ATTACHMENT F: 2021 RARE PLANT SURVEY REPORT

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Badger Mountain Solar Energy Project
2021 Rare Plant Survey Report

Prepared for:

Aurora Solar, LLC

Prepared by:

TETRA TECH

September 2021

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Acronyms and Abbreviations

Avangrid	Avangrid Renewables
GIS	Geographic Information System
GPS	Global Positioning System
IPaC	Information for Planning and Consultation
NHD	National Hydrography Dataset
NWI	National Wetlands Inventory
Project	Badger Mountain Solar Energy Project
Tetra Tech	Tetra Tech, Inc.
USFWS	U.S. Fish and Wildlife Service
WNHP	Washington Natural Heritage Program

1.0 Introduction

This summary report presents the methods and results for the 2021 rare plant surveys conducted by Tetra Tech, Inc. (Tetra Tech) for the Badger Mountain Solar Energy Project (Project), performed for Aurora Solar, LLC, a wholly owned subsidiary of Avangrid Renewables (Avangrid). The Project is generally located 3.5 miles northeast of the city of East Wenatchee in Douglas County, Washington (Figure 1). The purpose of the rare plant surveys was to document the presence of rare vascular plant species within the Project area. Rare plant surveys were conducted in early May 2021, which is the appropriate time of year to identify rare plant species at the Project, if present. This Rare Plant Survey Report was developed to support Project permitting through the State of Washington Energy Facility Site Evaluation Council consistent with Washington Administrative Code 463-60-332.

2.0 Methods

2.1 Survey Area

The Survey Area consists of the approximately 2,390-acre Project area, which includes an approximately 2,274-acre Solar Array Micrositing Area and 116-acre Gen-tie Micrositing Corridor (Figures 1 and 2). Site access was not available to approximately 34 acres of the Survey Area along the Gen-tie Micrositing Corridor (Figure 2). While these areas were not traversed on foot during surveys, they were viewed from adjacent accessible parcels and public roads.

2.2 Background Review

For the purposes of this report, the term “rare plant” includes federally listed endangered, threatened, or candidate vascular plant species as well as species listed in the state as endangered, threatened, or sensitive by the Washington Natural Heritage Program (WNHP). Prior to conducting field surveys, Tetra Tech conducted a review of existing information on rare plant species with the potential to occur in Douglas County and in the Survey Area. Specific sources of information that were reviewed prior to conducting field surveys included:

- USFWS (U.S. Fish and Wildlife Service) Information for Planning and Consultation (IPaC) query for Douglas County (USFWS 2021a)
- List of Known Occurrences of Rare Plants in Washington by County (WNHP 2021a)
- Washington Vascular Plant Species of Special Concern (WHNP 2019)
- WNHP Element Occurrence database of rare and imperiled species and plant communities (WNHP 2021b)
- Online Field Guide to the Rare Plants of Washington (WNHP 2021c)
- USFWS National Wetlands Inventory (NWI; USFWS 2021b)

- U.S. Geological Survey National Hydrography Dataset (NHD; USGS 2021)
- Aerial imagery of the Survey Area (Google Earth Pro 2021)

Based on review of the above sources, Tetra Tech compiled a list of rare plant species known to occur or with the potential to occur in the Survey Area (Appendix A). Each of the species identified as potentially occurring within the Survey Area was assigned a "likelihood of occurrence" (i.e., unlikely, low, moderate, high) based on the proximity of known occurrences, whether the occurrence is an historical occurrence, and the likelihood of suitable habitat occurring within the Survey Area (based on review of aerial imagery [i.e., to locate areas of non-cultivated land within the Survey Area that potentially contain shrub-steppe, dwarf shrub-steppe, or other native habitat types] and NWI and NHD data noted above).

Prior to conducting field surveys, Tetra Tech completed a review of existing literature, herbarium records, and other sources to generate fact sheets or "field guides" for each rare plant species known to or with the potential to occur within the Survey Area. These fact sheets were used by the surveyors in the field and included the following:

- Photographs of each species and its habitat
- Information detailing habitat associations
- Range and flowering period
- Identifying features
- Characteristics distinguishing the target species from similar species within its range

2.3 Field Surveys

Tetra Tech conducted one round of rare plant surveys within the Survey Area in early May 2021. The survey period was chosen to coincide with the identification period for the majority of the rare plant species with potential to occur at the Project. During this survey, conducted in early May, it was determined that, due to the lack of suitable habitat, a second survey focused on later-blooming rare plant species was not necessary.

Field surveys were conducted using the focused intuitive controlled survey method, a standard and commonly accepted survey protocol (USFS and BLM 1999). This method incorporates meandering transects that traverse the Survey Area and target the full array of major vegetation types (with the exception of cultivated lands as they do not support rare plant species), aspects, topographical features, habitats, and substrate types. The distribution of survey effort is based on habitat conditions observed in the field, surveyor experience and knowledge of rare plant species and their habitats. Areas that provide marginal potential habitat for rare plant species (e.g., areas dominated by non-native species) are surveyed with less intensity than areas of high-potential habitat for rare plant species (e.g., intact shrub-steppe habitat).

While traversing the Survey Area, the surveyors searched for rare plant species, and when the surveyors arrived at an area of high-potential habitat for rare plant species, they conducted an

intensive survey for the rare species (i.e., the entire area of high-potential habitat is examined). Because this method focuses survey efforts on the parts of the landscape most likely to support rare plant species, surveyors were required to be familiar with all information in each species' fact sheet before beginning surveys.

During surveys, Tetra Tech maintained a running list of vascular plant species encountered and made informal collections of unknown species for later identification. Identification was verified through the use of appropriate plant keys—in particular, *Flora of the Pacific Northwest* (Hitchcock and Cronquist 2018).

3.0 Results

3.1 Background Review

One federally listed threatened plant species, Ute ladies'-tresses (*Spiranthes diluvialis*), is listed by the USFWS as known to occur or potentially occurring within Douglas County (USFWS 2021a). Habitat for this species includes low-elevation wetland complexes, moist to wet meadows, marshes, and riparian areas (Burke Museum 2021; WNHP 2021c). This species is typically restricted to temporarily flooded sites with stable subsurface moisture and low vegetation cover; over one-third of all known Ute ladies'-tresses populations are found on alluvial banks, point bars, floodplains, or ox-bows associated with perennial streams (WNHP 2021c; USFWS 2021c).

Including Ute ladies'-tresses, which in addition to being federally listed threatened is also considered a state endangered species, 33 state endangered, threatened, or sensitive species are known or potentially occurring within Douglas County (WNHP 2019, 2021a). Appendix A provides the list of the 33 rare plant species known or potentially occurring in Douglas County, as well as their state and federal status, preferred habitat, likelihood of occurring in the Survey Area, and recommended survey period.

As noted in Appendix A, 13 rare plant species have been documented within 10 miles of the Survey Area. Element occurrences (EOs)[1] for two of these species, Wenatchee larkspur (*Delphinium viridescens*) and sticky phacelia (*Phacelia lenta*), overlap the Survey Area (WNHP 2021b). Habitat for sticky phacelia includes basalt cliff crevices, ledges, cracks in basalt outcrops, open rocky habitats, and occasionally on talus below rock outcrops (WNHP 2021c).Habitat for Wenatchee larkspur includes moist meadows, seasonally wet openings in aspen groves and hardwood thickets, moist microsites in open coniferous forests, springs, seeps, and riparian areas (WNHP 2021c). The EO of Wenatchee larkspur occurs partially within the Survey Area and is considered historical as this occurrence has not been reconfirmed for more than 40 years (WNHP 2021a). Additionally, this EO polygon is large (and is centered outside the Survey Area) and thus likely includes a buffer to

[1] An Element Occurrence is an "area of land and/or water in which a species or natural community is, or was present" (DNR 2018). The WNHP provides data on rare plants in Washington, including the locations of documented EOs for rare plant species. However, due to the sensitive nature of this information rare plant EOs are buffered to protect the exact location of documented occurrences of rare plant populations.

protect the exact location of the rare plant and/or to account for uncertainty in the mapping; as a result, the specific occurrence location is likely outside the Survey Area.

3.2 Field Surveys

Tetra Tech conducted rare plant surveys within the Survey Area May 3 - May 7, 2021. No rare plant species were identified during the surveys. Although habitat for sticky phacelia was present within the Survey Area and surveys were conducted during the recommended survey period, no individuals of this species were observed. Habitat for later-blooming rare plant species with potential to occur in the Survey Area (i.e., those listed with a low, moderate, or high likelihood of occurrence in Appendix A whose recommended survey period occurs later than May) includes vernal pools, moist meadows, wet openings in in hardwood or coniferous forests, bogs, springs, seeps, riparian areas, and dry rocky washes. No suitable habitat for later blooming rare species with potential to occur in the Survey Area, including Wenatchee larkspur, was observed during surveys.

As noted in Section 2.1, site access was not available to approximately 34.3 acres of the Survey Area along the Gen-tie Micrositing Corridor (Figure 2) during these surveys. However, approximately 28.8 acres of these 34.3 acres consist of habitat types that do not provide suitable habitat for rare plant species (i.e., agriculture, developed, non-native grassland, and planted grassland). The other approximately 5.6 acres consists of shrub-steppe habitat which may provide suitable habitat for rare plant species. While these areas of shrub-steppe habitat were not traversed on foot during surveys, they were viewed from adjacent accessible parcels and public roads. Based on this initial assessment, the 5.6 acres of unsurveyed shrub-steppe habitat are relatively disturbed (i.e., contain high cover of non-native species in the understory) and likely provide little suitable habitat for rare plant species. Field surveys can be conducted within these areas of shrub-steppe habitat in May of 2022 if needed based on final Project design.

4.0 References

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Figures

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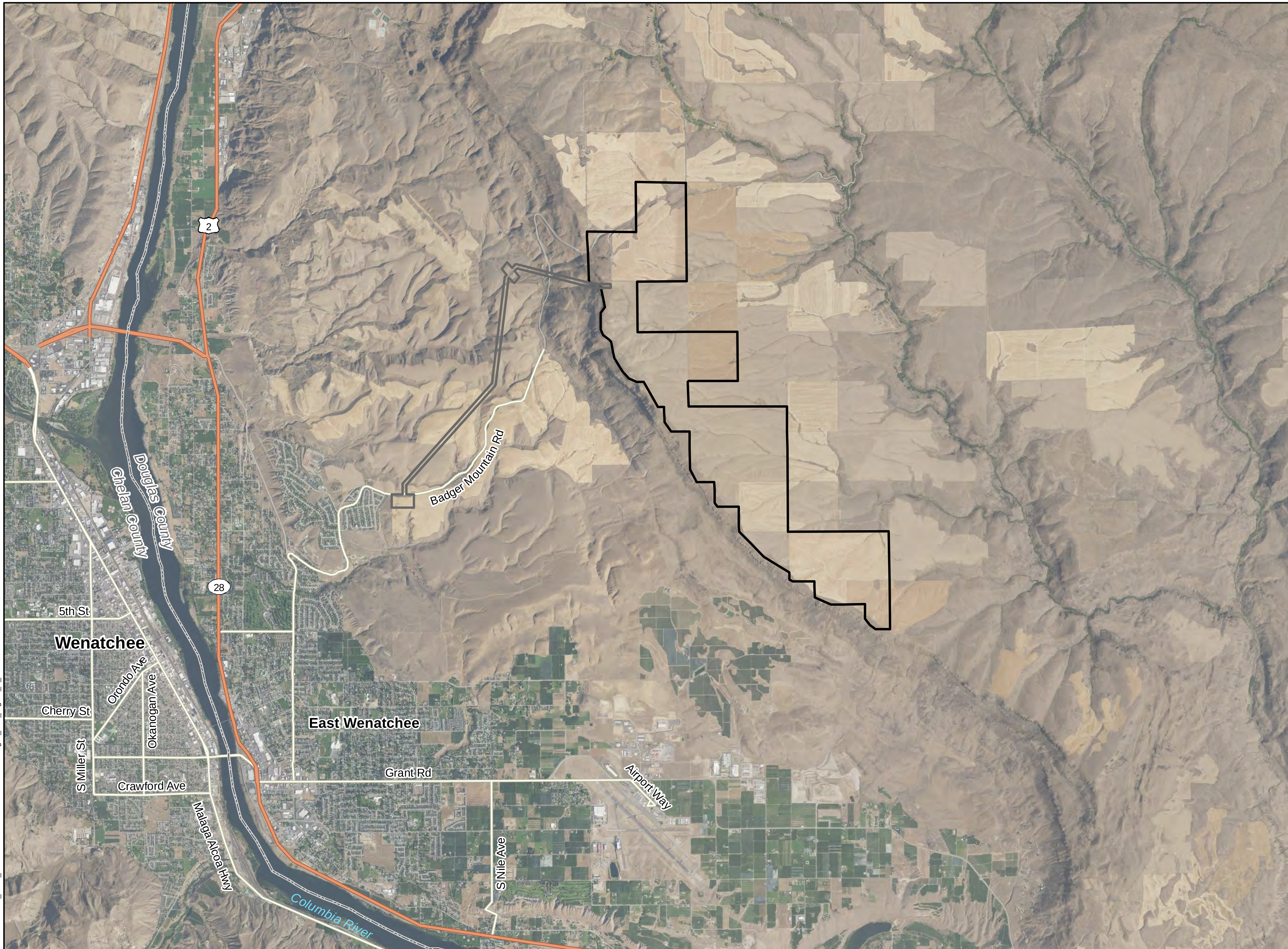
Badger Mountain Solar Energy Project

Figure 1
Project Location

DOUGLAS COUNTY, WASHINGTON



Project Area (2,390 acres)

Solar Array Micrositing Area (2,274 acres)

Gen-tie Micrositing Corridor (116 acres)

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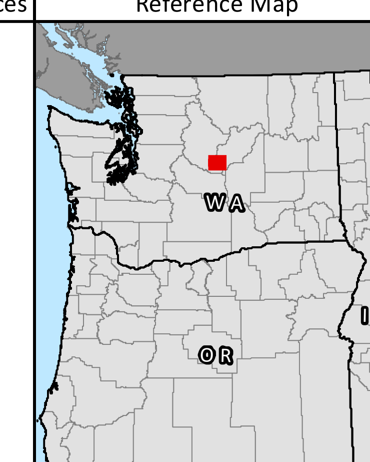
AVANGRID RENEWABLES

Data Sources

Avangrid-Project Boundary; USDA-NAIP Imagery

Reference Map



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Badger Mountain Solar Energy Project

Figure 2
Survey Area

DOUGLAS COUNTY, WASHINGTON

Survey Area

Area not Accessible*

* Site access was not available to approximately 34.3 acres of the Survey Area along the Gen-tie Micrositing Corridor during the 2021 survey season.
While these areas were not visited on foot in 2021, they were viewed from adjacent accessible parcels and public roads.

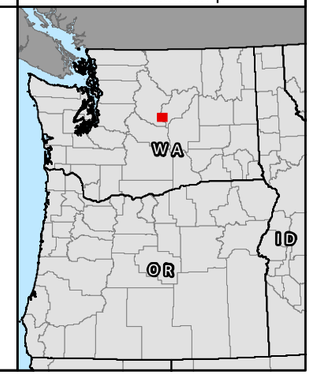
TETRA TECH

AVANGRID RENEWABLES

Data Sources

Avangrid-Project Boundary;
USDA-NAIP Imagery

Reference Map



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Appendix A. Rare Plant Species with Potential to Occur within the Survey Area

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Table A-1. Rare Plant Species with Potential to Occur within the Survey Area

Scientific name (Common Name)	State Status[1]	Federal Status[2]	Habitat Characteristics[3]	Potential to Occur in Survey Area	Survey Period[4]
Allium constrictum (constricted onion)	S	--	Vernally moist areas on flat basalt lithosols, margins of vernal ponds, and on open slopes with little or no shade; becoming less dense on drier lithosols. Associated species include *Artemisia rigida, Eriogonum thymoides, Phemeranthus spinescens, Viola trinervata, Poa secunda, Lomatium* spp., *Allium macrum, A. acuminatum, and Montia linearis*. Elev. 2070 to 2,550 feet.	Unlikely; local endemic from an approximately 23 x 11-mile area in northeast Douglas County.	April - July
Astragalus misellus var. *pauper* (pauper milkvetch)	S	--	Open ridgetops and upper slopes, rarely middle and lower slopes, along western margin of the Columbia Basin province. In *Artemisia tridentata/ Pseudoroegneria spicata* community. Associated species include *Artemisia rigida*, *A. tridentata, Crepis atribarba, C. occidentalis, Eriogonum sphaerocephalum*, *Pseudoroegneria spicata, Poa secunda*, *Astragalus purshii*, *Erigeron linearis*, *Lomatium macrocarpum*, *Phlox longifolia*, and *P. hoodii*. Elev. 500 to 3,280 feet.	Moderate; documented occurrence within 10 miles and suitable habitat may occur within Survey Area.	April - June
Astragalus tenellus (loose-flower milkvetch)	T	--	Alkaline clay and calcareous soils in grasslands, preferring bare, fast-eroding outcrops and slopes. Associated species include *Artemisia tridentata, Linanthus pungens, Festuca* spp., *Poa secunda,* and *Astragalus filipes.*	Unlikely; only 1 known extant occurrence of species in Washington, in northern Douglas County.	June – July
Corispermum pallidum (pale bugseed)	X	--	Historically found on sandy sagebrush plains in dry or drifting sand. One collection occurred with *Purshia tridentata* and *Achnatherum hymenoides.* Elev. 900 to 1,300 feet.	Unlikely; believed to be extirpated in Washington.	June – July
Cryptantha gracilis (narrow-stem cryptantha)	S	--	Sagebrush steppe habitats on basalt talus, in dry, rocky, or silty seasonal drainages, and pockets of silt on steep, somewhat unstable substrates. Associated species include *Artemisia tridentata, A. rigida, Amelanchier alnifolia, Philadelphus lewisii, Balsamorhiza careyana, Pseudoroegneria spicata, Poa secunda, Lupinus sulphureus, Eriophyllum lanatum,* and *Bromus tectorum.*	Moderate; suitable habitat likely to occur within Survey Area.	April - July
Cryptantha leucophaea Syn. *Oreocarya leucophaea* (gray cryptantha)	T	--	Sandy substrates, especially sand dunes that have not been completely stabilized. Appears to be restricted to areas where there is some wind-derived movement of open sand. Associated species include *Purshia tridentata, Artemisia tridentata, Hesperostipa comata, Achnatherum hymenoides, Poa secunda, Oenothera pallida, Eriogonum niveum, Penstemon attenuatus,* and *Astragalus succumbens.* Elev. 300-2,500 feet.	Moderate; occurrences within 5 miles of Survey Area and suitable habitat may occur within Survey Area.	May – July
Cryptantha scoparia (desert cryptantha)	S	--	Dry areas with full sun and little competing vegetation. In Washington, grows on south-facing slopes and ridges between small canyons with fine, dry silt and talus. Sites may be a little more alkaline than surrounding areas. Associated species include *Artemisia tridentata, Krascheninnikovia lanata, Eriogonum niveum, Eriophyllum lanatum, Epilobium minutum, Bromus hordeaceus, Bromus tectorum,* and *Pseudoroegneria spicata*. Elev. 1,200 - 2,100 feet.	Unlikely; known occurrences in Douglas County are historical; no known occurrences within 10 miles.	April – June

Scientific name **(Common Name)**	**State Status**[1]	**Federal Status**[2]	**Habitat Characteristics**[3]	**Potential to Occur in Survey Area**	**Survey Period**[4]
Delphinium viridescens (Wenatchee larkspur)	T	--	Moist meadows, seasonally wet openings in aspen groves and hardwood thickets, moist microsites in open coniferous forests, springs, seeps, and riparian areas. All sites have surface water or saturated upper soil profiles into early summer. Soils are silt loams or clay loams. Elev. 1,240 - 5,700 feet.	Low; documented occurrence overlaps Survey Area; however, occurrence is believed to be historical and suitable habitat unlikely to occur in Survey Area.	June – July
Eleocharis rostellata (beaked spike-rush)	S	--	Salt marshes along the coast and alkaline or highly calcareous sites inland, often around hot springs and wet calcareous or brackish fens. In WA this species is known from stream banks, lake margins, springs, and marshes east of the Cascade crest. Associated species include *Salix exigua, Schoenoplectus* spp., *Carex* spp., *Hypericum scouleri,* and rushes (*Juncus arcticus, J. nodosus*). Elev. 440 to 1,850 feet.	Unlikely; suitable habitat not likely present within Survey Area and occurrences in Douglas County are historical.	June - August
Eremothera pygmaea (dwarf evening-primrose)	S	--	Vernally moist areas in sagebrush steppe, unstable soil or gravel in steep talus, dry washes, banks, and roadcuts. Associated species include *Artemisia tridentata, Bromus tectorum, Eriogonum* spp., *Gilia minutiflora, Mentzelia spp., Cryptantha* spp., *Salsola tragus,* and *Neoholmgrenia (Camissonia*) *andina*. Elev. 450 - 2,050 feet.	Moderate; known occurrence within 10 miles and suitable habitat may be present within Survey Area.	Flowers: April – June; Fruits: June - August
Erythranthe suksdorfii (Suksdorf's monkeyflower)	S	--	Open, moist, or rather dry places, from the valleys and foothills to moderate or occasionally high elevations in the mountains. In Washington, occurs in seasonally moist swales, drainages, or vernal pools in shrub-steppe vegetation. Microhabitats often disturbed by small erosive events (i.e., slumps, slides, bioturbidity, and frost boils). Associated species include *Juniperus communis*. *Philadelphus lewisii, Artemisia tridentata, Eriogonum* spp., *Bromus tectorum, Poa secunda, Camissonia hilgardii, Collomia linearis*, *Draba verna*, *Erythranthe floribunda, E. breviflora, Plectritis macrocera*, *Cryptantha ambigua*, *Microsteris gracilis*, and *Ranunculus testiculatus*. Elev. 430 to 7,100 feet.	Low; limited suitable habitat likely present within Survey Area.	Mid-April – approx. July (as long as habitat remains moist)
Hackelia cinerea (gray stickseed)	T	--	Open or sparsely forested areas especially on cliffs, talus, or other exposed rock, often in mossy cracks. Associated species include *Pinus ponderosa, Pseudotsuga menziesii, Philadelphus lewisii, Penstemon fruticosus, P. richardsonii*, and *Woodsia oregana.* Elev. 1,040 to 2,520 feet.	Unlikely; known occurrence within 10 miles; however, occurrence in Douglas County is historical and suitable habitat unlikely to occur within Survey Area.	May - July
Hackelia hispida var. *disjuncta* (sagebrush stickseed)	S	--	Fine to coarse basalt talus, cliffs, or outcrops; sparsely vegetated dry sites. Associated species include *Artemisia tridentata, Philadelphus lewisii, Ribes cereum,* and *Grayia spinosa.* Elev. 1,000 to 2,500 feet.	Moderate; known occurrence within 10 miles and suitable habitat may be present within Survey Area.	May – June

Scientific name (Common Name)	State Status[1]	Federal Status[2]	Habitat Characteristics[3]	Potential to Occur in Survey Area	Survey Period[4]
Juncus tiehmii (Tiehm's dwarf rush)	T	--	Bare areas with moist granitic sand along streams, seepage areas around outcrops, depressions in meadows, and moist silt and clay soils. Only know from 1 location in WA where it grows at about 1,970 feet within shrub-steppe habitat, in seepy, moss-covered silt at the base of basalt cliffs and talus, and on mossy, moist benches. Associated species include *Navarettia intertexta, Apera interrupta, Leymus cinereus, Epilobium minutum, Juncus bufonius, Poa secunda, Epilobium pygmaeum,* and *Mimulus breweri.*	Unlikely; only known from one population in Washington, in central-eastern Douglas County.	Mid-spring to early-fall
Juncus uncialis (inch-high rush)	T	--	Vernal pools and pond edges, often in channeled scablands, or biscuit-swale topography. Elev. 300 to 2,500 feet. Associated species include *Allium constrictum, Allium geyeri, Navarretia leucocephala, Plagiobothrys scouleri, P. stipitatus,* and *Polygonum polygaloides* ssp. *confertiflorum*.	Low; limited suitable habitat likely present within Survey Area.	June
Lathrocasis tenerrima (delicate gilia)	T	--	Rocky outcroppings, ponderosa pine forest openings, and montane shrub-steppe communities.	Low to moderate; suitable habitat potentially present within Survey Area.	May - June
Micromonolepis pusilla (red poverty-weed)	T	--	Desert regions, in saline or alkaline clay soils, salt-encrusted soils, or edges of alkaline ponds. This species is adapted to extreme conditions. In some sites it is limited to growing directly beneath greasewood shrubs, due to cattle trampling and soil compaction between the shrubs. Associated species include *Sarcobatus vermiculatus, Suaeda depressa, Bromus tectorum,* and *Phacelia tetramera*. Elev. 1,950 - 2,210 feet.	Unlikely; suitable habitat not likely to occur within Survey Area.	April - June
Mimetanthe pilosa (false monkeyflower)	S	--	Moist, sandy or gravelly soils, especially by small streams, seeps, springs, and disturbed areas; dry stream beds. Elev. 1,000 to 4,500 feet.	Low; limited suitable habitat likely present within Survey Area.	May – July
Nicotiana attenuata (coyote tobacco)	S	--	Dry, sandy bottom lands, dry rocky washes, and in other dry open places; Elev. 320 to 2,640 feet. Associated species: *Artemisia tridentata, Ericameria* spp., *Bromus tectorum, Leymus cinereus*, *Centaurea diffusa*, *Verbascum thapsus*, *Solanum triflorum*, *Achillea millefolium*, *Mentzelia laevicaulis,*	Low to moderate; known occurrence within 10 miles and suitable habitat may be present within Survey Area.	June – September
Ophioglossum pusillum (Adder's-tongue)	S	--	Seasonally wet areas in pastures, old fields roadside ditches, bogs, fens, wet meadows floodplains, moist woods, grassy swales, dry or damp sand, dry hillsides and in seasonally wet, acidic soil. Elev. 40 to 3,200 feet. Associated species include *Pinus contorta, Spiraea douglasii, Carex* spp., *Poa compressa, P. palustris, P. pratensis, Phalaris arundinacea, Agrostis stolonifera, Botrychium* spp., *Fragaria* spp., *Spiranthes* spp., and *Achillea millefolium.*	Low; limited suitable habitat likely present in Survey Area.	June – September
Pediocactus nigrispinus (snowball cactus)	S	--	Thin, rocky soil on ridge tips, desert valleys, and low mountains. Associated species include *Artemisia rigida, Eriogonum thymoides, Poa secunda, Balsamorhiza hookeri, Allium* spp., *Lomatium* spp., *Erigeron linearis, Nestotus stenophyllus, Phlox hoodii,* and *Triteleia grandiflora var. grandiflora.* Elev. 1,000 to 4,000 feet.	Low to moderate; known occurrence within 10 miles and suitable habitat may be present within Survey Area.	May – July

Scientific name (Common Name)	State Status[1]	Federal Status[2]	Habitat Characteristics[3]	Potential to Occur in Survey Area	Survey Period[4]
Penstemon eriantherus var. *whitedii* (Whited's fuzzytongue penstemon)	T	--	West-facing slopes of small canyons, ridgetops, dry rocky places in the foothills of the Cascades and in the Columbia Basin; sometimes with an abundance of caliche fragments. Associated species include: *Purshia tridentata, Ericameria nauseosa, Artemisia tridentata, Salvia dorrii, Pseudoroegneria spicata,* and *Bromus tectorum.*	Moderate; known occurrence within 5 miles and suitable habitat likely to occur in Survey Area.	May – July
Petrophytum cinerascens (Chelan rockmat)	E	--	In crevices and on ledges of open, exposed cliffs and rock outcrops along the Columbia River. Habitat is very sparsely vegetated. Occupied basaltic cliffs predominantly face east or west; the species is absent from nearby south-facing basalt cliffs. Elev. 800 to 1,800 feet.	Unlikely; occurrence within 5 miles of Survey Area; however, known occurrences are along the Columbia River.	July – late August
Phacelia lenta (sticky phacelia)	T	--	Endemic to an area of approximately 12 x 8 miles in Douglas County. Found on arid Columbia Basin basalt cliff crevices, ledges, adjacent open rocky habitats, cracks in basalt outcrops and occasionally on talus below rock outcrops. Usually there is little other vegetation present. Elev. 1,300 to 3,400 feet.	High; known occurrences overlap Project Survey Area and suitable habitat present within Survey Area.	Mid-April – mid-June
Phacelia tetramera (dwarf phacelia)	T	--	Alkaline soils, vernal pools, swales and wetlands in sagebrush steppe communities. Grows in salt-encrusted soil, alkaline clay and fine silt, and cracked bare alkaline silt in vernally moist wetlands. Associated species include *Artemisia tridentata, A. rigida, Sarcobatus vermiculatus, Poa secunda, Distichlis spicata, Bromus hordeaceus, B. tectorum, Leymus cinereus,* and *Lepidium perfoliatum.* Elev. 1,200 to 2,200 feet.	Low; limited suitable habitat likely present within Survey Area.	April - May
Sandbergia perplexa (puzzling rockcress; puzzling halimolobos)	E	--	Sagebrush desert, typically on lithosol. Only known from 1 population in Washington which occurs in reddish, clay-rich soil with scattered rocks at 1,750 feet. The site is mostly flat with 30% cover of bare ground. Associated species include *Eriogonum thymoides* and *Poa secunda.* In Idaho, it is found on steep, rocky slopes in a forested area.	Unlikely; only known from one population in Washington.	May
Schizachyrium scoparium var. *scoparium* (little bluestem)	T	--	Open places, in a variety of soils. In Washington it grows in sand, silt, cobble, and gravel, above and below the high water line of the Columbia River; often in high-quality riparian plant communities dominated by native bunchgrasses. Associated species include *Pinus ponderosa, Juniperus scopulorum, Amelanchier alnifolia, Aristida purpurea var. longiseta, Pascopyrum smithii, Poa* spp., *Artemisia ludoviciana, Hesperostipa comata, Heterotheca villosa, Lomatium grayi*, and *Melilotus officinalis.* Elev. 610 to 1,320 feet.	Unlikely; known occurrence within 5 miles; however, occurrences are along the Columbia River and suitable habitat not likely to occur within Survey Area.	July - September
Silene scouleri ssp. *scouleri* (Scouler's catchfly)	S	--	Prairies and open timberland from low to moderate elevations.	Unlikely; known occurrence in Douglas County is historical.	June - August
Sisyrinchium montanum var. *montanum* (strict blue-eyed grass)	T	--	Moist meadows, stream banks, mossy springs, and open woods in steppe and montane zones. Associated species includ: *Pinus ponderosa, Artemisia ludoviciana, Medicago sativa, Oenothera strigosa,* and *Juncus balticus.* Elev in WA: 700 -3,200 feet.	Unlikely; suitable habitat not likely to occur within the Survey Area.	May

Scientific name (Common Name)	State Status[1]	Federal Status[2]	Habitat Characteristics[3]	Potential to Occur in Survey Area	Survey Period[4]
Spartina pectinata (prairie cordgrass)	S	--	Known from wet swales, meadows, edges of marshes and ponds; Washington populations are generally along riverbanks. Associated species include *Salix exigua, Phragmites australis, Eleocharis palustris, Carex* spp., and *Phalaris arundinacea.*	Unlikely; suitable habitat not likely to occur within the Survey Area.	June - July
Spiranthes diluvialis (Ute ladies'-tresses)	E	T	Moist to wet meadows, marshes, and riparian areas at low elevations; restricted to temporarily flooded sites with stable subsurface moisture and low vegetation cover. Associated species include *Pinus ponderosa, Artemisia* spp., *Purshia tridentata, Salix* spp., *Carex* spp., *Juncus* spp., *Agrostis stolonifera*. *Panicum occidentale,* and *Equisetum* spp.	Unlikely; suitable habitat not likely to occur within the Survey Area.	July – September
Thelypodium sagittatum ssp. *sagittatum* (arrow thelypody)	T	--	Moist swales and meadows in sagebrush plains and scablands and moist alkaline meadows and salt flats that dry by midsummer. Associated species include: *Apera interrupta, Distichlis spicata, Leymus cinereus, Carex praegracilis, Eleocharis macrostachya, Juncus balticus, Epilobium brachycarpum, Iris missouriensis, Linum perenne, Perideridia gairdneri,* and *Plagiobothrys leptocladus*.	Unlikely; suitable habitat not likely present within the Project Survey Area and known occurrence in Douglas County is historical.	June - July
Trifolium thompsonii (Thompson's clover)	T	--	Lower mountain slopes and ridges in grasslands dominated by bunchgrasses and herbs, and in adjacent open ponderosa pine and Douglas fir woodlands. Also on alluvial fans, canyon bottoms, and deeper soils of biscuit-swale topography. Slopes are very steep to nearly flat. This taxon is limited to microsites which are intermediate between dry, south-facing slopes and more mesic, shaded, heavily vegetated sites. Associated species include *Artemisia tridentata* ssp. *vaseyana, Amelanchier alnifolia, Pseudoroegneria spicata,* and *Festuca idahoensis.* Elev. 1,140 - 3,760 feet.	Moderate; documented occurrence within 5 miles and suitable habitat may occur within Survey Area.	May - June

Notes: A historical occurrence refers to an occurrence has not been reconfirmed for 40 or more years (WNHP 2021)

1. State Status: WNHP (2019) provides the following explanation of state status:
   E = Endangered, in danger of becoming extinct or extirpated from Washington
   T = Threatened, likely to become Endangered in Washington
   S = Sensitive, vulnerable or declining and could become Endangered or Threatened in Washington
   X = Possibly extinct or extirpated from Washington State (includes state historical species)
2. Federal Status:
   "--" = not federally listed
   T = Threatened
3. Sources: Burke Museum 2021; Hitchcock and Cronquist 2018; WNHP 2019; WNHP 2021; USFWS 2021.
4. Sources: Burke Museum 2021; WNHP 2021

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Scientific name (Common Name)	State Status[1]	Federal Status[2]	Habitat Characteristics[3]	Potential to Occur in Survey Area	Survey Period[4]

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Appendix B. Vascular Plants Observed During 2021 Field Surveys

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SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE	Non-native	Noxious Weed Class Douglas County/ WA State	Synonyms
Achillea millefolium	common yarrow	Asteraceae	forb	both		
Achnatherum thurberianum	Thurber's rice grass	Poaceae	grass			
Agastache occidentalis	western giant-hyssop	Lamiaceae	forb			
Agoseris heterophylla	annual agoseris	Asteraceae	forb			
Agropyron cristatum	crested wheatgrass	Poaceae	grass	x		
Allium (cf.) *acuminatum*	tapertip onion	Amaryllidaceae	forb			
Amelanchier alnifolia	serviceberry	Rosaceae	shrub			
Amsinckia sp.	fiddleneck	Boraginaceae	forb			
Antennaria dimorpha	low pussytoes	Asteraceae	forb			
Antennaria flagellaris	flagellate pussytoes, whip pussytoes	Asteraceae	forb			
Antennaria microphylla	little-leaf pussytoes, rosy pussytoes, white pussytoes	Asteraceae	forb			
Antennaria stenophylla	narrowleaved pussytoes	Asteraceae	forb			
Apocynum androsaemifolium	spreading dogbane	Apocynaceae	forb			
Arnica sp.	arnica	Asteraceae	forb			
Artemisia rigida	scabland sagebrush, stiff sagebrush	Asteraceae	shrub			
Artemisia tridentata	big sagebrush	Asteraceae	shrub			
Artemisia tripartita	threetip sagebrush, cut-leaf sagebrush	Asteraceae	shrub			
Asclepias speciosa	showy milkweed	Apocynaceae	forb			
Astragalus leibergii	Leiberg's milk-vetch	Fabaceae	forb			
Astragalus purshii	Pursh's milk-vetch, woolly-pod milk-vetch	Fabaceae	forb			
Balsamorhiza hookeri	Hooker's balsamroot	Asteraceae	forb			
Balsamorhiza sagittata	arrowleaf balsamroot	Asteraceae	forb			
Boechera pauciflora	Columbia rockcress, few-flowered rockcress	Brassicaceae	forb			*Arabis sparsiflora var. columbiana, Boechera holboellii*
Boechera retrofracta	reflexed rockcress	Brassicaceae	forb			*Arabis holboellii var. retrofracta*
Bromus inermis	smooth brome	Poaceae	grass	x		
Bromus tectorum	cheatgrass	Poaceae	grass	x		
Buglossoides arvenis	field gromwell; corn gromwell	Boraginaceae	forb	x		*Lithospermum arvense*
Calochortus (cf.) *macrocarpus*	sagebrush mariposa lily	Liliaceae	forb			
Carex sp.	sedge	Cyperaceae	sedge			
Castilleja thompsonii	Thompson's paintbrush	Orobanchacaea	forb			
Centaurea diffusa	diffuse knapweed	Asteraceae	forb	x	Class B / Class B	
Ceratocephala testiculata	burr buttercup	Ranunculaceae	forb	x		
Chaenactis douglasii	Douglas' dustymaiden	Asteraceae	forb			
Chorispora tenella	crossflower, blue mustard	Brassicaceae	forb	x		
Chrysothamnus viscidiflorus	yellow rabbitbrush, green rabbitbrush	Asteraceae	shrub			
Cirsium arvense	Canada thistle	Asteraceae	forb	x	Class C / Class C	
Cirsium undulatum	wavy leaf thistle	Asteraceae	forb			
Claytonia perfoliata	miner's lettuce	Portulacaceae	forb			
Collinsia parviflora	small blue eyed Mary	Scrophulariaceae	forb			
Collomia grandiflora	large-flowered collomia	Polemoniaceae	forb			
Collomia linearis	tiny trumpet, narrow-leaf collomia	Polemoniaceae	forb			
Comandra umbellata	bastard toadflax	Santalaceae	forb			
Convolvulus arvensis	field bindweed	Convolvulaceae	forb	x	Class C / Class C	
Conyza canadensis	Canadian fleabane, horseweed	Asteraceae	forb			
Crepis occidentalis	western hawksbeard	Asteraceae	forb			
Crepis sp.	hawksbeard	Asteraceae	forb			
Cryptantha (cf.) *flaccida*	weak-stem cryptantha	Boraginaceae	forb			
Delphinium nuttallianum	upland larkspur	Ranunculaceae	forb			
Delphinium xantholeucum	yellow-white larkspur	Ranunculaceae	forb			
Descurainia sp.	tansymustard	Brassicaceae	forb			
Descurainia sophia	flixweed	Brassicaceae	forb	x		
Dieteria canescens	hoary-aster	Asteraceae	forb			*Machaeranthera canescens*

SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE	Non-native	Noxious Weed Class Douglas County/ WA State	Synonyms
Dodecatheon sp.	shooting star	Primulaceae	forb			
Draba verna	spring whitlow-grass	Brassicaceae	forb	x		
Elymus elymoides	squirreltail	Poaceae	grass			
Epilobium brachycarpum	tall annual willowherb	Onagraceae	forb			
Eremogone capillaris	Franklin's sandwort	Caryophyllaceae	forb			*Arenaria franklinii* var. *franklinii*
Ericameria nauseosa	rubber rabbitbrush, gray rabbitbrush	Asteraceae	shrub			
Erigeron corymbosus	foothill fleabane, longleaf fleabane	Asteraceae	forb			
Erigeron linearis	desert yellow daisy, lineleaf fleabane	Asteraceae	forb			
Erigeron poliospermus	purple cushion fleabane	Asteraceae	forb			
Eriogonum compositum	arrowleaf buckwheat	Polygonaceae	forb/sub-shrub			
Eriogonum heracleoides	parsnipflower buckwheat	Polygonaceae	forb/sub-shrub			
Eriogonum niveum	snow buckwheat	Polygonaceae	forb/sub-shrub			
Eriogonum sphaerocephalum	rock buckwheat,	Polygonaceae	forb/sub-shrub			
Eriogonum strictum ssp. *proliferum*	Blue Mountain buckwheat, strict buckwheat	Polygonaceae	forb/sub-shrub			
Eriogonum thymoides	thyme-leaf buckwheat	Polygonaceae	forb/sub-shrub			
Eriogonum umbellatum	sulfur buckwheat, sulfurflower	Polygonaceae	forb/sub-shrub			
Eriophyllum lanatum var. *integrifolium*	Oregon sunshine, common woolly sunflower	Asteraceae	forb			
Festuca idahoensis	Idaho fescue	Poaceae	grass			
Festuca sp.	fescue	Poaceae	grass	varies		
Filago arvensis	field cottonrose, field filago	Asteraceae	forb	x		*Logfia arvensis*
Fritillaria pudica	yellow fritillary	Liliaceae	forb			
Galium serpenticum	intermountain bedstraw	Rubiaceae	forb			
Geum triflorum	prairie smoke, old-man's whiskers	Rosaceae	forb			
Grindelia sp.	gumweed	Asteraceae	forb			
Hackelia diffusa var. *arida*	sagebrush stickseed	Boraginaceae	forb			
Helianthella uniflora	Rocky Mountain helianthella	Asteraceae	forb			
Hesperochiron pumilus	small hesperochiron, small monkey-fiddle	Hydrophyllaceae	forb			
Hesperostipa comata	needle-and-thread	Poaceae	grass			
Heuchera cylindrica	lava alumroot, poker alumroot, roundleaf alumroot	Saxifragaceae	forb			
Hieracium scouleri	Scouler's hawkweed	Asteraceae	forb			*H. cynoglossoides*
Hydrophyllum capitatum	ballhead waterleaf	Hydrophyllaceae	forb			
Koeleria macrantha	prairie Junegrass, Koeler's prairie grass	Poaceae	grass			
Lactuca serriola	prickly lettuce	Asteraceae	forb	x		
Lepidium perfoliatum	clasping pepperweed	Brassicaceae	forb	x		
Lewisia rediviva	bitteroot	Portulacaceae	forb			
Leymus cinereus	basin wildrye	Poaceae	grass			*Elymus cinereus*
Linaria dalmatica ssp. dalmatica	Dalmatian toadflax	Plantaginaceae	forb	x	Class B / Class B	
Lithophragma sp.	woodland-star	Saxifragaceae	forb			
Lithospermum ruderale	western stoneseed	Boraginaceae	forb			
Lomatium brevifolium	narrowfruit biscuit-root, short-leaved biscuit-root	Apiaceae	forb			*L. triternatum var. alatum, L. triternatum* var. *brevifolium*
Lomatium canbyi	Canby's biscuit-root, Canby's desert-parsley	Apiaceae	forb			
Lomatium dissectum	fern-leaved biscuit-root	Apiaceae	forb			
Lomatium farinosum	northern biscuit-root, Hamblen's lomatium	Apiaceae	forb			
Lomatium geyeri	Geyer's desert-parsley, Geyer's lomatium	Apiaceae	forb			
Lomatium macrocarpum	large-fruit desert-parsley, bigseed lomatium	Apiaceae	forb			
Lomatium nudicaule	bare-stem lomatium	Apiaceae	forb			
Lomatium papilioniferum	butterfly bearing biscuit-root, butterfly bearing desert-parsley	Apiaceae	forb			*L. grayi*
Lomatium simplex	nine-leaf biscuitroot	Apiaceae	forb			
Lomatium triternatum	triternate biscuit-root	Apiaceae	forb			
Lupinus arbustus	longspur lupine, spurred lupine	Fabaceae	forb			*L. caudatus*
Lupinus polyphyllus	bigleaf lupine, large-leaved lupine	Fabaceae	forb			

SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE	Non-native	Noxious Weed Class Douglas County/ WA State	Synonyms
Lupinus saxosus	rock lupine	Fabaceae	forb			*L. polyphyllus var. saxosus, L. subsericeus*
Lupinus sulphureus var. bingenensis	sulfur lupine	Fabaceae	forb			*L. sulphureus* ssp. *subsaccatus*
Lupinus sp.	lupine	Fabaceae	forb			
Melica bulbosa	onion grass	Fabaceae	grass			
Mertensia longiflora	long-flowered bluebells, trumpet bluebells	Boraginaceae	forb			
Mertensia oblongifolia	languid lady, leafy lungwort	Boraginaceae	forb			
Micranthes sp.	saxifrage	Saxifragaceae	forb			
Microseris nutans	nodding microseris	Asteraceae	forb			
Microsteris gracilis	pink microsteris	Asteraceae	forb			*Phlox gracilis; Gilia gracilis*
Muhlenbergia richardsonis	matted muhly, short-leaved muhly	Poaceae	grass			
Nestotus stenophyllus	narrowleaf goldenweed	Asteraceae	forb/sub-shrub			*Haplopappus stenophyllus*
Nothocalais troximoides	false agoseris, sagebrush false dandelion	Asteraceae	forb			*Microseris troximoides*
Penstemon gairdneri var. *gairdneri*	Gairdner's penstemon	Plantaginaceae	forb			
Penstemon pruinosus	Chelan beardtongue	Plantaginaceae	forb			
Phacelia hastata	silverleaf phacelia, whiteleaf phacelia	Hydrophyllaceae	forb			
Phacelia humilis	low phacelia	Hydrophyllaceae	forb			
Phacelia linearis	thread-leaf phacelia, thread-leaf scorpion-weed	Hydrophyllaceae	forb			
Phlox caespitosa	clumped phlox, clustered phlox, stiff phlox, tufted phlox	Polemoniaceae	forb/sub-shrub			
Phlox hoodii	carpet phlox, Hood's phlox	Polemoniaceae	forb			
Phlox longifolia	longleaf phlox	Polemoniaceae	forb/sub-shrub			
Phlox speciosa	showy phlox	Polemoniaceae	forb/sub-shrub			
Phoenicaulis cheiranthoides	daggerpod	Brassicaceae	forb			
Pinus ponderosa	ponderosa pine	Pinaceae	tree			
Poa bulbosa	bulbous bluegrass	Poaceae	grass	x		
Poa secunda	Sandberg bluegrass	Poaceae	grass			
Polemonium micranthum	annual Jacob's-ladder, annual polemonium	Polemoniaceae	forb			
Poteridium annua	prairie burnet, annual burnet	Rosaceae	forb			*Sanguisorba annua, S. occidentalis*
Prunus virginiana	chokecherry	Rosaceae	shrub			
Pseudoroegneria spicata	bluebunch wheatgrass	Poaceae	grass			
Purshia tridentata	bittebrush, antelope bitterbrush	Rosaceae	shrub			
Ribes aureum	golden currant	Grossulariaceae	shrub			
Ribes cereum	wax currant	Grossulariaceae	shrub			
Rosa woodsii	Wood's rose	Rosaceae	shrub			
Rosa sp.	rose	Rosaceae	shrub	unknown		
Rumex crispus	curly dock	Polygonaceae	forb	x		
Rumex salicifolius	willow dock	Polygonaceae	forb			*Rumex triangulivalvis*
Salsola tragus	Russian thistle, tumbleweed	Chenopodiaceae	forb	x		*Salsola kali*
Salvia dorrii	purple sage	Lamiaceae	shrub			
Sambucus cerulea	blue elderberry	Adoxaceae	shrub			
Senecio integerrimus	one-stemmed butterweed, western groundsel	Asteraceae	forb			
Sisymbrium altissimum	tall tumblemustard	Brassicaceae	forb	x		
Symphoricarpos albus	common snowberry	Caprifoliaceae	shrub			
Taraxacum officinale	common dandelion	Asteraceae	forb	x		
Tetradymia canescens	gray horsebrush, spineless horsebrush	Asteraceae	shrub			
Toxicoscordion sp.	deathcamas	Melanthiaceae	forb			*Zigadenus paniculatus*
Tragopogon dubius	yellow salsify	Asteraceae	forb	x		
Triteleia grandiflora var. *grandiflora*	Douglas' brodiaea, blue-lily, large-flowered triteleia	Asparagaceae	forb			
Triticum aestivum	wheat	Poaceae	grass	x		
Verbascum thapsus	common mullein	Scrophulariaceae	forb	x		
Veronica arvensis	corn speedwell, wall speedwell	Plantaginaceae	forb	x		
Viola nuttallii	Nuttall's violet	Violaceae	forb			
Viola trinervata	sagebrush violet, desert pansy, 3-nerved violet	Violaceae	forb			

SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE	Non-native	Noxious Weed Class Douglas County/ WA State	Synonyms
Vulpia bromoides	barren fescue	Poaceae	grass	x		
Woodsia oregana	Oregon cliff-fern, Oregon woodsia	Woodsiaceae	fern			
Wyethia amplexicaulis	northern mule-ears	Asteraceae	forb			