Horse Heaven Wind Project EFSEC Review
Data Request No. 2
July 16, 2021

The following table provides Scout's responses to EFSEC's data requests dated 6/16/21. We have provided full responses where possible; however, some requested analysis will require additional time to prepare. In these instances, we have indicated that additional information will be provided under separate cover at a later date. These include:

- Data Requests where a full response will be provided under separate cover at a later date:
  - Earth-1
  - Earth-2
  - Earth-3
  - Earth-4
  - Air-1
  - Air-2
  - Air-3
  - Air-5
  - Air-13
  - Vegetation-3
  - Vegetation-6
  - Vegetation-7
  - Vegetation-9
  - Vegetation-10
  - Vegetation-14
  - Vegetation-18
  - Vegetation-19
  - Vegetation-22
  - Wildlife-7
  - Wildlife-8
  - Wildlife-11
  - Wildlife-17
  - Energy and Natural Resources-1
  - Cultural/Historic-1
  - Cultural/Historic-2
  - Cultural/Historic-3
  - Cultural/Historic-5
  - Surface Water and Wetlands-8
  - Aesthetics-2
  - Aesthetics-3
  - Transportation-3

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Earth-1	WAC: 463-60-302 Section 3.1	Topography	Provide topographic map (or equivalent) to show proposed changes to topography from construction.	The 2-foot contour data are available from surveys recently conducted for current existing topography on site. Proposed changes to topography will be part of the final construction package to be provided prior to Notice to Proceed with construction. This 2-foot topographic contour map will be provided to EFSEC under separate cover at a later date.
Earth-2	WAC: 463-60-302 Section 3.1	Aggregate Fill	Indicate the source(s) of any soil or aggregate fill materials needed for any ground improvement, access road base, foundations, and engineered fill.	Aggregate material for access roads will conform with civil specifications created by the Applicant. The Applicant plans on using on-site excavated materials for backfill to the extent possible. American Rock Products, based in Prosser, is a local source of soil and aggregate fill materials that has capacity and has expressed interest in providing services to the Project. They are an example of a local company that has a gravel pit adjacent to the Project site. The specific source to be used during construction, either sourced from on-site quarry or from external sources, will be confirmed through a bid process by the Engineer-Procure-Construct (EPC) contractor and is not known at this time. The civil specifications for this is provided in Attachment "Earth-2" to this response.
Earth-3	WAC: 463-60-302 Section 3.1	Seismic Requirements	Confirm whether the applicable seismic Standard is 2018 IBC/ASCE 7-16 or the IBC 2015/ASCE 7-10 Standard as referenced in the application.	The Project will comply with Seismic Standard 2018 IBC/ASCE 7-16. Information related to compliance with the Washington State Building Code for foundations and structures will be provided to EFSEC under separate cover at a later date.

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			Confirm compliance with Washington State Building Code for foundations and structures.	
Earth-4	WAC: 463-60-302 Section 3.1	Geotechnical	The Washington Department of Agriculture has requested the following: Given that this has a short-term (construction phase), long-term transitory (operations phase), and unknown after removal recovery phase that is primarily caused by the solar siting impact, provide a geotechnical report for the parcels and solar siting fields.	A geotechnical survey will be conducted for the solar siting fields. The scope of work for this investigation will include subsurface exploration, field and laboratory testing, engineering analysis, and preparation of a report for the proposed solar portion of the Project. The full geotechnical report will be completed prior to Notice to Proceed and final engineering design. Refer to Appendix A of the ASC for the preliminary geotechnical report for a sampling of Turbine locations. The restoration of the solar sites will be directed by the Decommissioning Plan. The purpose of this Decommissioning Plan is to establish the protocols for disassembly of the wind, solar, and battery energy storage facility at the end of its useful life and to financially guarantee funding of the decommissioning process so that there is assurance that the site can be restored to a condition as close to a pre-construction state as feasible. Refer to Appendix B of the ASC for the preliminary decommissioning plan.
Air-1	WAC: 463-60-312 Section 3.2.1.3	Background Air Quality	Provide background ambient air quality data for the Project Area or the nearest representative air monitoring station for the previous three (3) years.	A summary of background ambient concentration data from representative monitoring stations for the most recent 3-year period available will be provided to EFSEC under separate cover at a later date.
Air-2	WAC: 463-60-312 Section 3.2.1.2	Background Meteorological Conditions	Provide quarterly and annual wind and atmospheric stability roses for the Project Area or the nearest representative monitoring station for at least one full year.	A summary of background meteorological conditions, including wind roses, will be provided to EFSEC under separate cover at a later date using data from the nearest representative monitoring station.
Air-3	WAC: 463-60-225 Section 3.2.2.1	Criteria Air Pollutant Emission Rates	For each distinct construction location (laydown area, turbine pads, solar cluster, switchyard, etc.), include an Excel spreadsheet with a list of all air pollution emitting equipment, equipment rating, expected duration of use, load factor, the applicable emission factor for each criterion air pollutant (NOx, SO2, PM10/2.5, CO, NMHC) and emission rate calculations in pounds/hour, pounds/day and tons/year. Include diesel generators, batch plant, and blasting emission rate estimates. Provide references for all emission factors and other assumptions used in all calculations. Indicate which sources of emissions will be operating concurrently and provide a summary of maximum emission rates for each averaging period (e.g., hour, day. year) for each distinct construction location.	Tables quantifying the estimated air emissions from construction of the Project will be provided to EFSEC under separate cover at a later date. Note that it will not be feasible to provide a list of air emitting equipment for each construction location, but a list of air emitting equipment for each phase of construction and operation should be possible to be provided. Air emissions will be quantified on a calendar year basis, but it will not be feasible to estimate maximum concurrent emission rates for each distinct construction location, or for 1-hour or 24-hour averaging periods. WAC 463-60-225 does not explicitly require this level of detail to be provided regarding short-term emission rates, nor is it considered prudent by the Applicant for a non-emitting renewable energy facility. Emissions from mobile equipment used during construction, operation, and maintenance are also not subject to stationary source permitting. Information regarding batch plant and blasting operations is not available at this time. Refer to Air-4 and Air-11 responses.

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			Provide requested Excel file including all calculations in an unprotected format allowing all fields to be displayed.	
Air-4	WAC: 463-60-225 Sections 3.2.2.1 2.23.2.7	Criteria Air Pollutant Emission Rates Applicable Air Quality Permits	Provide Notice of Construction (NOC) applications for the concrete batch plant and the diesel generators. Alternatively, for an existing portable concrete batch plant, provide the applicable order of approval from Benton Clean Air Agency (BCAA). This data will aid in showing supporting location, emissions, and the mitigation proposed.	NOC applications for the concrete batch plant (if utilized), and for diesel generators (if applicable), are not available at this stage of project development because the EPC contractor has not yet been selected and they will identify the batch plant operator. It is not yet known if a batch plant will be utilized or whether the batch plant will be an existing batch plant or a new one. NOC applications will be prepared by the selected EPC contractor prior to commencing construction. Consistent with WAC 463-60-297, the application contains a list of applicable federal, state, and local statutes, ordinances, rules, permits, and required use authorizations that would apply to the Project. As described in Section 2.23.2.7 of the ASC, an NOC permit would be required and obtained from the Benton Clean Air Agency.
Air-5	WAC: 463-60-312 Section 3.2.2.1	Fugitive Dust Emissions – Open Storage	Provide the number, size (pile height and diameter for piles), duration of open construction material stockpiles and open disturbed areas (acres), or other factors used to develop emission rate calculations. Quantify PM10 and PM2.5 emissions. Incorporate the control efficiency associated with the use of stockpile covers or other mitigation proposed to minimize or eliminate fugitive dust in the calculations. Provide a reference for control efficiency used in calculations.	A response to this comment will be provided to EFSEC under separate cover at a later date.
Air-6	WAC: 463-60-312 Sections 2.1.2 3.2.3	Fugitive Dust Controls	Provide justification that the proposed fugitive dust mitigation measures are the highest and best practicable for treatment and control of emissions during construction.	WAC 463-60-225 requires applicants to “demonstrate that the highest and best practicable treatment for control of emissions will be utilized in facility construction and operation.” However, WAC 463-60-225 does not define the term “highest and best practicable” or provide a methodology for demonstrating that the highest and best practicable methods for controlling emissions are being used. The proposed mitigation measures for construction are widely accepted as best management practices (BMPs) for minimizing fugitive dust emissions from construction activities.
Air-7	WAC: 463-60-312 Sections 2.1.2 3.2.3	Emission Controls	Explain whether a speed limit lower than 25 miles per hour (mph) would further minimize fugitive dust during operation and construction.	A speed limit lower than 25 mph on unpaved roads would further minimize fugitive dust emissions during construction and operation. However, speed limits are developed/set based on balancing safety, efficiency, and air quality needs.
Air-8	WAC: 463-60-312 Sections 2.1.2	Emission Controls	Provide justification that proposed measures to control combustion emissions from construction equipment are the highest and best practicable for	WAC 463-60-225 does not define the term “highest and best practicable” or provide a methodology for demonstrating that the highest and best practicable methods for controlling emissions are being used. The proposed mitigation measures for construction are widely accepted as BMPs for minimizing combustion source emissions from construction activities.

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	3.2.3		treatment and control of emissions during construction.	
Air-9	40 CFR Part 1039.101 WAC: 463-60-312 Sections 2.1.2 3.2.3	Emission Controls	Explain whether compliance with Tier 4 emission standards (40 CFR 1039.101) for non-road equipment (including, if applicable, use of diesel particulate filters) to minimize emissions is feasible during construction and operation.	The use of non-road equipment equipped with Tier 4-compliant engines may be feasible during construction and operation, but is subject to the availability of suitable Tier 4-compliant equipment. Tier-4 compliant equipment will be used to the extent such equipment is reasonably available.
Air-10	40 CFR Part 60, Subpart IIII WAC: 463-60-312 Sections 2.1.2 3.2.3	Emission Controls	Explain whether proposed diesel generators, used during construction, will be subject to federal New Source Performance Standards for diesel engines (40 CFR Part 60, Subpart IIII).	It is anticipated that any diesel generators used during construction will be portable nonroad engines (as defined under 40 CFR 1068.30), and will therefore be subject to nonroad emission standards, rather than the federal New Source Performance Standards under 40 CFR Part 60, Subpart IIII.
Air-11	WAC: 463-60-312 Section 3.2.2.1	Criteria Air Pollutant Emission Rates	Calculate worst-case emissions for each criterion air pollutant for each averaging period for which there is an applicable ambient air quality standard (AAQS) used to support air quality modeling and AAQS compliance demonstration for construction emissions.	The level of detail of construction schedule and planning necessary to model construction emissions is not available at this stage of Project development. For stationary sources of air emissions, dispersion modeling is typically only required for stationary sources that exceed one or more major source thresholds under the U.S. federal Prevention of Significant Deterioration (PSD) or New Source Review (NSR) permitting programs. The only stationary source associated with the Project is the temporary concrete batch plant, and its potential emissions are not anticipated to exceed any PSD or NSR major source thresholds. However, if any such modeling were required, it would be included as part of the NOC application submitted to BCAA for the temporary batch plant, rather than as part of this EFSEC application. The following list summarizes the level of air quality impact analysis that was performed for several previous wind and/or solar projects in Washington state. None of these example projects included any kind of air dispersion modeling. • The Kittitas Valley Wind Draft Environmental Impact Statement (DEIS) (2003) only included a qualitative discussion of construction air emissions and did not quantify emissions or include any type of dispersion modeling. • The Wild Horse EFSEC application (2004) only included a qualitative discussion of construction air emissions and did not quantify emissions or include any type of dispersion modeling. • The Desert Claim Wind Power EFSEC application (2009) is possibly only a supplement to a previous application and does not include a full impacts section. • The Whistling Ridge DEIS (2010) only included a qualitative discussion of construction air emissions, and did not quantify emissions or include any type of dispersion modeling. • The Columbia Solar EFSEC application (2018) quantified construction air emissions but did not include any type of dispersion modeling.
Air-12	WAC: 463-60-312 Section 3.2.2.1	Air Quality Impacts	Provide an ambient air quality impact modeling analysis to demonstrate compliance during construction with all applicable ambient AAQSs using an EPA-approved guideline model (such as AERMOD) and the three (3) most recent years of available meteorological data. Provide the rationale for model input parameters.	See response to Air-11.

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			Provide the model input/output files, meteorological data files, and table(s) summarizing the modeling results for each applicable pollutant/averaging period combination.	
Air-13	WAC: 463-60-312 Section 3.2.1	Climate Change	Quantify Project Greenhouse Gas (GHG) emissions during construction and operation. Compare GHG emissions to regional and statewide emissions and GHG reduction goals. Describe any proposed GHG mitigation measures.	Tables quantifying the estimated GHG emissions from construction, operation, and maintenance of the Project will be provided to EFSEC under separate cover at a later date. This filing will also include: • A summary of Washington state's GHG emission inventory and GHG reduction targets • A summary of proposed GHG mitigation measures Also see our response to Air-11.
Air-14	WAC: 463-60-312 Section 3.2.2.1	Cumulative Air Quality Impact Source Inventory	Provide a listing and criteria pollutant emission inventory for any proposed air quality emissions sources within a six-mile radius that would operate concurrently with the proposed construction. Provide a cumulative air quality impact modeling analysis for criteria air pollutants in the construction period similar to the analysis requested or demonstrate that proposed emission sources within six (6) miles will not cause significant cumulative air quality impacts.	Per discussion with EFSEC on August 2, 2021, a cumulative impact analysis will be conducted by EFSEC and is not required to be provided by the Applicant.
Surface Water and Wetlands-1	WAC: 463-60-322; 463-60-333 Sections 3.3.1-3.3.3 3.5.1-3.5.3 Appendix I	Unsurveyed Area for Surface Water and Wetlands	Provide results of the 2021 spring and wetland survey within the portion of the solar siting area along Sellards Road that had not been previously surveyed for wetlands during the 2020 field program due to access restrictions.	The wetland and waters survey report provided with the ASC has been updated to address comments received from Ecology as well as surveys conducted in Spring 2021. The revised report (which includes the results of the 2021 spring and wetland survey within the portion of the solar siting area along Sellards Road that had not been previously surveyed for wetlands during the 2020 field program due to access restrictions) is found in Attachment "Wetland-1" to this response.
Surface Water and Wetlands-2	WAC: 463-60-215; 463-60-322 Sections 3.3.1-3.3.3	Project ESCP and SWPPP	Provide a draft framework for the Erosion and Sediment Control Plan (ESCP) and the Stormwater Pollution Prevention Plan (SWPPP) for review that the application lists as mitigation for construction and operational activities.	EFSEC and its consultant clarified during a call on August 4, 2021 that this question should address the outline of information that would be included in the SWPPP. Section 2.11 of the ASC provides information on how the 13 Elements addressed in the Ecology Stormwater Management Manual for Eastern Washington would be addressed.
Surface Water and Wetlands-3	WAC: 463-60-215; 463-60-322 Sections 2.11 3.1.3	Surface Water Runoff Mitigation Measures	Provide a detailed list of mitigation measures for surface-water runoff and the associated monitoring programs that will enable an evaluation of the effectiveness of these mitigation measures.	No impacts resulting from surface water runoff are expected to occur (see Section 3.3.2.2 of the ASC); therefore, no mitigation measures are listed or provided in Section 3.3.3 of the ASC.

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Surface Water and Wetlands-4	WAC: 463-60-322 Sections 3.3.1.1 3.3.2.1 3.3.3	Analysis of Effluent Distribution from Construction Water Discharge and Operation/Maintenance Water Discharge	Provide an analysis of effluent distribution from construction water discharge, including on-site concrete batch plant operations and dust control, on receiving environment to demonstrate the effectiveness of proposed mitigation measures. Provide an analysis of effluent distribution from operation and maintenance water discharge, such as from washing of solar panels, on receiving environment to demonstrate the effectiveness of proposed mitigation measures.	Effluent discharge from construction concrete operations, including on-site concrete batch plant operations, will be controlled as required in the Construction General Permit and Sand and Gravel General Permit to prevent contamination of stormwater runoff. Best management practices used (including but not limited to SWMMEW BMPs C151E, C154E, and C252E) will include preferential off-site disposal when possible, establishment and maintenance of concrete washout areas when off-site disposal is not possible, and monitoring of effluent pH. Specific to operation of an on-site concrete batch plant, any impoundments for process water will be lined and the impoundment capacity adequate to provide treatment and flow control. Because the overall project will meet the Construction General Permit's definition of "significant concrete work" (>1,000 cubic yards of concrete placed or poured), pH sampling will be completed as specified in the permit. If effluent exceeds the benchmark value, the high pH water will be either prevented from reaching surface waters or neutralized. Site BMPs will be designed and implemented to avoid comingling of water, and any stormwater that has comingled with concrete wastewater will be considered process wastewater and managed appropriately. Additional sampling and monitoring requirements are identified in the Sand and Gravel General Permit, and these requirements will be followed. The Site Management Plan will include all required elements, including the site map, Erosion and Sediment Control Plan (ESCP), Monitoring Plan, SWPPP, and Spill Control Plan. Washing of solar panels would be done with water only and no surfactants or other chemicals would be added. See response to Surface Water and Wetlands-5 for additional information on the quantity of water that would be used for panel washing. Because the panel wash water would not contain added chemicals, no treatment would be needed, no mitigation would be required, and there would be no impact on the receiving environment.
Surface Water and Wetlands-5	WAC: 463-60-322 Sections 2.6.1.1 2.6.1.2 3.3.1.2 3.3.2.2 3.3.3	Erosion and Sediment Control Mitigation for Surface Water Runoff during Operations and Maintenance	Provide details of erosion and sediment control mitigation measures as part of the ESCP related specifically to the surface water runoff generated during operation and maintenance activities, including those related to solar panel washing operations.	Panel washing is not expected to generate runoff from the site or cause erosion. Estimated water use across all three solar areas is 2,025,000 gallons per year (Section 2.6 of the ASC). Conservatively assuming that one-third of this amount would be used even at the smallest area (Sellards Road, 1,935 acres), an estimated 675,000 gallons of water may be used during panel washing at this site. If all of this water were to run off from panels and none of it evaporated, the depth of water on the ground would be 0.012 inch across this area. This amount of water would easily infiltrate into the ground around the panels and is not likely to run off to surface water bodies. Runoff also could occur due to rainfall on the site. Because the overall contours of the project site would not change significantly from current contours, stormwater runoff generally would follow current patterns during operations. Erosion and sediment control during operations and maintenance would consist of revegetating the area following construction to facilitate infiltration of stormwater that may run off of Project infrastructure. There would be ample space between the solar panel rows (generally at least twice the panel height in between rows, to minimize shading of panels when tilted) and infiltration could occur in this space as well as underneath the panels.
Surface Water and Wetlands-6	WAC: 463-60-322 Sections 3.3.1.3 3.3.2.3 3.3.3	Temporary Impacts within the 100-year floodplain	Provide details of the source and extent of the "temporary impacts" to the 0.8-acres within the 100-year floodplain and provide mitigation measures to avoid and/or reduce temporary impacts to this area.	The 0.8 acres of temporary impacts are related to the temporary disturbance footprint associated with the new 230-kilovolt (kV) transmission line for the solar intertie. This estimate is based on a standard disturbance width applied along all transmission line corridors but would be modified during final design to reduce impacts as much as possible. Construction will follow BMPs to be detailed in the ESCP/SWPP, including BMPs to reduce impacts and to minimize the potential for erosion, and the area will be revegetated following construction. As no permanent impacts would occur to this area, no permanent mitigation is proposed.
Surface Water and Wetlands-7	WAC: 463-60-540 Sections 2.23.2.6 5.3	Notice of Intent	Provide applicable Notice of Intent (NOI) for sand and gravel operation.	As noted in Table 2.23-1 and ASC Sections 2.23.2.6 and 5.3, required permits will be sought by the selected Balance of Plant contractor when conditions are established prior to the subject activity commencement.
Surface Water and Wetlands-8	WAC: 463-60-540	Thirty-three non-wetland water features were discovered within the Project Area, 31 ephemeral streams and two intermittent streams. It is unclear in the	Describe each anticipated stream crossing and how the Project expects to traverse streams.	The updated wetland delineation report, incorporating 2021 surveys, will be submitted to the U.S. Army Corps of Engineers for a jurisdictional determination. Details regarding the engineering of the stream crossing design will be provided to EFSEC under separate cover at a later date.

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		application if stream crossings will be required or how the applicant anticipates traversing the stream features. Ecology typically requires a Jurisdictional Determination (JD) from the U.S. Army Corps of Engineers (Corps) verifying the waters are non-federally jurisdictional prior to beginning the permitting process.	Confirm whether Corps has issued a Jurisdictional Determination (JD) for the Project.	
Water Supply-1	WAC: 463-60-165 Section 2.6.1	Water Conveyances	Confirm whether there will be on-site water conveyance systems.	No water conveyance systems are planned. Water will be trucked to the site during construction and operation.
Vegetation-1	WAC: 463-60-332 Section 3.4 Appendix A	Vegetation Type	Clarify the habitat subtype corresponding to the deciduous tree group selected in the SEPA checklist types of vegetation on-site.	A few deciduous trees were documented during field surveys and were typically single trees, often with raptor nests (see Section 3.4.2.3 of the ASC) that did not warrant delineation as a separate habitat subtype. Therefore, “deciduous tree” is selected in section 4a of the SEPA checklist because deciduous trees are known to occur within the Project Lease Boundary, but this is not reflected in the habitat subtypes that would be impacted by the Project because individual deciduous trees were noted as features rather than a separate habitat subtype with a habitat polygon.
Vegetation-2	WAC: 463-60-332 Section 3.4.1 Appendix K	A ranking system for plant species is used in the Tetra Tech Botany and Habitat Survey Report (2020).	Define the levels of the ranking system (unlikely, low, low to moderate).	The “likelihood of occurrence” as noted in Table A-1 of Attachment A in Appendix K of the ASC are based on 1) the proximity of known occurrences of special-status plant species to the Project; 2) whether the known occurrence is an historical occurrence (i.e., occurrence has not been confirmed within 40 years) or an extant occurrence; and 3) the likelihood of suitable habitat occurring within the Project. Special-status plants were considered ***unlikely*** to occur if: • The species is considered extirpated in Washington or has a very limited range that does not overlap the Project; • Known occurrences of the species in Benton County are historical; or • Suitable habitat (e.g., riparian habitat along perennial rivers or lakeshores) does not occur in the Project Area. Special-status plant species were considered to have a ***low*** likelihood to occur in Project Area if: • Suitable habitat for species is limited within the Project Area. Special-status plant species were considered to have a ***moderate*** likelihood to occur in Project Area if: • Suitable habitat is present within the Project Area.
Vegetation-3	WAC: 463-60-332 Section 3.4.1.1 Appendix A	Two (2) state-listed endangered, 11 state-listed threatened, and 15 state sensitive vascular plants are known or have the potential to occur in	Confirm which is correct for state-listed endangered (1 or 2 species).	The Washington Natural Heritage Program (WNHP) lists of special-status plant species known or with a potential to occur in each county are updated periodically. Based on the most recent county list (updated January 14, 2021 and available at: https://www.dnr.wa.gov/NHPdata) one state endangered, 11 state threatened, and 15 state sensitive vascular plant species are known or have the potential to occur in Benton County. In addition, the state threatened woven-spore lichen is also known to occur in Benton County. The 2021 Botany and Habitat Survey Report, and associated Attachment A, will reflect the latest WNHP special-status species list for Benton County.

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	Attachment A	Benton County per the Tetra Tech Botany and Habitat Survey Report (2020). However, Attachment A only lists one (1) state-listed endangered species.		
Vegetation-4	WAC: 463-60-332 Section 3.4.2	Cumulative Effects to Shrub-steppe and dwarf shrub-steppe Priority Habitat.	Provide a discussion on the impacts of the additional loss of the shrub-steppe and dwarf shrub-steppe ecosystems in the broader context of cumulative effects (i.e., in areas adjacent to the Project site). Confirm whether other shrub-steppe ecosystems occur in the Project's vicinity or the additional loss constitutes some of the last remaining ecosystems around the Project Area. Provide a discussion of the impacts of this habitat loss on species assemblages.	Per discussion with EFSEC on August 2, 2021, a cumulative impact analysis will be conducted by EFSEC and is not required to be provided by the Applicant.
Vegetation-5	WAC: 463-60-332 Section 3.4.2 Appendix L	Priority Habitat mitigation	Provide more detailed information on the mitigation measures that will avoid and minimize impacts.	Avoidance and minimization measures are outlined throughout the ASC; those related to vegetation are listed in Section 3.4.3 as well as Appendix L to the ASC (i.e., the Draft Habitat Mitigation Plan). Options for compensatory mitigation (i.e., actions taken after impacts are minimized or avoided) related to habitat and wildlife impacts are outlined in Appendix L to the ASC. These measures are the subject of ongoing discussions with WDFW and may be revised based on requests and input from this agency.
Vegetation-6	WAC: 463-60-332 Section 3.4.2	Plant species at risk (vascular and non-vascular) in the remaining unsurveyed areas.	Discuss the impacts of the Project on populations of vascular and non-vascular plant species at risk, including: – the number of individuals or populations that will be impacted by the Project; – the number of known populations adjacent to the Project boundary; – the type of habitats where plant species at risk may occur; and – the potential for plant species to occur in similar habitats within the Project.	This data request was responded to in the previous round of requests (i.e., in version 1 of the initial data request). As stated earlier: Known populations of special-status plants within 5 miles of the Project Lease Boundary are discussed in the Botany and Habitat Survey Report (Tetra Tech 2020). Attachment A in the Botany and Habitat Survey Report (Tetra Tech 2020) provides a description of habitat characteristics for special-status species with potential to occur at the Project, and describes the potential for the species to occur based on the proximity of known occurrences to the Project and the presence of suitable habitat at the Project. No individuals or populations of special-status vascular plants will be impacted by the Project; complete surveys were conducted for special-status vascular plants species within the Project Micrositing Corridor and Solar Siting Areas and none were found in the area. Woven-spore lichen is the only listed non-vascular species with potential to occur at the Project. The locations of previously identified woven-spore lichen in the vicinity of the Project are described in Tetra Tech's 2020 Botany and Habitat Survey Report (Appendix K to the ASC). In lieu of non-vascular species surveys, as discussed on a June 17, 2021 call with EFSEC/Golder, the Applicant is conducting a habitat suitability assessment for this species to quantify potentially suitable habitat at the Project (see habitat description in response to Hab-5 in DR #1). The results of this habitat suitability assessment will be provided along with the 2021 Botany and Habitat Survey Report.
Vegetation-7	WAC: 463-60-332 Section 3.4.2	Potentially Hazardous Substances Storage and Protection of Vegetation and Wildlife	Identify all potentially hazardous substances that will be stored or used in the construction or operation of the Project, even in low quantities (lubricating oils and hydraulic fluid are the only ones mentioned in reference to "small	A detailed construction spill prevention plan will be developed by the Balance of Plant Contractor and submitted to EFSEC for review prior to construction. Measures to prevent and contain any accidental spills will be listed in the project-specific Spill Prevention, Control, and Countermeasures (SPCC) Plan. The following provides information the substances that may be used. Small quantity of potentially hazardous substances:

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			quantities of a few hazardous materials may be used or stored" Section 2.10.1). Include required minimum spill kit contents for equipment on-site and the temporary fuel storage facilities.	• Synthetic Lubricating Oil • Glycol-water mix • Transformer Mineral Oil • Hydraulic fluid (if Turbine equipment requires it) Other potentially hazardous substances: • Diesel fuel
Vegetation-8	WAC: 463-60-332 Section 3.4.2.1 Table 3.4-14	Permanent and Temporary Disturbance Calculations	Provide information on how temporary and permanent disturbance were calculated for the area shown as the micrositing corridor and the solar siting area.	Please refer to the footnotes to Table 3.4-14, which state: 1/ (Micrositing Corridor): Overlapping permanent disturbance is subtracted from temporary impact corridors/areas (e.g., temporary impact area around a Turbine does not include the Turbine foundation and graveled areas); those are included only in the permanent impact column. 2/ (Solar Siting Areas): Temporary impacts associated with solar facilities include a 10-foot construction buffer along the outside of the solar fencelines. Permanent impacts include the solar inverters and new access roads within the Solar Siting Areas. Modified impacts are associated with the solar arrays and included those areas within the solar fencelines that are outside areas of permanent impact. Following construction, low growing vegetation would be planted under the solar arrays; therefore, these impacts would be considered a modification of habitat rather than a temporary or permanent impact.
Vegetation-9	WAC: 463-60-332 Section 3.4.2.1 Table 3.4-14 Appendix L	There are three (3) habitat offset design options, with a final option to be determined later.	Clarify how the Project proposes to "ensure no net loss of habitat function and value" for each of the options. Outline the criteria that will be used to assess current habitat function and will be used to ensure no net loss. Provide the plan for monitoring offset options to ensure no net loss.	Habitat mitigation is the subject of ongoing discussions with WDFW and EFSEC. Details will be documented as these discussions move forward. Also see our response to Wildlife-21.
Vegetation-10	WAC: 463-60-332 Section 3.4.2.1 Table 3.4-14 Appendix K	Botany and habitat survey reports indicate 44 of 244 proposed turbine locations were surveyed.	Explain why only a small proportion of the areas of direct disturbance are field verified. Describe how baseline surveys inform Project layout. Describe how the Project's layout changed to avoid impacts to habitat and vegetation. Explain how Priority Habitats (other than wetlands and riparian areas), such as dwarf shrub and shrub-steppe habitat, influenced the layout.	All areas of potential direct disturbance have now been field verified. The vast majority of the Turbine locations are within active agricultural lands. Surveys in 2020 were conducted within the 44 Turbine locations believed to be sited in non-agricultural lands based on previous habitat mapping. Surveys in 2021 field-verified habitat types within the entire Micrositing Corridor and Solar Siting Areas. This included all Turbine locations not previously surveyed in 2020. The results of the 2021 surveys will be provided in the 2021 Botany and Habitat Survey Report that is currently being prepared. Baseline surveys informed the Project layout in a number of ways. First, Turbines were relocated be at least 0.25 miles from raptor nests based on guidance provided by WDFW and Larson et al. (2004) (see responses to EFSEC's Data Request 1 for more details). Turbines were not placed in topographic low points, drainages. or swales where shrub-steppe habitat is common. The Project layout was also revised in 2020 to minimize impacts to shrub-steppe habitat in the northeastern portion of the Project area following the baseline surveys conducted in 2020. Additional leases and portions of leases were terminated to reduce the Project footprint east of the Project site along the Columbia River.
Vegetation-11	WAC: 463-60-332 Section 3.4.3	Plant Mitigation Measures	Describe the proposed BMPs that will be followed. Outline the specific documents that will be referenced and applied to the Project.	Avoidance and minimization measures are outlined throughout the ASC; those related to vegetation are listed in Section 3.4.3 as well as Appendix L to the ASC (the Draft Habitat Mitigation Plan). The compensatory mitigation (i.e., actions taken after impacts are minimized or avoided) related to habitat and wildlife is outlined in Appendix L to the ASC. These measures are the subject of ongoing discussions with EFSEC and WDFW and may be revised based on requests and input from this agency. These avoidance, minimization, and mitigation measures are standard practices in the industry (i.e., they are considered effective at avoiding, minimizing, and mitigating impacts); however,

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			Identify the BMP/guidance documents if additional priority habitats or plant species at risk are identified during construction.	metrics to assess the exact quantitative effect that they would have (broadly acrost all measures) are not available. Also see our response to Wildlife-21.
Vegetation-12	WAC: 463-60-332 Section 3.4.3	Three proposed turbine locations that were surveyed overlap rare and/or high-quality dwarf shrub-steppe habitat.	Explain whether alternative locations were considered for these three turbine locations. Clarify why these potential alternatives are not included in the Application.	As described in the ASC, all proposed Turbine locations should be included when considering mitigation requirements. The Turbines that overlap rare and/or high-quality dwarf shrub-steppe habitat are on the periphery of this habitat and if constructed, appropriate mitigation will be specified. Also see our responses to Vegetation-5 and Wildlife-21.
Vegetation-13	WAC: 463-60-332 Section 3.4.4 Appendix N	Detailed Site Preparation Prescriptions The Revegetation and Noxious Weed Control Plan doesn't include a soil salvage plan for the stockpiling of topsoil and subsoil. There is no erosion and sediment control plan for stockpiles. Site preparation doesn't include information on microtopography creation.	Describe the erosion and sediment control plan for soil stockpiles. Include how microtopography will be created on-site (i.e., rough mounding). Explain how soil compaction will be managed. Include which excavated or graded areas will include stockpiling of topsoil. Clarify why other excavated or graded areas are not proposed for topsoil stockpiling.	As noted in ASC Section 2.11, the goal of the stormwater program is to reduce or eliminate stormwater pollution from municipal and industrial point sources by requiring the implementation of a technology-based SWPPP and to eliminate violations of surface water quality standards caused by stormwater. Project site grading plan and roadway design will incorporate measures in line with the SWPPP and Best Management Practices (BMPs). Potential surface water impacts resulting from runoff related to construction and operations of the Project and measures to control such runoff are described in the Projects Construction General Storm Water Pollution Prevention Measures. The Project will prepare and implement a formal SWPPP and BMPs to reduce and/or eliminate the discharge of suspended sediment and turbidity above the turbidity criteria stipulated in the Water Quality Standards for Surface Waters of the State of Washington which will include documenting the required 13 elements. Stockpiles may be located near each foundation excavation, roadways and other Project infrastructure such as substation, switchyard, and O&M building.
Vegetation-14	WAC: 463-60-332 Section 3.4.3 Appendix N	Integrated Noxious Weed/Pest Management Plan	Develop and submit an integrated pest management plan as recommended by the Washington State Noxious Weed Control Board. Include detailed treatment options for species observed in the Project Lease Boundary.	See Appendix N to the ASC, including Section 6 Noxious Weed Prevention and Control. The main components of an IPMP are incorporated in Appendix N, Section 6 of the ASC (i.e., Noxious Weed Prevention and Control Plan). These components include: • Prevention, • Revegetation of disturbed areas with native and desirable species, • Monitoring, • Identification, • Treatment utilizing a variety of methods (e.g., mechanical, chemical), and • Evaluation of success of noxious weed treatment and recommendations. Treatment options for noxious weed species observed in the Project Lease Boundary are provided in Attachment "Veg-14" to this response, and a final plan will be made available at the time of construction.
Vegetation-15	WAC: 463-60-332 Section 3.4.3 Appendix N	Revegetation Seed Source	Indicate whether seeds used for revegetation will be locally sourced and collected, if available. If so, explain what the plan is for the local sourcing of seeds.	As noted in Section 6.2.2 of Appendix N, the site will be revegetated with appropriate, local native seed or native plants to the extent possible. The Applicant will work with a local seed providers to procure locally sourced seed mixes to the extent possible and to ensure that sufficient seed quantities are available at the time of construction.
Vegetation-16	WAC: 463-60-332 Section	Seed and Straw Mulch	Confirm whether seed and straw mulch used for site rehabilitation and revegetation will be certified free of noxious weed seed and propagules.	Seed and straw mulch used for site rehabilitation and revegetation will be certified free of noxious weed seed and propagules (see Section 6.2.2 of Appendix N to the ASC).

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	3.4.3 Appendix N			
Vegetation-17	WAC: 463-60-332 Section 3.4.3	Detailed Revegetation Monitoring Plan	Describe all actions associated with the remediation and monitoring.	All actions associated with the remediation and monitoring are detailed in Appendix N to the ASC (i.e., the Revegetation and Noxious Weed Management Plan), including Section 3 (i.e., Revegetation Methods) and Section 5 (i.e., Revegetation Monitoring).
Vegetation-18	WAC: 463-60-332 Appendix L	Habitat Mitigation Plan Option Analysis	Discuss how each option or combination of options used proposes to achieve equivalent or greater habitat quality, value, and function for those habitats being impacted, as well as for habitat being enhanced, created or protected through mitigation actions. Indicate how habitat quality will be .assessed for Priority Habitats lost. Discuss how the measures will provide benefits to existing species and compensate for impacts beyond habitat loss.	The Applicant has worked with and continues to work with the WDFW to ensure that each option or combination of options will achieve equivalent or greater habitat quality, value, and function for those habitats being impacted, as well as for habitat being enhanced, created or protected through mitigation actions. Habitat mitigation is the subject of ongoing discussions with EFSEC and WDFW. Details will be provided to EFSEC as these discussions progress. Also see our response to Wildlife-21.
Vegetation-19	WAC: 463-60-332 Section Appendix L	Habitat Mitigation Plan Habitat Function and Value	Provide details in the Habitat Mitigation Plan describing how habitat function and value will be measured for the impacted habitat, both temporary and permanent. Indicate the areas for the proposed conservation easement. Describe the habitat function and value of all areas included in the conservation easement.	Habitat mitigation is the subject of ongoing discussions with EFSEC and WDFW. Details will be provided to EFSEC as these discussions progress. Also see our response to Wildlife-21.
Vegetation-20	WAC: 463-60-332 Section Appendix L Appendix N	Mitigation Plans	Indicate when progressive revegetation will occur. Include the schedule for implementing the mitigation measures and plans.	As noted in Section 3 of Appendix N of the ASC, revegetation would begin as soon as feasible following completion of construction. In addition, as noted in Appendix N, seeding would occur within the appropriate season to facilitate germination. The exact schedule in not known at this time, however, a schedule for this implementation is not required in order to inform a determination of significance for the project. As noted in Section 5.1 of Appendix N, monitoring of the revegetation areas would be conducted by a qualified investigator annually for a minimum of 3 years, with the first monitoring period to occur during the first growing season following initial seeding. As noted in Sections 6.2 and 7 of Appendix N, noxious weed prevention measures would be implemented during construction, revegetation, and operation of the Project. Noxious weed control would occur following construction of the Project and would occur for the duration of operation.

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Vegetation-21	WAC: 463-60-332 Section Appendix N	Map Identifying Seeding	Provide a map that shows the seed mixes and where they will be applied during revegetation activities.	Section 3.3 of Appendix N of the ASC provides details on locations where each of the four proposed seed mixes would be applied during revegetation (e.g., Table 5 – Example Sagebrush Shrub-steppe Seed Mix would be applied for revegetation of temporarily disturbed sagebrush shrub-steppe habitat). As noted in Section 3.3 of Appendix N, the number of seed mixes and composition of the final seed mixes would be determined based on pre-construction conditions and the availability of seed at the time of procurement. In addition, the final locations where each seed mix would be applied will be based on the final construction layout and associated disturbance areas (which is unknown at this time).
Vegetation-22	WAC: 463-60-362 Section 4.2.5	Native Plant First Foods	Conduct an ethnobotanical study of the Project area that would include native plant First Foods. This information will be incorporated into the assessment of potential cultural impacts.	Ethnobotanical studies are typically conducted by Tribal specialists. The CTUIR has indicated in their Traditional Use Study that a study is necessary for their ceded lands in the Horse Heaven Hills. A study will be completed for the Project in the appropriate season, with results provided to EFSEC when complete.
Wildlife-1	WAC: 463-60-332 Section 3.4.2.1 Appendix M	Wildlife	Provide information on regional wildlife population trends, including adjacent to the project. Provide an analysis of potential effects to special status wildlife, including anticipated potential changes in populations, changes in behavior patterns, and changes in habitat use. Quantitative analysis of effects is preferred, where feasible.	Populations of regional wildlife populations are likely to fluctuate annually, independent of the Project. Populations are typically affected by larger-scale processes such as climate change, which influences a myriad of factors for wildlife (Yang et al. 2021). The on-going drought in eastern Washington will continue to effect trophic interactions within the ecosystem, modifying prey base, vegetation, water resources – all which affect wildlife populations. Pronghorn populations in the adjacent Yakima Reservation may overwinter in the Horse Heaven Hills and are increasing (Fidorra et al. 2019). Current minimum population estimates are approximately 250 animals (M. Ritter, WDFW, pers. comm). Reintroduction efforts continue with tribal entities. The Project is located in the Columbia Plateau Mule Deer Management Zone within Game Management Unit 373 (WDFW 2016). The Project and surrounding Horse Heaven Hills is considered part of the mule deer “limited range” which is defined as habitat which are occasionally inhabited and/or contain small populations of scattered mule deer (WAFWA 2004). Mule deer are present throughout most of the Columbia Plateau Mule Deer Management Zone (MDMZ) at varying densities depending upon locality and habitat quality, with the exception of the largest irrigated parcels within the Columbia Basin Irrigation Project in the center of the MDMZ (WDFW 2016). The robust and stable populations in the region are reflected in the fact that more mule deer are harvested in the Columbia Plateau MDMZ than in any other MDMZ and harvest has remained stable since 2001 (WDFW 2016). Population estimates for non-game wildlife species are typically unavailable or outdated because they are non-revenue-producing species that do not receive prioritized government funding (WDFW 2016). However, WDFW provides periodic status reviews for special status species or species of special concern. (https://wdfw.wa.gov/sites/default/files/2021-03/wdfwspeciesstatusandrecoveryplanlist.pdf). Please see the Bird and Bat Conservation Strategy (BBCS) for a summary of bird species of special concern that were observed at the Project. Bird response to Turbines is species-specific and behavioral changes such as displacement (relative density or abundance estimates in proximity to turbines) involve a number of factors such as species habitat requirements, available habitat on the landscape and pre-existing disturbances. Gillespie (2013) found mixed effects of grassland bird displacement in Iowa. Shaffer and Buhl (2016) found displacement and attraction to Turbines over a five-year period in the Dakotas, and similar species-specific displacement patterns were observed in patterns were observed in Wisconsin (Garvin et al. 2011). The most abundant small bird species documented during 2017-2019 avian use surveys was horned lark, which is a widely distributed species with a stable population in Washington over the past two decades (Sauer et al. 2019).
Wildlife-2	WAC: 463-60-332 Section 3.4.2 Appendix M	Wildlife	Provide details regarding the anticipated risk of aerial turbine collisions based on season, day/night, and weather. Identify specific mitigation measures that could be implemented to reduce collision	Seasonally, the highest risk of collision is typically when species are most abundant and flying at a height within the rotor swept area (RSA). Seasonally, risk is higher during the spring and fall for birds that migrate through the area to nesting areas located north (spring) or over wintering areas (fall). Nest species, such as resident raptor like American kestrel and red-tailed hawk, are likely a great risk of collision with turbines during the spring and summer as they establish territories, provision nests, and young fledge from the nest navigating a new, novel landscape. Post construction fatality monitoring studies at wind projects throughout North America have recorded higher fatalities in late summer and fall, when migratory tree and leaf roosting bats pass through the region (Goldenberg et al. 2021). Weather patterns may play a role

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			risk during peak risk periods (i.e., inclement weather).	in bat fatalities as well; a review of 21 post-construction monitoring studies found the relationships between bat fatalities and weather patterns resulted in more bats were killed on nights with low wind speed (<6 m/sec) and that fatalities increased immediately before and after passage of storm fronts (Arnett et al. 2008). Conversely, high wind speeds may increase the collision risk for raptors, as they tend to soar and kite into the wind, thus increasing their exposure to collision when flying within the rotor swept area (Hoover and Morrison 2005). Avian collision fatality data from studies conducted at 30 wind farms across North America were examined to estimate how many night migrants collide with Turbines and towers, and how aviation obstruction lighting relates to collision fatalities. Fatality rates, adjusted for scavenging and searcher efficiency, of night migrants at Turbines 54 to 125 meters in height ranged from <1 bird/Turbine/year to ~7 birds/Turbine/year with higher rates recorded in eastern North America and lowest rates in the west. Multi-bird fatality events (defined as >3 birds killed in 1 night at 1 Turbine) were rare, recorded at <0.02% (n = 4) of ~25,000 Turbine searches. Lighting and weather conditions may have been causative factors in the four documented multi-bird fatality events, but flashing red lights (L-864, recommended by the Federal Aviation Administration [FAA]) were not involved, which is the most common obstruction lighting used at wind farms. A Wilcoxon signed-rank analysis of unadjusted fatality rates revealed no significant differences between fatality rates at Turbines with FAA lights as opposed to Turbines without lighting at the same wind farm (Kerlinger et al. 2010). Minimization measures that will be implemented during the construction and decommissioning of the Project are included in the BBCS (see Section 7). Pertaining to inclement weather when collision risk may increase, minimization measures include down lighting of all lights to reduce attraction of nocturnal migratory birds and FAA mandated obstruction lighting on turbines which have been shown to reduce collision risk compared to white non-flashing lighting commonly found on communication towers (Kerlinger et al. 2010).
Wildlife-3	WAC: 463-60-332 Section 3.4.2 Appendix M	Wildlife	If hazardous materials may be used (including pesticides), provide a discussion of the potential effects on the availability of prey items for insectivorous wildlife species and potential effects to wildlife species from ingestion of prey items.	The Applicant does not anticipate using pesticides during Project construction or operation; if unforeseen circumstances arise that require the use of pesticides, the Applicant would consult with WDFW and EFSEC regarding use of pesticides to avoid and minimize impacts to burrowing owl. Additional information is proved in Section 3.4.4 of the ASC.
Wildlife-4	WAC: 463-60-332 Appendix M Appendix L	Wildlife	Provide further details on how sensitive wildlife features (i.e., nest, dens, roost sites) will be identified prior to construction and proposed setback distances.	The Applicant proposes conducting pre-construction surveys for priority species with documented habitat within impacted areas or suitable buffers, where construction would occur during sensitive periods such as nesting season. Setbacks for priority bird species would be established in accordance with WDFW management recommendations as defined at this link: https://wdfw.wa.gov/sites/default/files/publications/00026/wdfw00026.pdf Also see our response to Wildlife-21.
Wildlife-5	WAC: 463-60-332 Appendix M Appendix L	Wildlife	Provide a list of guidance and BMP documents that will be implemented as part of the mitigation program. Confirm how mitigation measures recommended in “US Fish and Wildlife Service Land-Based Wind Energy Guidelines” will be implemented (i.e., lighting type: flashing/strobe lights vs steady burning). Confirm mitigation to reduce perching habitat on turbines. Confirm if there is a plan to mitigate and/or compensate for wildlife mortality.	Proposed Best Management Practices (BMPs) at the Project draw from a number of guidance documents developed by the USFWS (2012), WDFW (2009) and supported by non-profit organizations such as The National Wildlife Foundation, The Nature Conservancy, and The Audubon Society (Murphy and Anderson 2019, the Nature Conservancy 2020, Audubon, undated). The BBCS provides a list of BMP measures that will be used to avoid and minimize impacts during project construction, operation, and decommission (Section 7). BMP measures implemented at the Project are consistent with United States Clean Air Act, American Power Line Interaction Committee and WDFW Wind Power Guidelines. In addition, regarding perching on turbines, the new-generation tubular steel turbine towers proposed at the Project do not provide perch habitat for birds, unlike older generation lattice towers do. In our experience, air disturbance caused by the wake effect from turbine rotors when in operation precludes bird perching opportunities on the top of the nacelle. Collision risk with rotors is likely non-existent if a bird were to perch on the nacelle of a non-operating turbine. The compensatory habitat mitigation plan with WDFW compensates for the loss of habitat for species, and therefore their productivity from Project impacts to species’ habitat. In addition, a post-construction fatality monitoring program will be implemented at the Project where wildlife fatalities will be monitored and, through coordination with WDFW and other stakeholders, impacts to wildlife will be evaluated in an adaptive management framework and appropriate measures will be evaluated. As discussed in the BBCS, a Wildlife Incidental Reporting and Handling System (WIRHS) will be implemented for the life of the Project, which entails the tracking of bird and bat mortality and injury information in a standardized format. Information reported within the WIRHS will be consistent with standards supporting a scientific collection permit from the WDFW. Reporting of mortalities will be submitted and discussed in coordination with WDFW.

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				Also see our response to Wildlife-21.
Wildlife-6	WAC: 463-60-332 Appendix L	Wildlife	Provide a detailed discussion of potential cumulative effects on wildlife species. Provide a list of other projects occurring in the region that could contribute to a cumulative loss of habitat, habitat fragmentation, and mortality. Provide a quantitative analysis of cumulative habitat loss and bird/bat mortality.	Per discussion with EFSEC on August 2, 2021, cumulative impact analysis will be conducted by EFSEC and is not required to be provided by the Applicant. However, the following information is provided for reference. Johnson and Erickson (2011) provided a cumulative impacts analysis from 25 year-long monitoring studies conducted at 23 wind energy facilities in the Columbia Plateau Ecoregion. Results indicated that background mortality for the study species (all birds, raptor group and bats) is much higher than fatality rates observed at turbines and the additional wind energy related mortality is likely insignificant from a population standpoint. Three studies supported the results from Johnson and Erickson (2011) by attempting to contextualize bird fatalities at wind facilities with other forms of mortality. Mean estimates ranged between 234,000 to approximately 573,000 birds annually (Loss et al. 2013; Smallwood 2013; Erickson et al. 2014). Although not trivial, Turbine-related mortality is much lower than other human-related sources of bird deaths, (e.g., communication towers, buildings [including windows]), and domestic cats) have been estimated to kill millions to billions of birds each year. Compared to continent-wide population estimates, the cumulative mortality rate per year by species was highest for black-throated blue warbler and tree swallow; 0.043% of the entire population of each species was estimated to annually suffer mortality from collisions with Turbines (Erickson et al. 2014). Within proximity to the Project, the most likely ongoing loss of habitat and displacement to wildlife species over the 30-year life of the Project included the expansion of exurban and rural grown of the tri-cities area. Permanent impacts to habitat from Project development are expected to be 990 acres (1.5 mi^2). Benton County which encompasses the Tri-Cities area experienced a 17.4% population growth rate between the 2010 and 2020 census' dates (Tri-Cities Journal of Business). Between 2000 and 2011 the Tri-Cities area added 23,700 additional houses (USHUD 2011). The continued expansion of the Tri-Cities area will have a greater impact on habitat and wildlife species than the footprint and effect of a wind energy project. See https://www.fws.gov/southwest/es/documents/R2ES/LitCited/LPC_2012/Johnson_and_Erickson_2011.pdf
Wildlife-7	WAC: 463-60-332 Appendix L	Wildlife	Demonstrate how each option or combination of options used will achieve equivalent or greater habitat quality, value, and function for those habitats being impacted, as well as for habitat being enhanced, created or protected through mitigation actions.	The Habitat Mitigation Plan is currently in discussion with EFSEC and WDFW and this information will be provided as those discussions move forward. Also see our response to Wildlife-21.
Wildlife-8	WAC: 463-60-332 Section 3.4.2.1	Wildlife	Provide a method to qualify the anticipated effectiveness of the proposed mitigation measures. Use examples from other projects or citations, where available.	The Habitat Mitigation Plan is currently in discussion with EFSEC and WDFW and this information will be provided as those discussions move forward. Also see our response to Wildlife-21.
Wildlife-9	WAC: 463-60-332 Appendix L, Table 4	Habitat	Confirm that the construction phase will not require developing temporary sediment ponds/water retention ponds or the creation of roadside ditching that could provide habitat for amphibians or other water-related species.	Hydrology studies will be performed to inform the final design which will confirm if/where sediment ponds/water retention ponds or the creation of roadside ditching will occur. Although unlikely, if they do occur, mitigation measures will be considered in the final version of the Habitat Mitigation Plan.
Wildlife-10	WAC: 463-60-332 Appendix L, Table 4	Wildlife	Provide a discussion on the potential use of features (turbines, solar arrays, wires) by wildlife (i.e., perching, roosting).	Following construction, birds will continue to perch on anthropogenic structures such as fences, the top edge of solar arrays, transmission poles, and buildings if left undeterred. When operating, birds will typically not attempt to perch on the nacelle of wind turbines due to the atmospheric disturbance. Transmission poles will be designed according to standards developed by the Avian Power Line Interaction Committee (APLIC), which eliminates the possibility of electrocution.
Wildlife-11	WAC: 463-60-332 Section	Habitat	Provide a schedule for implementation and details on the selected approach for habitat mitigation provided in Appendix L.	The Habitat Mitigation Plan is currently in discussion with EFSEC and WDFW and this information will be provided as those discussions move forward.

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	1.10.1 Appendix N Appendix L			
Wildlife-12	WAC: 463-60-332 Section 3.4	Wildlife	Provide a quantitative analysis of habitat and habitat loss for wildlife affected by the Project. Include State-listed species.	Information regarding a quantitative analysis of habitat and habitat loss for wildlife affected by the Project, including State-listed species, is provided in Section 3.4.2.2 of the ASC.
Wildlife-13	WAC: 463-60-332 Section 3.4 Appendix K	Wildlife	Provide additional information on how sampling sites for birds and bats were selected and whether the selection of the wildlife sampling sites included stratification of habitat or review of species distribution data.	Because of their specificity, the applicable standards were used to structure the survey design and sampling effort, to the extent possible, for all avian surveys. Please see Jansen and Brown (2018) and Jansen et al. (2019) where the USFWS describes survey guidelines in the Eagle Conservation Plan Guidance (ECPG [USFWS 2013]) and has codified those guidelines into standards in the recent Final Rule (USFWS 2016; 50 CFR Parts 13 and 22, §22.26). The standards specify the protocols for station establishment, level of survey effort, and data collection related to bald and golden eagles. Data collection for all surveys used commonly used survey methods (Ralph et al. 1993) and followed protocols specified in USFWS (2016) for eagles, specifically. Fixed-point count stations were established by placing a point nearest to the farthest western proposed Turbine location, then picking from a list of randomly generated numbers that corresponded to a proposed Turbine location. Numbers were discarded and redrawn if 800-m radius survey plots substantially overlapped (e.g., >50%). Point placement was microsited (e.g., minor shifts of approximately 100 m) in the field to maximize the surrounding viewshed and were placed on publicly accessible roads. Survey points were established within the proposed Project area to comply with ECPG recommended survey coverage of 30% of the area within one kilometer (km) of Turbines to be covered by 800-meter radius observation plot.
Wildlife-14	WAC: 463-60-332 Section 3.4 Appendix K	Wildlife	Provide additional information on wildlife habitat associations so that the effects of habitat loss can be assessed. Include a discussion on how the connectivity along and over the Horse Heaven Hills ridgeline (east/west and north/south) will be mitigated.	Please see Johnson and O'Neil (2001) for primary habitat associations. Connectivity within the Horse Heaven Hills will be maintained through minimization of fencing around solar arrays within the north/south connection including set-backs of Turbines and associated infrastructure from the escarpment where the east/west connection is located. Turbines and associated infrastructure (excluding O&M building) are unfenced, allowing open access and movement to all wildlife. Also see our response to Wildlife-21.
Wildlife-15	WAC: 463-60-332 Section 3.4.2 Appendix M	Wildlife	Provide further quantitative analysis of the potential effects from indirect habitat loss (i.e., disturbance, fragmentation) or avoidance on wildlife populations, including land-based species. An example could be quantifying habitat adjacent to the Project predicted to be affected by noise and night lighting thereby resulting in indirect habitat loss/alteration (i.e., Zone of Influence).	See response to Wildlife-1.
Wildlife-16	WAC: 463-60-332 Appendix N Appendix M	Wildlife	Provide further information on post-construction monitoring or management surveys/programs that will be implemented to mitigate and monitor ongoing effects on non-aerial species (i.e., mammals, reptiles, amphibians, etc. --- species other than birds and bats).	Post construction fatality monitoring plans will be developed in coordination with EFSEC and WDFW as needed as part of the habitat mitigation plan discussions. This post-construction fatality monitoring program will be implemented at the Project where wildlife fatalities will be monitored and, through coordination with WDFW and other stakeholders, impacts to wildlife will be evaluated in an adaptive management framework and appropriate measures will be evaluated. Post construction monitoring is conducted in a systematic manner that provides robust estimates of Project-related wildlife mortality. Results from the monitoring effort are submitted to Project stakeholders and next steps are evaluated that may include additional measures to avoid, minimize or mitigate Project impacts to wildlife. As discussed in the BBCS, a Wildlife Incidental Reporting and Handling System (WIRHS) will be implemented for the life of the Project, which entails the tracking of any wildlife (i.e., mammals, reptiles, amphibians, etc.) mortality and injury information in a standardized format. Information reported within the WIRHS will be consistent with standards supporting a scientific collection permit from the WDFW. Reporting of mortalities will be submitted and discussed in coordination with WDFW. Also see our responses for Wildlife-5 and Wildlife-21.

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Wildlife-17	WAC: 463-60-332 Section 1.10.1 Appendix L	Wildlife	Provide details on how all mitigation measures provided in guidance documents, cited in Appendix L, will be applied to the Project or rationale for why some measures are not applicable nor feasible.	The Habitat Mitigation Plan is currently in discussion with EFSEC and WDFW and this information will be provided as those discussions move forward. Also see our response for Wildlife-21.
Wildlife-18	WAC: 463-60-332 Section 3.4	Wildlife	Provide further information based on surveys or habitat modeling of the occurrence and distribution of species and or groups of species (i.e., guilds) that could occur in the Project Area.	Please refer to Hab-11 response in EFSEC's Data Request #1 where additional context for the potential for special-status wildlife is provided in Attachment 1 to that response. In that response we provided modeled predicted habitat based on Gap Analysis Program (GAP) data for the following special-status small mammals, herptiles, and bird species with the potential to occur in the vicinity of the Project: American white pelican (*Pelecanus erythrorhynchos*); black-tailed jackrabbit (*Lepus californicus*); burrowing owl (*Athene cunicularia*; also see response to Hab-14 in EFSEC's Data Request #1); ferruginous hawk (*Buteo regalis*); great blue heron (*Ardea Herodias*); ring-necked pheasant (*Phasianus colchicus*); striped whipsnake (*Masticophis taeniatus*; also see response to Hab-13 in EFSEC's Data Request #1); Townsend's big-eared bat (*Coryhorhinus townsendii*); Townsend's ground squirrel (*Urocitellus townsendii townsendii*; also see response to Hab-12 below); tundra swan (*Cygnus columbianus*); white-tailed jackrabbit (*Lepus townsendii*); loggerhead shrike (*Lanius ludovicianus*; also see response to Hab-14 below); sagebrush sparrow (*Artemisiospiza nevadensis*), and sage thrasher (*Oreoscoptes montanus*). Because Vaux's swift (*Chaetura vauxi*) had no predicted habitat in the area, no map is provided.
Wildlife-19	WAC: 463-60-332 Sections 4.2.6 3.4.1.1 4.2	Animals	Confirm whether domesticated farm animals will be allowed to graze under the turbines. Describe the impacts of fencing around solar arrays (if constructed) to wildlife or cattle grazing and proposed mitigation.	Domesticated farm animals will be allowed to graze under the Turbines but not under the solar arrays (i.e., within the fenced solar array area); therefore, fencing around solar arrays will eliminate grazing in these areas. Impacts of fencing around solar arrays on wildlife are described in the ASC; for example: • *"habitat and vegetation within the solar array fencelines but outside areas of permanent disturbance (i.e., graveled interior access roads, inverter pads, and tracker system support posts) would retain residual value following construction, especially for wildlife that can pass through, under, or over the security fence (e.g., birds, mice) and utilize the low-growing vegetation that would be established and maintained under the solar arrays"* • *…"the fenced solar array may disrupt dispersal. However, Townsend's ground squirrels are likely to be able to pass through or burrow under the perimeter fencing and utilize the low-growing vegetation that will be planted under the solar arrays."*
Wildlife-20	WAC: 463-60-332	Prey Base and Food Webs	Provide further information on the prey base for all animals, such as Townsend's ground squirrel (an important food source for listed Ferruginous hawk), the micrositing of the Project may impact.	Please see our response to Hab-11 in EFSEC's Data Request #1 where small mammals are discussed. Small mammals (kangaroo rat, gopher, squirrel) are common through the Horse Heaven Hills and broadly distributed except in areas that are actively tilled and managed for dryland wheat and other agriculture. Additional context for the potential for special-status wildlife was provided in EFSEC's Data Request #1, which provided modeled predicted habitat based on GAP data for the following special-status small mammals, with the potential to occur in the vicinity of the Project: black-tailed jackrabbit (Lepus californicus); Townsend's ground squirrel (*Urocitellus townsendii townsendii*; and white-tailed jackrabbit (*Lepus townsendii*). Modeled predicted habitat does not constitute species occurrence. Please reference data limitation of GAP habitat when making inferences of species habitat and occurrence. The vast majority of Project infrastructure is not located within modeled Townsends ground squirrel areas. Please see Attachment "Wildlife-20" to this response.
Wildlife-21	WAC: 463-60-332	WDFW Letters	Confirm that recommendations from letters dated March 31, 2021 and April 1, 2021 from WDFW to EFSEC were reviewed and taken into consideration. Provide mitigation that has changed or has been added based on WDFW recommendations.	Letters submitted by WDFW to EFSEC were received after the application was submitted, and these issues were not raised by WDFW during pre-application consultations. As a result, the application did not directly address specific issues raised by the Agency. A memorandum was provided separately to EFSEC on August 13, 2021 that provides detailed responses to topics raised in the WDFW letters.
Energy and Natural Resources-1	WAC: 463-60-342; 463-60-165	Construction Water Supply	Provide a letter from the City of Kennewick indicating that water is available in the amounts required and	Construction water is planned to be sourced from the potential suppliers in close proximity to the construction activity. Municipalities are the likely source for the quantities anticipated. The City of Kennewick has a published policy and program for obtaining water from their fire hydrant

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	Sections 2.6.1.1 2.6.2 2.6.3 3.6.2	Water Use Authorization	that the City is willing to supply it to the Project for both construction and operation in the required timeline. Provide a discussion of water supply alternatives for construction and O&M. Describe contingencies if source water from the District of Kennewick is curtailed during drought.	system. The City has not denied service but has indicated that applications to obtain their hydrant meters should be filed as the need arises and refused to provide confirmation of supply. As an alternative to the City, the Project will apply to the Washington Department of Ecology (Ecology) for overlapping water rights in cooperation with AgriNW to utilize their existing irrigation system infrastructure to obtain water. It is anticipated that mitigation for this impact will be provided in accordance with Ecology guidelines from regional sources. This Application will be provided after filing with the Department of Ecology. The Project has no intention to source water from the Kennewick Irrigation District. In the event drought conditions occur, it will likely be affecting all potential water sources in near proximity to the site. Consequently, if alternative water suppliers cannot be found, this may affect the continuity of scheduled activities dependent on water.
Energy and Natural Resources-2	WAC: 463-60-342; 463-60-165 Sections 2.6.1.1 2.6.2 3.6.2	Construction and Operation Water Supply	Provide a discussion of water supply alternatives for construction and site operation and maintenance. Explain how the identified water trucking company can provide 220,000 gallons per day of water with two 4,000-gallon capacity water trucks during construction. If additional water trucking capacity is needed, provide a similar letter for each additional supplier.	The use of water at the site is described in Sections 2.6.1, 2.6.2, and 3.6.2 of the ASC. As noted in Energy and Natural Resources-1, as an alternative, the Project will apply to Ecology for overlapping water rights in cooperation with AgriNW to utilize their existing irrigation system infrastructure to obtain water. It is anticipated that three trucks can simultaneously fill from this system. As noted in Section 2.6.1.1 of the ASC, construction activities are conservatively estimated to generate an average water demand of 220,000 gallons per day. The daily water demand estimate assumes that, on an average construction day, 60 acres of the Project are in active construction, requiring 10 continuous hours of water. The Balance of Plant contractor will be responsible to obtain water sources and trucking services to meet the needs for construction prior to the commencement of construction activities. Appendix J of the ASC (i.e., statement of water supply capability) was only one example of a local firm providing water services and their capability at the time the document was created. Also see response to Energy and Natural Resources-1.
Energy and Natural Resources-3	WAC: 463-60-342 Section 3.6.2	Source/Availability of Resources	Provide information confirming the availability of energy and other resources to be used by the Project, such as letters from material and equipment suppliers confirming their interest to supply required materials/equipment and confirming the availability of the required material and equipment within the timeframe indicated for the Project.	As noted in Energy and Natural Resources-2 above, typically the Balance of Plant contractor will be responsible to obtain required resource suppliers/contracts that will be sought prior to the respective activity commencement. If suppliers experience challenges, alternative suppliers will be sought. The unavailability of needed resources may affect the continuity of scheduled activities dependent on them.
Energy and Natural Resources-4	WAC: 463-60-342 Sections 3.6.2 3.6.3	Efficiency of Use of Energy and Natural Resources	Describe the efficiency of consumption of energy and natural resources and measures proposed to improve the efficiency of use.	The Project will generate energy from renewable resources (wind and sun). Consumption of energy during operations will be minimal and will be limited to power used at the collection substations and operations and maintenance buildings. During construction, energy and natural resources would be consumed as described in Section 3.6.2. The exact quantity of materials consumed during construction would be determined by the final design but would be controlled and managed to the extent possible by the construction contractor. Vehicles would be powered off when not needed. Water would be used as necessary to construct Turbine foundations and minimize dust, but its use would be managed carefully to avoid purchasing and hauling water unnecessarily. Only the materials and equipment necessary to construct the Project would be ordered and installed. Most construction materials would enter the Project area via one of the construction laydown yards. Some materials, particularly Turbine components and solar components, would be delivered directly to the location at which they would be used. Rock and gravel may be sourced from on-site borrow pits or from local commercial sources in quantities needed for immediate use during the construction period as determined by the construction contractor. Overall, the Project would have a large positive net energy balance, and once constructed, would require limited inputs of energy and natural resources while generating up to 1,150 MW of energy for beneficial use.
Energy and Natural Resources-5	WAC: 463-60-342 Sections 3.6.2	Conservation and Renewable Resources	Describe conservation measures which would or could be used during construction and operation of the facility.	During Project construction, the measures described under Energy and Natural Resources-4 would be implemented to conserve resources. The Project is designed to use renewable resources (wind and sun) to generate energy and would minimize use of non-renewable resources once operational, allowing other energy-generating facilities such as coal- and natural gas-fired power plants to be retired. During Project operation, roads will be cost-effectively maintained for all weather access to the assets. Only the materials and equipment necessary would be utilized and applied.

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	3.6.3			
Land and Shoreline Use-1	WAC: 463-60-362 Sections 4.2.1 4.2.4	Section 1.10.1 indicates that mitigation measures proposed for land-use plans and zoning ordinances are described in detail within Section 4.2.1 of the Application for Site Certification (ASC), including site-specific BMPs to minimize potential impacts to noise, traffic, and the visual surroundings, as described in the respective resource sections of this ASC. Details are not provided on site-specific BMPs within Section 4.2.1. Section 1.10.1 also indicates mitigation measures proposed for recreation are described in detail within Section 4.2.4 of the ASC, including site-specific BMPs to minimize potential impacts to noise, traffic, and the visual surroundings, as described in the respective resource sections of the ASC. While it is acknowledged that these measures would minimize impacts to recreational users, details are not provided on site-specific BMPs within Section 4.2.4.3.	Provide details on site-specific BMPs to minimize potential impacts to noise, traffic, and the visual surroundings or provide references to the respective resource sections of this ASC where these are identified. Provide details regarding the recreational paragliding that occurs in the vicinity of the Project area.	The mitigation measures for noise, traffic, and visual surroundings are described in their respective ASC resource sections as follows: 4.1.1.3 (Noise mitigation), 4.3.3 (Transportation mitigation), and 4.2.3.4 (Aesthetics mitigation). There are no state parks in the vicinity of the Project area where paragliding is permitted pursuant to WAC 352-32-130 (Washington State Parks 2021). While the DNR lands noted in Table 4.2.4-1 of the ASC (i.e., Johnson Butte, Jump Off Joe Butte, and Goose Hill Butte) are open for public access, they are not considered designated recreation sites nor have public facilities. Any paragliding that may occur from these locations is informal and not tracked by a state agency with information available to the public. Information provided by a local paragliding pilot (see below) did not indicate that flights occur from DNR lands. Paragliding is known to occur from Chandler Butte BLM-managed land at Horse Heaven Hills. Chandler Butte is located approximately 2.5/2.8 miles away from the closest potential Turbine, 2.1 miles from the closest potential solar array, and 4.2 miles from the closest potential transmission line for the Project. The BLM Horse Heaven Hills recreation area is identified by BLM public data as “an undeveloped watchable wildlife and watchable wildflowers area. Popular with locals, it is primarily used for hiking, nature viewing, photography, and mountain biking” (BLM 2021). According to correspondence with BLM’s Spokane Office (Smith 2021), BLM is aware that hang gliders and paragliders launch from Chandler Butte on BLM lands, and it is an allowed use with no permit required so long as it is “casual use.” Certain triggers would require pre-application for a BLM Special Recreation Permit, as related to specified commercial, competitive, and/or organized use (Smith 2021). At this time, BLM does not have accurate knowledge of how much such casual use occurs annually, nor the actual trajectories utilized (i.e., flight paths of gliders; Smith 2021). As an unofficial estimate, BLM approximated that current annual recreation visitation at Horse Heaven Hills, not specific to paragliding, is roughly 7,300 visits per fiscal year (Smith 2021). The BLM Spokane Office suggested speaking with local Tri-Cities parasailing pilots. One pilot, Manuel Seubert, provided additional detail information via phone conversation and email (Seubert 2021). Mr. Seubert indicated that the ridgeline along which Chandler Butte is located is known locally as Kiona Ridge. The Chandler Butte point itself is not used as a launch site due to an existing communications tower and associated fencing. Rather, there are at least four commonly used launch spots for hang gliding, paragliding, and cross-country parasailing along Kiona Ridge following McBee Road starting to the west of the McBee trailhead (off of McBee Road, identified as “TH” on the enclosed BLM Horse Heaven Hills map). Launching sites stop before reaching an existing 500-kV BPA transmission line (Ashe-Slatt No.1) located approximately 0.4-mile east/southeast from the top of Chandler Butte, which poses a safety hazard. From Kiona Ridge, gliders typically launch to the south, flying with the wind direction. Landing sites also occur to the south, but gliders can also follow wind direction after launching to the south and land north of Kiona Ridge. Depending on wind and weather conditions, cross-country gliders can fly all the way to the Columbia River and across into Oregon. Mr. Seubert estimates that roughly 100 individual people may launch from Kiona Ridge in a year, with individuals flying multiple times, for several hundred flights each year. Kiona Ridge is known as one of the few locations where gliders can launch year-round, with few seasonal interruptions due to weather. Gliders include local recreationists, as well as visitors from around the state and country. A subset of flights from Kiona Ridge are logged voluntarily by pilots using a global flight database, which shows over 300 flights since 2010 with a wide variety of flight paths and landing locations (Paragliding Forum 2021). The siting of the proposed Project would add additional risk to flying from Kiona Ridge, but would not preclude all gliding activities. Based on input from Mr. Seubert, the main risks include: a) losing safe landing space in the event of an in-flight emergency and a pilot needs to land quickly while avoiding turbines, b) collision with a Turbine if a pilot loses the ability to steer mid-flight, and c) wind turbulence from operating Turbines. Extra precautions would have to be taken by pilots to maintain a high enough altitude to avoid Turbines (i.e., cross-country parasailers can reach 5,000 to 6,000 feet in altitude, above the height of Turbines), or otherwise alter their flight path to maintain a safe distance from Turbines. Mr. Seubert has flown frequently from Kiona Ridge, and indicated the siting of the wind farm would make him rethink future activity, and would generally discourage launching from Kiona Ridge. Based on the information provided by Mr. Seubert (Seubert 2021), and a review of example flight paths (Paragliding Forum 2021), it is anticipated that implementation of the Project would impact existing recreational paragliding activity (and other types of gliding) from Kiona Ridge. While some flights may continue to occur safely, pilots would need precise information regarding Turbine locations and plan ahead to carefully prepare a safe route. The closest proposed Turbine location to Kiona Ridge is approximately 1 mile to the south. Flight paths that stay close to Kiona Ridge and cross back to the northside of the ridge may not be as affected.

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				The Applicant has received additional comments about the potential for the Project to affect use of radio control gliders use of the ridgelines just west of McBee Grade Road and North of Beightol Road (comments from the "Mid Columbia Soarers"). It is anticipated that affect to these unmanned radio control gliders would be similar to what is discussed above for manned paragliders. As noted in prior correspondence, the Project has received FAA Determinations of No-Hazard from the FAA for all Turbine locations filed.
Cultural/Historic-1	WAC: 463-60-362 Section 4.2.5	Tribal Consultation Reports Lists of known resources within the areas surveyed have been provided to interested tribes and the Department of Archeology and Historic Preservation (DAHP). The Yakama Nation has identified multiple Traditional Cultural Properties (TCPs) within and adjacent to the Project Area.	Provide the (unredacted) Traditional Cultural Property (TCP) and Traditional Use Study (TUS) reports for the Project.	These reports are in development by the Tribes, and are not available at this time. These reports will be provided when available.
Cultural/Historic-2	WAC: 463-60-362 Section 4.2.5	Archaeological Baseline Data	Provide the results of the spring 2021 archaeological field survey (i.e., the remainder of the micrositing corridor and the solar siting areas amounting to 57% of the total baseline survey area).	This survey report has been completed, and tribes that requested a copy (Yakama Nation, CTUIR) and are currently reviewing the draft report. The report will be provided to EFSEC once comments have been received from the tribal review and the document has been revised accordingly.
Cultural/Historic-3	WAC: 463-60-362 Section 4.2.5	Isolate Testing Results	Provide results from the shovel probe testing required. Archaeological resource - isolate # 45BN2092.	This survey report has been completed, and tribes that requested a copy (Yakama Nation, CTUIR) and are currently reviewing the draft report. The report will be provided to EFSEC once comments have been received from the tribal review and the document has been revised accordingly.
Cultural/Historic-4	WAC: 463-60-362 Section 4.2.5	Evidence of Appropriate Consultation The Yakama Nation has contacted EFSEC to oppose the manner in which consultation has been conducted for the Project and request that tribal consultation take place on a government-to-government basis rather than with HRA (Yakama Nation letter dated March 2, 2021). The Confederated Tribes of the Umatilla Indian Reservation (CTUIR)	Provide evidence, if any, of ongoing coordination (with the Yakama Nation and other interested Tribes).	On-going coordination with the Tribes is included in Table 1.12-1. Communications with Applicable Agencies and Tribes. See response to Cultural/Historic-1."

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		Department of Natural Resources has also contacted the EFSEC to request direct consultation with the State Department/EFSEC (CTUIR letter dated April 9, 2021). This request is supported by the DAHP (letter dated March 9, 2021).		
Cultural/Historic-5	WAC: 463-60-362 Section 4.2.5	Response to State Historic Preservation Office (SHPO) Comments A grain elevator (# 722995) was recorded by the Consultant (HRA) during the baseline field survey. HRA determined that the resource was not eligible for individual listing. However, comments from the SHPO (DAHP letter to EFSEC, dated March 9, 2021) request a reconsideration conclusion.	Provide the Consultant's response to the SHPO request, dated March 9, 2021, regarding the grain elevator (#722995).	This survey report has been completed, and tribes that requested a copy (Yakama Nation, CTUIR) and are currently reviewing the draft report. The report will be provided to EFSEC once comments have been received from the tribal review and the document revised accordingly.
Aesthetics-1	WAC: 463-60-362 Section 4.2.3 Appendix Q	WAC 463-60-362 (3) identifies that the applicant shall describe procedures to be utilized to restore or enhance the landscape disturbed during construction.	Provide details on site-specific BMPs or site-specific mitigations related to construction to restore or enhance the disturbed landscape.	Exposed and unworked soils shall be temporarily or permanently stabilized as soon as practicable by application of effective BMPs that protect the soil from the erosive forces of raindrops, flowing water, and wind. No soils should remain exposed and unworked for more than the time periods set forth in the SWPPP. This stabilization requirement applies to all soils on site, whether at final grade or not. Final stabilization techniques will be defined in the final project specific Storm Water Prevention Plan. Typical stabilization techniques include, but are not limited to, mulching, nets and blankets, plastic covering, temporary and permanent seeding, surface roughening, dust control, interceptor dike and swale. As noted in Section 4.2.3.3, construction disturbance would be limited to the extent practicable in accordance with BMPs and the Project's site certificate conditions. After construction is completed, disturbed areas, including temporary access roads not later used as Project access roads, would be restored as nearly as practicable to their original condition. In general, vegetated areas that are temporarily disturbed or removed during construction of the Project would be restored as reasonably possible to pre-disturbance conditions. Areas with significant soil compaction and disturbance from construction activities would be revegetated in accordance with the Revegetation and Noxious Weed Management Plan (Appendix N).
Aesthetics-2	WAC: 463-60-362 Section 4.2.3 Appendix Q	The selection of representative viewpoints for field survey, simulations, and analysis are predominately middle-ground viewing	Provide panoramic photos (similar to those provided in Appendix Q of the ASC) of the existing condition of the Project area from a representative viewing location in the following residential communities:	Proposed photo locations have been provided to EFSEC for review corresponding to the identified locations. With EFSEC's concurrence on the proposed locations, these photos will be provided to EFSEC under separate cover at a later date.

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		distance zone (0.5 to 5 miles) and do not represent foreground (less than 0.5 miles) viewing opportunities. Few of the viewpoints represent local communities or residential areas in the Tri-Cities area. It is acknowledged in the ASC that there are 13 non-participating landowners within a foreground viewing distance that would be exposed to relatively near views of the Project. It's illustrated in the ASC that there is potential visibility of the Project from nearby communities and residential areas (Figures 4.2.3-1 to 4.2.3-6). Comments received as part of the public scoping process identified a lack of representative viewpoints in nearby residential subdivisions or foreground areas.	• Benton City • Badger • Kennewick (Canyon Lakes area) • Highland These viewing locations should provide relatively unobstructed views towards the Project area and represent public viewing opportunities within these communities. Provide panoramic photos of the existing condition of the Project area from the following representative rural residential viewing location within a foreground viewing distance zone (0 to 0.5 miles): • Along County Well Rd (near the County Well Road Solar Array location) – view towards solar array and turbines • Near Sellards Rd and Travis Rd – view towards transmission line and turbines	
Aesthetics-3	WAC: 463-60-362 Section 4.2.3 Appendix Q	Simulations of the Project features are needed to support an understanding and analysis the visual character and potential visual impact of the project on viewpoints representing local residential communities or rural residential areas within a foreground viewing distance,	Provide photographic simulations (similar to those provided in Appendix Q of the ASC) of Project features from the same locations established in response to Aesthetics-2 data request. Include modelling of turbine layout options, solar array facilities and transmission line options within these simulations.	Photographic simulations will be provided to EFSEC under separate cover at a later date.
Light and Glare-1	WAC: 463-60-362 Section	Construction Lighting – Nighttime	Nighttime construction is noted as a possibility. Address lighting mitigation if there are construction activities that may	To the extent feasible, lighting will be directed towards construction activities and away from roadways or residences.

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	4.2.2.2		impact roadway traffic or nearby residences.	
Light and Glare-2	WAC: 463-60-362 Section 4.2.3 Appendix Q Appendix H	Light or glare from construction and operation of the Project were determined to not result in a safety hazard or other significant adverse impact, and as a result, no mitigation measures are proposed. However, mitigations identified in Section 4.2.3.4 are related to lighting.	Clarify why four of the mitigations identified in Section 4.2.3.4 are related to lighting if no mitigation measures are proposed in relation to light or glare.	No significant glare impacts would occur (as discussed in Section 4.2.3.4 of the ASC); however, visual impacts would occur, and mitigation is proposed for these impacts (which includes some that would have an effect on lighting).
Environmental Health-1	WAC: 463-60-352 Sections 2.10.2 4.1.2.1	Risk of Fire	Provide additional design details for the fire suppression system associated with the Battery Energy Storage System (BESS).	The selection of equipment suppliers for the BESS will not occur until after the ASC is approved. The fire suppression system will meet all applicable codes and standards. As noted in Section 2.3.5 of the ASC, the details and complexity of these elements depend on the final system selected.
Heat Dissipation-1	WAC: 463-60-175 Section 2.7	Heat Dissipation Mechanisms	Provide information on why heat dissipation systems, in regards to BESS, are not being used for this Project. Provide mechanisms or methods (and the alternatives) in the event, unlikely or not, that solar panels or turbines overheat.	Section 2.3.5 of the ASC describes that the battery storage design is for a modular self-contained unit. It will include, but not be limited to, the following elements (the details and complexity of these elements depend on the final system selected): • Battery storage equipment, including batteries and racks or containers, inverters, isolation transformers, and switchboards; • Balance of plant equipment, which may include medium-voltage and low-voltage electrical systems, fire suppression, heating, ventilation, and air-conditioning systems, building auxiliary electrical systems, and network/supervisory control and data acquisition systems • Cooling system, which may include a separate chiller plant located outside the battery racks with chillers, pumps, and heat exchangers. Turbines are also designed as self-contained units that are internationally certified to operate within a specified temperature range for the climate in the area constructed. Safety features warn operators when normal ranges are exceeded and will trip the unit when outside the design operating parameters. Solar panels are exposed to the elements and are also designed to operate in the climate of the area constructed. As this is a renewable energy facility and not a thermal generator, design concepts such as a massive cooling system/feature (heat sink) are unnecessary.
Heat Dissipation -2	WAC: 463-60-175 Section 2.7	Heat Dissipation Mechanisms: Operating Machinery	Describe operating machinery and the potential heat produced. Provide information on what would occur if operating machinery overheated.	As noted in item Heat Dissipation-1, the major components are designed as self-contained units with all attendant systems necessary to maintain functionality for the range of operation intended. Operational parameters are monitored and safety features warn operators when normal ranges are exceeded and will trip the unit when outside the design operating parameters.
Transportation-1	WAC: 463-60-372 Section 4.3.1.4	Location of existing Waterborne, Rail and Air Traffic	Provide map(s) and/or descriptions of local ports, airports, and railways mentioned in this section. Provide details on the distance of locations relative to the proposed Project Area.	The Port of Kennewick (which is located 14.6 miles driven distance to the approximate center of Project area [ACPA]), Port of Benton (17.4 miles driven distance to the ACPA), and the Port of Pasco (16.3 miles driven distance to the ACPA) on the Columbia River serve the area by water. The largest airport to serve the area is the Tri-Cities Airport, located 15.7 miles driven distance to the ACPA. Smaller airports that serve the area are Vista Field (8.4 miles driven distance to the ACPA), Port of Benton Airport (15.0 miles driven distance to the ACPA), and Richland Airport (14.7 miles driven distance to the ACPA). Burlington-Northern Santa Fe (BNSF) (which is located 20.4 miles driven distance to the ACPA), Union Pacific Railroad (35.7 miles driven distance to the ACPA), Tri City and Olympia Railroad Company (16.8 miles driven distance to

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			Determine if major roads used to access waterborne, rail, and air traffic transportation services use the same major roads as the proposed Project site.	the ACPA) provide rail service to the area. Amtrak provides passenger service to the area. The ACPA that was used to measure these distances is 47229 Locust Grove Rd, Kennewick, WA 99338. The roads that serve these major ports/services are primarily the major highways and freeways in the region, none of which would be adversely affected by the Project.
Transportation-2	WAC: 463-60-372 Section 4.3.3	Mitigation Measures: Distinguish Existing Road Improvements	Provide a list of all existing roads and intersections that will require improvements. Provide details of improvements to each road/intersection necessary for the Project.	Planned improvements to existing roads and intersections are provided in Appendix V to the ASC. This report will be updated once Turbines are selected and minor modifications to planned improvements could be identified at that time based on specific requirements of the selected Turbines.
Transportation-3	WAC: 463-60-372 Section 4.3.3	Mitigation Measures: Distinguish Existing Road Improvements	Describe how the applicant will restrict the general public from accessing roads used for the construction and operation of the proposed Project.	The Project will utilize appropriate signage where needed to direct the public from entering restricted areas. During construction, temporary barriers and traffic control measures will be utilized where applicable.
Stormwater-1	WAC: 463-60-537 Section 5.2 Appendix T	Stormwater Discharge Permit	Provide a discussion on the applicability of the National Pollutant Discharge Elimination System (NPDES) permit coverage post-construction for stormwater discharges to surface water.	The standard Construction General Permit in Washington stays in effect until all site conditions including stabilization and removal of BMPs have been met. Once the required conditions have been met, a request for a Notice of Termination would be submitted to Ecology. If Ecology concurs that the conditions have been met, then permit coverage ends one month later.
Wastewater-1	WAC: 463-60-195 Section 2.17.3	Batch Plant	Confirm if a temporary on-site concrete batch plant will be used. If an on-site concrete batch plant will be used, provide the water source and wastewater treatment information.	Please see our response to Air-4. Also, as noted in Table 2.23-1 of the ASC as well as in Section 2.17.3 of the ASC, commitments to obtain the required permits will be sought by the selected Balance of Plant contractor when conditions are established prior to the subject activity commencement.

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Attachment Earth-2

General Specification - Civil Technical Specifications

General Specifications

Civil Technical Specification

GENERAL REQUIREMENTS

1 GENERAL REQUIREMENTS

Refer to Attachment A for the description of the Project.

1.1 Drawing and Installation Data

1.1.1 Drawings of all and installation data furnished by the Contractor shall be part of the Submittals

1.1.1.1 Drawings of all Equipment, structures, and materials supplied by the Contractor shall be furnished to the Owner as prescribed in [_____] and herein. The drawings shall be submitted as follows:

1.1.1.2 Submit four (4) prints to the Owner for checking and approval. After checking, one (1) print will be returned marked “Not Reviewed”, “No Comment”, “Furnish as Corrected”, “Correction Required”, or “Rejected”.

1.1.1.3 A total of three (3) review packages may be submitted. Contractor shall be responsible to develop and maintain a document list for all documents generated by the Contractor. This listing shall be provided within thirty (30) days of award. Submittal of all documents for review and comments shall be in advance of any Equipment and materials being procured or start of construction.

1.1.1.4 Drawings shall be clearly marked and shall be in ascending order.

1.1.1.5 The Contractor's transmittal shall include a list of items included in the package.

1.1.1.6 After final approval, submit two (2) copies and an electronic copy, in [native format/PDF] to the Owner.

1.1.2 Contractor shall submit two (2) copies of the bill of materials, spare parts data, and instruction books to the Owner.

1.1.3 Four (4) copies of any special instructions regarding unloading, storage, or installation of the equipment shall be issued and distributed as follows:

1.1.3.1 Two (2) copies to Owner (office).

1.1.3.2 One (1) copy to Owner (field).

1.1.3.3 One (1) copy to be included with the material or equipment when shipped.

1.2 Interpretation of Documents after Contract Award

1.2.1 Report any errors or ambiguities in the Specifications and/or Submittals to the Owner as soon as detected. Owner’s engineering designee (the “Engineer”) shall interpret the intended meaning of the Specifications and the Engineer’s interpretation shall be final.

1.2.2 If any construction problem arises that is not covered by these Specifications, the Engineer shall be consulted immediately and shall render a decision on the problem. Failure to notify the Owner shall preclude any entitlement to a Change Order under the Agreement.

1.3 Abbreviations and References

1.3.1 These Specifications contain references to various standard specifications, codes, practices, and requirements for materials, workmanship, installation, inspections, and tests; which standards are published and issued by the organizations, societies, and associations by abbreviation and name or number.

1.3.2 Whenever the abbreviation is specified, it shall be understood to mean the full name of the respective organization (and referenced specification, code, practice, rule, etc.) as listed below.

AA	The Aluminum Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPB	American Wood Preservers Board
AWPI	American Wood Preservers Institute
AWS	American Welding Society
BLM	Bureau of Land Management
CRSI	Concrete Reinforcing Steel Institute
EEI-AEIC	Edison Electric Institute Publications
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FERC	Federal Energy Regulatory Commission
FS	Federal Specification
IBC	International Building Code
ICEA	Insulated Cable Engineers Association
MSHA	Mine Safety and Health Administration
NBS	National Bureau of Standards
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
NETA	National Electrical Testing Association
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
REA	Rural Electrification Administration (U.S.D.A.)
SAE	Society of Automotive Engineers
SSPC	Society for Protective Coatings

UL	Underwriter's Laboratories, Inc.
USFS	U. S. Forest Service
WCRSI	Western Concrete Reinforcing Steel Institute

1.4 Codes and Standards

1.4.1 Any material, method, or procedure specified by reference to a specific standard or specification, such as a commercial standard, American Concrete Institute Standard, federal or state specification, industry or government code, trade association code or standard, or other similar standard, shall comply with the requirements in the latest revision thereof and any amendments or supplements thereto in effect on the Effective Date.

1.4.2 The code, specification, or standard referred to, except as modified in these Specifications, shall have full force and effect as though printed in these Specifications. Such specifications and standards are not furnished to bidders, since manufacturers and trades involved are assumed to be familiar with their requirements.

1.5 Manufacturer's Specifications and Instructions

1.5.1 All manufactured materials, products; processes, equipment, or the like shall be installed or applied in accordance with the manufacturer's instructions, directions, or specifications, this Exhibit and otherwise in accordance with the Agreement. Said installation or application shall be in accordance with printed instructions furnished by the manufacturer of the material or equipment concerned for use under conditions similar to those at the job site. Installation instruction shall be furnished to the Owner and its acceptance thereof obtained before such portion of the Work is begun.

1.5.2 Any deviation from the manufacturer's printed recommendations shall be explained and acknowledged in writing by the manufacturer involved as correct for the circumstances. The Contractor shall be held responsible for all installations contrary to the manufacturer's recommendations. If any item of material or equipment is found to be installed out of accordance with the manufacturer's recommendations, the Contractor shall make all changes necessary to achieve such compliance.

1.5.3 Manufacturer's Field Supervision

Contractor shall be responsible for the scheduling of any manufacturer's service engineers. If a service engineer arrives at the station and the equipment is not ready for adjustment and testing, a second trip by the service engineer will be scheduled at the Contractor's expense. The services of a service engineer will normally include the following:

1.5.3.1 Instruct the personnel installing the equipment in the proper assembly and installation.

1.5.3.2 Inspect, supervise adjustment, and test the equipment after installation for proper electrical and mechanical operation.

1.5.3.3 Represent the manufacturer and assist in placing equipment into initial service.

1.5.3.4 Instruct Owner's personnel in the proper operation and maintenance of the equipment furnished.

1.6 Work Quality

1.6.1 In addition to the requirements set forth in the body of the Agreement, (a) the Work shall be performed by construction workers skilled and experienced in the work involved and (b) with respect to such construction workers conduct on this Project, all Work shall be performed in accordance with the best practices of the various trades involved and in accordance with the Submittals and these Specifications.

1.6.2 All Work shall be erected and installed plumb, level, square, and true, or true to the indicated angle, unless otherwise specified. Quality workmanship is of primary importance on this Project.

1.7 Material

1.7.1 Owner-Furnished Material

1.7.1.1 Material furnished by Owner shall be transferred to the Contractor, including instruction books at delivery points specified in the Contract Documents.

1.7.1.2 Contractor shall (1) accept the materials at the delivery points specified; (2) check all materials to satisfy him/her that the materials delivered are in good condition and the quantities are correct; and (3) execute a receipt for all materials accepted from Owner.

1.7.1.3 After the materials are accepted as specified above, the Contractor shall become solely responsible for their care, storage, and protection in accordance with the Agreement. In the event materials are damaged, lost, stolen, or destroyed by any cause whatsoever after the Contractor has signed a receipt for them, repair or replacement shall be entirely at the Contractor's expense.

1.7.2 Contractor-Furnished Material

1.7.2.1 All material and Equipment (as specified in the Submittals) furnished by the Contractor shall be in accordance with the Owner-approved Bill of Material, the Submittals and these Specifications.

1.7.2.2 Contractor shall purchase all materials and Equipment (other than Owner furnished materials) outright and not subject to any conditional sales agreement, bailment, lease, or other agreement reserving unto the Contractor any right, title, or interest therein.

1.7.2.3 The identification, purchasing, and delivery of all materials (except Owner furnished materials) are the responsibility of the Contractor

1.7.3 Material Storage

1.7.3.1 All construction material and equipment shall be stored so as to be protected from detrimental effects of the elements. If outdoor storage cannot be avoided,

the material and equipment shall be stacked on supports well above the ground line and protected from the elements as appropriate, with due regard to public safety.

1.7.3.2 All arrangements for material storage area(s) outside the station shall be the Contractor's responsibility. Any costs related to the storage area(s) shall be paid by the Contractor. Contractor shall be responsible to furnish and install proper security measures associated with the storage of all equipment and materials.

1.7.3.3 All equipment provided with space heaters shall have the heaters energized during storage. The Contractor shall make arrangements and provide the wiring for the electrical source.

1.7.3.4 On a monthly basis the Contractor shall furnish a list of Contractor furnished materials which have not been ordered.

1.8 Testing

1.8.1 Testing of the equipment shall be provided as indicated under the equipment supplier's instruction manual, as further outlined in these Specifications, and otherwise pursuant to the Agreement. If the Equipment is damaged, either in shipment or during installation, additional tests shall be made as recommended by the manufacturer and as specified by the Owner. All the Equipment shall be given complete mechanical operation tests to ensure proper operation. Schedules for equipment tests shall be submitted to the Engineer for approval. All tests shall be witnessed by the Owner in accordance with the Agreement.

1.8.2 The Contractor shall be responsible for coordinating all tests, [including the final substation checkout and energization,] which must be coordinated with the Owner. All checkout and testing records shall be provided to the Owner for review and comments prior to energization of any systems or equipment.

END OF GENERAL REQUIREMENTS

ROADWORKS & CIVIL

2 ROAD WORKS & CIVIL SPECIFICATIONS

2.1 General Design Criteria

Drawings and general provisions of the Agreement, including General and Supplementary Conditions apply to this Section.

2.1.1 Summary

This Section includes the following:

1. Clearing and grubbing.
2. Stripping and stockpiling topsoil.
3. Temporary erosion and sedimentation control measures.
4. Earthwork
5. Excavation and Backfill
6. Access Roads/Public Road Improvements
7. Crane Pads
8. Fences and Gates
9. Signage

2.1.2 Codes Standards and Regulations

Work shall adhere to the latest edition of the following standards

1. AASHTO M-147 – Materials for Aggregate and Soil-Aggregate Sub-base, Base, and Surface Structures
2. ASTM C127 – Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate
3. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
4. ASTM D422 – Standard Test Method for Particle Size Analysis of Soils
5. ASTM D1140 – Standard Test Method for Amount of Material in Soils Finer than No. 200 Sieve
6. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort

7. ASTM D2216 – Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

8. ASTM D2487 – Standard Classification of Soils for Engineering Purposes

9. ASTM D2922 – Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

10. ASTM D3017 – Standard Test Method for Water content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

11. ASTM D4318 – Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils

12. Code of Federal Regulations Occupational Safety and Health Administration (OSHA) Title 29-Labor, Part 1926

13. (*State*) Department of Roads – Standard Specifications for Highway Construction.

14. (*State*) Department of Environmental Quality Permit Definitions

    Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; and free of subsoil and weeds, roots, toxic materials, or other non-soil materials

    Road Surfacing: Base course aggregate material for permanent road construction composed of crushed rock.

    Controlled Structural Fill: Shall be process on-site or imported and shall meet the following requirements. The liquid limit of 30 or less, plastic index of less than 15, fill shall be free of organic matter, the maximum particle size will be no greater than 4 inches, and no less than 4 percent and no more than 12 percent passing the No. 200 sieve.

    Select Fill: Appropriate fill material as selected by the engineer of record for a specific application.

Backfill: Any native soil material from excavations. To be used in compacted lifts.

2.1.3 Material Ownership

Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

2.1.4 Submittals

Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

Submit all requirements under provisions of Section 1.1 – Drawings and Installation Data. Certification must be provided that Contractor's shoring methods conform to OSHA requirements and other applicable codes.

Drawing should include excavation quantities, limits of disturbances, disturbance area, and any other relevant information required by environmental assessment and restrictions.

2.1.5 Project Conditions

Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction **.**

2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

3. Do not proceed with performance of any Work on adjoining property until directed by Owner.

Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

2.2 Products

Soil Materials

Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM. AASHTO M 145 Soil Classification Groups A-1, A-2-4, A-2-5, and A-3, or a combination of these groups; free of rock or gravel larger than 6 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487. A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.

Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Section 4.4 "Earthwork."

1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

2.3 Execution

2.3.1 Preparation

Protect and maintain benchmarks and survey control points from disturbance during construction.

Locate and clearly flag trees and vegetation to remain or to be relocated.

Protect existing site improvements to prevent damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

2.4 Utilities

Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Owner's written permission.

2.5 Clearing and Grubbing

Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Excavate and remove topsoil in roadway and shoulder areas. Remove all stumps, roots, brush, and other objectionable material. All large boulders and tree stumps shall be removed and disposed of in an approved dump area. All organic materials shall be removed to a depth of two (2) feet below the subgrade of the roadway. Rocks and boulders shall also be removed to a depth of two (2) feet below the subgrade of the roadway.

Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

2.5.1 Topsoil Stripping

Remove sod and grass before stripping topsoil.

Strip topsoil to depth of 4" minimum (and where needed, additional material may need to be stripped).in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and non-soil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.

Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Limit height of topsoil stockpiles to 144 inches (3600 mm). Note that the stockpile height limit may be reduced to account for safety and visibility reasons.

2. Dispose of excess topsoil as specified for waste material disposal.

3. Stockpile surplus topsoil to allow for re-spreading deeper topsoil.

2.5.2 Disposal

Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

2.6 Erosion/Sedimentation Control

Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to the Storm Water Pollution Prevention Plan.

Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

2.7 Earthwork

2.7.1 General

This section includes Work and/or operations necessary to excavate, place, and compact materials, regardless of character and subsurface conditions, from the site or adjacent thereto and to import materials for use as fill, and to export unused or unsuitable material. This includes but is not limited to:

1. Excavation of foundations for structures or other facilities

2. Excavation for structures, roads, and slabs-on-grade

3. Excavation of materials for site improvements

4. Excavation of trenches for culverts and other utilities

5. Excavation of ditches and swales

6. Excavation of selected materials from the site and borrow material as specified

7. Construction of embankments

8. Placement of fill to raise the site elevation

9. Placing of select fill for structure, culverts, or other facilities

10. Placement of bedding and initial backfill for conduits, culverts, and other utilities

11. Backfilling trenches and depressions resulting from removal of obstructions or placement of underground facilities

12. Building perimeter backfill to subgrade elevations

13. Backfilling holes, pits, or other depression or low spots on the site

14. Removal and replacement of unsuitable material

15. Excavation and grading of roads, parking lots, and connections

16. Preparation of base material for the placing of other materials thereon

17. Fill for over excavation and unauthorized excavation

18. Import of fill required to raise the site or to replace unused or unsuitable material

19. Removal of excess, unused, or unsuitable materials, with approval of the Owner

Work shall be performed as shown on the plans and as outlined in this Specification. Whenever reference to finished grade is made, it shall be considered to be the finished surface of the completed Project.

Clearing and grubbing shall conform to General Notes shown on certain Submittals and Section 2.6.

2.7.1.1 Related Specifications

Cast-In-Place Concrete

2.7.2 Materials

Controlled Structural Fill (beneath O&M building and substation foundations). Submit imported material specification to Engineer for approval.

1. Controlled Structural Fill shall be processed on-site or imported fill and shall meet the following requirements:

    - Liquid limit of 30 or less

    - Plastic index of less than 15

- Free of organic matter
- Maximum particle size no greater than 4 inches
- No less than 4 percent and no more than 12 percent passing the No. 200 sieve

The above requirements shall be modified as approved by the geotechnical engineer and recommended in the geotechnical report.

2. Sand bedding or sand fill shall be free from clay or organic material, shall be suitable for the purpose intended, and shall be a uniformly graded, clean sand such that 90% to 100% will pass a ¼" sieve, and not more than 5% will pass the No. 200 sieve.

- Sand Bedding or Sand Fill (for cable trench). Submit imported material specifications to Engineers for approval

Gravel Surfacing (for parking areas). Submit imported material specification to Engineer for approval.

1. Material shall consist of hard, durable, clean sand, gravel, or crushed stone and shall be free from organic matter, clay balls, or other deleterious substances, and shall conform to the following grading:

SIEVE SIZE	% PASSING
1 inch	100
¾ inch	90-100
½ inch	60-85
3/8 inch	20-55
No. 4	0-15
No. 8	0-5

Gravel Surfacing (for use within substations, switchyards, and other areas where step-and-touch potential hazards exist to personnel). Submit imported material specification to Engineer for approval.

2. Uniformly graded crushed stone, crushed or screened gravel, that is hard, durable, and free from organic matter, clay balls, or other deleterious substances, with a minimum of 75% by weight having two or more fractured faces, and conforms to the following gradation:

SIEVE SIZE	% PASSING
1 1/2 inch	100%
1 1/4 inch	90-100%
1 inch	25-50%
3/4 inch	0-15%

No. 200	0-3%

3. Road Surfacing. Aggregate shall be composed of crushed rock. Road surfacing aggregate shall be free from organic matter and all other deleterious materials, including silt and clay balls. Submit material specification to Engineer for approval. Aggregate shall have a Liquid Limit of 30 max, Plasticity Index of 15 max, and conform to the following gradation:

SIEVE SIZE	% PASSING
6 inch	100%
3 inch	70-100%
No. 4	50 - 100%
No. 200	50 (max)%

Lean Concrete.

- Lean concrete shall consist of a fluid, workable mixture of sand, cement, and water yielding a minimum compressive strength of 2000 psi.

Topsoil

- Topsoil shall be surface soil native to the area that is capable of sustaining vigorous growth.
- Topsoil shall be generated from excavation within the top 12 inches of the original site grades.
- If soil capable of sustaining vigorous plant growth is not found on the site, topsoil may be required to be imported.

2.7.3 Execution

2.7.3.1 Field Measurement and Layout

Verify that survey benchmarks are accurate and are as indicated. Re-verify this information periodically, as necessary, to ensure the accuracy of the Work.

Contractor is responsible for necessary staking and engineering services to layout and control the Work to the elevations, lines, and dimensions shown on the plans.

2.7.3.2 Tolerances

Immediately prior to placement of subsequent material thereon, the grading plane shall be as follows:

1. For aggregate base or sub-base material, THE GRADING PLANE SHALL NOT VARY MORE THAN 0.1 feet above or below the established grade.

2. For all other areas that are to be hydroseeded, landscaped, or are to receive other surface treatment, the grading plane shall not vary more than 0.2 feet ABOVE OR BELOW THE ESTABLISHED GRADE.

3. In no case shall a variance from the designed grading plane allow for the ponding or collection of water.

4. For a trench to receive bedding material, the grade shall not vary more than 0.1 feet above or below the established grade. Any over-excavation within a trench shall be replaced with bedding material.

2.7.3.3 Protection of Existing Features

Contractor shall protect benchmarks, temporary facilities, existing structures, fences, and all other items during performance of the Work.

Contractor shall identify, flag, and protect all underground and aerial utilities.

2.7.3.4 Preparation

Site shall be cleared and grubbed as specified in the Site Clearing Specification.

Proof roll site with six overlapping passes of a heavy smooth drum vibratory compactor, a fully loaded water truck, or other heavy rubber tired equipment, operating at a speed not in excess of five miles per hour, after completion of clearing and grubbing. The type, size and weight of the proposed proof rolling equipment will be approved by the engineer prior to commencing any proof rolling activities. Any soft areas exhibiting weaving or any loose or unsatisfactory material shall be excavated and replaced with controlled structural backfill or aggregate fill in accordance with this Specification. Proof rolling will be completed to the satisfaction of the Engineer.

All areas to receive fill, shallow footings, mats, slabs on grade, or pavement, shall be scarified to a depth of 6 inches, moisture conditioned, and compacted prior to fill being placed. In confined areas, compact with six overlapping passes of a walk-behind mechanical compactor.

2.8 Excavation and Backfill

2.8.1 General Excavation

Take special precautions as required preserving condition and integrity of any existing structures.

Excavate subsoil required to accommodate building foundations, slabs on grade, and paving.

Grade top perimeter of all excavations to prevent surface water from draining into excavation.

Use precaution during final excavation to subgrade level to prevent disturbance and remolding of subgrade material. Hand trim excavation as required. Remove loose material.

Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard measured by volume.

Notify the Engineer of unexpected subsurface conditions or hazardous materials encountered, and discontinue affected Work in area until notified to resume Work.

Correct unauthorized excavation to bring it to original condition or better.

Correct areas over-excavated by error in accordance with General Fill Section of this Specification.

It is the Contractor's responsibility to comply with applicable state and federal regulations on excavation, shoring, and trenching.

2.8.2 General Fill

Fill in areas to contours and elevations with unfrozen materials. Do not place fill over porous, wet, frozen, or soft subgrade surfaces.

Controlled Structural Fill: Place and compact controlled structural backfill material, as outlined below, in uniform, continuous loose layers not exceeding 8 inches in depth. Compact to 95 percent maximum dry density per ASTM D1557.

Gravel Surfacing: Place and compact materials in continuous layers not exceeding 8 inches loose depth. Compact each layer with a minimum of two passes of a vibratory compactor or other Engineer approved compaction methods. Compaction tests are not required for this material; however, the suitability of compaction will be determined by the Engineer through visual inspection during compaction.

Road Surfacing: Place and compact granular base materials on the compacted and proof rolled subgrade in continuous layers not exceeding 6 inches in loose depth. Compact each layer in accordance with these Specifications.

Sand Bedding and Sand Fill: Compaction of sand bedding and fill in the cable trench is required only where the trench crosses a road. In roadways, place and compact materials in continuous layers not exceeding 8 inches in loose depth. Compact each layer to 95 percent maximum dry density per ASTM D1557. Compaction testing shall be according to Section 2.8.7 Field Quality Control below.

Topsoil generated during earthwork shall be stockpiled in a location selected by the Contractor and approved by the Owner for use during landscaping.

Maintain moisture content within 2 to 3 percent above optimum of all fill material to attain required compaction density.

Do not mix fill types beneath foundations.

If subgrade material or previously placed subsoil fill has deteriorated due to weather exposure, scarify the top 2 inches of material to establish an interface acceptable to the Engineer prior to placing any additional fill.

Slope grades away from buildings a minimum of 6 inches in 10 feet, unless noted otherwise. Grade site to promote drainage for surfaces that are to remain exposed for an extended period of time to prevent water accumulation and subsequent softening.

Make grade changes gradual. Blend slope into level areas and match existing paving that will remain.

Remove surplus fill materials from site or dispose of in designated disposal areas. Contractor shall make all arrangements and pay all costs involved for the disposal of excess material. Contractor shall obtain Owner's approval before removing surplus material from site.

Fill for over-excavation, removal of unsuitable, or unauthorized excavation shall be controlled structural backfill, placed in accordance with these Specifications for all excavations except the Turbine foundations.

Fill for over-excavation beneath Turbine foundations shall be lean concrete.

Embankments shall be constructed so that each layer shall have a cross fall not greater than 1 foot in 20 feet.

Filling of areas under roads, buildings, or structural foundations shall be of controlled structural backfill.

All areas to receive fill, shallow footings, mats, slabs on grade, or pavement, shall be scarified to a depth of 6 inches, moisture conditioned, and compacted to at least 95 percent maximum dry density per ASTM 1557 prior to fill being placed. In confined areas compact with six overlapping passes of a walk-behind mechanical compactor.

All completed fill surfaces shall be proof rolled as per this Specification. Proof rolling shall be completed to the satisfaction of the Engineer immediately prior to placement of subsequent materials or layers.

The specified compaction layer thickness noted above shall be reduced to one-half of the specified value when using walk-behind compactors weighing less than 2,000 pounds.

Subgrade should be sloped to provide rapid surface drainage during and after construction. Surface drainage features such as broad-dips, grade breaks, crown and side-slope shall be incorporated into the design. Culverts shall be installed under roadway where required to prevent damming or water flow over surface of road. Culverts shall be sized for predicted flow based on local rainfall intensity data and topography.

2.8.3 Excavation of Trenches

Excavate subsoil required for connection of underground utilities.

Cut trenches sufficiently wide to enable installation of utilities, placement of initial backfill under haunches, and to allow for inspection. Maximum clear width of trench at the top of the utility shall not be more than utility O.D. plus 2 feet.

Excavation shall not interfere with normal 45-degree bearing splay of foundations.

Remove rocks to a minimum clearance of 8 inches around the bottom and sides of cable, conduit, and duct.

Hand trim excavation. Remove loose matter.

Keep trenches dewatered.

Correct unauthorized excavation in accordance with General Fill Section of this Specification.

Correct areas over-excavated by error in accordance with General Fill Section of this Specification.

Stockpile excavated material in area designated on site. Remove surplus excavated materials from site, or dispose of in designated areas.

It is the Contractor's responsibility to comply with all regulations on excavations, shoring, and trenching.

Notify the Engineer of unexpected subsurface conditions or hazardous materials encountered, and discontinue affected Work in area until notified to resume Work.

2.8.4 Backfill of Trenches

Backfill trenches to proper contours and elevations with unfrozen materials.

Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

Sheeting and bracing may not be left in place unless written permission has been received from the Engineer.

Employ a backfill placement and compaction method that does not disturb or damage underground facilities in the trench.

Maintain material at a moisture content 2 to 3 percent above optimum to attain required compaction density.

Backfill all trenches with natural backfill (free of stones that are 3" or larger or angular and sharp), after completion of bedding and initial backfill. Place backfill in continuous layers and compact to 85 percent maximum dry density per ASTM 1557.

The specified compaction layer thickness noted above shall be reduced to one-half of the specified value when using walk behind compactors weighing less than 2,000 pounds.

Backfill of trenches shall be by mechanical methods. Jetting will not be allowed.

Backfill with cement slurry may be used upon approval of Engineer.

2.8.5 Bedding and Initial Backfill of Trenches

Bedding for direct bury electrical cable shall be sand bedding unless shown differently on the plans.

Bedding for manholes and structures associated with the cable shall be of the same material as used on the pipeline. Lean concrete may be used upon approval of Engineer.

Bedding shall provide continuous support for cable or pipe between joints.

Bedding must be placed prior to placement of cable, conduit or pipe and initial backfill around the utility.

Initial backfill of trenches is defined as a minimum of 6 inches and a maximum of 12 inches of fill over the top of the cable, pipe or conduit unless shown differently on the plans. Underground structures and manholes shall be backfilled with controlled structural fill, bedding material, or lean concrete.

Concrete vibrator shall be used to properly consolidate lean concrete. Allow 24 hours minimum cure time for concrete or cement slurry prior to backfilling.

Where the cable trench crosses a roadway, backfill underneath haunches and around sides up to 12 inches over the top of utility with the same material as the bedding. Sand bedding shall be placed in 8-inch lifts and compacted to 95% maximum dry density (ASTM 1557) at 2 to 3 percent above optimum moisture content. Place remaining backfill in continuous layers not exceeding 8 inches compacted depth and compact to 95% maximum dry density (ASTM 1557) at 2 to 3 percent above optimum moisture content.

Sand Bedding and Sand Fill for Bedding and Initial Backfill: Place and compact materials in continuous layers not exceeding 8 inches in loose depth. Compact each layer to 95 percent modified Proctor density (ASTM D1557). Compaction testing shall be according to the items below. Where compaction and subsequent testing is impractical (for sand fill around conduits or pipe), jetting combined with vibration may be used for consolidation of the sand fill if approved by the Engineer.

2.8.6 Protection

Protect finished Work until the subsequent improvements are complete.

Protect excavations from cave-ins or collapse of loose soil.

Repair, refinish, and re-compact areas disturbed by vehicle traffic, weather, or other occurrences.

Prevent surface water from entering excavations.

Remove water that enters excavations and submit methods for approval by Engineer prior to dewatering.

It is the Contractor's responsibility to comply with applicable rules and regulations in protecting open excavations.

Protect soil adjacent to and beneath existing foundations from freezing.

2.8.7 Field Quality Control

Site Tests, Inspection

1. Samples: Submit a 25-pound sample of each type of fill for every 1,000 cubic yards of material to the testing laboratory in airtight containers. For each type of fill to be used, one moisture-density curve (ASTM D1557), a sieve analysis, and Atterberg limit tests (liquid limit, plastic limit and plasticity index according to ASTM D4318) shall be performed. The results of the tests shall be submitted to the Engineer for approval prior to delivery.

2. Compaction testing will be performed in accordance with ASTM D2922 and this Specification.

3. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

4. Frequency of Tests: For Controlled Structural Fill perform at least one compaction test per 200 linear feet and one per 5,000 square feet per lift, unless otherwise noted by the Engineer. Minimum two tests per lift.

5. Frequency of Tests: For Sand Bedding (Cable Trench) perform a minimum of one test at each cable trench roadway crossing unless otherwise advised by Project Engineer.

6. Compaction shall continue until the materials meet the densities specified herein. Blading and compacting shall be done alternatively, as necessary, to obtain a smooth, even, and uniformly compacted course.

7. The final surface should be smooth and uniform and should conform to the required cross section and established grade.

8. Provide for inspection and testing of all bearing surfaces (foundations, slabs, roadways, trench bottom, etc.) by the Geotechnical Engineer. No facilities may be placed until the surface has been approved by the Engineer.

2.9 Revegetation

2.9.1 General

Revegetation shall be conducted for all disturbed areas. Late fall seeding is most successful and shall normally be required. Revegetation will usually be accomplished during September or October.

2.9.2 Seed Mix

The seed mix shall be determined by Owner and shall be provided and applied by the Contractor in accordance with the specific instructions and techniques recommended by the supplier.

All seed used shall meet all requirements of the federal and state seed and noxious weed laws. Evidence of seed certification shall be furnished by the Contractor. All leguminous seed shall be inoculated with approved cultures in accordance with the manufacturer's instructions.

2.9.3 Seed Application

Contractor shall apply seed and fertilizer uniformly on the designated areas. No seed, fertilizer, or mulch shall be applied when wind velocities prevent uniform application of the material. Engineer shall witness all seeding.

Contractor shall file a notice with the Engineer when such planting is complete. The notice shall contain information regarding location of the area, type of planting or seeding (including mixtures and amounts), date(s) of planting, and other relevant information.

2.9.4 Inspection and Evaluation

Inspection and evaluation of revegetation shall be made by Owner after completion of the first growing season, with further evaluation during the following growing season. If rehabilitation measures as listed above fail to become established in two growing seasons due to inadequate reseeding techniques or drought conditions, the Contractor shall be required to reseed the previously treated area. At the end of the two-year period following the second seeding the Contractor shall be relieved of further responsibility.

2.10 Access Roads/Public Road Improvements

2.10.1 Roadways, Permanent Access

Contractor shall construct roadways according to these Specifications and specific requirements provided by the Turbine Supplier that will meet their requirements for Turbine component delivery. The road will be cleared and graded to minimum 36’ wide to allow for crane walking between Turbine sites (16’ will be permanent with base course cover, other sides will be covered with overburden and reseeded prior to Final Completion.)

Contractor is responsible for maintaining access roads throughout the term of the Agreement. Prior to Final Completion, access roads will be subject to proof rolling and inspection by the Owner/Engineer. Soft or unacceptable areas will require over-excavation and backfill with controlled structural backfill per the Specifications.

2.10.2 Existing Roads

Contractor shall utilize existing roads where possible to minimize clearing and grubbing Work. The Work will include sub-grading, drainage, maintenance, and reclamation and re-tolerance of the roads.

2.11 Crane Pads

Crane pads shall be constructed in accordance with the drawings per Turbine Supplier Specifications. Recommendations provided in the Geotechnical Evaluation will outline the site specific criteria to be utilized to obtain the necessary bearing capacity.

2.12 Fences and Gates

Contractor shall repair any damage to existing fences and gates that occurs during performance of the Work.

Contractor shall provide permanent access gates in locations where roads must be constructed through existing fencing. Livestock will be handled per Owner and/or Landowner instructions. Contractor may, subject to landowner approval, provide permanent or temporary cattle guards in lieu of gates on access roads subject to significant construction traffic.

2.13 Signage

Main entrances shall be adequately signed to direct all traffic to designated construction and field offices for sign in.

The Contractor shall provide a 1’ x 1’ metal sign at each Turbine driveway location indicating Turbine number.

END OF ROADWORKS & CIVIL

3 ATTACHMENT A

3.1 Description of Project

A	Description of Project:						
B.	Environmental Conditions						
	1. Design Temperature Range (^{O}F)	min	-20	to	110	max	
	2. Wind Velocity					mph	
	3. Design Ice Loading					in. radial	
	4. Avg. Annual Rain Fall					in.	
	5. Avg. Annual Snow Fall					in.	
	6. Seismic Zone						
	7. Elevation above Mean Sea Level					ft.	
C.	Drawing Requirements						
	1. Drawing Software	AutoCAD					
	2. Drawing Size	24x36					
	3. Drawing Standards						
	4. Copies for Preliminary Review	4					
	5. Copies for 90% Review	4					
	6. Copies for Construction	4					
	7. Final Record Drawings	2 Sets & Electronic File					

Attachment Wetland-1

Revised Wetland Delineation Report

TETRA TECH

Memo

To:	Amy Moon, EFSEC; Lori White, Ecology
Cc:	Dave Kobus, Scout Clean Energy
From:	Jessica Taylor, Tetra Tech; Linnea Fossum, Tetra Tech
Date:	Thursday, August 12, 2021
Subject:	Amendments to the Wetlands and Other Waters Delineation Report for the Horse Heaven Wind Farm Project

This memo serves as a cover sheet to the amended Wetlands and Other Waters Delineation Report for the Horse Heaven Wind Farm Project and details the changes that have been made as a result of surveys completed in May 2021 where access had not previously been granted. The Washington Department of Ecology requested that the report be amended to include wetland E10, found outside the Project survey area, and the field delineated streamlines for the streams on Washington Department of Natural Resources land that had previously been inaccessible. The following table lists the amendments made to the original Wetlands and Other Waters Delineation Report for the Horse Heaven Wind Farm Project.

Item	Description	Page Number and Location
1	Added precipitation data for May 2021 site visit	Pages 4 and 5, Section 4.5 and Table 3
2	Added dates of surveys to Section 5.2 Field Work	Page 6, Section 5.2
3	Added wetland "E10" descriptions to Section 6, Figure A-4, and data sheets in Appendix B.	Page 7, Section 6.1; Figure A-4 Map 11; Appendix B
4	Ephemeral drainages EPH900, EPH901, EPH902, EPH904, and EPH905 were originally digitized using orthoimagery due to lack of access to those parcels. These features were surveyed in the field in May when access to those parcels was obtained. The last paragraph in Section 5.2.2 detailing the desktop delineation method has been removed.	Page 7, Section 5.2.2
5	Desktop delineated streams EPH901 and EPH902 were found to not actually have bed or banks during field surveys. Both features were swale features. These features have been removed from the table of non-wetland features and figures.	Page 7, Table 4; Figure A-4, Maps 3 and 8
6	Figure A-4 has been updated to show field delineated streamlines for EPH900, EPH904, and EPH905.	EPH900 – Figure A-4, Map 8; EPH904, and EPH905 – Figure A-4, Map 11

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Wetlands and Other Waters Delineation Report for the Horse Heaven Wind Farm Project

Submitted by
Horse Heaven Wind Farm, LLC

Prepared by

TETRA TECH

December 2020
Amended August 2021

CONTENTS

LIST OF TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

AW Supplement	*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West* (Version 2.0)
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
LRR	Land Resource Region
NHD	National Hydrography Dataset
NI	No Indicator
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
Project	Horse Heaven Wind Farm Project
SDAM	Streamflow Duration Assessment Method for the Pacific Northwest
Tetra Tech	Tetra Tech, Inc.
the Manual	Wetlands Delineation Manual, Technical Report Y-87-1
UPL	Upland
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
WETS	Climate Analysis for Wetlands Tables

1 INTRODUCTION

An approximately 21,680-acre area was surveyed for wetlands and other waters as part of the reporting for the proposed Horse Heaven Wind Farm Project (Project) in Benton County. The Project is a commercial wind and solar project with a nominal nameplate energy generating capacity of up to 1,150 megawatts proposed by Scout Clean Energy and located in Benton County, Washington. Tetra Tech, Inc. employed two staff experienced in conducting wetland delineations in the Arid West region of the United States. The surveys were completed in pairs with senior staff supervising junior staff. The staff included:

- Jessica Taylor, Wetland Scientist, who has over 15 years of experience conducting wetland and other waters of the U.S. assessments in the Pacific Northwest; and
- Katie Pyne, Biologist, who has 2 years of experience conducting wetland and other waters of the U.S. assessments in the Pacific Northwest.

2 LANDSCAPE SETTING AND LAND USE

2.1 Project Study Area

The Project study area encompasses 21,680 acres of mostly dryland agricultural crops and private homes (Figure A-1). This area receives between 6 and 8 inches of precipitation annually and includes no irrigated crops. Agricultural crops are winter wheat followed by a chemical fallow rotation. Grazing does occur on the stubble left behind after wheat harvest and on the lands where cropping is not feasible.

2.2 Landscape Setting

The Project is located within the Level III Columbia Plateau Ecoregion, and within the further subdivided Level IV, Yakima Folds Ecoregion (Thorson et al. 2003). In addition, the Project is within U.S. Department of Agriculture (USDA) Land Resource Region (LRR) B, Northwestern Wheat and Range Region (NRCS 2006). LRR B, Northwestern Wheat and Range Region, overlaps within the Project study area with LRR B Columbia/Snake River Plateau Region in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0; U.S. Army Corps of Engineers [USACE] 2008) (AW Supplement).

Plant species names and associated wetland indicator status ratings are from the State of Washington 2016 Wetland Plant List (Lichvar et al. 2016). The following wetland indicator ratings are ordered according to the percent likelihood, from most likely to least likely, of the plant occurring in wetlands: Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), and Upland (UPL). Species with an indicator of NI (No Indicator) refers to plants that are not listed in the wetland plant list and are thereby considered to be upland plants.

Woody vegetation commonly observed in the Project study area included big sagebrush (*Artemisia tridentata,* UPL), yellow rabbitbrush (*Chrysothamnus viscidiflorus,* UPL), and rubber rabbitbrush (*Ericameria nauseosa,* UPL).

Herbaceous species documented in upland areas included intermediate wheatgrass (*Agropyron intermedium,* UPL), bluebunch wheatgrass (*Pseudoroegneria spicata,* UPL), medusahead grass (*Taeniatherum caput-medusae,* UPL), bulbous bluegrass (*Poa bulbosa,* UPL), Idaho fescue (*Festuca idahoensis,* FACU), common yarrow (*Achillea millefolium,* FACU), tall fescue (*Schedonorus*

arundinaceus, FAC), lupine (*Lupinus* sp., UPL), nineleaf biscuit-root (*Lomatium triternatum,* UPL), and yellow salsify (*Tragapogon dubius,* UPL).

The Washington State Department of Ecology requests information of priority habitats and species from the Washington Department of Fish and Wildlife. Surveys for specialized habitats and species are being assessed as part of separate reports in support of this Project and can be made available as requested.

2.3 National Wetlands Inventory and Natural Resources Conservation Service Soils

Prior to field work, Tetra Tech reviewed the National Wetlands Inventory (NWI), Natural Resource Conservation Service (NRCS) hydric soils data, and aerial photographs to identify potential wetlands and other waters, as described below.

2.3.1 National Wetlands Inventory Data

Desktop review of NWI data identified no wetlands within the Project study area. Figure A-2 of Appendix A shows the National Hydrography Dataset (NHD) map layered over the Project study area.

2.3.2 NRCS Hydric Soils Data

Nineteen soil map units are mapped in the Project study area (Table 1, and Figure A-3 [NRCS 2020]). The dominant soil in the Project study area is Ritzville silt loam, with 0 to 5 percent slopes covering 85.6 percent of the Project study area. There are no soils in the Project study area that are considered hydric soils.

Table 1. Soils Mapped in the Project Study Area[1]

Map Symbol	Unit Name	Hydric Soil Y/N	Acres	Percent of Project Study Area
BmAB	Burke silt loam, 0 to 5 percent slopes	No	59.1	0.3%
EfB	Ellisforde silt loam, 0 to 5 percent slopes	No	105.5	0.5%
EfE3	Ellisforde silt loam, 15 to 30 percent slopes, severely eroded	No	18	0.1%
EsB	Esquatzel fine sandy loam, 0 to 5 percent slopes	No	10.7	0.0%
EuAB	Esquatzel silt loam, 0 to 5 percent slopes	No	4	0.0%
FeC	Finley fine sandy loam, 0 to 15 percent slopes	No	10	0.0%
KnE	Kiona very stony silt loam, 0 to 30 percent slopes	No	47.3	0.2%
KnF	Kiona very stony silt loam, 30 to 65 percent slopes	No	41.3	0.2%
ReB	Ritzville silt loam, 0 to 5 percent slopes	No	18,547.5	85.6%
ReE3	Ritzville silt loam, 15 to 30 percent slopes, severely eroded	No	1,347.5	6.2%
ReF	Ritzville silt loam, 30 to 65 percent slopes	No	621	2.9%
RfD2	Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded	No	502.4	2.3%
ShAB	Shano silt loam, 0 to 5 percent slopes	No	112.5	0.5%
ShE3	Shano silt loam, 15 to 30 percent slopes, severely eroded	No	66.5	0.3%
ShF	Shano silt loam, 30 to 65 percent slopes	No	31.6	0.1%
SnD2	Shano very fine sandy loam, 0 to 15 percent slopes, eroded	No	20.9	0.1%
WdF	Warden silt loam, 30 to 65 percent slopes	No	26.7	0.1%

Map Symbol	Unit Name	Hydric Soil Y/N	Acres	Percent of Project Study Area
WsB	Willis silt loam, 0 to 5 percent slopes	No	55.8	0.3%
WsE3	Willis silt loam, 15 to 30 percent slopes, severely eroded	No	50.9	0.2%

[1] NRCS 2020a

3 SITE ALTERATIONS

Site alterations are those activities that directly or indirectly impact wetlands and other waters such that the function or area of the feature changes significantly. A significant alteration would be one that renders the feature non-functioning, or one that changes the boundaries. Land use in the Project study area is generally dominated by agricultural activities including wheat farming and open range grazing. Tillage practices are changing across the region, and the conversion to reduced till and no-till methods of farming has decreased the amount of overland flow and increased the infiltration rates on site. The alterations associated with these practices may have affected the geographic size and/or the hydroperiod of wetlands and other waters. Some waters that were delineated in the study area are likely to have had historically higher flows due to runoff from the farmed fields that would not be present with the new farming practices.

4 PRECIPITATION DATA AND ANALYSIS

Average historical monthly precipitation data and daily precipitation data for the periods preceding and during field work were obtained from the National Oceanic and Atmospheric Administration's National Weather Service (NOAA 2020; Table 2). The closest geographical location with an NRCS WETS table is for Kennewick, Washington (NRCS 2020b).

The annual precipitation before the 2020 surveys was 90 percent of normal and the annual precipitation before the 2021 surveys was 65 percent of normal. Based on the precipitation data for the 3 months preceding the site visits in 2020, it was estimated that groundwater was about average for what is usually encountered at that time of year (Table 2). Based on the precipitation data for the 3 months preceding the site visits in 2021, it was estimated that groundwater was below average for what is usually encountered at this time of year (Table 3).

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

4.1 February 2020 Site Visits

Field surveys for wetlands and other waters were conducted from February 19th to 23rd, 2020. There was no measurable precipitation in the 10 days preceding field work, and on the final day of field data collection the month-to-date precipitation for February was 42 percent of normal. Monthly precipitation totals for November and December were well below average while January was just under average.

4.2 August 2020 Site Visits

Field surveys for wetlands and other waters were conducted on August 26th and 27th, 2020. There was 0.01 inch of measurable precipitation within the 10 days preceding field work, and the total amount precipitation for August was 65 percent of normal. Precipitation was lower than normal in July and August; however, May and June were well above normal precipitation rates.

4.3 October 2020 Site Visits

Field surveys for wetlands and other waters were conducted on October 19th and 20th, 2020. There was 0.19 inches of measurable precipitation within the 10 days preceding field work, and the total amount precipitation for October was only 43 percent of normal. Precipitation was lower than normal in August and September as well.

4.4 November 2020 Site Visit

Field surveys for wetlands and other waters were conducted on November 30th, 2020. There was 0.06 inches of measurable precipitation within the 10 days preceding field work, and the total amount of precipitation for November was 143 percent of normal. Precipitation was lower than normal in September and October.

4.5 May 2021 Site Visit

Field surveys for wetlands and other waters were conducted on May 11th, 2021. There was 0.01 inches of measurable precipitation within the 10 days preceding field work, and the total amount of precipitation for April was 0 percent of normal. December and February had higher than average amounts of rainfall. March was much drier than the average at 17 percent of normal and only a trace of rain fell in April compared to the 0.53 average inches.

Table 2. Precipitation Data – Water Year 2019 to 2020: Current and Historical (Inches)

Precipitation Data Source	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sept 2020	Oct 2020	Nov 2020	Annual Total to Date (November 2020)
Recorded Monthly Precipitation Totals (inches) (Pasco, WA)	0.48	0.18	0.47	1.00	0.32	0.49	0.19	1.08	0.55	0.04	0.17	0.05	0.27	1.32	7.13
WETS Accumulated Monthly Averages (inches) (Kennewick, WA)	0.60	0.92	1.15	1.07	0.76	0.71	0.53	0.74	0.50	0.18	0.26	0.33	0.60	0.92	7.89
Recorded Precipitation Relative to Average Monthly Precipitation (Kennewick, WA)	80%	20%	41%	93%	42%	69%	36%	146%	110%	22%	65%	15%	43%	143%	90%

Table 3. Precipitation Data – Water Year 2020 to 2021: Current and Historical (Inches)

Precipitation Data Source	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Annual Total to Date (May 2021)
Recorded Monthly Precipitation Totals (inches) (Pasco, WA)	0.48	0.18	1.17	0.54	1.84	0.12	0	0.04	4.24
WETS Accumulated Monthly Averages (inches) (Kennewick, WA)	0.60	0.92	1.15	1.07	0.76	0.71	0.53	0.74	6.49
Recorded Precipitation Relative to Average Monthly Precipitation (Kennewick, WA)	80%	20%	102%	50%	242%	17%	0%	5%	65%

5 METHODS

5.1 Pre-field Work

In preparation for the field work, Tetra Tech reviewed NWI, NHD (USGS 2020), hydric soils data, and aerial photographs to identify potential wetlands and other waters, as described in the preceding sections. Tetra Tech prepared digital field maps with these data and uploaded these maps onto a Samsung Android data collection tablet to assist field staff in identifying the locations of probable wetlands and non-wetland waters within or adjacent to the Project study area.

Wetlands and surface water data were obtained from NWI (NWI 2020). Soils data were obtained from the NRCS Web Soil Survey (NRCS 2020a). Tetra Tech used high-resolution Google Earth Pro historical imagery to identify potential wetland areas (Google Earth 2020). Tetra Tech also reviewed the Washington Natural Heritage Program for high-quality wetlands in or near the Project study area (Heritage Program 2018). No high-quality wetlands were present in the Project study area.

The following guidance documents and procedures were reviewed:

- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West* (Version 2.0) (USACE 2008);
- *Wetlands Delineation Manual,* Technical Report Y-87-1 (the Manual) (USACE 1987);
- Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015); and
- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979).

5.2 Field Work

Field investigations for the delineation of wetlands and other waters included pedestrian surveys within the Project study area. Tetra Tech conducted the field delineation on February 19th through February 23rd, 2020 with follow-ups on August 26th and 27th, October 19th and 20th, and November 30th, 2020; and another follow-up visit on May 11th, 2021. The desktop wetland data were used to focus the wetland delineations, while the desktop surface water data were used to focus the non-wetlands water evaluation as necessary.

5.2.1 Wetland Delineations

Wetland presence was determined as per methods in the Manual and the AW Supplement. Two sample sites were investigated at representative low elevations within the Project study area (see Appendix B for USACE data sheets for each site). Wetland indicator status for plants was determined using the State of Washington 2016 Wetland Plant List (Lichvar et al. 2016). No wetland indicators were found at any of the low elevation sites on the landscape nor were they found within the ephemeral streambeds.

5.2.2 Non-wetland Waters Evaluations

Non-wetland waters evaluated using the following criteria.

- Flow duration for non-wetland waters was determined using SDAM (Nadeau 2015). Details on mapping methods are presented in Section 8.0.
- The centerline of non-wetland waters less than 6 feet in width was recorded as a line feature and buffered to the stream width determined in the field.

- Photographs were taken to document streams, ditches, and upland conditions at locations that NHD mapped as streams (Appendix C, Photolog).
- As water flows downstream, sites with upland conditions and lack of bed and banks were used to determine that the same conditions exist for sites uphill within the same drainage.

6 DESCRIPTION OF WETLANDS AND OTHER WATERS

All wetlands, non-wetland waters, and roadside drainage ditches evaluated in the Project study area are depicted in the Figure A-4 mapbook.

6.1 Wetlands

There are no wetlands within the Project study area, however, one wetland was identified outside of the Project study area. This wetland (E10) was surveyed at the request of the Department of Ecology. It lies approximately 240 feet west of the Project study area boundary. Figure A-4, Map 11 shows the location of the wetland in relation to the Project study area and the USACE data sheets are located in Appendix B. Photos of the site are in the photolog in Appendix C, pages C-98 and C-99.

6.2 Non-Wetland Waters

Thirty-one ephemeral streams and two intermittent streams were delineated within the Project study area. Table 3 below contains the acres of streams delineated within the larger Project area and is not limited to the stream segments that are present within the micrositing corridor. Stream acreage was determined by multiplying the average stream width by the length of the segment within the Project study area.

Table 4. Non-wetland Waters

Feature Name	Feature Type	Acres
EPH100	Ephemeral Stream	0.07
EPH101	Ephemeral Stream	0.00
EPH102	Ephemeral Stream	0.06
EPH104	Ephemeral Stream	0.15
EPH105	Ephemeral Stream	0.03
EPH200	Ephemeral Stream	0.02
EPH202	Ephemeral Stream	0.02
EPH203	Ephemeral Stream	0.03
EPH205	Ephemeral Stream	0.04
EPH206	Ephemeral Stream	0.02
EPH300	Ephemeral Stream	0.05
EPH301	Ephemeral Stream	0.02
EPH302	Ephemeral Stream	0.03
EPH303	Ephemeral Stream	0.04
EPH305	Ephemeral Stream	0.02
EPH306	Ephemeral Stream	0.09
EPH307	Ephemeral Stream	0.11
EPH308	Ephemeral Stream	0.03
EPH400	Ephemeral Stream	0.08
EPH401	Ephemeral Stream	0.46
EPH411	Ephemeral Stream	0.11
EPH413	Ephemeral Stream	0.07
EPH500	Ephemeral Stream	0.03
EPH501	Ephemeral Stream	0.04
EPH600	Ephemeral Stream	0.04
EPH602	Ephemeral Stream	0.07
EPH700	Ephemeral Stream	0.43
EPH800	Ephemeral Stream	0.15
EPH900	Ephemeral Stream	0.17
EPH904	Ephemeral Stream	0.01
EPH905	Ephemeral Stream	0.00
INT01	Intermittent Stream	0.02
INT02	Intermittent Stream	0.02
Grand Total		**2.56**

7 DEVIATION FROM NWI

The NWI showed no wetlands in the Project study area. Field surveys found one wetland outside of the Project study area.

8 MAPPING METHODS

Photograph and sample plot locations were recorded using a Samsung tablet equipped with ArcGIS Field Collector software and the Juniper Geode series GPS unit. This unit streams raw satellite data configured to differentially correct positions in real time using the Satellite Based Augmentation System, which typically results in positional error of less than 1 meter. Photopoints are shown in Figures A-2, A-3, and A-4, and photos are provided in Appendix C.

9 RESULTS AND CONCLUSIONS

Using methods recommended in the USACE Manual and Arid West Supplement, no wetlands were found in the Project study area and one wetland was found within 300 feet of the Project study area. Two intermittent streams and 31 ephemeral streams were documented within the Project study area.

10 REFERENCES

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APPENDIX A
FIGURES

Horse Heaven Wind Project

SCOUT CLEAN ENERGY

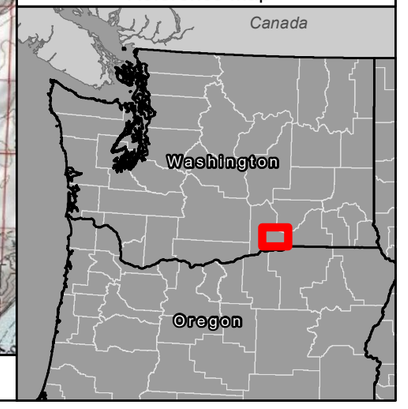
Figure A-1
Project Study Area

BENTON COUNTY, WA

Project Study Area

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map 1 of 11

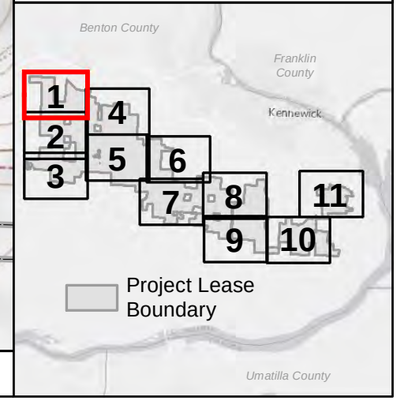
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map 2 of 11

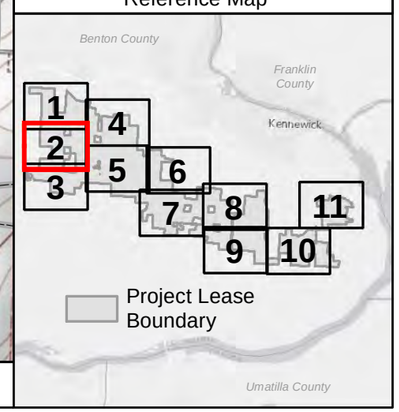
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map 3 of 11

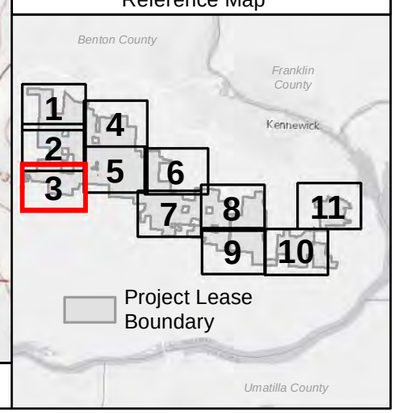
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map 4 of 11

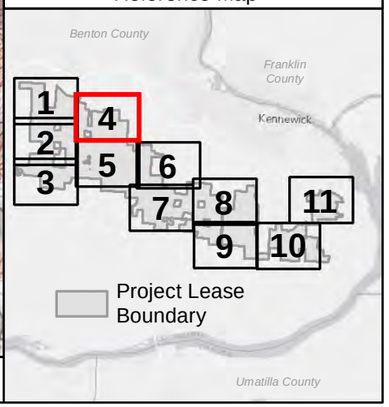
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map 5 of 11

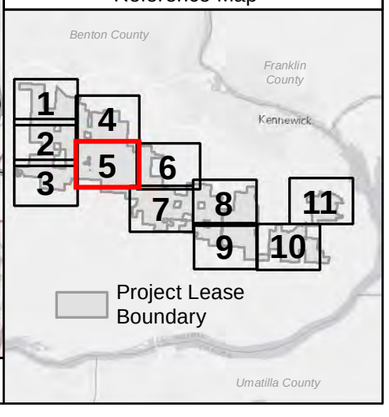
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map 6 of 11

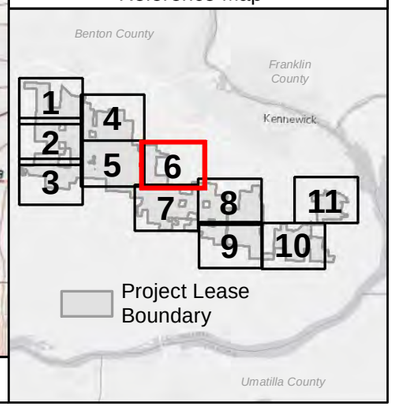
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map 7 of 11

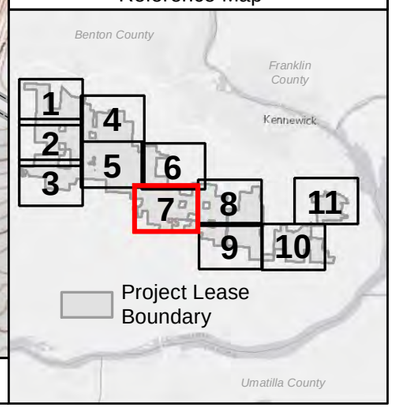
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map 8 of 11

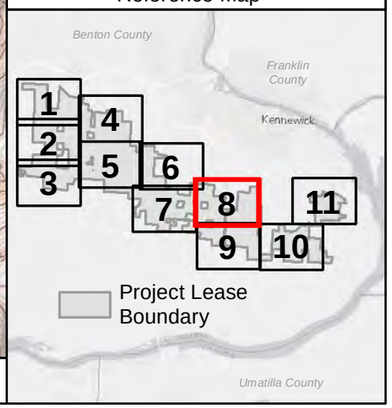
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map 9 of 11

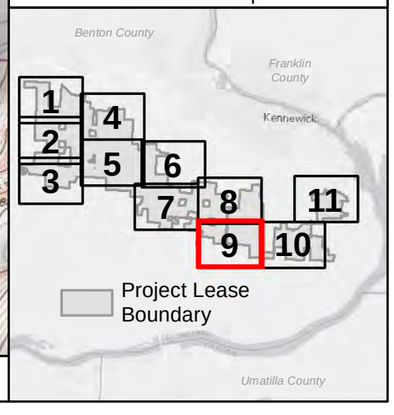
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map10 of 11

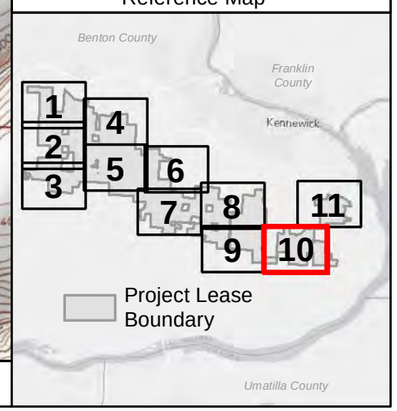
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-2
Project Study Area NHD
Map11 of 11

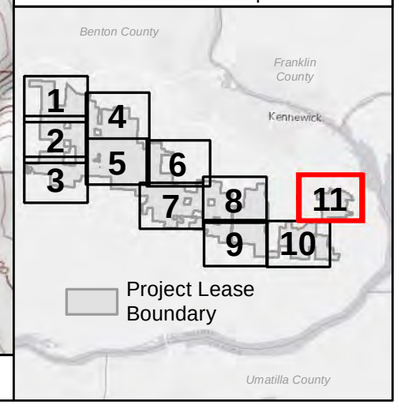
BENTON COUNTY, WA

Project Study Area Boundary

NHD Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils
Map 1 of 11

BENTON COUNTY, WA

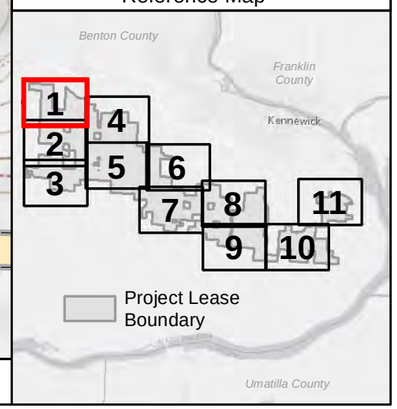
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- FeC: Finley fine sandy loam, 0 to 15 percent slopes
- KnE: Kiona very stony silt loam, 0 to 30 percent slopes
- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ReF: Ritzville silt loam, 30 to 65 percent slopes
- RfD2: Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded
- WsB: Willis silt loam, 0 to 5 percent slopes

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils
Map 2 of 11

BENTON COUNTY, WA

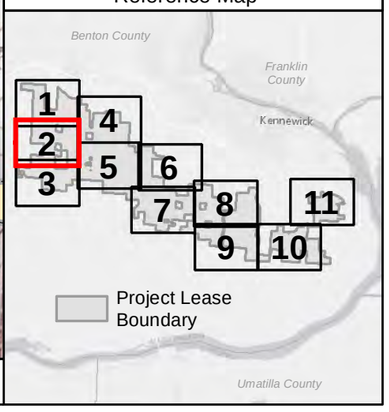
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- FeC: Finley fine sandy loam, 0 to 15 percent slopes
- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- RfD2: Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils
Map 3 of 11

BENTON COUNTY, WA

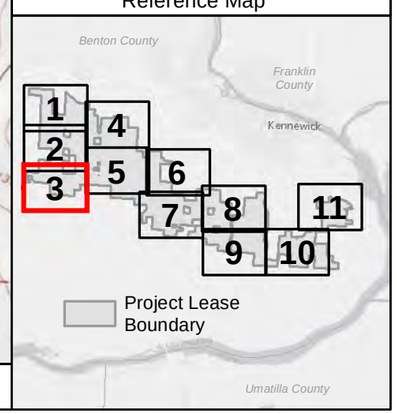
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- FeC: Finley fine sandy loam, 0 to 15 percent slopes
- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ShAB: Shano silt loam, 0 to 5 percent slopes
- ShE3: Shano silt loam, 15 to 30 percent slopes, severely eroded
- WsB: Willis silt loam, 0 to 5 percent slopes

TETRA TECH

Reference Map



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0 0.25 0.5 1 Miles

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils
Map 4 of 11

BENTON COUNTY, WA

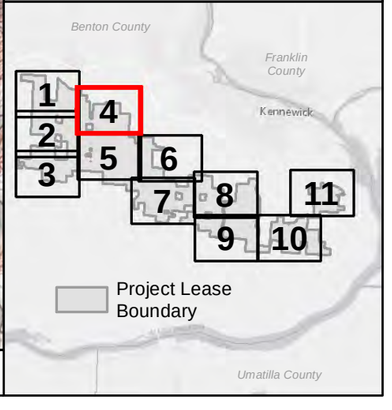
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- EfB: Ellisforde silt loam, 0 to 5 percent slopes
- EfE3: Ellisforde silt loam, 15 to 30 percent slopes, severely eroded
- KnE: Kiona very stony silt loam, 0 to 30 percent slopes
- KnF: Kiona very stony silt loam, 30 to 65 percent slopes
- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ReF: Ritzville silt loam, 30 to 65 percent slopes
- RfD2: Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded
- WsB: Willis silt loam, 0 to 5 percent slopes

TETRA TECH

Reference Map



1:24,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils
Map 5 of 11

BENTON COUNTY, WA

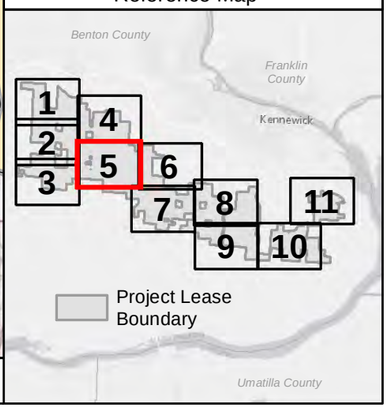
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- EfB: Ellisforde silt loam, 0 to 5 percent slopes
- FeC: Finley fine sandy loam, 0 to 15 percent slopes
- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ReF: Ritzville silt loam, 30 to 65 percent slopes
- RfD2: Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded
- WsB: Willis silt loam, 0 to 5 percent slopes

TETRA TECH

Reference Map



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0 0.25 0.5 1 Miles

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils
Map 6 of 11

BENTON COUNTY, WA

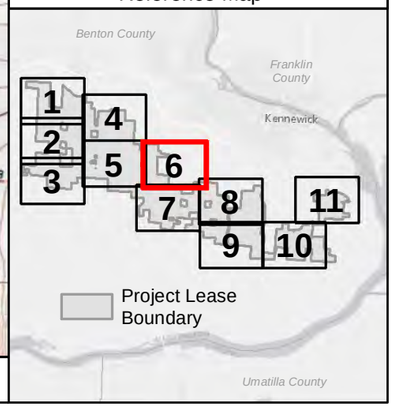
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- KnF: Kiona very stony silt loam, 30 to 65 percent slopes
- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ReF: Ritzville silt loam, 30 to 65 percent slopes
- RfD2: Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded

TETRA TECH

Reference Map



1:24,000 WGS 1984 UTM Zone 11N

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils
Map 7 of 11

BENTON COUNTY, WA

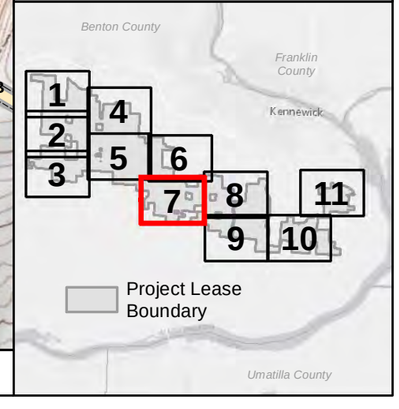
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ReF: Ritzville silt loam, 30 to 65 percent slopes
- RfD2: Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded

TETRA TECH

Reference Map



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0 0.25 0.5 1 Miles

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils
Map 8 of 11

BENTON COUNTY, WA

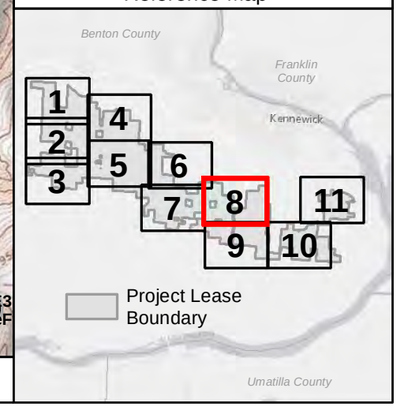
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ReF: Ritzville silt loam, 30 to 65 percent slopes
- RfD2: Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils
Map 9 of 11

BENTON COUNTY, WA

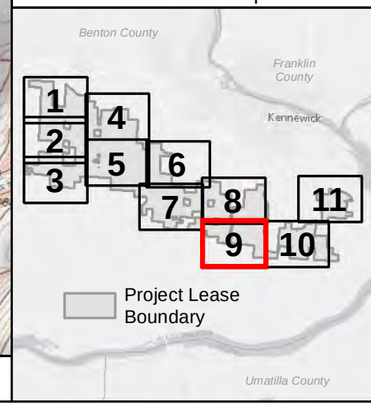
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ReF: Ritzville silt loam, 30 to 65 percent slopes
- RfD2: Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded
- ShAB: Shano silt loam, 0 to 5 percent slopes
- ShE3: Shano silt loam, 15 to 30 percent slopes, severely eroded
- ShF: Shano silt loam, 30 to 65 percent slopes
- SnD2: Shano very fine sandy loam, 0 to 15 percent slopes, eroded

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils Map 10 of 11

BENTON COUNTY, WA

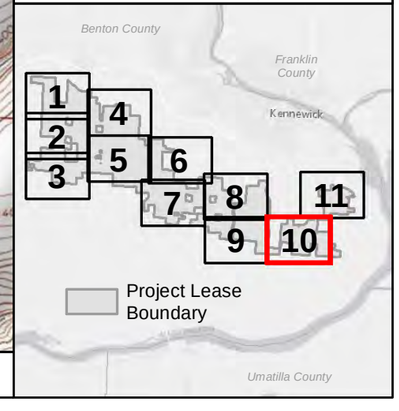
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- EuAB: Esquatzel silt loam, 0 to 5 percent slopes
- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ReF: Ritzville silt loam, 30 to 65 percent slopes
- ShAB: Shano silt loam, 0 to 5 percent slopes

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-3
Project Study Area Soils Map 11 of 11

BENTON COUNTY, WA

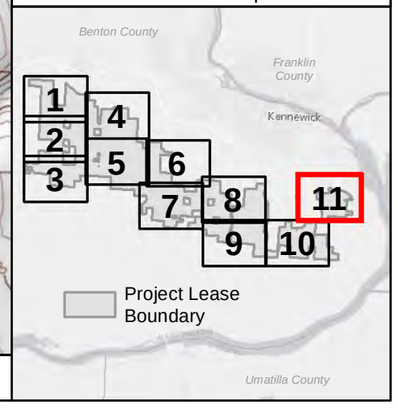
Project Study Area Boundary

Mapunit Symbol: Mapunit Name

- BmAB: Burke silt loam, 0 to 5 percent slopes
- EfB: Ellisforde silt loam, 0 to 5 percent slopes
- KnE: Kiona very stony silt loam, 0 to 30 percent slopes
- KnF: Kiona very stony silt loam, 30 to 65 percent slopes
- ReB: Ritzville silt loam, 0 to 5 percent slopes
- ReE3: Ritzville silt loam, 15 to 30 percent slopes, severely eroded
- ReF: Ritzville silt loam, 30 to 65 percent slopes
- ShAB: Shano silt loam, 0 to 5 percent slopes
- ShE3: Shano silt loam, 15 to 30 percent slopes, severely eroded
- ShF: Shano silt loam, 30 to 65 percent slopes
- WdF: Warden silt loam, 30 to 65 percent slopes

TETRA TECH

Reference Map



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Horse Heaven Wind Project

Figure A-4
Field Delineated WOUS/WOS
Map 1 of 23

BENTON COUNTY, WA

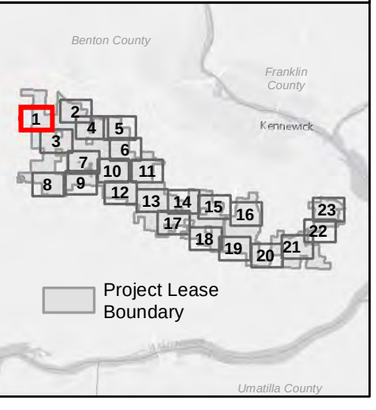
609
718
714
715
716
717

Project Study Area Boundary

Photo Point Location w/Direction

TETRA TECH

Reference Map



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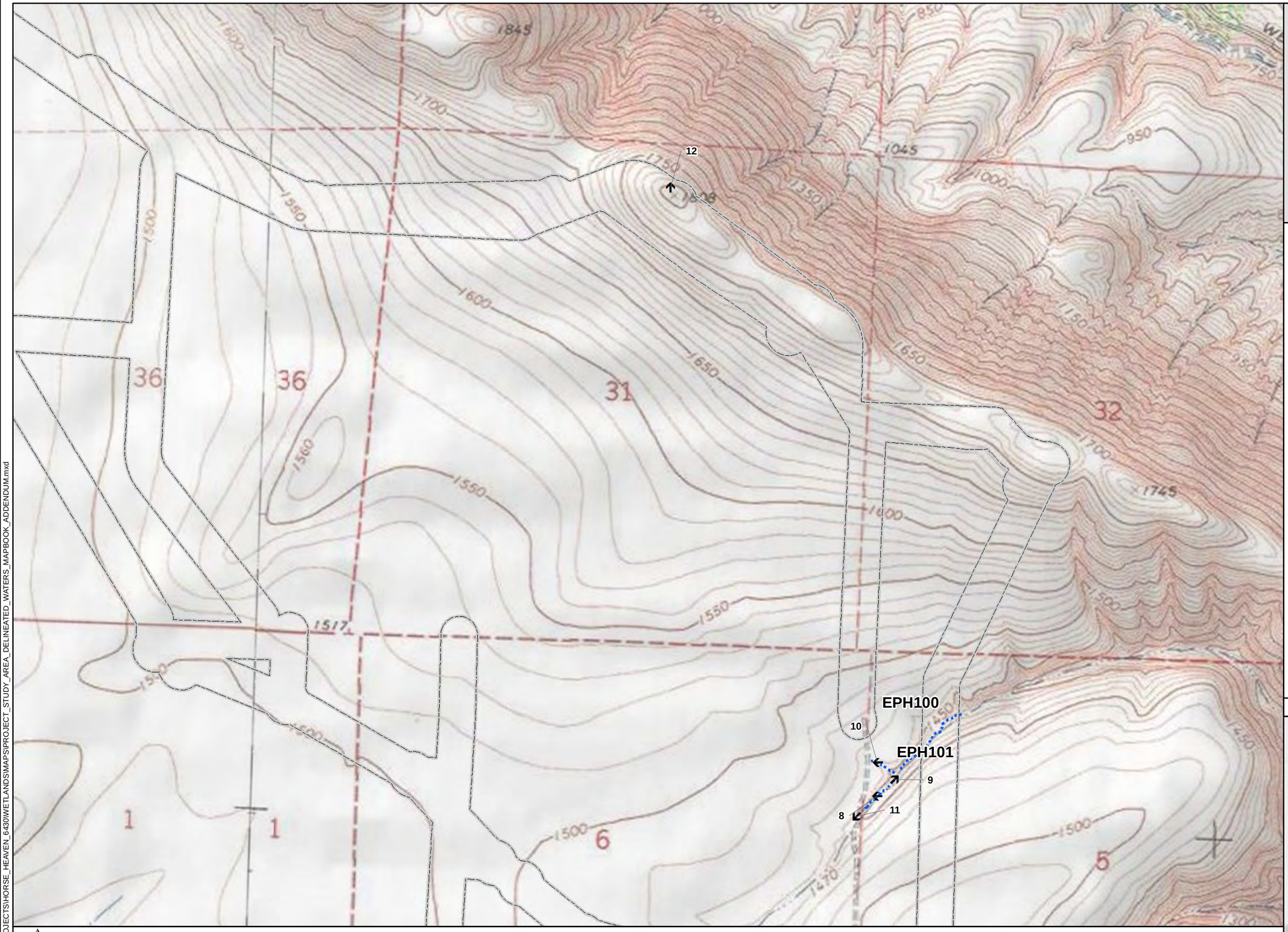
Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 2 of 23

BENTON COUNTY, WA



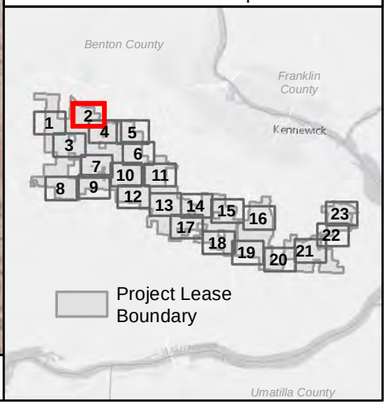
Project Study Area Boundary

Photo Point Location w/Direction

Ephemeral Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 3 of 23

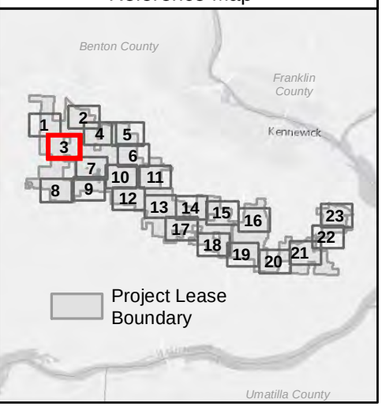
BENTON COUNTY, WA

Project Study Area Boundary

Photo Point Location w/Direction

TETRA TECH

Reference Map



614

90

XBB902

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Horse Heaven Wind Project

Figure A-4
Field Delineated WOUS/WOS
Map 4 of 23

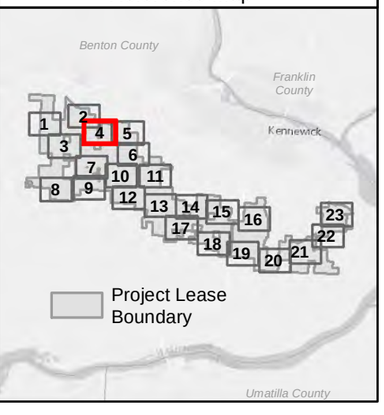
BENTON COUNTY, WA

EPH100
EPH101
EPH102
EPH204
EPH500
INT01
Canyon
Webber
Grain Elevator
WELL ROAD
DENNIS ROAD
BM 952
BM 1222
BM 1319
1062
1504
1505
1509

- Project Study Area Boundary
- Photo Point Location w/Direction
- Ephemeral Stream
- Intermittent Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 5 of 23

BENTON COUNTY, WA

EPH105
EPH104
EPH-104
EPH204
EPH205
EPH202
EPH203
22
23
24
21
3
20
34
33
90
31
311
312
313
45

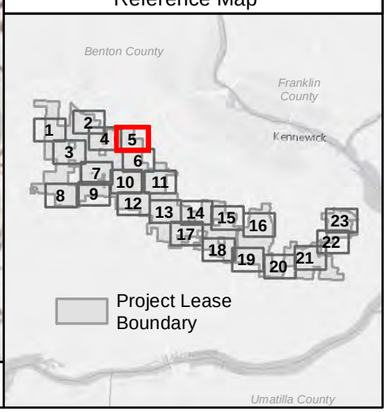
Project Study Area Boundary

Photo Point Location w/Direction

Ephemeral Stream

TETRA TECH

Reference Map



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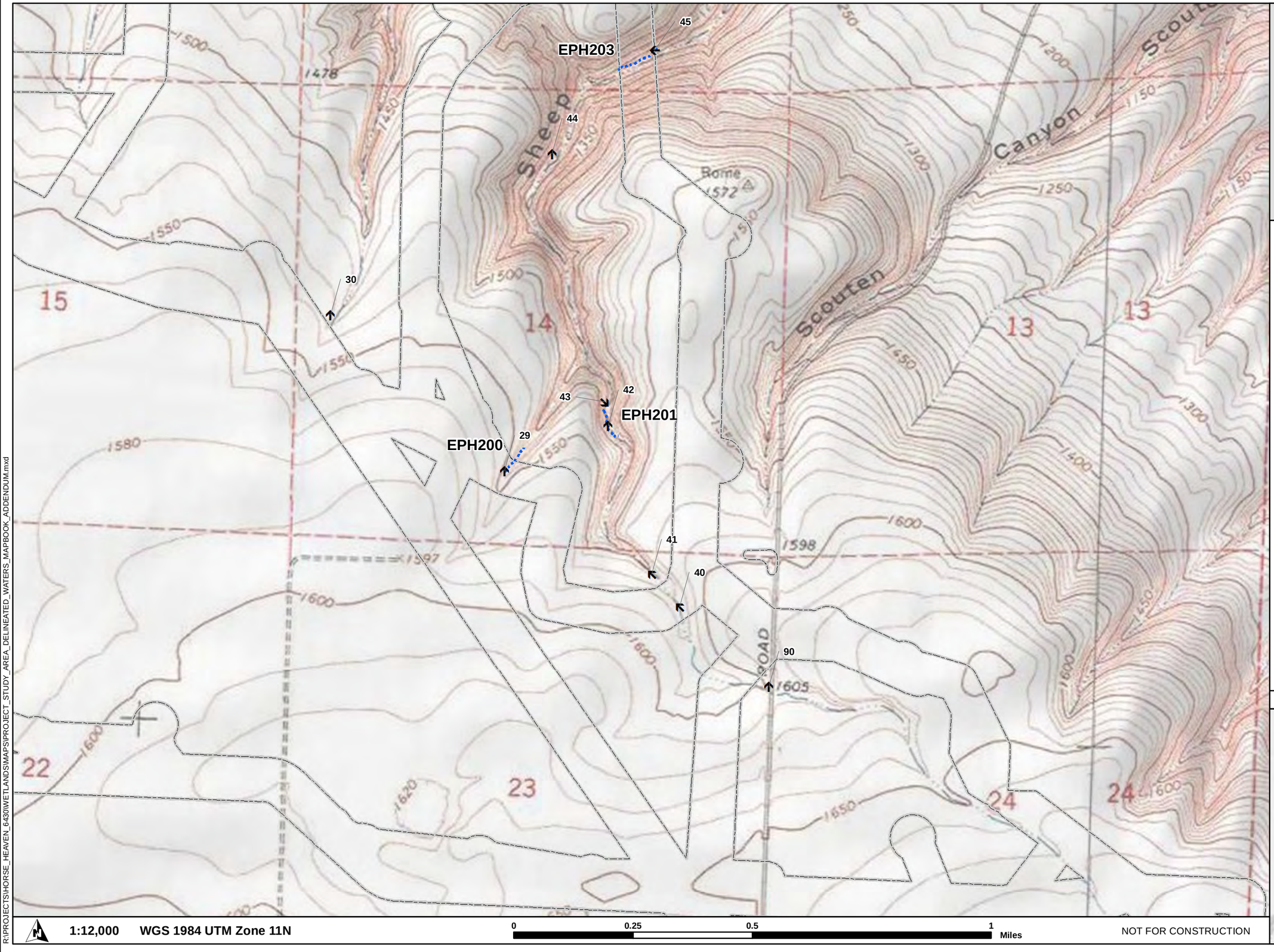
Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 6 of 23

BENTON COUNTY, WA



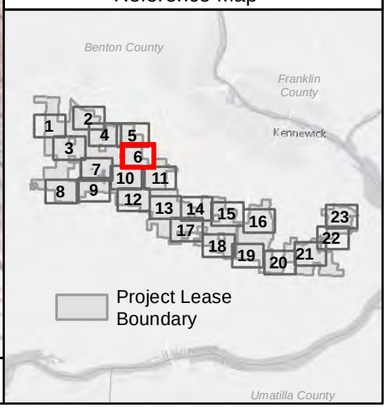
Project Study Area Boundary

Photo Point Location w/Direction

Ephemeral Stream

TETRA TECH

Reference Map



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0 0.25 0.5 1 Miles

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Horse Heaven Wind Project

Figure A-4
Field Delineated WOUS/WOS
Map 7 of 23

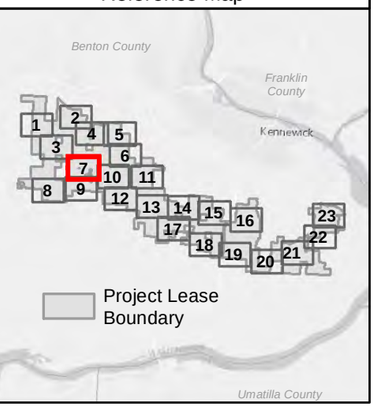
BENTON COUNTY, WA

Project Study Area Boundary

Photo Point Location w/Direction

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 8 of 23

BENTON COUNTY, WA

Project Study Area Boundary

Photo Point Location w/Direction

Ephemeral Stream

TETRA TECH

Reference Map

XBB901
610
611
612
613
EPH602
EPH900
900C
721
EPH700
720
EPH-800
812
811
719
SELLARDS ROAD
ANDERSON RD
TYACKE ROAD
BM 1244
BM 1304
1334
T 8 N
T 7 N
34
35
36
1266
1222
1252

1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 9 of 23

BENTON COUNTY, WA

EPH700

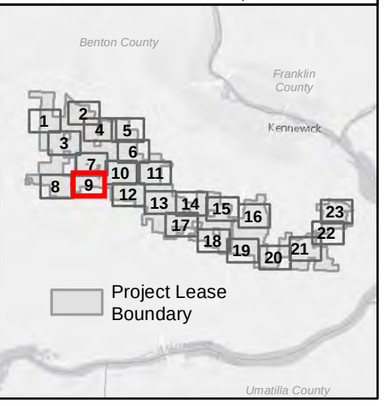
724
725
723
722
900
900B
614

Grain Elevator
BM 1496
Carter
Fire Station
BM 1357
BM 1408
BM 1442
SELLARDS ROAD
R 26 E
R 27 E
31
32
6
5
4
3

- Project Study Area Boundary
- Photo Point Location w/Direction
- Ephemeral Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 10 of 23

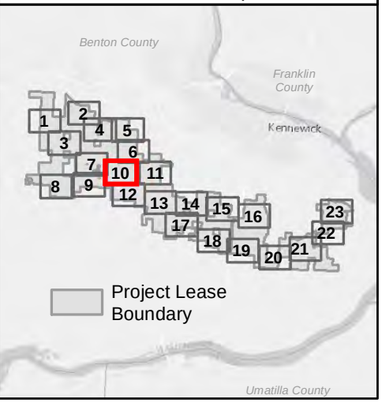
BENTON COUNTY, WA

Project Study Area Boundary

Photo Point Location w/Direction

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

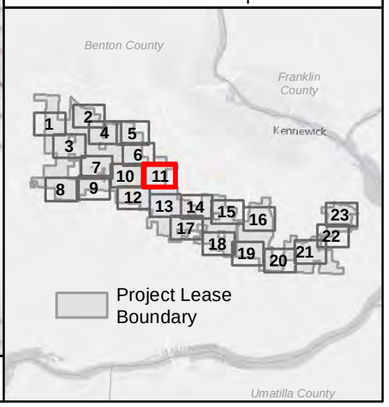
Figure A-4
Field Delineated WOUS/WOS
Map 11 of 23

BENTON COUNTY, WA

- Project Study Area Boundary
- Photo Point Location w/Direction
- Sample Site
- Ephemeral Stream
- Wetland

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

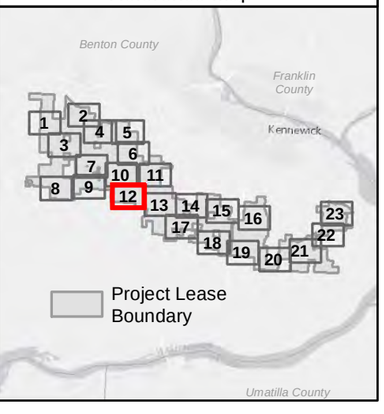
Figure A-4
Field Delineated WOUS/WOS
Map 12 of 23

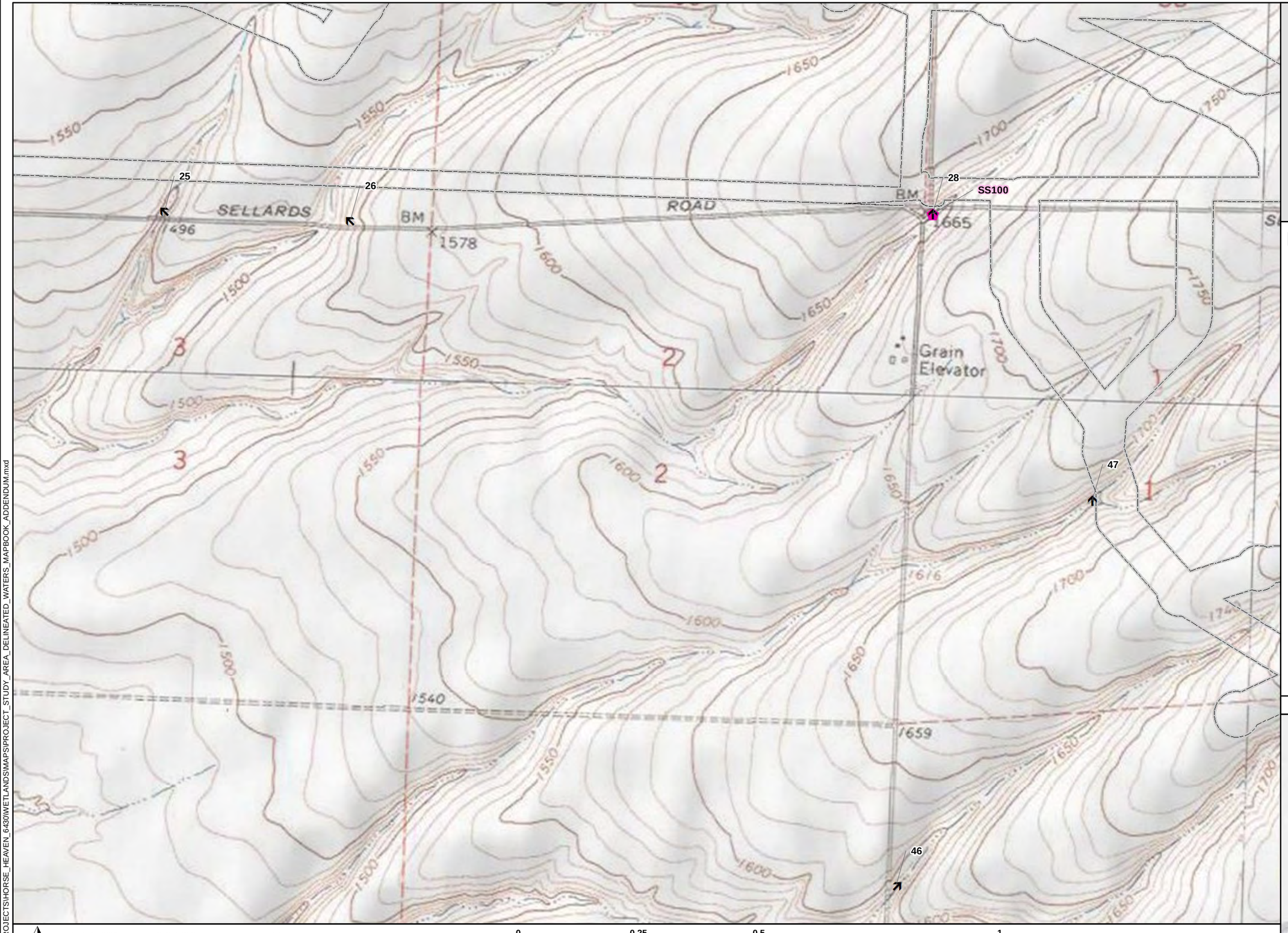
BENTON COUNTY, WA

- Project Study Area Boundary
- Photo Point Location w/Direction
- Sample Site

TETRA TECH

Reference Map





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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 13 of 23

BENTON COUNTY, WA

EPH206

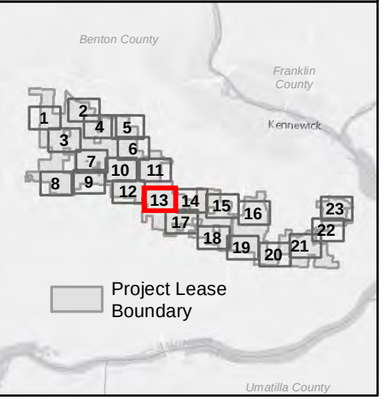
90
36
37
38
808
58

CLODFELTER ROAD
SMITH ROAD
EDEN ROAD
RICHMOND ROAD
REESE ROAD
BM 1840
BM 1777
BM 1676

- Project Study Area Boundary
- Photo Point Location w/Direction
- Ephemeral Stream

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 14 of 23

BENTON COUNTY, WA

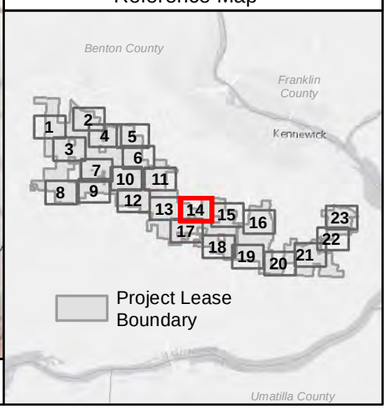
Project Study Area Boundary

Photo Point Location w/Direction

Ephemeral Stream

TETRA TECH

Reference Map



EPH305

62

63

XBB-301

XBB-302

XBB-303

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 15 of 23

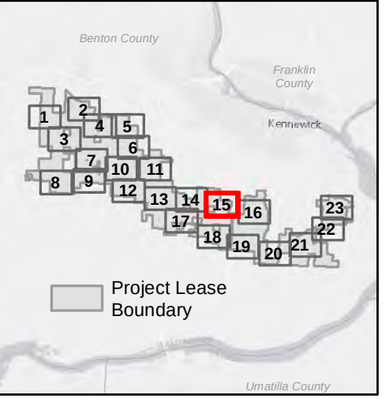
BENTON COUNTY, WA

Project Study Area Boundary

Photo Point Location w/Direction

TETRA TECH

Reference Map



XBB-304

XBB-305

XBB-306

64

65

66

PIPELINE

JEEP TRAIL

1:12,000 WGS 1984 UTM Zone 11N

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 16 of 23

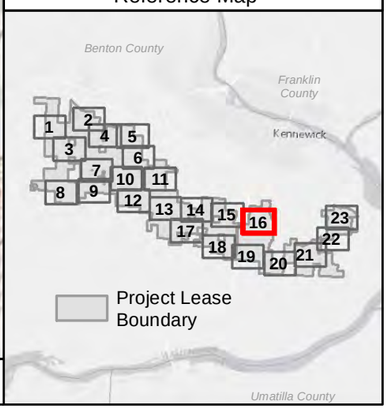
BENTON COUNTY, WA

Project Study Area Boundary

Photo Point Location w/Direction

TETRA TECH

Reference Map



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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 17 of 23

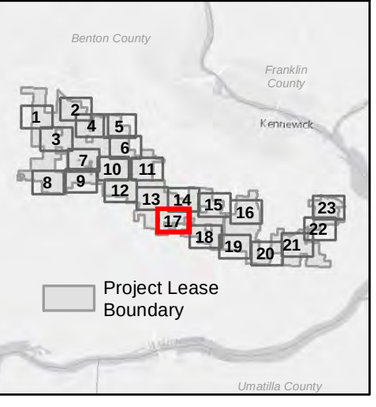
BENTON COUNTY, WA

Project Study Area Boundary

Photo Point Location w/Direction

TETRA TECH

Reference Map



1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 18 of 23

BENTON COUNTY, WA

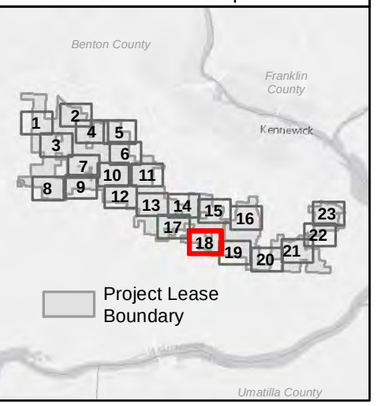
Project Study Area Boundary

Photo Point Location w/Direction

Ephemeral Stream

TETRA TECH

Reference Map



55
67
68
608
607
606
EPH600
PIPELINE
TRAIL
Canyon
Prospect
Well
BM
23
24
25
26
30
19
56

1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 19 of 23

BENTON COUNTY, WA

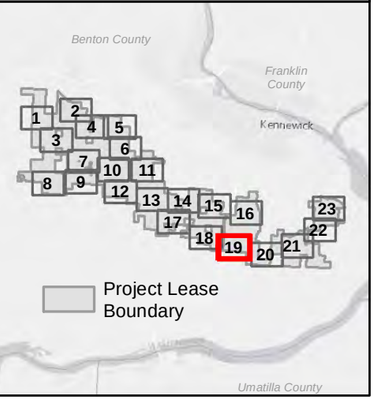
Project Study Area Boundary

Photo Point Location w/Direction

Ephemeral Stream

TETRA TECH

Reference Map



1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

R:\PROJECTS\HORSE_HEAVEN_6430\WETLANDSMAPS\PROJECT_STUDY_AREA_DELINEATED_WATERS_MAPBOOK_ADDENDUM.mxd

Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 20 of 23

BENTON COUNTY, WA

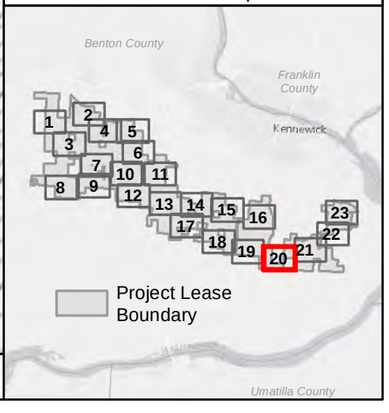
Project Study Area Boundary

Photo Point Location w/Direction

Ephemeral Stream

TETRA TECH

Reference Map



1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 21 of 23

BENTON COUNTY, WA

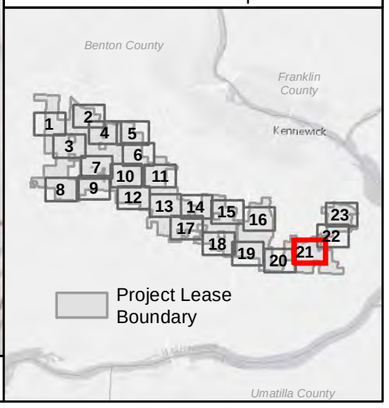
Project Study Area Boundary

Photo Point Location w/Direction

Sample Site

TETRA TECH

Reference Map



1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

Figure A-4
Field Delineated WOUS/WOS
Map 22 of 23

BENTON COUNTY, WA

EPH302

802

102

- Project Study Area Boundary
- Photo Point Location w/Direction
- Ephemeral Stream

TETRA TECH

Reference Map

1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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Horse Heaven Wind Project

SCOUT CLEAN ENERGY

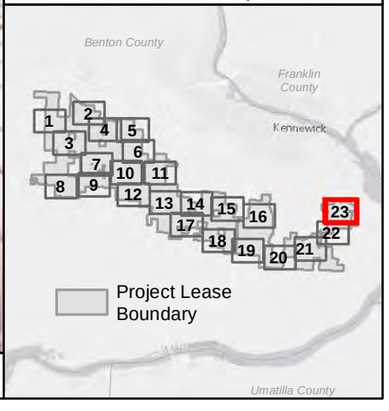
Figure A-4
Field Delineated WOUS/WOS
Map 23 of 23

BENTON COUNTY, WA

- Project Study Area Boundary
- Photo Point Location w/Direction
- Sample Site
- Ephemeral Stream
- Intermittent Stream

TETRA TECH

Reference Map



SS02
INT02
EPH411
EPH412
EPH413
EPH300
EPH301
XBB-310
86
87
88
89
107
108
109
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112
113
114
115
52
53
54

1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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APPENDIX B
USACE DATA SHEETS

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Horse Heaven Hills | City/County: Benton County | Sampling Date: 5/11/21
Applicant/Owner: Horse Heaven Hills, LLC | State: OR | Sampling Point: E10u
Investigator(s): Jessica Taylor | Section, Township, Range: Section 31, T07N, R30E
Landform (hillside, terrace, etc.): valley | Local relief (concave, convex, none): Slope | Slope (%): 30-65
Subregion (LRR): LRR B | Lat: 46.140656 | Long: -119.349764 | Datum: UTM11
Soil Map Unit Name: Ritzville Silt Loam, 30-65 percent slopes | 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This site is in a valley bottom. There is a spring with a well in it underneath a tree (visible in Google Earth orthoimagery). Historical photos, also on Google Earth imagery, show the area with a livestock watering trough and cattle onsite.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 15 feet)			
1. *Leymus cinereus*	100	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

% Bare Ground in Herb Stratum 30 % 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: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:
X 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: E10u

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
0-20	10YR 3/3	100					Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Soils match what has typically been found on this side of the project area in dryland areas.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Horse Heaven Hills | City/County: Benton County | Sampling Date: 5/11/21
Applicant/Owner: Horse Heaven Hills, LLC | State: OR | Sampling Point: E10w
Investigator(s): Jessica Taylor | Section, Township, Range: Section 31, T07N, R30E
Landform (hillside, terrace, etc.): valley | Local relief (concave, convex, none): concave | Slope (%): 30
Subregion (LRR): LRR B | Lat: 46.140656 | Long: -119.349764 | Datum: UTM11
Soil Map Unit Name: Ritzville Silt Loam, 30-65 percent slopes | 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 X 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 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:
This site is in a valley bottom. There is a spring with a well in it underneath a tree (visible in Google Earth orthoimagery). Historical photos, also on Google Earth imagery, show the area with a livestock watering trough and cattle onsite.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	45	Yes	FAC
2.			
3.			
4.			
	45	=Total Cover	
Sapling/Shrub Stratum (Plot size: 30 feet)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 15 feet)			
1. *Leymus cinereus*	10	No	FAC
2. *Equisetum arvense*	90	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum (Plot size:)			
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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	145	x 3 =	435
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	145 (A)		435 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** x

Remarks:
Vegetation is not currently being grazed by cattle, the stand of Great Basin Wildrye was very dense around the edges of the wetland.

SOIL

Sampling Point: E10w

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
0-12	10YR 2/2	100					Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X 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)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 12

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Soils had a slight hydrogen sulfide smell and felt mucky.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Horse Heaven Hills | City/County: Benton County | Sampling Date: 5/11/21
Applicant/Owner: Horse Heaven Hills, LLC | State: OR | Sampling Point: E18
Investigator(s): Jessica Taylor | Section, Township, Range: Section 31, T07N, R30E
Landform (hillside, terrace, etc.): wide valley bottom | Local relief (concave, convex, none): concave | Slope (%): 0
Subregion (LRR): LRR B | Lat: 46.055728 | Long: -119.079240 | Datum: UTM11
Soil Map Unit Name: Ritzville Silt Loam, 0-5 percent slopes | 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	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This site is at the toe slope of a cropfield. The entire site was covered in cerealy rye, a common weed in this region. Cereal rye shows up as a light blonde on orthoimagery.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 15 feet)			
1. *Secale cereale*	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
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: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)
Prevalence Index = B/A =			5.00

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: E18

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 3/3	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Soils match what has typically been found on this side of the project area in dryland areas.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Horse Heaven Hills | City/County: Benton County | Sampling Date: 2/19/2020
Applicant/Owner: Horse Heaven Hills, LLC | State: OR | Sampling Point: 01
Investigator(s): Jessica Taylor/Katie Pyne | Section, Township, Range: Section 01, T07N, R27E
Landform (hillside, terrace, etc.): swale | Local relief (concave, convex, none): concave | Slope (%): 20
Subregion (LRR): LRR B | Lat: 46.130370 | Long: -116.390489 | Datum: NAD83
Soil Map Unit Name: Ritzville Silt Loam | 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 x, 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 X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Site is in a low spot adjacent to an intersection. Two culverts are present and the soil surface was cracked. The only vegetation was sparse winter wheat that was part of a larger crop.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 30 feet)			
1. *Triticum aestivum*	20	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

% Bare Ground in Herb Stratum 80 | % 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: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	20	x 5 =	100
Column Totals:	20 (A)		100 (B)

Prevalence Index = B/A = 5.00

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: 01

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
0-15	10YR 3/4	100					Loamy/Clayey	Silt Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- x Drift Deposits (B3) **(Nonriverine)**
- x Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Horse Heaven Hills | City/County: Benton County | Sampling Date: 2/22/2020
Applicant/Owner: Horse Heaven Hills, LLC | State: OR | Sampling Point: 02
Investigator(s): Jessica Taylor/Katie Pyne | Section, Township, Range: Section 11, T07N, R30E
Landform (hillside, terrace, etc.): valley | Local relief (concave, convex, none): concave | Slope (%): 30-65
Subregion (LRR): LRR B | Lat: 46.114251 | Long: -119.052036 | Datum: NAD83
Soil Map Unit Name: Warden Silt Loam, 30-65 percent slopes | 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	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Bottom of steep canyon in a thin channel with very obvious bed and banks but lined with sagebrush at the bank's edge. Lomatium was blooming but other potential herbaceous species were not up yet. There had been recent flooding in the area and it was a warmer than usual winter.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: 30 feet)			
1. *Artemisia tridentata*	75	Yes	UPL
2.			
3.			
4.			
5.			
	75 =Total Cover		
Herb Stratum (Plot size: 15 feet)			
1. *Lomatium triternatum*	5	No	UPL
2. *Moss*	90	Yes	
3.			
4.			
5.			
6.			
7.			
8.			
	95 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
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: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	80	x 5 =	400
Column Totals:	80 (A)		400 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0[1]
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** x

Remarks:
Potential for more vegetation later in the season.

SOIL

Sampling Point: 02

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
0-4	10YR 4/4	100					Sandy	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 4

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

Wetland name or number_____

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): E-10 Date of site visit: 5/11/21

Rated by Jessica Taylor Trained by Ecology? __ Yes __X__ No Date of training_____

HGM Class used for rating Depressional Wetland has multiple HGM classes?____Y __X__N

NOTE: **Form is not complete without the figures requested** (*figures can be combined*).
Source of base aerial photo/map _____

OVERALL WETLAND CATEGORY ____IV____ (based on functions__X__ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 22-27

_____**Category II** – Total score = 19-21

_____**Category III** – Total score = 16-18

__X__**Category IV** – Total score = 9-15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H M **L**	H **M** L	H M **L**	
Landscape Potential	H **M** L	H **M** L	H **M** L	
Value	H M **L**	H M **L**	H **M** L	**TOTAL**
Score Based on Ratings	4	5	5	14

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY *Circle the appropriate category*
Vernal Pools	**II** **III**
Alkali	**I**
Wetland of High Conservation Value	**I**
Bog and Calcareous Fens	**I**
Old Growth or Mature Forest – slow growing	**I**
Aspen Forest	**I**
Old Growth or Mature Forest – fast growing	**II**
Floodplain forest	**II**
None of the above	Not Applicable

Wetland name or number E10

Maps and figures required to answer questions correctly for Eastern Washington

Depressional Wetlands 0.03 acre depressional wetland in riverine system

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	N/A
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	N/A
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	N/A
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 5.3	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	4
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	5

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of wetland vs. width of stream *(can be added to another figure)*	R 4.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	

Wetland name or number E10

HGM Classification of Wetland in Eastern Washington

For questions 1-4, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
   ___At least 30% of the open water area is deeper than 10 ft (3 m)

   NO – go to 2 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. Does the entire wetland unit **meet all** of the following criteria?
   _x_ The wetland is on a slope (*slope can be very gradual*),
   _x_ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks;
   _x_ The water leaves the wetland **without being impounded**.

   NO - go to 3 YES – The wetland class is **Slope**
   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

3. Does the entire wetland unit **meet all** of the following criteria?
   ___ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river;
   ___ The overbank flooding occurs at least once every 10 years.

   NO - go to 4 YES – The wetland class is **Riverine**
   NOTE: The Riverine wetland can contain depressions that are filled with water when the river is not flooding.

4. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

   NO – go to 5 YES - The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-4 APPLY TO DIFFERENT AREAS IN THE WETLAND UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

Wetland name or number E10

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the wetland unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM Class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number E10

DEPRESSIONAL WETLANDS **Water Quality Functions** - Indicators that the site functions to improve water quality	Points (only 1 score per box)
D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland has no surface water outlet points = 5 Wetland has an intermittently flowing outlet points = 3 Wetland has a highly constricted permanently flowing outlet points = 3 Wetland has a permanently flowing, unconstricted, surface outlet points = 1	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions of soils)* YES = 3 NO = 0	0
D 1.3. Characteristics of persistent vegetation (Emergent, Scrub-shrub, and/or Forested Cowardin classes) Wetland has persistent, ungrazed, vegetation for > $^2/_3$ of area points = 5 Wetland has persistent, ungrazed, vegetation from $^1/_3$ to $^2/_3$ of area points = 3 Wetland has persistent, ungrazed vegetation from $^1/_{10}$ to < $^1/_3$ of area points = 1 Wetland has persistent, ungrazed vegetation < $^1/_{10}$ of area points = 0	0
D 1.4. Characteristics of seasonal ponding or inundation: Area is grazed and has livestock watering facility adjacent to wetlands *This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.* Area seasonally ponded is > ½ total area of wetland points = 3 Area seasonally ponded is ¼ - ½ total area of wetland points = 1 Area seasonally ponded is < ¼ total area of wetland points = 0	0
Total for D 1 Add the points in the boxes above	3

Rating of Site Potential If score is: ___ **12- 16 = H** ___ **6- 11 = M** X **0- 5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1 - agricultural
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1- D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___ **3 or 4 = H** X **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, or lake that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where water quality is an issue in some aquatic resource [303(d) list, eutrophic lakes, problems with nuisance and toxic algae]? Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the drainage or basin in which the wetland is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	0

Rating of Value If score is: ___ **2-4 = H** ___ **1 = M** X **0 = L** *Record the rating on the first page*

Wetland name or number E10

DEPRESSIONAL WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and erosion.

Points (only 1 score per box)

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland:

- Wetland has no surface water outlet — points = 8
- Wetland has an intermittently flowing outlet — points = 4
- Wetland has a highly constricted permanently flowing outlet — points = 4
- Wetland has a permanently flowing unconstricted surface outlet — points = 0

(If outlet is a ditch and not permanently flowing treat wetland as "intermittently flowing")

4

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or deepest part (if dry).*

- Seasonal ponding: > 3 ft above the lowest point in wetland or the surface of permanent ponding — points = 8
- Seasonal ponding: 2 ft - < 3 ft above the lowest point in wetland or the surface of permanent ponding — points = 6
- The wetland is a headwater wetland — points = 4
- Seasonal ponding: 1 ft - < 2 ft — points = 4
- Seasonal ponding: 6 in - < 1 ft — points = 2
- Seasonal ponding: < 6 in or wetland has only saturated soils — points = 0

2

Total for D 4 — Add the points in the boxes above: **6**

Rating of Site Potential If score is: ___ **12-16 = H** x **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	0
D 5.2. Is > 10% of the area within 150 ft of the wetland in a land use that generates runoff?	Yes = 1 No = 0	0 -ephemeral stream
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses?	Yes = 1 No = 0	1 - agricultural
Total for D 5	Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___ **3 = H** x **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The wetland is in a landscape that has flooding problems.

Choose the description that best matches conditions around the wetland being rated. *Do not add points. Choose the highest score if more than one condition is met.*

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds), AND

- Flooding occurs in sub-basin that is immediately down-gradient of wetland — points = 2
- Surface flooding problems are in a sub-basin farther down-gradient — points = 1

The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood.

- *Explain why* _____ — points = 0
- There are no problems with flooding downstream of the wetland Area is very dry, no flooding — points = 0

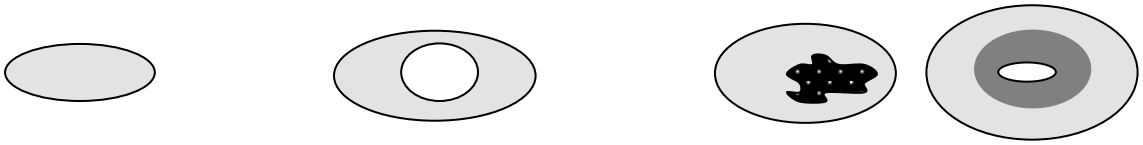
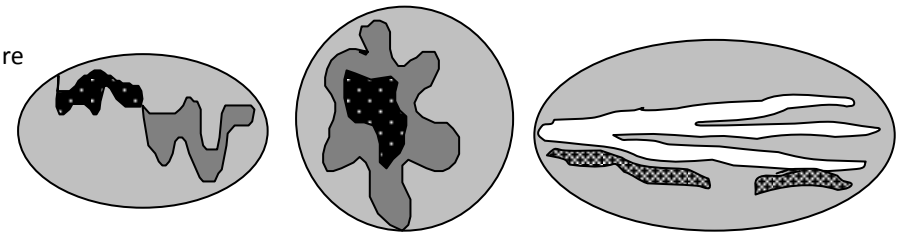
0

D 6.2. Has the site has been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0 — **0**

Total for D 6 — Add the points in the boxes above: **0**

Rating of Value If score is: ___ **2-4 = H** ___ **1 = M** x **0 = L** *Record the rating on the first page*

Wetland name or number E10

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	(only 1 score per box)
H 1.0. Does the wetland have the potential to provide habitat for many species?	
H 1.1. Structure of the plant community: *Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ¼ ac or >= 10% of the wetland if wetland is < 2.5 ac.* ____Aquatic bed ____Emergent plants 0-12 in (0-30 cm) high are the highest layer and have > 30% cover ____Emergent plants >12-40 in (>30-100 cm) high are the highest layer with >30% cover ____Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% cover ____Scrub-shrub (areas where shrubs have >30% cover) 4 or more checks: points = 3 _X_Forested (areas where trees have >30% cover) 3 checks: points = 2 Wetland is small and the one cottonwood covers the entire area. Less than 10% equisetum. 2 checks: points = 1 1 check: points = 0	0
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0	0
H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac **OR** 10% of its area during the March to early June **OR** in August to the end of September? ***Answer YES for Lake Fringe wetlands.*** Yes = 3 points & go to H 1.4 No = go to H 1.3.2 H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least ¼ ac or 10% of its area? *Answer yes only if H 1.3.1 is No.* Yes = 3 No = 0	0
H 1.4. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. D*ifferent patches of the same species can be combined to meet the size threshold. You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)* # of species 3 Scoring: > 9 species: points = 2 4-9 species: points = 1 < 4 species: points = 0	0
H 1.5. Interspersion of habitats Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. *Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **High** = 3 points  No open water, only one emergent plant species. Riparian braided channels with 2 classes	Figure__ 1

Wetland has a well and pump in it that is used by house directly to the SW for all of their drinking water.

Wetland name or number E10

H 1.6. Special habitat features *Check the habitat features that are present in the wetland. The number of checks is the number of points.* ____Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ____Cattails or bulrushes are present within the wetland. ____Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge. ____Emergent or shrub vegetation in areas that are permanently inundated/ponded. ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity x____ Invasive species cover less than 20% in each stratum of vegetation *(canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)*	1
Total for H 1 — Add the points in the boxes above	2

Rating of Site Potential If score is: ___**15-18 = H** ___**7-14 = M** X **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: *Calculate:* % undisturbed habitat 0 **+** [(% moderate and low intensity land uses)/2] 25 **=** 25 % > 1/3 (33.3%) of 1 km Polygon — points = 3 20-33% of 1km Polygon — points = 2 10-19% of 1km Polygon — points = 1 <10% of 1km Polygon Cattle have free access to this wetland and have watering trough adjacent. — points = 0	2
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. *Calculate:* % undisturbed habitat 0 **+** [(% moderate and low intensity land uses)/2] 50 **=** 50 % Undisturbed habitat > 50% of Polygon — points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches Cattle have free range of site but stick close to wetland/trough — points = 2 Undisturbed habitat 10 - 50% and > 3 patches — points = 1 Undisturbed habitat < 10% of Polygon — points = 0	2
H 2.3. Land use intensity in 1 km Polygon: > 50% of Polygon is high intensity land use Wheat crop is majority of polygon — points = (- 2) Does not meet criterion above — points = 0	-2
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. *Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs* — Yes = 3 No = 0	0
Total for H 2 Wetland is uphill from floodplain for dammed Columbia River and irrigation canal — Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___**4-9 = H** X **1-3 = M** ___**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose the highest score that applies to the wetland being rated* Site meets ANY of the following criteria: — points = 2 — It has 3 or more priority habitats within 100 m (see Appendix B) — It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) — It is mapped as a location for an individual WDFW species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan x Site has 1 or 2 priority habitats within 100 m (see Appendix B) — points = 1 Site does not meet any of the criteria above — points = 0	1

Rating of Value If score is: ___**2 = H** x **1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number_____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Vernal pools Is the wetland **less than 4000 ft²**, and does it meet at least **two** of the following criteria? — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool*. — The soil in the wetland is shallow [< 1 ft (30 cm)deep] and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the wet season. Yes **–** Go to **SC 1.1** No = **Not a vernal pool** SC 1.1. Is the vernal pool relatively undisturbed in February and March? Yes **–** Go to **SC 1.2** No = **Not a vernal pool with special characteristics**	No
SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? Yes = **Category II** No = **Category III**	**Cat. II** **Cat. III**
SC 2.0. Alkali wetlands Does the wetland meet **one** of the following criteria? — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 4 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meet two of the following three sub-criteria? — Salt encrustations around more than 75% of the edge of the wetland — More than ¾ of the plant cover consists of species listed on Table 4 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. Yes = **Category I** No = **Not an alkali wetland**	No **Cat. I**
SC 3.0. Wetlands of High Conservation Value (WHCV) SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 3.2** No – Go to **SC 3.3** SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 3.4** No = **Not a WHCV** SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and it is listed on their website? Yes = **Category I** No = **Not a WHCV**	No **Cat. I**

Wetland name or number_____

SC 4.0 Bogs and Calcareous Fens Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? *Use the key below to identify if the wetland is a bog or calcareous fen.* ***If you answer yes you will still need to rate the wetland based on its functions.*** SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? *See Appendix C for a field key to identify organic soils*. Yes – Go to **SC 4.3** No – Go to **SC 4.2** SC 4.2. Does an area within the wetland have organic soils, either peats or mucks, that are less than 16 in deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 4.3** No = **Is not a bog for rating** SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? Yes = **Category I bog** No – Go to **SC 4.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 5 are present, the wetland is a bog. SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No – Go to **SC 4.5** SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? Yes = **Is a Calcareous Fen for purpose of rating** No – Go to **SC 4.6** SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: — Marl deposits [calcium carbonate ($CaCO_3$) precipitate] occur on the soil surface or plant stems — The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland Yes = **Is a Category I calcareous fen** No = **Is not a calcareous fen**	**Cat. I** **Cat. I**

SC 5.0. Forested Wetlands Does the wetland have an area of forest rooted within its boundary that meets **at least one** of the following three criteria? (*Continue only if you have identified that a forested class is present in question H 1.1*) — The wetland is within the 100 year floodplain of a river or stream — Aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species — There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see definitions in question H3.1)* Yes – Go to **SC 5.1** No = **Not a forested wetland with special characteristics**	
SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (*see Table 7*)? Yes = **Category I** No – Go to **SC 5.2** SC 5.2. Does the wetland have areas where aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species? Yes = **Category I** No – Go to **SC 5.3** SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (*see Table 7*)? Yes = **Category II** No – Go to **SC 5.4** SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? Yes = **Category II** No = **Not a forested wetland with special characteristics**	**Cat. I** **Cat. I** **Cat. II** **Cat. II**
Category of wetland based on Special Characteristics *Choose the highest rating if wetland falls into several categories* If you answered No for all types, enter "Not Applicable" on Summary Form	

Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: ***NOTE:*** *This question is independent of the land use between the wetland and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 12 in (30 cm)in eastern Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

— **Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).

— **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).

— **Juniper Savannah:** All juniper woodlands.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

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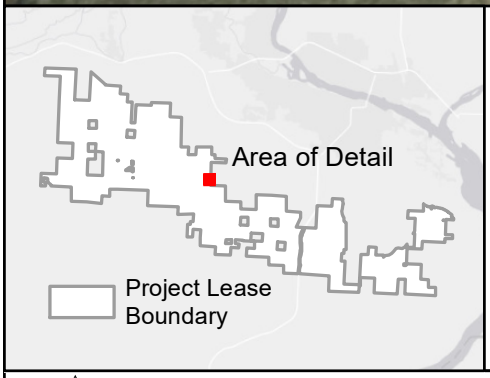


Wetland
Micrositing Corridor
150' Buffer
230-kV Intertie Transmission Line (Primary)

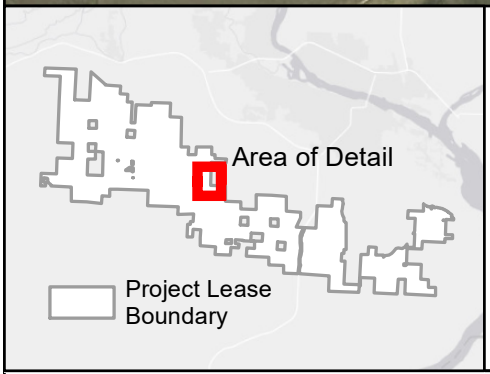
Figure 1
Wetland E-10

Horse Heaven Wind Project

SCOUT CLEAN ENERGY

BENTON COUNTY, WA

1:1,200 **WGS 1984 UTM Zone 11N** 0 10 20 40 **Meters** NOT FOR CONSTRUCTION TETRA TECH



Wetland
Micrositing Corridor
150' Buffer
230-kV Intertie Transmission Line (Primary)

Field Verified Habitat
Agricultural land
Unclassified Grassland
Sagebrush Shrub-steppe

Figure 2
Wetland E-10

Horse Heaven Wind Project

SCOUT CLEAN ENERGY

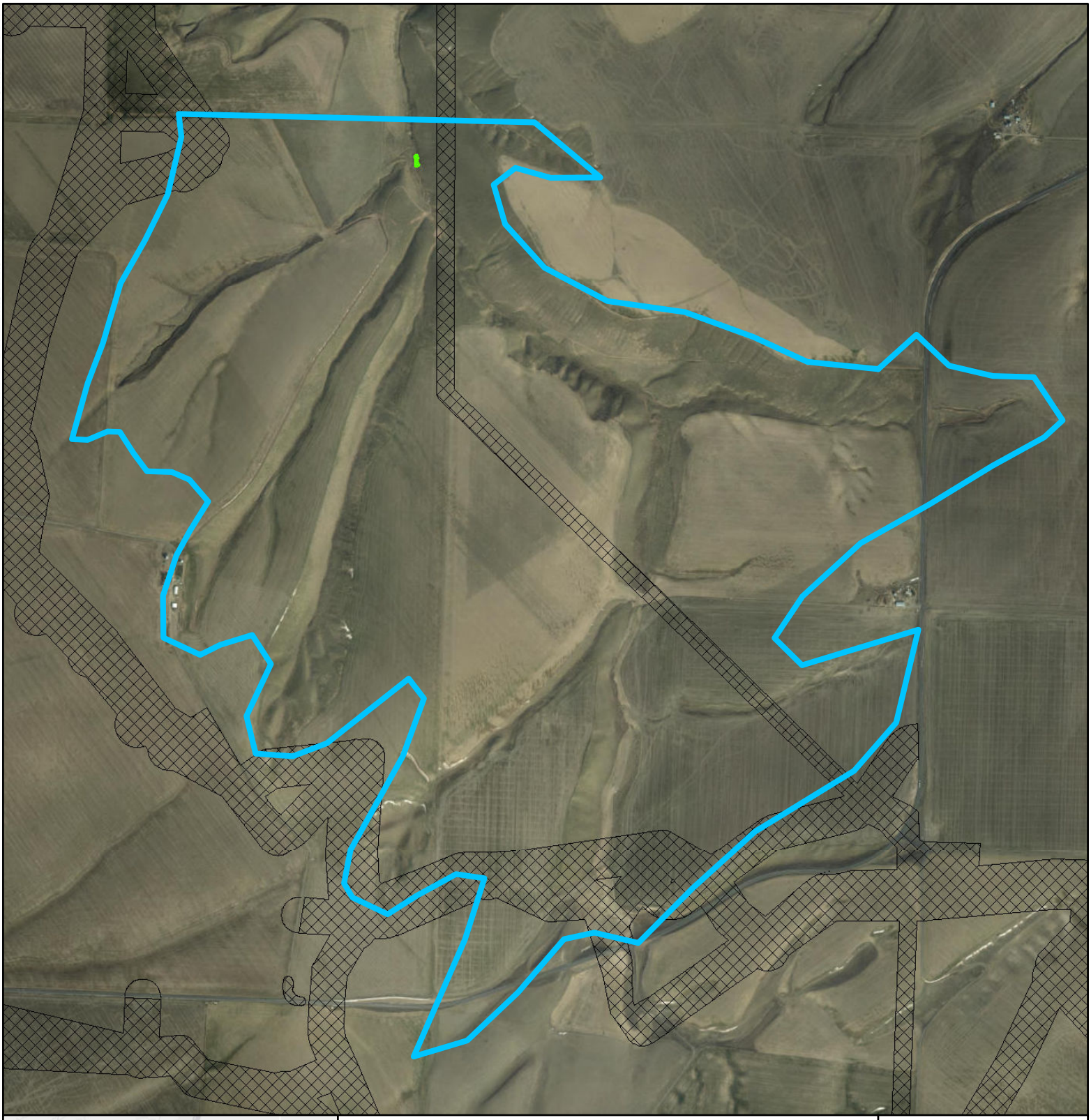
BENTON COUNTY, WA

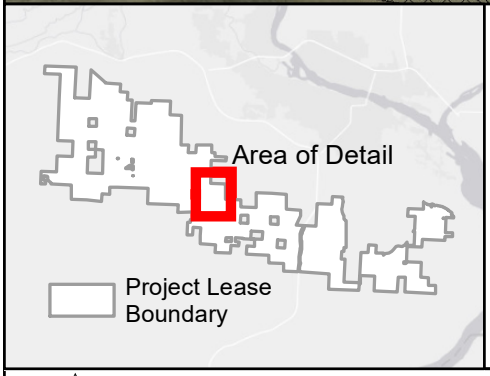
1:12,000 **WGS 1984 UTM Zone 11N**

0 0.25 0.5 Kilometers

NOT FOR CONSTRUCTION

TETRA TECH





Wetland

Contributing Watershed

Micrositing Corridor

Figure 3

Wetland E-10

Horse Heaven Wind Project

SCOUT CLEAN ENERGY

BENTON COUNTY, WA

1:18,000 **WGS 1984 UTM Zone 11N**

0 0.25 0.5 Kilometers

NOT FOR CONSTRUCTION

TETRA TECH

Assessed Water/Sediment Filter

ater

Category 5 - 303d
Category 4C
Category 4B
Category 4A
Category 2
Category 1

diment

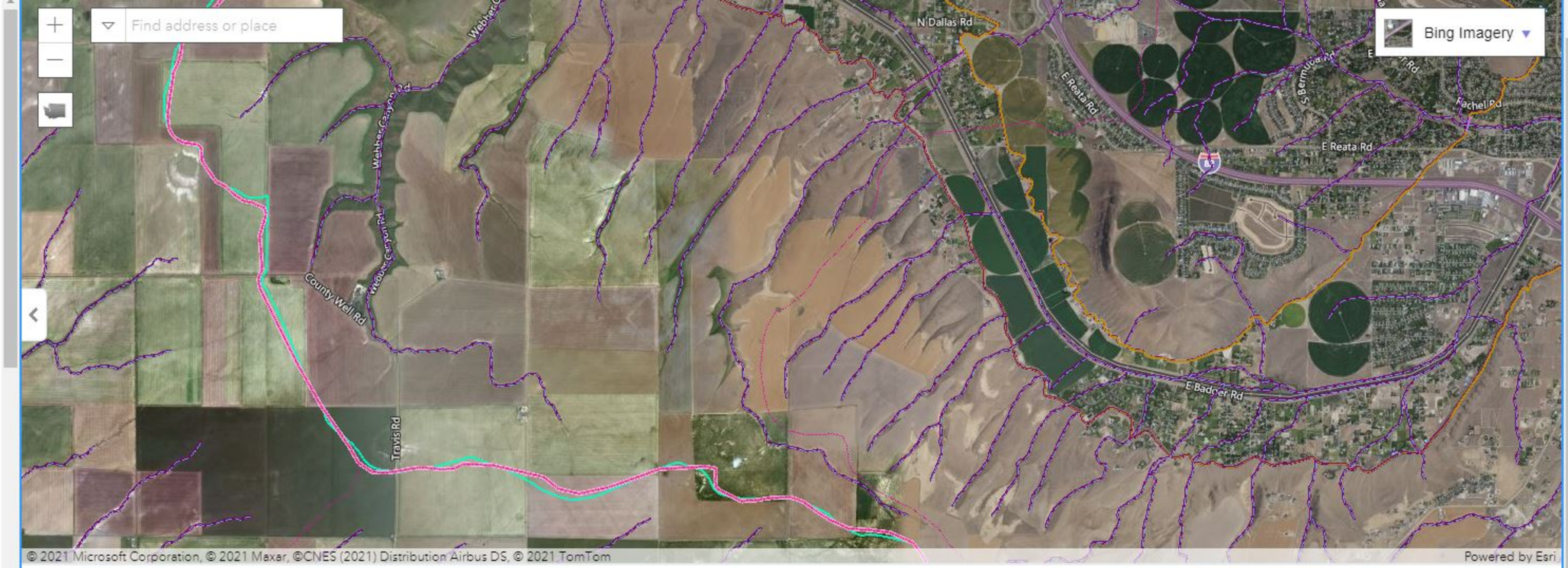
Category 5 - 303d
Category 4C
Category 4B
Category 4A
Category 2
Category 1

Water Quality Standards Filter

All Standards

National Hydrography Dataset

ID Watercourses



Assessed Water/Sediment

Zoom to selection | Table to CSV

Find	Listing ID	Assessment Unit ID	Category	Medium	Parameter	Details
	66746	170200011202_01_01	5	Water	Dissolved Oxygen	View
	11253	170200050203_01_01	5	Water	Temperature	View
	42784	170200050203_01_01	5	Water	Dissolved Oxygen	View

sessed Water/Sediment Filter

Category 5 - 303d
Category 4C
Category 4B
Category 4A
Category 2
Category 1

ment

Category 5 - 303d
Category 4C
Category 4B
Category 4A
Category 2
Category 1

ater Quality Standards Filter

p data not visible at this scale, zoom in to view

ater Resource Inventory Areas

Assessed Water/Sediment Zoom to selection Table to CSV

Find	Listing ID	Assessment Unit ID	Category	Medium	Parameter	Details
	66746	170200011202_01_01	5	Water	Dissolved Oxygen	View
	11253	170200050203_01_01	5	Water	Temperature	View
	42784	170200050203_01_01	5	Water	Dissolved Oxygen	View

APPENDIX C
PHOTOLOG

Photopoint 1. Overview of Slope

Photopoint 2. No beds, no banks, no stream present on NHD line.

Photopoint 3. Ephemeral drainage, upland vegetation with no sign of water. EPH100.

Photopoint 4. Ephemeral drainage, upland vegetation with no sign of water. EPH100.

Photopoint 5. Erosional feature. EPH101.

Photopoint 6. Erosional feature. EPH102.

Photopoint 7. No beds, no banks, no stream present on NHD line.

Photopoint 8. Streambed with watermarks on rocks, and water in pools due to recent rainfall. INT01.

Photopoint 9. Streambed with watermarks on rocks, and water in pools due to recent rainfall. INT01.

Photopoint 10. Streambed with watermarks on rocks, and water in pools due to recent rainfall. INT01.

Photopoint 11. Water in pools due to recent rainfall. INT01.

Photopoint 12. Waterline on rocks. INT01.

Photopoint 14. No beds, no banks, no stream present on NHD line.

Photopoint 15. Ephemeral drainage, upland vegetation with no sign of water. EPH105.

Photopoint 16. Ephemeral drainage, upland vegetation with no sign of water. Yarrow in channel. EPH105.

Photopoint 18. Ephemeral drainage, upland vegetation with no sign of water. EPH104.

Photopoint 19. Ephemeral drainage, upland vegetation with no sign of water. EPH105.

Photopoint 20. Ephemeral drainage, upland vegetation with no sign of water. EPH205.

Photopoint 21. No beds, no banks, no stream present on NHD line.

Photopoint 22. Ephemeral drainage, upland vegetation with no sign of water. EPH202.

Photopoint 23. Ephemeral drainage, upland vegetation with no sign of water. EPH203.

Photopoint 24. Well in bedrock in stream bottom.

Photopoint 25. No beds, no banks, no stream present on NHD line.

Photopoint 26. No beds, no banks, no stream present on NHD line.

Photopoint 27. No beds, no banks, no stream present on NHD line.

Photopoint 28. No beds, no banks, no stream present on NHD line.

Photopoint 29. No beds, no banks, no stream present on NHD line.

Photopoint 30. No beds, no banks, no stream present on NHD line.

Photopoint 31. No beds, no banks, no stream present on NHD line.

Photopoint 32. No beds, no banks, no stream present on NHD line.

Photopoint 33. No beds, no banks, no stream present on NHD line.

Photopoint 35. Garbage dump.

Photopoint 36. Ephemeral drainage, upland vegetation with no sign of water. EPH200.

Photopoint 38. No beds, no banks, no stream present on NHD line.

Photopoint 39. No beds, no banks, no stream present on NHD line.

Photopoint 41. Soil sample site. SS01.

Photopoint 42. No beds, no banks, no stream present on NHD line.

Photopoint 43. No beds, no banks, no stream present on NHD line.

Photopoint 44. No beds, no banks, no stream present on NHD line.

Photopoint 45. No beds, no banks, no stream present on NHD line.

Photopoint 46. No beds, no banks, no stream present on NHD line.

Photopoint 47. No beds, no banks, no stream present on NHD line.

Photopoint 48. No beds, no banks, no stream present on NHD line.

Photopoint 49. No beds, no banks, no stream present on NHD line.

Photopoint 50. Erosional Feature. EPH305.

Photopoint 51. No beds, no banks, no stream present on NHD line.

Photopoint 52. No beds, no banks, no stream present on NHD line.

Photopoint 53. No beds, no banks, no stream present on NHD line.

Photopoint 54. No beds, no banks, no stream present on NHD line.

Photopoint 55. No beds, no banks, no stream present on NHD line.

Photopoint 56. No beds, no banks, no stream present on NHD line.

Photopoint 57. No beds, no banks, no stream present on NHD line.

Photopoint 58. No beds, no banks, no stream present on NHD line.

Photopoint 59. Soil Sample Site. SS02.

Photopoint 60. Streambed with damp soils. INT02.

Photopoint 61. Streambed with damp soils. INT02.

Photopoint 62. Streambed with damp soils. INT02.

Photopoint 63. Streambed with damp soils. INT02.

Photopoint 64. Streambed with damp soils. INT02.

Photopoint 65. Ephemeral drainage, upland vegetation with no sign of water. EPH412.

Photopoint 67. No beds, no banks, no stream present on NHD line.

Photopoint 68. No beds, no banks, no stream present on NHD line.

Photopoint 69. No beds, no banks, no stream present on NHD line.

Photopoint 70. No beds, no banks, no stream present on NHD line.

Photopoint 71. No beds, no banks, no stream present on NHD line.

Photopoint 72. Ephemeral drainage, upland vegetation with no sign of water. EPH301.

Photopoint 73. No beds, no banks, no stream present on NHD line.

Photopoint 74. Ephemeral drainage, upland vegetation with no sign of water. EPH300.

Photopoint 75. No beds, no banks, no stream present on NHD line.

Photopoint 76. No beds, no banks, no stream present on NHD line.

Photopoint 77. No beds, no banks, no stream present on NHD line.

Photopoint 78. Ephemeral drainage, upland vegetation with no sign of water. EPH308.

Photopoint 79. Ephemeral drainage, upland vegetation with no sign of water. EPH308.

Photopoint 80. No beds, no banks, no stream present on NHD line.

Photopoint 81. Ephemeral drainage, upland vegetation with no sign of water. EPH308.

Photopoint 82. No beds, no banks, no stream present on NHD line.

Photopoint 83. Ephemeral drainage, upland vegetation with no sign of water. EPH307.

Photopoint 84. No beds, no banks, no stream present on NHD line.

Photopoint 85. Ephemeral drainage, upland vegetation with no sign of water. EPH307.

Photopoint 86. No beds, no banks, no stream present on NHD line.

Photopoint 87. Ephemeral drainage, upland vegetation with no water. EPH307.

Photopoint 88. Ephemeral drainage, upland vegetation with no sign of water. EPH306.

Photopoint 89. No beds, no banks, no stream present on NHD line.

Photopoint 90. Ephemeral drainage, upland vegetation with no sign of water. EPH401.

Photopoint 91. No beds, no banks, no stream present on NHD line.

Photopoint 93. Streambed with watermarks on rocks, and water in pools due to recent rainfall. INT01.

Photopoint 94. Ephemeral drainage, upland vegetation with no sign of water. EPH400.

Photopoint 95. Ephemeral drainage, upland vegetation with no sign of water. EPH400.

Photopoint 96. Ephemeral drainage, upland vegetation with no sign of water. EPH303.

Photopoint 97. Ephemeral drainage, upland vegetation with no sign of water. EPH303.

Photopoint 98. No beds, no banks, no stream present on NHD line.

Photopoint 99. No beds, no banks, no stream present on NHD line. Road present in valley bottom.

Photopoint 100. No beds, no banks, no stream present on NHD line.

Photopoint 101. No beds, no banks, no stream present on NHD line.

Photopoint 102. Ephemeral drainage, upland vegetation with no sign of water. EPH405.

Photopoint 103. Ephemeral drainage, upland vegetation with no sign of water. EPH404.

Photopoint 104. Ephemeral drainage, upland vegetation with no sign of water. EPH405.

Photopoint 105. Ephemeral drainage, upland vegetation with no sign of water. EPH404.

Photopoint 107. No beds, no banks, no stream present on NHD line.

Photopoint 108. No beds, no banks, no stream present on NHD line.

Photopoint 109. No beds, no banks, no stream present on NHD line.

Photopoint 110. No beds, no banks, no stream present on NHD line.

Photopoint 111. No beds, no banks, no stream present on NHD line.

Photopoint 114. No beds, no banks, no stream present on NHD line.

Photopoint 115. No beds, no banks, no stream present on NHD line.

Photopoint 209. No beds, no banks, no stream present on NHD line.

Photopoint EPH104. Ephemeral drainage, upland vegetation with no sign of water.

Photopoint EPH104. Ephemeral drainage, upland vegetation with no sign of water.

Photopoint EPH500 levee 1. Ephemeral drainage, upland vegetation with no sign of water.

Photopoint EPH500 N. Ephemeral drainage, upland vegetation with no sign of water.

Photopoint EPH500 NE1. Ephemeral drainage, upland vegetation with no sign of water.

Photopoint EPH501 NW1. Ephemeral drainage, upland vegetation with no sign of water.

Photopoint EPH501 SE. Ephemeral drainage, upland vegetation with no sign of water.

Photopoint EPH501 SE1. Ephemeral drainage, upland vegetation with no sign of water.

Photopoint EPH500 levee 2. Ephemeral drainage, upland vegetation with no sign of water.

Photopoint XBB 310. No beds, no banks, no stream present on NHD line.

Photopoint XBB 300. No beds, no banks, no stream present on NHD line.

Photopoint XBB 301. No beds, no banks, no stream present on NHD line.

Photopoint XBB 302. No beds, no banks, no stream present on NHD line.

Photopoint XBB 303. No beds, no banks, no stream present on NHD line.

Photopoint XBB 304. No beds, no banks, no stream present on NHD line.

Photopoint XBB 305. No beds, no banks, no stream present on NHD line.

Photopoint XBB 306. No beds, no banks, no stream present on NHD line.

Photopoint XBB 307. No beds, no banks, no stream present on NHD line.

Photopoint XBB 308. No beds, no banks, no stream present on NHD line.

Photopoint XBB 309. No beds, no banks, no stream present on NHD line.

Photopoint XBB 310. No beds, no banks, no stream present on NHD line.

Photopoint XBB 311. No beds, no banks, no stream present on NHD line.

Photopoint XBB 312. No beds, no banks, no stream present on NHD line.

Photopoint XBB 313. No beds, no banks, no stream present on NHD line.

Photopoint 600. Ephemeral drainage, upland vegetation with no sign of water . Overview of drainage, EPH401.

Photopoint 601. Ephemeral drainage, upland vegetation with no sign of water Ephemeral drainage, EPH401.

Photopoint 602. Ephemeral drainage, upland vegetation with no sign of water Ephemeral stream does not extend uphill. EPH306.

Photopoint 603. Ephemeral drainage, upland vegetation with no sign of water Ephemeral drainage, less than one foot wide. EPH306.

Photopoint 604. No beds, no banks, no stream present on NHD line. Cattle trail.

Photopoint 605. No beds, no banks, no stream present on NHD line. Ephemeral stream does not extend beyond this point.

Photopoint 606. No beds, no banks, no stream present on NHD line.

Photopoint 607. Ephemeral drainage, upland vegetation with no sign of water. Narrow ephemeral drainage, EPH600.

Photopoint 608. Ephemeral drainage, upland vegetation with no sign of water. Overview of EPH600.

Photopoint 609. No beds, no banks, no stream present on NHD line.

Photopoint 610. No beds, no banks, no stream present on NHD line. Culvert under road.

Photopoint 611. Ephemeral drainage, upland vegetation with no sign of water. Ephemeral drainage begins at this point, EPH602.

Photopoint 612. Ephemeral drainage, upland vegetation with no sign of water. EPH602.

Photopoint 613. End of EPH602.

Photopoint 614. No beds, no banks, no stream present on NHD line.

Photopoint 701. Ephemeral drainage, upland vegetation with no sign of water. EPH401.

Photopoint 702. No beds, no banks, no stream present on NHD line. Upstream end of EPH401.

Photopoint 703. Ephemeral drainage, upland vegetation with no sign of water. EPH401.

Photopoint 704. Ephemeral drainage, upland vegetation with no sign of water. EPH401.

Photopoint 705. No beds, no banks, no stream present on NHD line. Hillside between plowed fields.

Photopoint 706. No beds, no banks, no stream present on NHD line.

Photopoint 708. Ephemeral drainage, upland vegetation with no sign of water Ephemeral drainage, with trash pile. EPH306.

Photopoint 709. No beds, no banks, no stream present on NHD line.

Photopoint 710. No beds, no banks, no stream present on NHD line.

Photopoint 711. No beds, no banks, no stream present on NHD line.

Photopoint 712. No beds, no banks, no stream present on NHD line.

Photopoint 713. No beds, no banks, no stream present on NHD line. Bottom between two hills next to freeway.

Photopoint 714. No beds, no banks, no stream present on NHD line.

Photopoint 715. No beds, no banks, no stream present on NHD line.

Photopoint 716. No beds, no banks, no stream present on NHD line.

Photopoint 717. No beds, no banks, no stream present on NHD line.

Photopoint 718. No beds, no banks, no stream present on NHD line.

Photopoint 719. No beds, no banks, no stream present on NHD line.

Photopoint 720. Ephemeral drainage, upland vegetation with no sign of water. EPH700.

Photopoint 721. Ephemeral drainage, upland vegetation with no sign of water. EPH700, leading up to culvert under road.

Photopoint 722. No beds, no banks, no stream present on NHD line.

Photopoint 723. Ephemeral drainage, upland vegetation with no sign of water. EPH700.

Photopoint 724. Ephemeral drainage, upland vegetation with no sign of water. Upstream end of EPH700, begins to lose bed and banks.

Photopoint 725. No beds, no banks, no stream present on NHD line.

Photopoint 800. No beds, no banks, no stream present on NHD line. Water retention pond, with no culvert.

Photopoint 801. No beds, no banks, no stream present on NHD line.

Photopoint 802. No beds, no banks, no stream present on NHD line.

Photopoint 803. No beds, no banks, no stream present on NHD line.

Photopoint 804. No beds, no banks, no stream present on NHD line.

Photopoint 805. No beds, no banks, no stream present on NHD line.

Photopoint 806. No beds, no banks, no stream present on NHD line.

Photopoint 807. No beds, no banks, no stream present on NHD line.

Photopoint 808. No beds, no banks, no stream present on NHD line.

Photopoint 809. No beds, no banks, no stream present on NHD line.

Photopoint 810. No beds, no banks, no stream present on NHD line.

Photopoint 811. Ephemeral drainage, upland vegetation with no sign of water, EPH800.

Photopoint 812. Ephemeral drainage, upland vegetation with no sign of water, EPH800.

Photopoint 813. No beds, no banks, no stream present on NHD line. No culvert alongside road.

Photopoint 814. No beds, no banks, no stream present on NHD line.

Photopoint 900. No beds, no banks, no stream present on NHD line.

Photopoint 900b. Ephemeral drainage, typical conditions. EPH-900. Facing southwest.

Photopoint 900c. Ephemeral drainage. EPH-900. No bed or banks southwest of here.

Photopoint 904. Ephemeral drainage, typical conditions. EPH-904. Facing northwest.

Photopoint 904a. Ephemeral drainage, typical conditions. EPH-904A. Facing north.

Photopoint 905. Ephemeral drainage, typical conditions. EPH-904. Facing west.

Photopoint E10. Sample site. No water, horsetail, well pump in background.

Photopoint E10a. Overview.

Photopoint E10b. Sample site. Upland, great basin wildrye and non-hydric soils.

Photopoint E18. Sample site. Upland, cereal rye and non-hydric soils.

Photopoint 901. No beds, no banks, no stream present on NHD line. Facing northeast.

Photopoint 902. No beds, no banks, no stream present on NHD line. Facing northeast.

Attachment Veg-14

Treatment options for noxious weed species observed in the Project Lease Boundary

Tetra Tech documented observations of noxious weeds during botany and habitat surveys conducted for the Project in 2020 and 2021. During these surveys, five Washington State and Benton County-listed noxious weed species were observed within the survey area. Recommended treatment methods and timing for each of the five noxious weeds observed are provided in Table 1. Treatment methods provided in Table 1 include mechanical and chemical control.

Mechanical control involves removing or destroying plants, seed heads, and/or roots with a shovel or other hand tools or equipment used to remove, mow, or disc noxious weed populations. Tilling and discing; however, disturb the soil, which can facilitate the germination or colonization of noxious weeds or disturb or kill desirable native species. Therefore, care must be taken when using tillage to treat noxious weed infestations and follow-up treatments may be necessary. Mechanical methods are recommended for smaller infestations of noxious weeds in the Project area, such as for smaller patches of knapweed (*Centaurea* spp.) or Scotch thistle (*Onopordum acanthium*).

Chemical control, through the use of selective herbicides, is often the most effective method of controlling noxious weeds; especially for large infestations. The recommended herbicide, rate of application, and timing of application differ based on the target species being treated and the herbicide being used. In addition, herbicides approved for use by the U.S. Environmental Protection Agency and the State of Washington periodically change; therefore, the Benton County Weed Coordinator should be contacted prior to any application of herbicides. Prior to use of herbicides, the Benton County Weed Coordinator should also be consulted on preferred methods of control for each identified noxious weed species, as the effectiveness of various herbicides may change if a noxious weed species becomes resistant to herbicide treatment over time.

Table 1. Recommended Control Methods for Noxious Weeds Observed within the Project Lease Boundary

Noxious Weed Species ***Scientific Name*** **(Common Name)**	**Herbicide Control**	**Mechanical Control**
Bassia (*Kochia*) *scoparia* (Kochia)	**Spring:** • **Aminocyclopyrachlor + chlorsulfuron –** Apply either preemergence or postemergence. Postemergence applications are most effective on seedlings • **Hexazinone –** Apply preemergence in the spring • **Imazapic –** Apply preemergence or postemergence to actively growing kochia • **Imazapyr –** Apply preemergence or postemergence to actively growing kochia • **Rimsulfuron–** Apply preemergence or postemergence to kochia seedlings **Spring through early Summer:** • **Chlorsulfuron –** Apply preemergence, or postemergence from seedling to bolting stage of growth. • **Fluroxypyr** – Apply in spring from seedling to bolting stage of growth • **Glyphosate** – Apply in spring from seedling to flowering stage of growth. • **Metsulfuron** – Apply in spring from seedling to flowering stage of growth	• Dig or hand-pull small infestations; when digging, sever the root below the soil surface. • Mowing will reduce seed production; mow prior to flowering. • Shallow tillage can control emerged plants; however, it often stimulates recruitment. Deep tillage can reduce infestations by burying seed deep enough to prevent germination.
Centaurea spp.[1] (Diffuse knapweed)	**Spring:** • **2,4-D** - Apply at early stage of flower stem elongation (late April to early May) • **Aminocyclopyrachlor + chlorsulfuron –** Apply to actively growing plants in spring. • **Clopyralid + 2,4-D amine–** Apply after rosettes emerge but before flower stem elongates • **Picloram –** Apply in late spring before or during flower stem elongation. **Spring through early Summer:** • **Clopyralid –** Apply to actively growing plants through bud stage. **Spring or Fall:**	• Mechanical methods (e.g., digging or hoeing, hand-pulling) that severs roots below the soil surface will kill plants. • Mow or chop plants. Mowing or chopping while plants are in full bloom, but prior to seed set (typically July through early September), is most effective. • Bag and dispose of cut flowering plants. Seeds of cut plants can mature and become viable if left on the ground.

Noxious Weed Species ***Scientific Name*** **(Common Name)**	**Herbicide Control**	**Mechanical Control**
	• **Aminopyralid –** Apply to actively growing plants in spring or fall.	
Chondrilla juncea (Rush skeletonweed)	**Spring:** • **2,4-D or MCPA –** Apply to rosettes in spring immediately before or during bolting; retreatment likely necessary • **Clopyralid –** Apply to rosettes in fall or up to the early bolting stage in spring **Spring or Fall:** • **Aminocyclopyrachlor + chlorsulfuron –** Apply postemergence in spring until flowering, or apply to rosettes in the fall • **Aminopyralid –** Apply in the spring or fall when rosettes are present • **Picloram –** Apply from late fall to early spring. For best results, apply just before or during bolting.	• Mechanical control is only effective for very small infestations. • Hand-pull or dig plants when soil is moist and remove all roots (to the extent possible). • New plants can arise from root fragments; therefore, several rounds of hand-pulling or digging may be necessary. • Bag individuals that are flowering during removal (so as not to scatter seeds). • Mowing is not an effective method for mechanical control of this species.
Onopordum acanthium (Scotch thistle)	**Spring:** • **Aminocyclopyrachlor + chlorsulfuron –** Apply to actively growing plants in spring. • **Chlorsulfuron –** Apply to young, actively growing plants. **Spring through early Summer:** • **Clorpyralid or clopyralid + 2,4-D amine –** Apply to actively growing plants after most basal leaves emerge but before bud stage. • **Metsulfuron** – Apply postemergence to actively growing plants. • **Triclopyr + clopyralid –** Apply to actively growing thistle from rosette to early bolt stage. **Spring or Fall:** • **2,4-D –** Apply spring or fall to rosettes. • **Aminopyralid –** Apply in spring or early summer to rosettes or bolting plants or in fall to seedlings and rosettes. • **Glyphosate + 2,4-D –** Apply to thistles in rosette stage of growth in spring or before freeze-up in fall • **Picloram –** Apply in the fall before thistle bolts.	• Till, hoe, dig, or hand pull (with gloves), preferably before production of a flower stalk. When complete removal cannot be achieved, the root can be severed below the soil surface. • Mowing, can be effective; however, if cut before plants have flowered; plants may re-sprout and flower again that season. Repeated mowing may prevent flowering. Make sure to mow before flowering to prevent seeds development. Repeated mowing may be needed on moist sites. • Collect, bag, and dispose of or destroy flower heads and buds; seeds will mature and germinate if left on the ground.

Noxious Weed Species *Scientific Name* (Common Name)	Herbicide Control	Mechanical Control
Secale cereale (Cereal rye)	**Glyphosate** can be applied post-emergence; however, it does not provide residual weed control, so any plants that emerge after treatment will not be controlled.	• Mechanical and cultural control options are generally ineffective. • Mowing of cereal rye will only kill plants that are nearly mature.

Sources: CDA 2021; DiTomaso e al. 2013; LCNWCB 2021; Prather et al. 2019; WSNWCB 2021.

Notes:

[1] Individuals observed were not flowering at the time of surveys; therefore, positive identification was not possible. Based on observations of rosettes and leaves, individuals and populations are believed to be either diffuse knapweed (*Centaurea diffusa*) or spotted knapweed (*Centaurea stoebe*). Recommended treatment options for these two species are the same.

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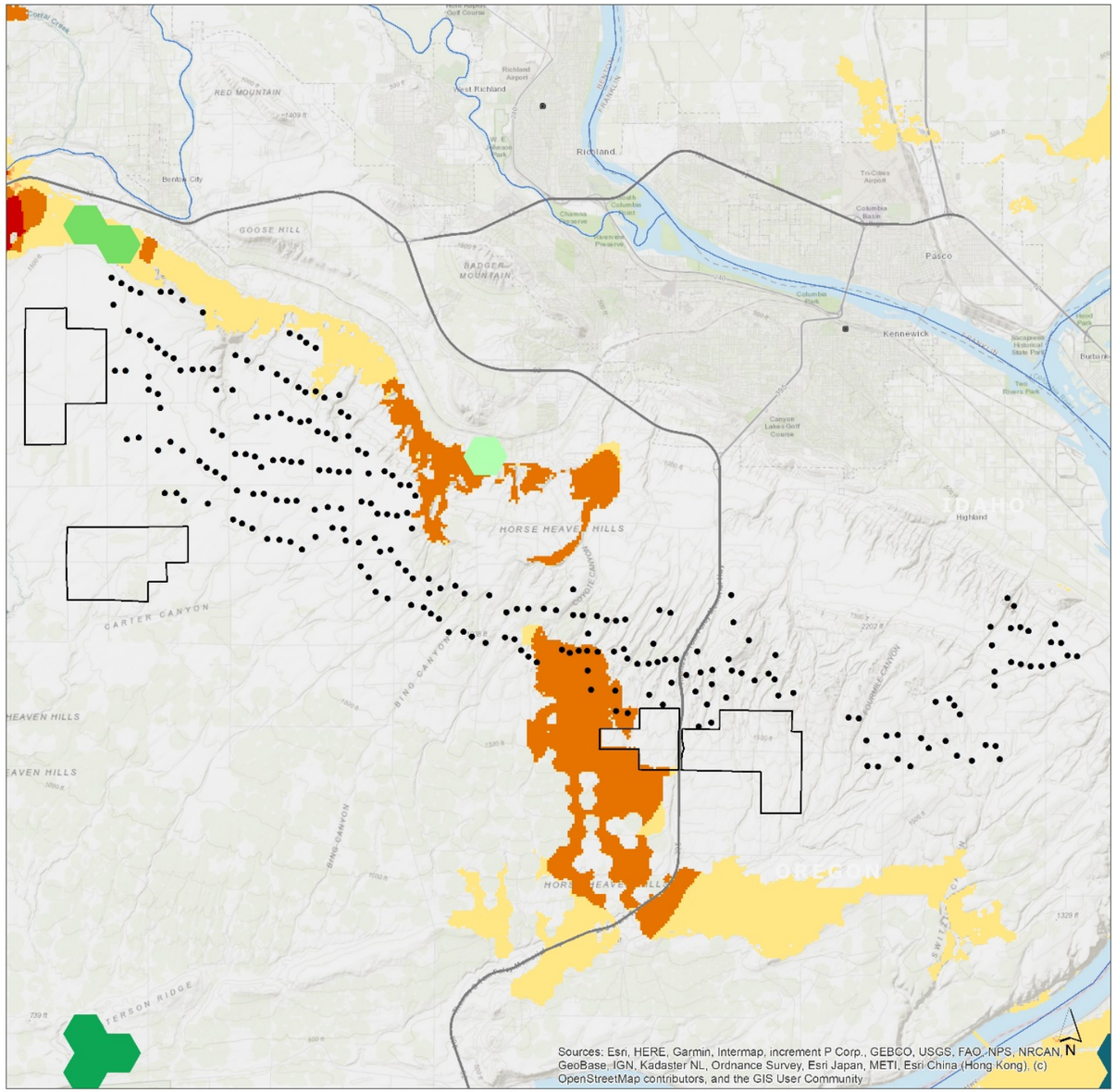
Attachment Wildlife-20



ALI Priority Areas: ranked Marxan core areas and WHCWG high priority linkages

On 2/3/2014, the ALI Core Team agreed on the spatial priorities shown in this map. They include priority core areas (PCAs) from this analysis as well as high priority linkages identified by the WHCWG.

The Marxan PCAs (in blues and greens) are ranked by their contributions to under-represented targets. Under-represented targets are defined as those with less than their ALI percentage goal (at medium overall levels) currently falling within lands with GAP protected status 1 – 3. Contributions (percent of targets inside of PCA) were summed across targets for each PCA, and then normalized by PCA size to derive a ranking index.

The WHCWG linkages (in fire colors) were ranked in their 2013 analysis of linkage centrality. The "very high" and "high" centrality composite linkages were chosen as priority areas by the ALI. Areas where over four WHCWG focal species connectivity networks overlap are also ALI priorities

Priority Core Areas

Contribution of priority area to under-represented targets

- Low
- Medium-low
- Medium
- Medium-high
- High

Project Development

- Wind Turbine (244)
- Solar Area of Interest

WHCWG Linkages

Linkage centrality cumulative rating

- Very high linkage centrality
- High linkage centrality

Number of overlapping WHCWG focal species networks

- 6 - 9 overlapping focal species networks
- 4 - 5 overlapping focal species networks

Data Sources: Arid Lands Initiative (ALI), WHCWG, Esri, USGS NHD, Natural Earth, Scout

0 1.75 3.5 7 Miles

Arid Lands Initiative

Figure 1. ALI Shared Priority Area Model Results and Horse Heaven Wind Farm Infrastructure

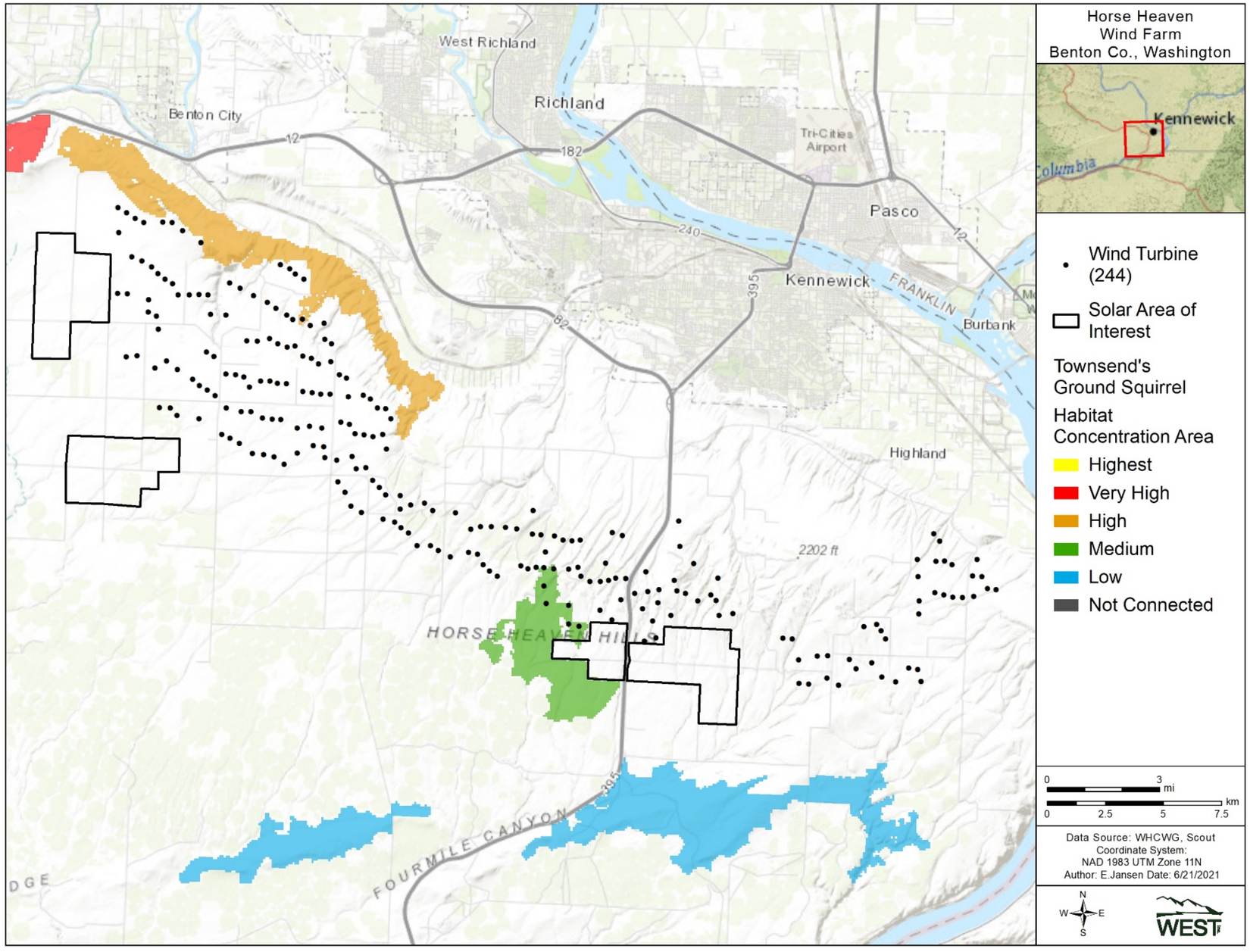


Figure 2. Townsend's Ground Squirrel Habitat Concentration Areas in the Horse Heaven Hills as Modeled by the WHCWG