

Rare Plant Survey for the Preferred Alternative
Bonneville Power Administration
Schultz-Hanford Area Transmission Line Project
Central Washington

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1.0 EXECUTIVE SUMMARY

Beck Botanical Services, subcontractor to Parsons Brinckerhoff, conducted a survey for federally listed and state listed (Threatened, Endangered and Sensitive) plant species along the preferred alternative of the proposed Bonneville Power Administration Schultz-Wautoma transmission line. The preferred alternative includes Segments A, B_{south} and D. The survey project area included the 150 feet wide right-of-way (ROW) and proposed and existing access roads for the transmission line. The objective of the survey was to map occurrences of rare plant species within the project area. In addition, an evaluation of potential habitat and searches for federally listed species was done on the proposed fiber optic line.

The 63.7-mile long project area is located in Kittitas, Grant and Benton Counties, Washington. It begins at the Schultz Substation north of Ellensburg, traverses state, private and DOD lands to the Vantage Substation, then travels through private, BLM and DOE lands before it terminates at the proposed Wautoma Substation approximately two miles southwest of Cold Creek. The 32-mile long proposed fiber optic line would be affixed to the existing Vantage-Columbia transmission line that begins at the Vantage Substation and terminates at the Columbia Substation approximately 12 miles southeast of Wenatchee. It is in Grant and Douglas Counties.

Prior to the survey, a list was compiled of rare plant species with the potential to occur in the project area using lists for each county the proposed transmission line crosses. These lists are maintained by the WNHP and BLM. In addition, a data request was made to the WNHP for occurrences of high quality plant associations and rare plants. Rare plant surveys occurred in August 2001 and April through July 2002. While all plants were searched for, the primary focus was to locate populations of Federal listed and candidate plants. The project area was surveyed by walking meander transects. Areas with likely rare plant habitat were surveyed at a higher intensity. The rare plant survey did not include Segments B_{north}, C, E and F that were not part of the Preferred Alternative.

The rare plant survey documented the presence of 14 populations of six rare plant species in the Schultz-Wautoma project area. Some of these were known occurrences tracked by the WNHP and some of these were previously unknown. These were found on BLM, DOD, DOE, private, and State lands. Several of these occurrences are quite large. No populations of Federally listed, proposed or candidate species were located in the Schultz-Wautoma project area.

2.0 INTRODUCTION

Beck Botanical Consulting, a subconsultant to Parsons Brinckerhoff conducted a survey for threatened, endangered and sensitive plant species (rare plants) along the Preferred Alternative (Segments A, B_{south} and D) of the proposed Bonneville Power Administration Schultz-Hanford Area transmission line. The East Cascades and Lower Columbia Basin geographic area has numerous endemic and rare plant species. The list of potential rare plant species varied somewhat depending on land ownership. Both Federal and State listed species were searched for on federal and state lands. BLM rare plant species were searched for on BLM lands. Federally listed plants, including “federal species of concern” were searched for on private lands and along the proposed fiber optic line. Federal species of concern are those whose conservation standing is of concern to the USFWS, but for which status information is still needed (WNHP 1997). There are extensive sections of federally owned lands along the proposed line.

The objective of the survey was to map occurrences of rare plant species within the project area. BPA would use the information on rare plants in the proposed ROW and access roads to

determine the impacts of proposed construction activities. These surveys would also provide information and recommendations for possible mitigation, construction methods and avoidance.

3.0 PROJECT AREA DESCRIPTION

The preferred alternative for the proposed Schultz-Wautoma transmission line is comprised of Segments A, B_{SOUTH} and D. The 63.7-mile long project area is located in Kittitas, Grant and Benton Counties, Washington. It begins at the Schultz Substation north of Ellensburg, traverses private and DOD lands to the Vantage Substation, then travels through private, BLM and DOE lands before it terminates at the proposed Wautoma Substation approximately two miles southwest of Cold Creek. A 32-mile long proposed fiber optic line would be affixed to the existing Vantage-Columbia transmission line that begins at the Vantage Substation and terminates at the Columbia Substation approximately 12 miles southeast of Wenatchee. It is in Grant and Douglas Counties.

For purposes of the rare plant survey, the project area included the 150 feet wide ROW and proposed and existing access roads. The project centerline was staked in the field prior to the beginning of surveys. Proposed and existing access roads were marked on field maps. A description of vegetation communities in the project area is provided starting in Section 3.4.2.1. The rare plant survey did not include Segments B_{north}, C, E and F as described in Section 3.4.2. Since existing access roads would be used to construct the fiber optic line, an intensive rare plant survey was not necessary. Instead, a field reconnaissance for rare plants was conducted along the existing transmission line and access roads.

4.0 METHODS

The rare plant survey of the Schultz-Wautoma project area was performed using commonly accepted botanical survey methods to ensure a high likelihood of locating and identifying rare plant populations. Rare plant survey methods are straightforward, and involve visually searching the project area for rare plant species. Timing for field surveys are based on flowering times of potential rare plant species. In general, upland plant species were searched for earlier in the field season than plants that occur in wetland habitats, because they typically bloom earlier. Some areas were visited more than once to search for both early and late blooming rare plant species.

Table 1 presents rare plant taxa that have a reasonable potential to occur in the project area (WNHP 1997). These include Federal and State listed plants and BLM rare plant species. Most rare plant species require a technical key for positive identification. The status of the listed plant taxa reflects the most current information available; however, the status of a particular rare plant taxon is subject to change by the WNHP and/or the USFWS. While most scientific names follow Hitchcock and Cronquist (1973), some updated taxonomy is included.

Rare plant survey strategies included: habitat searches when rare plants were identifiable, visits to known occurrences of rare plants, literature review, and herbarium research for additional information and species verification. Surveys were conducted by walking meander transects.

The vast majority of the project area that supports native vegetation was surveyed, as rare plant species are potentially present in all of the habitat types. A GPS unit was used to help accurately map rare plant populations. Some photographs were taken of rare plant species (close-ups of individual plants and more general habitat shots). Plant collections were made when it was deemed necessary to identify a plant. A complete species list was compiled for the project area.

Depending on the habitat, survey intensities employed in the field while walking meander transects were light, moderate or complete, as defined below:

Light: light search intensity in an area with degraded habitat or low potential for rare plant species.

Moderate: moderate search intensity through an area, with higher intensity surveys in the portions of the areas which appear unique or which appear to have a high potential for rare plant populations.

Complete: close searching in areas with rare plant populations or with habitat with a higher potential of having rare plant populations.

In order to determine the survey intensity level that would be used for any given area, the likelihood the area would serve as rare plant habitat, habitat quality, vegetation density, terrain and expected visibility of the target species were all taken into account. Most of the project area received moderate survey intensity. The fiber optic line was field evaluated for habitat for federally listed species. It did not however receive a full rare plant survey.

When a rare plant population was located, it was mapped on aerial photomaps and USGS maps and its population size was estimated. When the population covered a large area, the locations where it intersected the ROW were mapped. Additional information collected included: distance and bearing to nearest BPA transmission line towers, GPS readings, associated plant species, information for completion of WNHP siting forms, and recommendations for construction methods, avoidance and mitigation. Notes were also taken on habitat conditions, plant communities, dominant grass and shrub species, plant phenology and other pertinent observations.

5.0 RESULTS

Surveys of the Schultz-Wautoma project area were conducted on August 21-23, 2001 for late-blooming species and to identify potential habitat and plan for field surveys in 2002. Early season surveys were done in April 9-12, 2002. Most of the project area was visited in May and June depending on elevation, aspect and target plant species (May 8-18, May 22-26, June 11-13). Late season surveys occurred in July (July 17-19, July 24-25). The fiber optic line was surveyed during the July visits.

Although it was evaluated in the field for habitat for federally listed species, the proposed fiber optic line did not receive a formal rare plant survey. The only federally listed species that was deemed to have habitat along the fiber optic line was Ute ladies'-tresses. Wetland areas were searched for this species in July. Upland areas along the proposed line were spot-checked for rare plants.

5.1 Rare Plant Species

The following six rare plant species were encountered in the project area (Segments A, B_{south} and D): Columbia milk-vetch, gray cryptantha, Hoover's desert-parsley, piper's daisy, tufted evening-primrose, and desert cryptantha, (Table 1), Number of rare plant populations within the Schultz-Wautoma Project area and along the fiber optic line).

Three populations of state sensitive rare plant species were located along the fiber optic line: gray cryptantha, beaked spike-rush, and Geyer’s milk-vetch. Although several populations of rare plants were located along the fiber optic line, a formal survey of the line was not done. Low quality habitat for Ute ladies’-tresses was located and searched. Potential habitat for other federally listed species was not present along the fiber optic line.

A WNHP siting form was filled out for each new rare plant population. In addition to siting forms, maps would be provided to the WNHP. A brief description of each rare plant species and its populations within the project area are provided below.

Table 1 Rare plant populations within project area and fiber optic line*.

Common Name <i>Scientific Name</i>	Federal Status	State Status	A	B _{SOUTH}	D	Fiber optic line
Columbia milk-vetch <i>Astragalus columbianus</i>	Species of Concern	Threatened			4?	
Gray cryptantha <i>Cryptantha leucophaea</i>	Species of Concern	Sensitive			4	1
Hoover’s desert-parsley <i>Lomatium tuberosum</i>	Species of Concern	Threatened			2	
Geyer’s milk-vetch <i>Astragalus geyeri</i>	--	Sensitive				1
Desert cryptantha <i>Cryptantha scoparia</i>	--	Sensitive		1		
Beaked spike-rush <i>Eleocharis rostellata</i>	--	Sensitive				1
Piper’s daisy <i>Erigeron piperianus</i>	--	Sensitive			1	
Tufted evening-primrose <i>Oenothera cespitosa ssp. cespitosa</i>	--	Sensitive		1	1	

* Number of rare plant populations along access roads and within the proposed Schultz-Wautoma ROW.

Federal Species of Concern. Species whose conservation standing is a concern to USFWS, but status information is needed.

Threatened. Taxa that are likely to become Endangered in the state within the near future if factors contributing their decline continue.

Sensitive. Taxa that are vulnerable or declining, and could become Endangered or Threatened without active management or threat removal.

Information from the Washington Natural Heritage Program Information System. The status of all the plant taxa listed in this table reflects the most current information available; however, the status of a particular rare plant taxon is subject to change by the WNHP and/or the FWS.

5.1.1 Columbia milk- vetch (*Astragalus columbianus*)

Columbia milk-vetch is a member of the legume family, Fabaceae. It is considered Threatened in Washington and is a Federal species of concern. It is a local endemic found in Yakima, Kittitas and Benton counties in south-central Washington. Columbia milk-vetch is a short-lived perennial forb with white to cream colored flowers. It normally flowers in April and May. The pods are distinctive and allow the plant to be recognizable for several months after flowering. It usually grows in well-drained sandy and gravelly loams, lithosols and cobbly sand in big sagebrush/bluebunch wheatgrass and big sagebrush /Sandberg’s bluegrass community types. Its populations are often quite extensive.

Two known and two new populations of Columbia milk-vetch were located in the project area. One is an extensive population on the south and north slopes of Umtanum Ridge, another is a large population on the south and north slopes of Yakima Ridge. The other two populations are in between the two ridges in the Cold Creek Valley near Highway 24. The populations on Yakima Ridge and the Cold Creek Valley in particular are quite weedy in places. The spatial distribution

of plants in these populations ranges from scattered patchy to very widely scattered. Collectively, the four Columbia milk-vetch populations are many square miles in size and intersect over 3 miles of the proposed line.

5.1.2 Gray cryptantha (*Cryptantha leucophaea*)

Gray cryptantha is considered Sensitive in Washington and a Federal species of concern. It is a regional endemic known from the western Columbia Basin down to The Dalles, Oregon. Gray cryptantha is a large, showy perennial forb in the borage family (Boraginaceae). It has white flowers and is recognizable between May and June. The species is more or less restricted to slopes and swales of unstabilized to semi-stabilized sand dunes with low vegetative cover. It is typically associated with the bitterbrush/ Indian ricegrass plant association.

Two known and two new populations of gray cryptantha were located in the project area. These are in sandy areas south of the Vantage Substation, between Wanapum Village and the base of the north slope of the Saddle Mountains. One population is on BLM land, while the rest are on private lands. The spatial distribution of plants in these populations ranges from scattered patchy to very widely scattered. Collectively, the four gray cryptantha populations are several square miles in size and intersect over 1 mile of the proposed line.

While two groups of gray cryptantha plants were located along the fiber optic line in sandy areas north of the Vantage Substation, the entire population was not mapped. Appropriate habitat for this species along the fiber optic line is extensive north of the Vantage Substation.

5.1.3 Hoover's desert-parsley (*Lomatium tuberosum*)

Hoover's desert-parsley is considered Threatened in Washington and is a Federal species of concern. It is a local endemic that is only found in Benton, Grant, Kittitas and Yakima Counties in south-central Washington. Hoover's desert-parsley is a tuberous rooted perennial in the parsley family (Apiaceae) with small purple flowers and distinctive blue-green leaves. It blooms in March and April and grows in crevices of steep basalt talus slopes, in areas that have low vegetation cover. The surrounding vegetation community is generally big sagebrush/bluebunch wheatgrass.

The proposed ROW intersects small portions of two very large known occurrences of Hoover's desert-parsley. These are on the steep north-facing slopes of Umtanum Ridge on DOE land and Saddle Mountains on BLM land. In both locations, the patches of plants are located between structures on steep slopes in basalt talus.

5.1.4 Geyer's milk-vetch (*Astragalus geyeri*)

Geyer's milk-vetch is considered Sensitive in Washington where it is disjunct from its main range in the Great Basin and Snake River Plains. It is a small, annual forb in the pea family (Fabaceae) with whitish to purplish flowers. It is generally recognizable from April to July, depending on local rainfall patterns. This species is distinctive because it is one of the few annual species of milk-vetch. The general habitat of Geyer's milk-vetch includes depressions in mobile or stabilized dunes, sandy flats, valley floors, draws in gullied hills and margins of alkaline sandy playas.

A large population of Geyer's milk-vetch was recently located in sandy areas just north of the Vantage Substation. The population is several square miles in size and intersects several miles of

the proposed fiber optic line. The spatial distribution of the plants ranges from scattered patchy to very widely scattered.

5.1.5 Desert cryptantha (*Cryptantha scoparia*)

Desert cryptantha is a regional endemic that is most common on the Snake River Plains of Idaho and is disjunct in a few counties in Washington. It is a small annual forb in the borage family (Boraginaceae) with tiny white flowers and unusual, hooked nutlets. Its habitat is dry, open slopes and flats typically within the big sagebrush/ bluebunch wheatgrass plant association. Although this species is currently included on the WNHP Review Group 1 list, it would be added to the Sensitive list when the WNHP updates its list later in 2002.

One small population of 20 plants was located on YTC, along a portion of the John Wayne Trail that would be used as an access road. Plants are at the base of the steep south-facing riprap slope.

5.1.6 Beaked spike-rush (*Eleocharis rostellata*)

Beaked spike-rush is a Sensitive species in Washington. It is a rhizomatous plant in the sedge family (Cyperaceae). Its flowers are not showy, although the species is unusual in that it produces above-ground stolons. When walking through a patch of beaked spike-rush, the stolons make a distinctive popping sound as one's foot catches on and snaps the stolons. Beaked spike-rush is known from alkaline or highly calcareous substrates around streambanks, springs, lake margins, and in marshes. It grows in moist silty soils with lots of organic material.

One small population of beaked spike-rush was located on marshy ground immediately north of the Vantage Substation. The population is between towers on the edge of the ROW of the proposed fiber optic line.

5.1.7 Piper's daisy (*Erigeron piperianus*)

Piper's daisy is a Sensitive species in Washington. It is a regional endemic found only in the Columbia Basin. It is a small yellow-flowered perennial in the composite family (Asteraceae) that blooms from May through June. It occurs most commonly in the winterfat/ Sandberg's bluegrass and big sagebrush/ bluebunch wheatgrass plant communities. It grows on level ground to moderate slopes of all aspects. Soils are well drained and are generally somewhat alkaline.

The proposed line intersects a portion of a large occurrence of Piper's daisy on both north and south-facing slopes on the Hanford Site. Plants have a discontinuous distribution within the population; they are scattered patchy to widely scattered. This survey substantially enlarged the boundaries of the existing population to the north and to the south. The Piper's daisy population is several square miles in size and intersects approximately 5000 feet of the proposed line.

5.1.8 Tufted evening-primrose (*Oenothera cespitosa* subsp. *cespitosa*)

Tufted evening-primrose is a Sensitive species in Washington where it is peripheral to its main range. It is a perennial in the evening-primrose family (Onagraceae) with large, showy white flowers that turn pink with age. This species favors dry, open slopes, occurring as individuals or colonies on clay soils, rocky slopes composed of shales, volcanics and sandstones, bluffs and exposed rocky ridges. It also colonizes roadcuts in grasslands and sagebrush.

There are two populations of tufted evening-primrose in the project area, one known and one newly located. The known population is on the YTC, along the built up portions of the converted railway right-of-way John Wayne Trail. Plants grow in loose substrate on top of the roadbed and on steep, unstable south facing slopes composed of basalt riprap. The proposed ROW utilizes a portion of the John Wayne Trail as an access road. Tufted evening-primrose plants occur along sections of this portion of the John Wayne Trail.

The newly located population is on the steep west-facing slopes above Lower Crab Creek. While most of the plants are outside of the ROW, some plants are in the ROW, some are along an existing road that would be used by the proposed project as an access road, and some plants are growing in a gravel pit adjacent to the access road.

5.2 Federal Status Plant Species

No populations of Federally listed, proposed or candidate species were located along the Preferred Alternative (Segments A, B_{SOUTH} and D) of the proposed Schultz-Hanford Area transmission line project area or the fiber optic line. The following section describes the five federal status plant species with potential to occur in the Schultz-Wautoma study area. It includes information on their habitat, ecology, range (Table 2), and where rare plant surveys for them occurred within the Project area. No federal status plant species were located along the.

Table 2. Federal Status Plant Species Potentially Occurring in Study Area

Common Name <i>Scientific Name</i>	Federal Status	Habitat Preference and Plant Associations	Known Occurrence(s) in the Vicinity of the Study area
Ute ladies'-tresses <i>Spiranthes diluvialis</i>	Threatened	Low elevation wetlands in valleys - associated with spike-rushes, sedges, grasses, and rushes	None
Wenatchee Mountains checker-mallow <i>Sidalcea oregana</i> var. <i>calva</i>	Endangered	Grows in meadows that are moist into the summer - associated with quaking aspen, black hawthorn, snowberry, and serviceberry.	Approximately 25 miles north of the north end of Segment A.
Basalt daisy <i>Erigeron basalticus</i>	Candidate	Grows in crevices in basalt cliffs on canyon walls facing north, east, or west, from 1,250 to 1,500 feet in elevation - associated with a few grass and forb species	None within 1 mile of line segments. Occurs within Kittitas and Yakima counties along the Yakima River and Selah Creek; within the YTC, approximately 10 miles west of Segment C.
Umtanum desert buckwheat <i>Eriogonum codium</i>	Candidate	Found on the exposed tops of a ridgeline that is composed of basalt, from 1,100 to 1,320 feet in elevation - associated with cheatgrass and a variety of forbs.	One known population, on part of Umtanum Ridge, in Benton County.
Northern wormwood <i>Artemisia campestris</i> var. <i>wormskioldii</i>	Candidate	Grows only within the floodplain of the Columbia River in relatively level, arid, shrub-steppe, on basalt, compacted cobble, and sand - associated with sagebrush and grasses	None within 1 mile of line segments. Several occurrences within the floodplain of the Columbia River, several miles south of the Segment B river crossing.

5.2.1 Ute Ladies'-Tresses (*Spiranthes diluvialis* Sheviak)

The proposed project falls within the range of Ute ladies'-tresses, which was listed as Threatened by the USFWS on January 17, 1992 because of habitat loss and modification and hydrological

modifications of existing and potential habitat areas (57 FR 2048 2054). No critical habitat has been designated for Ute ladies'-tresses.

Habitat and Ecology

Though little is known about the specific life history characteristics of Ute ladies'-tresses, orchids generally require symbiotic associations with mycorrhizal fungi for seed germination. Plants of some species of ladies'-tresses (*Spiranthes*) are initially saprophytic, persisting underground for several years before emerging above ground. Research has shown that Ute ladies'-tresses can remain dormant for several growing seasons, or produce only vegetative shoots (USFWS, 1995). It requires insect pollinators to set seed (Sheviak, 1984). Plants in Washington typically flower from mid-July to mid-August. Ute ladies'-tresses is a perennial, terrestrial orchid with stems 8 to 20 inches tall with showy spikes of white flowers, arising from thickened roots (WNHP, 1999). Despite their distinctive spikes of white flowers, blooming plants can be extremely difficult to see in the dense herbaceous vegetation they are associated with.

Ute ladies'-tresses exist in mesic and wet meadows and riparian/wetland habitats near springs, seeps, lakes or perennial streams. Soils may be inundated early in the growing season, which normally become drier but retain subsurface moisture through the season. It occurs primarily in areas where the canopy vegetation is relatively open and not dense or overgrown (USFWS, 1995). Populations tend to decline if trees and shrubs invade the habitat. The known sites in Washington include a periodically flooded alkaline flat (moist meadow) and riparian fringe and moist meadow adjacent to a large river. Plant associations adjacent to all four Washington occurrences include Ponderosa pine/Douglas fir woodlands and shrub-steppe dominated by big sagebrush, bitterbrush and rabbitbrush.

Specific impacts to Ute ladies'-tresses habitat include urban and agricultural development, stream channelization, water diversions and other watershed and stream alterations that degrade natural stream stability and diversity (WNHP, 1999).

Presence in Project area

Ute ladies'-tresses is currently known to occur in Colorado, Idaho, Montana, Nebraska, Utah, Washington and Wyoming. In Washington, there are four known population; three small occurrences near the Columbia River in Chelan County and one occurrence in Okanogan County. Surveys for Ute ladies'-tresses were conducted in late summer of 2001 and again in July and August 2002. Areas searched included the Columbia River crossings, Lower Crab Creek and wetlands associated with perennial creeks in Segment A. No occurrences of this species were found during any of the surveys.

5.2.2 Wenatchee Mountains Checker-mallow (*Sidalcea oregana* var. *calva*)

The proposed project falls within the range of the Wenatchee Mountains checker-mallow, which was federally listed as an Endangered species on December 22, 1999 (64 FR 71680-71687). Approximately 6,135 acres near Camas Meadows in Chelan County, Washington has been designated as critical habitat for the Wenatchee Mountains checker-mallow (66 FR 46536).

Habitat and Ecology

The Wenatchee Mountains checker-mallow is a perennial that grows from a stout taproot. The taproot gives rise to several stems from 8 to 60 inches tall. The leaves are thick and fleshy and the flowers are light to deep pink (Hitchcock et al., 1961). Wenatchee Mountains checker-mallow is most abundant in moist meadows that have surface water or saturated upper soil profiles into early summer. These meadows vary in size from greater than 100 acres to approximately 1 acre in size. The plant is also found in somewhat open coniferous stands dominated by Douglas fir or

Ponderosa pine. Individuals begin to flower in mid- to late June. Flowering peaks in mid- to late July. Some individuals, however, have flowers present in mid August. Fairly well-developed fruits are present by early August (WNHP, 2002).

Presence in Project area

Wenatchee Mountains checker-mallow is currently known to occur at only six sites in the Wenatchee Mountains (located north and west from the project area) in Chelan and Kittitas Counties (66 FR 46537). The nearest population is approximately 25 miles north of the project area. No suitable habitat or occurrence of Wenatchee Mountain checker- mallow is known to exist within or near the project area.

5.2.3 Basalt Daisy (*Erigeron basalticus* Hoover)

The proposed project falls within the range of the basalt daisy, a candidate for federal listing (64 FR 57533-57547) No critical habitat has been designated for the basalt daisy.

Habitat Requirements and Ecology

Basalt daisy is a perennial, taprooted herb with one to several sprawling or pendent stems per plant. Stems are 4 to 6 inches long with lobed leaves clustered especially toward the tip. Flowers are daisy-like with white to lilac ray flowers.

Basalt daisy blooms from early May to the middle of June. It is restricted to cracks in basalt cliffs on canyon walls with northerly, easterly and westerly aspects. Total vegetative cover is generally less than 1%. The vegetation in these cracks may contribute to the fracturing of the basalt. Threats and management concerns include basalt mining, homesite development, spray drift from adjacent agricultural fields and railroad and highway construction and maintenance activities (WNHP 1999).

Presence in Project area

Basalt daisy is a narrow endemic known only to Washington in an area approximately 10 miles long and 2 miles wide in and adjacent to Yakima Canyon, in Yakima and Kittitas counties (WNHP 1999). Surveys of suitable habitat (basalt cliffs) along the proposed project alignment during summer 2001 and 2002 did not identify occurrences of this species.

5.2.4 Umtanum Desert Buckwheat (*Eriogonum codium* Reveal, Caplow & Beck)

The proposed project falls within the range of the Umtanum desert buckwheat, a candidate for federal listing (64 FR 57533 57547). No critical habitat has been designated for the Umtanum desert buckwheat.

Habitat Requirements and Ecology

Umtanum desert buckwheat is a low, tufted herbaceous perennial shrub with aboveground woody stems forming highly branched mats 8 to 28 inches across (WNHP 1997). The lemon-yellow flowers are tightly clustered in a ball on top of a leafless flowering stem.

Umtanum desert buckwheat blooms from May through late August. Individual plants are known to reach an age of nearly 100 years. Although seeds readily germinate, seedling mortality is extremely high, resulting in very low population recruitment (Dunwiddie, et.al., 2001). The only known population grows on flat to gently sloping microsites near the top of the steep, north-facing basalt cliffs overlooking the Columbia River (Reveal, et al., 1995). Vegetative cover is sparse. Its substrate is composed of fine, reddish to blackish, gravelly basalt pumice. Surrounding upland areas support arid shrub-steppe vegetation.

Threats and management concerns include illegal off-road vehicle traffic and public use within the general area, livestock grazing and wildfire. A recent wildfire burned a large portion of the Umtanum desert buckwheat population in 1996, resulting in a substantial increase in annual weedy species and significant mortality. Umtanum desert buckwheat does not survive scorching or resprout after a fire (Dunwiddie, et al., 2001).

Presence in Project area

Umtanum desert buckwheat is a narrow endemic plant species known from only one occurrence in Benton County, Washington. It grows in a narrow, discontinuous population approximately 1 mile long. Segment D of the proposed project passes near the population on the top of Umtanum Ridge, although the nearest individuals of the population are over 750 feet east of the centerline of the project. The nearest individuals are approximately 35 feet from an existing access road that would be improved for the projects.

5.2.5 Northern Wormwood (*Artemisia campestris* L. ssp. *borealis* Hall & Clem. var. *wormskioldii* (Bess.) Cronquist)

The proposed project falls within the range of Northern wormwood, a candidate for federal listing (50 FR 39526-39584). No critical habitat has been designated for Northern wormwood.

Habitat Requirements and Ecology

Northern wormwood is a low biennial or perennial shrub, with a taproot and basal leaves in crowded rosettes. Northern wormwood blooms from early April and reaches its peak by mid-April whereas other members of the genus do not flower until much later in the season (WNHP, 1997). The plant grows on basalt, compacted cobble and sand on relatively flat terrain within in the floodplain of the Columbia River (WNHP, 1997). It presumably withstands occasional short periods of inundation. Vegetative cover is sparse at both known sites, with less than 1% cover. Surrounding upland areas support arid shrub-steppe vegetation.

Threats and management concerns include weed invasions and recreational use and vehicle compaction of known sites. Flooding may also pose a threat due to the limited population size and limited habitat availability.

Presence in Project area

Northern wormwood is a regional endemic known from two widely disjunct sites along the Columbia River in Washington, one each in Klickitat and Grant Counties (WHNP, 1999). The Beverly population in Grant County is along the Columbia River and on several islands just downstream of the where the proposed project crosses the river. Intensive surveys for Northern wormwood were conducted along the proposed alignment near the Columbia River crossings during the April of 2002. No individuals or populations of the species were found within the project area.

6.0 RECOMMENDATIONS

To protect rare plants and high quality native plant communities within the proposed Schultz-Wautoma ROW, certain impact mitigations and minimization measures would be implemented. In general, the best way to protect rare plants is to protect the native plant communities they grow in and to minimize the introduction of weeds. Native species provide habitat and food for wildlife, while resisting invasion by non-native species. The native plant communities along the ROW should be disturbed as little as possible. All construction and vehicular travel would be restricted to the ROW and access roads. Where disturbance to native plant communities is unavoidable, disturbed areas should be promptly reseeded with native grass and/or shrub species

to minimize the possibility of invasion by non-native species, including noxious weeds. Flagging the beginning and end points of rare plant populations along the proposed line would indicate the presence of rare plants to construction crews. Specific mitigations as they relate to native plant communities, rare plants and weed control are presented below.

6.1 Native Plant Communities

Impacts to high quality plant communities would be minimized by locating structures and roads outside them, where possible. Maps of high quality communities would be provided to engineers designing the proposed line. Impacts to native plant communities would be minimized during construction by implementing the following practices:

- Construction activities would be restricted to the area needed to work effectively. Construction crews would be instructed to restrict vehicles to designated areas.
- Designated areas would be used to store equipment and supplies. The contractor would follow state and federal regulations to protect plant communities.
 - In areas of known sensitive species, topsoil would be stockpiled when the footings of structures are put in place or an area for placement of a structure is graded. After construction, the topsoil would be replaced on the surface of the soil and the surface would be restored to the former grade, where possible.
 - After construction, disturbed areas not needed for ongoing access or maintenance would be reseeded.
 - Construction specifications would designate which species are appropriate for reseeded in certain areas. Inquiries would be made to determine which commercially available native seed has been used with some success.

6.2 Rare Species

Rare plant species habitat would be avoided if possible and unavoidable impacts would be minimized as much as possible. Maps of all rare species occurrences would be provided to engineers designing the proposed line. Structures and roads would be placed to avoid impacting rare species occurrences if possible. Impacts to rare species would be minimized during construction and subsequent maintenance, by implementing the following practices:

- Boundaries of rare species populations would be flagged in the field with an appropriate buffer, to ensure areas that are designated to be avoided during construction are not impacted.
- If impacts are temporary, it may be sufficient to restrict the time of year that various activities take place. Many plants in the study area flower and fruit very early in the spring, then remain dormant under the ground for much of the year. The underground parts may not be disturbed during certain time periods by certain types of activities, such as driving through an area.
- Information on rare plant species occurrences would be given to BPA maintenance personnel to be considered during the planning and implementation of future maintenance activities. The location of rare plant occurrences would be placed on BPA

maps and documents so that maintenance personnel are aware of their location. A written description of restrictions, precautions, or special procedures within rare plant habitat would be attached to maps and documents for that area.

- On state and federal land where rare plants are known to occur, the procedures used to control weeds would be restricted to those that minimize harm to rare plant species. The decision on the best actions to take to control weeds would be made on a case-by-case basis with consultation with the respective state or federal land manager.

6.3 Weeds

Throughout the project, efforts would be made to minimize the introduction or spread of weeds, by implementing the following activities and practices. These activities and practices would be included in a Weed Management Plan for this project:

- To determine the extent of the weed problems along the Preferred Alternative, a pre-construction weed survey would be done to document current conditions.
- Some weed control or eradication activities may occur prior to construction or even during the weed survey if construction would exacerbate an existing weed problem.
- After construction, the seeding of disturbed areas would help decrease weed invasion by providing competition for space.
- A post construction weed survey would be done so that pre- and post-construction weed distributions can be compared. If weed problems exist or are increasing over pre-construction conditions, BPA would cooperate with county weed boards or federal land management agencies to eradicate or control any species that invade disturbed areas.
- To control weeds, BPA would use the procedures outlined in the BPA's Transmission System Vegetation Management Program Record of Decision (August 2000) to address weed problems in subsequent maintenance activities.
- Because weeds can be spread by vehicles, BPA would restrict access to the newly constructed access roads where possible, by using gates.

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 Rare Plant Status: <http://www.wa.gov/dnr/htdocs/fr/nhp/refdesk/lists/planttrnk.html>
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8.0 PLANT NAMES

Table 8-1 gives the scientific and common names for plants discussed in the EIS.

Table 8-1. Common and Scientific Plant Names

Common Name	Scientific Name
* = non-native species	
*Annual beardgrass	<i>Polypogon monspeliensis</i>
Balsamroot	<i>Balsamorhiza</i> species
*Barnyard-grass	<i>Echinochloa crusgalli</i>
Basalt daisy	<i>Erigeron basalticus</i>
Basin wildrye	<i>Leymus (Elymus) cinereus</i>
Beaked cryptantha	<i>Cryptantha rostellata</i>
Beaked spike-rush	<i>Eleocharis rostellata</i>
Big sagebrush	<i>Artemisia tridentata</i>
Bitterbrush	<i>Purshia tridentata</i>
Bitterroot	<i>Lewisia rediviva</i>
Black cottonwood	<i>Populus trichocarpa</i>
Black greasewood	<i>Sarcobatus vermiculatus</i>
Black hawthorn	<i>Crataegus douglasii</i>
Bluebunch wheatgrass	<i>Pseudoroegneria (Agropyron) spicata</i>
Blue elderberry	<i>Sambucus cerulea</i>
Bristle-flowered collomia	<i>Collomia macrocalyx</i>
*Bulbous bluegrass	<i>Poa bulbosa</i>
*Bull thistle	<i>Cirsium vulgare</i>
Bulrush	<i>Scirpus</i> species
*Canada thistle	<i>Cirsium arvense</i>
Canadian St. John's-wort	<i>Hypericum majus</i>
Carey's balsamroot	<i>Balsamorhiza careyana</i>
Cattail	<i>Typha latifolia</i>
Cespitose evening-primrose	<i>Oenothera cespitosa ssp. cespitosa</i>
Chaenactis	<i>Chaenactis douglasii</i>
*Cheatgrass	<i>Bromus tectorum</i>
*Chicory	<i>Cichorium intybus</i>
Chokecherry	<i>Prunus virginiana</i>
Columbia milk-vetch	<i>Astragalus columbianus</i>
Common blue-cup	<i>Githopsis specularioides</i>
Common reed	<i>Phragmites australis</i>
Common snowberry	<i>Symphoricarpos albus</i>
Common spike-rush	<i>Eleocharis palustris</i>
Common St. John's-wort	<i>Hypericum perforatum</i>
Cottonwood (=black cottonwood)	<i>Populus trichocarpa</i>
Curve-pod milk-vetch	<i>Astragalus speirocarpus</i>
Cushion daisy	<i>Erigeron poliospermus</i>
Cusick's bluegrass	<i>Poa cusickii</i>
* Dalmatian toadflax	<i>Linaria dalmatica ssp. dalmatica</i>
Desert buckwheat	<i>Eriogonum</i> species
Desert Cryptantha	<i>Cryptantha scoparia</i>
Desert-parsley species	<i>Lomatium</i> species

Common Name	Scientific Name
* = non-native species	
*Diffuse knapweed	<i>Centaurea diffusa</i>
Douglas' buckwheat	<i>Eriogonum douglasii</i>
Dwarf evening-primrose	<i>Camissonia pygmaea</i>
Eriogonum	<i>Eriogonum</i> species
Field bindweed	<i>Convolvulus arvensis</i>
Filaree	<i>Erodium cicutarium</i>
Geyer's milk-vetch	<i>Astragalus geyeri</i>
Globepodded hoarycress	<i>Cardaria pubescens</i>
Golden currant	<i>Ribes aureum</i>
Gray Cryptantha	<i>Cryptantha leucophaea</i>
Grays' desert parsley	<i>Lomatium grayi</i>
Gray rabbitbrush	<i>Ericameria (Chrysothamnus) nauseosa</i>
Green-banded star-tulip	<i>Calochortus macrocarpus</i>
Green rabbitbrush	<i>Chrysothamnus viscidiflorus</i>
Hoary aster	<i>Machaeranthera canescens</i>
Hood's phlox	<i>Phlox hoodii</i>
Hoover's desert-parsley	<i>Lomatium tuberosum</i>
Hoover's tauschia	<i>Tauschia hooveri</i>
Idaho fescue	<i>Festuca idahoensis</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
*Johnsongrass	<i>Sorghum halepense</i>
*Kochia	<i>Kochia scoparia</i>
Longsepal globemallow	<i>Iliamna longisepala</i>
Lyall's milk-vetch	<i>Astragalus lyallii</i>
Milk-vetch species	<i>Astragalus</i> species
Mint	<i>Mentha arvensis</i>
Mockorange	<i>Philadelphus lewisii</i>
Mountain monardella	<i>Monardella odoratissima</i>
Munro's globemallow	<i>Sphaeralcea munroana</i>
*Musk thistle	<i>Carduus nutans</i>
Naked-stemmed evening-primrose	<i>Camissonia scapoidea</i>
Needle-and-thread grass	<i>Hesperostipa (Stipa) comata</i>
Narrowleaf goldenweed	<i>Haplopappus stenophyllus</i>
Northern wormwood	<i>Artemisia campestris</i> var. <i>wormskioldii</i>
Nuttall's sandwort	<i>Minuartia nuttallii</i> var. <i>fragilis</i>
Oceanspray	<i>Holodiscus discolor</i>
Oregon sunshine	<i>Eriophyllum lanatum</i>
Pauper milk-vetch	<i>Astragalus misellus</i> var. <i>pauper</i>
Penstemon	<i>Penstemon</i> species
*Perennial pepperweed	<i>Lepidium latifolium</i>
*Perennial sowthistle	<i>Sonchus arvensis</i>
Persistentsepal yellowcress	<i>Rorippa columbiae</i>
Phlox	<i>Phlox</i> species
Piper's daisy	<i>Erigeron piperianus</i>
Ponderosa pine	<i>Pinus ponderosa</i>
Prairie junegrass	<i>Koeleria macrantha (cristata)</i>
*Puncturevine	<i>Tribulus terrestris</i>

Common Name	Scientific Name
* = non-native species	
*Purple loosestrife	<i>Lythrum salicaria</i>
Purple sage	<i>Salvia dorrii</i>
Quaking aspen	<i>Populus tremuloides</i>
Redosier dogwood	<i>Cornus sericea (stolonifera)</i>
*Reed canarygrass	<i>Phalaris arundinacea</i>
Rock buckwheat	<i>Eriogonum species</i>
Rocky Mountain iris	<i>Iris missouriensis</i>
Rose	<i>Rosa species</i>
*Rush skeletonweed	<i>Chondrilla juncea</i>
Rush species	<i>Juncus species</i>
*Russian knapweed	<i>Acroptilon (Centaurea) repens</i>
*Russian olive	<i>Elaeagnus angustifolia</i>
*Russian thistle	<i>Salsola kali (iberica)</i>
Sagebrush	<i>Artemisia species</i>
*Saltcedar	<i>Tamarix ramosissima</i>
Saltgrass	<i>Distichlis spicata</i>
Sandberg's bluegrass	<i>Poa secunda (sandbergii)</i>
Sand dock	<i>Rumex venosus</i>
Sand dropseed	<i>Sporobolus cryptandrus</i>
* Scotch thistle	<i>Onopordum acanthoides</i>
Sedge	<i>Carex species</i>
Serviceberry	<i>Amelanchier alnifolia</i>
*Siberian elm	<i>Ulmus pumila</i>
Slenderbush buckwheat	<i>Eriogonum microthecum</i>
Spikerush	<i>Eleocharis species</i>
*Spiny cockle bur	<i>Xanthium spinosum</i>
Spiny hopsage	<i>Grayia (Atriplex) spinosa</i>
*Spotted knapweed	<i>Centaurea biebersteinii (maculosa)</i>
Sprangletop	<i>Leptochloa fascicularis</i>
Stiff sagebrush	<i>Artemisia rigida</i>
Stinging nettle	<i>Urtica dioica</i>
Suksdorf's monkey-flower	<i>Mimulus suksdorfii</i>
*Teasel	<i>Dipsacus sylvestris</i>
Threetip sagebrush	<i>Artemisia tripartita</i>
Thurber's needlegrass	<i>Achnatherum (Stipa) thurberianum</i>
Thyme-leaved buckwheat	<i>Eriogonum thymoides</i>
Tufted evening-primrose	<i>Oenothera cespitosa ssp. cespitosa</i>
*Tumble mustard	<i>Sisymbrium altissimum</i>
Umtanum desert buckwheat	<i>Eriogonum codium</i>
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>
Wallflower	<i>Erysimum species</i>
Wanapum crazyweed	<i>Oxytropis campestris var. wanapum</i>
Wavy-leaved alder	<i>Alnus sinuata</i>
Wax currant	<i>Ribes cereum</i>
Wenatchee Mountains checker-mallow	<i>Sidalcea oregana var. calva</i>
White buckwheat	<i>Eriogonum niveum</i>
*White mulberry	<i>Morus alba</i>

Common Name * = non-native species	Scientific Name
White sagebrush	<i>Artemisia ludoviciana</i>
White-stemmed evening primrose	<i>Oenothera pallida</i>
*White sweetclover	<i>Melilotus alba</i>
Wild rose	<i>Rosa</i> species
Willow	<i>Salix</i> species
Winterfat	<i>Krascheninnikovia (Eurotia) lanata</i>
Wyoming big sagebrush	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>
Wood's rose	<i>Rosa woodsii</i>
Yarrow	<i>Achillea millefolium</i>
Taxonomy follows Hitchcock and Cronquist, 1973. Some updated taxonomy is included.	