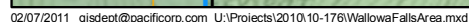


APPENDIX A

Wallowa Falls Project and Vicinity Map

Page 1



Proposed Project Boundary
 Road
 Trail
 Trailhead Parking
 CULVERT
 anchor block
 royal purple pipe outlet
PacificCorp Facility
 Recreation Storage Shed
 Royal Purple Diversion
 WALLOWA FALLS PLANT FENCE
 7.2 KV TRANSMISSION LINE
 ELEVATED TRESTLE
 LOW LEVEL OUTLET
 ROYAL PURPLE DIVERSION CHANNEL
 ROYAL PURPLE FLOWLINE - BURRIED
 ROYAL PURPLE FLOWLINE - EXPOSED
 SPILLWAY CATWALK
 WALLOWA FALLS PENSTOCK
 LINED TAILRACE
 TAILRACE - UNLINED
 UNLINED TAILRACE - MAIN CHANNEL
 TAILRACE SIDE CHANNEL - NORTHERN BORDER
 TAILRACE SIDE CHANNEL CENTERLINE
 INTAKE AND CONTROL STRUCTURE
 LAYDOWN AND STORAGE AREA
 SPILLWAY
 STORAGE SHED
 SUBSTATION
 WALLOWA FALLS FOREBAY
 WALLOWA FALLS POWERHOUSE
 PLSS-Section
 SDEADMIN.ADM_TOWNSHIP
 Waterbody
 Stream
Land Ownership - County Data
 Other
 PACIFICORP
 USA

0 500 1,000 Feet



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Appendix A Wallowa Falls Project and Vicinity

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Legend

- Proposed Project Boundary
- Road
- Trail
- Trailhead Parking
- CULVERT
- anchor block
- royal purple pipe outlet
- PacifiCorp Facility**
 - Recreation Storage Shed
 - Royal Purple Diversion
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 - USA

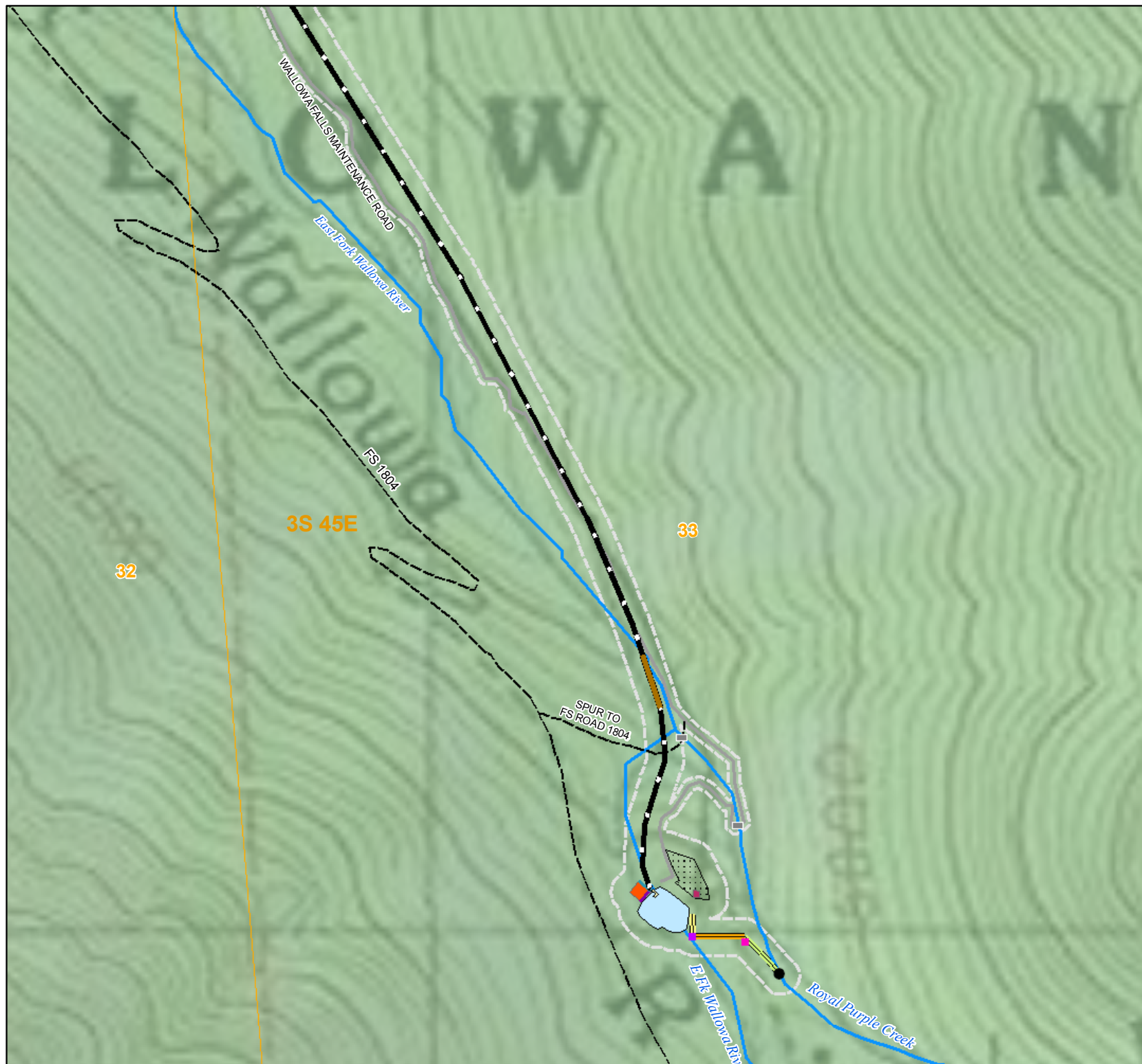
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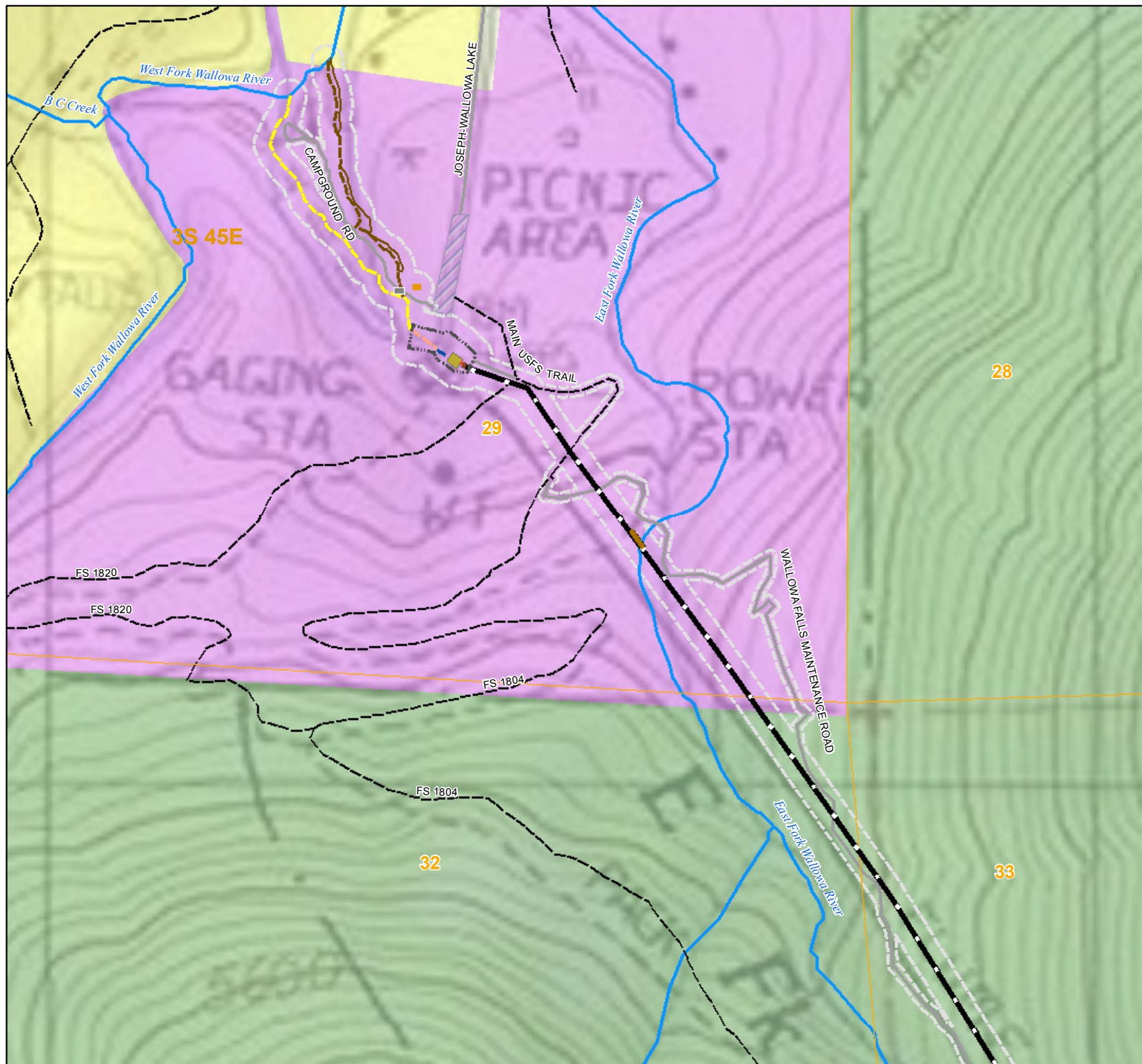
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Appendix A Wallowa Falls Project and Vicinity

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 - USA

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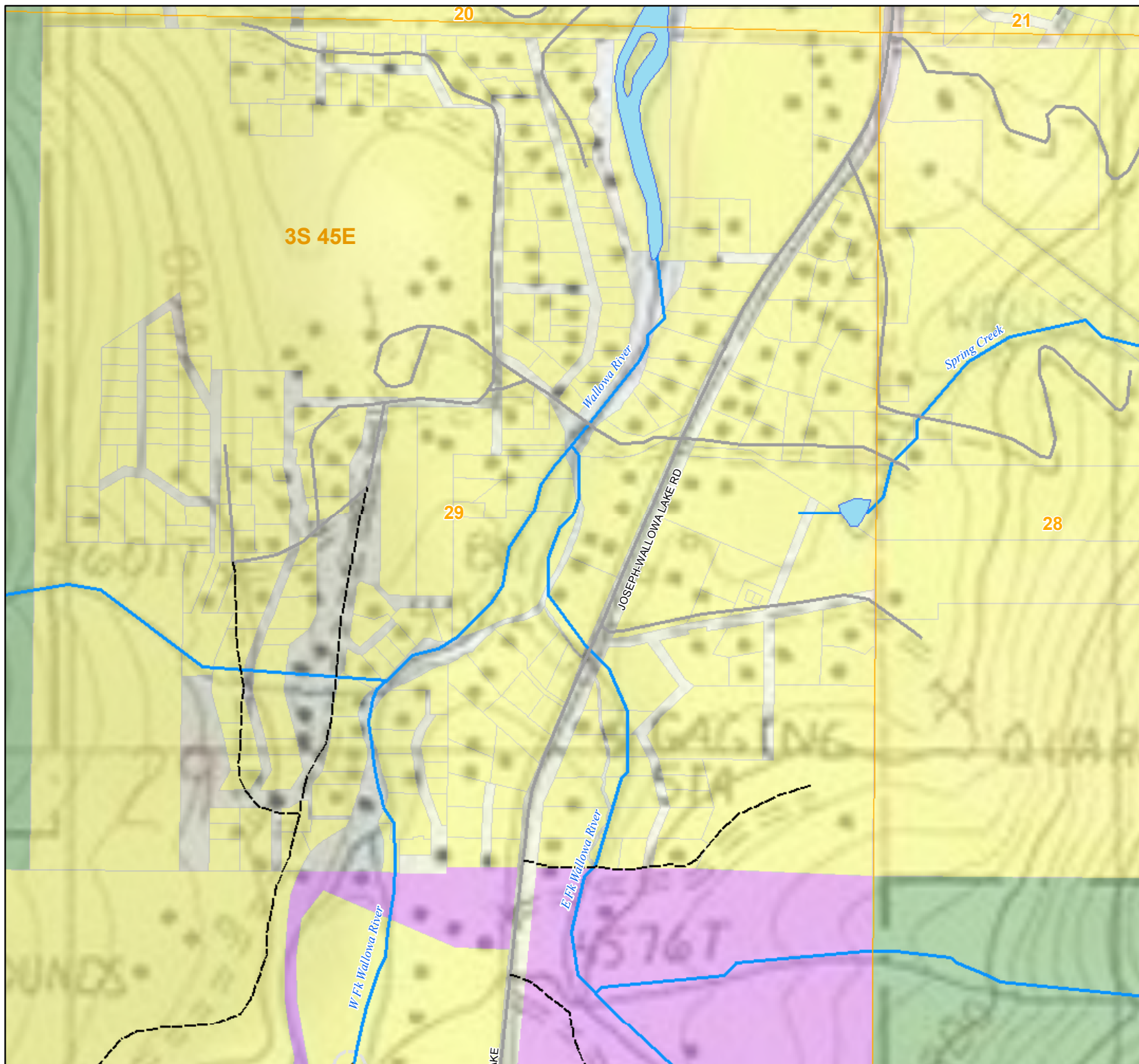
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Appendix A Wallowa Falls Project and Vicinity

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APPENDIX B

- Oregon Biodiversity Information Center List of Rare, Threatened and Endangered, Candidate, or Special Status Vascular Plant Species in Wallowa County
- Regional Forester's Special Status Species Lists for Sensitive Non-Vascular and Vascular plants on the Wallowa-Whitman National Forest
- Potential Sensitive Plant List – Wallowa Falls Hydroelectric Project
- Federally Listed, Proposed, Candidate Species and Species of Concern Under the Jurisdiction of the Fish and Wildlife Service Which May Occur within Wallowa County, Oregon

Table 3.5-2 Oregon Biodiversity Information Center List of Rare, Threatened and Endangered, Candidate, or Special Status Vascular Plant Species in Wallowa County.

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Wallowa ricegrass	<i>Achnatherum wallowaensis</i>	SOC	--	1	Grows in shallow, rocky soils from 3,280 – 5,250 feet (Oregon Flora Project 2010).	Suspected	Yes
Blue Mountain onion	<i>Allium dictyon</i>	SOC	--	1	Occurs at middle to upper elevations (4,200-5,200 feet), on moderately steep slopes (0-55 degrees) with unstable substrates. The surface is dominated by loose gravel (Washington Natural Heritage Program [WNHP] 2010).	Suspected	Yes
Geyer's onion	<i>Allium geyeri</i> var. <i>geyeri</i>	--	--	2	Moist meadows, banks, and rock outcrops in the lowland, steppe and montane zones (E-flora BC 2010).	Suspected	Yes
Davidson's rockcress	<i>Arabis davidsonii</i>	--	--	2	Found in subalpine forests and alpine fell fields at higher elevation between 5,000 and 11,500 feet (Calflora 2010).	Suspected	Yes
Hell's Canyon rock-cress	<i>Arabis hastatula</i>	SOC	--	1	Rocky outcrops and mountain ridges between 4,990-7,612 feet (Oregon Flora Project 2010).	Suspected	Yes
Green Spleenwort	<i>Asplenium trichomanes-ramosum</i>	--	--	2	Found on cliffs in subalpine forest between 7,000 and 8,000 feet (Calflora 2010).	No	No
Oregon bolandra	<i>Bolandra oregana</i>	--	C	4	Occurs along the Columbia River drainage mostly at low elevations; it is usually found near streams and moist, rocky places in deep shade (WNHP 2010).	No	No
Upward-lobed moonwort	<i>Botrychium ascendens</i>	SOC	C	1	Prefers well-drained open habitats that include alpine meadows, avalanche meadows, pastured forest meadows, and grassy roadsides (USFS 2010d).	Suspected	Yes (PacifiCorp 1993)
Prairie moonwort	<i>Botrychium campestre</i>	SOC	--	2	Occurs primarily on well-drained soils in non-forested habitats, although it may grow under shrubs in or at the margins of these habitats. The one known location in Oregon is in an avalanche meadow (USFS 2010d).	No	No

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Crenulate grape fern	<i>Botrychium crenulatum</i>	SOC	C	1	It generally occurs in western redcedar (<i>Thuja plicata</i>), western hemlock (<i>Tsuga heterophylla</i>), and Engelmann spruce forests with greater than 70% canopy cover. Elevation ranges from 2000 to 5200 feet (WNHP 2010).	Suspected	Yes (PacifiCorp 1993)
Western moonwort	<i>Botrychium hesperium</i>	--	--	2	Found in open-canopied forests and meadows at higher altitudes, prefers gravelly soils, including areas with compacted substrates such as roadsides (USFS 2010d).	Suspected	Yes
Slender Moonwort	<i>Botrychium lineare</i>	--	--	1	Occurs in heavily forested sites, grassy meadows, fen-like seeps, and gravelly roadsides in relatively high elevation areas. In the Wallowa Mountains, the plants have been discovered growing in packed gravel of roadside shoulders and ditches and in boulder-laden substrate in an old avalanche meadow (USFS 2010d)	Suspected	Yes
Moonwort	<i>Botrychium lunaria</i>	--	--	2	Occurs at high latitudes and altitudes in open to lightly wooded meadows and vegetated scree slopes. At lower elevations it occurs in mesic woodlands, meadows, and sparsely vegetated sand dunes. It most commonly occurs on moist but well-drained soils with a neutral pH (USFS	Suspected	Yes (PacifiCorp 1993)
Mountain grape fern	<i>Botrychium montanum</i>	SOC	--	2	The preferred habitat is under old growth western red cedar on alluvial terraces along small streams where the soil is moist and high in organic matter. The other primary habitat is fens, seeps and meadows along streams where the substrate is saturated (USFS 2010d).	Yes (ORBIC 2010b, PacifiCorp 1993)	Yes (PacifiCorp 1993)
Twin-spike moonwort	<i>Botrychium paradoxum</i>	SOC	C	1	Mesic to wet subalpine mountain meadows dominated by grasses, sedges and in some cases, dense herbaceous cover (USFS 2010d).	Suspected	Yes (PacifiCorp 1993)
Stalked moonwort	<i>Botrychium pedunculosum</i>	SOC	C	1	Occurs in mountain meadows, roadsides, brushy secondary woodlands, and open to closed canopy forests (USFS 2010d).	Suspected	Yes (PacifiCorp 1993)

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Green-band mariposa lily	<i>Calochortus macrocarpus</i> var. <i>maculosus</i>	SOC	--	1	Pristine habitats at low, mid, or upper elevations in rocky, basaltic soils and substrates on hillsides, rock outcrops and cliff bands. The species has also been observed in grasslands on steep slopes (WNHP 2010).	No	No
Blackened Sedge	<i>Carex atosquama</i>	--	--	2	Moist to mesic slopes, meadows and thickets in the subalpine and alpine zones (E-flora BC 2010).	Suspected	Yes (PacifiCorp 1993)
Capillary sedge	<i>Carex capillaris</i>	--	--	2	Moist to wet shorelines, bogs, fens, stream banks, and seepage slopes in the montane to alpine zones (E-flora BC 2010).	Suspected (ORBIC 2010b)	Yes
Low northern sedge	<i>Carex concinna</i>	--	--	2	Moist to dry forests in the montane and subalpine zones (E-flora BC 2010).	Suspected (ORBIC 2010b)	Yes (PacifiCorp 1993)
Cordilleran Sedge	<i>Carex cordillerana</i>	--	--	2	Moist to dry meadows, shaded rocky slopes in the montane or subalpine zones (E-flora BC 2010)	Suspected	Yes
Yellow bog sedge	<i>Carex gynocrates</i>	--	--	2	Bogs, swamps, fens and wet meadows in the upper montane to alpine zones (E-flora BC 2010)	Suspected	Yes
Slender sedge	<i>Carex lasiocarpa</i> var. <i>americana</i>	--	--	2	Bogs, swamps, shorelines, marshes and fens in the lowland, steppe and montane zones (E-flora BC 2010).	No	No
Intermediate sedge	<i>Carex media</i>	--	--	2	This species is found near perennial streams and ponds and in moist meadows at an elevation of 4,900 to 7,120 ft (WNHP 2010).	Suspected	Yes
Small-footed sedge	<i>Carex micropoda</i>	--	--	2	Moist meadows, stream banks, seeps, snowbeds and areas irrigated by meltwater at various elevations (E-flora 2010).	Suspected	Yes
Spikenard sedge	<i>Carex nardina</i>	--	--	2	Dry fellfields, ridgecrests, rock outcrops, meadows and scree slopes in the alpine zone (E-flora BC 2010).	Suspected (ORBIC 2010b)	Yes
A sedge	<i>Carex pelocarpa</i>	--	--	2	Grows on alpine slopes, ridge crests, and rocky lakeshores between 8,860–12,140 ft (E-flora 2010).	Suspected	Yes

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Russet sedge	<i>Carex saxatilis</i>	--	--	2	Grows on poorly developed soils in wet meadows and boggy areas, especially near streams and lakes at mid to high elevations (USFS 2010e).	Suspected	Yes
Dark Alpine Sedge	<i>Carex subnigricans</i>	--	--	2	Grows in moist-mesic meadows and along lakes and streams above 8,200 feet (Yates 2009, E-flora 2010).	No	No
Native Sedge	<i>Carex vernacula</i>	--	--	2	A high-elevation subalpine-alpine species of rocky substrates (Yates 2009).	No	No
Holmgren Rustic paintbrush	<i>Castilleja flava</i>	--	--	2	Sagebrush foothills between 6,500-9,000 feet (Hitchcock and Cronquist 1973).	No	No
Fraternal paintbrush	<i>Castilleja fraterna</i>	SOC	--	1	Alpine meadows and talus slopes in Wallowa Mountains (Hitchcock and Cronquist 1973).	Suspected	Yes
Purple alpine paintbrush	<i>Castilleja rubida</i>	SOC	--	1	Rocky, open ground on alpine summits between 7,350-9,840 feet (Oregon flora Project 2010)	No	No
Fee's Lipfern	<i>Cheilanthes feei</i>	--	--	2	Occurs on limestone cliff crevices, outcrops and steep slopes, from 850 to 2,650 feet elevation (WNHP 2010).	No	No
Steller's rock-brake	<i>Cryptogramma stelleri</i>	--	--	2	This species grows on moist, shaded cliffs and ledges at middle and upper altitudes in the mountains. (WNHP 2010).	Suspected	Yes
A Cyperus	<i>Cyperus lupulinus ssp. lupulinus</i>	--	--	2	In well-drained, open roadsides, fields, pine barrens, and dunes (E-floras 2010).	Suspected	Yes
Bolander's spikerush	<i>Eleocharis bolanderi</i>	--	--	2	Fresh, often summer-dry meadows, springs, seeps, stream margins in elevation between 3,280–11,155 feet (E-floras 2010).	Suspected	Yes
White cushion erigeron	<i>Erigeron disparipilus</i>	--	--	2	Dry rocky hillsides (University of Washington 2010).	Suspected (ORBIC 2010b)	Yes

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Englemann's daisy	<i>Erigeron engelmannii</i> var. <i>davisii</i>	SOC	--	2	Woods, meadows, and open hillsides from foothills to mid-elevation mountains (Hitchcock and Cronquist 1973).	Suspected	Yes
Diffuse stickweed	<i>Hackelia diffusa</i> var. <i>diffusa</i>	--	C	4	Shaded areas, cliffs, talus, wooded flats and slopes at lower elevations (WNHP 2010).	No	No
Three-flowered Rush	<i>Juncus triglumis</i> var. <i>albescens</i>	--	--	2	An alpine species that grows in wet meadows, on edges of streams and river bars, and near snow banks. It grows in wet microsites with shallow soils or saturated sandy gravel that are subject to needle ice disturbance or frost hummocks (USFS 2010e).	Suspected	Yes
Bellard's kobresia	<i>Kobresia bellardii</i>	--	--	2	Often dry to somewhat moist places in high montane areas above timberline (Hitchcock and Cronquist 1973).	Suspected	Yes (PacifiCorp 1993)
Simple kobresia	<i>Kobresia simpliciuscula</i>	--	--	2	Grows in alpine areas in moist, peaty soils found in bogs, wet meadows, and along the edges of beaver ponds. It does well in calcareous habitats having pH 5.8 to 7.2. It also grows well in frost-shattered limestone, limestone grassland, boggy calcareous meadows, sugar limestone, and calcareous springs (USFS 2010e).	Suspected	Yes (PacifiCorp 1993)
Aristriulate lipocarpha	<i>Lipocarpha aristulata</i>	--	--	2	Grows in moist soil and mud, often comprised of fine sand and silt, in bottomlands, sandbars, and beaches at low elevations of 330 to 1,300 feet (WNHP 2010).	No	No
Northern twayblade	<i>Listera borealis</i>	--	--	2	Generally montane in moist or wet forest conditions of variable light (Hitchcock and Cronquist 1973)	Suspected	Yes (PacifiCorp 1993)
Greenman's desert parsley	<i>Lomatium greenmani</i>	SOC	LT	1	This species occurs between approximately 7,700 to 8,600 feet in the Wallowa Mountains. It prefers open subalpine meadows, fell fields and eroded ridge tops with islands of subalpine fir-white bark pine (<i>Abies lasiocarpa</i> - <i>Pinus albicaulis</i>) (USFS 2010d).	Suspected (ORBIC 2010b)	Yes

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Membrane-leaved monkeyflower	<i>Mimulus hymenophyllus</i>	SOC	C	1	Occurs in wet, mesic forests in the Snake River Canyon between elevation of 2,790 and 4,265 feet (Oregon Flora Project 2010).	No	No
Stalked-leaved monkeyflower	<i>Mimulus patulus</i>	--	C	4	Moist basaltic seeps, ephemeral seeps with fine gravel in relatively undisturbed, winter-wet, summer-dry canyon grasslands (WNHP 2010).	No	No
MacFarlane's four o'clock	<i>Mirabilis marfarlanei</i>	LT	LE	1	Rock slides and canyon walls, in sandy to gravelly talus in the Snake and Imnaha River Canyons (Oregon Flora Project 2010).	No	No
Least phacelia	<i>Phacelia minutissima</i>	SOC	C	1	Ephemerally moist open places at middle elevations (4,600 to 8,200 feet) in the mountains (WNHP 2010).	Yes	Yes
Henderson phlox	<i>Phlox hendersonii</i>	--	--	2	Moderate to high elevation mountains (Hitchcock and Cronquist 1973).	Suspected	Yes
Small Northern bog-orchid	<i>Platanthera obtusata</i>	--	--	2	A facultative wetland species that occurs in damp or wet places in forests with an average canopy cover of 50 percent, marshes, bogs, meadows, and along stream banks. Elevations range from 800 to 5,000 feet. (WNHP 2010).	Yes	Yes (PacifiCorp 1993)
Wallowa primrose	<i>Primula cusickiana</i>	--	--	2	Mid-montane to subalpine (Hitchcock and Cronquist 1973).	Suspected (ORBIC 2010b)	Yes
Rough pyrrocoma	<i>Pyrrocoma scaberula</i>	--	--	1	Occurs in large tracts of natural grasslands in the Palouse and Snake River Canyons/Camas Prairie regions (Bjork, C. and M. Darrach 2009).	No	No
Bartonberry	<i>Rubus bartonianus</i>	SOC	C	1	Occurs in Snake River Canyon on rock talus and cliff crevice, or forms thickets along stream banks (USFS 2010d, Oregon Flora Project 2010).	No	No
Farr's willow	<i>Salix farriae</i>	--	--	2	Wet to moist meadows and stream banks in the montane and subalpine zones (E-flora BC 2010)	Suspected (ORBIC 2010b)	Yes (PacifiCorp 1993)

Common Name	Scientific Name	Federal Status	ODA Status	ORBIC Status	Habitat Descriptions	Species present within the Project Vicinity	Habitat within the Project Vicinity
Wolf's willow	<i>Salix wolfii</i>	--	--	2	Occurs in stream banks, springs, wet meadows, and bogs between 6,500-12,450 feet (E-flora 2010)	Suspected	Yes
Wedge-leaf saxifrage	<i>Saxifraga adscendens</i> ssp. <i>oregonensis</i>	--	--	2	Moist cliffs, ledges, and scree slopes in the alpine zone (E-flora BC 2010).	Suspected	Yes
Spalding's catchfly	<i>Silene spaldingii</i>	LT	LE	1	Occurs primarily within open grasslands with a minor shrub component and occasionally with scattered conifers. It is found most commonly in the Idaho fescue/snowberry association at elevations of 1,900-3,050 feet. Populations have been found on all aspects, although there seems to be a preference for north face slopes (WNHP 2010).	No	No
Violet suksdorfia	<i>Suksdorfia violacea</i>	--	--	2	Moist rocky ledges, crevices and shady sandy places in the montane and subalpine zones (E-flora BC 2010).	Suspected	Yes
Mountain townsendia	<i>Townsendia montana</i>	--	--	2	Grows in meadows and granite and limestone ridges at elevations between 6,560–10,170 ft (E-flora 2010).	Suspected (ORBIC 2010b)	Yes
Parry's townsendia	<i>Townsendia parryi</i>	--	--	2	Dry rocky slopes in the alpine zone between 4,900 and 8,200 feet (E-flora BC 2010).	Suspected	Yes
American globeflower	<i>Trollius laxus</i> var. <i>albiflorus</i>	--	--	2	Wet to moist meadows and stream banks in the subalpine and alpine zones (E-flora BC 2010).	Suspected	Yes
Lesser bladderwort	<i>Utricularia minor</i>	--	--	2	An obligate wetland species that occurs in low nutrient lakes and peatbog pools in the lowland and montane zones at elevations from 135 to 4,000 feet (WNHP 2010).	No	No

Sensitive Plant List - Wallowa Whitman National Forest
January 31, 2008

(Vascular Plants)					
ScientificName	CommonName	ISSSP Status	MAL	UMA	WAW
ACHNATHERUM WALLOWAENSIS	WALLOWA RICEGRASS	OR-SEN	S		D
ALLIUM GEYERI VAR. GEYERI	GEYER'S ONION	OR-SEN			D
ARABIS HASTATULA	HELLS CANYON ROCKCRESS	OR-SEN			D
ASPLENIUM TRICHOMANES-RAMOSUM	GREEN SPLEENWORT	OR-SEN			D
BOTRYCHIUM ASCENDENS	UPWARD-LOBED MOONWORT	SEN	D		D
BOTRYCHIUM CAMPESTRE	PRAIRIE MOONWORT	OR-SEN			D
BOTRYCHIUM CRENULATUM	CRENULATE MOONWORT	SEN	D	D	D
BOTRYCHIUM LINEARE	SLENDER MOONWORT	SEN		S	D
BOTRYCHIUM LUNARIA	MOONWORT	OR-SEN		D	D
BOTRYCHIUM MINGANENSE	GRAY MOONWORT	OR-SEN	D	D	D
BOTRYCHIUM MONTANUM	MOUNTAIN GRAPE-FERN	OR-SEN	D	D	D
BOTRYCHIUM PARADOXUM	TWIN-SPIKED MOONWART	SEN		D	D
BOTRYCHIUM PEDUNCULOSUM	STALKED MOONWORT	SEN		S	D
BUPLEURUM AMERICANUM	BUPLEURUM	OR-SEN			D
CALOCHORTUS MACROCARPUS VAR. MACULOSUS	GREEN-BAND MARIPOSA-LILY	SEN		D	D
CALOCHORTUS NITIDUS	BROAD-FRUIT MARIPOSA-LILY	SEN		S	D
CAREX ABRUPTA	ABRUPT-BEAKED SEDGE	OR-SEN		S	D
CAREX ATROSQUAMA	BLACKENED SEDGE	OR-SEN/ WA-STR			D
CAREX CAPILLARIS	HAIRLIKE SEDGE	SEN			D
CAREX CAPITATA	CAPITATE SEDGE	OR-SEN/ WA-STR		S	S
CAREX CORDILLERANA	CORDILLERAN SEDGE	OR-SEN	D	D	D
CAREX DIANDRA	LESSER PANICLED SEDGE	OR-SEN	S	S	S
CAREX DIOICA (VAR. GYNOCRATES)	YELLOW BOG SEDGE	SEN			D
CAREX IDAHOA	IDAHO SEDGE	OR-SEN	D		S
CAREX LASIOCARPA VAR. AMERICANA	SLENDER SEDGE	OR-SEN	S		D
CAREX MEDIA	INTERMEDIATE SEDGE	SEN			D
CAREX NARDINA	SPIKENARD SEDGE	OR-SEN			D
CAREX PELOCARPA	NEW SEDGE	OR-SEN			D
CAREX PYRENAICA SSP. MICROPODA	PYRENAEAN SEDGE	OR-SEN			D
CAREX RETRORSA	RETRORSE SEDGE	OR-SEN	S	S	D
CAREX SUBNIGRICANS	DARK ALPINE SEDGE	OR-SEN			D
CAREX VERNACULA	NATIVE SEDGE	OR-SEN	S	S	D
CASTILLEJA FRATERNA	FRATERNAL PAINTBRUSH	OR-SEN			D
CASTILLEJA RUBIDA	PURPLE ALPINE PAINTBRUSH	OR-SEN			D
CHEILANTHES FEEI	FEE'S LIP-FERN	SEN	S	S	D
CRYPTOGRAMMA STELLERI	STELLER'S ROCKBRAKE	SEN			S
CYPERUS LUPULINUS SSP. LUPULINUS	A CYPERUS	OR-SEN		S	D
CYPRIPEDIUM FASCICULATUM	CLUSTERED LADY'S-SLIPPER	SEN		D	D
ELATINE BRACHYSPERMA	SHORT SEEDED WATERWORT	OR-SEN	S	S	S
ELEOCHARIS BOLANDERI	BOLANDER'S SPIKERUSH	OR-SEN	D	D	D
ERIGERON DISPARIPILUS	WHITE CUSHION ERIGERON	OR-SEN		D	D
ERIGERON ENGELMANNII VAR. DAVISII	ENGELMANN'S DAISY	OR-SEN/ WA-STR			D
GENTIANA PROSTRATA	MOSS GENTIAN	OR-SEN			S
GENTIANELLA TENELLA SSP. TENELLA	SLENDER GENTIAN	OR-SEN			S
HELIOTROPIUM CURASSAVICUM	SALT HELIOTROPE	OR-SEN	S	S	S
JUNCUS TRIGLUMIS VAR. ALBESCENS	THREE-FLOWERED RUSH	OR-SEN			D
KOBRESIA BELLARDII	BELLARD'S KOBRESIA	OR-SEN			D
KOBRESIA SIMPLICIUSCULA	SIMPLE KOBRESIA	OR-SEN			D

ScientificName	CommonName	ISSSPStat	MAL	UMA	WAW
LIPOCARPHA ARISTULATA	ARISTULATE LIPOCARPHA	SEN	S	S	D
LISTERA BOREALIS	NORTHERN TWAYBLADE	OR-SEN	D		D
LOMATIUM ERYTHROCARPUM	RED-FRUITED LOMATIUM	OR-SEN	S		D
LOMATIUM GREENMANII	GREENMAN'S DESERT PARSLEY	OR-SEN			D
LOMATIUM RAVENII	RAVEN'S LOMATIUM	OR-SEN	D		S
LYCOPODIUM COMPLANATUM	GROUND CEDAR	OR-SEN		S	D
MIMULUS HYMENOPHYLLUS	MEMBRANE-LEAVED MONKEYFLOWER	OR-SEN			D
MIRABILIS MACFARLANEI	MACFARLANE'S FOUR-O'CLOCK	Threatened			d
MUHLENBERGIA MINUTISSIMA	ANNUAL DROPSEED	OR-SEN	S	S	S
OPHIOGLOSSUM PUSILLUM	ADDER'S-TONGUE	SEN			D
PELLAEA BRIDGESII	BRIDGES' CLIFF-BRAKE	OR-SEN	S		D
PHACELIA MINUTISSIMA	DWARF PHACELIA	SEN	D	S	D
PHLOX MULTIFLORA	MANY-FLOWERED PHLOX	OR-SEN		S	D
PLATANThERA OBTUSATA	SMALL NORTHERN BOG-ORCHID	SEN			D
PLEUROPOGON OREGONUS	OREGON SEMAPHOREGRASS	OR-SEN			S
POTAMOGETON DIVERSIFOLIUS	RAFINESQUE'S PONDWEED	OR-SEN	S	S	S
RORIPPA COLUMBIAE	COLUMBIA CRESS	SEN			S
RODALA RAMOSIOR	LOWLAND TOOTH CUP	SEN	S	S	S
RUBUS BARTONIANUS	BARTONBERRY	OR-SEN			D
SALIX FARRIAE	FARR'S WILLOW	OR-SEN			D
SALIX WOLFII	WOLF'S WILLOW	OR-SEN	S	S	D
SAXIFRAGA ADSCENDENS SSP. OREGONENSIS	WEDGE-LEAF SAXIFRAGE	OR-SEN			D
SENECIO DIMORPHOPHYLLUS	PAYSON'S GROUNDSEL	OR-SEN			D
SILENE SPALDINGII	SPALDING CATCH-FLY	Threatened		D	D
SUKSDORFIA VIOLACEA	VIOLET SUKSDORFIA	OR-SEN		S	S
THALICTRUM ALPINUM	ALPINE MEADOWRUE	OR-SEN			D
THELYPODIUM EUCOSMUM	ARROW-LEAF THELYPODY	OR-SEN	D	D	S
TOWNSENDIA MONTANA	MOUNTAIN TOWNSENDIA	OR-SEN			D
TOWNSENDIA PARRYI	PARRY'S TOWNSENDIA	OR-SEN			D
TRIFOLIUM DOUGLASII	DOUGLAS' CLOVER	SEN		D	D
TROLLIUS LAXUS VAR. ALBIFLORUS	AMERICAN GLOBEFLOWER	OR-SEN			D
UTRICULARIA MINOR	LESSER BLADDERWORT	OR-SEN/ WA-STR	S	S	S
(Non-Vascular Plants)					
BARBILOPHOZIA LYCOPODIOIDES	LIVERWORT	OR-SEN			D
ENCALYPTA INTERMEDIA	MOSS	OR-SEN	S	S	D
HELODIUM BLANDOWII	MOSS	OR-SEN	D	D	S
JUNGERMANNIA POLARIS	LIVERWORT	OR-SEN	S	S	D
PELTOLEPIS QUADRATA	LIVERWORT	OR-SEN	S	S	D
PTILIDIUM PULCHERRIMUM	LIVERWORT	OR-SEN		S	S
RHIZOMNIUM NUDUM	MOSS	OR-SEN		S	S
SCHISTIDIUM CINCLIDODONTEUM	MOSS	OR-SEN	S	S	D
SCHISTOSTEGA PENNATA	MOSS	SEN		S	S
SPLACHNUM AMPULLACEUM	MOSS	OR-SEN	S	S	S
TETRAPHIS GENICULATA	MOSS	SEN		S	S
TOMENTYPNUM NITENS	MOSS	OR-SEN	S	S	S
TORTULA MUCRONIFOLIA	MOSS	OR-SEN	S	S	S
DERMATOCARPON MEIOPHYLLIZUM	LICHEN	SEN	S	S	S
LEPTOGIUM BURNETIAE	LICHEN	SEN	S	S	S
LEPTOGIUM CYANESCENS	LICHEN	SEN		S	S
PELTIGERA PACIFICA	LICHEN	SEN		S	S

Strategic Plant List - Wallowa-Whitman National Forest

(Vascular Plants)					
ScientificName	CommonName	ISSSSP Status	MAL	UMA	WAW
BOTRYCHIUM HESPERIUM	WESTERN MOONWORT	OR-STR/ WA-SEN			D
CAREX ELEOCHARIS	INVOLUTE-LEAVED SEDGE	OR-STR		S	S
CICUTA BULBIFERA	BULB-BEARING WATER-HEMLOCK	OR-STR/ WA-SEN			S
CRYPTANTHA THOMPSONII	THOMPSON'S CRYPTANTHA	OR-STR			D
LEPTODACTYLON PUNGENS SSP. HAZELIAE	HAZEL'S PRICKLY-PHLOX	OR-STR		D	D
TRIFOLIUM PLUMOSUM SSP. AMPLIFOLIUM	BIGLEAF CLOVER	OR-STR			S
(Non-Vascular Plants)					
ANASTROPHYLLUM MINUTUM	LIVERWORT	OR-STR			D
ANTHELIA JULACEA	LIVERWORT	OR-STR			D
LOPHOZIA GILMANII	LIVERWORT	OR-STR			D
PREISSIA QUADRATA	LIVERWORT	OR-STR	S	S	D
ANOMOBRYUM JULACEUM	MOSS	OR-STR			
BUXBAUMIA APHYLLA	MOSS	OR-STR			D
MNIUM BLYTII	MOSS	OR-STR			D
ORTHOTRICHUM EURYPHYLLUM	MOSS	OR-STR			D
ORTHOTRICHUM HOLZINGERI	MOSS	OR-STR		S	S
ORTHOTRICHUM PELLUCIDUM	MOSS	OR-STR	S	S	D
PSEUDOLESKEELLA TECTORUM	MOSS	OR-STR	D	S	S
SCOULERIA MARGINATA	MOSS	OR-STR/ WA-SEN		S	S
TORTELLA TORTUOSA	MOSS	OR-STR			S
COLLEMA CURTISPORUM	LICHEN	OR-STR			D
THELENELLA MUSCORUM VAR. OCTOSPORA	LICHEN	OR-STR	S	S	S

Management for Strategic Species

- Sensitive Species policies as described in FSM 2670 and BLM 6840 do not apply
- Analysis in BE/NEPA documents is not required
- Collection of information to remove uncertainties will be coordinated at the RO/SO level (ISSSSP)
- If sites are located, field units are required to collect occurrence data and enter into FS – NRIS).

2004 RFSS Species Dropped from 2008 RFSS List - WAW

SENSITIVE SPECIES	Authority	RFSS	WAW	Notes
<i>Peltigera neckeri</i>		W/O	S	
<i>Scouleria marginata</i>		W/O	S	strategic
<i>Botrychium hesperium</i>		W/O	D	strategic
<i>Botrychium lanceolatum</i>	(Gmel.) Angstrom	O	D	
<i>Botrychium pinnatum</i>	St. John	O	D	
<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i>	S. Wats.	W/O	D	
<i>Carex hystericina</i>	Muhl. ex Willd.	W/O	D	
<i>Carex interior</i>	L. Bailey	O	D	
<i>Carex eleocharis</i>	C.A. Mey.	W/O	D	strategic
<i>Cicuta bulbifera</i>			S	strategic
<i>Howellia aquatilis</i>	Gray	W/O	S	no habitat
<i>Leptodactylon pungens</i> ssp. <i>hazeliae</i>	(Torr.) Nutt. ex Rydb.(Peck) Meinke	O	D	remains HCNRA endemic
<i>Lomatium salmoniflorum</i>	(Coul. & Rose) Mathias & Constance	O	S	
<i>Mimulus clivicola</i>	Greenm.	O	D	
<i>Primula cusickiana</i>	Gray	O	D	
<i>Spiranthes diluvialis</i>		W	S	no habitat
<i>Thelypodium howellii</i> ssp. <i>spectabilis</i>	S. Wats. - (M.E. Peck) Al- Shehbaz	O	S	no habitat

Additions to 2008 RFSS List - WAW

(Vascular Plants)					
ScientificName	CommonName	ISSSSPStat	MAL	UMA	WAW
ASPLENIUM TRICHOMANES-RAMOSUM	GREEN SPLEENWORT	OR-SEN			D
BUPLEURUM AMERICANUM	BUPLEURUM	OR-SEN			D
CAREX ABRUPTA	ABRUPT-BEAKED SEDGE	OR-SEN		S	D
CAREX CAPITATA	CAPITATE SEDGE	OR-SEN/ WA-STR		S	S
CAREX DIANDRA	LESSER PANICLED SEDGE	OR-SEN	S	S	S
CAREX LASIOCARPA VAR. AMERICANA	SLENDER SEDGE	OR-SEN	S		D
CAREX PYRENAICA SSP. MICROPODA	PYRENAEAN SEDGE	OR-SEN			D
CAREX RETRORSA	RETRORSE SEDGE	OR-SEN	S	S	D
CAREX SUBNIGRICANS	DARK ALPINE SEDGE	OR-SEN			D
CAREX VERNACULA	NATIVE SEDGE	OR-SEN	S	S	D
CHEILANTHES FEEI	FEE'S LIP-FERN	SEN	S	S	D
CRYPTOGRAMMA STELLERI	STELLER'S ROCKBRAKE	SEN			S
CYPERUS LUPULINUS SSP. LUPULINUS	A CYPERUS	OR-SEN		S	D
ELATINE BRACHYSPERMA	SHORT SEEDED WATERWORT	OR-SEN	S	S	S
ELEOCHARIS BOLANDERI	BOLANDER'S SPIKERUSH	OR-SEN	D	D	S
GENTIANA PROSTRATA	MOSS GENTIAN	OR-SEN			S
GENTIANELLA TENELLA SSP. TENELLA	SLENDER GENTIAN	OR-SEN			S
HELIOTROPIMUM CURASSAVICUM	SALT HELIOTROPE	OR-SEN	S	S	S
JUNCUS TRIGLUMIS VAR. ALBESCENS	THREE-FLOWERED RUSH	OR-SEN			D
LIPOCARPHA ARISTULATA	ARISTULATE LIPOCARPHA	SEN	S	S	D
MUHLENBERGIA MINUTISSIMA	ANNUAL DROPSEED	OR-SEN	S	S	S
POTAMOGETON DIVERSIFOLIUS	RAFINESQUE'S PONDWEED	OR-SEN	S	S	S
ROOTALA RAMOSIOR	LOWLAND TOOTH CUP	SEN	S	S	S
SALIX WOLFII	WOLF'S WILLOW	OR-SEN	S	S	D
UTRICULARIA MINOR	LESSER BLADDERWORT	OR-SEN/ WA-STR	S	S	S
(Non-Vascular Plants)					
ScientificName	CommonName	ISSSSPStat	MAL	UMA	WAW
BARBILOPHOZIA LYCOPODIOIDES	LIVERWORT	OR-SEN			D
ENCALYPTA INTERMEDIA	MOSS	OR-SEN	S	S	D
HELODIUM BLANDOWII	MOSS	OR-SEN	D	D	S
JUNGERMANNIA POLARIS	LIVERWORT	OR-SEN	S	S	D
PELTOLEPIS QUADRATA	LIVERWORT	OR-SEN	S	S	D
PTILIDIUM PULCHERRIMUM	LIVERWORT	OR-SEN		S	S
SCHISTIDIUM CINCLIDODONTEUM	MOSS	OR-SEN	S	S	D
SPLACHNUM AMPULLACEUM	MOSS	OR-SEN	S	S	S
TOMENTYPNUM NITENS	MOSS	OR-SEN	S	S	S
TORTULA MUCRONIFOLIA	MOSS	OR-SEN	S	S	S
PELTIGERA PACIFICA	LICHEN	SEN		S	S

Nomeclature Changes from 2004 to 2008 RFSS List

2004 RFSS name	2008 RFSS Name
Botrychium fenestratum	Botrychium hesperium
Carex norvegica	Carex media
Carex nova	Carex pelocarpa
Carex parryana	Carex idahoa
Thalictrum alpinum var. hebetum	Thalictrum alpinum
Dermatocarpon luridum	Dermatocarpon meiophyllizum
Leptogium burnetiae var. hirsutum	Leptogium burnetiae

Potential Sensitive Plant List - Wallowa Falls Hydroelectric Project

Those species highlighted in yellow have a reasonable potential to be found in the Project Vicinity

1/31/2008 (last list update)

D=Documented on Forest,
S=Suspected on Forest

(Vascular Plants)					
ScientificName	CommonName	ISSSP Status	MAL	UMA	WAW
ACHNATHERUM WALLOWAENSIS	WALLOWA RICEGRASS	OR-SEN	S		D
ALLIUM GEYERI VAR. GEYERI	GEYER'S ONION	OR-SEN			D
ARABIS HASTATULA	HELLS CANYON ROCKCRESS	OR-SEN			D
ASPLENIUM TRICHOMANES-RAMOSUM	GREEN SPLEENWORT	OR-SEN			D
BOTRYCHIUM ASCENDENS	UPWARD-LOBED MOONWORT	SEN	D		D
BOTRYCHIUM CAMPESTRE	PRAIRIE MOONWORT	OR-SEN			D
BOTRYCHIUM CRENULATUM	CRENULATE MOONWORT	SEN	D	D	D
BOTRYCHIUM LINEARE	SLENDER MOONWORT	SEN		S	D
BOTRYCHIUM LUNARIA	MOONWORT	OR-SEN		D	D
BOTRYCHIUM MINGANENSE	GRAY MOONWORT	OR-SEN	D	D	D
BOTRYCHIUM MONTANUM	MOUNTAIN GRAPE-FERN	OR-SEN	D	D	D
BOTRYCHIUM PARADOXUM	TWIN-SPIKED MOONWART	SEN		D	D
BOTRYCHIUM PEDUNCULOSUM	STALKED MOONWORT	SEN		S	D
BUPLEURUM AMERICANUM	BUPLEURUM	OR-SEN			D
CALOCHORTUS MACROCARPUS VAR. MACULOSUS	GREEN-BAND MARIPOSA-LILY	SEN		D	D
CALOCHORTUS NITIDUS	BROAD-FRUIT MARIPOSA-LILY	SEN		S	D
CAREX ABRUPTA	ABRUPT-BEAKED SEDGE	OR-SEN		S	D
CAREX ATROSQUAMA	BLACKENED SEDGE	OR-SEN/ WA-STR			D
CAREX CAPILLARIS	HAIRLIKE SEDGE	SEN			D
CAREX CAPITATA	CAPITATE SEDGE	OR-SEN/ WA-STR		S	S
CAREX CORDILLERANA	CORDILLERAN SEDGE	OR-SEN	D	D	D
CAREX DIANDRA	LESSER PANICLED SEDGE	OR-SEN	S	S	S
CAREX DIOICA (VAR. GYNOCRATES)	YELLOW BOG SEDGE	SEN			D
CAREX IDAHOA	IDAHO SEDGE	OR-SEN	D		S
CAREX LASIOCARPA VAR. AMERICANA	SLENDER SEDGE	OR-SEN	S		D
CAREX MEDIA	INTERMEDIATE SEDGE	SEN			D
CAREX NARDINA	SPIKENARD SEDGE	OR-SEN			D
CAREX PELOCARPA	NEW SEDGE	OR-SEN			D
CAREX PYRENAICA SSP. MICROPODA	PYRENAEAN SEDGE	OR-SEN			D
CAREX RETRORSA	RETRORSE SEDGE	OR-SEN	S	S	D
CAREX SUBNIGRICANS	DARK ALPINE SEDGE	OR-SEN			D
CAREX VERNACULA	NATIVE SEDGE	OR-SEN	S	S	D
CASTILLEJA FRATERNA	FRATERNAL PAINTBRUSH	OR-SEN			D
CASTILLEJA RUBIDA	PURPLE ALPINE PAINTBRUSH	OR-SEN			D
CHEILANTHES FEEI	FEE'S LIP-FERN	SEN	S	S	D
CRYPTOGRAMMA STELLERI	STELLER'S ROCKBRAKE	SEN			S
CYPERUS LUPULINUS SSP. LUPULINUS	A CYPERUS	OR-SEN		S	D
CYPRIPEDIUM FASCICULATUM	CLUSTERED LADY'S-SLIPPER	SEN		D	D
ELATINE BRACHYSPERMA	SHORT SEEDED WATERWORT	OR-SEN	S	S	S
ELEOCHARIS BOLANDERI	BOLANDER'S SPIKERUSH	OR-SEN	D	D	D
ERIGERON DISPARIPILUS	WHITE CUSHION ERIGERON	OR-SEN		D	D
ERIGERON ENGELMANNII VAR. DAVISII	ENGELMANN'S DAISY	OR-SEN/ WA-STR			D
GENTIANA PROSTRATA	MOSS GENTIAN	OR-SEN			S
GENTIANELLA TENELLA SSP. TENELLA	SLENDER GENTIAN	OR-SEN			S
HELIOTROPIMUM CURASSAVICUM	SALT HELIOTROPE	OR-SEN	S	S	S

ScientificName	CommonName	ISSSPStat	MAL	UMA	WAW
JUNCUS TRIGLUMIS VAR. ALBESCENS	THREE-FLOWERED RUSH	OR-SEN			D
KOBRESIA BELLARDII	BELLARD'S KOBRESIA	OR-SEN			D
KOBRESIA SIMPLICIUSCULA	SIMPLE KOBRESIA	OR-SEN			D
LIPOCARPHA ARISTULATA	ARISTULATE LIPOCARPHA	SEN	S	S	D
LISTERA BOREALIS	NORTHERN TWAYBLADE	OR-SEN	D		D
LOMATIUM ERYTHROCARPUM	RED-FRUITED LOMATIUM	OR-SEN	S		D
LOMATIUM GREENMANII	GREENMAN'S DESERT PARSLEY	OR-SEN			D
LOMATIUM RAVENII	RAVEN'S LOMATIUM	OR-SEN	D		S
LYCOPODIUM COMPLANATUM	GROUND CEDAR	OR-SEN		S	D
MIMULUS HYMENOPHYLLUS	MEMBRANE-LEAVED MONKEYFLOWER	OR-SEN			D
MIRABILIS MACFARLANEI	MACFARLANE'S FOUR-O'CLOCK	Threatened			d
MUHLENBERGIA MINUTISSIMA	ANNUAL DROPSEED	OR-SEN	S	S	S
OPHIOGLOSSUM PUSILLUM	ADDER'S-TONGUE	SEN			D
PELLAEA BRIDGESII	BRIDGES' CLIFF-BRAKE	OR-SEN	S		D
PHACELIA MINUTISSIMA	DWARF PHACELIA	SEN	D	S	D
PHLOX MULTIFLORA	MANY-FLOWERED PHLOX	OR-SEN		S	D
PLATANThERA OBTUSATA	SMALL NORTHERN BOG-ORCHID	SEN			D
PLEUROPOGON OREGONUS	OREGON SEMAPHOREGRASS	OR-SEN			S
POTAMOGETON DIVERSIFOLIUS	RAFINESQUE'S PONDWEED	OR-SEN	S	S	S
RORIPPA COLUMBIAE	COLUMBIA CRESS	SEN			S
ROOTALA RAMOSIOR	LOWLAND TOOTH CUP	SEN	S	S	S
RUBUS BARTONIANUS	BARTONBERRY	OR-SEN			D
SALIX FARRIAE	FARR'S WILLOW	OR-SEN			D
SALIX WOLFII	WOLF'S WILLOW	OR-SEN	S	S	D
SAXIFRAGA ADSCENDENS SSP. OREGONENSIS	WEDGE-LEAF SAXIFRAGE	OR-SEN			D
SENECIO DIMORPHOPHYLLUS	PAYSON'S GROUNDSEL	OR-SEN			D
SILENE SPALDINGII	SPALDING CATCH-FLY	Threatened		D	D
SUKSDORFIA VIOLACEA	VIOLET SUKSDORFIA	OR-SEN		S	S
THALICTRUM ALPINUM	ALPINE MEADOWRUE	OR-SEN			D
THELYPODIUM EUCOSMUM	ARROW-LEAF THELYPODY	OR-SEN	D	D	S
TOWNSENDIA MONTANA	MOUNTAIN TOWNSENDIA	OR-SEN			D
TOWNSENDIA PARRYI	PARRY'S TOWNSENDIA	OR-SEN			D
TRIFOLIUM DOUGLASII	DOUGLAS' CLOVER	SEN		D	D
TROLLIUS LAXUS VAR. ALBIFLORUS	AMERICAN GLOBEFLOWER	OR-SEN			D
UTRICULARIA MINOR	LESSER BLADDERWORT	OR-SEN/ WA-STR	S	S	S
(Non-Vascular Plants)					
BARBILOPHOZIA LYCOPODIOIDES	LIVERWORT	OR-SEN			D
ENCALYPTA INTERMEDIA	MOSS	OR-SEN	S	S	D
HELODIUM BLANDOWII	MOSS	OR-SEN	D	D	S
JUNGERMANNIA POLARIS	LIVERWORT	OR-SEN	S	S	D
PELTOLEPIS QUADRATA	LIVERWORT	OR-SEN	S	S	D
PTILIDIUM PULCHERRIMUM	LIVERWORT	OR-SEN		S	S
RHIZOMNIUM NUDUM	MOSS	OR-SEN		S	S
SCHISTIDIUM CINCLIDODONTEUM	MOSS	OR-SEN	S	S	D
SCHISTOSTEGA PENNATA	MOSS	SEN		S	S
SPLACHNUM AMPULLACEUM	MOSS	OR-SEN	S	S	S
TETRAPHIS GENICULATA	MOSS	SEN		S	S
TOMENTYPNUM NITENS	MOSS	OR-SEN	S	S	S
TORTULA MUCRONIFOLIA	MOSS	OR-SEN	S	S	S
DERMATOCARPON MEIOPHYLLIZUM	LICHEN	SEN	S	S	S

(Non-Vascular Plants)					
LEPTOGIUM BURNETIAE	LICHEN	SEN	S	S	S
LEPTOGIUM CYANESCENS	LICHEN	SEN		S	S
PELTIGERA PACIFICA	LICHEN	SEN		S	S

Nomeclature Changes from 2004 to 2008 RFSS List

2004 RFSS name	2008 RFSS Name
Botrychium fenestratum	Botrychium hesperium
Carex norvegica	Carex media
Carex nova	Carex pelocarpa
Carex parryana	Carex idahoa
Thalictrum alpinum var. hebetum	Thalictrum alpinum
Dermatocarpon luridum	Dermatocarpon meiophyllizum
Leptogium burnetiae var. hirsutum	Leptogium burnetiae

**FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES
AND SPECIES OF CONCERN
UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE
WHICH MAY OCCUR WITHIN WALLOWA COUNTY, OREGON**

LISTED SPECIES

Fish

Inland:

Bull trout	<i>Salvelinus confluentus</i>	CH T
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Plants

MacFarlane's four o'clock	<i>Mirabilis macfarlanei</i>	T
Spalding's catchfly	<i>Silene spaldingii</i>	T

PROPOSED SPECIES

None

No Proposed Endangered Species	PE
No Proposed Threatened Species	PT

CANDIDATE SPECIES

Mammals

North American wolverine	<i>Gulo gulo luscus</i>
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SPECIES OF CONCERN

Mammals

Townsend's western big-eared bat	<i>Corynorhinus townsendii townsendii</i>
Spotted bat	<i>Euderma maculatum</i>
Silver-haired bat	<i>Lasionycteris noctivagans</i>
Small-footed myotis bat	<i>Myotis ciliolabrum</i>
Long-eared myotis bat	<i>Myotis evotis</i>
Fringed myotis bat	<i>Myotis thysanodes</i>
Long-legged myotis bat	<i>Myotis volans</i>
Yuma myotis bat	<i>Myotis yumanensis</i>
Preble's shrew	<i>Sorex preblei</i>

Birds

Northern goshawk	<i>Accipiter gentilis</i>
Western burrowing owl	<i>Athene cunicularia hypugaea</i>
Ferruginous hawk	<i>Buteo regalis</i>
Olive-sided flycatcher	<i>Contopus cooperi</i>
Willow flycatcher	<i>Empidonax traillii adastus</i>
Harlequin duck	<i>Histrionicus histrionicus</i>
Yellow-breasted chat	<i>Icteria virens</i>
Lewis' woodpecker	<i>Melanerpes lewis</i>
Mountain quail	<i>Oreortyx pictus</i>
White-headed woodpecker	<i>Plcoides albolarvatus</i>
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>

**FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES
AND SPECIES OF CONCERN
UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE
WHICH MAY OCCUR WITHIN WALLOWA COUNTY, OREGON**

Reptiles and Amphibians

Rocky Mountain tailed frog
Coastal tailed frog

Ascaphus montanus
Ascaphus truei

Fish

Pacific lamprey

Lampetra tridentata

Invertebrates

Snails:

Columbia pebblesnail

Fluminicola fuscus (= *columbianus*)

Plants

Wallowa ricegrass
Blue Mountain onion
Hell's Canyon rock-cress
Upward-lobed moonwort
Prairie moonwort
Crenulate grape fern
Mountain grape fern
Twin-spike moonwort
Stalked moonwort
Green-band mariposa lily
Broad-fruit mariposa lily
Fraternal paintbrush
Purple alpine paintbrush
Englemann's daisy
Hazel's prickly-phlox
Greenman's desert parsley
Membrane-leaved monkeyflower
Least phacelia
Bartonberry

Achnatherum wallowaensis
Allium dictyon
Arabis hastatula
Botrychium ascendens
Botrychium campestre
Botrychium crenulatum
Botrychium montanum
Botrychium paradoxum
Botrychium pedunculatum
Calochortus macrocarpus var. *maculosus*
Calochortus nitidus
Castilleja fraterna
Castilleja rubida
Erigeron engelmannii var. *davisii*
Leptodactylon pungens ssp. *hazeliae*
Lomatium greenmani
Mimulus hymenophyllus
Phacelia minutissima
Rubus bartonianus

DELISTED SPECIES

Mammals

Terrestrial:

Gray wolf
(Rocky Mountain distinct population segment)

Canis lupus

Birds

American Peregrine falcon
Bald eagle

Falco peregrinus anatum
Haliaeetus leucocephalus

Definitions:

Listed Species: An endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future.

**FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES
AND SPECIES OF CONCERN
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Proposed Species: Taxa for which the Fish and Wildlife Service or National Marine Fisheries Service has published a proposal to list as endangered or threatened in the Federal Register.

Candidate Species: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.

Species of Concern: Taxa whose conservation status is of concern to the U.S. Fish and Wildlife Service (many previously known as Category 2 candidates), but for which further information is still needed. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing.

Delisted Species: A species that has been removed from the Federal list of endangered and threatened wildlife and plants.

Key:

E	Endangered
T	Threatened
CH	Critical Habitat has been designated for this species
PE	Proposed Endangered
PT	Proposed Threatened
PCH	Critical Habitat has been proposed for this species

Notes:

Marine & Anadromous Species: Please consult the National Marine Fisheries Service (NMFS) (<http://www.nmfs.noaa.gov/pr/species/>) for marine and anadromous species. The National Marine Fisheries Service (NMFS) manages mostly marine and anadromous species, while the U.S. Fish and Wildlife Service manages the remainder of the listed species, mostly terrestrial and freshwater species.

Marine Turtle Conservation and Management: All six species of sea turtles occurring in the U.S. are protected under the Endangered Species Act of 1973. In 1977, NOAA Fisheries and the U.S. Fish and Wildlife Service signed a Memorandum of Understanding to jointly administer the Endangered Species Act with respect to marine turtles. NOAA Fisheries has the lead responsibility for the conservation and recovery of sea turtles in the marine environment and the U.S. Fish and Wildlife Service has the lead for the conservation and recovery of sea turtles on nesting beaches. For more information, see the NOAA Fisheries webpage on sea turtles <http://www.nmfs.noaa.gov/pr/species/turtles/>.

Gray Wolf: In 2008, the Service published a final rule that established a distinct population segment of the gray wolf (*Canis lupis*) in the northern Rocky Mountains (which includes a portion of Eastern Oregon, east of the centerline of Highway 395 and Highway 78 north of Burns Junction and that portion of Oregon east of the centerline of Highway 95 south of Burns Junction). Any wolves found west of this line in Oregon belong to the conterminous USA population [see 73 FR 10514]. On May 5, 2011, the Fish and Wildlife Service published a final rule – as directed by legislative language in the Fiscal Year 2011 appropriations bill – reinstating the Service's 2009 decision to delist biologically recovered gray wolf populations in the Northern Rocky Mountains. Gray wolves in Oregon are State-listed as endangered, regardless of location.

APPENDIX C

- Wallowa Falls Botanical Inventory Methodology
- Threatened, Endangered, and Sensitive Plants Survey Field Guide
- Threatened, Endangered, and Sensitive Plants Element Occurrence

Attachment 3

Wallowa Falls Botanical Inventory Methodology

Study Proposal Work Description

The work to be performed consists of botanical surveys for **Plant Species of Interest** within the Wallowa Falls Hydroelectric Project Vicinity.

Plant Species of Interest includes Proposed, Threatened, Endangered and Sensitive species on the Wallowa-Whitman Sensitive Plant List. Additional Species of Interest for this project include Wallowa-Whitman Strategic plant species and species from the Wallowa-Whitman (Wallowa County) Noxious Weeds Plant List. In addition to the Wallowa-Whitman Sensitive Plant List, any species with status for Oregon on the U.S. Forest Service Region Six Sensitive Plant List would also be considered a Plant Species of Interest. The W-W Sensitive plant list was created by the Forest based on our best professional judgment of what plants on the Region 6 FS list would have potential to be found on this Forest. There is always the potential for unexpected finds. Plants listed on the U.S. Fish and Wildlife County Species List for National Forests (available on USFWS web site) will also be considered – though these often correspond with the Forest Sensitive species lists.

Surveys for Wallowa Falls Hydroelectric Project rare plants will be conducted using the “intuitive controlled method,” whereby study area habitats with high potential to support these species will be surveyed with greater intensity than areas with low potential (Nelson 1985). This method is often used by the USFS and is one of the most common and efficient ways of surveying for rare plants. Survey protocols for non-vascular plants will also follow those for vascular plants found in the USDA *Threatened, Endangered and Sensitive Plant Survey Field Guide and Form*. Botanists searching for these species typically look for textural differences in the cover of non-vascular plants on trees, soil, or rocks while conducting surveys in potential habitats for vascular and nonvascular rare plants. Habitat features with observed textural differences are investigated further for the presence of rare non-vascular plants, especially in and along streams and riparian areas. Particular attention will be given to mossy rocks, large tree trunks, and down trees when these habitat features are encountered. Surveys should be scheduled to occur throughout two field seasons at times dictated by the most detectable phenological phase of target species plant growth. The timing of the surveys may require fine-tuning depending on the growing season conditions in 2012 & 2013, as well as any changes to the target rare plant list.

Wallowa Falls Hydroelectric Project rare plants will be identified in the field using the Flora of the Pacific Northwest (Hitchcock and Cronquist 1973) with synonymy cross-referenced to new plant names as recorded in the NRCS PLANTS data base. Plant species of questionable or unknown identification will be collected and sent to taxonomic specialists.

Survey should generally be organized in three phases – the Pre-Field Review, Field Work, and Documentation

Pre-Field Review

There are three necessary components in completion of the Pre-field Review – the actual pre-field review effort, a survey design, and a work plan.

The Pre-field Review, when completed, reflects Pacific Power and the Forest Service's review of literature and records of potential Sensitive plants and or known Sensitive Plant sites and the determination of the probability of habitat that may support Sensitive Plants within the Project Vicinity.

Survey Design: This step, precedes field surveys, and defines a survey strategy and how the results will be reported. Depending on the size and complexity of the terrain to be inventoried, the Survey Design may result in the division of the project area into logical survey blocks. These survey areas or blocks should generally be made up of terrain with similar geographic, topographic, geologic, ecologic/habitat, treatment, or access attributes. The survey design should generally account for areas with low, moderate, or high potential habitat for the various Plant Species of Interest, and addresses the requirements of the Field Survey described below.

The Work Plan is a description of approximately when and where project surveys will take place.

Field Surveys

a. The desired outcome of floristic field surveys would focus on conformation to the standards of the professional botanical community. The most favored and accepted technique is the Intuitive-control methodology including the following standard actions:

- search for and verification of **Plant Species of Interest** at known, reported, and all suitable habitat,
- identification to species of all vascular plant species encountered during field surveys,
- a list of all species encountered by each field crew member during field work (one comprehensive list would be turned in as part of the results documentation – see specifics below).

b. A desired outcome of (Intuitive-Control) unit field surveys is that major topographic features and areas of high probability potential habitat, are surveyed by walking routes. A desired outcome of field surveys is also that a representative cross-section of minor topographic features, plant associations, and moderate to low probability habitats are surveyed by walking routes. Each area shall be surveyed intensively enough to locate unique habitats and high probability areas for Sensitive Plants. A representative portion of moderate and low probability habitats shall be surveyed for each area. The location of unique habitat and high probability areas is essential to the Forest Service and can generally be accomplished by physically covering at least 40% of the ground and leaving no unsurveyed areas greater than 5% of the total Project Vicinity. It is assumed that the route walked accounts for a wide observational swath on either side of the surveyor's path. It is not expected that a uniform grid or transect method be deployed as part of the survey methodology. It is expected that the Botanists will apply their best professional judgment (Intuition) in implementing these surveys.

c. As a result of field surveys all Plant Species of Interest shall be looked for in areas that are identified to have potential effects associated with project activities. Professional botanical standards require a 100% intensively walked survey of these areas.

d. The Forest Service maintains a high interest in all "**Special Habitats**" occurring on Forest Service lands. A desired outcome of field surveys shall be to have an inventory and mapping of these Special Habitats to assure that all unique ecological features are located. **Special Habitats for this project area are defined as including aspen stands cottonwood stands, mountain mahogany stands, fens, bogs, springs, wet cliffs, vernal pools, camas meadows (patches), natural caves, natural salt licks ,&calcareous rock outcrops.**

Lastly, if an area is found by the Botanist to be uncommon or azonal within the project area, but is not defined above it should be noted as simply as possible. If you find something really cool and unusual, we want to know!

e. Due to the invasive nature of noxious weeds, various treatments are implemented on Forest Service lands and often coordinated with adjacent private land owners. A desired outcome of field surveys shall be to know if any Sensitive or Strategic species are located in or near known or newly discovered weed sites. This knowledge allows for correct weed treatment decisions to be made. This survey effort should identify which weed species to search for (from the provided Wallowa County List) and the level of documentation is required for each species. Specifications for recording GPS data on selected weed sites are the same as for Sensitive plants – see “Documentation. 3. d.” below.

f. Based on general climatic knowledge and the topographic complexity of the Wallowa-Whitman, it is estimated that the appropriate field survey time falls between April and September. Professional botanical knowledge of plant phenology would allow the professional botanist to fine tune that estimate for a given project area.

Most of the plant species on the Wallowa-Whitman National Forest potential Sensitive plants list can be identified via various plant characteristics over a span of time that could last several weeks although each has an optimal season. A subset of this list can only be positively identified during a short (spring) growth cycle. Not every species of interest can be surveyed for during any given week. It is expected that some areas may need to be visited more than once to properly survey for species that are evident at different times of the field season.

In rare instances, livestock grazing may have reduced the amount of available plant characters used to determine species taxonomy. If habitat is encountered that should be good potential habitat for a given Sensitive plant species, but the plant material is too compromised (from herbivory) to sufficiently determine presence, then document where the habitat is and for what species, such that targeted surveys could be conducted by the Forest Service during future field seasons.

Documentation

Documentation of field survey results assists the Forest Service with resource management. The Forest Service, under Agency policy, the National Forest Management Act (NFMA), and the Endangered Species Act (ESA), must be accountable for finding and protecting rare Plant Species of Interest, and managing the weed species. The following steps in documentation are essential to this accountability:

1. For each project area surveyed the Botanist / Pacific Power shall provide a completed Project Area Report study report containing the following:

a. To confirm the adequacy of field work, a list of all plant species encountered in each survey area shall be kept by the survey team. These lists shall be all inclusive, legible (but not required to be typewritten), and use complete scientific names and Natural Resource Conservation Service (NRCS) “PLANTS” codes for each species encountered, and should be organized by vascular and non vascular plant groups.

b. One typed, comprehensive species list with both complete scientific names and NRCS codes should be provided for each survey area within the Project Vicinity. Plant occurrence by area

may be reported by columns representing area occurrence in one comprehensive project list, or in a format that is found to be efficient by Pacific Power. This (these) list(s) shall also be provided on a computer disc in a Microsoft compatible format. Cite the source for your taxonomic determinations. Provide the synonymy for species with recent taxonomic changes – if new names are used as compared to the taxonomy of the Flora of the Pacific Northwest.

c. Botanical Survey notes shall be completed for each area, without regard to the presence of Plant Species of Interest. These area survey notes should include a **brief** professional description of the general condition of the habitat found within the survey unit.

d. For each survey area, a map of all surveys routes shall be completed. These routes should represent, to the degree feasible, the actual locations walked on the ground. They can be hand drawn or plotted from GPS data. This map shall be keyed to the Botanical Survey notes. Surveys of the same area at different times of the year need to be distinguished. The date of each survey route shall appear on this map (or legend). Report survey routes by depicting them on one of the following: aerial photo copies, or ortho-photo project maps, or topographic quad-style maps generated by the Botanist including township and ranges (electronic shape files of route reporting would also be accepted but not required).

e. For each survey area, a **map** showing the locations of all Sensitive plants, Strategic list plants, and Special Habitats found shall be completed. This shall be on a separate map from the survey routes, and keyed to the Botanical Survey notes. The Botanical Survey notes, when completed, shall discuss Special Habitats and correlate to the map. Each element needs to be distinguished. A legend shall be included which clarifies what each item is. Report these elements by recording as described in d above.

f. For each survey area, a map depicting the locations of all encountered Noxious weed sites (of select species) shall be completed. This shall be on a separate map from d. and e. above, and keyed to the Botanical Survey notes. Each species needs to be distinguished. A legend shall be included which clarifies what each item is, or the complete scientific name of each species found can be indicated next to the dot or polygon. Report these elements by recording as described in d above.

3. To provide the protection of **Sensitive Plants** required under the Forest Service policy, the NFMA, and the ESA, the Forest Service needs to permanently document each Wallowa-Whitman / Region Six Sensitive Plant Population encountered during surveys. Similar, but less detailed reporting is also required for **noxious weed** occurrences and additional **species of interest** – see below in sections 4 & 5.

Assign newly discovered patches of Sensitive plants to an existing occurrence (see c. below) or to a new occurrence based on the site specific situation. Although the contractor will not be assigning occurrence numbers, nor have to make final decisions on occurrence configuration prior to data submission - when filling out occurrence forms for this study apply professional judgement as to what is a distinct occurrence. The intent is to record as many patches as appropriate on as few forms (as few occurrences) as feasible, while still retaining enough detail for management and monitoring purposes. It is expected that the Botanist will rely on a considerable amount of professional judgment to accomplish this task, and will confer with the FS botanist if there are any questions. It is expected that the contractor will need to use some form of temporary number to tie the occurrence form to the report notes and maps.

To facilitate occurrence recording, each Sensitive plant occurrence discovery needs to be documented following the guidelines below:

- a. An R-6 Threatened, Endangered, and Sensitive (TES) Plant Sighting Form (Exhibit B) shall be filled out completely for each Sensitive Plant occurrence found (or revisited) during the course of the survey. **There are many new fields on this years form, to accommodate our new National Resource Information System (NRIS) database program – only the required (“R”) fields need to be competed.** An occurrence will be one to many patches of the plant. One (or more if needed) 8.5 x 11 size map showing the extent of the occurrence location (all the patches in the occurrence) shall be attached to each sighting report. This map can be a copy from the project area map, or a quad-like topographic map. These maps and photos shall be clearly marked with the Quad name, and the Township, Range, and Section that the population is in. Also provide a copy of the corresponding aerial photo (with the occurrence depicted) with each sighting report. This applies only to contracts where the Forest Service supplies aerial photo materials. All plant names used shall be the scientific names, spelled correctly. Provide synonymy for recent taxonomic name changes.

Alternatively, plotted GPS data can be used to create these maps – see below.

- b. A sketch map of the TES occurrence site(s) shall be completed and submitted with the site report. This map shall show local features, and micro habitat information for aiding future relocation. This map shall be clearly marked with the Quad name, and the Township, Range, and Section that the population is in and shall be clearly keyed to the Sighting form. A digital photo of the occurrence, or of each patch in the occurrence should accompany the sketch map, with the photo-point indicated on the sketch map. Depending on the extent and distribution of the particular occurrence it may not be feasible to capture it in one or two digital photos. The Botanist will pick photos they feel best represents the occurrence setting.
- c. To provide for the protection of Sensitive plants, it is imperative to know the current condition of all known Sensitive plant occurrences – new or previously known. Pacific Power will be given copies of existing Sensitive plant occurrence forms (for occurrences with in the units) to go with the provided map(s) of known occurrences in the Project Vicinity. All previously known occurrences within the area will need to be revisited and the Sensitive Plant Sighting form will need to be completed for revisit observations including changes in occurrence distribution patterns. Discoveries of new patches adjacent to known occurrences can be tied to the existing occurrence form when applicable.
- d. Sensitive plant occurrences and noxious weed occurrences need also (in addition to the map drawing discussed above) to be documented with GPS technology. Sensitive plant occurrences less than ½ acre can be delineated with a central point and those greater than ½ acres can be delineated with a suite or cloud of points representing its location on the ground. Flag the GPSed central point location. Apply this guidance to occurrences with multiple patches as the situation requires.

Specifications for collection and mapping with GPS equipment as follows:

All GPS points will also be provided to the Forest Service as UTMs, (Universal Transverse Mercator). This data should be collected in Albers 1983, (the FS preference) or as a second choice, collected in the North American Datum (NAD) 1927 earth model projection. Use only one and state which one was used in the final report. The contractor shall document Sensitive plant and noxious weed occurrences

within survey units with GPS points recorded as UTM coordinates with accuracy of 50 feet or better. These points should be mapped to correspond with mapping instructions above. The GPS point data should also correspond with the mapping requirements discussed in the documentation section. At sites where an accurate GPS reading is not available, due to terrain and/or canopy cover, the points may be marked by hand on corresponding map. The text field in the GPS unit should be used to label the point with the species and occurrence that is being recorded.

In addition to providing a map of the collected points, GPS locations shall be provided to the Government in an electronic format.

e. For occurrences in forested habitats or small openings in forested terrain, a representation of the center of the population shall be clearly flagged, with a 12 inch, or longer, streamer of blue polka-dot flagging. A select number of the flags need to be accompanied with GPS point data representing that patch/occurrence. Directions for relocation shall be detailed enough that the Forest Service may find the site regardless of whether Pacific Power is present. Depict the location of the routes to the occurrence on the sketch map and aerial photo that accompanies the sighting form.

For occurrences in non-forested habitats, implement the following: When the pattern of plant distribution is discretely patchy, utilize red pin flags (instead of the polka-dot ribbon flagging) of appropriate height to delineate the (approximate) center of the patch/occurrence. GPS that flag. Write the species code and date with a permanent marker on each pin flagged used. When the pattern of plant distribution is generally widely scattered individuals (not growing in apparent patches or clusters), utilize red pin flags to mark select individuals or small clusters most represent the setting of the overall occurrence. GPS those flag locations. Key the location of these pin flags to the sketch map and aerial photo attached to the occurrence form. If a distribution pattern is encountered that does not easily fit into one of these scenarios, or the occurrence overall (all patches/sites) is larger than 5 acres, or near a high use / high visibility recreation site, contact the Forest Service and propose a flagging strategy based on your professional judgment. The intent is to provide the minimal amount of flagging or pin flags that will function to mark the site on the ground (as a complement to the mapping and GPS work) so that the Forest Service knows they are at the right piece of ground during site visits. Pacific Power may also conduct a joint site visit with the Forest Service to develop a manner of delineating the site on the ground to make it easy to relocate on subsequent visits.

f. For newly located Sensitive plant occurrences **that are isolated and smaller than 1/4th acre**, select a tree nearest the occurrence or the main patch of the occurrence/population shall be used for attaching an occurrence reference tag. If possible this tree shall be alive and larger than 21 inches in diameter. A small metal tag shall be nailed to the base of the tree. This tag shall have the NRCS code for the species, the investigator's initials, and the date scratched into the surface. The site form location directions shall include a distance and azimuth from this reference tree to the occurrence. A GPS point should be gathered at this reference tree. The reference tree needs to be depicted on the maps accompanying the site form. Sites in grassland areas may be exempt from this requirement - reference tags will not be required for occurrences in non-forested terrains when the plant patches are further than 1/4th mile from forested habitat and road access.

g. A voucher specimen of the sensitive plant shall be collected, pressed, and submitted to the Forest Service within 14 calendar days of discovery. It shall be accompanied by a fully completed R-6 Sensitive Plant Sighting form and a digital photo of the occurrence vicinity. A specimen shall be collected only if the population exceeds 20 individuals. If the population does

not allow collection, the Forest Service shall be provided with a completed R-6 Sensitive Plant Sighting form and digital photo of the site within eight calendar days of discovery.

4. To facilitate occurrence recording, each **noxious weed occurrence** discovery needs to be documented following the guidelines below. Mapping and GPS data gathering should follow the specifications provided for Sensitive plant documentation. The provided Wallowa County Noxious Weed list is divided into 3 parts; “A”, “B” and “T”. This list is developed in conjunction with our partners in the county and is primarily organized by treatment priorities. For the purposes of this study effort map all species the same way as defined below.

Known Noxious weed occurrences will be projected on project area maps reviewed as part of the pre-field review. Revisits and documentation of weed sites within or directly adjacent to the project vicinity need to be completed in concert with new site documentation. Noxious weed occurrences also require GPS data collection, but need only have one central point collected for each located occurrence or each located/discrete patch of a multi-patch occurrence. Flag noxious weed sites as described above for Sensitive plants but use a separate flagging print that relates to noxious weeds. The GPS data should also be keyed to the respective sighting forms and report maps.

5. Wallowa-Whitman **Strategic plant list species**, shall be mapped as discussed above. A rough estimation of the number of plants present shall be indicated on the map. Gather one GPS point at the patch center. The species and numbers found shall also be discussed in the results area of the botanical survey forms for the appropriate units. **These species will not require any sighting forms, or flagging.**

Special habitats shall be mapped as described above and discussed in the botanical survey record form. No flagging or GPS data gathering is required for these areas.

Preferred Report Components

The following list reflects those products that would be most useful to the Forest Service in the study report.

- Pre-field Survey documentation, Survey Design and Work Plan and Schedule.
- Maps of occurrences of plant species of interest as described above –one for Sensitive plant occurrences & for survey routes, one for noxious weed occurrences, and one for Wallowa-Whitman Strategic plant list species.
- Project Area Report containing:
 - Botanical Survey Records (by unit or area as applicable to the specific contract),
 - Comprehensive plant list and Microsoft compatible CD of plant list and report text,
 - Sensitive plant and noxious weed occurrence forms.
- A Table that references the (electronic) GPS data.. Table column headings need to include at least the following: Point Type (what kind of resource is it representing), Waypoint number (from the GPS unit), Zone (11T) Easting, Northing, and comments as applicable (include the species name for applicable points if not in column 1)



United States
Department of
Agriculture

Forest Service

**Rangeland
Management
Staff**

Washington, DC

March, 2005

Threatened, Endangered And Sensitive Plants Survey

Field Guide





USDA Forest Service
Threatened, Endangered and Sensitive Plants
Survey Field Guide
March, 2005

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USDA Forest Service Threatened, Endangered and Sensitive Plant Survey Field Guide

Overview

General Description

Plant surveys typically consist of searching a specific geographic area to determine the presence of particular species, or to evaluate the habitat suitability for those species in that area. Surveys are commonly conducted to search for threatened, endangered and sensitive (TES) plants. Tracking of “watch” species, or species of concern at a Forest level, may also be accomplished using this protocol. The purpose of this protocol is to describe corporate data standards and attributes that summarize information about a TES Plant Survey. It is important to know where and when these surveys were conducted, even if the object of the survey (the target species) was not located. Although lack of detection does not absolutely prove lack of presence, information on the absence of a rare plant species can be as valuable as information on the presence of the species in a specific area. The **USDA Forest Service TES Plant Survey Protocol** is a consistent way to record the date, surveyor(s), location, type, target species, and results for a survey.

The TES Plant Survey Protocol is used to document the actual search or survey process. When a target species is located, data about the distribution and condition of that particular population is recorded using the **USDA Forest Service TES Plant Element Occurrence Protocol** (USDA Forest Service. 2005).

Plant surveys are conducted for a number of legal, policy and management reasons. A project proposal, such as a timber sale, prescribed burn, or road construction, will often require a survey under the auspices of the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), and USDA Forest Service policy. In such cases, the purpose for the survey is to locate any threatened, endangered or sensitive plant species within the project area that might be affected by the proposed project. In other cases, the purpose of the survey may be to search for locations of TES plant species where potential habitat has been identified. Such “targeted” surveys are conducted outside the context of a project, and are typically used as part of a status assessment for specific species.

Some survey information needs to be compiled prior to fieldwork, including general survey location information, the target species, survey type and focus. This preliminary (or *Pre-survey*) information is needed by the surveyors to help them perform the survey, and map any detected element occurrences.

National Data Standards

Following a corporate approach for collection of TES plant survey data facilitates:

- data sharing within the agency
- data sharing with partners
- data storage, tracking and reporting
- program consistency and efficiencies

The national TES Plant Program has developed agency data standards for collection and storage of TES plant data. Beginning in November 2001, a program working group, consisting of the Regional Botanists and a group of botanists on the National Forests and Ranger Districts, provided the guidance for protocol development. In May 2004, the draft products were reviewed in detail by a larger group of field botanists across the agency, representing the program user community.

All of the corporate data standards and attributes published in this protocol are supported in the Natural Resource Information System (NRIS). A required set of core attributes must be collected during field work and electronically stored in the corporate NRIS application to meet the minimum business needs of this protocol. All other fields are considered optional and can be used as needed or conditionally required at the Regional or local level to meet specific objectives. Table 1 lists the required attributes for plant surveys. Some attributes are auto-generated and populated in the NRIS application from the polygon feature. Detailed attribute descriptions and collection standards follow later in this document.

Pre-Surveys and Active Surveys	Completed Surveys
Survey Polygon (<i>spatial feature</i>)	Survey Polygon (<i>spatial feature</i>)
Survey ID	Survey ID
Survey Status	Survey Status
Survey Area (<i>Auto-generated in NRIS</i>)	Survey Area (<i>Auto-generated in NRIS</i>)
Area Unit of Measure (<i>Auto-generated, acres</i>)	Area Unit of Measure (<i>Auto-generated, acres</i>)
State (<i>Auto-generated in NRIS</i>)	Survey Type
County (<i>Auto-generated in NRIS</i>)	Survey Focus
Region (<i>Auto-generated in NRIS</i>)	Visit Dates
National Forest (<i>Auto-generated in NRIS</i>)	Examiners
District (<i>Auto-generated in NRIS</i>)	Target species plant code(s) (<i>i.e. objects of survey</i>)
	Suitable habitat found (<i>for the target species</i>)
	Target species found
	State (<i>Auto-generated in NRIS</i>)
	County (<i>Auto-generated in NRIS</i>)
	Region (<i>Auto-generated in NRIS</i>)
	National Forest (<i>Auto-generated in NRIS</i>)
	District (<i>Auto-generated in NRIS</i>)

Table 1: Fields required by the USDA Forest Service TES Plant Survey Protocol

Pre-survey information can be entered into the NRIS TES Plants application, and reports generated that can be utilized by the field crews. Since some surveys may extend over many weeks, data can be entered into NRIS prior to the survey being complete (active surveys). Completed surveys must have all required fields populated.

Data can be recorded in the field using the standard field form for TES Plant Surveys (Appendix C) and then entered into NRIS using the TES Plants application. The NRIS application uses an ArcMap “Task Assistant” and Windows data entry forms to guide the user through a common workflow to enter and edit the spatial representation of the survey polygon and the associated attribute data. The data entry screens mimic the workflow as presented on the paper field form. Block headings on the paper form

correspond to tabs or buttons on the electronic forms. Future development work may also support field data entry on electronic portable data recorders (PDRs).

This TES Plant Survey Field Guide makes occasional references to the NRIS TES Plants computer application. However, the field guide is not meant to be a user guide for the NRIS application as a whole. User Guides, Administrative Guides, Stewardship Guides and other relevant information can be accessed via the NRIS FSWeb website (<http://fsweb.nris.fs.fed.us/>)

Area of Use

The TES Plant Survey Protocol is applicable to all vegetation types in terrestrial, riparian and aquatic environments. The protocol can be applied to surveys conducted on National Forest System (NFS) lands and other ownerships as appropriate.

Mapping the Survey Area

This protocol requires spatially locating and delineating each survey to display the location and the extent of the survey. Spatial representation can be created by a number of methods:

- Hand-drawing the perimeter of the survey on maps or aerial photos, then redrawing the survey polygon within the NRIS TES Plants application;
- Using a GPS (Global Positioning System) device to define smaller areas, converting them to a shapefile, and importing the file into the ESRI SDE TESP layer using native ArcMap functionality;
- Digitizing the survey polygon with a computerized mapping system (Geographic Information System [GIS]) and importing it into the SDE TESP layer using native ArcMap functionality.

Regardless of the method used to delineate a plant survey in the field, the protocol requires that basic location information and the polygon be digitized and stored in ArcMap format. Survey polygons must be entered into NRIS before additional survey attributes can be entered.

To ensure consistency, the scale for hand-drawn survey polygons on maps should be 1:24,000. This is the scale of United States Geological Survey (USGS) 7.5-minute quadrangle (quad) maps. Note that maps with a variety of scales are utilized in Alaska. Aerial photos, orthophoto quads and remote sensing approaches can also be useful formats for delineation.

There is no minimum size for a delineated survey polygon. The NRIS application will allow very small surveys to be accurately depicted and located.

To facilitate consistency and information sharing in GIS, all TES plant surveys will be mapped and stored as polygons. Line and point data (layers) will not be supported. Surveys that could be mapped as “lines,” such as those occurring along ridges, streams, trails, or roadsides, will be stored as long, narrow polygons.

Figure 1 illustrates two possible ways in which a survey can be entered spatially using the TES Plant Survey protocol. In some cases the survey area may simply include one contiguous polygon (“Survey 1”), while in other cases a survey area may consist of adjacent subunits that are all part of the same survey (“Survey 2”). For example, a timber sale with multiple non-contiguous units that need to be surveyed for the same purpose and target species would be a multiple polygon survey. Survey data

apply to the *entire* survey. Detailed data for each separate polygon of the survey is not specifically tracked in the collection methods, field form, or NRIS application. Although each “subpolygon” will be drawn in the NRIS application, acres for all subpolygons comprising one survey are combined to calculate and auto-populate the survey area in the NRIS application. If there are significant differences in survey type, focus, or target species between polygons, it may be appropriate to identify and document them as separate surveys.

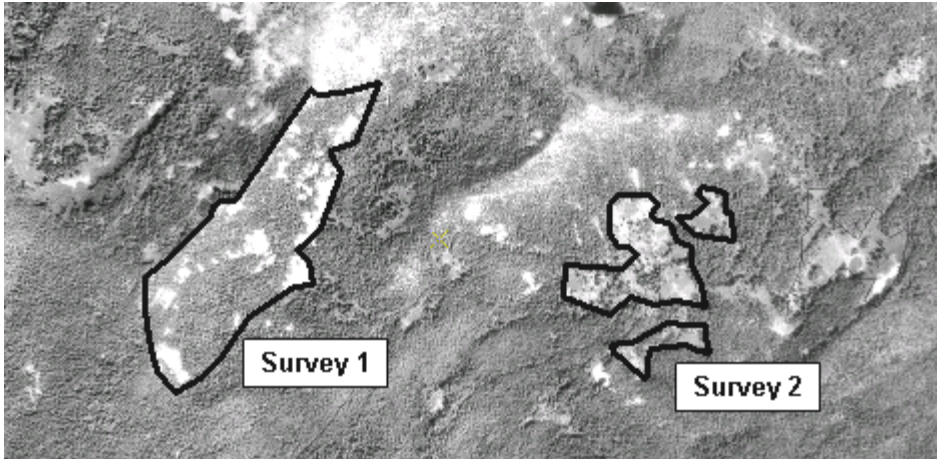


Figure 1: Survey 1 is single survey represented by one contiguous polygon. Survey 2 is a single survey represented by a multi-part polygon.

In addition to storing the spatial representation of the survey, the NRIS TES Plants application will automatically derive and populate required tabular geopolitical fields (State, County, Region, Forest and District) based on the location of the survey polygon feature in the NRIS application. Tabular location fields beyond those mentioned above are provided in the field form and the application, but are purely optional. These fields can be used to record a representative point or area for the survey when desired (available tabular location fields are outlined in the “Location Details Section”).

GPS technology can be helpful in locating, mapping and relocating the survey. A photograph of the general setting and location may also be helpful but is not required.

Survey Field Form Instructions

Descriptions of data fields are presented below. Required data fields are also indicated in the description and on the attached field form. Category headings and field numbers correspond to the layout and naming conventions used on the attached TES Plant Survey Field Form. Fields that have a standard “List of Values” (LOV) associated with them are listed in Appendix B. The TES Plant Survey field form is found in Appendix C of this field guide.

General Information

1) Survey ID: Required.

Assign a unique identification number to the survey. Each survey should have a unique Survey ID at the Forest level. This field is the unique identifier for the survey polygon(s). The Survey ID can be any combination of numbers and letters, up to 30 characters in length. It is recommended that Regions establish and follow a consistent approach for labeling survey IDs. It is highly recommended that the combination of Region, Forest and District numbers form the first six digits of the Survey ID, followed by “S” and a unique survey number (example: RRFFDDS##### [060805S00055]). This convention will facilitate consistent tracking and reporting within regional data centers.

2) Survey Name:

Enter a descriptive label for the survey. Up to 240 alphanumeric characters can be used. Include the project type as appropriate in the survey name. Examples: *Salmon River Meadows Prescribed Burn* or *Elkhorn Timber Sale*.

3) Survey Status: Required (LOV).

This field is used primarily to support tracking in the NRIS TES Plants application and to indicate when survey results are ready for use in analysis. The application can be used to enter certain data prior to, during, or after survey field data collection. The “Survey Status” field tracks this information and includes five choices that are described in Appendix B.

Survey Quality Control (Q/C) Certification Flag: (NRIS application feature). A yes/no indicator that the completed survey information has been reviewed and accepted by the appropriate data steward and deemed ready for use in comprehensive analysis and data sharing (“no” is the default value until certified). Survey Status must be set to “Complete” which indicates that all required field work and data entry is complete, before a survey can be certified. The certification date and person’s name is auto-populated in the database form when the Q/C flag is switched to “yes.” Only a person with the **Data Steward Role** can certify the survey within the NRIS application. Persons with the NRIS Data Entry Role can enter and edit data, including changing the survey status to Complete as appropriate. Once a Survey is flagged certified by the data steward, it is locked for general editing.

4) Source of Work: (LOV).

Indicate the primary work force used to perform the survey work. The List of Values is documented in Appendix B.

5) Survey Type: Required (LOV).

Enter the type of survey that was conducted. Up to three survey types may be entered. If the survey types are significantly different from one another, however, use the “Survey Comment” field to describe why. The List of Values is documented in Appendix B.

6) Survey Focus: Required (LOV).

Record the predominant focus of the survey from the List of Values. More than one choice can be recorded if survey target species occur in more than one of these general habitats. The List of Values is documented in Appendix B.

7) Area Surveyed: Required.

On the paper field form, record an estimated size in acres of the area within the survey perimeter. The actual area in acres, however, will be calculated and auto-populated from the spatial feature once the polygon is drawn in the NRIS application. A single survey may be comprised of more than one polygon. Acres for all polygons comprising a particular survey are combined to calculate and auto-populate the total survey area in the application.

8) Elevation:

For the spatial extent of the survey, record the maximum, minimum, and average (or “predominant”) elevation of the area.

9) Elevation Unit of Measure: (LOV).

Record whether the unit elevation was measured in feet or meters. *If elevation is entered this field is required.*

Geopolitical units, fields 10 – 14

Note that the descriptions for State, County, Region, Forest and District are found on page 13 of this guide. These fields are required on the field form but will be auto-populated in the NRIS application based on the survey polygon(s) drawn in the application.

15) Parameters of Survey:

Enter the parameters, strategies or ecological characteristics that were used to define or direct the survey. They could include such characteristics as habitat types, north slopes, calcareous soils, or distance in feet on each side of the road. Information in this field will be useful for interpreting survey results and for defining necessary fieldwork in pre-survey documentation. Text up to 2000 characters in length can be entered into NRIS.

16) Survey Comments:

This field is available to document any relevant information about the survey. Record general comments about the survey work, the survey area or findings. Include comments about specific visits, survey focus, land management within the survey area, etc., as needed. Text up to 2000 characters in length can be entered into NRIS.

*Survey Visits***17) Visit Date(s): Required.**

Plant surveys may be conducted over days, weeks and even months. The protocol allows you to record each day of field survey. The date format is MM/DD/YYYY. Record the calendar month, day, and year for all survey visits. These were the actual days that the survey was performed in the field and not the date(s) the data were entered into NRIS. Survey dates provide information about the time of year plants or habitats were observed. Surveys conducted at certain times of year may not reveal certain species that have already senesced or have yet to emerge in the spring. This field also indicates the age of the survey information, which may help identify the need for follow-up surveys.

18) Examiner(s): Required (LOV).

Record the last name and first name of all examiners present on any given visit date.

Target Species

19) NRCS Plant Code and 20) Scientific Name: Required (LOV).

Record all plant species (plant code and/or scientific name) that are the object of the survey. Codes for plant species must follow the USDA *PLANTS* database, plant symbols convention (USDA, NRCS 2002). Botanical nomenclature should follow a standard flora for the geographic area being sampled. Target species are typically determined via a pre-field review of information about the habitats that are known or suspected to occur in the survey area.

There is no limit to the number of target species that may be entered. It is a good habit to write out the name or a portion of the name on the field form to minimize misapplication of plant codes. The NRIS TES Plant application will auto-populate the entire scientific name when plant codes are entered, and can auto-populate the NRCS plant code when the scientific name is chosen from a standard list. Include the genus, species, and subspecies or variety as needed to properly identify the TES plant.

Plant lists can be created and stored in NRIS by the regional and local plant data stewards for repeated use in the TES Plant application. Many plant species can be quickly imported from a stored plant list to save data entry time for a long list of target species. The list of target species that is imported can then be modified to accurately represent the current survey.

21) Suitable Habitat Found: Required (LOV).

Habitat for a target species may be present even though the species itself may not be present. Record (yes/no) whether or not suitable habitat for each particular target species was found during this survey. This field may only be left blank if target species data are entered for pre-survey purposes or during an active survey while fieldwork is still ongoing. A yes or no must be entered for every target species before the survey can be considered complete. (Alternatively, if a target species initially included in a search list was not assessed in the field, the species name should be removed from the target species list in order to tag the survey as complete.)

22) Plant Found: Required (LOV).

Record (yes/no) whether or not an occurrence of each particular target species was found during this survey. This field may only be left blank if target species data are entered for pre-survey purposes or during an active survey while fieldwork is still ongoing. A yes or no must be entered for every target species before the survey can be considered complete. (Alternatively, if a target species initially included in a search list was not assessed in the field, the species name should be removed from the target species list in order to tag the survey as complete.)

23) FS Site ID:

If a target species is located during this survey, you are required to create an **Element Occurrence (EO) Record** for each unique occurrence of this species in the survey area. *FS Site ID* is a required field on the EO form (*refer to the USDA Forest Service TES Element Occurrence Protocol [USDA Forest Service, 2005]*). (**Note:** this ID number is separate from the “EO #” which is created and managed by the state Natural Heritage Program and Conservation Data Center offices.) Including the FS Site ID field on the paper survey form simply provides a link to any associated element occurrence records.

Species List of Surveyed Area

Optional. A list of all plant species found during the survey, or a partial list of species found to meet some desired criteria, can be stored for the survey area. The reasons for compiling species lists for surveyed areas include: 1.) developing floristic information for a Ranger District, National Forest or Grassland; 2.) assembling additional habitat characterization information for any associated TES plant species; and 3.) refining knowledge about the distribution and frequency of plant species on a Ranger District, National Forest or Grassland.

24) Completeness of Species List: (LOV).

An indication of how thorough the list of species recorded is for the survey area. *If a list of species is recorded, this field is required.* The List of Values is documented in Appendix B.

25) Cover Method: (LOV).

Required only if percent cover is recorded for any of the plant species on the species list. This field defines the method used for estimating cover: either a cover class set of codes or actual (continuous variable) estimates. **NOTE:** In this case, cover values are estimated and recorded for the survey polygon(s) as a whole (e.g., these values are **not** recorded using plot- or transect-based methods). The purpose for entering cover values in this case is simply to provide relative estimates that might be used to compare the general abundance of species in the survey area. As such, these cover values would **not** be appropriate for more rigorous quantitative analyses of vegetation data. If such rigorous data are desired, then the examiner(s) should use one of the appropriate vegetation protocols available such as ocular macroplot, cover-frequency, or line intercept (USDA Forest Service, 2003). The List of Values is documented in Appendix B.

26) Comments:

A text field to describe what guidelines were used for recording species or to give a text description of how complete or thorough the species list is. It is good practice to explain in this comment section what criteria were used to collect any partial plant list.

27) and 28) NRCS Plant Code and Scientific Name: (LOV).

Record all plant species (plant code and/or scientific name) that are to be included in the survey area plant list. Codes for plant species must follow the USDA *PLANTS* database, plant symbols convention (USDA, NRCS, 2002). Botanical nomenclature should follow a standard flora for the geographic area being sampled.

There is no limit to the number of species that may be entered. It is a good habit to write out the name or a portion of the name on the field form to minimize misapplication of plant codes. The NRIS TES Plant application will auto-populate the entire scientific name when plant codes are entered, and can auto-populate the NRCS plant code when the scientific name is chosen from a standard list. Include the genus, species, and subspecies or variety as needed to properly identify the plant.

29) Lifeform: (LOV).

Lifeform is defined as the characteristic form or appearance of a species at maturity. As desired, enter the lifeform code for each species recorded in the survey. The List of Values is documented in Appendix B.

29) Scientific Name: (LOV).

Refer to description under field 27.

30) Habitat:

Text field to briefly indicate the habitat in which that particular species was found in the survey area.

31) Percent Cover or Class: (LOV).

Ocular estimates of canopy cover of live foliage for plant species are an effective way to quickly collect abundance information about plants. This information can be collected using direct values or by using established canopy cover classes. Indicate the cover class method used (field 25). Cover class codes come from a list of values, whereas actual estimates are recorded as a number from 0.1 to 100.0. Since survey areas can be large, these estimates are merely approximate values, and are intended simply to give a general picture of the composition and relative abundance of species in the area. See the note in the description of field 25 regarding the use of cover data in this form. The List of Values is documented in Appendix B.

32) Non-Native: (LOV).

Flag any species (y = yes) recorded on the list that are considered to be non-native plants. Refer to the USDA *PLANTS* database for this specification (USDA, NRCS 2002).

Location Details

This protocol requires spatially delineating each survey to display the location and the extent of the survey (refer to *Mapping the Survey Area* on page 5). In addition to storing the spatial representation, the NRIS TES Plants application will automatically derive and populate required tabular geopolitical units in the application based on the location of the survey polygon (State, County, Region, Forest and District fields).

Geopolitical Units

It can be useful to record the political or administrative units on the field form. A survey may span two or more geopolitical units for any particular field. For example, a survey may extend across a state, county or National Forest boundary. In this case, record all that apply.

10) State: Required (LOV).

Record the code for the state (or states) in which the survey is located. These codes are the same as the postal state codes. State codes will be auto-populated in the application when the spatial feature (survey polygon[s]) is entered.

11) County: Required (LOV).

Record the county (or counties) in which the survey is located. County codes will be auto-populated in the application when the spatial feature (survey polygon[s]) is entered.

12) Region: Required (LOV).

Record the Forest Service Region (or Regions) in which the survey is located. Region codes will be auto-populated in the application when the spatial feature (survey polygon[s]) is entered. This field is not required when ownership is on non-Forest Service lands.

13) National Forest/Grassland: Required (LOV).

Record the National Forest or Grassland (or more than one) in which the survey is located. Forest/Grassland codes will be auto-populated in the application when the spatial feature (survey polygon[s]) is entered. This field is not required when ownership is on non-Forest Service lands.

14) District: Required (LOV).

Record the Ranger District (or Districts) in which the survey is located. District codes will be auto-populated in the application when the spatial feature (survey polygon[s]) is entered. This field is not required when ownership is on non-Forest Service lands.

Alternative Location Methods

Tabular location fields beyond those mentioned above are provided in the field form and in the application, but are purely optional. These fields can be used to record a representative point or area for the location of the survey, when desired.

Tabular data can be recorded about quad maps or for any of the three location methods described below.

- A. Legal description
- B. Latitude and Longitude
- C. GPS UTM location

33) USGS Quad Number:

The number of the primary USGS quadrangle map containing the survey. These codes are stewarded nationally by the ALP application. *(Note: currently only one representative quad can be entered in the application and surveys may commonly cross into more than one)*

34) USGS Quad Name:

The name of the primary USGS quadrangle map containing the survey. These codes are stewarded nationally by the ALP application. *(Note: currently only one representative quad can be entered in the application and surveys may commonly cross into more than one)*

35) Forest Quad Number:

The locally stewarded number for the primary USGS quad map where the survey is located. *(Note: currently only one representative quad can be entered in the application and surveys may commonly cross into more than one)*

36) Forest Quad Name:

The locally stewarded name for the primary USGS quad map where the survey is located. *(Note: currently only one representative quad can be entered in the application and surveys may commonly cross into more than one)*

37) Legal Description (Public Land Survey System or “PLSS”):

For areas of the country where the Public Land Survey System is available, it is desirable and required to record this information to an appropriate level of detail **on the field form only**. Since legal descriptions will not be auto-populated in the NRIS application, this information must be manually entered into the NRIS TES Plants data entry form if it is desired to be electronically stored. (These fields can be used only to record a representative point or area for the survey, when desired.)

Meridian: (LOV).

Record the code for the line of longitude from north to south that is the basis for local legal descriptions. These lines are also known as Principal Meridians and have distinct names.

Township/Direction: (LOV).

A Township is a unit of land containing 36 mile-square sections. Townships run in rows that parallel the local Base line. Each Township row is sequentially numbered relative to the row's order from, and whether it's north or south of, the local Base line; e.g., T2N (for the second township row north of the local Base line). To accommodate fractions of townships an additional code is required after the Township number, where 0 will equal no fraction; 1 equals $\frac{1}{4}$; 2 equals $\frac{1}{2}$, and 3 equals $\frac{3}{4}$ township (see table of examples below).

Range/Direction: (LOV).

The Range numbers run parallel to the local Principal Meridian. Range rows are sequentially numbered relative to the row's order from, and whether it's east or west of, the Principal Meridian; e.g. R2E (for the second Range row east of the Principal Meridian).

Township/Dir & Range/Dir Example	Description
7 N 14 E	Township 7 North Range 14 East
7.1 N 16 E	Township 7 1/4 North Range 16 East
8.2 N 12.0 W	Township 8 1/2 North Range 12 West

Section: (LOV).

Each 36 square-mile township is subdivided into smaller squares called Sections. Record the Section where the center of the survey polygon is located. A Section is equal to one square mile, 2.59 square kilometers, 640 acres, or 1/36 of a township. *(Note: only one representative section can be entered in the application and surveys may commonly cross into more than one)*

Quarter Section: (LOV).

The quarter-section subdivision where the center of the survey polygon is located. For example: the NE quarter of section 4 (NE 1/4).

Quarter, Quarter Section: (LOV).

The quarter-quarter section subdivision where the center of the survey polygon is located. For example: the NW quarter of the NE quarter of Section 4 (NW 1/4 NE 1/4).

Quarter, Quarter, Quarter Section: (LOV).

The quarter-quarter-quarter section subdivision where the center of the survey polygon is located. For example: the SE quarter of the NW quarter of the NE quarter of Section 4 (SE 1/4 NW 1/4 NE 1/4).

Quarter, Quarter, Quarter, Quarter Section: (LOV).

The quarter-quarter-quarter-quarter section subdivision where the center of the survey polygon is located. For example: the SW quarter of the SE quarter of the NW quarter of the NE quarter of Section 4 (SW 1/4 SE 1/4 NW 1/4 NE 1/4).

38) Latitude and Longitude:**Degrees, Minutes and Seconds****Geodetic Datum: (LOV).**

Record the geodetic datum for the latitude and longitude coordinates. Latitude and longitude in degrees/minutes/seconds will be automatically converted to decimal degrees.

Datum	Description
NAD-27	North American Datum of 1927
NAD-83	North American Datum of 1983
WGS-84	World Geodetic System (1984)

Latitude - Degrees:

(Range 0 to 90) The latitude degrees of the center of the survey as measured by GPS. (Default: North Latitude).

Minutes:

(Range 0 to 59) The latitude minutes of the center of the survey as measured by GPS. (Default: North Latitude).

Seconds:

(Range 0 to 59.99) The latitude seconds of the center of the survey as measured by GPS. (Default: North Latitude)

Longitude – Degrees:

(Range 0 to 180) The longitude degrees of the center of the survey as measured by GPS. (Default: West Longitude).

Minutes:

(Range 0 to 59) The longitude minutes of the center of the survey as measured by GPS. (Default: West Longitude).

Seconds:

(Range 0 to 59.99) The longitude seconds of the center of the survey as measured by GPS. (Default: West Longitude).

Decimal Degrees**Geodetic Datum: (LOV).**

Record the geodetic datum for the Latitude and Longitude coordinates. See table above for datums.

Latitude Decimal Degree:

Latitude in a degree value. Consists of the latitude in degrees to at least 6 decimal places.

Code Example	Description
42.206088	Decimal degrees

Longitude Decimal Degree:

Longitude in a degree value. Consists of the longitude in degrees to at least 6 decimal places.

Code Example	Description
105.105206	Decimal degrees

39) UTM Location**UTM Datum: (LOV).**

Record the datum for the UTM projection.

Datum	Description
NAD-27	North American Datum of 1927
NAD-83	North American Datum of 1983
WGS-84	World Geodetic System (1984)

UTM Zone:

The zone for the UTM projection. This can be obtained from quad maps or from GPS devices. UTM zone coordinates measure in meters east and north from two perpendicular reference baselines. (Up to two alphanumeric characters.)

UTM Zone Example	Description
13	Ranges from 1 to 60

Easting:

The distance in meters, east or west, from the central meridian of the UTM Zone, which is designated at a value of 500,000 meters.

Code Example	Description
71204000.52	Recorded to the hundredth of a meter.

Northing:

The distance in meters north from the equator from the UTM Zone origin, which is designated as a value of zero meters. (This protocol addresses only north latitudes.)

Code Example	Description
1687534000.25	Recorded to the hundredth of a meter.

40) GPS Equipment Used:

The manufacturer and model number of the GPS unit used. (*Note: this is not stored in NRIS at this time.*)

41) Metes and Bounds:

Metes and bounds is a system or method of describing property or real estate when it is surveyed. The system was used in England and, by custom, was applied in the original 13 colonies that became the United States. The system uses physical features of the geography along with directions and distances to define a piece of land. It is sometimes referred to as a *Boundary Survey*. The NRIS TES Plants application accommodates text up to 2000 characters in length.

*Directions***42) Directions to Survey Area**

A general description of the survey location, with directions as needed to return to the survey area. The NRIS TES Plants application accommodates text up to 2000 characters in length.

43) Sketch of Survey Area

Attach copies of air photos or quad maps with notations to identify the survey area, or include a sketch showing directions to the site, a map of the general location, or to display the location of the survey on the landscape. (*Not stored in NRIS at this time.*)

Appendix A - Literature Cited

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Appendix B – TES Plants Survey List of Values

3) Survey Status: *Required.*

Code	Description
Pre-Survey	Prior to beginning fieldwork, information can be entered to help with survey planning and fieldwork preparation. In addition to the spatial survey boundary, the survey ID and survey status are required at this stage of data entry. If pre-field review information is available to formulate a target species list, that list may also be entered at this stage, and would enable printing a list of target species to take in the field.
Active Survey	Used when initial survey results are being entered into the application, but fieldwork (or data entry work) is not yet complete. Since surveys may span an extended period of time within the field season, it may be advantageous to begin data entry prior to the completion of fieldwork. This category indicates that the survey is incomplete and should not be used for final data interpretations. In addition to the spatial survey boundary, the survey ID and survey status are required at this stage of data entry. “Active” will be the default value for this field in NRIS until set otherwise.
Inactive Survey	Surveys that have been suspended for a variety of reasons, including when the proposed project that required the survey is postponed or suspended.
Cancelled	Surveys that are stopped before they are completed because the proposed project that triggered the need for the survey was cancelled, or for other relevant reasons, including funding and personnel changes or modified priorities.
Completed Survey	Fieldwork and data entry work are complete for the survey, and survey data are ready to be certified for analysis. The survey polygon and all required fields from the field survey protocol must be entered before the status field of “Complete” can be used in the application.

4) Source of Work:

Code	Description
Force Account	Seasonal or permanent Forest Service employees
Contract	A contracted work crew or consultant(s)
Volunteer	Survey provided by unpaid volunteer(s)
Academia	Faculty, graduate student(s) or researcher(s) from an academic or research institution
Historic	Survey conducted previously, with source of work unknown

5) Survey Type: Required.

Code	Description
Field Check	In a Field Check, the survey area is given a quick “once over” but the surveyor does not walk completely through the project area. The entire area is not examined.
Cursory	A Cursory survey is appropriately used to confirm the presence of species of interest identified in previous surveys or in the pre-field analysis. By its nature, the cursory survey is rapid, and does not provide in-depth environmental information. The entire area is traversed at least once. For example, stand condition as seen in aerial photography can be verified by a cursory survey. Also, a cursory survey can be used to determine if a plant population that had been previously documented at a site remains present or intact.
General	The survey area is given a closer review by walking through the area and its perimeter or by walking more than once through the area. Most of the area is examined
Focused (Intuitive Controlled)	The Focused, or Intuitive Controlled, survey is the most commonly used and most efficient method of surveying for TES plants. During pre-field analysis, potential suitable habitat is identified for each species of interest and the survey effort is focused in those areas. This method requires adequate knowledge of suitable habitat in order to accurately select the areas of focused searching. When conducting intuitive controlled surveys, an area somewhat larger than the identified suitable habitat should be searched to validate current suitable habitat definitions.
Random	Random surveys employ an undirected, typically non-linear, traverse through a project area. They are employed either when there is inadequate natural history information about a species to discern its suitable habitat and the surveyor is simply searching for occurrences, or when a target species is very abundant within a search area and the surveyor is attempting to make estimates of population parameters such as intra-patch variations in density or the occurrence of predation or herbivory. However, a stratified random survey may be more effective in these latter cases.
Stratified Random	The Stratified Random survey is most often used within known population areas of target species, or when an area to be surveyed is of unknown habitat suitability and is relatively large. Stratified random surveys employ a series of randomly selected plots of equal size within a project area that are each thoroughly searched for target species. When conducting a stratified random survey, it is important to sample an adequate number of plots that are of sufficient size if statistical inference regarding the survey area is desired (for discussion of sample designs, see Elzinga, C., <i>et al.</i> 1998).
Systematic	The Systematic survey is typically used in limited areas where the likelihood of occurrence of a target species may be evenly distributed throughout the survey area. Systematic surveys are often employed either within focused search areas (e.g., stratified random and intuitive controlled methods), or when a proposed project is likely to produce significant habitat alterations for species that are especially sensitive to the proposed activities.

6) Survey Focus: Required.

Code	Description
Terrestrial	Upland areas.
Riparian	Areas of seasonal or periodic flooding and/or areas of transition from aquatic to upland areas.
Aquatic	Aquatic surveys are confined to surveys within water bodies such as springs, streams, lakes, ponds and irrigation canals. Vegetation can be classified as emergent, floating, hydrophytic, or submergent. For surveys that include the transition zone to uplands and areas of seasonal or periodic flooding, also record <i>riparian</i> .
Features	The survey focused on an area in and adjacent to developed features such as roads, trails, campgrounds, parking lots and boat launches.

24) Completeness of Species List:

Code	Description
Complete	Represents an attempt to list all species found. The survey area was surveyed intensively.
Reduced	Incomplete species list for some reason, e.g., partial search, only species above a certain cover value were recorded, etc. Indicate any specific criteria in the Comments field (field 26).
Selected	Only recorded species according to some selection criteria, such as only certain life forms, only species of specific interest, etc. Indicate any specific selection criteria in Comments field (field 26).

25) Cover Method:

Code	Description
DAUBEN	Daubenmire Canopy Cover Classes, modified to include trace.
NRMCOV	Cover Ten Codes - National Rangeland Methodologies Data Dictionary Canopy Cover Classes
Actual	The actual estimated canopy cover percent.

29) Lifeform:

Code	Name	Description
AL	Algae	A general name for the single-celled plant plankton, seaweeds, and their freshwater allies.
FB	Forb/herb	Vascular plant without significant woody tissue above or at the ground. Forbs and herbs may be annual, biennial, or perennial, but always lack significant thickening by secondary woody growth and have perennating buds borne at or below the ground surface. Federal Geographic Data Committee (FGDC, 1997) definition includes graminoids, forbs, and ferns; in

Code	Name	Description
		PLANTS, graminoids are separated.
FU	Fungi	A non-flowering plant of the kingdom Fungi, lacking chlorophyll.
GR	Graminoid	Grass or grass-like plant, including grasses (Poaceae), sedges (Cyperaceae), rushes (Juncaceae), arrow-grasses (Juncaginaceae), and quillworts (<i>Isoetes</i>). An herb in the FGDC classification (FGDC, 1997).
LC	Lichen	Organism generally recognized as a single plant that consists of a fungus and an alga or cyanobacterium living in symbiotic association. Often attached to solid objects such as rocks or living or dead wood rather than soil.
LI	Liana	Climbing plant found in forests with long, woody, rope-like stems of anomalous anatomical structure. A shrub in the FGDC classification (FGDC, 1997).
NP	Nonvascular	Nonvascular, terrestrial green plant, including mosses, hornworts, and liverworts. Always herbaceous, and often attached to solid objects such as rocks or living or dead wood rather than soil.
SH	Shrub	Perennial, multi-stemmed woody plant that is usually less than 4 to 5 meters or 13 to 16 feet in height. Shrubs typically have several stems arising from or near the ground, but may be taller than 5 meters or single-stemmed under certain environmental conditions.
SS	Subshrub	Low-growing shrub usually under 0.5 m or 1.5 feet tall (never exceeding 1 meter or 3 feet tall) at maturity. A dwarf-shrub in the FGDC classification (FGDC, 1997).
TR	Tree	Perennial, woody plant with a single stem (trunk), normally greater than 4 to 5 meters or 13 to 16 feet in height; under certain environmental conditions, some tree species may develop a multi-stemmed or short growth form (less than 4 meters or 13 feet in height).
UN	Unknown	Lifeform is unknown.
VI	Vine	Twining/climbing plant with relatively long stems, which can be woody or herbaceous. FGDC classification (FGDC, 1997) considers woody vines to be shrubs and herbaceous vines to be herbs.

31) Percent Cover or Class:

Modified Daubenmire Classes: Set Code = DAUBEN

Code	Cover Class	Mid Point
T	0 - 1.0%	0.5
1	1.1 - 5.0%	3.0
2	5.1 - 25.0%	15.0
3	25.1 - 50.0%	37.5
4	50.1 - 75.0%	62.5
5	75.1 - 95.0%	85.0
6	95.1 - 100%	97.5

National Range Management “Cover Ten Codes”: Set Code = NRMCOV

Code	Cover Class	Mid Point
T	0.1 - 1%	0.50
0	1.1 - 5%	3.0
1	5.1 - 15%	10.0
2	15.1 - 25%	20.0
3	25.1 - 35%	30.0
4	35.1 - 45%	40.0
5	45.1 - 55%	50.0
6	55.1 - 65%	60.0
7	65.1 - 75%	70.0
8	75.1 - 85%	80.0
9	85.1 - 95%	90.0
A	95.1 - 100%	97.5
X	99.1 - 100%	99.5

Appendix C - USDA Forest Service TES Plant Survey Field Form

(® = Required Fields)

General Information

1) SURVEY ID: ®		2) SURVEY NAME:		
3) SURVEY STATUS: ®		4) SOURCE OF WORK:		
5) Survey Type: ®				
6) Survey Focus: ®				
7) Estimate of Survey Area Size (acres): ®				
8) Elevation: Min:		Max:		Average:
				9) Elevation UOM:
10) State: ®	11) County: ®	12) Region: ®	13) Forest: ®	14) District: ®
15) Parameters of Survey <i>(Describe any ecological parameters, criteria or combinations of these used to focus the survey. (I.e., north slopes, specific habitat types, certain soils within certain forest conditions, etc.):</i>				
16) Survey Comments <i>(Directions, area description, specific comments by visit date, etc.):</i>				

Survey Visits

Required. Enter a Date (MM/DD/YYYY) and Examiners for each visit made.

17) VISIT DATE ®	18) LAST NAME ® AND FIRST NAME OF EXAMINERS FOR EACH VISIT

Target Species

Required. List all targeted plant species (TES, special forest products, or other species of concern) that are the focus of the survey. Enter all the species individually using the NRCS *PLANTS* code and/or scientific name. All columns are required.

[illegible]

Species List of Surveyed Area

Optional. List other species found during the survey. Record the NRCS *PLANTS* Code, scientific name or both. Indicate habitat (locally defined), lifeform and cover abundance (all optional). Indicate non-native plants with "X"

24) Completeness of species list:

25) Cover Method (if cover recorded):

26) Comments (e.g. details about species list approach, habitat focus, vegetation types or structure, etc.):

[illegible]

Optional Location Information

Location information to represent the survey area may be recorded,
in addition to entering the spatial feature in the application

33) USGS Quad Number:	34) USGS Quad Name:
35) Forest Quad Number:	36) Forest Quad Name:

37) Legal Description: Required where public land survey is available.				
Meridian:	Township and Range:			
Section: _____	Q Sec: _____	QQ Sec: _____	QQQ Sec: _____	QQQQ Sec: _____

38) Latitude and Longitude (either in degrees, minutes, seconds or in decimal degrees)				
Geodetic Datum:				
Latitude:	Degrees ____ N	Minutes	Seconds ____ . ____	
Longitude:	Degrees ____ W	Minutes	Seconds ____ . ____	
GPS Datum:				
GPS Lat. Dec. Degrees:		GPS Long. Dec. Degrees:		

39) UTM	
UTM Datum:	UTM Zone:
Easting: _____	Northing: _____

40) GPS Unit Used: Manufacturer:	Model:
---	---------------

41) Metes and Bounds:

42) Directions to Survey Area

43) Sketch of Survey Area





United States
Department of
Agriculture

Forest Service

**Rangeland
Management
Staff**

Washington, DC

October, 2005

Threatened, Endangered And Sensitive Plants Element Occurrence

Field Guide





USDA Forest Service
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USDA Forest Service

Threatened, Endangered and Sensitive Plants

Element Occurrence Field Guide

Overview

Following is an overview and general description of the Forest Service's national protocol for collecting information about Threatened, Endangered and Sensitive plant occurrences.

General Description

The Threatened, Endangered and Sensitive (TES) Plant Protocol focuses on tracking the presence, location, extent, and abundance of ***TES plant occurrences***. Tracking of “watch” species, or species of concern at a Forest level, may also be accomplished using this protocol. The protocol also includes methods to record and track site information for each TES plant occurrence, such as site morphometry, plant community, associated species, soil characteristics, disturbances or threats. One method of monitoring TES plant occurrences consists of repeated observations over time, noting relative changes in location, extent, and density of the plant population, as well as changes in existing or potential threats and habitat conditions. This method of monitoring may also be accomplished using the protocol.

Standardized tracking of TES plant occurrences directly supports the policy and legal requirements to maintain the viability of such species on National Forest System lands (FSM 2670; National Forest Management Act; Endangered Species Act). Business needs of the national TES Plant Program that will be supported by this protocol include:

- Completion of Biological Assessments (BAs) and Biological Evaluations (BEs),
- Status summaries for TES plants,
- Completion of conservation assessments and conservation strategies for TES plants,
- Occurrence-level monitoring of TES plant populations over time (presence/absence, or abundance as measured by repeated censuses of the populations), and
- Establish plant-habitat relationships.

National Standards

Following a corporate approach for collection of TES plant occurrence data facilitates:

- Data sharing within the agency,
- Data sharing with partners,
- Data storage, tracking and reporting, and
- Program consistency and efficiencies.

The national TES Plant Program has developed agency data standards for collection and storage of TES plant data. Beginning in November 2001, a program working group, consisting of the Regional Botanists and a small number of botanists on the National Forests and Ranger Districts, provided the guidance for draft protocol development. In May 2004, the draft products were

further reviewed by a larger group of field botanists across the agency, representing the program user community. Additional protocol modifications were included in early 2005 as a result of feedback during prototype testing of the corporate database application for TES plants.

Throughout the course of protocol development, reference was made to requirements in *Biotics*, the NatureServe database application used nationally by the network of state Natural Heritage Programs. TES plant information gathered by Forest Service programs will be entered and stored in the Natural Resource Information System (NRIS), the corporate database and interface for stewarding TES plant data in the Forest Service. NRIS design will also facilitate a cooperative agreement with NatureServe to electronically submit new *element occurrence* data from NRIS to the Biotics databases at individual Natural Heritage Programs. This agreement and application design will also address the need to view element occurrence records from Biotics in conjunction with NRIS TES Plants.

An **element occurrence (EO)** is an area of land and/or water in which a TES plant species is, or was, present. TES plant occurrences that are entered in the NRIS application are synonymous with the element occurrences that are entered in Biotics by the Natural Heritage Programs. The terms “plant occurrence”, “element occurrence”, “EO” or “occurrence” as used in this document may be considered interchangeable.

A required set of core attributes must be collected during field work and electronically stored in the corporate NRIS application to meet the minimum business needs of this protocol. Required attributes are established to meet corporate expectations of reporting, monitoring or data sharing (e.g., with Biotics). All other fields are considered optional and can be used as needed or conditionally required at the Regional or local level to meet specific program objectives. All required and optional fields in this protocol are supported in the NRIS application. Table 1 lists the required attributes for TES plant occurrences. Some attributes are auto-generated and populated in the NRIS application from the spatial feature. Detailed attribute descriptions and collection standards follow later in this document.

Required Attributes
Plant Occurrence Point or Polygon (<i>spatial feature</i>)
FS Site ID
Date
NRCS Plant Code for EO species
Scientific Name for Plant Code
Record Source
Examiner(s)
Ownership
Area of occupancy (<i>Auto-generated in NRIS</i>)
Area Unit of Measure (<i>Auto-generated, acres</i>)
Survey ID (<i>if record source = field survey</i>)
State (<i>Auto-generated in NRIS</i>)
County (<i>Auto-generated in NRIS</i>)

Required Attributes
Region (<i>Auto-generated in NRIS</i>)
National Forest (<i>Auto-generated in NRIS</i>)
District (<i>Auto-generated in NRIS</i>)

Table 1: Fields required by the USDA Forest Service TES Plant Element Occurrence Protocol

Data can be recorded in the field using the standard field form for TES Plant Element Occurrences (Appendix C) and then entered into NRIS using the TES Plants application. The NRIS application uses ArcMap, an NRIS “Task Assistant” and Windows data entry forms to guide the user through a standard workflow to enter and edit the spatial representation of the plant occurrence site and the associated attribute data. The data entry screens mimic the workflow as presented on the paper field form. Block headings on the paper form generally correspond to tabs or buttons on the electronic forms. Future development work may also support field data entry on electronic portable data recorders (PDRs).

This TES Plant Element Occurrence Field Guide makes occasional references to the NRIS TES Plants computer application. However, the field guide is not meant to be a user guide for the NRIS application as a whole. User Guides, Administrative Guides, Stewardship Guides and other relevant information can be accessed via the NRIS FSWeb website (<http://fsweb.nris.fs.fed.us/>).

Mapping

This protocol requires spatially locating and delineating each element occurrence. TES plant occurrences can be mapped and stored as either points or polygons. Occurrences that could be mapped as “lines,” such as those occurring along ridges or streams, will be stored as long, narrow polygons. Spatial representation can be created by a number of methods:

- Hand-drawing the perimeter of the occurrence or a representative point on maps or aerial photos, then redrawing the occurrence within the NRIS TES Plants application;
- Using a GPS (Global Positioning System) device to define smaller areas, converting them to a shapefile, and importing the file;
- Digitizing the occurrence with a computerized mapping system (Geographic Information System [GIS]) and importing it.

Regardless of the method used to delineate a TES plant occurrence in the field, the protocol requires that basic location information and the point or polygon be digitized and stored in ArcMap format. The point or polygon feature must be entered into NRIS before additional tabular attributes can be entered.

To ensure consistency, the scale for hand-drawn occurrences on maps should be 1:24,000. This is the scale of United States Geological Survey (USGS) 7.5-minute quadrangle (quad) maps. Note that maps with a variety of scales are utilized in Alaska. (*Note: the 1:24,000 scale is also the standard for invasive plant mapping as recommended by the International Mapping Standards for Invasive Plants*). Aerial photos, orthophoto quads and remote sensing approaches can also be useful formats for delineation.

There is no minimum size for a delineated polygon; however, occurrences less than .01 acre are generally mapped as points. The NRIS application will allow very small occurrences to be accurately depicted and located. It will also facilitate monitoring small changes in size.

A single TES plant occurrence may be comprised of more than one polygon (Figure 1). For example, a single occurrence may be defined by clumps of the same population in close proximity with intervening habitat. Recorded plant occurrence data, however, apply to the *entire* occurrence. Detailed data for each “subpopulation” of the survey is not specifically tracked in the TES plant occurrence data collection methods, field form, or NRIS application. Although each subpopulation can be individually drawn in the NRIS application, acres for all subpopulations comprising a particular occurrence are combined to calculate and auto-populate the occurrence area in the NRIS application. Text notes about specific subpopulations can be recorded and stored in the “EO comments” field.

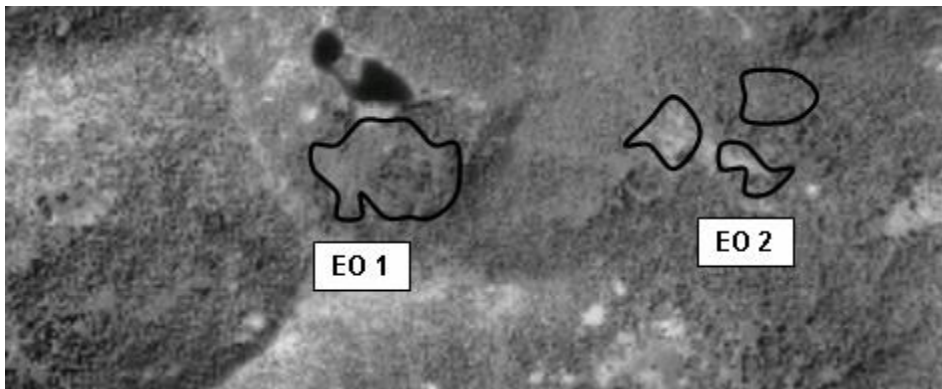


Figure 1: EO 1 is single element occurrence represented by one contiguous polygon. EO 2 is a single element occurrence represented by a multi-part polygon.

In addition to storing the spatial representation of the plant occurrence, the NRIS TES Plants application will automatically derive and populate required tabular geopolitical fields (State, County, Region, Forest and District) based on the location of the spatial feature in the NRIS application. Tabular location fields beyond those mentioned above are provided in the field form and the application, but are purely optional. These fields can be used to record a representative point or area for the plant occurrence when desired (available tabular location fields are outlined in the “Location Details Section”).

Monitoring TES Plant Occurrences (Revisits)

An essential element of TES plant management is monitoring changes or stability in populations over time. Subsequent visits to a known site for remeasurement will be considered *revisits*. Revisiting TES plant occurrences may also allow for detection of changes of threats to an occurrence. Each visit to a TES plant occurrence will require the completion of a new element occurrence form and the creation of a new record in the NRIS database to document that visit. Individual observations will be identified with the same *FS Site ID*, but differentiated by the visit date. Record “No” in the “New Occurrence” field for all revisit records. Some of the general site and location information from the previous visit can be automatically transferred to the new

record within the NRIS TES Plant application when appropriate. You can then update information about the plant occurrence based on the current site visit.

The *FS Site ID* and Element Occurrence number (if applicable) must remain constant for a particular occurrence through time (see data field descriptions later in this document). Changes in the occurrence data (i.e. size, shape, plant abundance, habitat or threats) can be traced over time through subsequent visits, differentiated by the *Visit Date*. The NRIS application will track these changes through time and record or display the history of any given site.

Extirpated Occurrences

All visual evidence of a formerly documented occurrence could be lacking during a revisit of the site. Though the plant may have disappeared above ground, there may be roots, rhizomes, or other plant parts that may recover and sprout. The relative time of visit compared to other years and/or yearly climate fluctuations may also affect the observation. Also, seeds of some species are stored in the soil and may remain viable for many years. For these reasons it is important to monitor some sites for many years, even after all evidence of the plant may have disappeared during an earlier visit.

For revisits that turn up no visual evidence of the TES plant, enter a new polygon or point representing the occurrence by copying the most recent spatial feature for that EO. Enter “No” for the “Plants Found” field and uncheck this flag in the application. Enter a canopy cover and plant count of zero (0). Enter appropriate comments in the “Population Comment” field and the “Revisit Justification” field. Other fields pertaining to habitat and threats (which may or may not be causal agents for change to the plant population) should be recorded. Recording a new revisit polygon/point and related data in the interim allows for monitoring of the site until there is adequate evidence that the occurrence has in fact disappeared.

Quality Control

The NRIS application for TES Plant Element Occurrences includes a quality control (Q/C) flag to indicate when the information for a particular EO is complete and has been reviewed and accepted by the appropriate data steward. At that point it is deemed ready for use in comprehensive analysis and for data sharing with partners (*“no” is the default value until certified*). All required field work and data entry must be complete before a TES plant occurrence can be certified. The certification date and the person’s name are auto-populated in the database form when the certification flag is switched to “yes.” Only a person with the **Data Steward Role** can certify the plant occurrence within the NRIS application. Persons with the NRIS Data Entry Role can enter and edit data as appropriate. Once an occurrence is flagged certified by the data steward, it is locked and cannot be further edited.

Element Occurrence Field Form Instructions

Following is a list of data attributes (or data fields) and instructions for recording specific data about a TES plant occurrence. These attributes are supported by the methods of this protocol and by the NRIS TES Plants application.

Collecting information for a TES plant element occurrence that are not required by this protocol, such as soil characteristics, existing vegetation community type and/or associated species, potential vegetation types, aspect, slope and elevation is encouraged. This information will be useful in establishing habitat relationships and modeling to predict where one might find or search for a particular species, as well as inferring the potential for a particular species to occur in an area either at present or in the future. Additional information about dominant ecological processes, threats, and current or expected management activities aid in predicting stability of that particular occurrence.

Required data fields are indicated below and on the attached field form. Data attributes are grouped into general categories. Categories and field numbers correspond to the layout and naming conventions used on the attached TES Plant Element Occurrence field form. Fields that have a standard “List of Values” (LOV) associated with them are listed as well. The specific values for each LOV are listed in Appendix B. The field form layout may be used as is or modified to cater to your unit (e.g., drop fields never used on your Forest, pre-populate Region or Forest fields, etc.) However, please note:

- **Only** the attributes listed on the field form along with the documented coding conventions will be supported in the NRIS TES Plant application.
- The workflow within the NRIS application will mimic the grouping, flow and presentation of data fields as presented in the attached standard EO field form.

General Information

1) FS Site ID: Required.

Forest Service Site Identifier. Assign a **unique** identification to each element occurrence. The FS Site ID can be any combination of letters and numbers up to 30 characters in length. Regions are encouraged to adopt a standard coding convention to facilitate tracking. It is highly recommended that the combination of Region, Forest and District numbers and the letters, “EO” form the first eight digits of the FS Site ID (example: RRFFDDEO##### [060805EO00055]). This convention will facilitate consistent tracking and reporting within regional data centers. Since field sheets may get split up, it is a good idea to repeat the FS Site ID at the top of each page.

Each TES plant occurrence will be mapped separately so that each FS Site ID will document a single occurrence. Revisits to the same occurrence should continue to track using this **same** FS Site ID but with a different date. (Note: The Natural Heritage Program is responsible for assigning **element occurrence (EO) numbers**. Thus, an EO number will not be available as a unique identifier for new occurrences, until they are entered in Biotics. Likewise, “watch” species or Forest “species of concern” that wouldn’t be submitted to the state Natural Heritage Program will need a unique FS Site ID for tracking, but will not receive an actual EO number.

2) Date: Required.

Date when the field data for this element occurrence was collected (not the date the record was entered into the computer). Use date format of: MM/DD/YYYY. Date provides information about the time of year plants and habitats were observed and indicate the age of the occurrence information, which may help identify the need for revisits.

3) Site Name:

Informal descriptive name assigned to the EO site or area.

4) NRCS Plant Code: Required:

Required by the application, but not on the field form if scientific name is entered. Enter one code for the TES plant being documented in this particular EO. Codes for plant species must follow the USDA *PLANTS* database, plant symbols convention (USDA, NRCS 2002). Botanical nomenclature should follow a standard flora for the geographic area being sampled.

5) Scientific Name: Required.

The scientific name of the TES plant as needed, if the NRCS code is not known. It is a good habit, however, to write out the name or portion of the name on the field form to minimize misapplication of plant codes. The TES application will auto-populate the scientific name when codes are entered or will auto-populate the NRCS plant code when the scientific name is chosen from a standard list. Include the genus, species, and subspecies or variety as needed to properly identify the TES plant.

6) Record Source: Required (LOV).

Indicate the source of data for this EO, such as Field Survey or herbarium specimen.

7) Survey ID: Conditionally Required.

If the record source is "Field Survey," indicate the Survey ID Number. Refer to the Survey Protocol for Survey ID coding conventions.

8) Survey Name:

If the record source is "Field Survey," enter the name of the field survey (also include the project type here if desired, i.e. Black Butte Timber Sale, Yellow Springs Road Realignment, etc.).

9) Examiner(s): Required.

Provide the name(s) of the field surveyors. This will provide a point of contact for questions during data entry or for future reference.

10) Ownership: Required.

Record the land ownership where the occurrence is located. Where the occurrence exists on two or more ownerships or jurisdictions, enter all that apply.

11) E.O. #:

Element occurrence number, when available, as assigned by the State Natural Heritage Program/Conservation Data Center. This will be null for new occurrences that are not yet submitted for Heritage review and data entry.

12) New Occurrence:

May need to be completed after the field survey. A yes/no flag to indicate whether this is a new occurrence (Y) or, if it is an existing occurrence (N). Revisits to an existing EO, for example, are not new occurrences and should reuse the established FS Site ID and EO number (if one exists).

Geopolitical Units

It can be useful to record the political or administrative units on the field form. An occurrence may span two or more geopolitical units for any particular field. For example, a survey may extend across a state, county or National Forest boundary. In this case, record all that apply.

13) State: Required.

It is useful to enter this information on the field form; however, this will be auto-populated in the application when the spatial feature (EO polygon) is entered. Record the code for the state in which the site is located. These codes are the same as the postal state codes.

14) County Name: Required.

It is useful to enter this information on the field form; however, this will be auto-populated in the application when the spatial feature (EO polygon) is entered. Enter the county in which the EO is located. If the element occurrence crosses county lines, record appropriate counties.

15) Region: Required.

It is useful to enter this information on the field form; however, this will be auto-populated in the application when the spatial feature (EO polygon) is entered. Record the Region number where the occurrence is located, regardless of which Region is currently administering the site. This field is not required when ownership is on non-Forest Service lands.

16) National Forest/Grassland: Required.

It is useful to enter this information on the field form; however, this will be auto-populated in the application when the spatial feature (EO polygon) is entered. Record the National Forest or Grassland (or more than one) where the occurrence is located. This field is not required when ownership is on non-Forest Service lands.

17) District: Required.

It is useful to enter this information on the field form; however, this will be auto-populated in the application when the spatial feature (EO polygon) is entered. Record the Ranger District number(s) where the site is located. This field is not required when ownership is on non-Forest Service lands.

18) Entire Extent Mapped:

Indicates whether the entire area occupied by the element occurrence was mapped or not, or “uncertain” if that is not known. It is intended that the entire extent of any EO should be mapped whenever possible.

19) Area (Area of Occupancy):

Optional to collect in the field. The NRIS application will auto-populate the area in acres. Record the estimated size of the area occupied by this single TES plant occurrence as depicted in a mapped polygon or group of polygons on the field form if desired. The area will also be auto-populated in the application from the spatial feature or GPS information once the polygon(s) are entered. If subpopulations exist and are mapped, size will be calculated by adding the area from all related subpopulations to determine the total size of the EO. If the EO is a point, the NRIS application will indicate area as 0 acres in the data editing forms, but for output and reporting purposes points will be buffered and reported as having an area of 0.001 acres.

20) Area Unit of Measure:

Record the unit of measure if an area estimate is entered on the field form. Units can be acres, square meters, or hectares, but acres will be the default value in the NRIS application.

Element Occurrence Data

Canopy Cover

A measurement of canopy cover is encouraged for the EO species and optional for associated species and lifeform classes. Ocular estimates of canopy cover of live foliage for plant species or groups of plant species are an effective way to quickly collect abundance information about

plants. Cover is a meaningful attribute for nearly all plant life forms, which allows their abundances to be evaluated in comparable terms (Daubenmire 1968, Mueller-Dombois and Ellenberg 1974). **Percent cover** can be defined generically as “the vertical projection of the crown or shoot area to the ground surface expressed as ... percent of the reference area” (Mueller-Dombois and Ellenberg 1974). **Canopy cover** is “the percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Small openings within the canopy are included” (SRM 1989, NRCS 1997). Canopy cover is synonymous with canopy closure (Helms 1998). For woody plants, canopy cover is synonymous with crown cover (NRCS 1997, Helms 1998).

Cover values are estimated and recorded for the EO polygon(s) or site as a whole (e.g., these values are **not** recorded using plot- or transect-based methods). The purpose for entering cover values is simply to provide relative estimates that might be used to compare the abundance of species at the EO site. As such, these cover values would **not** be appropriate for more rigorous quantitative analyses of vegetation data. If such rigorous data are desired, then the examiner(s) should use one of the appropriate vegetation protocols available such as ocular macroplot, cover-frequency, or line intercept (USDA Forest Service, 2003).

Estimating Canopy Cover

Project the outline of the plant’s live foliage vertically to a horizontal plane to determine what percentage of the EO polygon area that it covers at the time of the survey. For canopy cover by lifeform or for associated species, contributing plants do not have to be rooted in the polygon to be counted for canopy cover (e.g., they can overhang the edges of the polygon in which cover is being estimated). The area of foliar cover included in the polygon, expressed as a percent of the total sampling area, represents the canopy cover for that individual species or plant group being estimated. Different lifeform groups or plants may overlap and, therefore, it is common for the canopy cover “sum” across lifeforms or across multiple plant species to be greater than 100% within a polygon. No single lifeform class or plant species, however, can total greater than 100%.

Canopy cover information can be collected using actual values or by using established canopy cover classes. If canopy cover classes are used to measure canopy cover, indicate the cover class set used.

21) Canopy Cover Method: Conditionally Required (LOV).

If cover values are recorded for any of fields 22, 61, 62 or 69, then indicate the one method used for making any cover estimates at this site. Choices are Actual (0.1-100%), Daubenmire (modified) Cover Class Set, and National Range Cover Ten Class Set. If canopy cover sets are not used, draw a line or record N/A for “Not Applicable” in this space on the field sheet. See Appendix B for a list of canopy cover sets and the cover class codes for each set.

22) EO Canopy Cover:

The percent cover or cover class of the TES plant species within the EO polygon(s) or site. See Appendix B for a List of Values.

23) Lifeform: (LOV).

The lifeform of the rare plant. Lifeform is defined as the characteristic form or appearance of a species at maturity. See Appendix B for a List of Values.

24) Number of Subpopulations:

If the EO is not mapped as one contiguous polygon, map each subpopulation considered to be a component of this particular EO. Data stored in the NRIS application, however, will be relevant to the entire EO polygon only, and detailed data for each subpopulation is not tracked in the application. Text notes about subpopulations can be recorded and stored in the EO comment field. Although each “subpopulation” will be drawn into the NRIS application, acres for all subpopulations combined for a particular EO will be combined to calculate and auto-populate an accurate size in the application for the entire EO.

XX) Plant Found:

Indicate whether the EO plant species was observed during a revisit to the EO. This flag should be checked yes for all new occurrences (and is defaulted to yes in the database). If the plant is not observed during a revisit to the EO, record plants found as “no” and uncheck the “plant found” box in the application.

25) Plant Count:

Indicate the number of individual plants of the EO species.

26) Count Type: (LOV).

Indicate what was counted: Genets, Ramets, or Undetermined. Counts of genets represent the number of genetically independent individuals in an occurrence. Counts of ramets represent the number of vegetative units that are produced by the genets in an occurrence. For example, a plant occurrence that has five individual plants, each of which has produced five stems, consists of 5 genets and 25 ramets. See Appendix B for a List of Values.

27) Count (Actual or Estimate):

Indicate if the plant count was a precise count or an estimate.

28) Revisit Needed:

Yes or No flag to indicate need for a follow-up visit. Record yes if fieldwork is not completed and additional survey is needed or yes if a follow-up visit is anticipated or desired for monitoring purposes.

29) Revisit Date:

Record a desired date to re-visit the occurrence if that is identified. For example, enter a projected date if a particular study or set of circumstances require the EO to be re-examined two years from now or for monitoring purposes after project completion, or perhaps later in the same growing season. For visits over multiple years, it is generally best to compare sites at the same time each year.

30) Revisit Justification:

Give reason a revisit is desired. Examples include: post-project monitoring, successional monitoring, recovery or stability after protection, where revisits are part of a sampling method for a particular species protocol, etc.

31) Phenology by %:

Record the percentage of the occurrence that was in each stage at the time of visit: vegetative, flower/bud, fruit/dispersed, seedlings/juvenile. Values should total to 100%. See Appendix B for a List of Values.

32) Population Comments:

An open text field, to record observations regarding the status of the population, including distribution, vigor, density, phenology and dispersal.

33) Evidence of disease, competition, predation, collection, trampling, or herbivory:

Yes or No flag to indicate any evidence of these effects on the population.

34) Evidence Comments:

If Yes is checked for field above, give a brief explanation. If possible, record the cause of the effect(s).

35) Pollinator Observed:

Indicate whether pollinators were observed visiting flowers or reproductive structures of the TES plant (yes or no).

36) Pollinator Type(s): (LOV).

The organism(s) observed pollinating the TES plant. See Appendix B for a List of Values.

37) Pollinator Comments:

Text field, if needed, for further explanation of pollinator observations.

Site Morphometry

38) Percent Slope:

The average slope that is characteristic of the EO polygon or site, expressed as a percentage as measured in the field.

39) Slope position: (LOV).

Record the two-dimensional position of the occurrence on the landform as observed in the field. See Appendix B for the List of Values.

40) Aspect:

Record the predominant aspect as measured in the field that is characteristic of the EO polygon or site. Either azimuth in degrees (preferred) or cardinal direction can be used.

Azimuth:

(Range 0-360). The direction that the landscape predominantly faces at a defined position, such as the center point of the occurrence. Azimuth is recorded in degrees from north, in a clockwise manner. Use “360” for north. Use “0” when there is no slope.

Cardinal: (LOV).

The generalized cardinal direction that the landscape predominantly faces at a defined position, such as the center point of the occurrence. (Accuracy Standard: ± 11.25 degrees). See Appendix B for a List of Values.

41) Elevation:

For the spatial extent of the occurrence, record the average (or a “predominant”) elevation of the area occupied by the species as measured either in feet or meters above sea level. Minimum and maximum elevation should be recorded only if it is determined that the elevation range is significant for that particular occurrence (e.g., an occurrence on a steep slope or a large occurrence on an undulating landscape).

42) Elevation Unit of Measure: Conditionally Required (LOV).

Record the unit elevation was measured in; Feet or meters.

Soil Characteristics and Light Conditions

43) Substrate on which EO occurs: (LOV).

Record the predominant substrate that the rare plant species is rooted in. See Appendix B for a complete List of Values.

44) Parent Material: (LOV).

The unconsolidated material, mineral or organic, from which the substrate in the occurrence polygon developed. See Appendix B for List of Values.

45) Soil Moisture: (LOV).

Moisture state of the soil for the time period being described. See Appendix B for a List of Values.

46) Soil Texture: (LOV).

The code for the proportions of the various size groups of individual mineral soil grains less than two millimeters equivalent diameter in a mass of soil, expressed as a class, or names for other materials or physical state, measured at the surface horizon. See Appendix B for a List of Values.

47) Soil Type:

If desired, record the dominant soil map unit or soil series as indicated on a soils or ecological unit inventory map. Refer to locally stewarded soil maps or GIS layers to obtain this information. This information is not entered into the NRIS TES Plant Application. It would be obtained by intersecting appropriate spatial layers.

48) Light Exposure: (LOV).

Record the predominant light exposure throughout the occurrence polygon. Choose one of three values (full sun/ partial shade/ full shade). See also Appendix B for a List of Values and definitions.

Site Classifications

Record taxonomic units by type if published classifications exist for the area. Taxonomic classifications are not developed at the time of TES plant inventory. Use locally appropriate field keys and guides to describe the TES plant occurrence habitat within the terms of locally accepted and published classification systems. Contact your local or Regional ecologist for appropriate information available for use in your area. Available taxonomic classifications sanctioned for your area by regional and local stewards have been previously entered into NRIS and are used in the TES plants application as Lists of Values.

Taxonomic information about plant communities and site potential, along with other site morphometry measures and associated species, provide valuable information to model, track and predict the potential for TES plant species occurrences in time and space. Examples include focusing surveys on suspected habitats, predictive insight on the stability or successional status of the associated vegetation for a given population, and the ability to document and refine predictive models. Available taxonomic classifications and detail vary by Region within the USFS.

Existing Vegetation classifications provide context regarding the seral stage or current plant community in which the species occurs and should be recorded whenever possible. Existing vegetation classifications developed by the USFS, NatureServe or other partners may include hierarchical levels (i.e. classification levels) such as broad cover types, or alliances, or more detailed classifications at the association or community type level. Since most classification systems are hierarchical by design, record the most detailed classification level available (e.g., an association vs. an alliance).

Potential vegetation (or “Potential Natural Vegetation”) or **Ecological Type classifications** provide context to determine areas that may now or in the future contain suitable habitat for a given species, and predictive insight on the stability of the population on that particular site in

time. For example, based on knowing the site capability where the EO occurs, the site may become more or less favorable through time for that particular TES plant species. Potential vegetation classifications include hierarchical levels (i.e. classification levels) with nomenclature such as series, plant association, habitat types, or phases of plant associations and habitat types. Ecological type information, which by design integrates soil, geology, geomorphology and potential vegetation, should be used at the landtype or landtype phase level when available.

49) Existing Veg:

Record the taxonomic classification name or code for the existing vegetation type that accurately describes the EO. In addition to code and name, the following fields are used in NRIS (as stewarded and stored regionally) to locate the correct record from a List of Values:

Classification Level, Classification Code, Classification Short Name and Classification Set.

50) Potential Veg:

Record the taxonomic classification name or code for the potential natural vegetation type that accurately describes the EO. In addition to code and name, the following fields are used in NRIS (as stewarded and stored regionally) to locate the correct record from a List of Values:

Classification Level, Classification Code, Classification Short Name and Classification Set.

51) Ecotype:

Record the taxonomic classification name or code for the ecological type classification that accurately describes the EO. In addition to code and name, the following fields are used in NRIS (as stewarded and stored regionally) to locate the correct record from a List of Values:

Classification Level, Classification Code, Classification Short Name and Classification Set.

Habitat Quality and Management

The following fields are also contained in Biotics (Natural Heritage Program database).

52) Habitat Description:

Text field. A description or observations about the habitat that the EO occupies.

53) Dominant Process: (LOV).

Record a value indicating the dominant disturbance regime influencing the EO, if any. See Appendix B for a List of Values.

54) Process Comment:

Text field. Record any comments about the observed dominant disturbance.

55) Community Quality:

Enter a qualitative ranking for the overall quality of the habitat or plant community(-ies) with which the TES plant is associated. Choices: Low, Medium, High.

56) Landscape Integrity:

Enter a qualitative ranking for the overall quality of the landscape setting in which the TES plant is located. Choices: Low, Medium, High.

57) Disturbance/Threat (present or imminent): (LOV).

Record threats or potential threats, e.g., noxious weeds, OHV trails, or environmental problems that could affect the TES plant habitat. See Appendix B for a List of Values.

58) Disturbance/Threat Comment:

Record any comments about the extent or severity of the threat(s).

59) Non-native Species Comment:

Comments and observations concerning non-native species occurrences within or adjacent to the specific EO.

60) Current Land Use Comment:

Comments and observations about current land uses within or adjacent to the EO, including recommendations for modifications.

Lifeforms and Ground Cover

These lifeform canopy cover and ground cover estimates are approximate values. They are intended simply to give a general picture of the composition and relative abundance by lifeform category at the EO site during the visit. Use the same method for estimating covers as indicated in field 21, "Canopy Cover Method". See the Canopy Cover Section earlier for more detail regarding the use of cover data in this form.

61) Lifeform Canopy Cover (% Cover or Class): (LOV).

List the canopy cover for each lifeform represented in the EO, expressed as either percent cover values or canopy cover classes. Use the same method or class set for estimating cover for all cover estimates made for various lifeforms at this EO. See Appendix B for List of Cover Class Codes.

62) Ground Cover Type (% Cover or Class): (LOV).

The composition of the ground surface within the EO at the time of visit. Record each ground surface cover type present in the EO, expressed as a percent cover value or cover class code. This includes organic material, vegetation basal cover (live and standing dead), mosses, lichens, litter/duff, and inorganic material such as exposed mineral soil, gravel, rock, bedrock and any road surface. Ground surface for each type is estimated within only a two dimensional plane (unlike foliage cover); thus the total of all types should approximate 100%. See Appendix B for List of Cover Class Codes.

Associated Species

Associated species are those found in the same habitat and same location as the EO and should not include species that are not directly within or related to the EO polygon or site. Associated species help to establish habitat relationships and can help in habitat modeling. Associated species in the more general area surrounding the EO polygon can be listed in the associated TES plant field survey field form.

There is no limit to the number of species that may be entered. It is a good habit to write out the name or portion of the name on the field form to minimize misapplication of plant codes. The NRIS TES Plant application will auto-populate the entire scientific name when plant codes are entered, and can auto-populate the NRCS plant code when the scientific name is chosen from a standard list. Include the genus, species, and subspecies or variety as needed to properly identify the plant.

63) Completeness of Species List: Conditionally required (LOV).

It is helpful to know if the species list is a best attempt to document all associated species at the EO site (complete list) or if just certain species of interest were listed (selected or reduced by

some abundance level, or due to time constraints). Indicate how thorough the list of associated species is for an EO observation by selecting one of the standard choices listed in Appendix B (Complete, Reduced or Selected). This field is conditionally required if associated species are listed.

64) Species List Comment:

A text field to describe what guidelines were used for recording species or to give a text description of how complete or thorough the associated species list is. It is good practice to explain in this comment section what criteria were used to collect any partial plant list.

65) and 66) NRCS Plant Code and Scientific Name:

Record all associated plant species (plant code and/or scientific name) that are to be included in the EO site plant list. Codes for plant species must follow the USDA *PLANTS* database, plant symbols convention (USDA, NRCS, 2002). Botanical nomenclature should follow a standard flora for the geographic area being sampled.

67) Lifform: (LOV).

Lifform is defined as the characteristic form or appearance of a species at maturity. As desired, enter the lifform code for each associated species listed for the EO. See Appendix B for a List of Values.

68) Dominant:

If desired, indicate whether the species is dominant at this site (Y = yes)

69) Percent Cover or Class: (LOV).

These cover estimates are approximate values, and are intended simply to give a general picture of the composition and relative abundance of each species at the EO site during this visit. Use the same method for estimating covers as indicated in field 21, "Canopy Cover Method". See the Canopy Cover Section earlier for more detail regarding the use of cover data in this form.

70) Non-Native:

Flag any species (y = yes) recorded on the list that are considered to be non-native plants. Refer to the USDA *PLANTS* database for this specification (USDA, NRCS 2002).

EO Specimen Documentation

Record appropriate documentation for EO voucher specimens collected for non-federally listed plants.

71) Reference for ID:

Record the appropriate flora or reference material used to identify the TES plant taxon.

72) Primary Collector: Conditionally Required.

Required if specimen collected. Record the primary collector of the specimen, who is responsible for assigning the collection number.

Other Collectors:

If additional collectors were involved in the collection.

73) Collection #:

Required if a specimen is collected. Record a unique number, assigned by the primary collector, for the specimen. If no collection number is assigned to the specimen, enter "s.n."

74) ID Confirmed: Conditionally Required (LOV).

Required if a specimen is collected. Indicate whether a positive identification has been confirmed for the specimen. See Appendix B for a List of Values.

75) Verification:

Name and institution or agency of the individual who provides authoritative verification of the specimen identification.

76) Specimen Repository: Conditionally Required.

Required if a specimen is collected. Text field to indicate the herbarium or location where the collected specimen is stored.

Image Information

77) Image ID:

Text field used to denote related photograph exposure numbers or computer file designations.

78) Image Description(s):

Text field used to describe the subject of any photograph or electronic image taken.

Location Information

This protocol requires spatially delineating each TES plant occurrence to document the location and extent of the occurrence (refer to *Mapping the Survey Area* on page 7). In addition to storing the spatial representation, the NRIS TES Plants application will automatically derive and populate required tabular geopolitical units in the application based on the location of the occurrence polygon or point (State, County, Region, Forest and District fields).

Alternative Location Methods

Tabular location fields beyond those mentioned above are provided in the field form and in the application, but are purely optional. These fields can be used to record a representative point or area for the location of the element occurrence, when desired. Tabular data can be recorded about quad maps or for any of the four location methods described below.

- Legal description
- Latitude and Longitude
- GPS UTM location
- Metes and Bounds

79) USGS Quad Number:

The number of the primary USGS quadrangle map containing the survey. These codes are stewarded nationally by the ALP application. *(Note: only one representative quad can be entered in the NRIS application. EOs may cross into more than one)*

80) USGS Quad Name:

The name of the primary USGS quadrangle map containing the survey. These codes are stewarded nationally by the ALP application. *(Note: currently only one representative quad can be entered in the NRIS application. EOs may cross into more than one)*

81) Forest Quad Number:

The locally stewarded number for the primary USGS quad map where the survey is located. *(Note: currently only one representative quad can be entered in the NRIS application. EOs may cross into more than one)*

82) Forest Quad Name:

The locally stewarded name for the primary USGS quad map where the survey is located. *(Note: currently only one representative quad can be entered in the NRIS application. EOs may cross into more than one)*

83) Legal Description (Public Land Survey System or “PLSS”):

For areas of the country where the Public Land Survey System is available, it is desirable and required to record this information to an appropriate level of detail **on the field form only**. Since legal descriptions will not be auto-populated in the NRIS application, this information must be manually entered into the NRIS TES Plants data entry form if it is desired to be electronically stored. (These fields can be used only to record a representative point or area for the EO, when desired.)

Meridian:

Record the code for the line of longitude from north to south that is the basis for local legal descriptions. These lines are also known as Principal Meridians and have distinct names. This information is available on the USGS Quadrangle map.

Township/Direction:

A Township is a unit of land containing 36 mile-square sections. Townships run in rows that parallel the local Base line. Each Township row is sequentially numbered relative to the row's order from, and whether it's north or south of, the local Base line; e.g., T2N (for the second township row north of the local Base line). To accommodate fractions of townships an additional code is required after the Township number, where 0 will equal no fraction; 1 equals $\frac{1}{4}$; 2 equals $\frac{1}{2}$, and 3 equals a $\frac{3}{4}$ township (see table of examples below). This information is available on the USGS Quadrangle map.

Range/Direction:

The Range numbers run parallel to the local Principal Meridian. Range rows are sequentially numbered relative to the row's order from, and whether it's east or west of, the Principal Meridian; e.g. R2E (for the second Range row east of the Principal Meridian). This information is available on the USGS Quadrangle map.

Township/Dir & Range/Dir Example	Description
7 N 14 E	Township 7 North Range 14 East
7.1 N 16 E	Township 7 $\frac{1}{4}$ North Range 16 East
8.2 N 12.0 W	Township 8 $\frac{1}{2}$ North Range 12 West

Section:

Each 36 square-mile township is subdivided into smaller squares called Sections. Record the Section where the center of the EO is located. A Section is equal to one square mile, 2.59 square kilometers, 640 acres, or $\frac{1}{36}$ of a township. This information is available on the USGS Quadrangle map. *(Note: Only one representative section can be entered in the application and surveys may commonly cross into more than one)*

Quarter Section:

The quarter-section subdivision where the center of the EO is located. For example: the NE quarter of section 4 (NE $\frac{1}{4}$).

Quarter, Quarter Section:

The quarter-quarter section subdivision where the center of the EO is located. For example: the NW quarter of the NE quarter of Section 4 (NW $\frac{1}{4}$ NE $\frac{1}{4}$).

Quarter, Quarter, Quarter Section:

The quarter-quarter-quarter section subdivision where the center of the EO is located. For example: the SE quarter of the NW quarter of the NE quarter of Section 4 (SE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$).

Quarter, Quarter, Quarter, Quarter Section:

The quarter-quarter-quarter-quarter section subdivision where the center of the EO is located. For example: the SW quarter of the SE quarter of the NW quarter of the NE quarter of Section 4 (SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$).

84) Latitude and Longitude:

Arbitrary measurements used to describe any point on the Earth or similar globe. Borrowing from theories of ancient Babylonians, later expanded by the famous Greek thinker and geographer Ptolemy, a full circle is assigned 360 degrees. Latitude is the term for the distance from the middle of the circle, or, in the case of the Earth, the equator. The equator is designated 0 degrees, with each pole being 90 degrees. Longitude is the vertical measurement--current convention places the zero degree point at Greenwich, England (also known as the Prime Meridian), with 180 degrees being on the opposite point on the globe.

Geodetic Datum: (LOV).

Record the geodetic datum for the latitude and longitude coordinates. Latitude and longitude in degrees/minutes/seconds will be automatically converted to decimal degrees.

Examples of Commonly Used Datums	Description
NAD-27	North American Datum of 1927
NAD-83	North American Datum of 1983
WGS-84	World Geodetic System (1984)

Latitude:**Degrees:**

(Range 0 to 90) The latitude degrees of the center of the EO as measured by GPS. (Default: North Latitude).

Minutes:

(Range 0 to 59) The latitude minutes of the center of the EO as measured by GPS. (Default: North Latitude).

Seconds:

(Range 0 to 59.99) The latitude seconds of the center of the EO as measured by GPS. (Default: North Latitude)

Longitude:**Degrees:**

(Range 0 to 180) The longitude degrees of the center of the EO as measured by GPS. (Default: West Longitude).

Minutes:

(Range 0 to 59) The longitude minutes of the center of the EO as measured by GPS. (Default: West Longitude).

Seconds:

(Range 0 to 59.99) The longitude seconds of the center of the EO as measured by GPS. (Default: West Longitude).

GPS Datum:

Record the geodetic datum used by the GPS unit for the Latitude and Longitude coordinates. See table above for examples of commonly used datums.

Latitude Decimal Degree:

Latitude in a degree value. Consists of the latitude in degrees to at least 6 decimal places.

Code Example	Description
42.206088	Decimal degrees

Longitude Decimal Degree:

Longitude in a degree value. Consists of the longitude in degrees to at least 6 decimal places.

Code Example	Description
105.105206	Decimal degrees

85) UTM Location:

The Universal Transverse Mercator Map Projection. A special case of the Transverse Mercator project. Abbreviated as the UTM Grid it consists of 60 north-south zones, each 6 degrees wide in longitude.

UTM Datum:

Record the datum for the UTM projection.

Examples of Commonly Used Datums	Description
NAD-27	North American Datum of 1927
NAD-83	North American Datum of 1983
WGS-84	World Geodetic System (1984)

UTM Zone:

The zone for the UTM projection. This can be obtained from quad maps or from GPS devices. UTM zone coordinates measure in meters east and north from two perpendicular reference baselines. (Up to two alphanumeric characters.)

UTM Zone Example	Description
13	Ranges from 1 to 60

Easting:

The distance in meters, east or west, from the central meridian of the UTM Zone, which is designated at a value of 500,000 meters.

Code Example	Description
71204000.52	Recorded to the hundredth of a meter.

Northing:

The distance in meters north from the equator from the UTM Zone origin, which is designated as a value of zero meters. (This protocol addresses only north latitudes.)

Code Example	Description
1687534000.25	Recorded to the hundredth of a meter.

86) GPS Equipment Used:

The manufacturer and model number of the GPS unit used.

87) Metes and Bounds:

Metes and bounds is a system or method of describing property or real estate when it is surveyed. The system was used in England and, by custom, was applied in the original 13 colonies that became the United States. The system uses physical features of the geography along with directions and distances to define a piece of land. It is sometimes referred to as a *Boundary Survey*. The NRIS TES Plants application accommodates text up to 2000 characters in length.

Directions**88) Directions to the Site:**

Text field. A narrative description of the EO location, with directions as needed for someone to follow in order to return to the site.

89) Sketch of Site or Area:

Make a general sketch, if desired, on the field form of the element occurrence to facilitate relocation or to point out any particular characteristics or features of the area. Include a general scale, with north at the top (unless otherwise indicated).

90) General Element Occurrence Comments:

Include any additional comments related to this EO that are not accounted for in other fields. Examples include details about subpopulations that may exist.

Appendix A – References

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(<http://www.natureserve.org/prodServices/biotics.jsp>)
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Appendix B - List of Values (Standard Codes) for TES Plant Element Occurrence Field Form

Following are the standard codes or List of Values used for this protocol. Additional values should not be added to these lists without National approval because they will not be able to be entered into the NRIS TES Plants application.

6) *Record Source* List of Values:

Code	Name	Description
FS	Field Survey	A systematic search of a geographical area for a particular target species or group of species. Refer to the TES Plant Survey Protocol for conducting field surveys.
IN	Incidental	The EO was discovered informally while conducting other fieldwork (not part of a formal plant survey).
HS	Herbarium Specimen	The record source for the EO was obtained in the course of examining an herbarium specimen
EO	Existing Natural Heritage Program record	The record source for the EO is from an existing Natural Heritage Program record
RV	Revisit	This data record is a new visit to an existing plant occurrence for purposes of monitoring population stability, habitat change or threats to the occurrence. If the revisit occurs as part of another formal survey, use "Field Survey" as record source, and answer NO for the new occurrence field.

21) *Canopy Cover Class Sets* List of Values:

Code	Name	Description
DAUBEN	Modified Daubenmire	Daubenmire Canopy Cover Classes, modified to include trace.
NRMCOV	National Rangeland Methodologies - Cover Ten Codes	Cover Ten Codes - National Rangeland Methodologies Data Dictionary Canopy Cover Classes

22) Canopy Cover Class Values – Listed by Set

Modified Daubenmire Classes: Set Code = DAUBEN

Code	Cover Class	Mid Point
T	0 - 1.0%	0.5
1	1.1 - 5.0%	3.0
2	5.1 - 25.0%	15.0
3	25.1 - 50.0%	37.5
4	50.1 - 75.0%	62.5
5	75.1 - 95.0%	85.0
6	95.1 - 100%	97.5

National Range Management “Cover Ten Codes”: Set Code = NRMCOV

Code	Cover Class	Mid Point
T	0.1 - 1%	0.50
0	1.1 - 5%	3.0
1	5.1 - 15%	10.0
2	15.1 - 25%	20.0
3	25.1 - 35%	30.0
4	35.1 - 45%	40.0
5	45.1 - 55%	50.0
6	55.1 - 65%	60.0
7	65.1 - 75%	70.0
8	75.1 - 85%	80.0
9	85.1 - 95%	90.0
A	95.1 - 99%	97.5
X	99.1 - 100%	99.5

23) and 66) Lifeform List of Values:

Code	Name	Description
FB	Forb/herb	Vascular plant without significant woody tissue above or at the ground. Forbs and herbs may be annual, biennial, or perennial but always lack significant thickening by secondary woody growth and have perennating buds borne at or below the ground surface. Federal Geographic Data Committee (FGDC) definition includes graminoids, forbs, and ferns; in PLANTS, graminoids are separated.
GR	Graminoid	Grass or grass-like plant, including grasses (Poaceae), sedges (Cyperaceae), rushes (Juncaceae), arrow-

Code	Name	Description
		grasses (Juncaginaceae), and quillworts (Isoetes). An herb in the FGDC classification.
LC	Lichen	Organism generally recognized as a single plant that consists of a fungus and an alga or cyanobacterium living in symbiotic association. Often attached to solid objects such as rocks or living or dead wood rather than soil.
LI	Liana	Climbing plant found in forests with long, woody, rope-like stems of anomalous anatomical structure. A shrub in the FGDC classification.
NP	Nonvascular	Nonvascular, terrestrial green plant, including mosses, hornworts, and liverworts. Always herbaceous, and often attached to solid objects such as rocks or living or dead wood rather than soil.
SH	Shrub	Perennial, multi-stemmed woody plant that is usually less than 4 to 5 meters or 13 to 16 feet in height. Shrubs typically have several stems arising from or near the ground, but may be taller than 5 meters or single-stemmed under certain environmental conditions.
SS	Subshrub	Low-growing shrub usually under 0.5 m or 1.5 feet tall (never exceeding 1 meter or 3 feet tall) at maturity. A dwarf-shrub in the FGDC classification.
TR	Tree	Perennial, woody plant with a single stem (trunk), normally greater than 4 to 5 meters or 13 to 16 feet in height; under certain environmental conditions, some tree species may develop a multi-stemmed or short growth form (less than 4 meters or 13 feet in height).
UN	Unknown	Lifeform is unknown.
VI	Vine	Twining/climbing plant with relatively long stems, which can be woody or herbaceous. FGDC classification considers woody vines to be shrubs and herbaceous vines to be herbs.
AL	Algae	A general name for the single-celled plant plankton, seaweeds, and their freshwater allies.
FU	Fungi	A non-flowering plant of the kingdom Fungi, lacking chlorophyll.

26) Plant Count Type List of Values:

Code	Name	Description
Genets	Genets	A plant that originates from seed, all parts of which thus share exactly the same genes. Counts of genets represent the number of genetically independent individuals in an occurrence. A genet may consist of numerous ramets.
Ramets	Ramets	Vegetative units that are initially physically attached to, and hence arise from, the same parent plant (genet). Examples include rosettes, stems or tillers (grasses), each of which have the potential for an independent existence if severed from the parent plant. Counts of ramets represent the number of vegetative units that are produced by the genets in an occurrence.
Undetermined	Undetermined	It is not clear whether the plant count is of genets, ramets, or a combination of both.

31) Phenology List of Values:

Code	Abbreviation	Meaning
VEG	Vegetative	Non-flowering or non-reproducing stems or individual plants.
FLB	Flower/Bud	Stems or individual plants that are in bud or flowering.
FRD	Fruit/Dispersed	Stems or individual plants that are fruiting, or have fruits that are dispersing, or have dispersed, seed.
SJ	Seedlings/Juvenile	Seedling or immature (pre-reproductive) stages.

36) Pollinator Type List of Values:

Code	Name
ANT	Ant
BAT	Bat
BIRD	Bird
BEE	Bee
BEET	Beetle
BUTTER	Butterfly
FLY	Fly
MOTH	Moth
OTUN	Other/Unknown

39) Slope Position List of Values:

Code	Name	Description
BS	Backslope	The steepest portion of the slope where material is generally in transit.
FS	Footslope	The lower portion of the slope where material is generally re-deposited.
SH	Shoulder	The upper slope where material generally moves through creep processes.
SU	Summit	The uppermost slope.
TS	Toeslope	The lowermost slope position where material moves generally through alluvial processes.

40) Aspect: Cardinal Direction List of Values:

Code	Name	Description
A	Includes all aspects	Where a population is on a conical depression or elevation and all aspects are represented
E	East	East
ENE	East northeast	East northeast
ESE	East southeast	East southeast
FL	Flat (no aspect)	Flat (no aspect)
N	North	North
NE	Northeast	Northeast
NNE	North northeast	North northeast
NNW	North northwest	North northwest
NW	Northwest	Northwest
S	South	South
SE	Southeast	Southeast
SSE	South southeast	South southeast
SSW	South southwest	South southwest
SW	Southwest	Southwest
W	West	West
WNW	West northwest	West northwest
WSW	West southwest	West southwest

43) Substrate on which EO Occurs List of Values:

Code	Name	Description
CL	Cliff	Any high, very steep to perpendicular or overhanging face of rock; a precipice.
DU	Duff	Leaf and needle litter, and duff not yet incorporated into the decomposed top humus layer. Non-continuous litter is not included
GR	Gravel	Rock fragments between 2 and 75 mm in diameter.
L	Log	An unhewn length of the trunk or large limb of a felled tree. The trunk or limbs of a felled tree or large fallen tree limbs.
M	Moss	Nonvascular, terrestrial green plant, including mosses, hornworts, and liverworts. Always herbaceous. This code does not apply to moss growing on bare soil in dry rangeland conditions.
O	Other	Other substrates not included in this list of values.
RS	Roadside	The disturbed area adjacent to a road surface.
R	Rock	Relatively hard, naturally formed mineral or petrified matter >1/8 inch in diameter appearing on soil surface, as small to large fragments, or as relatively large bodies, cliffs, outcrops or peaks.
S	Soil	Soil particles < 2 mm Bare soil, particles < 2 mm, not covered by rock, cryptogams, or organic material. Does not include any part of a road.
W	Water	Where the water table is above the ground surface during the growing season, such as streams, swamps, marshes, and ponds.

44) Parent Material List of Values:

Code	Name	Description
ALLU	Alluvium	A general term for clay, silt, sand, gravel, or similar unconsolidated detrital material, deposited during comparatively recent geologic time by a stream or other body of running water, as a sorted or semi-sorted sediment in the bed of the stream or on its flood plain or delta, as a cone or fan at the base of a mountain slope
CIND	Cinders	A juvenile vitric vesicular pyroclastic fragment that falls to the ground in an essentially solid condition
COLL	Colluvium	A general term applied to any loose, heterogeneous, and incoherent mass of soil material and/or rock fragments deposited by rainwash, sheetwash, or slow continuous downslope creep, usually collecting at the base of gentle slopes or hillsides
EOLI	Eolian deposit	A sedimentary deposit accomplished by the wind.
GLAC	Glacial deposit	Materials produced by or derived from glaciers and ice

Code	Name	Description
		sheets.
HUCA	Human caused/constructed	Materials created by the acts of humans, such as crushed rock or screened gravel.
LACU	Lacustrine sediments	Pertaining to sedimentary deposits produced by, or formed in a lake or lakes.
LADE	Landslide deposits	Deposits related the mass movement, including topples, falls, slides and debris flows
LAHA	Lahar (volcanic mudflow)	Deposits from mudflows originating from volcanic activities, and commonly found along the flanks of volcanoes.
MIXE	Mixed parent material	Mixed parent material, such as where a landslide deposit has mixed with alluvium.
MUCK	Muck	Dark finely divided well decomposed organic material, intermixed with a high percentage of mineral matter, usually silt; it forms surface deposits in some poorly drained areas, e.g. areas of permafrost and lake bottoms
ORGA	Organic deposits (undifferentiated)	A general term for organic deposits, including muck or peat
PEAT	Peat	An unconsolidated deposit of semicarbonized plant remains in a watersaturated environment, such as a bog or fen, and of persistently high moisture content (at least 75%).
RESI	Residuum	Deeply weathered in place bedrock.
TALU	Talus	Rock fragments of any size or shape (usually coarse and angular) derived from and lying at the base of a cliff or very steep, rocky slope. Also, the outward sloping and accumulated heap or mass of such loose broken rock, considered as a unit, and formed chiefly by gravitational falling, rolling, or sliding.
TEPH	Tephra	A general term for all pyroclastics of a volcano; particles that have been ejected through the air from volcanic activities, including ash, cinders and bombs
VOAS	Volcanic ash	Fine pyroclastic material under 2.0mm in diameter;

45) Soil Moisture List of Values:

Code	Abbreviation	Meaning
D	Dry	No moisture observed, at the wilting point (>15 bars of tension, realizing that various perennials, shrubs, trees and other native vegetation have wilting points up to 66 bars of tension).
M	Moist	Moisture state is between the wilting point and field capacity.
W	Wet	The moisture state is at field capacity or wetter.

46) Soil Texture List of Values:

Code	Name	Description
C	clay	A term used in the U.S. and by the International Society of Soil Science for a rock or mineral particle in the soil, having a diameter less than 0.002 mm (2 microns)
CL	clay loam	A soil containing 27-40% clay, 20-45% sand, and the remainder silt.
L	loam	A rich, permeable soil composed of a friable mixture of relatively equal and moderate proportions of clay, silt, and sand particles, and usually containing organic matter
S	sand	A term used in the U.S. for a rock or mineral particle in the soil, having a diameter in the range of 0.05-2 mm.
SI	silt	A rock or mineral particle in the soil, having a diameter in the range of 0.002-0.05 mm.
SIL	silt loam	A soil containing 50-88% silt, 0-27% clay, and 0-50% sand; e.g. one with at least 50% silt and 12-27% clay, or one with 50-88% silt and less than 12% clay.
SL	sandy loam	A soil containing 43-85% sand, 0-50% silt, and 0-20% clay, or containing at least 52% sand and no more than 20% clay and having the percentage of silt plus twice the percentage of clay exceeding 30, or containing 43-52% sand, less than 50% silt, and less than 7% clay.

48) Light Exposure List of Values:

Code	Name	Description
SUN	Full Sun	Full Sun characterizes the predominant light exposure condition across the EO.
PSH	Partial Shade	Partial Shade characterizes the predominant light exposure condition across the EO.
FSH	Full Shade	Full Shade characterizes the predominant light exposure condition across the EO.

53) Dominant Process List of Values:

Code	Name	Description
10	Insects (general)	Any of numerous usually small arthropod animals of the class Insecta, having an adult stage characterized by three pairs of legs and a body segmented into head, thorax, and abdomen and usually having two pairs of wings. Insects include the flies, crickets, mosquitoes, beetles, butterflies, and bees.
19	General diseases	A general category for a pathological condition of a part or system of an organism resulting from various causes, such as infection, genetic defect, or environmental stress, and characterized by an identifiable group of signs or symptoms. Included are biotic damage, root/butt diseases, stem decays/cankers/parasitic/epiphytic plants, decline complexes/diebacks/wilts, foliage diseases, stem rusts and broom rusts.
30	Fire	Disturbances related to natural or human caused fires.
41	Wild animals	Disturbances related to the activities of wild animals
42	Domestic animals	Disturbances related to domestic animals.
50	Abiotic damage	Disturbances related to a wide variety of abiotic events, including air pollution, chemicals, drought, flooding, lightning, snow/ice, avalanches and landslides.
51	Erosion	Disturbances related to the group of natural processes, including weathering, dissolution, abrasion, corrosion, and transportation, by which material is worn away from the earth's surface.
60	Competition	Disturbances related to the simultaneous demand by two or more organisms for limited environmental resources, such as nutrients, living space, or light.
70	Human activities	Disturbances related to human activities, including herbicides, imbedded objects, land clearing, logging damage, roads, vehicle damage and compaction.
90	Unknown	The mechanism creating the disturbance is unknown.

55) Community Quality List of Values

Code	Name	Description
L	Low	
M	Medium	
H	High	

56) Landscape Integrity List of Values

Code	Name	Description
L	Low	
M	Medium	
H	High	

57) Threats List of Values

Code	Name	Description
CO	Collecting	Collecting; includes scientific collecting, or gathering by gardeners or others with the intent of cultivation, or collecting for medicinal or wildcrafting use
EX	Exotic Plant Species	Threats related to the invasion of an invasive plants infestation.
FC	Change in fire regime	Successful fire suppression activities have lead to changes in the seral stage that may contribute to a greater threat of catastrophic fires.
FF	Fire suppression activities	Fire suppression activities, including hand lines, dozer lines, back burning, etc.
FI	Increased fire frequency	Changes in the vegetation community are contributing to an increased fire frequency.
FL	Federally Listed Species	Not currently known to occur on NFS lands in a given state, but currently included by USFWS on the species lists for the National Forests in that state; = listed species potentially occurring on NFS lands
FR	Fire (direct effects)	The effects of burning from a fire.
FS	Stand-replacing fires	The effects of intense fire that leads to mortality and stand replacement
GI	Grazing, Indirect Effects	Indirect effects of livestock grazing (e.g., changes in moisture regime)
GZ	Grazing, Direct effects	Direct effects of livestock grazing (e.g., browsing, trampling)
FX	Fire exclusion	Due to fire exclusion, the population is threatened.
HC	Hydrological regime	Changes; includes alterations to wetland habitats (e.g., peatlands, aquatic habitats) that might result indirectly from management activities elsewhere in the watershed

Code	Name	Description
MN	Mining	The direct and indirect effects of mining including removal of material, stockpiling or disposal of tailings and discharge of fluids.
NW	Not protected by existing wetland protections	Not adequately protected by existing wetland/SMZ/BMP guidelines (e.g., isolated wetlands < 1 acre, as not covered by PACFISH/INFISH)
OV	Off highway vehicles	Off-highway vehicles and motorized recreation
PA	Pathogens	Pathogens are affecting the population.
PL	Pipelines	Direct and indirect disturbances related to pipeline construction and maintenance
RC	Recreation	Recreation (hiking, stock use, mountain bike use, trail construction, etc.)
RD	Road construction	Direct and indirect disturbances related to road construction.
RE	Review	Review of status, threats, and ecological specialization needed by Forest specialists
RM	Road maintenance	Direct and indirect disturbances related to road maintenance.
RP	Riparian zone disturbances	Generic code for disturbances in riparian zones related to human activities
SU	Succession	The natural vegetation succession is creating habitat that is threatening the population
TH	Timber harvest	Timber harvest activities, including felling, yarding and disposal activities are threatening the population.
XX	Herbicide spray and drift	Direct application of herbicides and indirect effects of drift are affecting the population.

61) Ground Cover List of Values

Code	Name	Description
BARE	Bare soil (soil particles < 2 mm)	Bare soil, not covered by rock, cryptogams, or organic material. Does not include any part of a road (see definition for road).
BAVE	Basal vegetation	Basal vegetation, not differentiated by lifeform. For use when basal vegetation is not separated into more detailed codes.
BEDR	Bedrock Outcrop	A general term for the rock, usually solid, that outcrops at the surface
GRAV	Gravel	Rock fragments between 2 and 75 mm in diameter.
LICH	Lichen	an organism generally recognized as a single plant that consists of a fungus and an alga or cyanobacterium living in a symbiotic association. For lichen growing on bare soil in dry rangeland conditions see cryptogammic crusts (CRYP).

LITT	Litter and duff	Leaf and needle litter, and duff not yet incorporated into the decomposed top humus layer. Non-continuous litter is not included (for example, scattered needles over soil is classified as BARE).
MOSS	Moss	Nonvascular, terrestrial green plant, including mosses, hornworts, and liverworts. Always herbaceous. This code does not apply to moss growing on bare soil in dry rangeland conditions. For rangeland conditions, see cryptogrammic crusts (CRYP).
ROAD	Road	Improved roads, paved roads, gravel roads, improved dirt roads, and off-road vehicle trails regularly maintained or in long-term continuing use. Generally constructed using machinery. Includes cut banks and fills.
ROCK	Rock	Relatively hard, naturally formed mineral or petrified matter >1/8 inch in diameter appearing on soil surface, as small to large fragments, or as relatively large bodies, cliffs, outcrops or peaks. Includes bedrock. Generic term used by Inven.
WATE	Water	Where the water table is above the ground surface during the growing season, such as streams, swamps, marshes, and ponds.

63) Completeness of Species List List of Values:

Code	Name	Description
C	Complete	Represents an attempt to list all species found in association with the EO. The occurrence polygon or the survey area was surveyed intensively.
R	Reduced	Incomplete species list for some reason, e.g., partial search, only listed species above a certain cover value, etc. Indicate any specific criteria in a separate note.
S	Selected	Only listed species according to some selection criteria, such as only certain life forms, only species of specific interest, etc. Indicate any specific selection criteria in a separate note.

74) ID Confirmed List of Values:

Code	Name	Description
Y	Yes	Identification of the specimen has been confirmed
N	No	Identification of the specimen has not been confirmed, pending follow-up verification
Q	Questionable	Identification of the specimen can't currently be confirmed

Appendix C - TES Plant Element Occurrence Field Form

USDA FOREST SERVICE 2005

® = required field, ®* = conditionally required field

General Information

1) FS SITE ID: ®		2) DATE: ®		3) SITE NAME:	
4) NRCS PLANT CODE: ®					
5) SCIENTIFIC NAME: ®					
6) RECORD SOURCE: ®		7) SURVEY ID: ®*		8) Survey Name:	
9) EXAMINER(S)- LAST: ®			FIRST:		MIDDLE INITIAL:
LAST:			FIRST:		MIDDLE INITIAL:
10) OWNERSHIP: ®					
11) E.O. #			12) NEW OCCURRENCE – YES: OR NO:		
13) STATE: ®*		14) COUNTY: ®*			
15) REGION: ®*		16) FOREST: ®*		17) DISTRICT: ®*	
18) Entire extent mapped: Yes: No: Uncertain:			19) Area (Est):		20) Area UOM: ®*
21) Canopy Cover Method ®* (circle one): COVER PERCENT; DAUBEN; NRMCOV					

Element Occurrence Data

22) EO Canopy Cover: %Cov: or Cover Class Code:		23) Lifeform:	
24) Number of subpopulations:		XX) Plants Found: Yes or No	
25) Plant Count:	26) Count Type: <i>Genets/Ramets/Undetermined</i>		27) Count: <i>Actual or Estimate</i>
28) Revisit needed - Yes or No		29) Revisit Date:	
30) Revisit Justification:			
31) Phenology by % <i>(Sum to 100%):</i> Vegetative ____ Flower/Bud . . . ____ Fruit/Dispersed . ____ Seedlings/ Juvenile ____		32) Population Comments: (e.g., distribution, vigor, density, phenology, dispersal) <hr/> 33) Evidence of disease, competition, predation, collection, trampling, or herbivory: Yes ____ or No ____ 34) Evidence Comments:	
35) Pollinator observed – Yes or No 36) Pollinator type(s):			
37) Pollinator comments:			

Site Morphometry

38) Percent Slope:		39) Slope position:	
40) Aspect: azimuth: or cardinal:			
41) Elev.: Ave: Min: Max:		42) Elev UOM: ®*	

Soil Characteristics and Light Conditions

43) Substrate on which EO occurs:			
44) Parent Material:		45) Soil Moisture:	
46) Soil Texture:		47) Soil Type:	
48) Light Exposure:			

FS SITE ID:

Site Classifications

Record taxonomic units of the given type(s) if published classifications exist for the area.			
CLASSIFICATION TYPE	CLASS CODE	CLASSIFICATION SHORT NAME	CLASSIFICATION SET
49) Existing Veg			
50) Potential Veg			
51) Ecotype			

Habitat Quality and Management Comments

52) Habitat Description:	
53) Dominant Process:	
54) Community Quality (L, M, H):	55) Landscape Integrity (L, M, H):
56) Process Comment:	
57) Disturbance/Threats (present or imminent):	
58) Disturbance/Threats Comment:	
59) Non-Native Comment:	
60) Current Land Use Comment:	

Canopy Cover

Record % canopy cover by actual percent, or by cover class (as indicated in General Information Block).			
Lifeform Canopy Cover	61) % Cov or Code	Ground Cover	62) % Cov or Code
Tree		Bare	
Shrub		Gravel	
Forb		Rock	
Graminoid		Bedrock	
Non-vascular		Moss	
Lichen		Litter/Duff	
Algae		Basal Veg	
		Water	
		Road surface	
		Lichen	

FS SITE ID:

Associated Species

List species directly associated with the EO species on this site. Record the NRCS Plant Code, scientific name or both. If desired, indicate lifeform, dominant species, % cover for each species and flag non-native species.

63) Completeness of Species List: ®* C, R, OR S

64) Species List Comment:

[illegible]

EO Specimen Documentation

71) Reference for ID:			
72) Primary Collector – Last Name:		First Name:	M.I.
Other Collectors – Last Name:		First Name:	M.I.
73) Collection #: ®*		74) ID Confirmed: ®* Y: or N: or Questionable:	
75) Verification:			
76) Specimen Repository: ®*			

Image Information

77) Image ID	78) Image Description

Location Information

(State, County, Region, Forest, District will be auto-populated by the database application when the spatial feature is entered)

79) USGS Quad Number:	80) USGS Quad Name:
81) Forest Quad Number:	82) Forest Quad Name:

83) Legal Description: Required where public land survey is available.				
Meridian:	Township and Range:			
Section: _____	Q Sec: _____	QQ Sec: _____	QQQ Sec: _____	QQQQ Sec: _____

84) Latitude and Longitude (either in degrees, minutes, seconds or in decimal degrees)			
Geodetic Datum:			
Latitude:	Degrees ____ N	Minutes	Seconds ____.
Longitude:	Degrees ____ W	Minutes	Seconds ____.
GPS Datum:			
GPS Lat. Dec. Degrees:		GPS Long. Dec. Degrees:	

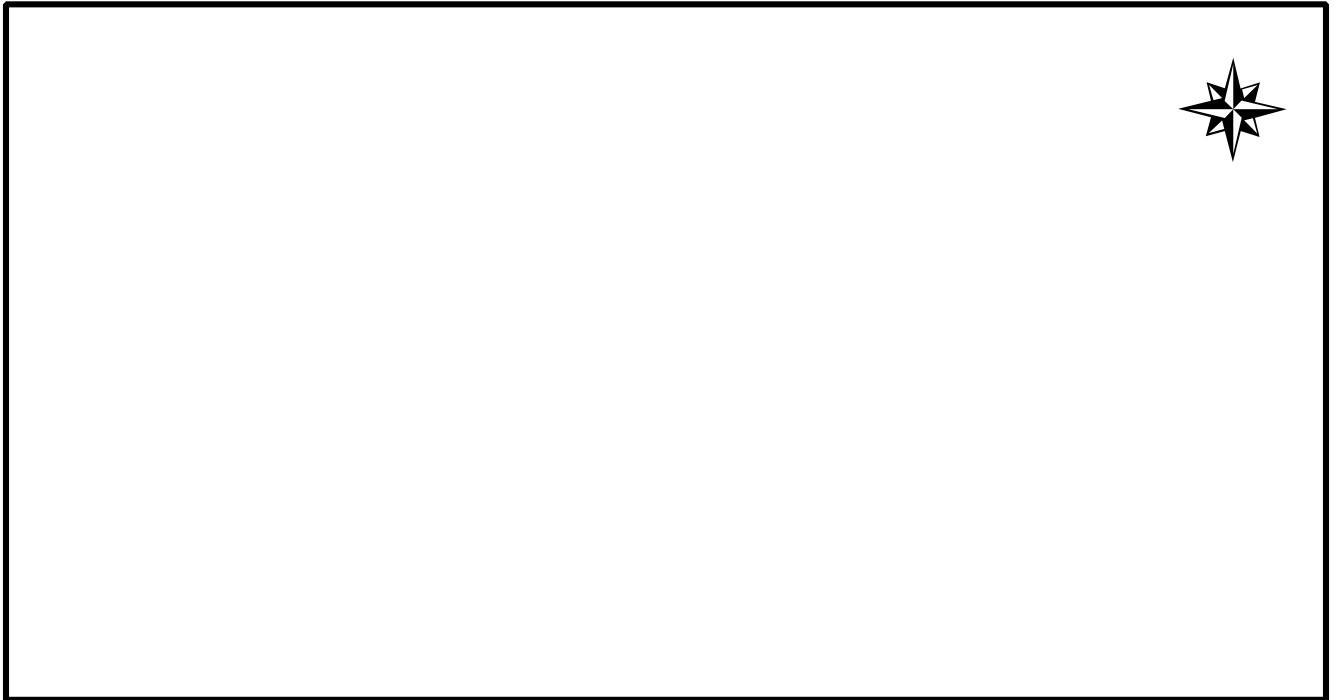
85) UTM	
UTM Datum:	UTM Zone:
Easting: _____	Northing: _____

86) GPS Equipment Used (Manufacturer and Model):
87) Metes and Bounds

FS SITE ID:

88) Directions to Site

89) Sketch of Site or Area

A large empty rectangular box for sketching the site or area. In the top right corner of the box, there is a compass rose icon with eight points, indicating North is towards the top of the page.

90) General EO Comments

APPENDIX D

- Wallowa County Noxious Weed list
- Oregon Noxious Weed List
- Noxious Weed Plant Occurrence Record

Attachment 1

2011 Wallowa County Weed List

Common name	WR code	Gov code	Scientific name
Absinth Wormwood	AWW	ARAB3	<i>Artemisia absinthium</i>
<u>Annual Bugloss</u>	<u>ABL</u>	<u>ARM12</u>	<u><i>Anchusa arvensis</i></u>
Bachelor Button	BAB	CECY2	<i>Centaurea cyanus</i>
Black Henbane	BLH	HYNI	<i>Hyoscyamus niger</i>
Himalayan Blackberry	HBB	RUAR9	<i>Rubus armeniacus</i>
Blooddrop	BDP	ADAD	<i>Adonis annua</i>
Bouncingbet	BBT	SAOF4	<i>Saponaria officinalis</i>
Buffalo Bur	BFB	SORO	<i>Solanum rostratum</i>
Bur Buttercup	BBC	CETE5	<i>Ranunculus testiculatus</i>
Bur Chervil	BRC	ANCA14	<i>Anthriscus caucalis</i>
Canada Thistle	CTH	CIAR4	<i>Cirsium arvense</i>
Chicory	CHK	CIIN	<i>Cichorium intybus</i>
Clary Sage	CSG	SASC	<i>Salvia sclarea</i>
Common Bugloss	CBL	ANOF	<i>Anchusa arvensis</i>
Common Burdock	CBD	ARM12	<i>Arctium minus</i>
Common Crupina	CCP	CRVU2	<i>Crupina vulgaris</i>
Common Tansy	CTZ	TAVU	<i>Tanacetum vulgare</i>
Common Teasle	CMT	DIFU2	<i>Dipsacus fullonum</i>
Common Reed Grass	CRG	PHAU7	<i>Phragmites australis</i>
Dalmation Toadflax	DTF	LIDA	<i>Linaria dalmatica</i>
Diffuse Knapweed	DKW	CEDI3	<i>Centaurea diffuse</i>
<u>Dyers Woad</u>	<u>DYW</u>	<u>ISTI</u>	<u><i>Isatis tinctoria</i></u>
<u>False Hoary Allysum</u>	<u>FHA</u>	<u>BEIN2</u>	<u><i>Berteroa incana</i></u>
Field Bindweed	FBW	COAR4	<i>Convolvulus arvensis</i>
Foxtail	FXT	HOMUL	<i>Hordeum leporinum</i>
<u>Garlic Mustard</u>	<u>GMS</u>	<u>ALPE4</u>	<u><i>Alliaria petiolata</i></u>
Hounds Tongue	HDT	CYOF	<i>Cynoglossum officinale</i>
<u>Italian Thistle</u>	<u>ITH</u>	<u>CAPY2</u>	<u><i>Carduus pycnocephalus</i></u>
<u>Japanese Knotweed</u>	<u>JKW</u>	<u>POCU6</u>	<u><i>Polygonum cuspidatum</i></u>
Johnsongrass	JNG	SOHA	<i>Sorghum halepense</i>
Jointed Goatgrass	JGG	AECY	<i>Aegilops cylindrica</i>
Kochia	KCH	KOSC	<i>Kochia scoparia</i>
Leafy Spurge	LSP	EUES	<i>Euphorbia esula</i>
Long Spine Sandbur	LSS	CELO3	<i>Cenchrus longispinus</i>

Common name	WR code	Gov code	Scientific name
Meadow Hawkweed	MHW	HICAI0	<i>Hieracium pratense</i>
<u>Meadow Knapweed</u>	<u>MKW</u>	<u>CEDE5</u>	<i>Centaurea pratensis</i>
<u>Mediterranean Sage</u>	<u>MSG</u>	<u>SAAE</u>	<i>Salvia aethiopis</i>
Medusahead Rye	MHR	TACA8	<i>Taeniatherum caput-medusae</i>
Mullein	MLN	VETH	<i>Verbascum thapsus</i>
<u>Musk Thistle</u>	<u>MTH</u>	<u>CANU4</u>	<i>carduus nutans</i>
<u>Myrtle Spurge</u>	<u>MSP</u>	<u>EUMY2</u>	<i>Euphorbia mysinites</i>
<u>Orange Hawkweed</u>	<u>OHW</u>	<u>HIAU</u>	<i>Hieracium aurantiacum</i>
<u>Oregano</u>	<u>ORE</u>	<u>ORVU</u>	<i>Origanum vulgare</i> <i>Chrysanthemum</i> <i>leucanthemum</i>
Oxeye Daisy	OED	LEVU	
Perennial Peavine	PPV	LALA4	<i>Lathyrus latifolius</i>
<u>Perennial</u>			
<u>Pepperweed</u>	<u>PPW</u>	<u>LELA2</u>	<i>Lepidium latifolium</i>
Perennial Sowthistle	PSO	SOAR2	<i>Sonchus arvensis</i>
<u>Plumeless Thistle</u>	<u>PTH</u>	<u>CAAC</u>	<i>Carduus acanthoides</i>
Poison Hemlock	PHK	COMA2	<i>Conium maculatum</i>
Puncturevine	PVN	TRTE	<i>Tribulus terrestris</i>
Purple Loosestrife	PLS	LYSA2	<i>Lythrum salicaria</i>
<u>Purple Starthistle</u>	<u>PST</u>	<u>CECA2</u>	<i>Centaurea calcitrapa</i>
Queen Anne's Lace	QAL	DACA6	<i>Daucus carota</i>
Reed Canary Grass	RCG	PHAR3	<i>Phalaris arundinacea</i>
Rose Campion	RCP	LYCO	<i>Lychnis coronaria</i>
Rush Skeletonweed	RSW	CHJU	<i>Chondrilla juncea</i>
<u>Russian Knapweed</u>	<u>RKW</u>	<u>ACRE3</u>	<i>Acroptilon repens</i>
Russian Olive	ROL	ELAN	<i>Elaeagnus angustifolia</i>
<u>Scotch Broom</u>	<u>SCB</u>	<u>SYSC4</u>	<i>Cytisus scoparius</i>
Scotch Thistle	SCT	ONAC	<i>Onopordum acanthium</i>
Silverleaf Nightshade	SNS	SOEL	<i>Solanum elaeagnifolium</i>
Skeletonleaf Bursage	SLB	AMTO3	<i>Ambrosia tomentosa</i>
Sow Thistle	SOT	SOAR2	<i>Sonchus arvensis</i>
<u>Spotted Cats Ear</u>	<u>SCE</u>	<u>HYRA3</u>	<i>Hypochaeris radicata</i>
<u>Spotted Knapweed</u>	<u>SKW</u>	<u>CEBI2</u>	<i>Centaurea stoebe</i>
St. Johnswort	STJ	HYPE	<i>Hypericum perforatum</i>
Sulfur Cinquefoil	SCQ	PORE	<i>Potentilla recta</i>
Sweet Briar Rose	SBR	ROEG	<i>Rosa eglanteria</i>
Tall Buttercup	TBC	RAAC3	<i>Ranunculus acris</i>

Common name	WR code	Gov code	Scientific name
Tamarisk/Saltcedar	TMR	TARA	<i>Tamarix ramosissima</i>
<u>Tansy Ragwort</u>	<u>TRW</u>	<u>SEJA</u>	<u>Senecio jacobaea</u>
Tree of Heaven	TOH	AIAL	<i>Ailanthus altissima</i>
Ventenata	VTa	VEDU	<i>Ventenata dubia</i>
Western Water Hemlock	WWH	CIDO	<i>Cicuta douglasii</i>
<u>White Bryony</u>	<u>WBR</u>	<u>BRAL4</u>	<u>Bryonia alba</u>
White Campion	WCA	SIAL12	<i>Silene alba</i>
Whitetop	WTP	CADR	Cardaria draba
<u>Yellow Flag Iris</u>	<u>YFI</u>	<u>IRPS</u>	<u>Iris pseudacorus</u>
Yellow Starthistle	YST	CESO3	Centaurea solstitialis
Yellow toadflax	YTF	LIVU2	Linaria vulgaris

KEY

Wallowa County "B" and/or "Watch" List Noxious Weed Species

Wallowa County "A" List Noxious Weed Species (Bold)

Wallowa County "T" List Noxious Weed Species (Underline)

Wallowa County "A" & "T" List Noxious Weed Species(Bold & Underline)

Oregon State Noxious Weed List



[Page Under Construction](#)

[A List](#)

[B list](#)

Page Under Construction

Page under construction...we apologize for the inconvenience.

For full list of OSWB recognized Noxious Weeds view the [2011 Noxious Weed and Classification System](#) or contact [Shannon Brubaker](#) for details - 503-986-4621

A List

"A" Designated weeds as determined by the Oregon Department of Agriculture

Common Name	Scientific Name
African rue	<i>Peganum harmala</i>
Camelthorn	<i>Alhagi pseudalhagi</i>
Coltsfoot	<i>Tussilago farfara</i>
Common reed	<i>Phragmites australis ssp. australis</i>
Cordgrass	
Common	<i>Spartina anglica</i>
Dense-flowered	<i>Spartina densiflora</i>
Saltmeadow	<i>Spartina patens</i>
Smooth	<i>Spartina alterniflora</i>
European water chestnut	<i>Trapa natans</i>
Flowering rush	<i>Butomus umbellatus</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>
Goatgrass	
Barbed	<i>Aegilops triuncialis</i>
Ovate	<i>Aegilops ovata</i>
Goatsrue	<i>Galega officinalis</i>

Hawkweed	
<u>King-devil</u>	<i>Hieracium piloselloides</i>
<u>Meadow</u>	<i>Hieracium pratense</i>
<u>Mouse-ear</u>	<i>Hieracium pilosella</i>
<u>Orange</u>	<i>Hieracium aurantiacum</i>
<u>Yellow</u>	<i>Hieracium floribundum</i>
<u>Hydrilla</u>	<i>Hydrilla verticillata</i>
<u>Japanese dodder</u>	<i>Cuscuta japonica</i>
<u>Kudzu</u>	<i>Pueraria lobata</i>
<u>Matgrass</u>	<i>Nardus stricta</i>
<u>Oblong spurge</u>	<i>Euphorbia oblongata</i>
<u>Paterson's curse</u>	<i>Echium plantagineum</i>
<u>Purple nutsedge</u>	<i>Cyperus rotundus</i>
<u>Silverleaf nightshade</u>	<i>Solanum elaeagnifolium</i>
<u>Squarrose knapweed</u>	<i>Centaurea virgata</i>
Starthistle	
<u>Iberian</u>	<i>Centaurea iberica</i>
<u>Purple</u>	<i>Centaurea calcitrapa</i>
<u>Syrian bean-caper</u>	<i>Zygophyllum fabago</i>
Thistle	
<u>Plumeless</u>	<i>Carduus acanthoides</i>
<u>Smooth distaff</u>	<i>Carthamus baeticus</i>
<u>Taurian</u>	<i>Onopordum tauricum</i>
<u>Woolly distaff</u>	<i>Carthamus lanatus</i>
<u>White bryonia</u>	<i>Bryonia alba</i>
<u>Yellow floating heart</u>	<i>Nymphoides peltata</i>
<u>Yellow Tuft (Allysum)</u>	<i>Allysum spp</i>

B list

"B" designated weeds as determined by the Oregon Department of Agriculture
 (*indicates targeted for biological control)

Common Name	Scientific Name
<u>Armenian blackberry (Himalayan blackberry)</u>	<i>Rubus armeniacus (R. procerus, R. discolor)</i>
<u>Biddy-biddy</u>	<i>Acaena novae-zelandiae</i>
Broom	
<u>French*</u>	<i>Genista monspessulana</i>
<u>Portuguese</u>	<i>Cytisus striatus</i>
<u>Scotch*</u>	<i>Cytisus scoparius</i>
<u>Spanish</u>	<i>Spartium junceum</i>
<u>Buffalobur</u>	<i>Solanum rostratum</i>
<u>Butterfly bush</u>	<i>Buddleja davidii (B. variabilis)</i>
<u>Common bugloss</u>	<i>Anchusa officinalis</i>
<u>Common crupina (bearded creeper)</u>	<i>Crupina vulgaris</i>
<u>Creeping yellow cress</u>	<i>Rorippa sylvestris</i>
<u>Cutleaf teasel</u>	<i>Dipsacus laciniatus</i>
<u>Dodder</u>	<i>Cuscuta spp.</i>
<u>Dyers woad</u>	<i>Isatis tinctoria</i>
<u>English ivy</u>	<i>Hedera helix (H. hibernica)</i>
<u>Eurasian watermilfoil</u>	<i>Myriophyllum spicatum</i>
<u>False brome</u>	<i>Brachypodium sylvaticum</i>
<u>Field bindweed*</u>	<i>Convolvulus arvensis</i>
<u>Garlic mustard</u>	<i>Alliaria petiolata</i>
<u>Gorse*</u>	<i>Ulex europaeus</i>
<u>Halogeton</u>	<i>Halogeton glomeratus</i>
<u>Herb Robert</u>	<i>Geranium robertianum</i>
<u>Houndstongue</u>	<i>Cynoglossum officinale</i>
<u>Johnsongrass</u>	<i>Sorghum halepense</i>
<u>Jointed goatgrass</u>	<i>Aegilops cylindrical</i>

<u>Jubata grass</u>	<i>Cortaderia jubata</i>
Knapweeds	
<u>Diffuse*</u>	<i>Centaurea diffusa</i>
<u>Meadow*</u>	<i>Centaurea pratensis</i> (<i>C. jacea</i> x <i>C. nigra</i>)
<u>Russian*</u>	<i>Acroptilon repens</i>
<u>Spotted*</u>	<i>Centaurea stoebe</i> (<i>C. maculosa</i>)
Knotweeds	
<u>Giant</u>	<i>Fallopia sachalinense</i> (<i>Polygonum</i>)
<u>Himalayan</u>	<i>Fallopia polystachyum</i> (<i>Polygonum</i>)
<u>Japanese (fleece flower)</u>	<i>Fallopia japonica</i> (<i>Polygonum cuspidatum</i>)
<u>Kochia</u>	<i>Kochia scoparia</i>
<u>Lesser celandine</u>	<i>Ranunculus ficaria</i>
<u>Mediterranean sage*</u>	<i>Salvia aethiopis</i>
<u>Medusahead rye</u>	<i>Taeniatherum caput-medusae</i>
<u>Old man's beard</u>	<i>Clematis vitalba</i>
<u>Parrots feather</u>	<i>Myriophyllum aquaticum</i>
<u>Perennial peavine</u>	<i>Lathyrus latifolius</i>
<u>Perennial pepperweed</u>	<i>Lepidium latifolium</i>
<u>Poison hemlock</u>	<i>Conium maculatum</i>
<u>Policeman's helmet</u>	<i>Impatiens glandulifera</i>
<u>Puncturevine*</u>	<i>Tribulus terrestris</i>
<u>Purple loosestrife*</u>	<i>Lythrum salicaria</i>
<u>Ragweed</u>	<i>Ambrosia artemisiifolia</i>
<u>Rush skeletonweed*</u>	<i>Chondrilla juncea</i>
<u>Saltcedar*</u>	<i>Tamarix ramosissima</i>
<u>Shiny geranium</u>	<i>Geranium lucidum</i>
<u>Small broomrape</u>	<i>Orobanche minor</i>
<u>South American waterweed</u>	<i>Egeria densa</i> (<i>Elodea</i>)

<u>Spanish heath</u>	<i>Erica lusitanica</i>
Water primrose	<i>Ludwigia spp.</i>

Attachment 2

NOXIOUS WEED PLANT OCCURRENCE RECORD WALLOWA-WHITMAN NATIONAL FOREST

 : Noxious Weed

Listed: Category :

SCIENTIFIC NAME: _____COMMON NAME: _____

PROJECT: _____DISCOVERY DATE: _____

LOCATION

RANGER DISTRICT: _____COUNTY: _____

QUAD(S):

LEGAL SUBDIVISION:

GPS-datum/lat&long (decimal,degree)

LOCATION (directions, landmarks, etc):

Land Owner:

DATES OF FIELDWORK:

BY:

INFESTATION

SIZE OF SITE: _____NUMBER OF PLANTS: _____

DESCRIPTION (phenology, age class, density, etc.):

VOUCHER (collector and number, where stored):

SUITABILITY FOR MONITORING:

HABITAT

ELEVATION:_____ **ASPECT:**_____ **SLOPE:**_____

Riparian:_____ **Upland:**_____ **Site Composition:**_____

DESCRIPTION (microhabitat, timber type, plant associates, soil type, etc.):

NATURE OF DISTURBANCE (if any):

MONITORING STATUS:

ERADICATION

METHODS USED (if any):

RECOMMENDATIONS (for further control efforts):

REPORTER:_____ **JOB TITLE:**_____ **DATE:**_____

Photos: _____

APPENDIX E

- Oregon Biodiversity Information Center List of Rare, Threatened and Endangered, Candidate, or Special Status Wildlife Species in Wallowa County
- Regional Forester's Special Status Species Lists for Sensitive Vertebrates and Federally Threatened, Endangered, and Proposed (TE&P)
- Management Indicator Species and Forestwide Standards and Guidelines (USFS 2010)

Table 3.5-1 Oregon Biodiversity Information Center List of Rare, Threatened and Endangered, Candidate, or Special Status Wildlife Species in Wallowa County.

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Amphibians							
Rocky Mountain tailed frog	<i>Ascaphus montanus</i>	SOC	SV	2	Cold, clear, rocky perennial streams in mature forests (Washington Herp Atlas 2009).	Suspected	Yes
Columbia spotted frog	<i>Rana luteiventris</i>	C	SV	2	Slow-flowing streams, ponds, springs, and marshes with emergent vegetation. Egg masses are placed in areas where they receive little or no shading from vegetation. Waters that remain aerobic and do not freeze to the sediments (such as springs and creeks) are most likely necessary for winter survival in areas subject to freezing. (Washington Herp Atlas 2009).	Suspected	Yes
Birds							
Northern goshawk	<i>Accipiter gentilis</i>	SOC	SV	4	Mature stands with large trees, a high canopy closure, and an open understory. The stands are generally located on moderate slopes, benches, toe of slope, level ground, and typically close to perennial water (Marshall et al. 2003).	Suspected	Yes
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	--	SV	2	In Oregon their distribution is restricted to grasslands (Marshall et al. 2003).	No	No
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	SOC	SC	4	Open grasslands and shrub-steppe areas including rangelands, pastures, golf course, and airports (Marshall et al. 2003).	No	No
Bufflehead	<i>Bucephala albeola</i>	--	--	2	High-elevation forested lakes. It uses cavities and artificial nest boxes in trees close to water to nest. In migration and winter they use sheltered freshwater lakes, ponds, sewage ponds, slow-moving rivers, bays, and backwaters (Marshall et al. 2003).	Suspected	No

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Ferruginous hawk	<i>Buteo regalis</i>	SOC	SV	4	Open country such as grasslands, shrub steppe, desert woodlands. Nest on cliffs and ledges, isolated trees, or riparian woodlands (Csuti et al. 1997, Marshall et al. 2003).	No	No
Swainson's hawk	<i>Buteo swainsoni</i>	--	SV	4	Open country such grasslands, sagebrush flats, juniper woodlands, and larger meadows in mountainous regions (Csuti et al. 1997).	No	No
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C	SC	2-ex	Large expanses of riparian forest that include Oregon Ash (<i>Fraxinus latifolia</i>), black cottonwood, and willow (<i>Salix</i> spp.) (Marshall et al. 2003).	No	No
Olive-sided flycatcher	<i>Contopus cooperi</i>	SOC	SV	4	Conifer forests with uneven age or open canopy stand with tall trees and snags for perching (Csuti et al. 1997)	Yes - observed	Yes
Bobolink	<i>Dolichonyx oryzivorus</i>	--	SV	2	Open prairies, grasslands, wet meadows, pastures, and grain crops (Csuti et al. 1997).	No	No
Pileated woodpecker	<i>Dryocopus pileatus</i>	--	SV	4	Dense mixed conifer forests in late-seral stages with large diameter trees and snags (Marshall et al. 2003).	Yes-observed	Yes
Willow flycatcher	<i>Empidonax traillii adastus</i>	SOC	SV	4	Tall brushy vegetation along streams, along the edge of forest clearings, or other openings (Csuti et al. 1997).	Suspected	Yes
Spruce grouse	<i>Falcipennis canadensis</i>	--	SV	3	In the Wallowa Mountains only and typically found in mix younger dense conifer forest with lodgepole pine, Engelmann spruce, and subalpine fir (Csuti et al. 1997, Marshall et al. 2003).	Suspected	Yes
American peregrine falcon	<i>Falco peregrinus anatum</i>	Delisted	SV	2	Cliffs greater than 75 ft in height and within 1.0 mile of water (Marshall et al. 2003).	Suspected	Yes
Bald eagle	<i>Haliaeetus luecocephalus</i>	Delisted	LT	4	Associated with large bodies of water. Nest in forested areas near oceans, rivers, estuaries, lakes, and reservoirs (Marshall et al. 2003).	Yes - Documented	Yes

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Harlequin duck	<i>Histrionicus histrionicus</i>	SOC	--	2	Breeds in low-gradient, slower reaches of mountain streams in forested areas primarily in the western cascade mountains. The Wallowa Mountain reports are prior to 1935 (Csuti et al. 1997, Marshall et al. 2003).	No	No
Yellow-breasted chat	<i>Icteria virens</i>	SOC	SC	4	The edges of large, dense thickets in riparian areas and swales, floodplains areas adjacent to streams and rivers, and in unmanaged dense leafy vegetation surrounding ponds and swamps (Marshall et al. 2003).	No	No
Wallowa rosy-finch	<i>Leucosticte tephrocotis wallowa</i>	--	--	1	Nest in rock crevices and crannies in high alpine habitat (Marshall et al. 2003).	No	No
Lewis' woodpecker	<i>Melanerpes lewis</i>	SOC	SC	2	Associated with open woodland habitat near water. Breeds in Oregon white oak (<i>Quercus garryana</i>), ponderosa pine, and riparian cottonwood communities (Marshall et al. 2003).	Suspected	Yes
Long-billed curlew	<i>Numenius americanus</i>	--	SV	4	Open grasslands, prairies, and meadows, often near scattered shrubs and usually near water or wet meadows in flat or rolling topography (Csuti et al. 1997, Marshall et al. 2003).	No	No
Mountain quail	<i>Oreortyx pictus</i>	SOC	SV	4	Generally found in shrub dominated communities in open forests, ridge tops, mountain slopes (Marshall et al. 2003).	Suspected	Yes
Flammulated owl	<i>Otus flammeolus</i>	--	SV	4	In dry open forest in mid-elevation range between 3,800 and 4,600 feet. Nest in mixed forest dominated with ponderosa pine (Marshall et al. 2003).	Suspected	Yes
Northern waterthrush	<i>Parkesia noveboracensis</i>	--	--	2	Dense and tall willow thickets in slow or standing water (Marshall et al. 2003).	No	No

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
White-headed woodpecker	<i>Picoides albolarvatus</i>	SOC	SC	2	In open ponderosa pine or mixed-conifer forests dominated by ponderosa pine. It requires large trees and snags for nesting and foraging (Csuti et al. 1997, Marshall et al. 2003).	Suspected	Yes
Black-backed woodpecker	<i>Picoides arcticus</i>	--	SV	4	Found in a variety of mix conifer forests dominated with ponderosa pine or lodgepole pine, typically below 4,500 ft with a high proportion of dead trees (Csuti et al. 1997, Marshall et al. 2003).	Suspected	Yes
American three-toed woodpecker	<i>Picoides dorsalis</i>	--	SV	4	Found in a variety of mix conifer forests dominated with or mixed with lodgepole pine, typically above 4,500 ft and contains high proportion of dead trees (Csuti et al. 1997, Marshall et al. 2003).	Suspected	Yes
Horned grebe	<i>Podiceps auritus</i>	--	--	2	Large open water areas surrounded with emergent vegetation (Csuti et al. 1997).	No	No
Great gray owl	<i>Strix nebulosa</i>	--	SV	4	Inhabit mature to old-growth coniferous forest adjacent to forest openings and clearings such as meadows (Csuti et al. 1997).	No	No
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>	SOC	SC	2	Found in grassland or grass-shrub habitats and utilize deciduous shrubs and trees for wintering (Marshall et al. 2003).	No	No
Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Mammals							
Gray wolf	<i>Canis lupus</i>	LE	LE	2	Habitat generalists and will establish territories anywhere there is a sufficient food source (ODFW 2010a).	Suspected	Yes

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Townsend's big-eared bat	<i>Cornorhinus townsendii</i>	SOC	SC	2	Occurs in wide variety of habitats, but commonly found in desert scrub, pinon-juniper and pine forests. Roost in caves, mines, and buildings (Verts and Caraways 1998).	No	No
Spotted bat	<i>Euderma maculatum</i>	SOC	SV	2	A wide variety of habitat that contain cliffs and crevices for roosting and opening for foraging (Verts and Caraways 1998).	Suspected	Yes
California Wolverine	<i>Gulo gulo</i>	C	LT	2	Open forest at higher elevations and vast amounts of wilderness (Csuti et al. 1997, Verts and Caraways 1998).	Suspected	Yes
Silver-haired bat	<i>Lasionycteris noctivagans</i>	SOC	SV	4	Associated with older conifer forests, roosts under loose bark, and forages over ponds and streams (Csuti et al. 1997, Verts and Caraways 1998).	Suspected	Yes
Hoary bat	<i>Lasiurus cinereus</i>	--	SV	4	Solitary forest-dwelling species that roosts in trees and forages along riparian corridors and brushy areas in the forest (Csuti et al. 1997).	Suspected	Yes
White-tailed jackrabbit	<i>Lepus townsendii</i>	--	SV	3	Open habitats with sagebrush deserts and grasslands (Csuti et al. 1997).	No	No

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Canada lynx	<i>Lynx canadensis</i>	LT	--	2	Canada lynx den in forests with large woody debris, such as downed logs and windfalls, to provide denning sites with security and thermal cover for kittens. Forests older than 200 years with lodgepole pine, spruce, and subalpine fir have been used for denning in Washington. Den sites must provide for minimal disturbance by humans and proximity to foraging habitat (early successional forests), with denning stands at least 2.5 acres in size. Intermediate-age forests allow for lynx access between den sites and foraging areas, movement within home ranges, and random foraging opportunities (USFWS 2009). USFS has identified the Project area as within Lynx Core Habitat Area and the habitat within the Project area as non-habitat, unsuitable, and no data (USFS 2010c).	Suspected	Yes
American marten	<i>Martes americana</i>	--	SV	4	Mature forest with closed canopies with adequate structure and down logs (Csuti et al. 1997).	Suspected	Yes
Fisher	<i>Martes pennanti</i>	SOC	SC	2	Mature, closed canopy forest with some deciduous component, particularly along riparian corridors (Csuti et.al. 1997).	Suspected	Yes
California myotis	<i>Myotis californicus</i>	--	SV	4	Forages around the edges of clumps of trees or over or near open water. Roost in cliff faces, crevices in trees, and caves (Csuti et al. 1997).	Suspected	Yes
Western small-footed myotis	<i>Myotis ciliolabrum</i>	SOC	--	4	Associated with arid grasslands in cliffs and rocky canyons, ponderosa pine, or mixed-conifer forests. Roosts in rock crevices, under boulders, and bark (Csuti et al. 1997).	No	No
Long-eared myotis	<i>Myotis evotis</i>	SOC	--	4	Associated with forested habitats and forest edges including juniper woodlands, open areas in ponderosa pine woodlands, Douglas-fir, spruce, true fir, and subalpine forest (Csuti et al. 1997).	Suspected	Yes

Common Name	Scientific Name	Federal Status	State Status	ORBIC Status	Habitat	Species present in the Project Vicinity	Habitat within the Project Vicinity
Fringed myotis	<i>Myotis thysanodes</i>	SOC	SV	2	Cave dweller found a variety of forested vegetation (Csuti et al. 1997, Verts and Caraways 1998).	Suspected	Yes
Long-legged myotis	<i>Myotis volans</i>	SOC	SV	4	Coniferous forests and roosts in crevices in cliff faces, abandon buildings, caves and mines (Csuti et al. 1997).	Suspected	Yes
Yuma myotis	<i>Myotis yumanensis</i>	SOC	--	4	Closely associated with open water and forests. Uses abandon buildings and other man-made structures for roosting (Csuti et al. 1997, Verts and Caraways 1998).	Suspected	Yes
Preble's shrew	<i>Sorex preblei</i>	SOC	--	3	Occurs near permanent or intermittent streams in arid to semi-arid shrub/grass associations and dense high-elevation coniferous forests (Csuti et al. 1997).	No	No
Grizzly bear	<i>Ursus arctos horribilis</i>	LT	--	2-ex	Rugged and most inaccessible wilderness areas with adequate food, dens, and cover. Grizzly bears have been extirpated from Oregon since 1931 (Verts and Caraway 1998).	No	Yes
Reptiles							
Painted turtle	<i>Chrysemys picta</i>	--	SC	2	Shallow quiet waters, such as ponds, marshes, and small streams with muddy or sandy substrates with aquatic vegetation and basking sites (Csuti et al. 1997).	Suspected	Yes

REGIONAL FORESTER'S SPECIAL STATUS SPECIES LIST - Federally Threatened, Endangered, and Proposed (TE&P)																									
USDA FOREST SERVICE - PACIFIC NORTHWEST REGION																									
Date: January 2008																									
Taxon	ScientificName	CommonName	ESU_DPS	Federal Status	Date Listed	Critical Habitat	Recovery Plan	CRG	COL	DES	FWI	GIP	MAL	MBS	MTH	OCH	OKW	OLY	RRS	SIU	UMA	UMP	WAW	WIL	
MA	CANIS LUPUS	GRAY WOLF		FE	2003	None in OR or WA	Final 1987		D			D	D	D			D				D		D		
MA	LYNX CANADENSIS	CANADA LYNX		FT	2000	Designated 2006	None		D				S				D				D		D		
VA	MIRABILIS MACFARLANEI	MACFARLANE'S FOUR O'CLOCK		FT	1979	None	Final 2000																D		
VA	SILENE SPALDINGII	SPALDING'S CATCHFLY		FT	2001	None	Final 2007														D		D		
FA	ONCORHYNCHUS MYKISS	STEELHEAD	MIDDLE COLUMBIA RIVER	FT	1999	Designated 2005	None	D				I	D		D	D	D				D		I		
FA	ONCORHYNCHUS MYKISS	STEELHEAD	SNAKE RIVER BASIN	FT	1997	Designated 2005	None	D													D		D		
FA	ONCORHYNCHUS NERKA	SOCKEYE SALMON	SNAKE RIVER	FE	1991	Designated 1993	None	D															D		
FA	ONCORHYNCHUS TSHAWYTSCHA	CHINOOK SALMON	SNAKE RIVER FALL/SPRING/ SUMMER RUNS	FT	1992	Designated 1993	None	D													D		D		
FN	SALVELINUS CONFLUENTUS	BULL TROUT	COLUMBIA RIVER	FT	6/10/1998	Final 2005	Draft 2002	I	D	D		D	D		D	D	D				D		D	D	

REGIONAL FORESTER'S SPECIAL STATUS SPECIES LIST - Sensitive Vertebrates																						
USDA FOREST SERVICE - PACIFIC NORTHWEST REGION																						
Date: January 2008																						
(*) = Survey and Manage species that will remain Sensitive in OR and/or WA even though the criteria would place them in the Strategic category or off the list																						
Taxon	ScientificName	CommonName	ESU_DPS	ISSSSP Status	CRG	COL	DES	FWI	GIP	MAL	MBS	MTH	OCH	OKW	OLY	RRS	SIU	UMA	UMP	WAW	WIL	
BI	BARTRAMIA LONGICAUDA	UPLAND SANDPIPER		SEN				S		D			S	S				S			D	
BI	BUCEPHALA ALBEOLA	BUFFLEHEAD		OR-SEN	D		D	D		D		D	D				D		D		S	D
BI	CENTROCERCUS UROPHASIANUS	GREATER SAGE-GROUSE		SEN			D	D		D			D								S	
BI	FALCO PEREGRINUS ANATUM	AMERICAN PEREGRINE FALCON		SEN	D	D	D	D	D	S	D	D	S	D	D	D	D	S	D		D	D
BI	HALIAEETUS LEUCOCEPHALUS	BALD EAGLE		SEN	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		D	D
BI	MELANERPES LEWIS	LEWIS' WOODPECKER		OR-SEN	D		D	D		D		D	D			D		S	D		D	S
BI	PICOIDES ALBOLARVATUS	WHITE-HEADED WOODPECKER		SEN	S	D	D	D		D		D	D	D		D		D	D		D	D
BI	TYMPANUCHUS PHASIANELLUS																					
BI	COLUMBIANUS	COLUMBIAN SHARP-TAILED GROUSE		OR-SEN																	D	
HA	ASCAPHUS MONTANUS	INLAND TAILED FROG		OR-SEN														D			D	
HA	RANA LUTEIVENTRIS	COLUMBIA SPOTTED FROG	GREAT BASIN DPS	OR-SEN				S		D			D					D			D	
MA	GULO GULO LUTEUS	CALIFORNIA WOLVERINE		SEN	D	D	S	S	D	S	D	S	S	D		S	S	S	S		D	S
MA	MARTES PENNANTI	FISHER	OUTSIDE WEST COAST DPS	SEN	S	D								S							S	
FN	ONCORHYNCHUS CLARKII LEWISI	WESTSLOPE CUTTHROAT TROUT	ALL	SEN		D				D			D	D				D			D	
FN	ONCORHYNCHUS MYKISS	INLAND REDBAND TROUT (All stocks)		SEN		D	D	D	S	D		D	D	D		D		D			D	

	A	B	C	D	E	F	G	H	I	J	
1	REGIONAL FORESTER'S SPECIAL STATUS SPECIES LIST - Acronyms										
2	USDA FOREST SERVICE - PACIFIC NORTHWEST REGION										
3	Date: January 2008										
4											
5	National Forests:				Taxon:	Invertebrates					
6	CRG	Columbia River Gorge National Scenic Area				IA = Class Arachnida: Spiders, Scorpions, Mites & Ticks					
7	COL	Colville National Forest				IBI = Class Bivalva: Clams, Oysters & Mussels					
8	DES	Deschutes National Forest				ICL = Class Clitellata: Leeches & Earthworms					
9	FWI	Fremont-Winema National Forest				ICR = Class Crustacea: Crustaceans					
10	GIP	Gifford Pinchot National Forest				IG = Class Gastropoda: Snails & Slugs					
11	MAL	Malheur National Forest				IIC = Order Collembola: Springtails					
12	MBS	Mount Baker-Snoqualmie National Forest				IICO = Order Coleoptera: Beetles & Weevils					
13	MTH	Mt. Hood National Forest				IIHE = Order Hemiptera: True Bugs					
14	OCH	Ochoco National Forest	Federal Status:			IIHY = Order Hymenoptera: Ants, Bees & Wasps					
15	OKW	Okanogan-Wenatchee National Forest	FE = Federal Endangered			IILE = Order Lepidoptera: Butterflies & Moths					
16	OLY	Olympic National Forest	FT = Federal Threatened			IIOD = Order Odonata: Dragonflies & Damselflies					
17	RRS	Rogue River-Siskiyou National Forest	FPT = Federal Proposed Threatened			IIOR = Order Orthoptera: Grasshoppers, Crickets & Roaches					
18	SIU	Siuslaw National Forest	With "O" or "W" at the end, means			IIPL = Order Plecoptera: Stoneflies					
19	UMA	Umatilla National Forest	status only applies in Washington			IITR = Order Trichoptera: Caddisflies & Water Moths					
20	UMP	Umpqua National Forest	or Oregon			IT = Class Turbellaria: Flatworms					
21	WAW	Wallowa-Whitman National Forest				Vertebrates		Non-Vascular Plants			
22	WIL	Willamette National Forest				BI = Birds		BR = Bryophytes			
23	ISSSSP Status:					HA = Amphibians		LI = Lichens			
24		SEN = Sensitive in OR and WA	STR = Strategic in OR and WA			HR = Reptiles					
25		SEN-OR = Sensitive in OR only	STR-OR = Strategic in OR only			MA = Mammals					
26		SEN-WA = Sensitive in WA only	STR-WA = Strategic in WA only			FA = Anadromous Fish					
27		If species has different statuses in each state, both are noted on lists.				FN = Non-anadromous Fish					
28	Occurrence:										
29	D = Documented occurrence = A species located on land administered by the BLM or the Forest Service based on historic or current known										
30	sites of a species reported by a credible source for which BLM and the Forest Service has knowledge of written, mapped or specimen										
31	documentation of the occurrence.										
32	S = Suspected occurrence = Species is not documented on land administered by the BLM or the Forest Service, but may occur on the unit										
33	because: 1) BLM District or National Forest is considered to be within the species' range and 2) appropriate habitat is present or 3) known										
34	occurrence of the species (historic or current) in vicinity such that the species could occur on BLM or FS land.										
35	I = Influence = downstream influence by Forest Service actions (only applied to Fish species)										
36											

MANAGEMENT INDICATOR SPECIES AND FORESTWIDE STANDARDS AND GUIDELINES

The following is a list of the management indicator species and their associated standards and guidelines as stated in the Blue Mountains Forests Revised Land and Resource Management Plan – Proposed Action (USFS 2010).

American marten

G-1 Management activities that limit the ability of American marten to disperse between patches of source habitat should be avoided; area and patch size of old forest should be maintained and road density within and between old forest patches should be maintained or reduced.

G-2 Areal extent of existing stands within the moist and cold old forest type that are 300 acres or larger should not be reduced.

G-3 Improve riparian corridors connecting moist and cold old forest type.

Bald eagle

S-1 New activities that have potential to cause abandonment or destruction of known bald eagle nest or roost sites shall be prohibited within 1,200 feet of those sites.

Bighorn sheep

S-2 Effective separation between bighorn sheep and domestic sheep and goats shall be maintained.

S-3 The use of domestic goats for noxious weed control shall not be authorized or allowed within or adjacent to source habitat for bighorn sheep.

S-4 The use of domestic pack goats shall not be authorized or allowed within or adjacent to source habitat for bighorn sheep.

Black-backed woodpecker and boreal owl

G-4 Greater than 50 percent of post-fire source habitat should be retained and should not be salvage logged.

G-5 Salvage logging should not occur within burned source habitat areas less than 100 acres, except for the removal of danger/hazard trees.

G-6 Where salvage logging occurs, all snags 21 inches DBH and greater and 50 percent of the snags from 12 to 21 inches DBH should be retained, except for the removal of danger/hazard trees. Snags should be retained in patches,

Fringed myotis and Townsend's big-eared bat

G-7 Bat maternity and roost sites should not be disturbed.

Lewis's woodpecker

S-5 Salvage logging shall not occur within burned source habitat areas that are less than 100 acres in size, except for the removal of danger/hazard trees.

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G-8 Where salvage logging occurs within source habitat, all trees and snags 21 inches DBH and greater and 50 percent of the snags from 12 to 21 inches DBH should be retained. Snags should be retained in patches, except for the removal of danger/hazard trees.

Northern goshawk

G-9 Management activities should not alter stand structure within a radius of 660 feet from known goshawk nests.

G-10 Nest disturbing management activities should not occur within a radius of 1,320 feet from known active goshawk nests between April 1 and August 1.

Pileated woodpecker

G-11 To the extent practical, known cavity or nest trees should be preserved when conducting prescribed burning activities, mechanical fuel treatments, and silvicultural treatments.

White-headed woodpecker

S-6 Where silvicultural and prescribed burning activities occur within source habitat, all live trees and snags 21 inches DBH and greater and 50 percent of the snags from 12 to 21 inches DBH shall be retained, except for the removal of danger/hazard trees. Snags shall be retained in patches.

S-7 Where management activities occur within source habitat, all snags 21 inches DBH and greater and 50 percent of the snags from 12 to 21 inches DBH shall be retained, except for the removal of danger/hazard trees. Snags shall be retained in patches.

Fox Sparrow

G-12 Where management activities occur within riparian habitat, the quantity and health of shrubs should be increased and improved.

Cassin's Finch

G-13 Vigor and areal extent of seed producing grasses and forbs should not be reduced in source habitats.

Water Vole

G-14 Roads and trails should not be constructed within high elevation riparian areas.

G-15 Residual herbaceous vegetation within high elevation riparian areas should be maintained at a

level adequate to prevent stream bank degradation.

Rocky Mountain elk (winter range)

G-16 Motor vehicle use within crucial winter range should not be authorized or allowed between December 1 and April 30.

Rocky Mountain elk (summer range)

G-17 Management activities that disrupt areas identified by state fish and wildlife agencies as important elk calving areas should be avoided (from May 1 to June 30).

G-18 Management activities that disturb elk wallows should be avoided.

Reference:

United States Forest Service. 2010. Blue Mountains Forests Revised Land and Resource Management Plan – Proposed Action. United States Forest Service. On the web: http://www.fs.fed.us/r6/uma/blue_mtn_planrevision/.