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AND ASSOCIATES INC.

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## TECHNICAL MEMORANDUM

**DATE:** July 23, 2008  
**TO:** Scott Williams, Puget Sound Energy  
**FROM:** Gray Rand, Senior Biologist  
**SUBJECT:** **Rare Plant Survey for Expansion of Wild Horse Wind Facility**  
**PROJECT:** Wild Horse Expansion  
**PROJECT NO:** PSEN00000134  
**COPIES** Ron Bockelman, Jennifer Diaz

This memorandum documents the results of a rare plant survey conducted on portions of the proposed expansion at the Wild Horse Wind Power Facility (WHWPF). The Expansion would add 1,280 acres to the 8,600 acres of the original site for a total of 9,880 acres and add 26 new turbines to the 127 turbines currently operating for a total of 153 turbines at the WHWPF. The expansion area is located immediately north of the existing WHWPF on approximately 1,280 acres within Sections 8, 9, and 17 of Township 18N, Range 21 East. The site is located approximately 13 miles east of Ellensburg near the headwaters of Skookumchuck Creek.

The intent of this memorandum is to document the results of a rare plant survey conducted in new areas identified for the expansion not covered by a previous survey conducted by WEST, Inc. in 2006.

### Methods

Surveys were conducted by trained botanists during peak flowering and/or fruiting periods when target species are best identified. Meandering transects were walked in two separate areas (Figure 1): Survey Area 1 is the small mesa where the proposed S-string is located, and Survey Area 2 is the area surrounding the additional proposed R-11 through R-13 turbines. These areas were completely inventoried for rare plants on May 27 and June 15, 2008.

### Results

**Exhibit 1** lists all plant species found during site visits by the botanists. Habitat in the two surveyed areas was characterized by plants adapted to shallow lithosol soils, including biscuitroot, stiff sagebrush, false dandelion, a variety of lomatium species, Sandberg's bluegrass, thyme desert buckwheat, alumroot, bitter root, and sagebrush violet. Other species, including a variety of shrubs and different grasses were found on the fringes of these survey areas. 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 Survey Area 1. This species has been widely observed on the existing WHWPF as well as other nearby wind farms.

**Exhibit 1. Species Observed During Rare Plant Surveys on Wild Horse Expansion Area**

Family	Scientific Name	Common Name	Survey Area Where Observed
Apiaceae	<i>Lomatium gormanii</i>	salt and pepper	1,2
Apiaceae	<i>Lomatium grayi</i>	Gray's desert lomatium	1,2
Apiaceae	<i>Lomatium macrocarpum</i>	large-fruited lomatium	1,2
Apiaceae	<i>Lomatium sp.</i>		1
Apiaceae	<i>Lomatium triternatum</i>	nineleaf biscuitroot	1
Asteraceae	<i>Achillea millefolium</i>	common yarrow	1,2
Asteraceae	<i>Antennaria lanata</i>	pussytoes	1
Asteraceae	<i>Artemisia rigida</i>	stiff sagebrush	1,2
Asteraceae	<i>Artemisia tridentata</i>	big sagebrush	1,2
Asteraceae	<i>Balsamorhiza hookeri</i>	Hooker's balsamroot	1,2
Asteraceae	<i>Chaenactis douglasii</i>	dusty maidens	1
Asteraceae	<i>Chrysothamnus nauseosus</i>	gray rabbitbrush	1,2
Asteraceae	<i>Crepis modocensis</i>	low hawkbeard	1
Asteraceae	<i>Erigeron linearis</i>	Linear-leaf daisy	1,2
Asteraceae	<i>Erigeron pumilus????</i>	shaggy fleabane	1
Asteraceae	<i>Nestotus stenophyllus</i>	narrowleaf goldenweed	1,2
Asteraceae	<i>Nothocalais troximoides</i>	sagebrush false dandelion	1,2
Asteraceae	<i>Senecio canus (Packera cana)</i>	woolly groundsel	1
Asteraceae	<i>Senecio integerrimus</i>	western groundsel	1,2
Asteraceae	<i>Taraxicum officinale</i>	common dandelion	2
Asteraceae	<i>Tragopogon dubius</i>	yellow salsify	1,2
Berberidaceae	<i>Mahonia sp.</i>	Oregon grape	1
Boraginaceae	<i>Cryptantha affinis???</i>	quill cryptantha	1
Brassicaceae	<i>Arabis divaricarpa</i>	spreading rockcress	1
Brassicaceae	<i>Arabis sp.</i>	rockcress	1
Brassicaceae	<i>Clorospora tenella</i>	blue mustard	2
Brassicaceae	<i>Descurainia pinnata</i>	western tansymustard	1
Brassicaceae	<i>Drabis sp.</i>		1
Brassicaceae	<i>Phoenicautus cheiranthoides</i>	dagger-pod	1
Brassicaceae	<i>Sisymbrium altissimus</i>	tumble mustard	1
Cactaceae	<i>Pediocactus simpsonii</i>	hedgehog cactus	1
Cyprofoliaceae	<i>Symphoricarpos oreophilus</i>	mountain snowberry	1
Crassulaceae	<i>Sedum sp.</i>		1
Crassulaceae	<i>Sedum stenopetalum?</i>	wormleaf stonecrop	1
Fabaceae	<i>Lupinus aridus</i>	dry-ground lupine	1
Fabaceae	<i>Lupinus sulphureus</i>	sulphur lupine	1,2
Fabaceae	<i>Trifolium macrocephalum</i>	big-headed clover	1,2
Grossulariaceae	<i>Ribes cereum</i>	squaw current	1,2
Hydrophyllaceae	<i>Holidiscus sp.</i>	oceanspray	1
Hydrophyllaceae	<i>Hydrophyllum capitatum</i>	ballhead waterleaf	1
Hydrophyllaceae	<i>Phacelia linearis</i>	threadleaf phacelia	1
Liliaceae	<i>Allium acuminatum</i>	tapertip onion	1
Liliaceae	<i>Calicortus sp.</i>	mariposa	1
Liliaceae	<i>Triteleia grandiflora var. howellii (Brodiaea howellii)</i>	Howell's triteleia	2
Liliaceae	<i>Zigodenus venenosus</i>	death camas	1
Onagraceae	<i>Camissonia andina</i>	obscure evening primrose	1,2
Pinaceae	<i>Pinus ponderosa</i>	ponderosa pine	1
Poaceae	<i>Bromus tectorum</i>	cheatgrass	1,2
Poaceae	<i>Elymus elymoides (Sitianion histrix)</i>	squirreltail	1,2
Poaceae	<i>Festuca idahoensis</i>	Idaho fescue	1,2
Poaceae	<i>Poa bulbosa</i>	bulbous bluegrass	1
Poaceae	<i>Poa secunda</i>	Sandberg's bluegrass	1,2
Poaceae	<i>Pseudoroegneria spicata</i>	bluebunch wheatgrass	1,2
Polemoniaceae	<i>Collomia grandiflora</i>	large-flowered collomia	1
Polemoniaceae	<i>Gilia sp.</i>		1
Polemoniaceae	<i>Leptodactylon pungens</i>	granite prickly phlox	1
Polemoniaceae	<i>Phlox gracilis</i>	midget phlox	1
Polemoniaceae	<i>Phlox hoodii</i>	Hood's phlox	1,2
Polemoniaceae	<i>Phlox longifolia</i>	long-leaf phlox	2
Polygonaceae	<i>Eriogonum thymoides</i>	thyme desert buckwheat	1,2
Polygonaceae	<i>Eriogonum caespitosum</i>	cushion desert buckwheat	1,2
Polygonaceae	<i>Eriogonum compositum</i>	arrowleaf buckwheat	1
Polygonaceae	<i>Eriogonum heracleoides</i>	parsley desert buckwheat	1,2
Polygonaceae	<i>Eriogonum strictum</i>	strict desert buckwheat	1,2
Portulacaceae	<i>Claytonia sp.</i>	spring beauty	1
Portulacaceae	<i>Lewisia rediviva</i>	bitter root	1,2
Portulacaceae	<i>Montia linearis</i>	narrowleafed montia	1
Portulacaceae	<i>Montia sp.</i>	montia	1
Ranunculaceae	<i>Delphinium sp.</i>	larkspur	1,2
Ranunculaceae	<i>Ranunculus glaberrimus</i>	sagebrush buttercup	1
Ranunculaceae	<i>Ranunculus testiculatus</i>	bur buttercup	1
Rhamnaceae	<i>Ceanothus velutinus</i>	snowbrush ceanothus	1
Rosaceae	<i>Amelanchier alnifolia</i>	serviceberry	1,2
Rosaceae	<i>Purshia tridentata</i>	bitterbrush	1,2
Rosaceae	<i>Rosa woodsii</i>	wood's rose	1
Rubiaceae	<i>Galium aparine</i>	cleavers	1
Saxifragaceae	<i>Heuchera cylindrica</i>	alumroot	1
Saxifragaceae	<i>Lithophragma bulberas</i>	prairie woodland star	1,2
Scrophulariaceae	<i>Castilleja thompsonii</i>	paintbrush	1,2
Scrophulariaceae	<i>Collinsia parviflora</i>	maiden blue eyed Mary	1,2
Scrophulariaceae	<i>Penstemon gairdneri</i>	Rock penstemon	1
Scrophulariaceae	<i>Verbascum thapsus</i>	mullien	1
Violaceae	<i>Viola trinervata</i>	sagebrush violet	1,2

