the life of the Project, with insubstantial countervailing public service demands.

The affected landowners will also benefit. In return for granting leases and easements over small amounts of their farmland, the landowners will receive significant financial compensation.

B. ESEE Consequences Favor the Exception.

Environmental. The Project's environmental consequences are discussed primarily in Exhibits J (Wetlands), L (Protected Areas), P (Fish and Wildlife), and Q (Threatened and Endangered Species). These exhibits demonstrate that the Project will not cause significant adverse environmental consequences. Indeed, by and large, the Project will avoid impacts to such resources altogether. The Project will mitigate for any unforeseen impacts to wildlife habitat based on habitat categorization, as is required under ODFW policy (discussed above), and for any unforeseen impacts to the visual setting in which the Oregon Trail alignment occurs (also discussed above and in Exhibit R). In short, the Project does not anticipate any significant adverse impacts to soils, wetlands, protected areas, water resources, threatened and endangered species, scenic and aesthetic resources, historic and cultural and archaeological resources, or public services.

Socioeconomic. The Project's socioeconomic consequences will not be adverse. The Project will not have significant adverse impacts on scenic, cultural, historical, archeological, or recreational resources. Exhibit U (Public Services and Socio-Economic Impacts) demonstrates that the Project will not have significant adverse impacts on community services such as housing, sewer, water supply, waste disposal, health care, education, and transportation. As discussed above, the Project will create jobs and contribute income to the County. These benefits should be measured against the relatively small amount of agricultural activity that will be displaced by the Project.

The Project will supplement farmers' income with lease payments and without significantly reducing the land base available for farming practices. Similarly, although some farming will be displaced where certain portions of the Project will be located, the Project will be compatible with area farming.

Energy. The energy consequences of the Project are discussed briefly above. The Project will utilize existing electric energy capacity from the Wasco Electric Cooperative to operate the new O&M building. The energy produced by the Project will be clean energy that will help Oregon and the northwest region meet increasing energy demands.

C. The Facility Is Compatible with Other Adjacent Uses.

As discussed in detail above, the Project is compatible with adjacent land uses. The Project will not significantly alter the farming land use pattern or practices in the area, nor will it significantly increase farming costs.

In sum, there are compelling reasons that justify siting the Project at the proposed location, and doing so will not create any significant adverse economic, social, environmental or energy consequences. The Project will be compatible with adjacent land uses, as are the existing adjacent wind energy facilities. The Applicant therefore requests approval of a Goal 3 exception for the energy generating facility and all related or supporting facilities, including the new roads.

K.9 FEDERAL LAND MANAGEMENT PLANS

OAR 345-021-0010(1)(k)(D) *If the proposed facility will be located on federal land:*

i. Identify the applicable land management plan adopted by the federal agency with jurisdiction over the federal land;

ii. Explain any differences between state or local land use requirements and federal land management requirements;

iii. Describe how the proposed facility complies with the applicable federal land management plan;

iv. Describe any federal land use approvals required for the proposed facility and the status of application for each required federal land use approval;

v. Provide an estimate of time for issuance of federal land use approvals; and

vi. If federal law or the land management plan conflicts with any applicable state or local land use requirements, explain the differences in the conflicting requirements, state whether the applicant requests Council waiver of the land use standard described under paragraph (B) or (C) of this subsection and explain the basis for the waiver.

Response: These provisions are not applicable to the Project. No portion of the Project will be located on federal land.

K.10 REFERENCES

Allan, S., Buckley, A., and Meacham, J. 2001. Atlas of Oregon. Second Edition. William Loy, Ed. University of Oregon Press.

Renewable Northwest Project. 2004. Windfall from the Wind Farm, Sherman County, Oregon. Ouderkirk, B. and Pedden, M. August 2004 (Revised December 2004).

Soil Conservation Service. 1964. Soil Survey of Sherman County, Oregon.

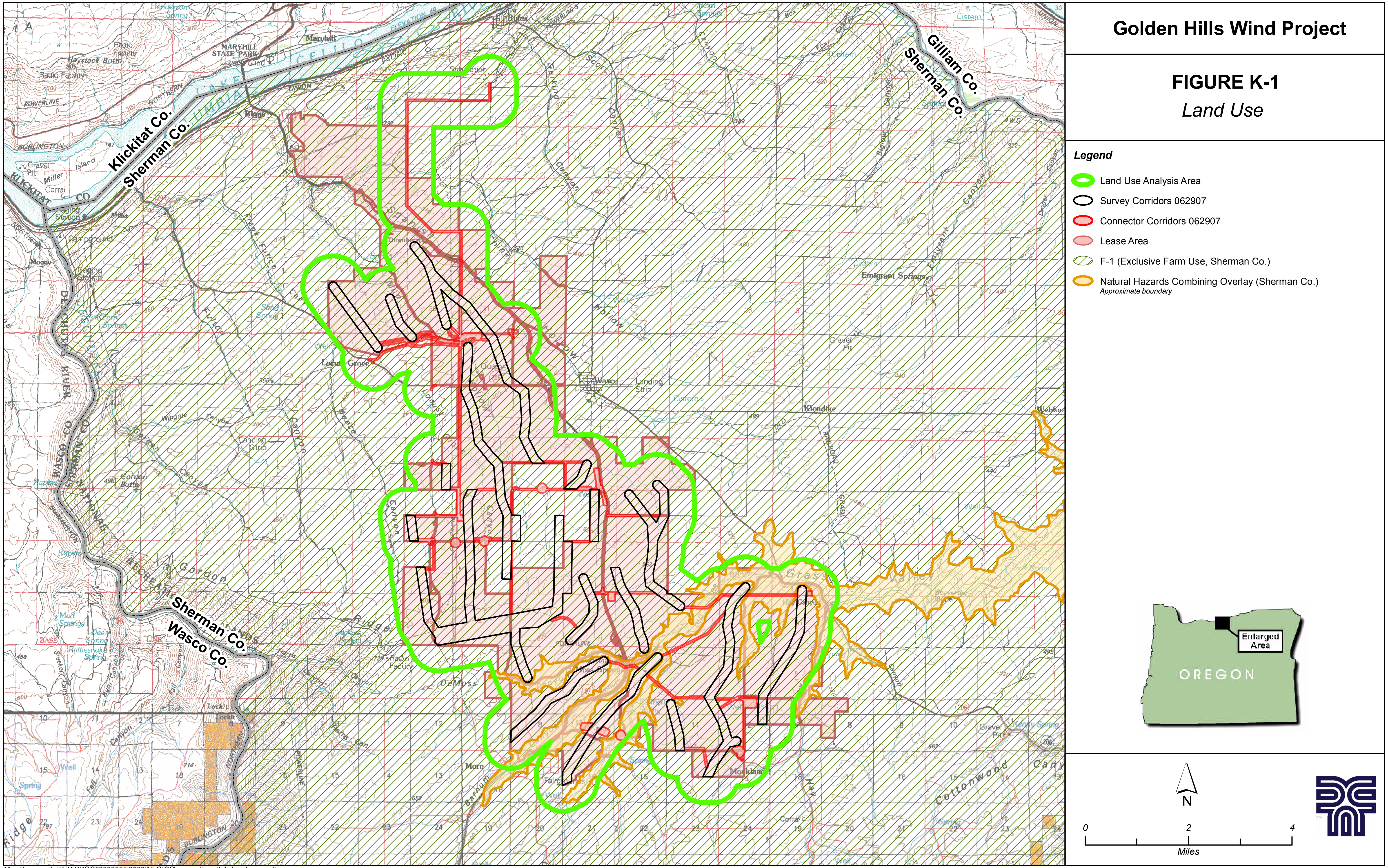
USDA National Agricultural Statistics Service . 2002. Census of Agriculture. http://www.nass.usda.gov/census/census02/volume1/or/index2.htm

FIGURE

Golden Hills Wind Project

FIGURE K-1

Land Use



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ATTACHMENT K-2

Farmland Technical Memorandum

DAVID EVANS AND ASSOCIATES INC.

MEMORANDUM

DATE: July 2007

TO: File

FROM: Alex Dupey

SUBJECT: **Farm Impacts Analysis**

PROJECT: Golden Hills Application for Site Certificate

PROJECT NO: BPOC0000-0005

COPIES:

This memorandum addresses existing conditions in the vicinity of the proposed Golden Hills Wind Farm Project, potential impacts and costs on farming practices from the proposed project, and available mitigation. This memo is intended to support findings in Exhibit K of the Application for Site Certificate.

State law under Chapter 215.200 (Agricultural Land Use, Exclusive Farm Use Zones) of the Oregon Revised Statutes requires an analysis of a proposed project's impacts on agricultural lands when they are proposed to be impacted by non-agricultural uses. ORS 215.203(1) states that zoning ordinances may designate areas as exclusive farm use zones, within which land shall be used exclusively for farm use except as otherwise provided in ORS 215.213, 215.283 or 215.284. ORS 215.203(2)(a) defines "farm use," in part, as "the current employment of land for the primary purpose of obtaining a profit in money by raising, harvesting and selling crops."

Methodology

Information on farm crops and farm practices in the area came from interviews with owners and/or farm operators affected by the Project. A blank copy of the survey is attached. The anticipated impact to landowners/farm operators is based on lost revenue from farmland permanently converted to utility use, while revenue generated for property owners and farm operators is based on the anticipated lease payment from the Applicant. Crop yields were provided by survey respondents. Revenue per bushel of wheat was estimated based on the current value of wheat based on current market conditions reported by the United States Department of Agriculture Portland Daily Grain Report (July 9, 2007).

Existing Conditions

Land in the vicinity of the proposed project is zoned F-1 (Exclusive Farm Use). Generally speaking, most of Sherman County is zoned F-1, except for some isolated nodes of commercial, industrial, and residential zoning designations. A Natural Hazards (NH) Combining District is applied to areas of surface water accumulations and high groundwater, unstable or fragile soils, geological hazards, and steep slopes (generally 30 percent or greater) in the county. A portion of the NH district extends into the Project lease area along Grass Canyon, but the Project is not expected to affect the NH district because turbines and access roads would be placed outside of those areas.

The soils in the project area are grouped into five General Soil Units (GSU) – Walla Walla-Anderly, Wato Anders, Wrentham-Lickskillet-Rock Outcrop, Lickskillet-Nansene, and Mikkalo-Ritzville. The Walla Walla-Anderly and Mikkalo-Ritzville GSUs provide the basis for wheat and barley production while the others are used mainly for grazing and wildlife habitat (see Exhibit I for detailed discussion of soils.). The soil survey performed for Sherman County identifies the Walla Walla silt loam, deep and very deep as being well suited to wheat and moderately well suited barley. Figure J-5 of Exhibit J shows the soil types. As shown on that figure, the flatter areas of the analysis area where the Project would be primarily located are dominated by Walla Walla silt loam on shallow slopes, which is a Class II soil. While ORS 215.710 includes land with soils rated as prime, unique, Class I, or Class II by the Natural Resource Conservation Service in its definition of high-value farmland, under Statewide Planning Goal 3 implementation, counties are allowed to make finer distinctions about agricultural land. Sherman County does not consider any soils in Sherman County as high-value farmland based on their analysis of soil types in the county (pers. comm., Georgia McNab, March 22, 2005 and July 29, 2005).

The vast majority of the analysis area (and Sherman County) is under dryland wheat or barley production, with some areas in open range for cattle. In 2002, the most recent agricultural census data available, Sherman County had approximately 129,000 acres in wheat and barley production. Portions of the land have also been enrolled in the Conservation Reserve Program (CRP). The Project leased area encompasses over 30,310 acres, of which approximately 113 acres of agricultural land will be directly affected by the Project.

Farm Practices

"Accepted farming practices" is defined at ORS 215.203(2)(c) as "a mode of operation that is common to farms of a similar nature, necessary for the operation of such farms to obtain a profit in money, and customarily utilized in conjunction with farm use." Typical farm practices for dryland wheat farming consist of land preparation in the spring, such as plowing, aerial fertilizing, sowing, followed by mechanical weeding with rod weeders and hand removal of weeds where rod weeders cannot reach, and harvesting. Soil preparations for winter wheat can involve burning stubble, spreading straw or crop residue, and reducing tall stubble by discing or harrowing. Farming in this area according to survey respondents occurs between March and October. None of the surveyed farmers mentioned aerial spraying. However, aerial spraying is known to occur in the area.

Access to the parcels is important for moving farming vehicles or equipment that is not stored on-site. All of the survey respondents said they use local roads to transport equipment. Some equipment is large, with 28-foot-wide combines up to 50-foot-wide rod weeders, and require dismantling or "folding up" before they can be moved. Because the vehicles move slowly compared to regular traffic, transportation along well-traveled roads can be a challenge. The time needed to fold up and move the vehicles can affect profitability as well, particularly at critical times such as harvesting if there are large areas to cover when the crops are at their peak. Most respondents said they move equipment early in the mornings to avoid traffic, but if needed they will move it at any time during the day.

Potential Farm Impacts

Permanent impacts consist of replacement of farmed land with utility use (including roads to access the turbine strings) and forced changes in harvesting patterns to avoid the turbine strings. If the turbine strings are long and bisect a parcel, they effectively convert the site into two parcels for farming purposes, primarily from the aspect of difficulty in moving and manipulating equipment and vehicles to, across, and around the property. Rod weeders, for example, can be 50 feet wide. Another potential permanent impact is the chance for new weeds to become established as a result of construction. Equipment brought from other parts of the state can carry weed seeds that opportunistically establish themselves and threaten crop yields and quality. Weed control is a major concern of farmers.

The Project will require approximately 96 acres of land to be permanently removed from farm use while 709 acres of farmland will be affected temporarily (by construction laydown sites etc.). Approximately 30,310 acres are within the Project lease area and assuming conservatively that 50 percent is actively farmed; the amount removed from production is about 0.3 percent of the farm land in the vicinity of the proposed project. If comparing the loss of production to all of Sherman County where there are approximately 129,000 acres in wheat and barley production, the total amount of land removed from production would amount to 0.08 percent of the land devoted to barley and wheat production in Sherman County lost to production.

Temporary impacts consist of delays in access to roads or property by construction traffic, and temporary displacement of crops by construction activities. Several of the roads listed by farm owners or operators are slated for improvements, which will cause temporary delays but when completed will improve the functionality of the roads for transporting farm equipment and vehicles. There would be little to no effect from permanent changes in traffic volumes due to the small number of permanent employees of the energy facility (up to 15, on shifts).

To the extent that disruptions cause delays in harvesting, more time spent moving equipment, and interruptions to harvesting patterns, farm revenues can be adversely affected. This depends on the timing of construction (temporary) and on the general configuration of each parcel (a permanent impact). If parcels are fenced, manipulating the equipment between towers and property lines can be difficult if not impossible. Of the five survey respondents, one cited the turbines as having the potential to negatively affect their farm operations because it could require changes in how the fields are farmed and the increased edges could also increase the areas that support weeds because crops cannot be harvested there and could require spraying.

When asked whether the location of the turbines and the roads is compatible with farming, all respondents replied that they had not yet seen where the turbines would be located, but one said that they thought the strings and roads were planned to be placed in a manner that reduces impacts to farming operations. When asked if the location of the turbines and roads would force a significant change in farm practices, no one was able to answer the question because the turbine locations had not yet been disclosed.

Additional Analysis

The potential impacts on individual farms depends on the size of the farm and the number of turbines proposed—which in turn determines the length of the turbine string and access road, the amount of land converted to utility use, and the relative difficulty of farming around the strings. It is also important to recognize that, unlike other projects that can affect farmlands (such as public roads), the proposed project offers offsetting benefits that will positively affect farm owners' incomes and access to their properties.

As noted above, part of the local road network will be improved substantially beyond county road standards (because of the need to support the weight and size of the turbine components). The improvements should help to ease the movement of equipment and farm vehicles, thus also contributing to more efficient (less costly) operations. The private access roads that will parallel the turbine strings will provide better access for farmers to their parcels. The roads will be maintained by the Applicant, which will lower maintenance costs for farmers. In addition, and most importantly, this Project will provide annual leasing fees to farmers that exceed the historical yields from the same amount of land. An average of 50 bushels of wheat per acre is harvested in this area that, as of July 2007, sells for an average of $6.25 per bushel for a revenue of approximately $315 per acre. The Project will permanently remove approximately 113 acres of land from farm production. Revenues from 113 acres of wheat sold at $315 per acre would be $35,595 annually. Royalty payments to landowners and operators vary, but typically range from $2,000 to $4,000 per turbine, per year. If the Project consists of 267 turbines, the total in annual lease payments that would be paid by the Project would be between $534,000 and $1,068,000, which will more than offset the annual losses in revenue from growing wheat.

The Project will pay the incremental taxes that will be assessed on the land occupied by the turbines.

Summary of Impacts

On balance, there would be some disruption to farming practices in terms of equipment movement to and around properties to avoid the turbine strings. None of the respondents said that the disruption would force a significant change in farm practices. Some said that the loss of farm land would negatively affect farm revenues; however, this is offset by annual lease revenues from the Applicant. Most farm operators or owners either had no opinion or said the Project would not be incompatible with farming.

Therefore, the project will not seriously interfere with accepted farming practices on adjacent lands, and will not force a significant change in farm practices or significantly increase the costs of farming.

Available Mitigation

No mitigation other than the annual lease revenue is proposed for loss of revenue from cropland converted to utility use. Wherever possible, turbines and transmission interconnection lines will be placed along the margins of cultivated areas to reduce the potential for conflict with farm operations. There is little other mitigation available for offsetting difficulties of maneuvering equipment around the turbine strings if the strings are close to property lines or fences so efforts will be made to allow sufficient room. The Applicant will coordinate with each property owner/farm operator to strike a balance between the Project's locational needs and the farmer's need for maneuverability around the turbines and the roads.

A weed control plan will be developed with the Sherman County Weed District. It will consist of preventive measures such as cleaning vehicles that arrive from off-site and revegetating disturbed areas. Monitoring to look for weed invasions should be done regularly throughout the year. Chemical control can be used as needed, provided they are applied by licensed users.

Farmed areas that are disturbed by construction temporarily would be restored. The proposed restoration plan calls for bringing the site back to the original contours, spreading topsoil on the site, and re-seeding for crops or other vegetation. Any disturbed CRP areas and other non-cropped vegetated areas will be revegetated with the appropriate species.

Ongoing coordination with farmers and operators will occur during construction and road improvements, to ensure timely and adequate access to the crops for sowing, fertilizing, pest management and harvesting. Other mitigation measures as identified in Exhibits I, J, and P and Q will also reduce impacts to farmland.

Initials: WAD

File Name: p:\b\bpoc00000005\0600info\0670reports\0672 - application for site certificate\0672 - exhibit k\farm survey memo\appk-2_ farm memo.doc

Project Number: BPOC0000-0005

Date : ____________________

Name : ____

Address : ____

Telephone Number : Day ________________ Evening ________________

Farm Survey for Golden Hills Wind Power Project

1. Are you the property owner? Yes ______ No ______

2. Do you farm the property? Yes ______ No ______

   If you do not farm the property, please provide the name, address, and telephone number of the farm operator.

   Name: ____

   Address: ____

   Phone: ____

3. Do you live on the property? Yes ______ No ______

   Some of the turbines for the wind power project are proposed to be constructed on the property you own and/or farm, or on adjacent property. The following questions will help us understand how both the construction of the project and the presence of the turbines and new maintenance roads may affect your farming operations, costs and facilities.

4. How large is the parcel (or parcels) that you own and/or farm that are affected by the project?

   ____

5. How much of your parcel is actively farmed?

   ____

If not all of the parcel is farmed, is the area not farmed suitable for farming, or are there constraints (such as poor soils, steep slopes) that make it unsuitable?

____

____

6. What is the total size of the land you own and/or farm in Sherman County?

____

Approximately what proportion of your business in terms of acreage or income does the affected parcel represent?

____

7. What crop(s) do you grow on this parcel?

____

____

How many crop(s) annually could you grow?

____

8. Is the equipment or machinery used to farm the crop(s) kept on the property, or is it moved from another location?

____

____

If moved from another location, which public roads and access points to your property are used?

____

How frequently and at what time of day or year do you need access to those roads?

9. Do you think the location of the wind turbines and the maintenance roads will negatively affect your ability or increase the cost of farming your parcel?

   Why or why not?

10. Do you expect the loss of agricultural land as a result of the project to have a significant negative impact on the annual revenues you earn from your farming operations?

    Why or why not?

11. Would you be willing to estimate the net cost or benefit of the project to you in terms of agricultural revenue as well as revenue from leasing the land for the wind power project?

    If "yes," please estimate the net cost or benefit to you.

12. If not willing to estimate, do you agree or disagree with estimates of net costs provided by wheat farmers affected by Klondike I project? They estimated annual losses of approximately $125 per turbine, based on loss of ½ acre of farmed land, 25 bushels of wheat per ½ acre at $5 per bushel.

    Agree _________ Disagree ________

13. Do you think the location of the wind farm turbines and roads that will be built to access the turbines are compatible with your ability to farm your parcel?

    Why or why not? ____

    ____

    ____

14. Will the location of the wind turbines force a significant change in farming practices on your land?

    If so, why? ____

    ____

    ____

15. Will the location of the wind turbines significantly increase the cost of farming your property? Yes ______ No ______

    Comments:

    ____

    ____

    ____

    ____

EXHIBIT L

PROTECTED AREAS
OAR 345-021-0010(1)(L)

TABLE OF CONTENTS

L.1 INTRODUCTION

Exhibit L addresses impacts the Project will have on Protected Areas in the facility analysis area. This Exhibit responds to the provisions of OAR 345-021-0010(1)(L), which requires the submission of:

OAR 345-021-0010(1)(L) *Information about the proposed facility's impact on Protected Areas, providing evidence to support a finding by the Council as required by OAR 345-022-0040, including:*

L.2 LIST OF PROTECTED AREAS

OAR 345-021-0010(1)(L)(A) *A list of the protected areas within the analysis area showing the distance and direction from the proposed facility and the basis for protection by reference to a specific subsection under OAR 345-022-0040(1).*

Response: The analysis area for impacts on Protected Areas includes the area within the site boundary and extends 20 miles beyond the site boundary in Oregon and Washington. Figure L-1 illustrates the analysis area and 21 identified Protected Areas within the analysis area. Table L-1 lists these Protected Areas, the state in which they occur, their approximate minimum distance from the proposed facility, and the applicable OAR 345-022-0040(1) subsection defining the basis for protection. Subsections for Protected Areas in Washington have been extrapolated because the OARs do not address resources in states other than Oregon.

Table L- 1. Protected Areas Within Analysis Area and Their Approximate Minimum Distance from the Proposed Facility

Protected Area	State	Direction and Distance from Golden Hills site (miles)	OAR 345-022-0040(1) Subsection
John Day Wildlife Refuge	OR	East, 5.3	(a)
Goldendale Hatchery	WA	Northwest, 12.5	(f)
Columbia River Gorge National Scenic Area	OR and WA	West, 2.7	(g)
Deschutes River State Recreation Area	OR	West, 4.3	(h)
Heritage Landing (Deschutes)	OR	West, 5.4	(h)
JS Burres State Recreation Site/BLM Cottonwood Facility	OR	Southeast, 6,8	(h)
Goldendale Observatory State Park	WA	North, 11.8	(h)
Columbia Hills (Horsethief Lake) State Park	WA	Northwest, 14.0	(h)
Doug's Beach State Park	WA	Northwest, 19.9	(h)
Maryhill State Park	WA	North, 1.0	(h)
Brooks Memorial State Park	WA	North, 19.7	(h)
Columbia Hills Natural Area Preserve	WA	Northwest, 11.7	(i)

Protected Area	State	Direction and Distance from Golden Hills site (miles)	OAR 345-022-0040(1) Subsection
Badger Gulch Natural Area Preserve	WA	Northeast, 15.6	(i)
John Day Federal Wild and Scenic River	OR	East, 5.2	(k)
John Day State Scenic Waterway (Parrish Creek to Tumwater Falls)	OR	East, 5.3	(k)
Deschutes Federal Wild and Scenic River	OR	West, 2.3	(k)
Deschutes State Scenic Waterway (Pelton Dam to Columbia River)	OR	West, 2.4	(k)
Lower Klickitat Federal Wild and Scenic River	WA	Northwest, 16.2	(k)
Columbia Basin Agriculture Research Center (Moro)	OR	Southwest, 0.4	(m)
Lower Deschutes Wildlife Area	OR	Southwest, 1.8	(p)
Klickitat Wildlife Area	WA	Northwest, 16.6	(p)

The proposed facility is not located within any of the Protected Areas as defined by OAR 345-022-0040.

L.3 MAP OF PROPOSED FACILITY IN RELATION TO PROTECTED AREAS

OAR 345-021-0010(1)(L)(B) *A map showing the location of the proposed facility in relation to the protected areas listed in OAR 345-022-0040 located within the analysis area.*

Response: See Figure L-1.

L.4 POTENTIAL IMPACTS

OAR 345-021-0010(1)(L)(C) *A description of significant potential impacts of the proposed facility, if any, on the Protected Areas including, but not limited to, potential impacts such as:*

Response: Through an evaluation of potential impacts, it has been determined that the design, construction, and operation of the facility are not likely to result in significant adverse impacts to Protected Areas. The evaluation is described below.

(i) Noise resulting from facility construction or operation;

Response: The noise analysis conducted for the proposed facility indicated the proposed facility would be inaudible from all Protected Areas except the Columbia Basin Agriculture Research Center. The maximum noise level at the Center would be approximately 34 dBA which would be audible at times at a very low level, mostly late at night.

Noise resulting from facility construction or operation would not adversely impact Protected Areas.

(ii) Increased traffic resulting from facility construction or operation;

Response: A detailed description of traffic resulting from facility construction and operation is included in Exhibit U.

The construction access route includes using US 97 from Biggs Junction at I-84 to the US 97/OR 206 intersection near Wasco. Construction traffic may also approach the site from the south on US 97. Construction traffic would use OR 206 to reach Wasco, and then use a series of local Sherman County roads to reach construction sites within the site boundary. Several local roads would need to be improved to accommodate heavier construction equipment, resulting in a long-term improvement to the local road system.

Temporary impacts such as short-term traffic delays on US 97 and local roads may affect access to Protected Areas associated with the John Day River and the Columbia Basin Agriculture Research Center. The construction route is not a primary access route to the John Day River, and several passing lanes on US 97 will alleviate potential impacts along the travel corridor. Impacts to Protected Areas associated with the Deschutes River would be negligible because access to the river is primarily from I-84 and from state and local roads south of the analysis area. Traffic demands on local roads are currently low. Any effects are expected to be temporary, negligible, and would not adversely impact Protected Areas. Long-term negative impacts due to traffic would be negligible because the facility would employ 10 to 15 people.

The remaining Protected Areas are distant enough from the Project that they would not be affected by increased traffic. In conclusion, increased traffic resulting from facility construction or operation would not adversely impact Protected Areas.

(iii) *Water use during facility construction or operation;*

Response: As stated in Exhibit O, water use during facility construction will primarily involve dust control and making concrete. During operations, water use will be minimal and will include normal domestic use associated with the O&M facility. During construction, water will be trucked in from offsite. During operation, water for the O&M facility will be supplied from an exempt well near the O&M building.

Water use during facility construction or operation would not impact Protected Areas.

(iv) *Wastewater disposal resulting from facility construction or operation;*

Response: The use of water for construction practices is not anticipated to generate runoff. Wastewater would not be discharged into wetlands or other adjacent resources. Sanitary effluent would be treated via an on-site septic system and stormwater would infiltrate on site. Therefore, wastewater resulting from facility construction or operation would not impact Protected Areas.

(v) *Visual impacts of facility structures or plumes.*

Response: A visibility analysis was conducted to determine areas within the analysis area from which any part of any turbine would potentially be visible. The details of the modeling method are discussed in Exhibit R; the results for the Protected Areas visibility analysis are included in Figure L-2. The results were ground-truthed during site investigations on June 13 and 14, 2007.

The proposed project will not be visible from the following Protected Areas, according to the computer modeling results and site investigations:

- Goldendale Hatchery
- Deschutes River State Recreation Area
- Heritage Landing (Deschutes)
- JS Burres State Recreation Site/BLM Cottonwood Facility
- Goldendale Observatory State Park
- Columbia Hills (Horsethief Lake) State Park
- Doug's Beach State Park
- Maryhill State Park
- Brooks Memorial State Park
- Badger Gulch Natural Area Preserve
- Lower Klickitat Federal Wild and Scenic River
- Klickitat Wildlife Area

Since the proposed project would not be visible from these Protected Areas, there would be no visual impact to them.

The proposed project would be potentially visible, in very limited areas, from the following Protected Areas:

- John Day Federal Wild and Scenic River
- John Day State Scenic Waterway (Parrish Creek to Tumwater Falls)
- John Day Wildlife Refuge
- Deschutes Federal Wild and Scenic River
- Deschutes State Scenic Waterway (Pelton Dam to Columbia River)
- Lower Deschutes Wildlife Area

The proposed project would be visible from limited isolated rims of the John Day River canyon including areas within the boundaries of the John Day Federal Wild and Scenic River (WSR), John Day State Scenic Waterway, and John Day Wildlife Refuge (see Figure L-2). The proposed project would be visible from very limited isolated rims of the Deschutes River canyon, including areas within the Deschutes Federal WSR, Deschutes State Scenic Waterway, and Lower Deschutes Wildlife Area boundaries (see Figure L-2). The John Day Federal WSR, John Day State Scenic Waterway, Deschutes Federal WSR, and Deschutes State Scenic Waterway are managed for outstanding scenic quality (USDI 1986, USDI 1993, USDI 2000, USDI 2001). The John Day Wildlife Refuge and Lower Deschutes Wildlife Area are not managed for visual quality (Kohl, 2007).

The US Department of Interior Bureau of Land Management (BLM) has indicated that its primary concern would be visual impacts seen from the rivers, not from the canyon rims (Mottl, H. 2007, Mottl, T. 2007). The proposed project would not be visible from the John Day River, the Deschutes River, or either of the river canyons' interior and would therefore have negligible impacts, if any, on these Protected Areas.

The proposed project would be visible from the following Protected Areas:

- Columbia Hills Natural Area Preserve
- Columbia Basin Agriculture Research Center (Moro)
- Columbia River Gorge National Scenic Area

The Columbia Hills Natural Area Preserve (NAP) is located within the Columbia River Gorge National Scenic Area (CRGNSA) and is managed for rare plant habitat; the NAP itself is not managed for visual quality. The proposed project would likely be visible from the NAP, but would not adversely impact the NAP nor interfere with its management objectives. Photos L-1 and L-2 depict typical views from the NAP, including views of existing wind turbines that are barely discernable to the naked eye.

The proposed project would be visible from the Columbia Basin Agriculture Research Center in Moro, Oregon. The center is not managed for visual quality. The proposed Project would not adversely affect operations at the center (Petrie, 2007).

The proposed project would be visible from the eastern end of the CRGNSA. Much of the visible area identified in the visibility analysis is not publicly accessible; there is limited road access and most land is held in private ownership. The most likely locations from which to view the proposed Project occur along Washington SR-14, near Wishram, Washington. Turbines may potentially be visible in the distant middleground and background. Views from SR-14 are currently encroached upon by multiple transmission corridors and steel lattice towers, distribution lines, radio towers, rail lines, the I-84 and US 30 corridors, and rural development. Photos L-3 and L-4 depict views from SR-14 near Wishram. Given the relative amount of existing encroachment in the foreground and middleground views, that proposed turbines (or portions of turbines) would likely be visible in the background, and limited opportunities to view turbines, the proposed project would result in minimal impacts to the CRGNSA.

In summary, visual impacts of project structures would not significantly impact Protected Areas.

(vi) *Visual impacts from air emissions resulting from facility construction or operation, including, but not limited to, impacts on Class 1 Areas as described in OAR 340-204-0050.*

Response: The proposed project would not create air emissions, so no impacts would occur. There are no Class 1 Areas within the analysis area.

L.5 REFERENCES

L.5.1 Telephone Contacts/Personal Interviews

Kohl, Keith. District Wildlife Biologist. Mid-Columbia District. Oregon Department of Fish and Wildlife. Telephone conversation with Sean Sullivan. June 28, 2007.

Mottl, Heidi. Recreation Planner. Prineville District, Bureau of Land Management. Telephone conversation with Sean Sullivan. June 25, 2007.

Mottl, Tom. District Recreation Planner. Prineville District, Bureau of Land Management. Telephone conversation with Sean Sullivan. June 26, 2007.

Petrie, PhD., Steve. Director. Columbia Basin Agriculture Research Center (Moro). Oregon State University. Voicemail message for Sean Sullivan July 5, 2007.

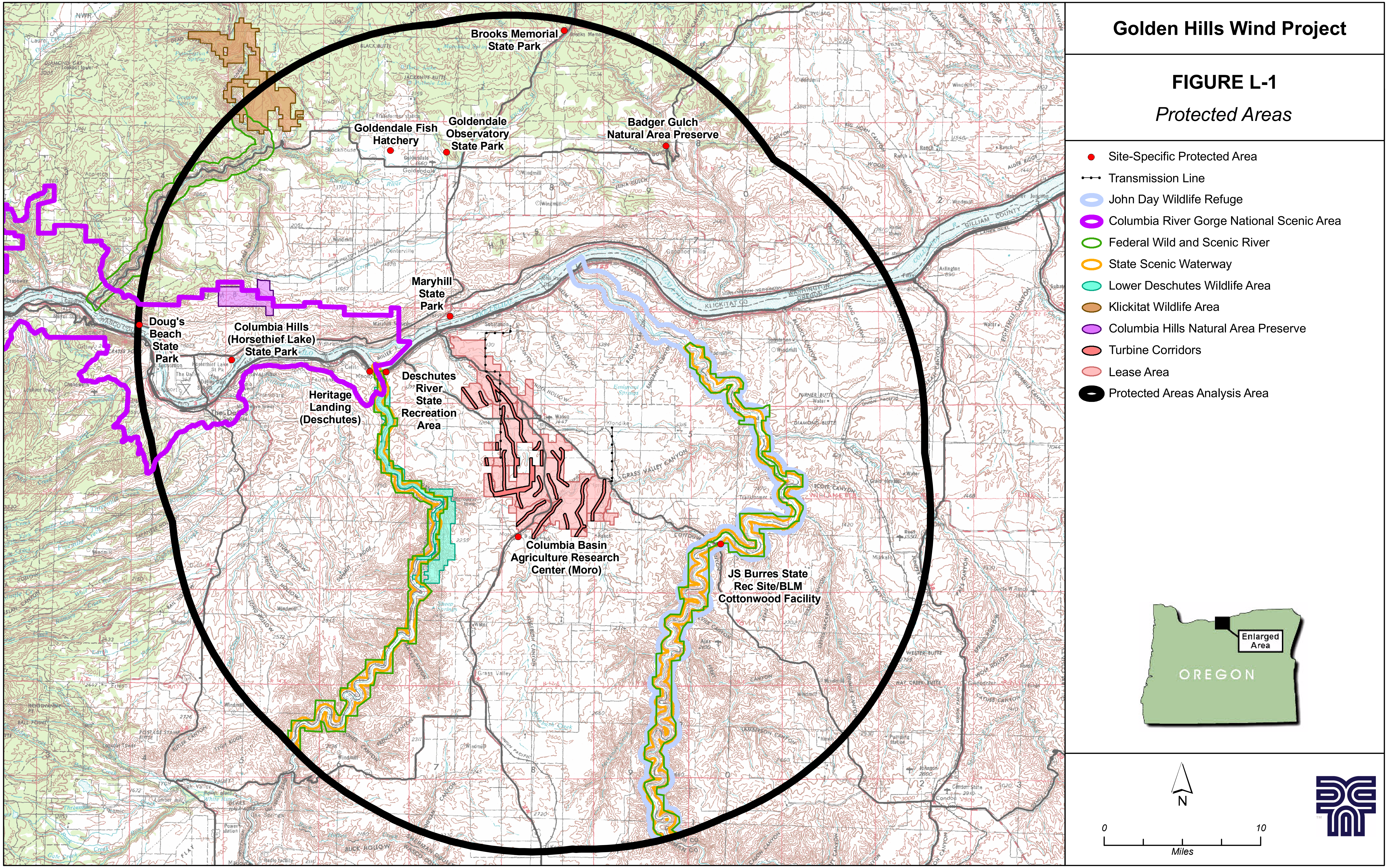
L.5.2 Website/Document References

USDI Bureau of Land Management. Two Rivers Resource Management Plan Record of Decision. June 1986.

USDI Bureau of Land Management. Lower Deschutes River Management Plan Record of Decision. February 1993.

USDI Bureau of Land Management. John Day River Proposed Management Plan, Two Rivers and John Day Resource Management Plan Amendments and Final Environmental Impact Statement. June 2000.

USDI Bureau of Land Management. John Day River Management Plan, Two Rivers, John Day, and Baker Resource Management Plan Amendments Record of Decision. February 2001.



Golden Hills Wind Project

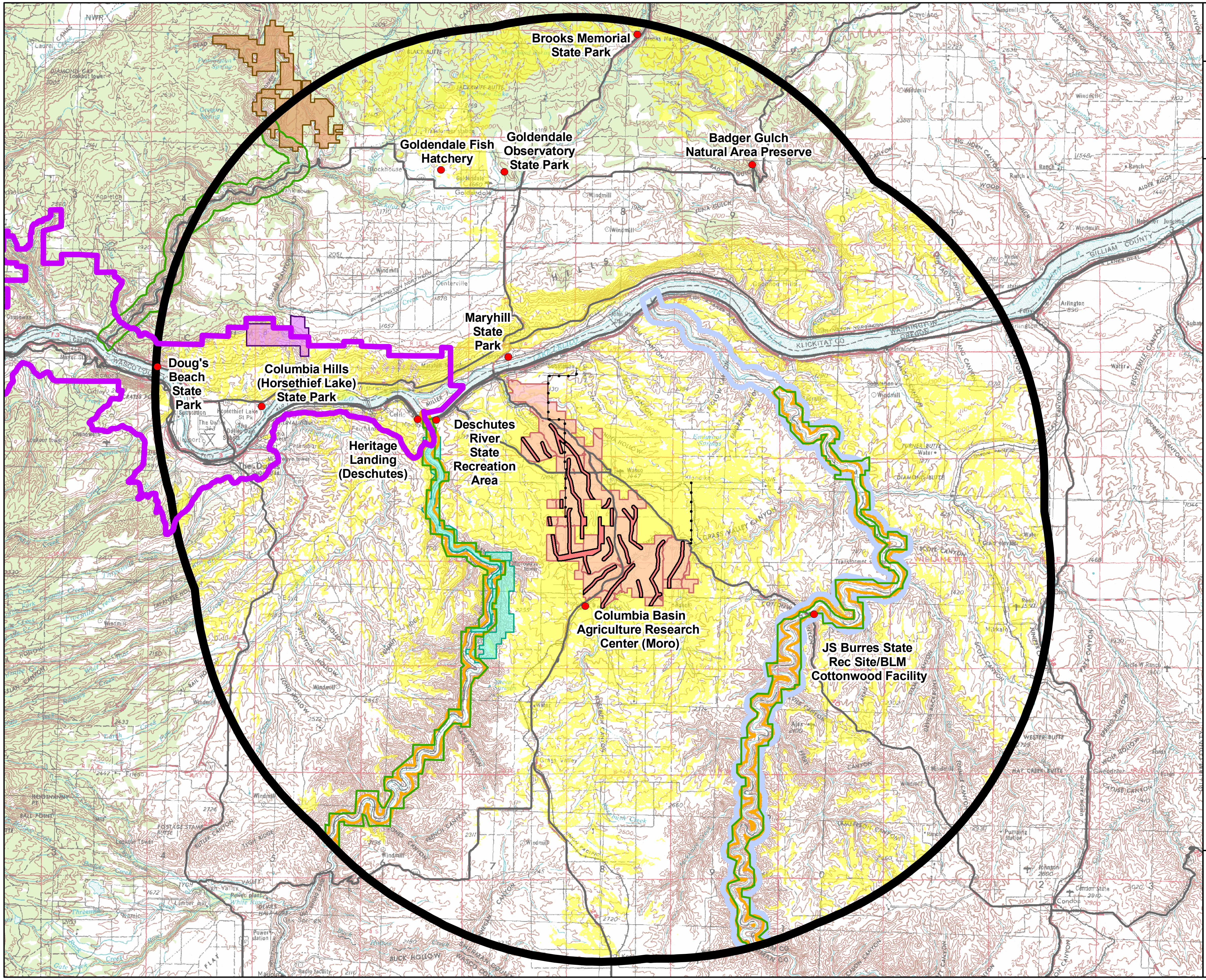
FIGURE L-1

Protected Areas

Golden Hills Wind Project

FIGURE L-2

Visibility Analysis



Site-Specific Protected Area
Transmission Line
John Day Wildlife Refuge
Columbia River Gorge National Scenic Area
Federal Wild and Scenic River
State Scenic Waterway
Lower Deschutes Wildlife Area
Klickitat Wildlife Area
Columbia Hills Natural Area Preserve
Areas Where Proposed Turbines Likely Visible
Turbine Corridors
Lease Area
Protected Areas Analysis Area

N

0 10
Miles

ATTACHMENT L-1
PHOTOGRAPHS

PHOTO L-1: Columbia River Gorge National Scenic Area viewed from Columbia Hills Natural Area Preserve looking southeast. Existing turbines barely discernable center background.

PHOTO L-2: Columbia River Gorge National Scenic Area viewed from Columbia Hills Natural Area Preserve looking southwest. Transmission line and City of The Dalles visible center middleground.

PHOTO L-3: SR-14 overlook near Wishram, Washington. View of Columbia River looking southeast. Deschutes River confluence at center right.

PHOTO L-4: SR-14 at Mile Post 97, near east boundary of CRGNSA, looking east. Transmission and distribution lines silhouetted center left and right.