Wild Horse Wind Power Expansion Project

Draft Supplemental Environmental Impact Statement

Lead Agency:

Energy Facility Site Evaluation Council

November 2008

WILD HORSE WIND POWER EXPANSION PROJECT

Draft Supplemental Environmental Impact Statement (SEIS)

Prepared by:

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November 2008

FACT SHEET

Wild Horse Wind Power Expansion Project
Supplemental Environmental Impact Statement (SEIS)

Lead Agency and Responsible Official: Washington Energy Facility Site Evaluation Council (EFSEC); Allen Fiksdal, EFSEC Manager, 905 Plum Street, PO Box 43172, Olympia, WA 98504-3172; (360) 956-2152.

Abstract: On July 2, 2008, Puget Sound Energy (PSE) submitted a request to amend the Site Certification Agreement (SCA) for the Wild Horse Wind Power Project (WHWPP), as recommended by the Energy Facility Site Evaluation Council (EFSEC) in Council Order No. 814, and approved by Governor Gregoire on July 26, 2005. The WHWPP was approved along with EFSEC's issuance and approval of a Final Environmental Impact Statement (FEIS) dated May 16, 2005. The WHWPP is fully constructed and operational and includes 127 wind turbine generators, along with related and supporting facilities, with generation of 229 MW of electricity. The Site Certificate Agreement and FEIS document EFSEC's and Governor Gregoire's review and approval of a maximum project of 158 wind turbine generators and 312 MW of electrical generation.

The purpose of the requested Amendment is to develop and operate 22 new wind turbine generators, adding 960 acres to the 8,600-acre Wild Horse Project, with generation capacity of approximately 44 MW of electricity. The Project proposes related and supporting facilities as described fully in the Request for Amendment and in this Supplemental EIS, including without limitation: access roads, underground electrical collection cables, and expansion to the existing substation. The total output and number of turbines will remain within the limits allowed under the existing SCA. This Supplemental EIS analyzes existing conditions and impacts of these additional facilities, which are located outside the project footprint analyzed in the FEIS. The project will be constructed on the high open ridges in the vicinity of Whiskey Dick Mountain, located approximately 10 miles east of Kittitas and approximately 5 miles north of the Old Vantage Highway. The project will be adjacent to the Wild Horse Wind Power Project. Specifically, the project will be located in Section 8 and the North Half of Section 17, all in Township 18 North, Range 21 East, W.M., in Kittitas County.

Proposal's Sponsor: Puget Sound Energy, 10885 NE 4th Street, Bellevue, WA 98009

Date of Implementation: Construction activities are anticipated to begin in early 2009 and last approximately nine months. The start of construction depends on the date of approval of the SCA amendment.

List of Possible Permits, Approvals, and Licenses: EFSEC is the sole non-federal agency authorized to permit the proposed project. For informational purposes, Table 2-10 of the August 2004 Draft EIS lists the major state and local permitting requirements preempted by EFSEC, as well as federal requirements. Not all listed permits and approvals may be required. The original SCA provides construction and operational requirements and all other relevant local and Washington state permits and approvals for the Wild Horse Wind Power Facility as a whole.

Authors and Principal Contributors to SEIS: David Evans and Associates, Inc., consultant to the project sponsor, is the principal author of the SEIS. The primary sources of information used to prepare the SEIS are the DEIS and FEIS prepared by Jones & Stokes, as well as supporting documentation prepared by Puget Sound Energy and its consultants: WEST, Inc.; Lithic Analysts, and Kleinfelder. The document was reviewed by EFSEC staff.

Subsequent Environmental Review: Adjudicative Hearings
SEPA Checklist

Date of Final Lead Agency Action: After EFSEC deliberates on the facts, testimony, and SEIS contents, it will make a decision to approve, conditionally approve, or deny the project (expected in late 2008).

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Location of Background Information: You may access this SEIS and find additional information about the project on the EFSEC Web site at www.efsec.wa.gov. Copies of the Wild Horse Wind Power Project SCA, EFSEC No. 2004-01, and this SEIS, also are available for public review at the following locations:

Washington State Energy Facility Site Evaluation Council
905 Plum Street SE, Building 4
Olympia, WA 98504-3172
(360) 956-2121

Washington State Library
Joel M. Pritchard Branch
Point Plaza East
6880 Capital Blvd.
Olympia, WA 98504-2460
(360) 704-5200

Ellensburg Public Library
209 North Ruby Street
Ellensburg, WA 98926
(509) 962-7250

Kittitas Public Library
NE 2nd and Pierce Streets
Kittitas, WA 98934
(509) 968-0226

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 Project Outline 1
1.2 Purpose and Need 4
1.3 Background 4
1.4 Summary Table 6
2 PROJECT DESCRIPTION 9
2.1 Project Overview 9
2.2 Facilities 9
2.3 Construction Sequencing 13
2.4 Construction Equipment 14
3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS 15
3.1 Earth 15
3.1.1 Affected Environment 15
3.1.2 Impacts of the Proposed Action 18
3.1.3 Mitigation Measures 19
3.1.4 Significant Unavoidable Adverse Impacts 20
3.2 Biological Resources 20
3.2.1 Affected Environment 20
3.2.2 Impacts of the Proposed Action 24
3.2.3 Mitigation Measures 27
3.2.4 Significant Unavoidable Adverse Impacts 28
3.3 Water Resources 28
3.3.1 Affected Environment 28
3.3.2 Impacts of the Proposed Action 28
3.3.3 Mitigation Measures 29
3.3.4 Significant Unavoidable Adverse Impacts 30
3.4 Visual Resources 30
3.4.1 Affected Environment 30
3.4.2 Impacts of the Proposed Action 30
3.4.3 Mitigation Measures 36
3.4.4 Significant Unavoidable Adverse Impacts 36
3.5 Energy and Natural Resources 37
3.5.1 Affected Environment 37
3.5.2 Impacts of the Proposed Action 37
3.5.3 Mitigation Measures 37
3.5.4 Significant Unavoidable Adverse Impacts 37
3.6 Noise 37
3.6.1 Affected Environment 37
3.6.2 Impacts of the Proposed Action 38
3.6.3 Mitigation Measures 39
3.6.4 Significant Unavoidable Adverse Impacts 40
3.7 Land Use and Recreation 40
3.7.1 Affected Environment 40
3.7.2 Impacts of the Proposed Action 42
3.7.3 Mitigation Measures 44
3.7.4 Significant Unavoidable Adverse Impacts 44
3.8 Cultural Resources 44
3.8.1 Affected Environment 44

3.8.2 Impacts of the Proposed Action 44
3.8.3 Mitigation Measures 44
3.8.4 Significant Unavoidable Adverse Impacts 45
3.9 Transportation 45
3.9.1 Affected Environment 45
3.9.2 Impacts of the Proposed Action 45
3.9.3 Mitigation Measures 45
3.9.4 Significant Unavoidable Adverse Impacts 46
3.10 Health and Safety 46
3.10.1 Affected Environment 46
3.10.2 Impacts of the Proposed Action 46
3.10.3 Mitigation Measures 46
3.10.4 Significant Unavoidable Adverse Impacts 46
3.11 Air Quality 46
3.11.1 Affected Environment 46
3.11.2 Impacts of the Proposed Action 46
3.11.3 Mitigation Measures 47
3.11.4 Significant Unavoidable Adverse Impacts 47
3.12 Public Services and Utilities 47
3.12.1 Affected Environment 47
3.12.2 Impacts of the Proposed Action 47
3.12.3 Mitigation Measures 47
3.12.4 Significant Unavoidable Adverse Impacts 48
3.13 Socioeconomics 48
3.13.1 Affected Environment 48
3.13.2 Impacts of the Proposed Action 48
3.13.3 Mitigation Measures 49
3.13.4 Significant Unavoidable Adverse Impacts 49
3.14 Cumulative Impacts 49
3.14.1 Vegetation 50
3.14.2 Wildlife 50
3.14.3 Noise 51
3.14.4 Visual Resources 51
4 ADDITIONAL REFERENCES 52
5 SEIS DISTRIBUTION LIST 53

LIST OF TABLES

Table 1. Summary of Project Impacts 6
Table 2. Estimated Area of Associated Temporary and Permanent Disturbance 15
Table 3. Estimated Project Cut and Fill Quantities 19
Table 4. Estimated Habitat Impacts (Acres) 25
Table 5. Plans, Policies, and Regulations Pertinent to the Project 43

LIST OF FIGURES

Figure 1. Vicinity Map 2
Figure 2. Expanded Wind Facility 3
Figure 3. Expansion Features 10
Figure 4. Preliminary Site Layout 11
Figure 5. Geological Units and Faults 16
Figure 6. Soils 17
Figure 7. Wildlife Habitat 21
Figure 8. Visual Simulation Viewpoint Locations 32
Figure 9. Selected Visual Simulations 33
Figure 10. Land Use and Zoning 41

APPENDICES

Appendix A – Comments on the SEPA Checklist
Appendix B – Applicant Responses to Checklist Comments
Appendix C – 2007 Baseline Wildlife and Habitat Study
Appendix D – 2008 Rare Plant Survey
Appendix E – 2007 First-Year Operation Wildlife Monitoring Report
Appendix F – 2008 Aerial Surveys
Appendix G – Visual Impact Study
Appendix H – Cultural Report Summary

Abbreviations and Acronyms

BMP	best management practice
CRM	Coordinated Resource Management
CRP	Conservation Reserve Program
DEIS	Draft Environmental Impact Statement
dBA	decibels
DNR	Department of Natural Resources
Ecology	Washington State Department of Ecology
EDNA	environmental designation for noise abatement
EFSEC	Energy Facility Site Evaluation Council
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
I-90	Interstate 90
met	meteorological
MW	megawatts
PSE	Puget Sound Energy
SCA	Site Certification Agreement
SEIS	Supplemental Environmental Impact Statement
SEPA	State Environmental Policy Act
SWPPP	Stormwater Pollution Prevention Plan
TAC	Technical Advisory Committee
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
Wild Horse	Wild Horse Wind Power Project
WTG	wind turbine generator

1 INTRODUCTION

1.1 Project Outline

Wild Horse Wind Power Project (Wild Horse) is located six miles west of Vantage in eastern Kittitas County (**Figure 1**). The Final EIS (FEIS) for Wild Horse was published by the Washington Energy Facility Site Evaluation Council (EFSEC) on May 16, 2005. On July 26, 2005, Governor Gregoire approved the Site Certification Agreement (SCA) for the project. Construction of 127 wind turbine generators (WTGs) and related facilities (**Figure 2**) was substantially completed in December 2006. Since then, Puget Sound Energy (PSE) has operated Wild Horse, which currently has a gross nominal generating capacity of 229 megawatts (MW) of electricity.

The original Wild Horse SCA authorized a facility of up to 158 WTGs with a maximum nameplate capacity of 312 MW on an approximately 8,600-acre site. This is a significantly larger number of turbines and total output than installed to date. PSE has requested an amendment to the SCA in order to add approximately 960 acres immediately adjacent to the northwest corner of the existing site. These additional acres comprise Section 8 and the north half of Section 17, all in Township 18 North, Range 21 East, Willamette Meridian.

The expansion project would install 22 new WTGs, associated roads, and an electrical collection system delivering generated electricity to the existing Wild Horse substation, which will be expanded slightly (**Figure 3**). Three of the WTGs would be installed within the Wild Horse site, and 19 are proposed within the new expansion area. The power would be transported off the site on the existing transmission line. The expansion project will result in a total of 149 WTGs at Wild Horse with a generating capacity of 273 MW, both of which are below the respective limits authorized by the SCA.

EFSEC is evaluating the siting of the additional 22 turbines pursuant to the requirements of Chapter 80.50 RCW. In accordance with the Washington State Environmental Policy Act (SEPA) (RCW 43.21C), EFSEC is conducting an environmental review with this Supplemental Environmental Impact Statement (SEIS) (WAC 463-47). Information and resulting analysis presented in this SEIS are based primarily on information provided in the FEIS for Wild Horse, which incorporates the Draft EIS (DEIS), and in a SEPA Checklist submitted as part of the SCA amendment request. The SCA, DEIS, FEIS, and SEPA Checklist are available on the internet at EFSEC's website (www.efsec.wa.gov) and are incorporated by reference into this SEIS.

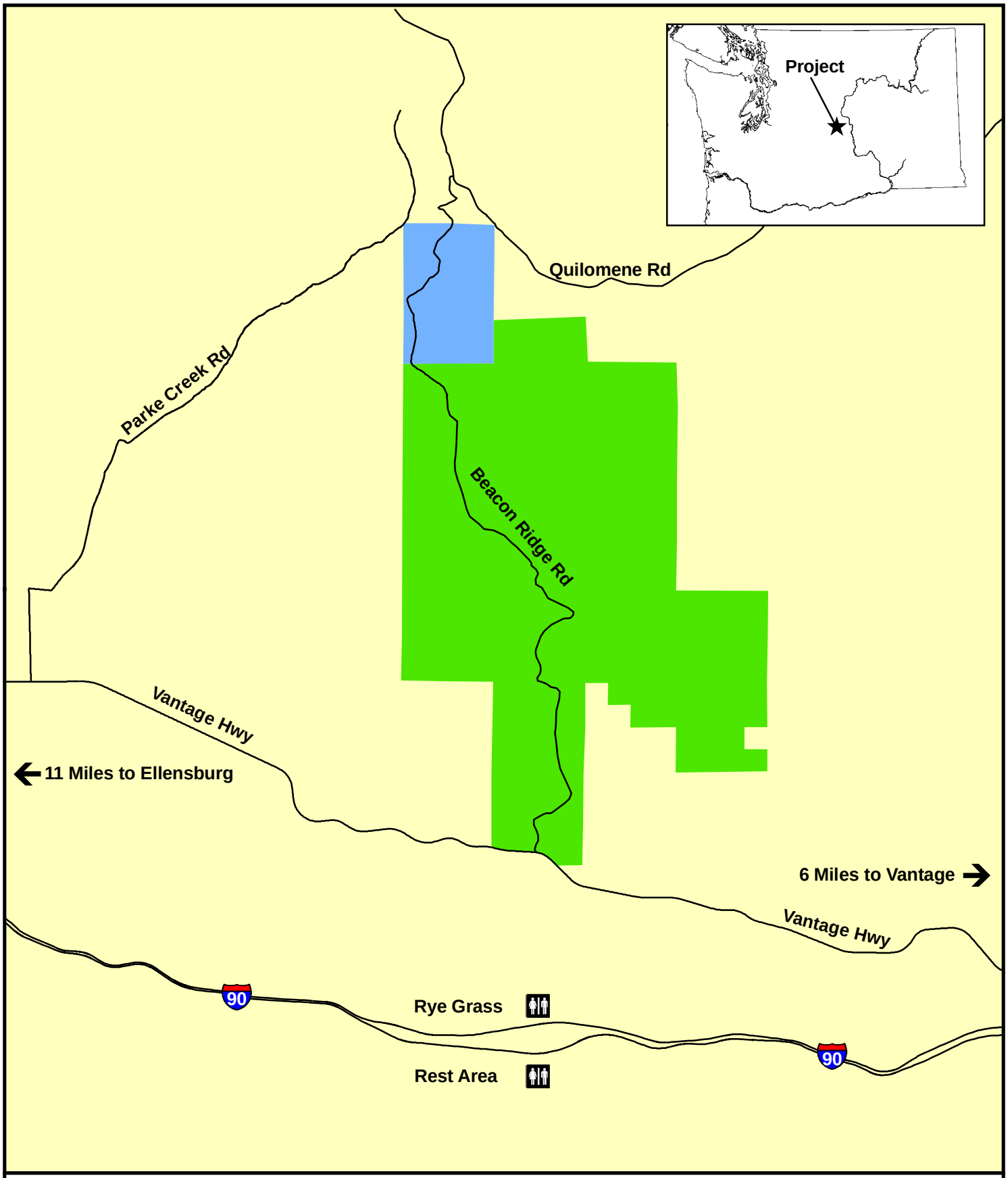

Figure 1 - Vicinity Map
Wild Horse Supplemental EIS

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N W E S

Road
Expansion Area
Existing Facility

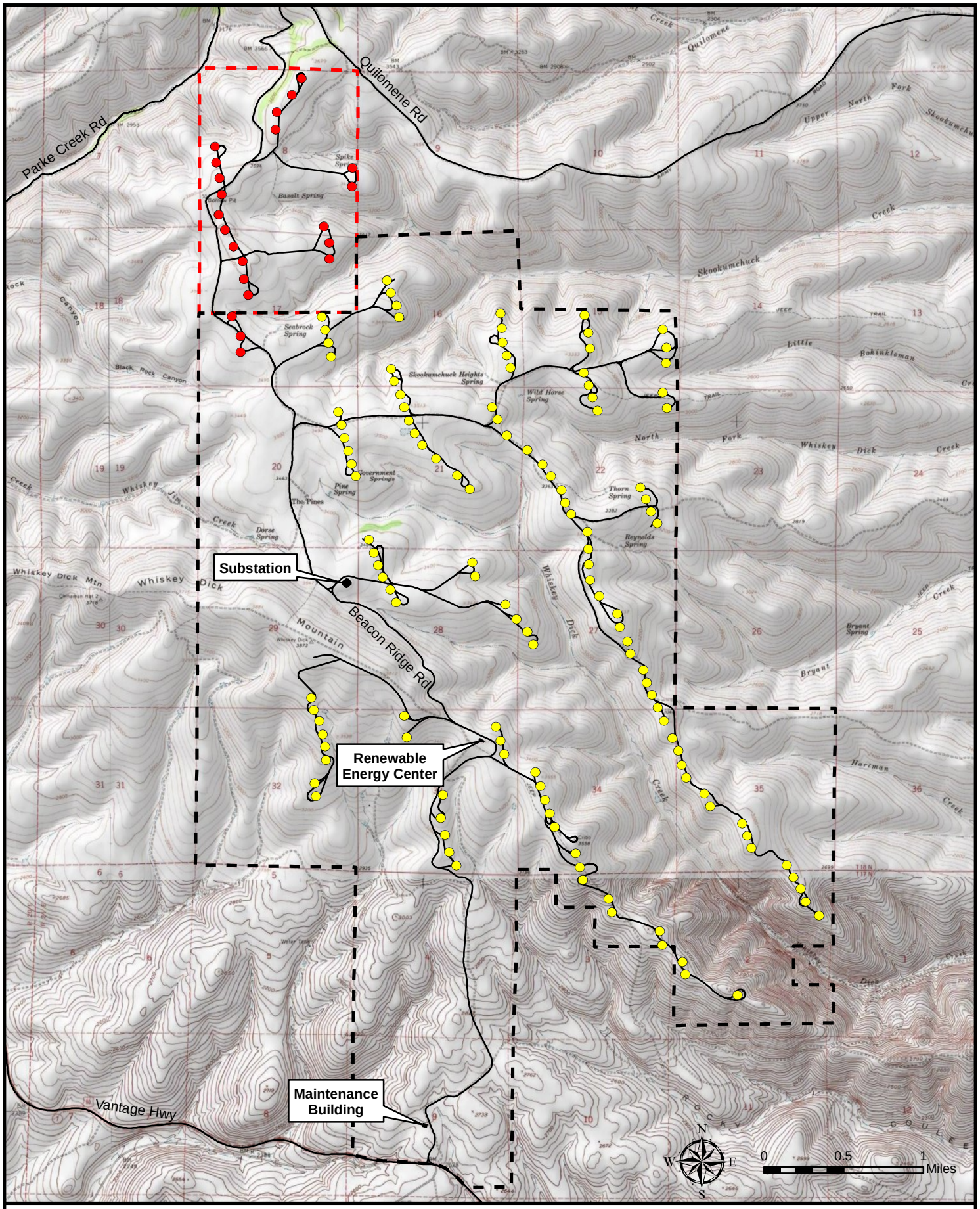

Figure 2 - Expanded Wind Facility
Wild Horse Supplemental EIS

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Proposed Wind Turbine
Existing Wind Turbine
Road
Existing Facility
Expansion Area

1.2 Purpose and Need

The purpose of the expansion is to allow PSE to approach its previously-approved generation capacity for Wild Horse. The additional electricity that would be generated is needed to help meet the growing regional demand for renewable, wind-generated electricity. PSE has indicated that adding this and other wind power projects to the utility's portfolio of electric resources will help provide more control over PSE's power supply and minimize the risk to their customers from a volatile short-term energy market. The expansion is also needed to help PSE meet its own goal of supplying 10 percent of its customers' total electricity needs with cost-effective renewable resources by 2013. This goal exceeds the target established by Washington's renewable portfolio standard, which requires a qualifying utility (such as PSE) to generate 3 percent of their total electricity from renewable sources other than hydroelectric facilities by 2012, escalating to 15 percent by 2020.

1.3 Background

Early in 2008, PSE acquired rights to a potential wind energy site named Whiskey Ridge and located immediately north of Wild Horse. This acquisition offered PSE the potential to expand the generating capacity of Wild Horse closer to the level authorized in the SCA. By taking advantage of the infrastructure already in place, PSE could avoid impacts of constructing new facilities such as a transmission line, substations, and operations and maintenance building, which a stand-alone project would need. Preliminary biological and cultural studies of Whiskey Ridge showed many similarities to Wild Horse, so PSE could apply their experience constructing and operating Wild Horse to the adjacent site.

In spring of 2008, PSE commissioned additional studies of the potential expansion area to better understand existing conditions and optimize a preliminary site layout that included 26 WTGs. On July 2, 2008, PSE submitted a request to EFSEC, accompanied by a SEPA checklist and supporting studies, to amend the Wild Horse SCA by adding 1,280 acres and 26 additional WTGs to the operating facility. The requested amendment proposed related and supporting facilities, including without limitation: access and crane roads, temporary concrete batch plant and rock quarry, turbine pads, laydown area, electric cable system proposed primarily underground, and an addition to the existing substation. These facilities are described fully in the Request for Amendment and the SEPA Checklist.

On August 6, 2008, during the public comment period on the SEPA Checklist, EFSEC conducted a public hearing in Ellensburg to accept verbal and written comments on the proposal. This comment period served as an opportunity for the public to comment on the environmental checklist and studies prepared for the project, and as a "scoping" opportunity for agencies and the public. The process also allowed EFSEC to evaluate issues and concerns for ongoing SEPA

review. Written and oral comments received by EFSEC, and responses by the applicant to concerns that were raised, are provided in **Appendices A** and **B** of this SEIS. Primary issues and concerns raised during the initial comment period included the following:

- Potential impacts to greater sage habitat and regional populations
- Placement of “V” and “W” strings
- Potential impacts of the overhead collector line
- Status of the mitigation parcel
- Alternative mitigation
- Landscape restoration
- Potential impacts to bats from proximity to forested areas
- Potential impacts to water resources (i.e., springs)
- Temporary versus permanent fencing
- Potential loss of shrub-steppe habitat

Some comments suggested that an SEIS be prepared to analyze the potential impacts related to issues and concerns related primarily to the “V” and “W” strings. PSE revised the proposed expansion to mitigate potential impacts by dropping four WTGs (i.e., the “V” and “W” strings) from this proposal and the supporting facilities, including the overhead collector line, associated with them. PSE also elected to prepare this SEIS on the revised project with 22 WTGs and a 960-acre expansion of the existing Wild Horse facility, as described in Chapter 2. EFSEC SEPA rules allow the applicant to prepare EISs and addenda with oversight from the responsible official (WAC 463-47-090).

1.4 Summary Table

Table 1. Summary of Project Impacts

Resource	Construction Impacts	Operation and Maintenance Impacts	Mitigation Measures
Earth	• 72 total acres disturbance • 49,922 cubic yards cut/85,917 cubic yards fill • 98,000 cubic yards quarry/borrow material • No off-site spoils disposal	Low potential for earthquakes, volcanic hazard, or landslides.	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.1.3.
Biological Resources	• 25.1 acres permanent vegetation removal and habitat loss • 44.6 acres temporary vegetation removal and habitat loss • 6.6 acres permanent impact to lithosols • 0 acres impact to wetlands • No impacts to federal or state listed endangered, threatened, proposed, candidate, or species of concern plant species • 0.4 acres permanent impact to rock habitat that supports state "Review" plant species – hedgehog cactus • Temporary construction disturbance to wildlife using project area, including big game, small mammals, raptors, and songbirds • No impacts to identified raptor nests • No impacts to fish or fish-bearing waters	• Potential colonization of 72 acres of disturbed area by invasive species • Raptor mortality, 1-4 year • Songbird mortality, 50-120/year • Most likely birds to be killed include American kestrel, red-tailed hawk, and horned lark • Bat mortality, approximately 15/year, mostly migratory bats • Possible avoidance behavior by big game	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.2.3.

Resource	Construction Impacts	Operation and Maintenance Impacts	Mitigation Measures
Water Resources	• No impacts to surface water or ground water • Project footprint located at least 150 meters from all springs • 72 acres of ground disturbance/potential area for erosion and stormwater runoff • No groundwater withdrawals • No floodplain impacts	25 acres of permanent ground disturbance/ potential area for erosion and stormwater runoff.	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.3.3.
Visual Resources	Construction activity will be visible from nearby areas, including several seasonal residences.	Minor visual change; levels of impact will be the same as described in the FEIS. Seasonal residences to the north will have more turbines in their view, but they will blend in to the existing turbines on the facility.	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.4.3.
Energy and Natural Resources	Project will consume resources, including electricity, diesel fuel, gasoline, sand, gravel, water, cement, and steel. Over time, energy produced by the completed project will be significantly greater than that expended by the facility's construction.	During periods of low wind, the proposed turbines will consume electricity provided by the Wild Horse solar facility and the transmission grid. Other materials, such as diesel and unleaded gasoline, would be consumed by on-site vehicles.	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.5.3.
Noise	Short-term noise sources include construction traffic, blasting, and operation of equipment. Blasting will occur more than 1 mile away from nearest residence. No impacts to Town of Kittitas. Minor impacts to local residents immediately adjacent to roads.	Noise from wind turbines may be detectable at one seasonal residence north of the project, but will be below permissible levels per WAC 173-60-040.	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.6.3.
Land Use and Recreation	• Temporary disturbance to 45 acres of open space and grazing land. • Construction may require short-term, intermittent closures of project area to recreational users.	• Permanent removal of 25 acres of open space and grazing land • No agricultural land will be removed from production • Public access through the wind farm facility via Beacon Ridge Road • No public access to turbine strings • Controlled hunting to be allowed in accordance with hunting plan	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.7.3.

Resource	Construction Impacts	Operation and Maintenance Impacts	Mitigation Measures
Cultural Resources	Project footprint avoids all identified sites.	No impacts.	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.8.3.
Transportation	• 3.8 miles of new roads constructed • 1.8 miles of existing roads improved • 0.7 miles of existing roads abandoned and restored	• 5 to 10 additional vehicle trips per day • No new parking required	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.9.3.
Health and Safety	Health and safety risks would the same as those described in the Wild Horse FEIS.	Health and safety risks would the same as those described in the Wild Horse FEIS.	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.10.3.
Air Quality	Temporary, localized impacts from fugitive dust and tailpipe emissions. Potential air quality impacts from operation of the batch plant and rock crushers will be managed under the auspices of Ecology's air quality permit program.	Negligible impacts from fugitive dust and tailpipe emissions from commuter vehicles and onsite operational equipment.	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.11.3.
Public Services and Utilities	Public services and utilities impacts are generally the same as described in the Wild Horse FEIS. Less construction personnel would be required, minimizing the need for public services, including emergency services.	Public services and utilities impacts from operation are generally the same as described in the Wild Horse FEIS.	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.12.3.
Socioeconomics	Temporary increase in local construction force and associated spending for nine months.	• Operation will employ approximately 2 to 5 additional full-time staff • Expansion will contribute an additional estimated $500,000 annually to local economy	All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Additional mitigation measures are described in Section 3.13.3.

2 PROJECT DESCRIPTION

2.1 Project Overview

The proposed expansion area is located north of the existing Wild Horse facility, on approximately 960 acres within Sections 8 and 17 of T18N, R21E, W.M. The site is located approximately 13 miles east of Ellensburg and 5 miles north of Vantage Highway near the headwaters of Skookumchuck Creek.

2.2 Facilities

The proposed project analyzed in this SEIS is to construct and operate 22 additional WTGs located on open ridge tops north and west of the operating WTGs at Wild Horse. **Figures 3** and **4** show the proposed turbine locations and the associated facilities. The Wild Horse DEIS provides detailed descriptions of WTG components and related facilities. Descriptions specific to the proposed expansion project follow.

WTGs – The proposed WTGs will be the same size as the 3-bladed Vestas V80 machines that are currently operating at Wild Horse. Each turbine is approximately 344 feet high from ground to tip of rotor blade in the vertical position. Each turbine rotor is supported by a tubular conical steel tower approximately 221 feet high and 13 feet wide at the base. Rotor blades and the tower are connected by a nacelle containing the main mechanical components of the WTG – drive train, gearbox, and the generator. The proposed V80 WTGs have a nameplate generating capacity of 2 MW each.

The Federal Aviation Administration (FAA) is expected to require nighttime lighting on the first and last turbine of every string and on turbines located every half mile between the ends of the strings. These new lights will be incorporated into the synchronized system currently operating at Wild Horse.

Turbine Foundations and Crane Pads – These will be similar to those previously constructed at Wild Horse. The concrete foundations are anchored in bedrock. Geotechnical engineering studies are needed to design the foundations. The adjacent gravel crane pad is level and large enough for cranes that erect the tower, nacelle, and turbine blades. WTG manufacturer specifications dictate many aspects of the turbine foundations and crane pads.

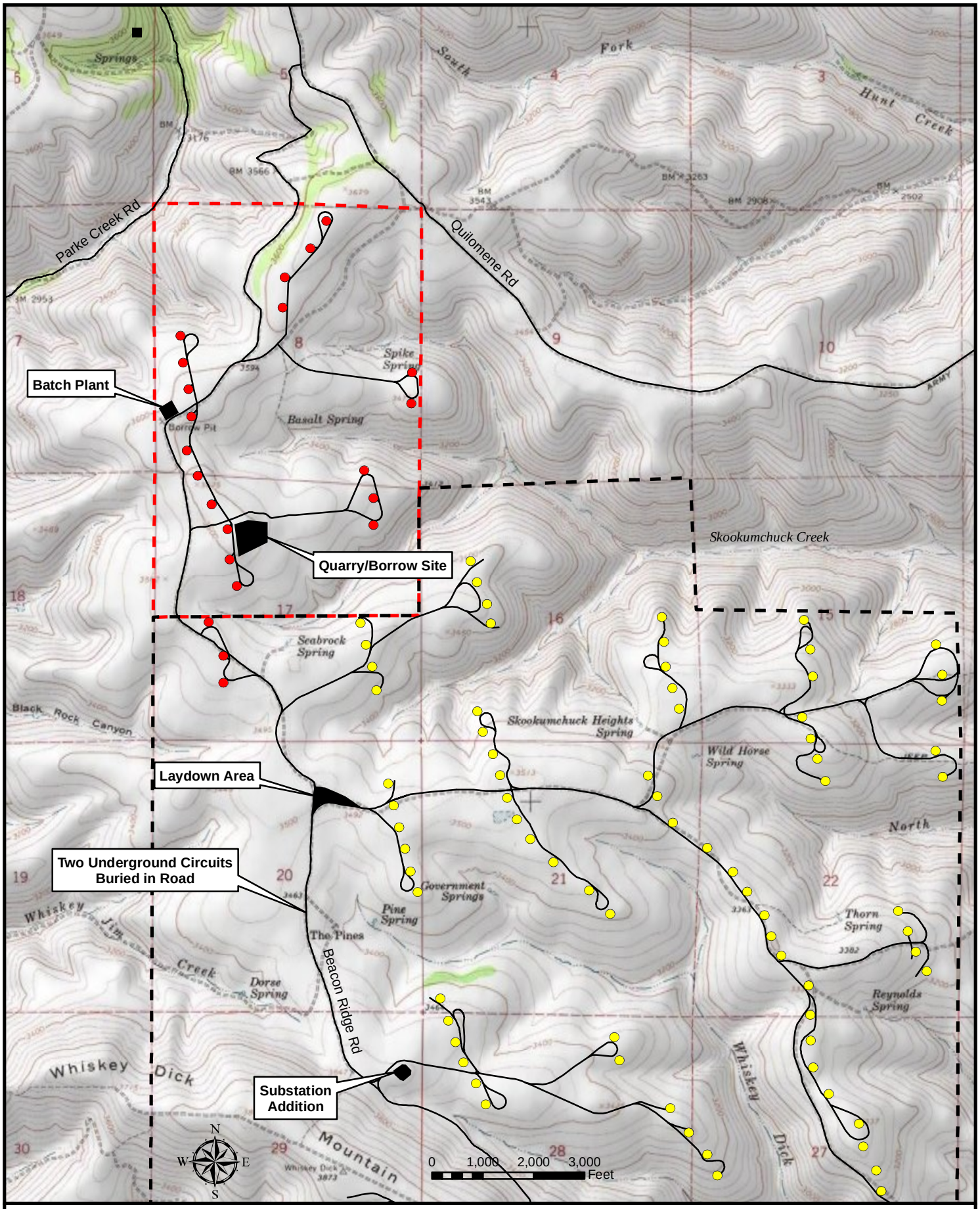

Figure 3 - Expansion Features
Wild Horse Supplemental EIS

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Proposed Wind Turbine
Existing Wind Turbine
Seasonal Residence
Road
Existing Facility
Expansion Area

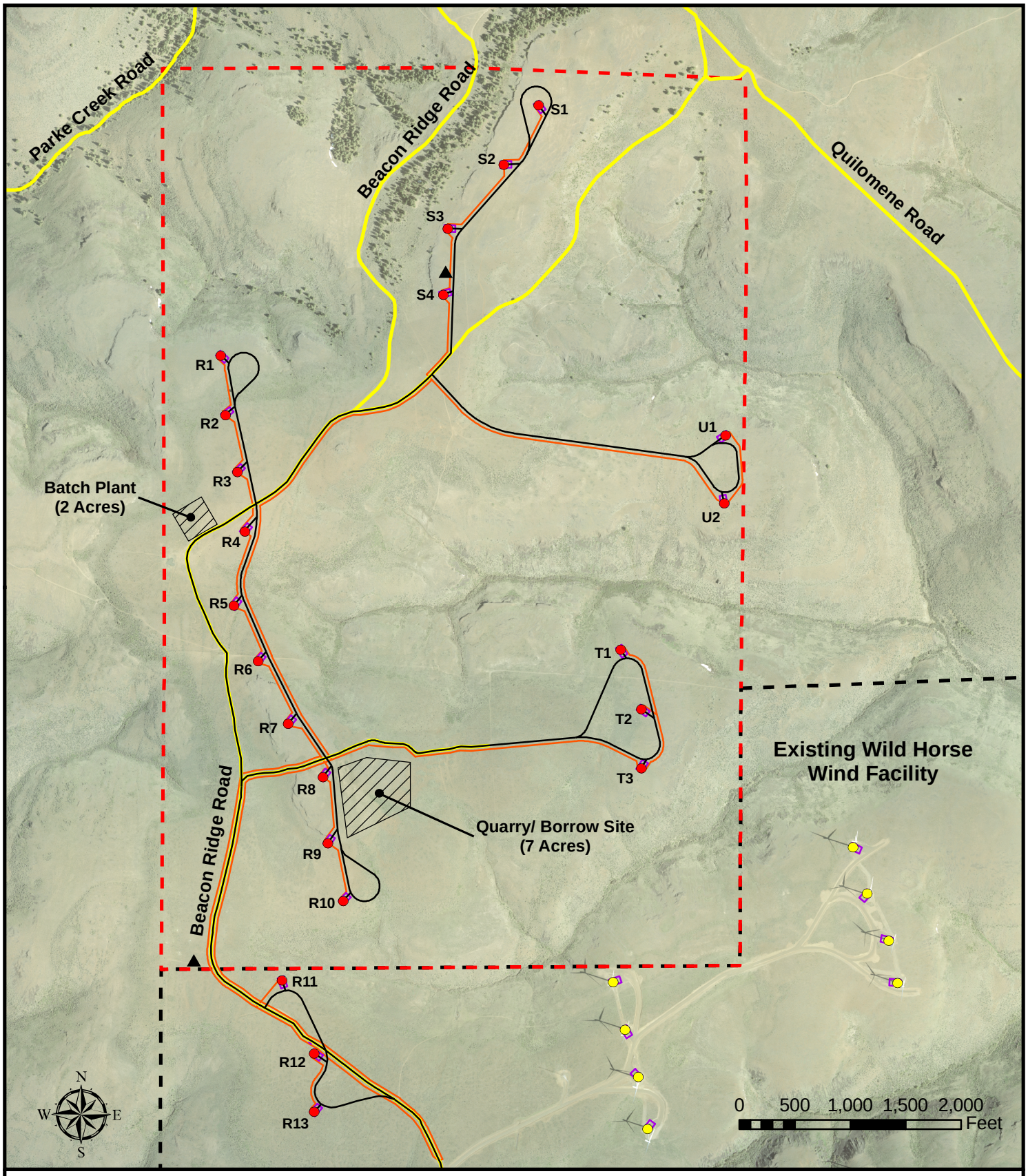

Figure 4 - Preliminary Site Layout
Wild Horse Supplemental EIS

- Temporary Met Tower
- Proposed Wind Turbine
- Existing Wind Turbine
- Proposed/Improved Road
- Existing Road
- Crane Pad
- Underground Collector
- Expansion Area
- Existing Facility

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Laydown Area – A temporary laydown area is needed for initial receipt, inspection, and preliminary assembly of WTG components. The proposed expansion will use the primary laydown area from Wild Horse construction, thereby avoiding several acres of new ground disturbance. Post-construction restoration of this laydown area failed to meet PSE expectations, and additional restoration measures are planned for fall of 2009, following construction of the proposed expansion area.

Roads – Manufacturer specifications also dictate many design criteria for roads constructed to deliver WTG components to the site, laydown area, turbine pads, and to allow the large erection cranes to move from the laydown area to the crane pads.

Existing improved roads at Wild Horse can be used for deliveries to the laydown area. Most of the 5.6 miles of roads constructed for the expansion need to have a 34-foot-wide finished gravel surface for crane use. As was the case for constructing Wild Horse, existing roads will be improved whenever possible to minimize pioneering of new roads.

Electrical Collection System – Underground cables will collect electricity generated by the new WTGs and deliver it to the existing Wild Horse substation site. Trenches will be excavated on one or both sides of the crane roads (**Figure 4**). Fiber-optic cables for the SCADA system will also be placed in these trenches. Utility trenches will typically be 2 to 3 feet wide with a minimum depth of 36 inches.

On the existing Wild Horse site, the trenches will be excavated in the previously improved Beacon Ridge Road. During final design and construction of Wild Horse, it was discovered that electrical and thermal resistivity of the soil/rock matrix would not allow placement of all electrical cables into a single trench alongside the roads, as assumed in the DEIS and FEIS. Instead, multiple parallel trenches were required, especially past the Pines area between the laydown and the substation. Post-construction restoration is progressing very well for these disturbed areas along Beacon Ridge Road.

Substation – A step-up transformer added to the existing Wild Horse step-up substation will convert the 34.5 kV electricity from the new WTGs to 230 kV electricity for transmission to PSE's Wind Ridge interconnect substation near Interstate 90 (I-90), which would not be altered. The added transformer and associated substation components are planned for an area already permanently disturbed by the Wild Horse project.

Overhead Transmission Line – The current Wild Horse 230 kV transmission line will carry electricity between the step-up and interconnect substations. No changes to this line are proposed.

Batch Plant – The option of a temporary ready-mix concrete batch is proposed on-site. The batch plant site would include a stockpile of crushed rock for use in the concrete mixture. Given

the relatively small number of turbines proposed, it is also possible that concrete would be trucked to the site.

Quarry / Borrow Site – The option of a temporary rock quarry with a portable rock crusher is proposed as part of the expansion project. Preliminary calculations indicate that more fill and embankment material will be needed than can be generated from cuts for the new roads and turbines. Therefore, a borrow area is combined with the proposed quarry. Approximately 2 acres is required for the quarry/rock-crushing operation and 5 acres for borrow material. It is also possible that some or all of the material required could be trucked in from outside sources.

Meteorological Towers – Two temporary meteorological (met) towers are currently in place on the proposed expansion area, which are guyed. These will be removed during or after construction. One additional permanent un-guyed met tower may be installed.

2.3 Construction Sequencing

Typical construction techniques are described in the Wild Horse DEIS. The expansion would be constructed in the following general sequence:

- Preliminary erosion control Best Management Practices (BMPs)
- Top soil stripping, clearing, and stockpiling
- Rough grading of roads and turbine sites
- Construction of foundations
- Construction of substation expansion
- Construction of electrical collection system
- Turbine erection
- Turbine commissioning
- Finish grading, top soiling, and revegetation

Construction will begin in April 2009. Foundation construction will begin in May 2009 and will be completed by August 2009. Construction of the underground collection system will begin in June 2009 and will be completed by September 2009. Construction of the substation expansion will begin in May 2009 and will be completed by November 2009. Turbine delivery and erection will begin in July 2009 and will be completed by October 2009. Commissioning of turbines will begin in September 2009 and will be completed by November 2009. Finish grading and revegetation will begin in August 2009 and will be completed in November 2009. Additional revegetation may be required in the spring of 2010.

2.4 Construction Equipment

Equipment used during construction will include heavy earth moving equipment such as bull dozers, excavators, loaders, off-road dump trucks, concrete trucks, turbine delivery truck, primary lift crane, secondary lift crane, loading and staging cranes, trenching machines, graders, and vibratory and static compactors.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

The proposed expansion adds permanent and temporary disturbance to areas that were not analyzed in the Wild Horse DEIS and FEIS. The construction and access to the 22 WTGs proposed for the expansion site would require a footprint of approximately 25 acres of permanent and 45 acres of temporary disturbance (**Table 2**).

Table 2. Estimated Area of Associated Temporary and Permanent Disturbance

Description	Permanent Disturbed Area (acres)	Temporary Disturbed Area (acres)	Total Disturbance (acres)
Roads Total (net - existing)	19.1	19.6	38.7
Wind Turbine Sites	6	2	8
Electrical Collection System	0	14	14
Concrete Batch Plant	0	2	2
Main Laydown Area	0	0	0
Quarry Site/Processing/Borrow Pit	0	7	7
Substation Expansion	0	0	0
TOTAL	25.1	44.6	69.7

These impact amounts are referenced in each of the following sections, where appropriate.

3.1 Earth

3.1.1 Affected Environment

Geologic conditions on the expansion parcel are similar to those on the existing facility. The geology of the area consists of basalt flows of the Columbia River Basalt Group. Interflow deposits of sedimentary rock and tuff separate the flows. Alluvial deposits, residual soils from the basalt and interflows, and bedrock, are also present in the drainage valleys bisecting the basalt flows. Major geologic units at Wild Horse include upper Grande Ronde Basalt and Frenchman Springs Member of Wanapum Basalt (**Figure 5**).

Surface geology at Wild Horse is dominated by a combination of rocky lithosols on shallow ridge tops and deeper stony loams on the slopes. Upland soils are shown on **Figure 6** and include the following series:

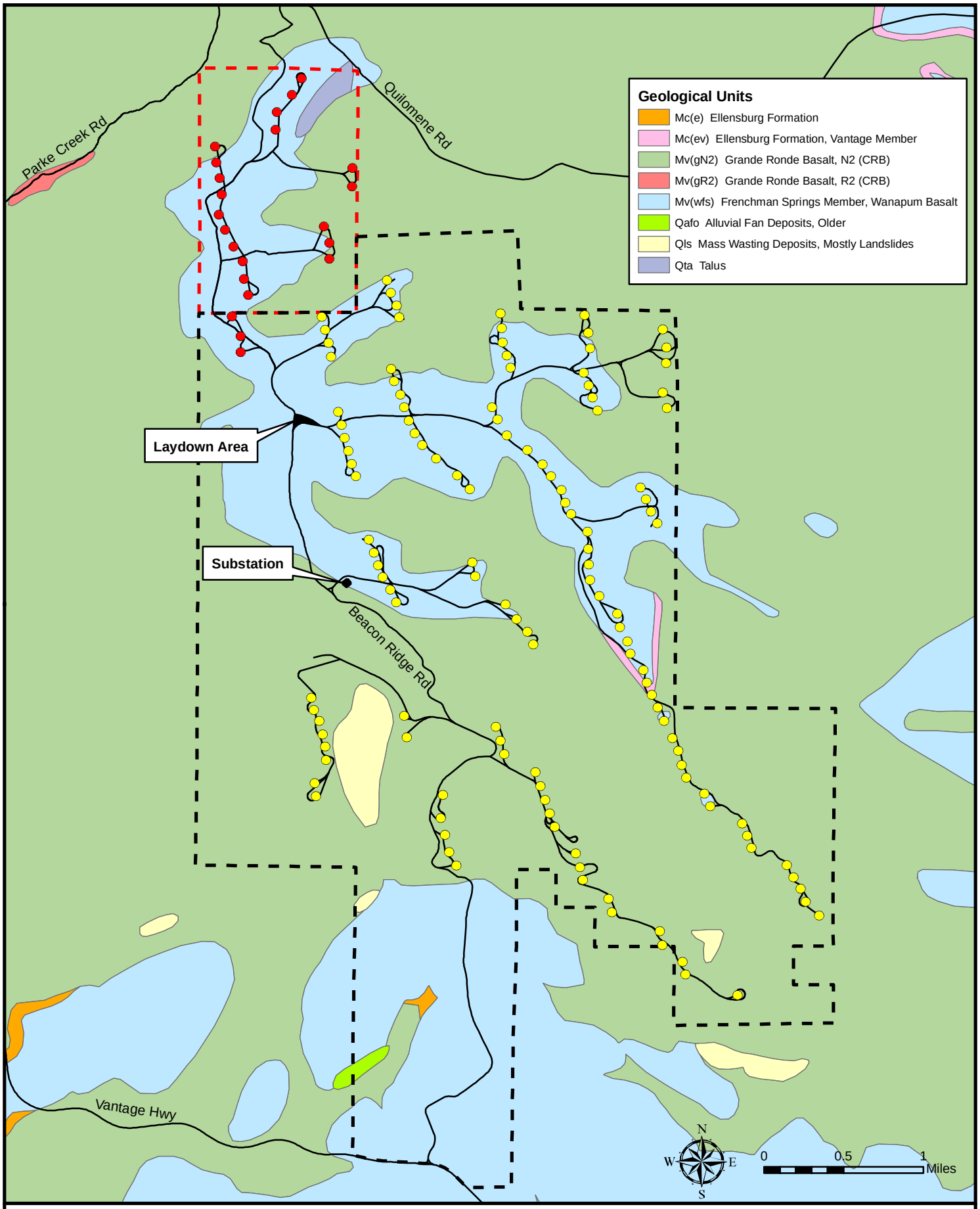

Figure 5 - Geological Units and Faults
Wild Horse Supplemental EIS

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Proposed Wind Turbine
Existing Wind Turbine
Road
Existing Facility
Expansion Area

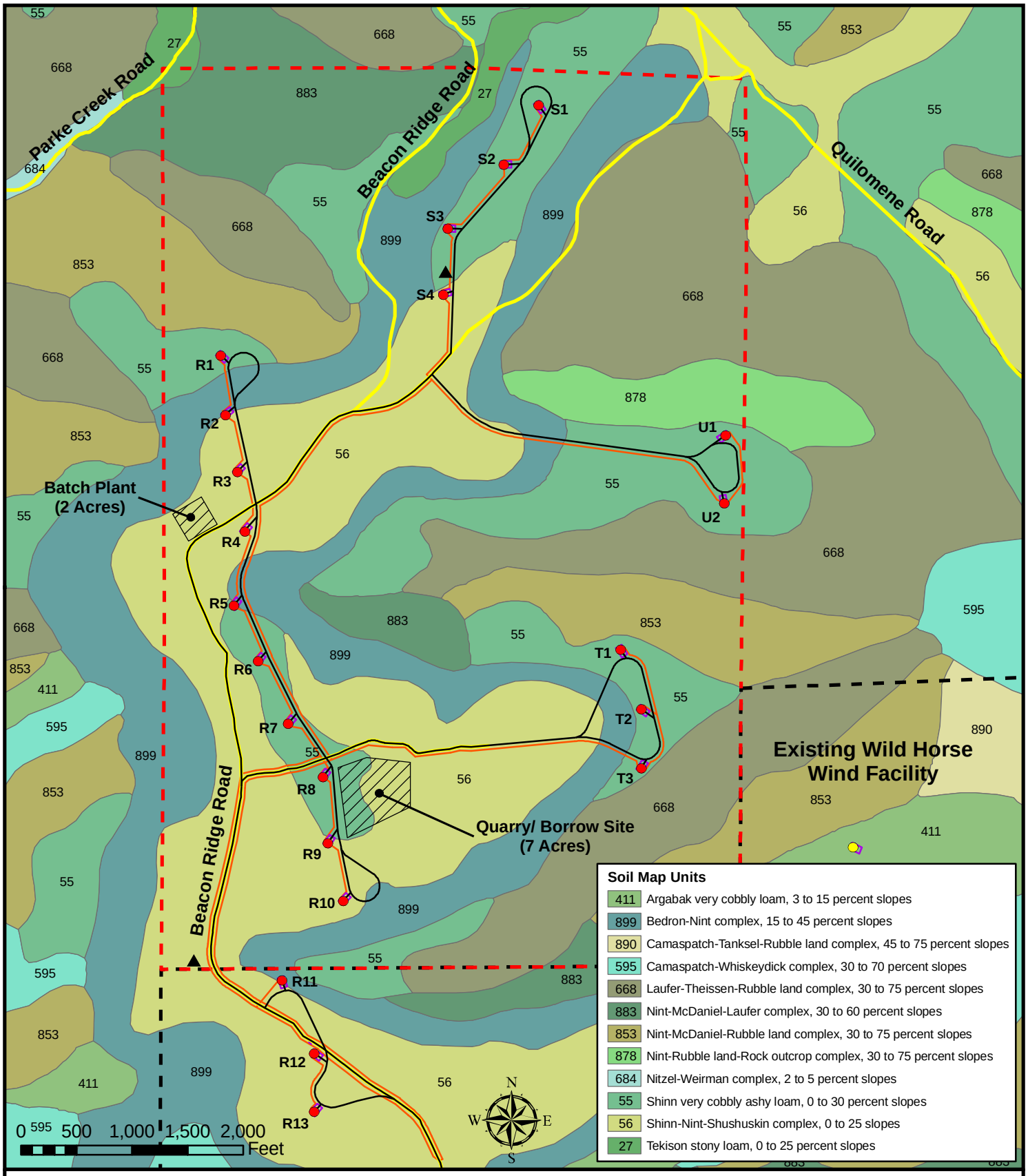

Figure 6 - Soils
Wild Horse Supplemental EIS

Temporary Met Tower
Proposed Wind Turbine
Existing Wind Turbine
Proposed/Improved Road
Existing Road
Crane Pad
Underground Collector
Expansion Area
Existing Facility

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Shinn-Nint-Shushuskin complex, 0 to 25 percent slopes – This complex consists of shallow and very shallow soils formed in colluvium and some residuum from basalt with an influence of loess and volcanic ash in the upper part. Depth to bedrock is 10 to 40 inches. Drainage class is well drained, not flooded, and not ponded. Organic content is low (about 2 percent). This is not a hydric soil.

Shinn very cobbly ashy loam, 0 to 30 percent slopes – This series consists of very shallow soils on hill slopes, plateaus, and hills; and is formed in colluvium and some residuum from basalt with an influence of loess and volcanic ash in the surface. Depth to bedrock is 4 to 10 inches. Drainage class is well drained, not flooded, and not ponded. Organic content is low (about 2 percent). This is not a hydric soil.

Bedron-Nint complex, 15 to 45 percent slopes – This complex consists of shallow and moderately shallow soils formed from parent material consisting of interbedded sediments, slope alluvium, and loess mixed with volcanic ash as well as colluvium and some residuum from basalt with an influence of loess and volcanic ash in the upper part. Depth to bedrock or restrictive layer is 20 to 60 inches. Drainage class is well drained, not flooded, and not ponded. Organic content is low (two to three percent). This is not a hydric soil.

Slopes in the area range from less than 5 percent on flat plateaus and ridge lines up to 40 percent in incised side drainages. **Figure 3** shows topography for this area.

Geologic hazards in this area, as described in the DEIS, are the same for the expansion site.

3.1.2 Impacts of the Proposed Action

The primary impacts to geology and soils will occur during construction of the expansion facility. Clearing and grubbing, excavation, and filling expose loose soil and increase the risk of erosion. Soils on the site have a high potential for runoff, particularly on steep (>40 percent) slopes. Most project construction will occur on ridge tops and areas with shallow slopes. However, some erosion is possible. No significant soil erosion would occur during operation and maintenance of the expansion area. All temporarily disturbed areas (i.e., laydown areas, utility trenches) will be revegetated following construction. The batch plant and quarry/borrow areas will be graded with an inward slope or surrounded by berms to prevent stormwater running off these areas into local ephemeral drainages.

Approximately 25 acres of permanent ground disturbance will be added to the current Wild Horse footprint by this expansion. Almost 45 acres of temporary disturbance is expected during construction. Estimated cut-and-fill requirements for the expansion are listed in **Table 3**:

Table 3. Estimated Project Cut and Fill Quantities

	Excavation/Cut (cy)	Embankment/Fill (cy)
Roadways	43,627	80,180
WTG Site (pads)	3,259	4,889
Laydown Area	4,033	4,033
Batch Plant	1,613	1,613
TOTAL	52,532	90,715

A total of approximately 98,682 cubic yards of quarry/borrow material will be required for surfacing and base material for roads and pads. Cut and fill requirements for the laydown area and the batch plant will be balanced over the site.

3.1.3 Mitigation Measures

All mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. A Construction Stormwater Pollution Prevention Plan (SWPPP) for the expansion will also be prepared and appended to the existing plan for Wild Horse. Erosion and sediment control BMPs that proved most effective during Wild Horse construction will be emphasized. Once construction is complete and the site stabilized, the expansion would be managed according to the existing Operations SWPPP.

In addition, the following mitigation measures are proposed in order to minimize disturbance from the expansion:

1. Underground collector cables will be installed adjacent to roads in the expansion area. A maximum of two new circuits will be installed with one on each side of the roads to minimize disturbance.

2. Where the two new circuits are routed through existing project roads, underground cables will be located within the road prism to prevent further disturbance in this area.

3. Expansion of the substation will occur within the existing footprint of the area previously disturbed during Wild Horse construction.

4. The existing laydown yard used during Wild Horse construction, will be re-used for constructing the expansion.

5. To the greatest extent practicable, existing road alignments will be retained for construction of project roads. Those existing road segments that cannot be used for project access will be abandoned and restored wherever possible.

6. As a result of public comments received during the amendment process, the applicant voluntarily withdrew four turbines (“V” and “W” strings) from the proposal, reducing the

overall size of the expansion area from 1,280 acres to 960 acres. This change significantly reduced permanent and temporary impacts of the project.

3.1.4 Significant Unavoidable Adverse Impacts

The proposed action would not result in any significant unavoidable adverse impacts on earth resources. Implementation of the SWPPP, BMPs, on-site emergency plans, and other mitigation measures described above and in the Wild Horse FEIS would result in low risk from erosion or natural hazards.

3.2 Biological Resources

This section discusses vegetation, wetlands, wildlife and habitat, fisheries, and protected species elements of the environment. Many of these elements are interrelated.

3.2.1 Affected Environment

3.2.1.1 Vegetation and Wetlands

Generalized vegetation communities in the vicinity of the proposed expansion are the same as those described in detail in the Wild Horse DEIS and FEIS. Specific vegetation types occurring on the proposed expansion area are very similar to those occurring on the existing facility. The dominant vegetation community on the expansion area is shrub-steppe, with lesser amounts of herbaceous, rock outcrop, pine forest, mixed scrub, and talus. Similar to the rest of Wild Horse, vegetation within the proposed expansion area has been modified as a result of disturbance, primarily livestock grazing, but also introduction of nonnative and invasive plant species, and recreational activities. Despite these disturbances, the expansion area is overwhelmingly dominated by native species.

3.2.1.2 Wetlands

The National Wetland Inventory does not identify any wetlands within the proposed expansion area boundary. Basalt Spring and Spike Spring are located in the proposed expansion area, and Seabrock Spring to the south, but none are in close proximity to any project activity (**Figure 7**). Section 3.3 provides further discussion of the springs. No wetlands were found during surveys within any areas where project facilities would be located on the proposed expansion area.

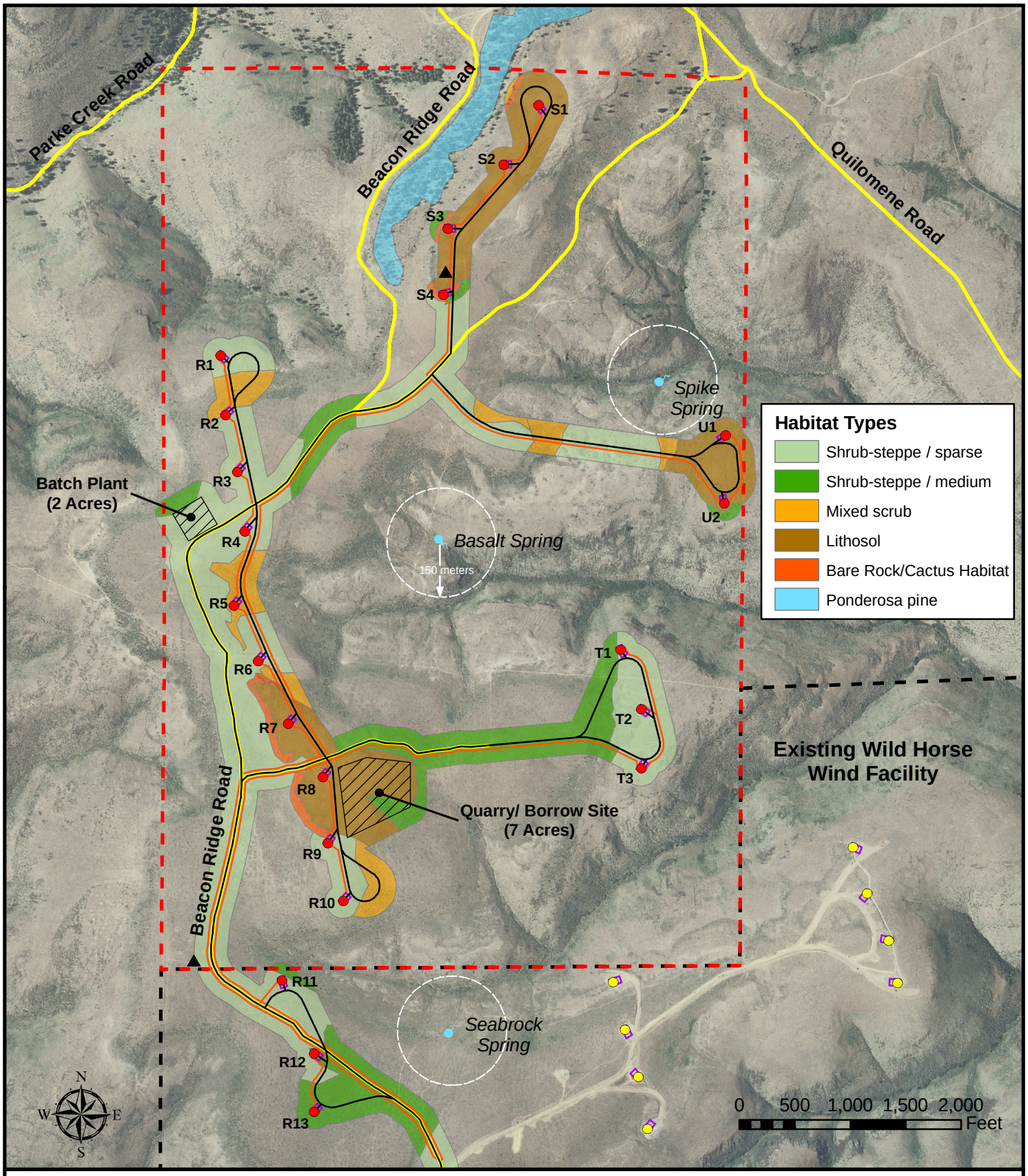

Figure 7 - Wildlife Habitat
Wild Horse Supplemental EIS

Temporary Met Tower
Proposed Wind Turbine
Existing Wind Turbine
Proposed/Improved Road
Existing Road
Crane Pad
Underground Collector
Expansion Area
Existing Facility

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3.2.1.3 Special Status Plant Species

Surveys for rare plants in the original (Whiskey Ridge) expansion area were conducted in 2006, with follow-up surveys conducted in 2008 for additional areas where expansion facilities are proposed (i.e., the "S" string and portions of the "R" string). Methods for these surveys are described in **Appendix C** and **Appendix D**. No federal or state endangered, threatened, proposed, or candidate plant species were encountered during the field surveys.

One plant species on the Washington State "Review" plant list—hedgehog cactus—was observed, primarily along the exposed rocky edges of knolls and hilltops. This species has been widely observed on the existing Wild Horse facility as well as other nearby wind farms (e.g., Vantage).

As clarified in **Appendix B**, searches for Hoover's tauschia were included in the rare plant surveys of the expansion area. This species was not found during either survey. No new unique niches were encountered in the expansion area that could provide different habitat for rare plant species than those found on the existing facility.

3.2.1.4 Wildlife

Wildlife and wildlife habitat occurring on the proposed expansion area are described in detail in **Appendix C**. Detailed studies conducted for the expansion area included habitat mapping, raptor nest surveys (ground and aerial), sage-grouse surveys (ground and aerial), bat echolocation study, and incidental wildlife observations.

Wildlife habitat types mapped in corridors surrounding proposed facilities in the expansion area are shown on **Figure 7**. Habitat types are very similar to those in the existing Wild Horse facility, being dominated by shrub-steppe with varying amounts of canopy cover. Other habitat types that occur include lithosol, which are shallow soil areas dominated by herb and forb species, mixed scrub (dominated by multiple large shrub species), and bare rock. These latter areas usually occur around the edges of small outcroppings and knolls, and are the characteristic habitat for hedgehog cactus on the expansion area.

General diversity and abundance of wildlife taxa, including raptors, songbirds, big game, small mammals, and reptiles and amphibians, on the expansion area are similar to the existing Wild Horse, as described in the DEIS and FEIS.

One active red-tailed hawk nest and one active American kestrel nest have been identified in the expansion area, both of which are associated with ponderosa pine trees in the northeast corner of the site, approximately 1,500 feet west of the proposed "S" string. Both of these nests were active in the spring of 2008. Other raptors observed during surveys include golden eagle, northern harrier, and great horned owl.

Wild Horse and the expansion area are located within the Pacific Flyway. The project site is not a documented migration route for birds, but songbirds in the West appear to migrate across a broad front, so these birds could occasionally move across the wind farm facility, mostly at night. Passerine songbirds observed during expansion area surveys include Brewers sparrow, horned lark, vesper sparrow, sage sparrow, sage thrasher, loggerhead shrike, American robin, chestnut-backed chickadee, mountain bluebird, and white-crowned sparrows. Other birds observed included American crow, common raven, northern flicker, spotted towhee, Oregon junco, Clark's nutcracker, gray partridge, California quail, and Canada geese (flying over site).

A supplemental acoustic study was conducted between May and October 2007 to determine the relative level of bat use in the expansion area (**Appendix C**). Four locations were monitored—one within the pine tree habitat on the north edge of the expansion area, one in close proximity to Basalt Spring (between the "T" and "U" strings), and two near temporary met towers. This study was timed to occur before and during the period of highest risk to bats (the post-breeding or fall migration season). Recorded activity was much higher at the spring and pine habitat sites than at either of the two open habitat sites at the met towers. Results documented a higher relative abundance of small bats such as *Myotis* species, which have high frequency calls. Initial post-construction monitoring on the operating Wild Horse facility found three bat species during fatality estimate studies—silver-haired bat, hoary bat, and little brown bat (**Appendix E**).

The project is located in an area designated by Washington Department of Fish and Wildlife (WDFW) as winter range for mule deer and elk, and is located in the extreme southeast portion of the Quilomene migration corridor. Similar to the adjacent Wild Horse, the expansion area experiences a high level of use by wintering big game, primarily elk and mule deer. During April 2006 lek and raptor nest surveys, 589 elk in 14 groups and 126 mule deer in 7 groups were observed within the expansion area and a 2-mile buffer around it (**Appendix C**). During sage-grouse lek surveys in March and April 2008, 467 elk in 15 separate groups and 49 mule deer in 7 groups were observed.

Twenty-seven species of reptiles and amphibians occur in Kittitas County and could be present in the project area. Only short-horned lizards have been observed in the proposed expansion area. A total of five reptile species were observed at Wild Horse during post-construction avian and bat monitoring in 2007—gopher snake, western diamondback rattlesnake, rubber boa, short-horned lizard, and western yellow-bellied racer (**Appendix E**). These additional species are expected to occur in the proposed expansion area.

3.2.1.5 Threatened and Endangered Species

No federally-listed threatened or endangered species have been documented on or near the expansion site. Of 36 state-listed threatened and endangered species, the ferruginous hawk and greater sage-grouse have been documented in the vicinity of the project. One possible ferruginous hawk observation was made in 2006, but could not be confirmed.

Historic use of Wild Horse and vicinity by sage-grouse is described in detail in the FEIS. The proposed expansion area is at the western edge of the Colockum Sage-Grouse Management Unit, as identified in the WDFW Final Sage-Grouse Recovery plan (Stinson et al. 2004). This management unit is identified as having the best potential to connect existing populations of sage-grouse to the north and south, but is severely limited by rugged terrain and lack of suitable habitat. Suitable sage-grouse habitat is characterized by sagebrush-dominated areas with sufficient canopy cover of shrubs, grasses and forbs. Much of the expansion area lacks suitable habitat, either due to steep slopes or dry, open ridge tops with insufficient vegetative cover. It is also possible that historic grazing practices have reduced the suitability of habitat on the expansion area for sage-grouse by reducing the cover of grasses and forbs. Similarly, large concentrations of wintering elk can reduce habitat suitability for sage-grouse (Stinson et al. 2004).

Additional aerial and ground-based sage-grouse surveys were conducted for the proposed expansion area, using survey protocols developed in consultation with WDFW (WDFW 2006) and consistent with the WDFW Guidelines for Baseline Studies for Wind Projects (WDFW 2003). A single sage-grouse nest with eggs was found during Wild Horse post-construction monitoring surveys in 2007, approximately 100 meters from turbine E1 in a large wash with abundant sagebrush and grass cover. Two adult greater sage-grouse incidental observations were also recorded—one in September 2007 and one in June 2008—at the existing facility near Skookumchuck Heights Spring. A total of six (five ground-based and one aerial) sage-grouse lek surveys were conducted between March and April of 2008 on the entire Wild Horse facility and the expansion area (**Appendix F**). No leks were observed.

3.2.1.6 Fisheries

Based on available information, no fish occur in the project area. Assuming BMPs are employed on site and compliance with applicable permits regarding runoff and sediment control is maintained, no downstream impacts should be experienced.

3.2.2 Impacts of the Proposed Action

3.2.2.1 Vegetation and Wetlands

Approximately 25.1 acres of the project area would be permanently impacted by the proposed project, with 44.6 acres temporarily disturbed. Most of these impacts would occur to sparsely vegetated shrub-steppe areas, with lesser amounts of lithosol, mixed scrub, and medium cover shrub-steppe areas affected. **Table 4** lists the acreages of different habitat types that would be affected permanently by the proposed project footprint.

Table 4. Estimated Habitat Impacts (Acres)

Habitat Type	Permanent Impacts[1]
Shrub-steppe sparse	12.6
Shrub-steppe medium	4.2
Mixed scrub	2.5
Lithosol	6.6
Rock	0.4
Total	26.3

The proposed project is anticipated to permanently remove approximately 19 acres of general shrub-steppe habitat, which is an approximately 11 percent increase over the existing Wild Horse footprint, but still within the disturbance amount (165 acres) analyzed in the FEIS.

No wetlands occur within or adjacent to the proposed project footprint, so all direct and indirect effects to wetlands would be avoided.

3.2.2.2 Special Status Plant Species

The only special status plant species that was identified during rare plant surveys was the hedgehog cactus, a Washington State "Review" plant species. This plant species has been found widely distributed on the existing facility, as well as the nearby Vantage Wind Farm project south of Vantage Highway, which has been approved by Kittitas County. On the expansion area, it is closely associated with lithosol habitats, particularly rock outcrops along the edges of knolls. Within these habitats, it appears relatively abundant, occurring in discrete clumps of one to six individual plants. Impacts to hedgehog cactus would occur in portions of the "S" string and the "R" string. Approximately 0.4 acres of rock habitat that support scattered hedgehog cacti would be disturbed by the proposed project. No long-term impacts to cactus populations in eastern Kittitas County are anticipated as a result of the expansion project.

3.2.2.3 Wildlife

Predicted impacts to wildlife from Wild Horse are discussed in detail in the FEIS. Potential impacts of the proposed expansion are discussed in **Appendix C** and summarized here.

Construction of the expansion project is expected to temporarily displace birds using habitats in the immediate vicinity of proposed project features, such as turbine pads and expanded road footprints, which may in turn affect breeding and foraging opportunities. No identified raptor nests are expected to be disturbed by the proposed construction. Construction equipment could cause mortality of ground-nesting birds through destruction of nests or sluggish birds.

Operation of 22 additional WTGs is predicted to increase fatalities of raptor and songbirds due to potential for collisions with additional turbine towers and blades. No new overhead transmission lines would be constructed, so birds would not be affected by this project feature. Operational

impacts to bird populations are anticipated to be minor compared to other wind farms in the western United States. Predicted fatality rates for raptors and songbirds are anticipated to be <0.1/MW/year and <2.75/MW/year, respectively. Raptors most likely to be affected include American kestrel and red-tailed hawk, the two most common raptors in North America. The songbird predicted to be killed most frequently is the horned lark, the most commonly observed bird species in the expansion area. Most frequently collected songbird and raptor carcasses during the first year of Wild Horse operations were horned larks (14 percent of all bird mortalities) and American kestrel (four out of six raptor mortalities).

Some indirect impact to songbirds is anticipated from displacement effects due to the expansion. These impacts are expected to be minor for the local population and are discussed in detail in the FEIS and **Appendix C**.

Impacts on bats would likely be limited to long term operational impacts. Bat fatalities from the rotating wind turbine blades are predicted to be limited to late summer and early fall migrants, primarily hoary and silver-haired bats. These are the most commonly observed bat mortalities in Washington on wind farms in open habitat similar to the expansion area. These two species were the most frequent bat mortalities during the first year of Wild Horse operations monitoring (**Appendix E**). Adjusted fatality rate for bats at Wild Horse was 0.39/MW/year (0.70/turbine/year), which is near the low end of the national range. The fatality rate for the expansion project is expected to be similar to that for Wild Horse.

Bat detection rates in the expansion area were higher at Basalt Spring and pine stands to the north, indicating that the risk of bat mortality may be higher at the “S” string, which is the turbine string closest to these features. However, bat detection rates at the met tower on “S” string was much lower than the spring and forested stations, despite being closer to the ponderosa pine stand on the north edge of the expansion area. Thus it seems unlikely that bat mortalities at the expansion WTGs will be significantly higher than those observed at the adjacent Wild Horse.

Elk and deer are expected to be temporarily displaced in the immediate vicinity of expansion construction, which is anticipated to require approximately seven months. Long-term effects to elk and deer use of the project area from the presence of the expansion are uncertain. Some studies have shown a negative relationship between roads and presence of elk and deer on winter range. No studies have shown a measurable effect on elk use of habitat on wind farms. Anecdotal observations of elk during Wild Horse operation indicate that they acclimate quickly to the new conditions and show no avoidance of turbines. Aerial counts by WDFW conducted the spring following construction of Wild Horse indicated that elk herds were concentrated near the facility, possibly because hunting was not allowed during construction. Data are not yet available to determine elk distribution after hunting was allowed this fall.

The placement of a significant portion of Wild Horse in a voluntary conservation easement, combined with inclusion of the facility in a Coordinated Resource Management (CRM) plan with surrounding lands, will likely improve long-term foraging habitat for elk and deer on the facility. Similar improvements can be expected for the expansion area when it is incorporated into the easement and CRM plan.

3.2.3 Mitigation Measures

All mitigation measures for biological resources identified in the Wild Horse FEIS and required by the SCA will be implemented on the expansion area. Construction of the expansion project will also employ the topsoil management strategy for the underground collection system that was developed during Wild Horse construction in conjunction with WDFW. This strategy keeps native soils and associated native plant seeds and roots near the area of disturbance to improve the success of initial restoration following construction.

Consistent with WDFW's guidelines, permanent impacts on habitat would be replaced at a ratio equal to or greater than 1:1 for grasslands and 2:1 for shrub-steppe. The original Wild Horse project designated a 600-acre parcel for mitigation.

As a result of public comments received during the amendment process, the applicant voluntarily withdrew four turbines ("V" and "W" strings) from the proposal, reducing the overall size of the expansion area from 1,280 acres to 960 acres. This change significantly reduced permanent and temporary impacts of the project, as well as eliminating the need for road upgrades adjacent to the documented raptor nests and within the boundaries of the Quilomene Wildlife Area. Further mitigation measures proposed as a result of public comments that have some relation to wildlife include the following:

- Provide either additional replacement habitat for impacts from the expansion or annual alternative mitigation fee in accordance with WDFW Wind Power Guidelines (2003), as determined in consultation with WDFW. If replacement habitat is selected, the guidelines would require approximately 73 acres (25.1 acres permanent disturbance at 2:1 plus 44.6 acres temporary disturbance at 0.5:1). The applicant proposes to offer an approximately 80-acre parcel owned by them as mitigation (the south half of the south half of the north half of Section 15, Township 18 North, Range 21 East, W.M., Kittitas County, Washington). If habitat replacement is selected, this parcel would be conveyed by the applicant to WDFW by quit claim deed. If alternative mitigation is selected, the annual fee would be approximately $3,850. These funds would be paid to WDFW, and targeted at funding habitat conservation and restoration efforts.
- The applicant will reseed certain areas within the existing Wild Horse facility, to be selected in consultation with WDFW and a qualified restoration specialist, where native seeds have not germinated and are not expected to germinate over time. The applicant will also extend restoration monitoring requirements on the existing site for the two-year

period proposed for monitoring the expansion area, to maintain consistency and to compare restoration results with the expansion area.

- The applicant will conduct a two-year post-construction monitoring study on the expansion site to evaluate impacts to avian and bat species. This monitoring may include the Wild Horse site as determined by the applicant in consultation with the Technical Advisory Committee (TAC) and approved by EFSEC.

3.2.4 Significant Unavoidable Adverse Impacts

Assuming appropriate implementation of all proposed BMPs and mitigation measures, no significant unavoidable adverse impacts to vegetation, wetlands, wildlife, or threatened and endangered species are anticipated.

3.3 Water Resources

3.3.1 Affected Environment

Regional surface water bodies and climate conditions as discussed in the Wild Horse DEIS apply equally to this expansion project. The expansion area sits on a ridge line that separates the Skookumchuck Creek Basin and the Parke Creek Basin (**Figure 3**). Roughly three quarters of the expansion property drains southeast to Skookumchuck Creek. The remaining quarter drains northwest to Parke Creek. The expansion parcel overlaps three headwater basins to Skookumchuck Creek. Each of these three basins contains a natural spring. Two of the springs, Spike Spring and Basalt Spring, are on the expansion property. The third spring, Seabrock Spring, is just south of the expansion boundary on the current Wild Horse site. These springs do not produce enough water to generate surface stream flow so the basins are dry for most of the time.

Both Skookumchuck and Parke Creeks are classified as Type N ephemeral streams or Unknown by the Washington State Department of Natural Resources (DNR). There are no water bodies on the site that are considered Shorelines of the State.

The project area is not within any designated Federal Emergency Management Agency (FEMA) floodplains.

The detailed discussion of groundwater in the DEIS applies equally to this expansion project.

3.3.2 Impacts of the Proposed Action

Impacts to water resources from the expansion will be the same as those described in the FEIS. Construction of the expansion will not cross any surface water bodies, nor will it discharge any waste materials. During construction, BMPs will be in place to collect and infiltrate stormwater. The project footprint has been located at least 150 meters from all springs (**Figure 7**).

The expansion will have no floodplain impacts, because the project is not within any designated floodplains.

No groundwater will be withdrawn for purposes of construction, operation, or maintenance of the proposed expansion. All construction-related water will be brought in from outside sources. Surface water that collects within the perimeter of the batch plant or quarry will not be allowed to drain to adjacent surface waters, but will be allowed to infiltrate or evaporate. All project facilities are well above the local groundwater table, so infiltration will not significantly affect groundwater quality, quantity, or flow.

3.3.3 Mitigation Measures

All mitigation measures identified in the FEIS and required by the SCA will be followed.

A Construction SWPPP for the expansion will be prepared and appended to the existing plan for Wild Horse. Once construction is complete and the site stabilized, the expansion would be managed according to the existing Operations SWPPP.

As a result of public comments received during the amendment process, the applicant voluntarily withdrew four turbines (“V” and “W” strings) from the proposal, reducing the overall size of the expansion area from 1,280 acres to 960 acres. This change significantly reduced permanent and temporary impacts of the project.

In order to further minimize ground disturbance resulting from the project, and therefore minimize the potential for impacts to surface and groundwater, the following additional mitigation measures are proposed:

- Underground collector cables will be installed adjacent to roads in the expansion area. A maximum of two new circuits will be installed with one on each side of the roads to minimize disturbance. As discussed in Section 3.1, BMP inspections at Wild Horse determined the underground system also works like a French drain to prevent road runoff from leaving the site.
- Where the two new circuits are routed through existing project roads, underground cables will be located within the road prism to prevent further disturbance in this area.
- Expansion of the substation will occur within the existing footprint of the disturbance. The additional substation bay will utilize the existing Substation Control Building to minimize the footprint of the substation expansion.
- The existing laydown yard used for Wild Horse construction will be re-used for the expansion.
- The existing Operations and Maintenance Building will serve the additional 22 turbines without the need for additional facilities.

- The existing offsite communications, comprising fiber optic and microwave systems, will handle the increased data streams without additional equipment.
- To the greatest extent practicable, existing road alignments will be retained for construction of project roads.

3.3.4 Significant Unavoidable Adverse Impacts

The proposed action would not result in any significant unavoidable adverse impacts on water resources. Implementation of the SWPPP, BMPs, on-site emergency plans, and other mitigation measures described above and in the Wild Horse FEIS would result in low risk to water quality.

3.4 Visual Resources

3.4.1 Affected Environment

A detailed description of the visual conditions surrounding the project area can be found in the DEIS. In general, the expansion area includes dry, rocky grasslands used for grazing, and areas covered with a mixture of sagebrush, bitterbrush, and bunchgrasses, with clusters of ponderosa pine. The existing condition for evaluating the visual effects of the expansion also includes the operating Wild Horse facility with 127 existing turbines.

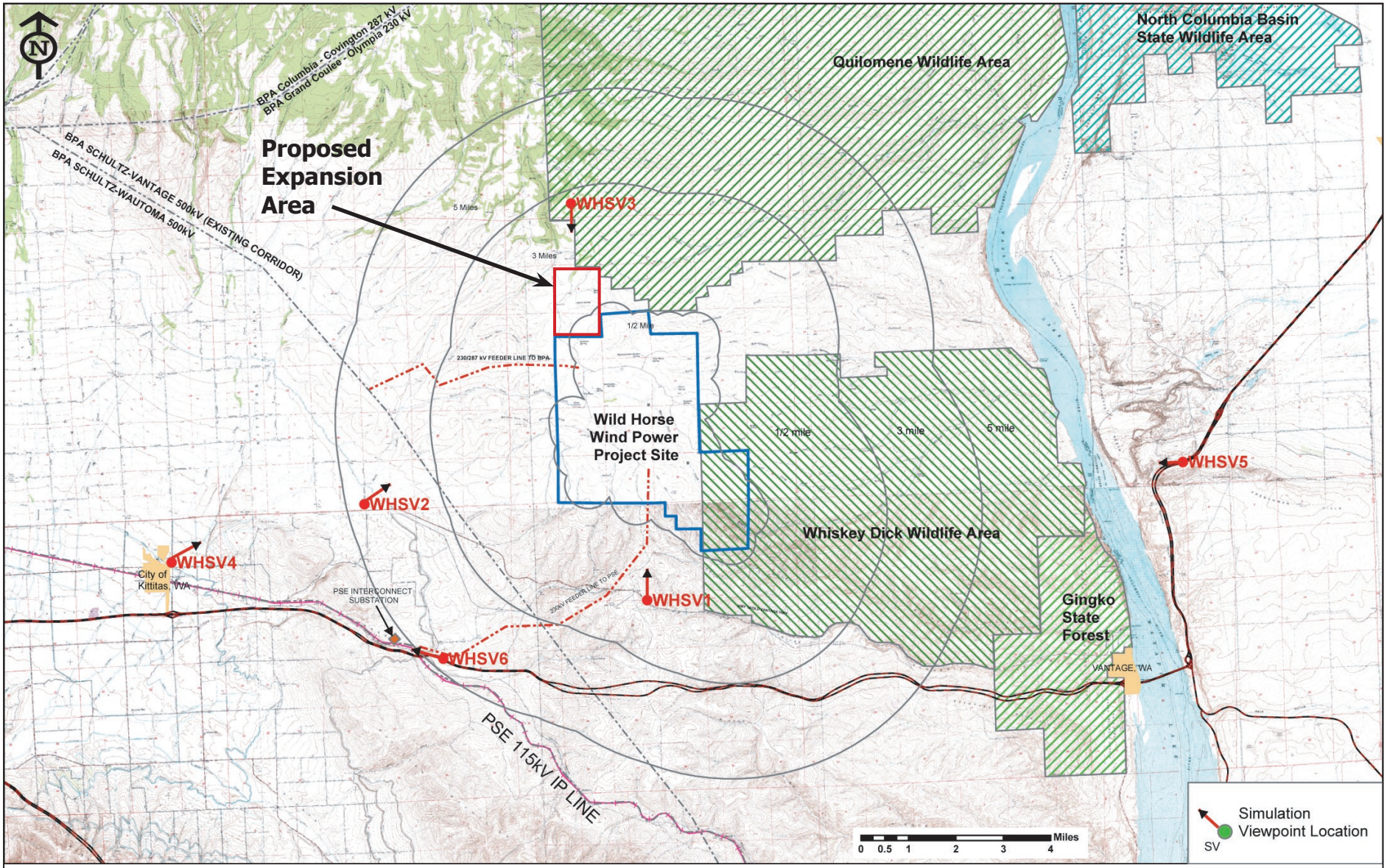
After construction, the tallest structures on the site will be the 22 proposed wind turbines, whose blades will extend a total of approximately 350 feet above the existing ground surface. To determine impacts to visual quality from the expansion area, representative viewpoints from the EIS were evaluated. The evaluation was based on: 1) Site reconnaissance conducted on June 24, 2008; and 2) Visual simulations for three key viewpoints where new turbines would be visible (**Appendix G**). Viewpoints WHSV3, WHSV4, and WHSV5 from the FEIS (**Figure 8**) were approximated for the simulations. The simulations used for SEPA Checklist on the expansion area were rerun without the “V” and “W” turbines that were dropped from the preliminary site layout.

3.4.2 Impacts of the Proposed Action

Construction activities for the expansion (e.g., large earth-moving equipment, trucks, cranes, etc.) would be similar to those described in the FEIS. They would be visible from a few seasonal residences northwest of the site. However, it is anticipated that construction activities would be low to moderately visible elsewhere, including Kittitas and surrounding valley areas and the plateaus east of the Columbia River.

Figure 9 shows both existing 2008 views and the simulated views. Visual changes to the three viewpoints after construction of the expansion are as follows:

- **WHSV3** is the nearest FEIS viewpoint to the expansion area. New turbines would extend north from Wild Horse along the upland plateau. These new turbines would be 2.8 miles away from (or 1.7 miles closer to) this viewpoint which looks south from Beacon Ridge Road. The increased proximity and quantity of turbines would introduce more vertical elements and reduce the intactness of the landscape. The larger apparent scale of the facilities would increase vividness of the landscape. Overall visual impacts would be small as this viewpoint does not have many viewers. The degree of visual change caused by the Expansion would be minor and it is not anticipated to change the potential level of visual impact from "Moderate" as described in the FEIS.
- **WHSV4** is located near the intersection of Patrick Avenue, No. 81 Road, and Clerf Road at the eastern edge of the city of Kittitas. The expansion turbines would be visible along ridges. The visual impacts would be greatly attenuated by the fact that these turbines are 8 to 11 miles away. Additional vertical elements would reduce intactness of the landscape. However, the degree of visual effect is minor and it is not anticipated to change the potential level of visual effect from "Low" as described in the FEIS.
- **WHSV5** looks west from the I-90 on-ramp from Silica Road. The expansion turbines would appear north of the operating Wild Horse turbines. Additional vertical elements would reduce intactness in the landscape. However, these turbines would be partially obscured behind the ridge, silhouetted against the sky, and would be greatly attenuated by the fact that they are located 9 to 13 miles away. The degree of visual effect from the expansion is minor and it is not anticipated to change the potential level of visual impact from "Low" as described in the FEIS.



Source: Wind Ridge Power Partners, LLC 2004.

Gx1736

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Figure 8
Simulation Viewpoints
WILD HORSE SUPPLEMENTAL EIS

EXISTING

PROPOSED

Viewpoint WHSV3 - Existing View.

Viewpoint WHSV3 - Proposed: View simulation looking south from Beacon Ridge Road.

Selected Viewpoints Showing Existing and Proposed Conditions

Wild Horse Wind Facility Expansion

PSEN0000-0134

November 2008

Figure 9

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Viewpoint WHSV4 - Existing View.

Viewpoint WHSV4 - Proposed: View simulation looking east from the edge of the city of Kittitas.

Selected Viewpoints Showing Existing and Proposed Conditions

Wild Horse Wind Facility Expansion

PSEN0000-0134

November 2008

Figure 9

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EXISTING

PROPOSED

Viewpoint WHSV5 - Existing View.

Viewpoint WHSV5 - Proposed: View simulation looking west from I-90 on-ramp from Silica Road.

Selected Viewpoints Showing Existing and Proposed Conditions

Wild Horse Wind Facility Expansion

PSEN0000-0134

November 2008

Figure 9

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Based on the results of the visibility analysis, most of the turbines on the expansion area will be visible at a distance of greater than 5 miles from areas east of the Columbia River and from areas east of the town of Kittitas. Turbines would be visible from the wind farm itself and from Beacon Ridge Road to the north at a closer distance. However, existing forest to the north of the expansion area and viewpoint WHVS3 will screen the turbines to a large extent from persons traveling on that road. Residents living northwest of the expansion area would see more turbines than currently but the turbines will blend with the existing turbines from this perspective. Small numbers of turbines will be visible from north-facing slopes on ridges within 5 miles of the project. In areas more than 5 miles from the project site, turbines may be visible, but they will be relatively small elements in the overall view, and will tend to fade into the background, particularly at times when the atmosphere is less than completely clear. The existing wind turbines at Wild Horse have a limited effect on the overall character and visual quality of the landscape from these areas. Overall, the proposed project will have a low potential level of visual impact due to the low number of potential viewers in the relatively remote area north of the existing wind facility, and the distance to population centers and major roads.

The project will provide no additional light and glare during the day. FAA warning beacons will be placed on the wind turbines that will be visible to pilots at night. The lights will blink simultaneously to minimize nighttime intrusion. These beacons will be synchronized with FAA lights on the existing wind facility. No additional facility lighting will be required.

3.4.3 Mitigation Measures

All of the mitigation measures identified in the Wild Horse FEIS and required by the SCA will be implemented. Project lighting will be limited to that required by the FAA. New FAA lights will be coordinated with the existing system, to create a minimum facility envelope in which all lights are synchronized to a time source and flash simultaneously. Additional mitigation for nighttime lighting will include placing lights at the substation on motion sensors so they only shine when needed for security.

As a result of public comments received during the amendment process, the applicant voluntarily withdrew four turbines (“V” and “W” strings) from the proposal, reducing the overall appearance of the expansion.

3.4.4 Significant Unavoidable Adverse Impacts

The proposed action would not result in any significant unavoidable adverse impacts on visual resources. Predicted changes to views would not be significant compared to the existing Wild Horse. Affected views in the project area have a low level of sensitivity due to the remoteness of the site and distance from population centers and actively traveled roads.

3.5 Energy and Natural Resources

3.5.1 Affected Environment

Available energy resources and energy demand are discussed in detail in the Wild Horse DEIS. Since the publication of the FEIS, the Wild Horse has been constructed and currently adds to the energy resources of the region.

3.5.2 Impacts of the Proposed Action

Energy will be consumed during construction of the expansion for producing materials, transporting these materials, and operating construction equipment. Over time, energy produced by the completed project will be significantly greater than that expended by the facility's construction.

During periods of low wind, the proposed turbines would consume electricity. This electricity would be provided by the Wild Horse solar facility and from the transmission grid. Diesel fuel and unleaded gasoline would be used by vehicles for site personnel. As an alternative energy facility, the project would produce significantly more power than it consumes.

3.5.3 Mitigation Measures

All mitigation measures for energy and natural resources documented in the Wild Horse FEIS and required by the SCA will also be followed for the expansion.

3.5.4 Significant Unavoidable Adverse Impacts

The proposed action would not result in any significant unavoidable adverse impacts on energy and natural resources.

3.6 Noise

3.6.1 Affected Environment

As documented in the DEIS and FEIS for the Wild Horse, existing residences near the expansion area are noise-sensitive, with an environmental designation for noise abatement (EDNA) equivalent to Class A (lands where people reside and sleep). Table 3.8-3 from the DEIS summarizes the maximum permissible levels applicable to noise originating from an industrial site (e.g., the proposed wind turbine generators) as received at residences and agricultural areas. Consistent with the DEIS and FEIS, a traffic noise impact due to equipment transport and delivery during construction is defined as a peak-hour traffic level exceeding 66 decibels (dBA) at any residence. The British Wind Energy Association recommends that the noise levels resulting from new wind generation facilities should be kept within 5 dBA of the average evening and nighttime background levels at residences. This recommended restriction of 5 dBA

above background levels was used as the environmental significance criterion in the DEIS and FEIS and thus is used as the impact threshold during operation for this supplemental noise analysis.

Section 173-60 of the Washington Administrative Code (WAC) provides applicable noise standards for Washington State, including Kittitas County. Per WAC 173-60-040, the maximum permissible noise level at a Class A site such as a residence from a Class C noise source such as a wind turbine is 60 dBA.

The Project area is sparsely populated. Ambient noise in the expansion area is very low, with no sensitive receptors located within 0.5 mile. The nearest residence is located approximately 3,300 feet northwest of the expansion area and approximately 1 mile from the nearest proposed wind turbine, as shown in **Figure 3**. This home is the nearest of a cluster of six homes located northwest of the expansion area (see DEIS Figure 3.8-1) that are used seasonally for recreational activities such as hunting, etc. As documented in the DEIS, the estimated average nighttime background noise level at these homes is 30 to 35 dBA.

3.6.2 Impacts of the Proposed Action

Direct noise impacts would occur if noise levels exceed the regulatory limits or the environmental impact thresholds described in Section 3.6.1. Based on the noise analysis provided in the DEIS, noise from the proposed expansion turbines may be detectable at the nearest residence, but would not exceed the permissible noise levels under WAC 173-60-040.

Indirect impacts are not anticipated because the project is not expected to substantially induce regional growth or traffic that would result in significant changes to offsite noise. The proposed project will comply with all regulations and environmental noise criteria during construction and operation.

3.6.2.1 Construction Impacts

Short-term sources of noise include construction traffic, operation of the rock quarry and the concrete batch plant, blasting, and portable generators. Construction noise is likely to create noise in excess of the normal background levels at the nearest residences to the expansion area, which are approximately 1 mile northwest of the proposed S-string. However, all noise-generating construction activities will be conducted between the hours of 7 a.m. and 10 p.m. and are, therefore, exempt from regulation per WAC 173-60-050. Blasting will only occur during the daytime, and no impact is anticipated since the nearest home is approximately 1 mile away from the nearest WTG foundation and 1.75 miles away from the proposed rock quarry. Blasting activities are specifically exempt from noise regulations per WAC 173-60-050(1)(c).

The FEIS concluded that haul truck traffic during construction would cause temporary high noise levels at homes within 60 feet of the roads being used to access the site during facility

construction. However, there are few homes that close to the proposed construction haul routes, which are identical to the routes used to construct the existing facility. Therefore, any adverse impacts would be temporary and restricted to a small number of homes.

The FEIS concluded that there was little potential for construction vehicles to adversely impact homes in the town of Kittitas. This conclusion was based upon an estimated 49 heavy haul trucks per hour and 170 commute vehicles per hour traveling through town during the peak hour of the major construction period. These traffic volumes were estimated based upon the construction of 136 turbines. Since the expansion area will only include the construction of 22 new wind turbines, it can be deduced that there will be fewer construction vehicles traveling through town, further reducing the potential to adversely impact nearby homes.

3.6.2.2 Operations and Maintenance Impacts

Long-term noise sources include new wind turbines, occasional maintenance traffic, and potentially increased noise from the existing substation. Traffic noise generated by the project would be in excess of normal background levels on the wind farm, but within typical levels for the surrounding communities. Operational traffic is estimated between 5 and 10 trips per day based upon an operation and maintenance staff of 2 to 5 persons. Operational traffic noise is not expected to exceed the Federal Highway Administration impact criterion even at homes closest to the street, as concluded in the DEIS and FEIS.

The DEIS estimated that evening background noise levels at the homes northwest of the expansion area are between 30 and 35 dBA. Based upon the results of the noise model utilized in the DEIS to estimate the ground-level noise emissions caused by new wind turbines, it appears that noise levels up to 50 dBA are audible within approximately 0.5 mile of WTGs and noise levels up to 40 dBA are audible within approximately 1.25 miles of WTGs. Therefore, it is estimated that noise levels at the nearest residence (approximately 1 mile away) will be between 40 and 50 dBA. These estimated noise levels exceed the 5 dBA environmental significance criteria established by the British Wind Energy Association, but are below the maximum permissible noise level of 60 dBA as identified in WAC 173-60-040. The existing topography, including trees surrounding the cluster of seasonable residences, is expected to further reduce perceptible noise levels from the turbines.

The new wind turbines will transmit power to the substation on the existing facility site via an underground collection system. The expansion area does not include the construction of new transmission lines or substations. Noise levels at the existing substations are not expected to increase.

3.6.3 Mitigation Measures

All mitigation measures identified in the FEIS and required by the SCA will be implemented for the proposed expansion area.

3.6.4 Significant Unavoidable Adverse Impacts

Temporary noise impacts from haul truck traffic on homes near access roads to the site would be adverse and unavoidable. Since the new turbines will be located at least one mile from existing residences, no significant unavoidable adverse impacts from operational noise are expected.

3.7 Land Use and Recreation

3.7.1 Affected Environment

The expansion area, comprised of two PSE-owned parcels totaling 960 acres, is located entirely within unincorporated Kittitas County. A seasonal use residence is located approximately 3,300 feet northwest of the expansion area. Forest cover exists to the north of the project site, but there are no commercial forestry operations taking place in the immediate vicinity of the project. No Conservation Reserve Program (CRP) lands or prime soils are located within the expansion area. Grazing is the only agricultural activity occurring within the expansion area and most grazing is seasonal (spring) in nature. None of the land is irrigated and no agricultural crops are cultivated within the project site. Grazing occurred on the site in 2008 in compliance with the Wild Horse CRM Area 2008 Grazing Plan.

There are no public lands located within the expansion area, but adjacent WDFW lands are located to west, north, and along Quilomene Road to the east. The entire expansion area has a Rural land use designation and is zoned Forest and Range, as illustrated in **Figure 10**. The Rural designation is intended to sustain rural character by focusing project development around existing cities, consistent with planned transportation and urban utility corridors. The intent of the Forest and Range zone is to provide areas of Kittitas County where natural resource management is the highest priority and where the subdivision and development of lands for uses and activities incompatible with resource management are discouraged. Permitted resource management uses include logging, mining, quarrying, and agricultural practices. Several residential uses are also allowed in the Forest and Range zone.

Per Chapter 17.61A of the Kittitas County Municipal Code, the expansion area is also located within a Wind Farm Resource overlay zone. The overlay zone is intended to pre-identify areas suitable for the location of wind farms that will protect public health and safety and ensure compatibility with adjacent land use. The overlay zone encompasses 19 townships located within county boundaries, including Township 18 North, Range 21 East, where the expansion area is located.

The DEIS (Table 3.9-2) summarizes the local land use plans, ordinances, and policies that would typically apply to a wind project proposed in Kittitas County.

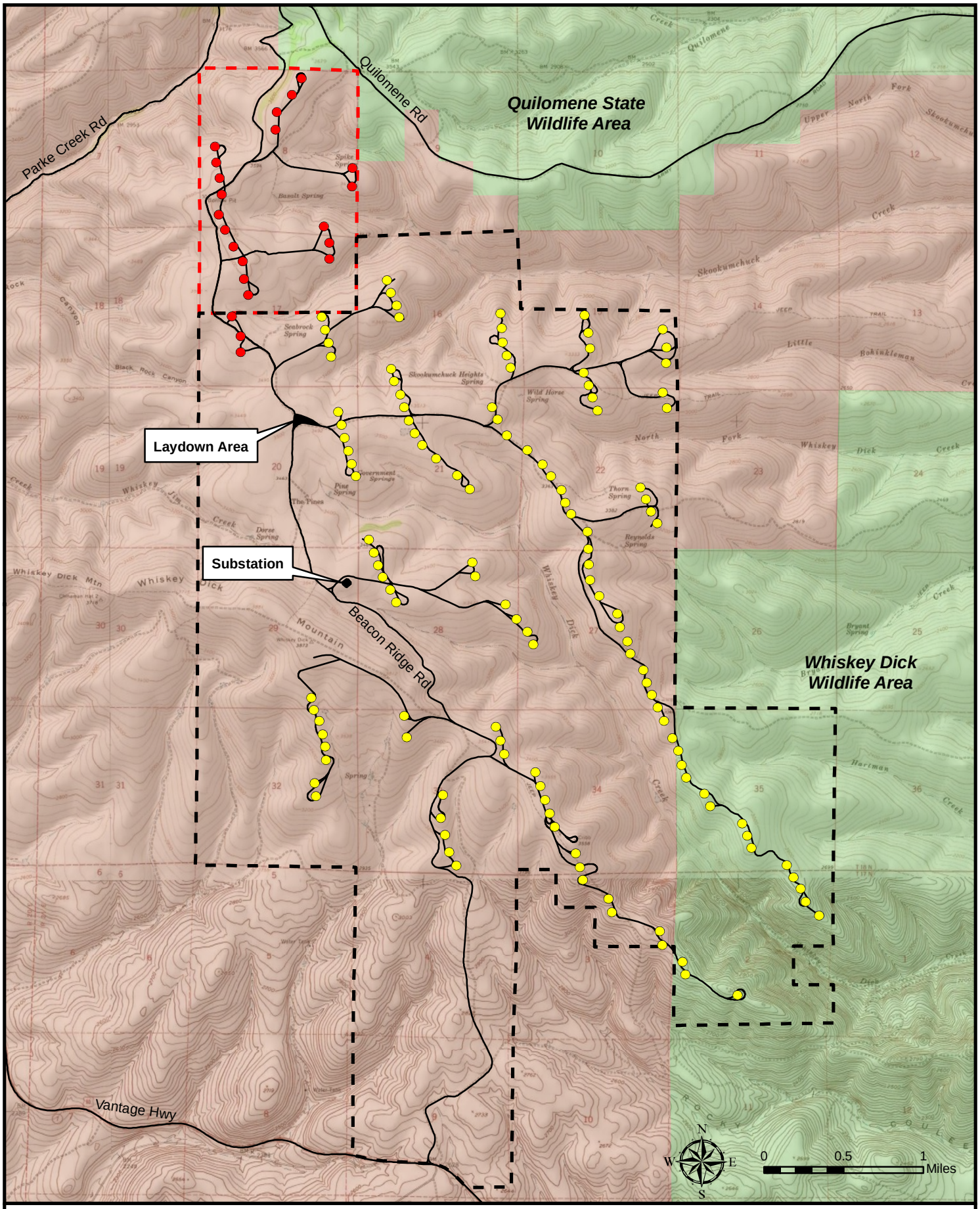

Figure 10 - Land Use and Zoning
Wild Horse Supplemental EIS

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- Proposed Wind Turbine
- Existing Wind Turbine
- Road
- Existing Facility
- Expansion Area
- Commercial Agriculture
- Forest and Range (Rural Land Use)

The area in and around the expansion area is used for dispersed recreation, primarily hunting, horseback riding, and camping. The Quilomene State Wildlife Area borders the northern boundary of the expansion area. Ginkgo State Park is located on Vantage Highway approximately 11 miles southeast of the expansion area. The Whiskey Dick Wildlife Area is located directly east of the existing Wild Horse site. Seasonal hunting is permitted on the property with landowner permission, which can be obtained on-line. The DEIS lists (Table 3.13.1-2) and illustrates (Figure 3.12-2) the recreational facilities and activities available within a 25-mile radius of the existing Wild Horse, which includes the proposed expansion area.

PSE's Renewable Energy Center is located on the existing Wild Horse site approximately 2.5 miles north of Vantage Highway (**Figure 2**).

3.7.2 Impacts of the Proposed Action

Potential direct impacts of the expansion area include the conversion of rangeland to utility-related uses and the temporary removal of livestock from the project site during construction activities. Indirect land use impacts are not anticipated because the project is not expected to substantially induce regional growth that would change off-site land uses.

3.7.2.1 Construction Impacts

Temporary land disturbances will occur from construction of turbines and roads and extraction of resources from the rock quarry, resulting in the conversion of approximately 45 acres of open space and grazing land. After construction is complete, temporarily disturbed areas will be returned as closely as possible to their original state, excluding service and access roads, which would remain in place for the life of the facility.

Construction workers may utilize local parks and campgrounds and may take advantage of other recreational opportunities within the county and throughout the region. No significant impact on parks and recreation is expected to occur due to their presence, as discussed in the DEIS. Public access to the expansion area will likely be restricted during construction, at least intermittently, in order to prevent any potential conflicts between recreational users and construction equipment and activities. Recreational users of the Quilomene State Recreational Area may be able to hear and see construction activities within the expansion area. However, construction activities will be intermittent and temporary and are not expected to substantially impair recreational use. Construction activities may require intermittent closure of the Renewable Energy Center. PSE will post anticipated facility closures on local signage and the PSE website for visitors to utilize in travel planning.

3.7.2.2 Operation and Maintenance Impacts

The permanent project footprint will remove approximately 25 acres from open space and grazing uses for the life of the project (estimated at 20 years). The remaining 935 acres within the expansion area will remain undeveloped or in their current condition (roads, etc.). The permanent conversion of 25 acres of land zoned as Forest and Range represents 0.009 percent of the total 288,444 acres in the County.

Public access through the wind farm facility via Beacon Ridge Road will remain available April through November, weather permitting. The public will not have access to roads leading to turbine strings. Controlled hunting will be allowed during project operations, in accordance with a Hunting Plan approved by EFSEC.

Table 5 provides a list of plans, policies, and regulations that are pertinent to the proposed project and have changed since the publication of the FEIS. The table focuses primarily on the Kittitas County Comprehensive Plan and Zoning Code, portions of which were updated in 2008. The general discussion of compliance with policies and regulations that have not changed since publication of the FEIS is applicable for the proposed expansion and is not repeated here.

Table 5. Plans, Policies, and Regulations Pertinent to the Project

Plan, Policy, or Regulation	Description	Consistency Determination
Kittitas County Comprehensive Plan	"GPO 6.34. Wind Farms may only be located in areas designated as Wind Farm Resource overlay districts in the Comprehensive Plan unless they meet the criteria as may be developed under GPO 6.35. Such Wind Farm Resource overlay districts need not be designated as Major Industrial Developments under Chapter 2.5 of the Comprehensive Plan."	The expansion area is located within a Wind Farm Resource overlay district. Therefore, the project is consistent with this policy.
	"GPO 6.35. As allowed in GPO 2.10b and GPO 2.10c, develop a study area encompassing the entire county to establish criteria and design standards for the siting of wind farms outside the process outlined in GPO 6.34. Criteria should include but not be limited to: • Location relative to residential development • Location relative to visual impacts • Location relative to audible impacts • Issues pertaining habitat and avian impacts"	The County has not yet developed a study area with criteria and design standards for the siting of wind farms. However, the SEIS takes into consideration the mandatory criteria identified in GPO 6.35, including land use, visual, noise, and wildlife impacts of the proposed expansion.
Kittitas County Zoning Code	Wind Farm Resource overlay zone, as described in Chapter 17.61A of the zoning code.	The project site is located within the overlay zone.

3.7.3 Mitigation Measures

Access to and through the expansion area will be managed similar to the existing Wild Horse. The adaptive management approach identified in the SCA will continue to be implemented in coordination with WDFW.

As a result of public comments received during the amendment process, the applicant voluntarily withdrew four turbines ("V" and "W" strings) from the proposal, reducing the overall area of the expansion.

3.7.4 Significant Unavoidable Adverse Impacts

Permanent conversion of approximately 25 acres of rangeland from the project footprint would be an unavoidable impact of the project. However, other typical land uses, including grazing, hunting, traditional food gathering, etc., will continue in the expansion area, according to management objectives. Loss of 25 acres of rangeland would have a minimal impact on the availability of grazing land in Kittitas County.

3.8 Cultural Resources

3.8.1 Affected Environment

Regulatory framework, regional context, and historic setting of the proposed project's cultural resources is described in detail in the DEIS and FEIS for Wild Horse.

Identified archaeological resources in the expansion area are described in Lithic Analysts (2008). Due to the confidentiality of specific information on archeological sites, a summary is provided in **Appendix H.** Pedestrian surveys conducted in October 2005 and May 2008 identified five previously unrecorded archeological sites and two isolates. In addition, one previously identified archaeological site was revisited, and the site boundaries expanded as a result of the current investigation.

3.8.2 Impacts of the Proposed Action

The proposed project was designed to avoid all identified archaeological sites on the proposed expansion area. Eliminating the four turbines in the "V" and "W" strings has avoided any potential impacts to the previously identified archeological site from expansion of the existing dirt road in Section 8. No archaeological resources will be affected by the proposed project.

3.8.3 Mitigation Measures

All of the mitigation measures in the FEIS for the Wild Horse will be implemented. Where ground disturbance cannot maintain a 100-foot buffer around an identified archaeological site, a professional archaeologist will be present during construction.

3.8.4 Significant Unavoidable Adverse Impacts

Assuming appropriate implementation of proposed mitigation measures, the proposed action would not result in any significant unavoidable adverse impacts on cultural resources.

3.9 Transportation

3.9.1 Affected Environment

The existing road network for the project area is described in detail in the Wild Horse DEIS. The site is currently accessed from the south on the Vantage Highway and Beacon Ridge Road, the main private road through the existing wind farm facility. Access to the proposed project will be from the continuation of Beacon Ridge Road through the site, which will be widened and improved in areas necessary to providing access to the new turbines.

Beacon Ridge Road also provides access to the parcel from the north for public recreation. This northern access road will not be used for construction access or be improved by the expansion project.

3.9.2 Impacts of the Proposed Action

The proposed project will improve portions of Beacon Ridge Road as shown in **Figure 4**. In total, approximately 3.7 miles of new roads (mostly to access turbines) would be constructed, approximately 2.3 miles of existing roads would be improved, and 0.7 mile of existing roads would be abandoned and restored to native conditions. Public access to and through the site will continue to be managed in coordination with WDFW. During construction, portions of Beacon Ridge Road would be subject to intermittent closures for the safety of the public while large pieces of equipment are in transit.

Daily vehicle trips to the completed facility are not expected to change following construction of the expansion. It is estimated that 5 to 10 additional vehicle trips per day would be generated by the expansion facility.

3.9.3 Mitigation Measures

All of the mitigation measures identified in the FEIS for Wild Horse and required by the SCA will be implemented. PSE will restrict access to areas off the main road through the facility during construction. Similar to current conditions, periodic closures of the entire facility may occur for public safety. PSE will restrict access to areas off the main road through the facility during construction.

3.9.4 Significant Unavoidable Adverse Impacts

The proposed action would not result in any significant unavoidable adverse impacts on traffic and transportation resources.

3.10 Health and Safety

3.10.1 Affected Environment

Affected environment for health and safety is described in Section 3.15.1 of the DEIS.

3.10.2 Impacts of the Proposed Action

Health and safety risks for the proposed expansion would be the same as those described in the DEIS and FEIS for Wild Horse, and include fire or explosion, release of hazardous materials, terrorism/sabotage/vandalism, tower collapse, blade throw, ice throw, electromagnetic field effects, and electrical shock.

3.10.3 Mitigation Measures

All mitigation measures proposed in the FEIS and required by the SCA for Wild Horse will be implemented.

3.10.4 Significant Unavoidable Adverse Impacts

The proposed action would not result in any significant unavoidable adverse impacts on health and safety.

3.11 Air Quality

3.11.1 Affected Environment

Discussions in the Wild Horse DEIS regarding affected environment and air quality standards apply equally to the expansion parcel.

3.11.2 Impacts of the Proposed Action

Construction activity would temporarily generate fugitive dust and tailpipe emissions from construction equipment at the project site, including the concrete batch plant, delivery vehicles, and other construction equipment. Operational air impacts would be produced from on-site vehicular traffic and temporary processing equipment, such as the portable concrete batch plant and the portable rock crusher. The air quality permit for the temporary processing equipment will require the use of emission control devices to reduce fugitive dust. Thus, impacts from these

sources are expected to be minor and similar to those currently occurring on the facility. Therefore, operation of the expansion would not have a negative impact on air quality.

3.11.3 Mitigation Measures

All air quality mitigation measures contained in the FEIS will be followed for construction and operation of the expansion.

In addition, if portable concrete batch plants are used during construction, the Washington State Department of Ecology's (Ecology) Air Quality Program will be notified 30 days in advance. If portable rock crushers are used during construction, Ecology's Air Quality Program will be notified 10 days in advance. Any permits required to operate the concrete batch plant or rock crushers would be issued by EFSEC after consultation with Ecology.

3.11.4 Significant Unavoidable Adverse Impacts

Assuming appropriate implementation of all proposed BMPs and adherence to all permit conditions, the proposed action would not result in any significant unavoidable adverse impacts on air quality.

3.12 Public Services and Utilities

3.12.1 Affected Environment

Public services and utilities in the vicinity of this project are discussed in detail in the Wild Horse DEIS. The descriptions in the DEIS apply equally to the expansion project.

3.12.2 Impacts of the Proposed Action

The impacts of the expansion project are generally the same as those described in the DEIS and FEIS for Wild Horse. The expansion project will add approximately 44 additional MW of electrical generation capacity to the site, increasing the capacity of Wild Horse up to 273 MW.

The proposed project will create a short-term potential need for emergency services in case of fire or injury during construction. This need is not expected to increase the need for public services during operation above and beyond what currently exists for Wild Horse, which is currently under contract with Kittitas County Fire District 2 for emergency services.

No significant impacts to public services and utilities are expected from the expansion.

3.12.3 Mitigation Measures

All mitigation measures for public services and utilities contained in the FEIS and required by the SCA will be followed for construction and operation of the expansion.

3.12.4 Significant Unavoidable Adverse Impacts

The proposed action would not result in any significant unavoidable adverse impacts on public services and utilities.

3.13 Socioeconomics

3.13.1 Affected Environment

Relevant data regarding the existing population, housing, employment, income, and fiscal and tax conditions and trends in Kittitas County are presented in Section 3.11.1 of the DEIS.

3.13.2 Impacts of the Proposed Action

3.13.2.1 Construction Impacts

The DEIS concluded that construction of the existing facility would result in increased employment and spending throughout the County. This conclusion was based upon analysis from a study titled "Economic Impacts of Wind Power in Kittitas County," prepared by ECONorthwest in November 2002. The study was utilized to quantify the economic impacts of project construction throughout the County. The DEIS estimated that the construction of 136 turbines would result in $4.8 million in total income and 71 jobs in the County over a one-year period. It can be concluded that construction of 22 additional turbines within the expansion area would result in increased employment and spending throughout the County over a nine month period, but at a lesser scale than during construction of Wild Horse.

3.13.2.2 Operation and Maintenance Impacts

The operation of the proposed facility will employ approximately 2 to 5 additional, full-time staff, as compared to an estimated 14 to 18 for the existing facility. The DEIS concluded that such a small number of workers would not cause a significant increase in population or housing demands. Based upon the results of the ECONorthwest study, the DEIS estimated that operation of a 136-turbine wind farm would result in $1.4 million per year in added income and 26 to 30 additional jobs (14 to 18 direct, 1 indirect, and 11 induced) in the County. Therefore, the operation of 22 additional turbines and creation of 2 to 5 direct jobs would contribute to added incomes up to an estimated $500,000 per year.

The FEIS stated that the existing facility would result in a substantial increase in the local property tax base, based upon an estimated $1.5 million in annual property taxes to be paid by the project applicant. The proposed expansion will further increase the local property tax base, resulting in increased revenues for state schools and local public services in the area.

The DEIS also concluded that due to the nature of surrounding land uses, the project was unlikely to result in a negative impact on property values. Since there appear to be fewer

residential structures surrounding the expansion area than the existing facility, the potential for property value impacts appears to be even further reduced.

The applicant owns both parcels within the expansion area. Therefore, no long-term leases will be required.

3.13.3 Mitigation Measures

The proposed expansion does not change the conclusions of the DEIS or FEIS, and no new mitigation measures are proposed for population, housing, and economics.

3.13.4 Significant Unavoidable Adverse Impacts

The proposed expansion would not result in any significant unavoidable adverse impacts on population, housing, or economics.

3.14 Cumulative Impacts

Cumulative impacts are required to be addressed under SEPA. Potential cumulative impacts associated with Wild Horse, Kittitas Valley, and Desert Claim wind power projects were analyzed for 15 elements of the environment in the DEIS and FEIS for Wild Horse. Based on these analyses, EFSEC concluded that Wild Horse, in conjunction with the other developments, was not expected to result in significant adverse cumulative impacts for one or more of the following reasons: no significant adverse impacts were identified for each of the actions individually; impacts of the independent actions were localized to each project; the impacts of the actions are of a temporary nature; mitigation measures and requirements of the county regulations reduce adverse impacts to non-significance; or Wild Horse does not contribute to cumulative impacts because of the distance that separates it from other wind power development in the County.

A single cumulative impact involving development of all three wind power projects was identified with respect to visual resources: the impact of repetitive views of turbines in the County for residents and frequent visitors to the Valley could result in the impression of change in the overall visual character of the Kittitas Valley landscape.

Another wind power facility, Vantage Wind Energy Facility, proposed by Invenergy, has been approved immediately south of Wild Horse, between Vantage Highway and I-90. Vantage will construct up to 69 1.5 MW wind turbines on approximately 4,750 acres of privately-owned land.

Per Chapter 17.61A of the Kittitas County Municipal Code, Vantage, as well as the Wild Horse expansion, is located within a Wind Farm Resource overlay zone. The overlay zone is intended to pre-identify areas suitable for the location of wind farms that will protect public health and safety and ensure compatibility with adjacent land use.

This section considers the potential cumulative impacts of the Vantage project along with the proposed expansion of Wild Horse in light of the analysis previously provided in the FEIS, and determines if any significant impacts would result to any resources of concern. Only those resources with potentially significant cumulative adverse impacts are included below. The addition of the proposed expansion and the Vantage projects would not change the conclusions of the cumulative effects analysis in the DEIS and FEIS for the other resources.

3.14.1 Vegetation

The proposed expansion would add approximately 25 acres of permanent vegetation impacts to the approximately 361 acres of vegetation permanently lost by the Wild Horse, Desert Claim, and Kittitas Valley projects. The Vantage project would permanently remove another 113 acres of vegetation, for a cumulative total of approximately 500 acres of vegetation removal (if all currently proposed projects in this area were to be constructed), the majority of which is shrub-steppe habitat. This acreage represents less than 0.2 percent of the shrub-steppe habitat in Kittitas County (Dobler et al. 1996). For Wild Horse and Vantage, the total permanent impacts represent less than 0.3 percent of the shrub-steppe habitat in the Colockum Sage Grouse Management Unit (Stinson et al. 2004). Impacts from ongoing agricultural and residential development are also contributing to cumulative loss of native vegetation in the project vicinity.

3.14.2 Wildlife

The proposed expansion area is in both mule deer and elk winter range. The Vantage project is in neither elk nor mule deer winter range. Approximately 25 acres of elk and mule deer winter range would be removed by the proposed expansion, in addition to the approximately 300 acres removed by the other projects. This area is only a fraction (less than 0.09 percent) of the available winter range for these ungulates in Kittitas County. These projects are not being constructed concurrently, so temporary displacement impacts to elk and deer would be limited.

Predicted combined raptor fatalities from operation of the existing Wild Horse, Kittitas Valley, and Desert Claim projects are approximately 15 birds per year. Vantage and the proposed expansion of Wild Horse would add approximately 12 more raptor fatalities, for a cumulative total of 27 raptors per year. These birds are anticipated to be red-tailed hawks and American kestrels, the most common raptors in the region.

Predicted combined passerine mortality from the proposed expansion and Vantage projects would range from approximately 91 to 250 birds per year. Combined with previous estimates for the Wild Horse, Kittitas Valley, and Desert Claim projects, annual passerine mortality from all five projects would range from 521 to 990 birds. This level of mortality is not expected to have any population-level consequences for individual species because of the expected low fatality rates for most species and high population sizes of the commonly killed species such as horned lark, European starling, American robin, and western meadowlark. Some species documented at

these facilities (including horned lark and western meadowlark) have declining populations in the Columbia Basin, so may be more sensitive to declines in local populations.

Based on an observed bat mortality rate of 0.70 per turbine on the existing Wild Horse, predicted combined bat mortality from the proposed expansion and Vantage projects would be approximately 64 bats per year. The DEIS estimated that 361 to 782 bats would be killed annually at the existing Wild Horse, Kittitas Valley, and Desert Claim projects. Based on the observed mortality rate at Wild Horse, these estimates seem conservative. Little is known about bat populations in the study area, but most fatalities appear to be related to fall migration, so significant cumulative impacts to local bat populations are not expected.

Construction of the expansion and Vantage projects would reduce foraging and breeding habitat for other wildlife such as badger, coyote, pocket gophers, rabbits, mice, and voles. Impacts to reptiles and amphibians would also occur.

3.14.3 Noise

The proposed expansion project and the Vantage project are not close enough to create cumulative noise impacts. Noise produced by the proposed expansion turbines is not expected to be significantly different than the existing Wild Horse.

3.14.4 Visual Resources

The DEIS for Wild Horse addresses the cumulative impact of multiple wind power facilities in the Kittitas Valley. Construction of the expansion area and the Vantage facility would contribute to these impacts, providing more opportunity for residents and visitors to perceive a change to the overall character of the landscape. This perception will be most perceptible to travelers along I-90 from the vicinity of the Rye Grass Rest Area, from which both the Vantage facility and the existing Wild Horse will be visible. Development of the proposed expansion and the Vantage facilities will also contribute to the cumulative nighttime lighting in the Kittitas Valley.

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