

**COMBINED VEGETATION AND THREATENED, ENDANGERED AND
SENSITIVE SPECIES ASSESSMENT
-FINAL COMBINED REPORT-**

**MASON DAM PROJECT
BAKER COUNTY, OREGON
Project Number P-12686-001**



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1.0 INTRODUCTION

1.1 Overview

Baker County has applied to the Federal Energy Regulatory Commission (FERC) to develop hydroelectric energy at the existing Mason Dam. Mason Dam is located in Baker County, Oregon approximately 15 miles southwest of Baker City off of State Highway 7.

Mason Dam was built by the US Bureau of Reclamation (BOR) on the Powder River for irrigation, water delivery and flood control. Water is stored behind Mason Dam in Phillips Lake, and released during the irrigation season by Baker Valley Irrigation District. Water is generally stored between October and March and released April through September (Baker County 2006). Releases average approximately 10 cfs between October and January, increase to an average 20 to 50 cfs during February and March and generally remain above 100 to 200 cfs through the remainder of the year.

As part of the licensing process, FERC and other resource agencies requested a number of studies to be completed. Two of the requested studies were: Study Plan 2-Vegetation, Rare Plants, and Noxious Weeds and Study Plan 3 -Threatened, Endangered, and Special Status Species Assessment. These studies are made up of the following components, (1) threatened, endangered, or sensitive (TES) species and (2) general botanical resources including wetland/riparian habitats, rare plants and noxious weeds. The study plan results overlap, and FERC (2008) approved the combination of the two study plan results into a single final report for all TES species, habitats and botanical resources. Instead of splitting the discussion of TES plant species into listed, rare, sensitive, or other species of concern, all rare or sensitive plants are discussed in the TES species sections. Hereafter in this report, the acronym “TES” is used to refer to any species listed as threatened, endangered, sensitive or rare.

This report:

- Summarizes the results of existing data review, field surveys and habitat assessments for the TES species occurring or potentially occurring within the Mason Dam project study area.
- Summarizes the botanical resources within the study area, including vegetation cover types and descriptions.
- Provides an evaluation of potential impacts to TES species (including rare plants), identifies measures to reduce or avoid TES impacts (if necessary) and identifies measures that could be used to enhance TES species habitat.
- Identifies project-related actions that could affect wetland/riparian habitats.
- Includes a weed analysis that is described separately in the appendices, but which uses the same study area and project descriptions that are described in the main body of the report.

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The work was conducted according to Study Plans 2 and 3 as listed in Baker County (2006). Table 1 provides a summary of the objectives for each study plan and notes the sections in which the results are discussed.

| Table 1. Report Sections in Which Study Plan Results are Discussed. | | |
|---|--|---|
| Study Plan | Objective | Section In Which Results Discussed |
| Study Plan 3: Threatened, Endangered, Sensitive and other Plant or Wildlife Species of Concern (including rare plants) | 3.1.1 Identify and map habitat for TES species | Section 4.2 |
| | 3.1.2 Determine presence and distribution of TES species | Section 4.2 |
| | 3.1.3a. Determine/assess project-related actions that may affect TES species | Sections 5.1 and 5.2 |
| | 3.1.3.b. Identify measures to protect, mitigate or enhance TES species or their habitat | Section 5.3 |
| Study Plan 2: Vegetation, Rare Plants and Noxious Weeds | 2.1.1 Identify, map and describe vegetation cover types | Sections 6.1, 6.2 and 6.3 |
| | 2.1.2. Determine extent and quality of wetlands/riparian along Powder River in study area | Section 6.2 |
| | 2.1.3a Determine presence and distribution of rare plants | Section 4.2 |
| | 2.1.3b Determine the presence and distribution of noxious weeds | Appendix H |
| | 2.1.4. Determine/assess project-related actions that may affect: <ul style="list-style-type: none"> • wetlands/riparian • rare plants • noxious weeds | Section 6.4 Section 5.3 Appendix H |

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1.2 Project Description

The Mason Dam project is described below according to the components most pertinent to botanical resources and TES species. This description is summarized from FERC pre-application exhibits for project P-12686-001 and more complete details and maps can be found in these documents (Baker County 2006).

The Mason Dam project would consist of the following physical components:

- Turbines located in a powerhouse to be built near the base of the existing dam spillway. The facility would be approximately 40 feet by 50 feet in size and located in a bare, fenced upland area. The existing Mason Dam water intake would be used for the facility. Water would be returned to the Powder River via the existing stilling pond with additional discharge valves potentially added.
- Addition of a fish screen on the existing Mason Dam intake, which is currently unscreened, to prevent fish entrainment through the turbines.
- A new underground transmission line to be constructed within the existing Black Mountain Road right-of-way. The new transmission line would be approximately 1 mile long and connect with an existing 138 kv transmission line. A new substation would be built within the existing Idaho Power Company transmission line right-of-way.
- A construction staging area located on bare ground within the existing parking lot and access road at the base of the dam.

Construction of all project components is expected to occur during portions of a 1 to 2-year construction period. The County would prefer to schedule work within the Powder River between October and March when both the Mason Dam releases (average of 10 to 50 cfs) and recreational use are at a minimum. However, according to the *Oregon Guidelines for Timing of In-water Work*, any in-stream work would need to occur between August 1 and October 31, unless an exemption is granted. Other construction could occur at any time during the year.

A mix of equipment, such as bulldozers, loaders, graders, compactors and cement trucks, would be used during construction. This equipment typically produces noise in the range of 70 to 96 decibels, with a nominal noise level between 80 to 85 decibels at a distance of 50 feet from the source (EPA 1974 and 1981). There is no anticipated blasting or helicopter use. Following construction, the hydroelectric turbines would typically produce noise between 60 to 62 decibels directly outside of the turbine enclosure.

During operation, the Mason Dam hydroelectric project would generate power from releases made by the Irrigation District but will not change the timing or manner in which the Irrigation District releases water from Mason Dam to the Powder River (Baker County 2006).

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The study area for TES species (including rare plants) has been defined as 100 feet beyond the proposed new facilities and includes the construction staging area. This study area is approximately 40 acres in size (see Appendix A, Figure 1) and is located between approximately 3,900 feet (base of the dam) to 4,300 feet (substation) above Mean Sea Level (MSL). A second, indirect area of influence has also been defined for the bald eagle which includes the Bald Eagle Management Area (BEMA) around and including Phillips Lake, which is managed by the US Forest Service (FS) (Appendix A, Figure 2). The study area for vegetation and noxious weeds is generally similar to the TES and rare plant study area, with the difference being that the BEMA is not included.

2.0 METHODS

2.1 Introduction

Rare plant, fish and wildlife species (including invertebrates and non vascular plants) are categorized as to their legal status, degree of rarity and management/protection needs. This report addresses all rare species identified by the regulatory agencies as potentially occurring in the Mason Dam study area, regardless of their status. This discussion is organized as follows:

2.1.1 Federal and State-Listed Species

Federal and State-listed species refers to those species listed or otherwise protected under the Federal or State Endangered Species Acts, as summarized below. Individual descriptions for each of these species is provided in Section 3.0.

- **Federally-Listed Species:** Species listed by the US Fish and Wildlife Service (FWS) as threatened, endangered or candidate species under the Endangered Species Act, as identified in “Federally Listed, Proposed, Candidate, Delisted Species for Baker County”, dated September 20, 2008.
- **State-Listed Species:** Species listed by the Oregon Department of Fish and Wildlife (ODFW) or Oregon Department of Agriculture (ODA) as threatened, endangered or candidate species under the Oregon Threatened and Endangered Species Act, as of September 20, 2008. Wildlife species listed as sensitive by ODFW are addressed in Appendix I.
- **Federal Species of Concern:** Species listed by the FWS as species of concern as identified in “Federally Listed, Proposed, Candidate, Delisted Species for Baker County”, dated September 20, 2008.

2.1.2 Forest Service Sensitive Species

Forest Service Sensitive Species refers to those species managed solely under the FS Special Status Species Program (SSSP) which require a pre-project clearance prior to habitat-disturbing activities. The species covered in this report cover those sensitive or rare species listed by the Regional Forester as potentially occurring on the Wallowa-Whitman National Forest (WWNF), as of January

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1, 2008 and subsequently partially screened by the WWNF on July 8, 2008 to identify those species with the potential to occur in the Mason Dam vicinity.

2.1.3 TES Species Summary

There are four species listed as federally threatened, endangered or candidates for listing that may occur within Baker County. These species are the gray wolf, bull trout, Howell's spectacular thelypody and the Columbia spotted frog (see Table 3-1 in Section 3), of which three species are also listed by Oregon as threatened or endangered. There is one additional mammal species, one additional bird species and nine additional plants listed by Oregon as threatened, endangered or candidate species that may occur within Baker County. These include the bald eagle, which was recently delisted by the federal government, the California wolverine, Oregon semaphore grass, clustered lady's slipper, three grape-fern/moonwort species, Cronquist's stickseed, red-fruited desert parsley, Cusick's lupine and the Snake River goldenweed (see Table 3-2 in Section 3). There are an additional 29 species of concern identified by the FWS that may occur in Baker County (38 total FWS species of concern, of which 9 are also State-listed; Table 3-3). Overall, there are 44 species listed as threatened, endangered or candidates for listing or federal species of concern under the Federal and State Endangered Species Acts that may occur in Baker County.

There are 51 other sensitive species identified by the WWNF as potentially occurring in the Mason Dam vicinity. Collectively, these species are referred to as TES species (threatened, endangered, candidate, species of concern or sensitive [SSSP]).

Appendix B contains the FWS list for Baker County, the ODFW state list for wildlife species, and the WWNF screened list of Forest Service sensitive species (SSSP).

2.2 TES Pre-Field Screening

2.2.1 2007 TES Pre-Field Screening

The 2007 field studies focused solely on federal and state listed species or federal species of concern, as identified in Baker County (2006). Not all of the species that may occur within Baker County occur or have the potential to occur in the Mason Dam study area. To identify which species had the potential to occur near the Mason Dam site, several pre-field tasks were conducted. First, existing data was compiled on each TES species general distribution and habitat requirements. Data sources included the following:

- Existing federal agency survey records for the study area and vicinity, including results of the FS Little Dean plant surveys conducted by the FS adjacent to Phillips Lake in 2007
- Review of the federal government on-line TES database, which includes data from the Oregon Natural Heritage Program, as updated June 28, 2007
- Review of data collected as part of the Interior Columbia Basin Ecosystem Management Plan (ICBEMP) and the Powder River Subbasin Plan
- Published literature on species habitat requirements and limiting factors

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- FS BEMA Plan and associated FS data on bald eagle nesting and perch trees
- Information from the FS regarding the TES species updates being developed for the Blue Mountain Area Forest Plan revision
- Bird survey observations collected by a local bird club

Both known and historical occurrences were noted. The existing data on each of the TES species potentially occurring in Baker County are summarized in Section 3.

The second step was to conduct a pre-survey reconnaissance of the Mason Dam study area to identify the general habitat types, dominant vegetation species, and overall habitat structure. Habitat extent and juxtaposition were also evaluated. For example, a small patch of managed grassland within a parking lot surrounded by forest would provide habitat for a different suite of species than a large extent of native grassland interspersed with shrub-steppe.

Because the Mason Dam Vegetation Study was being conducted concurrently, a separate habitat assessment was conducted to collect data for the 2007 TES species assessments. Based on the preliminary habitat reconnaissance, the following general habitat types were identified:

Wetland or aquatic habitat

- Open water, riverine
- Riparian herbaceous wetland
- Riparian shrub wetland

Upland

- Dry coniferous forest (ponderosa pine), open canopy
- Mixed coniferous forest (mixed ponderosa pine, western larch and Douglas fir), moderately closed canopy
- Young regenerating forest
- Dry grassland
- Rock/talus slope on a road cut

The habitat requirements and known distributions for each of the potential TES species in Baker County were compared to the habitats occurring in the Mason Dam study area to develop a list of potential TES species for which field evaluations would be made.

2.2.2 2008 TES Pre-Field Screening

Several changes were made to the species listed by the US Fish and Wildlife Service (FWS) as threatened, endangered, candidate species or species of concern in 2008. These changes resulted in a number of species being delisted, removed from the candidate or species of concern lists (slender moonwort, bighorn sheep, inland redband trout), or removed from the Baker County list to be considered for this project (yellow-billed cuckoo). Conversely, there were several species added to the Baker County lists: gray wolf, Pacific lamprey, pallid bat, Townsend's big-eared bat and Blue Mountain crytochian caddisfly. There were no changes to the State species lists.

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Additionally, in March 2008, the Forest Service requested that surveys be conducted for species on the January 2008 Regional Forester's SSSP List. The original list was partially screened by the Forest Service (July 8, 2008) to identify the species that could occur within the Mason Dam project vicinity.

As described for the 2007 pre-field screening, the habitat requirements and known distributions for each of the new FWS and FS sensitive species with the potential to occur in the area were compared to the habitats occurring in the Mason Dam study area to develop a list of potential TES species for which field evaluations would be made. This was particularly important for those SSSP species groups in which only partial screening had been done by the FS and for which SSSP protocols identify literature review and habitat assessments as being quite important (i.e., snails and mussels, non-vascular plants).

The screening lists of species to be assessed in the field can be found in Sections 4.1 (Federal and State-Listed Species) and 4.2 (Forest Service Sensitive Species).

2.2.3 TES Plant Phenology

The phenology for each of the plant species likely to occur in the project area was identified to ensure that rare plant surveys were conducted at the appropriate time. The timing of key life history stages for each plant species listed in Tables 4-1 and 4-4 was identified using a combination of literature review and data from either other surveys in the area (e.g., the 2007 Little Dean unit survey data sheets) or surveys for the target species on other local projects (e.g., the Elkhorn Project in which the rare *Trifolium douglasii* was located). The phenological summary is provided in Section 4.3.

2.3 Field Methods

2.3.1 TES Species

2007 Field Surveys

Detailed field surveys were conducted for each of the species identified in the pre-field surveys. During 2007, surveys were conducted between October 21 and November 1. Weather during the survey period was generally clear, with daytime highs near or above 50 degrees Fahrenheit and night time lows approaching 20 degrees Fahrenheit.

In general, surveys were conducted according to a parallel meandering transect approach throughout the entire study area by a team of two TES biologists, with specific attention on key microsites, such as small rock openings that could provide habitat for sensitive bats, ferns and nonvascular plants.

During the 2007 field surveys, all vascular plant species observed were recorded. Species were noted both in an overall list and by habitat type. All wildlife species (birds, mammals, fish, amphibians) observed were noted, as well as wildlife sign (e.g., scat, tracks, nests) and their location recorded.

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Recorded habitat features included:

- Percent cover by strata (canopy, shrub layer, herb layer), with cover extrapolated to full leaf-on cover
- Dominant plant species by strata
- Key wildlife food species
- Number of snags, trees and stumps with cavities, amount and type of downed wood
- Range of tree diameters (dbh)
- Presence of caves, rock openings or fissures, and evidence of wildlife use
- Litter depth and substrate type
- Sediment depth within wetland and aquatic habitats
- Presence of streambanks with overhanging vegetation
- Riparian floodplain characteristics such as water level fluctuation range, degree of scouring
- Location of any seeps or springs.

Each habitat was subsequently given a preliminary habitat classification according to Crowe and Clausnitzer (1997) and Powell et al. (in progress) to allow correlation with the FS TES databases.

In addition to the daytime field observations, the rock faces adjacent to Mason Dam were visited twice at dusk to observe any nocturnal activity. Species for which the fall surveys might be inconclusive due to the survey dates were noted.

2008 Field Surveys

During 2008, surveys were expanded to include both vascular and nonvascular plant species, invertebrates, and to provide additional wildlife habitat assessments. Surveys were conducted between July 23 and July 29, 2008. Weather during the survey period was clear, with daytime highs above 80 degrees Fahrenheit and nighttime lows generally between 40 to 50 degrees Fahrenheit. During this time period, target spring flowering species/genera (e.g., *Calochortus*, *Trifolium*) were still blooming and many later flowering species had emerged to an identifiable stage (such as *Botrychium* spp.). Target nonvascular plants and invertebrates were also identifiable during this period.

Additional observations were made on August 20, 2008 to confirm species identification for some later blooming species or other species for which additional observations needed to be collected. Observations of aquatic species within the Powder River were made on October 1 when the dam releases lowered to a safe level for sensitive aquatic mollusks/nonvascular species surveys within the stream channel.

Surveys were generally conducted in a similar manner as in 2007, with complete surveys for vascular plants and wildlife habitat features. The data regarding plant species composition and percent cover by strata collected during the fall 2007 TES plant surveys for each habitat type were updated during the 2008 TES surveys to:

- Ensure that any species potentially missed during the 2007 fall surveys were included in the

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species list. All vascular plant species observed were recorded and added to the 2007 species list to provide a single species list.

- Provide percent species cover estimates by strata during the height of the plant growing season.

The area examined in 2008 was expanded slightly south of the existing Idaho Power transmission line to include portions of an old road that might be usable for substation construction access or staging.

Vegetation data were collected using the releve or plotless method in which a representative site within each community type was located and then ocular estimates of percent cover made for the entire representative area. When collecting the community type data, the entire community was examined to a definable feature, such as a slope break, that could be subsequently re-located. As a result, the area characterized was sometimes larger than the study area. Data collection locations were marked on an aerial photograph.

All observed wildlife species or sign were recorded and added to the 2007 species list. Habitat assessments made in 2007 were reviewed to identify if any mid-summer wildlife or habitat observations required a change in the 2007 assessments. This was particularly important for the spotted frog, which was likely in hibernation during the fall 2007 surveys. Habitat for the gray wolf was not assessed in 2007. This species is not known from the area, but could occur in the future. The gray wolf assessment focused on the presence/habitat suitability of the wolf's ungulate prey species.

Non-vascular plant and invertebrate surveys were conducted at the same time using targeted surveys (also referred to as "intuitive controlled" according to the FS TES survey protocols [BLM and Forest Service 2002]) with a focus on microhabitats such as: damp, shaded rocky areas and damp rotting logs for the sensitive mosses, liverworts and snails; tree bark, foot bridges and rocks for terrestrial lichens; and small submerged branches for the sensitive caddisfly. Non-vascular plant species and invertebrates were characterized by the presence/absence of sensitive genera or species, with identification of dominant species occurring within the target habitats. Any species suspected of being sensitive were collected for verification by FS Regional Specialists.

Habitat assessment and surveys for the Blue Mountains cryptochian caddisfly were based on the data and key habitat features provided in Betts and Wisseman (1995). The following habitat data were collected during the surveys:

- Average number of pieces of small wood or bark per 100 meters of stream length, and degree of contact with the water (above water level, submerged, partially submerged)
- Percent stream shaded

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- Water regime characterization
- Substrate type.

Each piece of wood was examined on all sides for insect larvae. Larvae were also searched for in representative bed samples. Surveys were conducted for the larvae and not the adults, as Betts and Wisseman (1995) recommended larval surveys as providing more reliable results than adult surveys.

Habitat assessments and surveys for sensitive mollusks within the Powder River were conducted by using visual observations of the substrate along parallel transects spaced 10 feet apart, with bed samples taken wherever sediment deposits occurred. The shoreline (newly exposed cobbles and adjacent riparian vegetation) was also examined for evidence of shells. During the mollusk surveys, all suitable rocks within the channel were investigated for aquatic lichens. A comparison reach one mile downstream was also examined to compare habitat and mollusk presence/absence in a reach with much greater sediment deposition.

Representative photographs of each habitat type are in Appendix C. A list of all plant species observed during both survey years can be found in Appendix D with a list of wildlife observations/sign in Appendix E. Completed FS TES Field Survey forms (FS Data Form F, as revised in 2008 by the FS) for all major vegetated habitat types are in Appendix F. FS Data Form E-TES Plant Element Occurrence forms (Form E) were only prepared if TES plant occurrences were located.

2.3.2 Vegetation Cover Type Mapping/Characterization

Vegetation data collected during the October 2007 and July 2008 TES field surveys were used to characterize the plant community composition and structure. These data were also used to develop a draft vegetation community type map on a 1:3,200 scale orthorectified aerial photograph.

Plant community boundaries were verified between December 5 to December 10, 2008, with GPS coordinates of plots and community type boundaries collected at that time. The GPS data were used to revise the draft community type boundaries, as necessary, and add the location of data points. GPS unit accuracy varied according to canopy cover and topographic obstacles affecting satellite signals. The accuracy was generally ± 12 to 14 feet (approximately 3 meters). Data were collected using the NAD 83 Datum.

Vegetation data were digitized in Xmap GIS 5.2 and transferred to GIS Arcview for the impact analysis. Vegetation attributes for each data point were added to a GIS layer. The attribute data sheet can also be found in Appendix F.

Weather was cool, clear and dry during the December site visits with daytime highs around 40 degrees Fahrenheit and nighttime lows between 15 to 20 degrees Fahrenheit. The ground was snow free. Structural data such as the number of large wood pieces, an update of the snag information, and additional tree dbh measurements were also collected at this time.

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2.4 Analysis Methods

2.4.1 TES Species

The TES analyses varied by species group (i.e., vascular plant, aquatic invertebrate, etc.) and are described in more detail in Section 5.0.

2.4.2 Vegetation Characterization

The preliminary community classifications developed in 2007 for the TES assessments were reviewed using the 2008 data. In many cases, slight modifications were required to refine the characterization from a general community type to a more specific association, or to reflect changes in either the PLANTS database names or the community classifications. Wetlands were also characterized according to the Cowardin classification used on the National Wetland Inventory maps (Cowardin et al. 1979) and the newer hydrogeomorphic (HGM) classification for Oregon (Adamus 2001). The Phillips Lake and Blue Canyon NWI quadrangles were reviewed to identify if the wetlands had previously been mapped according to the Cowardin system. If so, the map classification was listed. If not, the wetlands were classified according to the protocols described in Cowardin et al. (1979).

As a result, habitats were classified according to several different systems, each with a different focus.

- The preliminary, general habitat types used for TES species pre-field screening were based on a distinction among wetland/riparian, upland and bare habitats, and then classified according to the dominant vegetation structure.
- The FS community type classification system is a vegetation-based system that includes both wetlands and uplands, but not bare areas or open water. The community type/association is determined by the dominant species and the large-scale temperature/moisture regime (e.g., warm and moist, cool and dry).
- The Cowardin classification of wetlands and deepwater habitats is also vegetation based. The classification is determined by large-scale habitat type (e.g., riverine, lacustrine) and either vegetation structure for vegetated wetlands or substrate characteristics for deepwater habitats. The duration of hydrology is a secondary classification factor.
- The wetland HGM classification is based on hydrology (water source and direction of flow) and landscape position. HGM addresses only vegetated wetlands and not open water areas.

Wetland hydrology for the Cowardin and HGM classifications (water source, direction and duration) was determined through a combination of field examination of the depth of water, degree of soil saturation, evidence of flooding and gage data (available for the Powder River and not the

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unnamed tributary) over a 2-year period. Observations of wetland hydrology were made:

- Between October 21 and November 1, 2007
- Between July 23 and 29, 2008
- August 10, October 1, and December 5, 9 and 10, 2008.

Tables 6.1 and 6.2 provide a summary and cross reference of the different classifications for each of the habitat types in the study area.

Identification of the vegetation seral stage was identified by comparing the canopy tree composition and size (dbh), and plant association data to the data collected by the FS on identifying successional relationships in the Blue Mountains (Crowe and Clausnitzer 1997, Powell et al. 2007, Johnson and Clausnitzer 1992).

2.4.3 Wetland/Riparian Functional Assessment

Wetland functional assessment was conducted according to the HGM-based assessment recommended by the Oregon Department of State Lands (DSL). This assessment was used as it is required by the DSL for wetland permitting, which will likely be necessary in subsequent project stages, and it provides for an assessment of 10 different functions. DSL refers to the method as a “structured Best Professional Judgement”, in which 10 different functions are evaluated qualitatively and given a High, Moderate or Low ranking according to the criteria listed in Adamus (2001).¹

The functions evaluated were:

- Water storage and delay
- Sediment stabilization
- Phosphorus retention
- Nitrogen removal
- Thermo-regulation
- Primary production
- Fish habitat
- Amphibian habitat
- Waterbird habitat
- Biodiversity support:

Variables used in the HGM wetland functional assessment are often used to assess more than one function. Key assessment variables include:

¹The DSL is in the process of revising the wetland functional assessment methodology and the new version is anticipated in 2009 (release date unknown). For subsequent CWA permitting the 2009 assessment method may need to be used.

Physical Variables

- Topography, valley type
- Gradient
- Soil texture and depth
- Channel substrate

Hydrologic Variables

- Wetland size in relation to watershed/stream flow
- Presence/absence of constrictions, inlets, outlets
- Direct observations of sediment deposits
- Water depths, variety of depth classes
- Hydrologic sources
- Degree and timing of water level fluctuation

Biological Variables

- Habitat structure and interspersions
- Exposure, percent shade
- Overall species richness
- Presence/absence of nitrogen fixing species
- Wildlife and macroinvertebrate observations
- Presence of TES species or unique habitat features

2.4.4 Wetland and Riparian Impacts

Study Plan 2 requires that project-related actions that may influence the distribution of wetland and riparian habitats be identified. Potential impacts that could occur to these habitats were separated according to potential direct and indirect impacts. Direct impacts were identified as the potential loss of habitat during construction. Direct vegetation impacts were calculated by electronically overlaying the project construction area over the vegetation cover type map.

Indirect impacts were assessed by first identifying general construction-related and operational actions that could influence wetland habitats outside of the construction area. These potential actions were then compared to the actual project details, and the location of construction activities in relation to the wetlands to identify potential indirect impacts for the Mason Dam project.

Impacts to upland habitats will be addressed during subsequent FERC permit steps.

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3.0 FEDERAL AND STATE LISTED SPECIES ACCOUNTS

This section provides habitat and distribution descriptions for those species listed by the federal government as threatened, endangered, candidate or species of concern, and by the State of Oregon as threatened, endangered or candidate species. Wildlife species listed as sensitive by ODFW are addressed in Appendix I.

3.1 Federally Listed Species

There are four federally listed or candidate species that may occur in Baker County (Table 3-1). Three of these species, the gray wolf, bull trout and spectacular thelypody, are also listed by the State as threatened or endangered.

| Table 3-1. Federally Listed Threatened, Endangered or Candidate Species that May Occur in Baker County. | | | |
|--|-----------------------|---------------------|--|
| Scientific Name | Federal Status | State Status | Documented in Mason Dam Study Area/Vicinity |
| Mammal Species | | | |
| <i>Canis lupus</i> (Gray wolf) | Endangered | Endangered | No |
| Fish Species | | | |
| <i>Salvelinus confluentus</i> (Bull trout [Columbia River Basin]) | Threatened | Threatened | Yes |
| Amphibians and Reptiles | | | |
| <i>Rana luteiventris</i> (Columbia spotted frog) | Candidate | Not listed | Yes |
| Plant Species | | | |
| <i>Thelypodium howelli</i> spp. <i>spectabilis</i> (Spectacular thelypody) | Threatened | Endangered | No |

3.1.1 Gray Wolf

As of September 20, 2008, the Rocky Mountain population of the gray wolf was listed by the federal government listing as endangered. This population occurs or has the potential to occur in the eastern third of Oregon, defined as east of the boundary of Highways 395/78/20. The Rocky Mountain gray wolf population was delisted on March 28, 2008 and then at least preliminarily restored to federal protection on July 18, 2008.

Although historically present in Oregon, wolves were not specifically re-introduced to Oregon. Instead, the gray wolf naturally dispersed into the state from Idaho. Wolves that enter the state are protected under both the federal and state Endangered Species Acts and managed under ODFW's Wolf Plan.

The wolf can occur in a number of different habitat types, with key features being relatively low road density/human access and an abundant food supply. The key habitat feature seems to be an abundance of prey, with the primary prey being ungulates (deer, elk and moose), and territory size can vary considerably depending on changes in prey availability and distribution. Secondary prey food sources include smaller animals such as rabbits, beavers, grouse, ravens, skunks, coyotes, porcupines, eagles and fish. When necessary, wolves also will eat insects, nuts and berries.

Since 1999, there have been six confirmed wolf occurrences in northeast Oregon, with the active occurrences being a female wolf observed near the Eagle Cap Wilderness in January 2008, and a pack in northern Union County in July 2008 (ODFW 2008). The ODFW (2007) suspects that additional wolf packs occur near the Oregon border. The other occurrences have been in the Blue Mountains near the North Fork John Day River, Highway 84 south of Baker, and unknown locations in Union County and between Ukiah and Pendleton. These occurrences represent either dead or relocated wolves.

There are no known wolf occurrences in the vicinity of Mason Dam, but according to ODFW (2007), all of the Blue Mountains could provide suitable habitat.

3.1.2 Bull Trout

The Columbia and Klamath River populations of the bull trout are listed by both the federal government and the State of Oregon as threatened. The portions of the Columbia River bull trout population within the Powder River Basin are part of the Hells Canyon Complex Recovery Unit. Within the Powder River Basin, bull trout are currently known from the Powder River upstream of Mason Dam (Silver, Little Cracker and Lake Creeks), Powder River tributaries between Mason Dam and the North Powder River (Salmon Creek, Pine Creek, Rock Creek, Big Muddy Creek) and the North Powder River and some of its tributaries. Each of these populations are isolated from each other by a number of physical and water quality barriers (e.g., dams, diversions, channel characteristics, temperature)(FWS 2002 and 2005a). The occupied Powder and North Powder River tributaries on private land are designated as critical habitat, with the occupied tributaries on federal land managed under other federal programs (FWS 2005).

According to the FWS (2002), bull trout in the Powder River basin are thought to be resident fish, as there have been no documented observations of migratory bull trout in the reservoirs, including Phillips Lake (FWS 2002). However, ODFW suspects that bull trout could currently occur in Phillips Lake (Fagan 2008), and the FWS (2002) identifies that bull trout could expand their distribution into Phillips Lake during recovery.

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Bull trout require a combination of the following habitat elements, although not all occupied habitats contain all of these elements (FWS 2002):

- Relatively cool water temperatures (32 to 72 degrees F, with 36 to 59 degrees F preferred)
- Complex channels
- Specifically sized substrate with a minimum of fine material
- A natural hydrograph
- Cold water sources to contribute to surface flow
- An abundant food base (terrestrial invertebrates, aquatic macroinvertebrates, forage fish)
- Permanent water of sufficient quantity and quality
- Migratory corridors

3.1.3 Columbia Spotted Frog

The Columbia spotted frog is candidate for federal listing as threatened or endangered. The range of the species has declined substantially in the past 50 years, with the decline thought to be associated with wetland loss and introduction of nonnative predators, such as bullfrogs and bass. Populations in eastern Oregon are part of the Great Basin subpopulation of the Columbia spotted frog, which is one of four recognized subpopulations of the species (FWS 2005b).

The spotted frog is an aquatic species that is associated with open, non-turbid, slack or ponded water. It is often found in association with seeps and springs, open water with floating vegetation, and larger bodies of ponded water such as lakes and stream backwaters. Habitats tend to have relatively constant water levels and temperatures (Bull 2005). Breeding occurs in these open water areas with egg masses being laid in shallow water fringes (generally 6 to 12 inches or less) where they can float freely. Breeding occurs in late winter or early spring, generally between late March to April in mid-elevation areas.

The spotted frog tends to forage in adjacent wet meadows (i.e., wetland areas containing sedges, grasses and rushes), but can also be found hiding under decaying vegetation or upland habitats near water with dense cover to allow protection from predators and ultraviolet radiation. The frog is relatively inactive during winter, generally hibernating or aestivating in deep silt or muck substrates, spring heads, or undercut perennial streambanks with overhanging vegetation. The key feature of overwintering habitat is a microhabitat that is protected from freezing. The frogs can use different wetlands for breeding, foraging and overwintering and are sensitive to fragmentation of their travel routes among different wetland habitats.

There are a number of known breeding sites in northeastern Oregon in Union, Baker, Wallowa, Grant and Umatilla counties (Bull 2005). One of the known sites occurs immediately upstream of Phillips Reservoir in the series of ponds that have developed in the Sumpter mine tailings (Bull 2005). These ponds are not connected to the river and have no fish or bullfrogs as predators. The spotted frog also occurs in wetlands adjacent to the campgrounds on the south shore of Phillips Lake (A Kuehl, BLM [former FS], pers. comm.). There have been no spotted frog surveys below Mason Dam, although there is likely potential habitat near the Powder River trails approximately 1 mile

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downstream of Mason Dam (B. Mason, FS, pers. comm) (see also Appendix A).

3.1.4 Spectacular Thelypody

Spectacular thelypody is listed as endangered by the State of Oregon and as threatened by the federal government. It is known only from 11 sites (five populations) in Baker and Union Counties, Oregon. All of the known sites are located within a 15-mile radius of Haines in Baker County, within the Baker-Powder River valley. Occupied habitats include alkaline wet to mesic meadows within valley bottoms between elevations of 3,000 to 3,500 feet. Common associates include great basin wild rye (*Leymus cinereus*), with greasewood (*Sarcobatus vermiculatus*) typically occurring along the habitat fringes. The FWS considers that all moist, alkaline meadows dominated by greasewood, great basin wild rye or saltgrass between 3,000 to 3,500 feet in elevation within Baker, Union and Malheur Counties represent potential suitable habitat for the species (FWS 1999).

3.2 State Listed Species

3.2.1 Introduction

There are 14 species listed by the State of Oregon as threatened, endangered or candidate that may occur in Baker County (Table 3-2). Three of these species, the gray wolf, bull trout and spectacular thelypody, are also listed by the federal government and discussed in Section 3.1. The remaining 11 state-listed species are discussed below.

| Table 3-2. State Listed Threatened, Endangered or Candidate Species that May Occur in Baker County. | | | |
|--|---------------------------|---------------------|--|
| Scientific Name | Federal Status | State Status | Documented in Mason Dam Study Area/Vicinity |
| Bird Species | | | |
| <i>Haliaeetus leucocephalus</i> (Bald eagle) | None-federally downlisted | Threatened | Yes |
| Mammal Species | | | |
| <i>Canis lupus</i> (Gray wolf) | Endangered | Endangered | No |
| <i>Gulo gulo luteus</i> (California wolverine) | Species of Concern | Threatened | No |
| Fish Species | | | |
| <i>Salvelinus confluentus</i> (Bull trout [Columbia River Basin]) | Threatened | Threatened | Yes |

| Table 3-2. Continued | | | |
|---|-----------------------|---------------------|--|
| Scientific Name | Federal Status | State Status | Documented in Mason Dam Study Area/Vicinity |
| Plant Species | | | |
| <i>Thelypodium howelli</i> spp. <i>spectabilis</i> (Spectacular thelypody) | Threatened | Endangered | No |
| <i>Pleuropogon</i> = <i>Lophochlaena oreganus</i> (Oregon semaphore grass) | Not listed | Threatened | No |
| <i>Cypripedium fasciculatum</i> (Clustered lady's-slipper) | Species of Concern | Candidate | No |
| <i>Botrychium crenulatum</i> (Crenulate grape-fern) | Species of Concern | Candidate | No |
| <i>Botrychium paradoxum</i> (Twin spike moonwort) | Species of Concern | Candidate | No |
| <i>Botrychium pedunculatum</i> (Stalked moonwort) | Species of Concern | Candidate | No |
| <i>Hackelia cronquistii</i> (Cronquist's stickseed) | Species of Concern | Endangered | No |
| <i>Lomatium erythrocarpum</i> (Red-fruited desert parsley) | Species of Concern | Endangered | No |
| <i>Lupinus lepidus</i> var. <i>cusickii</i> (Cusick's lupine) | Species of Concern | Endangered | No |
| <i>Pyrrocoma radiata</i> (Snake River goldenweed) | Species of Concern | Endangered | No |

3.2.2 Bald Eagle

The bald eagle was listed as a federally threatened species but a notice of delisting was placed in the federal register on July 9, 2007, with the delisting effective August 8, 2007. The species is still listed by Oregon as threatened. It is managed by the FS as a Region 6 Regional Forester's sensitive species and continues to be protected under the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act. Both laws prohibit killing, selling or otherwise harming eagles, their nests or eggs. The Eagle Act was modified on June 5, 2007 to define "disturb" as a prohibited act. The final definition defines "disturb" as to "agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (72 FR 31132).

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The bald eagle prefers habitats near large bodies of water that contain an abundance of fish and requires mature trees for perching, roosting, and nesting. Selected trees must have good visibility, an open structure (canopy cover between 20 to 60%), and proximity to prey, but the height or species of tree is not as important as an abundance of comparatively large trees surrounding the body of water (Natureserve 2007).

The bald eagle is known to both nest and overwinter around Phillips Lake upstream of the Mason Dam direct area of influence, although the wintering eagles may move to other locales, such as Unity Reservoir, elsewhere on the Powder River, the Burnt River or nearby agricultural fields, according to prey availability. Between zero to four eagles have been documented wintering at Phillips Lake and Unity Reservoir, with up to 15 eagles documented using the Powder and Burnt River watersheds during the winter (FWS 2005c). The eagles tend to forage along the rivers in January and early February while the lakes are still frozen, and move to agricultural areas in February and March where they feed on cow after-birth. In addition, wintering eagles also feed on carrion.

The Phillips Lake bald eagle population consists of a single breeding pair of eagles along with a variable number of wintering eagles. An accurate record of nesting outcome has been kept since 1989. The history of this nesting territory prior to 1989 is unknown. The eagle nest has been used annually since 1989 (continuous nest use of 17 years). Reproductive success has generally been good, with between one to two young fledged most years. However, even though the eagles returned to the nest in 2004, 2005 and 2007, no young were produced (Isaacs and Anthony 2007). The cause or causes of nest failure in these years are unknown (P. Rivera, FS, pers. comm.).

The bald eagle breeding season generally extends from January through August. The eagles arrive at Phillips Lake in January, with mating during January and February. Egg laying occurs from mid-February through April, hatching from late March through early May, and fledging from late June through mid-August. The adults generally leave the nest at the end of August, after fledging occurs.

The Wallowa Whitman National Forest manages the nesting pair of eagles under *The Management Plan for the Phillips Reservoir Bald Eagle Nest Site* (1991). This Plan defines the boundaries of the BEMA to encompass the nest site, alternative nest sites, foraging areas and eagle flyways. The outline of the BEMA is depicted in Appendix A, Figures 3a and 3b. The nest site is on the south shore of Phillips Lake. Most of the BEMA is closed year round to motorized vehicles, with no restriction on over-snow vehicles as long as the snow depth is greater than 12 inches. There are no boat use restrictions on the reservoir.

Except for a small area to the west of Black Mountain Road, the BEMA is outside of the direct Mason Dam Study area. The majority of the BEMA is in the indirect area of influence. Specific BEMA management prescriptions that apply to indirect impacts include noise and flyway disruption. Other activities such as stand age management within the BEMA are not pertinent to this project.

Bald eagles are sensitive to disturbance at any time, but particularly so during the breeding season especially when returning to the area to mate. As a result, nesting occurs most commonly in areas

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free of human disturbance. Nesting sites are often chosen to be more than 0.75 miles (approximately 4,000 feet) from low-density human disturbance and more than 1.2 miles (approximately 6,400 feet) from medium- to high-density human disturbance (Forest Service 2007). The nest site at Phillips Lake is approximately 2.5 miles from the base of Mason Dam, 0.25 miles from the nearest open FS road, and a similar distance to Phillips Lake. The nearest campground to the nest site is 1 mile and the nearest boat ramp is 1.5 miles.

There is no set buffer around the eagle nest specified in the BEMA. Buffer zones of approximately 500 to 1,000 feet² from active nests have been recommended in the Northwest (Grubb and King 1991, Powder River Subbasin Plan 2004). Some, however, (see for example, Anthony and Isaacs [1989]) recommend larger buffer zones in which general human activities are restricted within 0.5 miles of nests (2,640 feet) between January and August, with logging, road building, boat launch facilities and other relatively loud activities prohibited within 0.25 miles (1,320 feet) of nests.

Bald eagles appear to respond differently to the type of human disturbance, with the response a function of not only the distance to the disturbance, but also the type of activity, noise level, visibility of activity, location in relation to the nest, and timing, frequency and duration of activity. For example, Grubb and King (1991) identified that pedestrian and vehicular activities resulted in a greater bald eagle disturbance response than aquatic activities or aircraft. As a result, these authors recommend both visual and noise buffering from activities, if necessary.

3.2.3 California Wolverine

The California wolverine is an Oregon-threatened species that is found in California, Oregon, Washington, and part of southern British Columbia. The wolverine is a high elevation species that is found in subalpine forest and alpine meadows and fellfields. In Oregon, the species has been recorded from Mount Hood, McKenzie Valley, near Three Fingered Jack Mountain and Steen's Mountain in Harney County.

3.2.4 Oregon Semaphore Grass

Oregon semaphore grass is an Oregon-threatened grass that was considered extinct for most of this century until it was rediscovered in 1975. It is currently known from eight sites in Lake and Union Counties, Oregon, including portions of the Powder and Grand Ronde River watersheds in Union County. The known populations occur in level topography with slow-moving water at elevations between 3,600 and 5,600 feet, with the habitat described as “sluggish water in depressions and sloughs within wet meadows”. Associated species include tufted hairgrass (*Deschampsia caespitosa*), meadow barley (*Hordeum brachyantherum*), creeping spikerush (*Eleocharis palustris*) and Nebraska sedge (*Carex nebrascensis*). Because of its rarity, little else is known about the species' ecology. The semaphore grass superficially resembles the much more common manna grass (*Glyceria borealis*), with which it can co-occur, but can easily be distinguished by the presence

²Most distances have been converted from meters so that distance conversions are approximate.

or absence of awns (pointed tips of grass flowers). Both the paleas and lemma of Oregon semaphore grass are awned, versus the unawned manna grass floret.

3.2.5 Clustered Lady's Slipper

The clustered lady's slipper is a candidate for listing in Oregon. The orchid occurs in cool coniferous forests along the Cascade-Sierran axis from Washington to central California and at widely scattered locations in the Rocky Mountains in Idaho, Montana, Wyoming, Utah and Colorado. Typical habitat is mid- to late seral Douglas fir (*Pseudotsuga menziesii*) or ponderosa pine (*Pinus ponderosa*) forest with a closed herbaceous layer and variable shrub layer, mostly on northerly aspects. Populations are found in areas with 60 to 100 percent shade. Elevations range considerably, from approximately 1,200 feet to more than 5,000 feet above MSL. Associated species include Oregon boxwood (*Pachistima myrsinites*), oceanspray (*Holodiscus discolor*), spiraea (*Spiraea betulifolia*), Oregon grape (*Berberis nervosa*), pinegrass (*Calamagrostis rubescens*), heart-leaf arnica (*Arnica cordifolia*) and elk sedge (*Carex geyeri*). The species is thought to be affected by forest activities that alter the moisture or temperature regime, actions that disturb the soil and litter layer, or decrease vegetation cover to less than 60 percent.

The related, but more common mountain lady's slipper (*Cypripedium montanum*) was found during 2007 TES surveys completed by the FS within the vicinity of Phillips Lake (Thomas 2007), but the candidate species was not observed.

3.2.6 Grape-Ferns and Moonworts

There are three grape-fern/moonwort species (*Botrychium* spp.) listed by the State of Oregon as candidate species and also by the FWS as species of concern (see Table 3-2). There are an additional two *Botrychium* species listed by the FWS as species of concern with no State status (Table 3-3). Because all five species are listed as FWS species of concern, and the species have some similar habitat requirements, and often co-occur, all grape-fern and moonwort species are discussed together in Section 3.3.

3.2.7 Cronquist's Stickseed

The Cronquist's stickseed is known only from the eastern border of Malheur and Baker Counties and the adjacent areas of Idaho, with most of the occurrences within a 20-mile radius of Vale, Oregon. It typically occurs on sandy soils, north-facing slopes and in association with big sagebrush (*Artemesia tridentata*) and Indian ricegrass (*Oryzopsis hymenoides*).

3.2.8 Red-Fruited Desert Parsley

The red-fruited desert parsley is a narrow endemic found only the Elkhorn Mountains, and only known currently from the Powder River watershed. It is restricted to high elevations (above 8,000 feet) on dry, relatively steep slopes in the ecotone between shrub-steppe vegetation (dominated by mountain mahogany [*Cercocarpus ledifolius*] and big sagebrush) and subalpine woodland

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(dominated by white-bark pine [*Pinus albicaulis*] and Engelmann's spruce [*Picea engelmannii*]).

3.2.9 Cusick's Lupine

Cusick's lupine is a narrow endemic with only five small populations in the Burnt River watershed of Baker County. Its habitat is characterized as loose, rocky slopes formed from eroding, tuffaceous material (Kaye and Gisler 2002). This lupine occurs in sparsely vegetated areas in association with scattered junipers and sagebrush.

3.2.10 Snake River Goldenweed

The Snake River goldenweed is a narrow endemic restricted to the lower portions of the Snake River Canyon and adjacent slopes of Baker and perhaps Malheur Counties, Oregon and Washington County, Idaho (Kaye 2001). Most of the population is centered around Huntington, in the eastern portion of Baker County. The species habitat has been characterized as dry, rolling hills with an open rocky, calcareous soil. Associated species include Sandberg bluegrass, cheatgrass and big sagebrush.

3.3 FWS Species of Concern

There are 38 species of concern listed by the FWS with the potential to occur in Baker County (Table 3-3), of which several species are also listed by Oregon as threatened, endangered or candidate species. Those species of concern that are also listed by the State as threatened, endangered or candidate species are indicated by an asterisk in Table 3 and discussed in Section 3.2. The remaining FWS species of concern, and all *Botrychium* species, are discussed below.

Unless otherwise noted, the species accounts in this section are summarized from data developed for ICBEMP (Quigley and Arbelbide 1997), Powder River Subbasin Plan (2004) and Natureserve (2007 and 2008).

3.3.1 Special Status Bird Species

In addition to agency surveys and studies of the following special status species, a local bird group conducts periodic bird surveys of the Mason Dam area. Appendix G contains a copy of the 2007 observations. These observations are included in this report to supplement the more formal bird surveys and habitat assessments, where appropriate.

3.3.1.1 Northern Goshawk

The northern goshawk is a relatively widespread species, but is a species that is sensitive to disturbance, especially timber harvest. The species typically nests in mature or old-growth coniferous forests and generally selects larger tracts of forest over smaller tracts. Nests are generally constructed in the largest trees of dense, old or mature stands with high canopy closure (65 to 95 %) and sparse groundcover, near the bottom of moderate slopes, and near water.

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Table 3-3. FWS Species of Concern that May Occur in Baker County. Those species that are also State-listed are identified by an “*”.

| Common Name | Scientific Name |
|-------------------------------------|---|
| BIRD SPECIES | |
| Northern goshawk | <i>Accipiter gentilis</i> |
| Western burrowing owl | <i>Athene cunicularia hypugea</i> |
| Ferruginous hawk | <i>Buteo regalis</i> |
| Greater sage-grouse | <i>Centrocercus urophasianus</i> |
| Olive-sided flycatcher | <i>Contopus cooperi</i> |
| Willow flycatcher | <i>Empidonax trailli adastus</i> |
| Yellow-breasted chat | <i>Icteria virens</i> |
| Lewis’ woodpecker | <i>Melanerpes lewis</i> |
| Mountain quail | <i>Oreortyx pictus</i> |
| White-headed woodpecker | <i>Picoides albolarvatus</i> |
| MAMMAL SPECIES | |
| Pygmy rabbit | <i>Brachylagus idahoensis</i> |
| Pallid bat | <i>Antrozous pallidus pacificus</i> |
| Pale western big-eared bat | <i>Corynorhinus townsendii pallescens</i> |
| Townsend’s western big-eared bat | <i>Corynorhinus townsendii townsendii</i> |
| California wolverine* | <i>Gulo gulo luteus</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> |
| FISH SPECIES | |
| Pacific lamprey | <i>Lampetra tridentata</i> |
| INVERTEBRATE SPECIES | |
| Blue Mountains cryptochian caddisfy | <i>Crypthocia neosa</i> |
| AMPHIBIANS AND REPTILES | |
| Tailed frog | <i>Ascaphus montanus</i> |
| Northern sagebrush lizard | <i>Sceloporus graciosus graciosus</i> |
| PLANT SPECIES | |
| Wallowa ricegrass | <i>Achnatherum wallowaensis</i> |
| Upward-lobed moonwort | <i>Botrychium ascendens</i> |
| Crenulate grape-fern* | <i>Botrychium crenulatum</i> |
| Mountain grape-fern | <i>Botrychium montanum</i> |
| Twin spike moonwort* | <i>Botrychium paradoxum</i> |
| Stalked moonwort* | <i>Botrychium pedunculatum</i> |
| Clustered lady’s slipper* | <i>Cypripedium fasciculatum</i> |
| Cronquist’s stickseed* | <i>Hackelia cronquistii</i> |

Table 3-3. Continued. FWS Species of Concern that May Occur in Baker County. Those species that are also State-listed are identified by an “*”.

| Common Name | Scientific Name |
|------------------------------|---|
| Red-fruited desert parsley * | <i>Lomatium erythrocarpum</i> |
| Cusick's lupine* | <i>Lupinus lepidus</i> var. <i>cusickii</i> |
| Snake River goldenweed * | <i>Pyrrocoma radiata</i> |
| Biennial stanleya | <i>Stanleya confertiflora</i> |

3.3.1.2 Western Burrowing Owl

Burrowing owl habitat is typified by short vegetation and presence of fresh small mammal burrows. The species is found in open grasslands, especially prairie, plains, and savanna, and sometimes in open areas near human habitation (such as vacant lots, golf courses, agricultural field edges, irrigation canal banks). The burrowing owl was not mapped by Quigley and Arbelbide (1997) as occurring in the central or western portions of Baker County.

3.3.1.3 Ferruginous Hawk

The ferruginous hawk breeds in Oregon but is not a permanent resident. Its preferred habitat consists of open grasslands and shrub-steppe communities, and the hawk also uses pastures and cropland for feeding. As a species requiring open country for foraging and nesting, it avoids high elevations, forest interiors, narrow canyons and cliff areas.

3.3.1.4 Greater Sage Grouse

The greater sage grouse occurs in habitats where sagebrush species (*A. tridentata*, *A. cana*, *A. nova*, *A. tripartita*) are dominant, occasionally using areas dominated by grasses or other shrubs. The species is currently known from eastern Baker County and adjacent counties in southeast Oregon in sagebrush steppe habitat, and is not known to occur in forested habitats.

3.3.1.5 Olive-Sided Flycatcher

The olive-sided flycatcher is considered an indicator species of high elevation coniferous forest in the Blue Mountains, although it is occasionally found in mixed deciduous/coniferous forests or lower elevations during migration. Most nesting sites contain dead standing trees, which are used as singing and feeding perches. As a result the species is often found near backwaters of lakes and rivers, small mountain ponds, beaver flows and forest openings created by fire or blowdowns. These birds avoid large areas of dense, second growth forests.

3.3.1.6 Willow flycatcher

The willow flycatcher is a breeding resident throughout much of the US including eastern Oregon, Washington and Idaho. Breeding is strongly tied to brushy areas of willow (*Salix* spp.) and similar

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shrubs (alder, dogwood, elderberry, hawthorn, rose) and the species can be common in mountain meadows, swampy thickets and along streams. The presence of water (running water, pools, or saturated soils) and willow, alder or other deciduous riparian shrubs are essential habitat elements, but large contiguous willow thickets without openings are typically avoided, as is dense tree cover.

3.3.1.7 Yellow Breasted Chat

The yellow-breasted chat is a breeding resident throughout most of the interior Columbia Basin, including Baker County. This bird is very secretive and is restricted to dense shrubby vegetation with few tall trees such as second growth, shrubby old pastures, wetland thickets, woodland undergrowth and fence rows. The species is common in early successional stages of forest regeneration. Key habitat features include both a dense shrub layer and the lack of trees. The chat is known to occur along the lower Powder River downstream of Baker.

3.3.1.8 Lewis Woodpecker

The Lewis woodpecker occupies a relatively large range in the western US and adjacent southern Canada, but its distribution can be spotty. The species' distribution is closely associated with open ponderosa pine forest, especially fire maintained old-growth ponderosa pine at higher elevations, or cottonwood riparian woodlands at lower elevations. Important habitat features include an open tree canopy, a brushy understory, dead trees for nest cavities and perch sites, dead or downed woody debris and abundant insects. Because the Lewis woodpecker can not excavate cavities in hard wood, it tends to nest in a natural cavity, an abandoned northern flicker (*Colaptes auratus*) hole, or a previously used cavity. Occasionally it will excavate a new cavity in a soft snag (standing dead tree) or rotting utility pole. The Lewis woodpecker catches insects in flight; as a result, perches near openings or in an open canopy are important for foraging.

The Lewis woodpecker is a breeding resident in eastern Oregon, including Baker County, between February and October. In Baker County, the woodpecker is found in the northeast corner adjacent to the Wallowas and along the western edge adjacent to the John Day drainage.

Activities that remove mature ponderosa pine or cottonwood can be detrimental to the species. Conversely, maintaining open, park-like stands of forest containing mature trees, snags, and a shrubby understory benefit the species.

3.3.1.9 Mountain Quail

Mountain quail occur in a variety of habitats from southwestern British Columbia to Mexico, favoring areas with tall, very dense shrubs that are close to water for breeding. The ecology of this species differs from other North American quail in a number of ways. Unlike other quail species, mountain quail use high-elevation habitats during the breeding season, migrating downslope in the fall to lower elevations. During the downslope migration, birds travel in coveys or groups, while in the springtime, migrants travel back upslope alone or in pairs. The species also requires dense, brushy areas for cover during its altitudinal migration.

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The mountain quail is found in remnant populations along the Snake and Imnaha Rivers in the steep canyons also covered by dense brush. The mountain quail has not been observed by the FS in the Mason Dam area. Neither has the species been observed in the local bird club surveys. However, the more common California quail has been observed.

3.3.1.10 White-Headed Woodpecker

The white-headed woodpecker occurs in coniferous forests from British Columbia to California, generally above 3,900 feet. Important habitat components are an abundance of mature pines, a relatively open canopy of 30 to 50 percent closure, a sparse understory, and numerous snags and stumps for nesting. Nests are preferentially built in large diameter trees. In Oregon, mean diameters of nest trees or snags have been reported from 25.6 to 31.5 inches. In the Interior Columbia River Basin, including Baker County, highest woodpecker densities are reached in mixed coniferous forests where ponderosa pine is dominant. The species tends to avoid monospecific ponderosa pine forests or forests dominated by closed-cone species such as lodgepole pine. The Powder River Subbasin Plan (2004) suggests that optimal white-headed woodpecker habitat in the Blue Mountains consists of large patches of open mature or old growth ponderosa pine, with canopy closure of 10 to 50 percent and snags or stumps greater than 31 inches dbh for nesting.

The white headed woodpecker has been observed fairly often in the Phillips Lake area (B. Mason, FS, pers. comm.). A white headed woodpecker was also observed during the 2004 local bird club surveys perched on a snag along FS Road 1145 approximately one mile south of Mason Dam. The snags in this area have been removed and the bird has not been observed along Rd 1145 since that time.

3.3.2 Special Status Mammals

3.3.2.1 Bats and Myotis

There are four species of bat and five species of myotis with the potential to occur in Baker County. There have been a number of bat species observed by the FS in the vicinity of Mason Dam. In particular, the silver-haired bat has been observed in California Gulch (approximately two miles from Mason Dam) in the summer (B. Mason, FS, pers. comm.). However, the FS surveys are more than 10 years old and the dataset is not available. The best that can be said is that at least one of the sensitive species has been observed in the Mason Dam vicinity.

The general habitat requirements of the nine bat and myotis species are similar. They are nocturnal species that tend to forage over water, especially the Yuma myotis. They need to have roost and maternity sites near foraging areas to minimize energy expenditure. They roost in caves, mine tunnels, buildings, under bridges, in rock crevices and under tree bark. Surrounding trees appear to be important for thermal protection and snags are often used for daytime roosts. Individuals generally return to the same maternity roost in successive years.

In general, bats are active April through September and either migrate or hibernate in October.

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Timing of breeding varies among species, but maternity colonies are generally formed in April with birth in late June to mid July, and the maternity colonies persisting through August or September. The exact dates of each life history stage varies with species, and also with the year according to weather patterns.

Bats are very sensitive to disturbance during hibernation, as this can cause the bats to use up their stored fat and starve to death. Bats are also sensitive to maternity colony disturbance as it can cause the young to lose their grasp and fall, resulting in injury or death. These species may also be sensitive to disturbance as they either arrive in the area from migration or emerge from hibernation.

Differences among species specific roost requirements (maternity, hibernation, daytime) and migratory/hibernation strategies are listed below in Table 3-4.

3.3.2.2 Pygmy Rabbit

The pygmy rabbit occurs within shrub-steppe habitat, typically in dense stands of big sagebrush growing in deep loose soils. It is dependent upon sagebrush for food, as the plant comprises 98 percent of its winter diet and much of its spring and summer diet. A petition to list the pygmy rabbit as federally threatened or endangered was found not to be warranted (Federal Register 2005 May 20), although the Columbia Basin [Washington State] Distinct Population Segment has been listed as endangered.

3.3.2.3 Preble's Shrew

The Preble's shrew occurs in semiarid shrub-grass associations, other habitats in which sagebrush occurs, or in habitats (such as wet meadows) interspersed with sagebrush. It is known from Harney County in Oregon and may occur in similar habitats in Baker County.

3.3.3 Special Status Fish Species

3.3.3.1 Pacific Lamprey

The Pacific lamprey is primarily an anadromous fish of medium to large rivers, known from the Columbia, Snake, John Day, Deschutes and Willamette Rivers in Oregon, as well as a number of coastal rivers such as the Rogue and Umpqua. The lamprey occurs in the Snake River up to the Hells Canyon Dam, but is not known to occur in the Snake River or any tributaries upstream of that point.

Adult lampreys are ocean-dwelling and migrate into freshwater to spawn, dying shortly thereafter. After hatching, lamprey remain in a larval stage for 4 to 6 years. The young or larval stage is a filter-feeder that occurs in shallow muddy backwaters and eddies along the river's edge. There are two known landlocked lamprey populations in Oregon, in the Klamath Basin and in Cottonwood Reservoir, Lake County. In these systems, the adults migrate locally into tributary streams with gravelly substrates to spawn, upstream of the muddy backwater habitat necessary for the larvae.

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| Table 3-4. Comparison of Baker County Sensitive Bat and Myotis Species Habitat Requirements. | | | | | |
|---|---|---|--------------------------|--------------------------------|--|
| Species | General Habitat | Roost Habitat (Maternity, Hibernation and/or Daytime) | Potential Habitat | Migration Status | |
| Small footed myotis | Desert and semi-arid areas | Rock crevices, caves, buildings | No | Hibernates in summer range | |
| Long eared myotis | Forested habitat along streams, reservoirs especially with rock outcrops; most common in dense coniferous forest | Trees, buildings, occasionally caves or rock fissures | Yes | Migratory | |
| Fringed myotis | Desert and open grassland | Trees, buildings, caves, rock fissures | No | Mixed data on migratory status | |
| Long legged myotis | Montane coniferous forest; prefers old growth using the oldest or most mature stand available but will use younger stands with high snag density; prefers firs or other species with exfoliating bark | Caves, buildings, trees; requires undisturbed caves for hibernation | Yes | Unknown | |
| Yuma myotis | Low to mid-elevation forest and forest edge (also grassland and desert shrub) along water, more closely associated with water than other species | Buildings, rock crevices, caves, mines, bridges | Yes | Unknown | |
| Pallid bat | Desert and open grassland, often near rocky outcrops and water | Rock crevices and overhangs, buildings, bridges | No | Unknown | |
| Pale western/Townsend's big eared bats | Mesic coniferous forest | Spacious caves and mine tunnels; does not use rock crevices or fissures | Maybe | Hibernates in summer range | |
| Silver haired bat | Coniferous forest adjacent to lakes, ponds, streams; prefers old growth but will occur in younger forest with high snag density | Tree foliage, cavities, loose bark; rarely in caves | Yes | Migratory | |

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3.3.4 Special Status Invertebrate Species

3.3.4.1 Blue Mountain Crytochia Caddisfly

The Blue Mountain Crytochia caddisfly is the only species of the genus Crytochia in the Blue Mountains. It is widespread, and common in Baker, Grant, and Union counties, occurring in most high-gradient, low order streams and also seepage areas and spring runs. Habitat requirements are for sediment-free pieces of small wood (twigs and branches) and bark (average of 79 pieces per 100 meters of stream length)(Betts and Wisseman 1995). Streams are typically shaded by trees or shrubs (mean of 69% shade cover), with a gravelly substrate and range between 0.5 to 2.8 meters in width. Other characteristics such as pool depth (0 to 17.5 meters) and degree of permanent water are variable. During the fall, the caddisfly may move into damp leaves. The caddisfly does not occur in large, fast streams or low-gradient streams.

The Crytochia is a case-dwelling caddisfly that grazes on fungal spores, algae, leaves and fine particulate matter. Its case is constructed out of transversely arranged pieces of wood and bark, which is unique to the genus (Betts and Wisseman 1995).

3.3.5 Special Status Amphibians/Reptiles

3.3.5.1 Interior Tailed Frog

The interior tailed frog is a species that is endemic to the Pacific Northwest and adjacent western Montana. It is a high elevation species, generally occurring above 6,000 feet in northeast Oregon. The species requires very cold and swift-moving mountain streams with coarse substrate. Although known from the Powder River in Baker County, the species occurs at a much higher elevation than the Mason Dam site.

3.3.5.2 Northern Sagebrush Lizard

The northern sagebrush lizard is a widespread species that is apparently secure in Oregon. Typical habitats are rock outcrops in sagebrush, juniper and mountain shrubland communities. In northeast Oregon, the species prefers open sagebrush and bitterbrush communities in sandy soil over communities either (1) on other substrates or (2) with rabbitbrush, cheatgrass or needle and thread grass.

3.3.6 Special Status Plant Species

3.3.6.1 Wallowa Ricegrass

The Wallowa ricegrass is limited to dry grasslands referred to as *Poa secunda* [*sandbergii*](or Sandberg bluegrass) grasslands. It is currently known from 30 populations within two main areas: the Ochoco Mountains in Crook County (area of about 3.5 miles by 1 mile) and the Lower Grande Ronde and Imnaha watersheds of Wallowa County (area of about 30 miles by 15 miles). Additional

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potential habitat occurs in the eastern portion of Baker and surrounding counties and more populations may be found in the eastern part of the County.

3.3.6.2 Grape-ferns and Moonworts

Five moonwort/grape-fern species were identified as species of concern potentially occurring within Baker County. These species are discussed together as they have similar habitat requirements and often occur together, although their microhabitat varies along a moisture and light gradient.

Their overall habitat in Oregon can be characterized as mixed forb and grass openings within mesic coniferous forests (Zika 1994, Croft et al. 1997). They favor partial shade from conifers or riparian shrubs but also occur in meadows with shade provided by forbs, grasses or encroaching pines. Soil moisture ranges from moist to wet, but is very rarely xeric. Canopy species tend to include or be restricted to spruces (*Picea engelmannii*) and lodgepole pine, although western red cedar (*Thuja plicata*) can dominate in western parts of the state. In northeast Oregon, these five grape-fern and moonwort species generally occur at elevations above 5,000 feet and up to 6,000 feet. Common landforms include riparian floodplains, alluvial fans, and other recent geologic deposits. Understory associates are variable but include a mix of sedges, rushes and grasses. Field strawberry (*Fragaria virginiana*) is a common forb associate.

Along a light/moisture gradient, the upward-lobed, twin spike and stalked moonworts tend to occur in open sunlight to partial shade, in seasonally flooded and mesic soils (Croft et al. 1997). The crenulate grape-fern has similar light requirements, but tends to occur in saturated soils or “marshy” habitats. The mountain grape-fern occurs in partial to full shade, but still requires mesic soils.

The center of moonwort/grape-fern diversity in Oregon occurs in the calcareous drainages of Wallowa Mountains, but all five of the *Botrychium* species listed in Table 3 have been documented in Baker County (NatureServe 2007), all well above 5,000 feet.

There were no moonwort or grape-fern species observed either during the summer 2007 Vegetation Study for the Mason Dam project or during the FS surveys of the nearby Little Dean units (Thomas 2007).

3.3.6.3 Biennial Stanleya.

The biennial stanleya is known from western Idaho and eastern Oregon. In Oregon it occurs in Baker, Harney and Malheur counties in the Burnt River, Bownlee Reservoir and Malheur River watersheds. The species tends to be concentrated in the Ontario/Weiser area, with scattered populations extending to Unity in Baker County. It typically occurs in sagebrush steppe on barren to sparsely vegetated clays.

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4.0 TES SPECIES RESULTS

4.1 Federal and State-Listed Species

4.1.1 Pre-Field Screening

As noted in Section 2.0 there are three wetland/aquatic habitats and five upland habitat types in the project study area. These are:

Wetland or Aquatic Habitat

- Open water, riverine
- Riparian herbaceous wetland
- Riparian shrub wetland

Upland Habitat

- Upland Forest
 - Dry coniferous forest (ponderosa pine), open canopy
 - Mixed coniferous forest (mixed ponderosa pine, larch and Douglas fir), moderately closed canopy
 - Young regenerating forest
- Dry grassland
- Rock/talus slope on a road cut

Not all of the species that may occur within Baker County occur or have the potential to occur in the habitats found within the Mason Dam study area. For example, a number of TES species that may occur in Baker County are known only from sagebrush steppe, low elevation grasslands, subalpine forest or other habitats which do not occur in the project area. The potential for each of the 44 TES species described in Section 3.0 to occur in the Mason Dam study area is discussed below by habitat type.

4.1.1.1 Wetland/Aquatic Dependent TES Species

All TES species with the potential to occur in mid-elevation riparian wetlands or aquatic habitats were identified as potentially occurring in the Mason Dam study area. These species are listed in Table 4-1. Table 4-1 also identifies those wetland species that have been observed either in or adjacent to the study area. These species are the spotted frog and bald eagle. (See also Appendix A.)

The bull trout is known to occur in the Powder River upstream of Phillips Lake. ODFW suspects that bull trout could currently occur in Phillips Lake (Fagan 2008), and the FWS (2002) identifies that bull trout could expand their distribution into Phillips Lake during recovery. As per the agreed-

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upon study plan (Baker County [2006], FERC [2007], FERC[2008]), no new surveys for the bull trout were conducted in either 2007 or 2008 and the existing data was used to assess impacts to this species.

Two wetland/riparian dependent and one aquatic TES species that may occur in Baker County do not have the potential to occur in the Mason Dam study area (Table 4-2). These are the spectacular thelypody (known only from lower elevation alkaline wet meadows), the interior tailed frog (higher elevation species) and the Pacific lamprey (medium to large rivers connected to the ocean and containing shallow muddy backwaters). In addition, the wetland/riparian habitat within the project area is more than 700 feet lower than the elevational range for the five grape-fern/moonwort species (see also discussion in Section 4.1.1.2). The remaining wetland/riparian dependent species were evaluated in the subsequent field surveys.

4.1.1.2 Upland Forest Dependent TES Species

Most of the Mason Dam study area consists of forests dominated by ponderosa pine. The majority of the forested areas have a relatively open canopy ($\leq 50\%$) and can be characterized as “warm, dry forest” according to the FS classification system (Powell et al. 2007). There are nine TES species³ that can occur within this mid-elevation habitat type (see Table 4-1). All were evaluated in the subsequent field survey.

Approximately 15 percent of forested areas in the study area are dominated by a mixed coniferous forest (ponderosa pine, Douglas fir and larch) with a greater canopy closure (50 to 60%). With the greater canopy closure, this habitat was considered potentially suitable for the clustered lady’s slipper and northern goshawk, even though these species typically require a more closed canopy and a later seral stage of forest. Because of the proximity to water as foraging habitat, the moderately closed forest was also examined for its suitability as roosting habitat for the six bat/myotis species.

The five grape-fern/moonwort species that occur in the Blue Mountains are known from elevations above 5,000 feet in mesic forest openings. With the exception of the mountain grape-fern, these species require full sun to only partial shade, relatively high soil moisture, and are associated with early successional habitats within the larger forest matrix. There are no such habitats (open, early successional and mesic) within the project area. The mountain grape-fern has been found in a range of light conditions, all above 5,800 feet elevation in Oregon. There is no habitat for the mountain grape-fern in the Mason Dam study area.

There is a small area of second growth within a timber sale unit along the transmission line interconnect. Depending on the density and height of the young trees, this area was identified as potentially suitable for the yellow-breasted chat and evaluated for that species during the field

³ Six of these species (bats and myotis) can occur in different forest types or rock slopes, and are listed in Table 4-1 under three habitat types. Likewise, the gray wolf is listed under all forest types.

surveys. The young forest represents an early successional habitat, however, it is too xeric and at too low of an elevation to provide habitat for the sensitive grape-fern/moonwort species.

4.1.1.3 Dry Grassland Dependent TES Species

The grassland within the Mason Dam study area consists of small patches or linear strips of seeded mostly non-native species including crested and intermediate wheatgrass (*Agropyron cristatum*, *A. intermedium*). These habitats occur adjacent to the recreation area parking lot where there is considerable human and domestic dog use, and along the existing transmission line off Black Mountain Road. Although sagebrush and rabbitbrush occur sporadically in these areas, there is no sagebrush steppe or desert habitat. Both habitats are bordered by forest. As a result, those species restricted to large expanses of grassland, desert or sagebrush habitats were identified as species with no potential to occur in the Mason Dam study area.

Table 4-2 lists 14 species that are restricted to these lower elevation habitats that do not occur in the Mason Dam area.

4.1.1.4 Rock/Talus Slope Dependent TES Species

The rock/talus slope habitat is sparsely vegetated and located on a steep slope between the Mason Dam recreation area parking lot and the adjacent Black Mountain Road. There are a couple of rock outcrops on the slope that have some small fissures and openings. These outcrops were examined in the subsequent field survey for potential bat/myotis use.

4.1.1.5 Other Species

Several of the potential TES species are restricted to high elevation forests, meadows or talus slopes, well above the elevation of the Mason Dam site. These species include the red-fruited desert parsley (known from steep slopes above 8,000 feet), the California wolverine (requires subalpine and alpine habitats) and the olive-sided flycatcher (requires high elevation forests with abundant standing, dead trees).

The mountain quail requires very dense shrublands for cover and mostly occurs in remnant populations along the Snake and Imnaha Rivers in the steep canyons also covered by dense brush. There is no such habitat in the Mason Dam study area.

Table 4-1. Federal/State-listed Species with the Potential to Occur within the Mason Dam Study Area and For Which Additional Field Assessments or Other Analyses Were Conducted.

| General Mason Dam Habitat Type | Potential TES Species | Species Status ¹ | TES Species Requirements within the General Habitat Type | Known From Study Area or Project Vicinity |
|--|------------------------|-----------------------------|--|---|
| Wetland/Aquatic Habitat | | | | |
| Open Water ^{2,3} <ul style="list-style-type: none"> • Riverine • Bedrock/Cobble bed | Spotted Frog | FC | Open, slack or ponded water with constant water levels and temperatures, bordered by wet meadows or uplands with dense cover | Yes |
| | Bald eagle | ST | Large bodies of water with abundant fish and bordered by large trees | Yes |
| | Bull trout | FC, ST | Cool, clear permanent water, substrate with a minimum of fine material, diverse food base from riparian and aquatic sources | N/A |
| | Blue Mt Cryptochia | FSOC | High gradient, low order streams in Blue Mountains | No |
| Riparian Herbaceous Wetland | Oregon Semaphore Grass | ST | Sluggish water in depressions between 3,600-5,600 ft. | No |
| Riparian Shrub <ul style="list-style-type: none"> • Along Powder River and small tributaries • Scattered cottonwood or aspen trees • Perennial water source | Willow flycatcher | FSOC | Willow, alder or other deciduous shrub thickets in wetlands or along streams, avoids dense tree cover | No |
| | Yellow breasted chat | FSOC | Dense wetland thickets lacking tree cover, known from the lower Powder River below Baker | No |

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| Table 4-1. Continued. | | | | | |
|---|------------------------------|-----------------------------------|---|--|--|
| General Mason Dam Habitat Type | Potential TES Species | Species Status¹ | TES Species Requirements within the General Habitat Type | Known From Study Area or Project Vicinity | |
| Upland Forest | | | | | |
| Dry coniferous forest-open <ul style="list-style-type: none"> • Ponderosa pine dominant • Less than 50% canopy cover • 3900 to 4300' elevation, various aspects | Gray wolf | FE, SE | Variety of habitats, mostly forested in Oregon, abundant prey base | No | |
| | Myotis and bats (6 species) | FSOC | Forest and forest edge along water | Yes, some species | |
| | Lewis woodpecker | FSOC | Open tree cover with brushy understory, dead trees for nest cavities, | No | |
| | White-headed woodpecker | FSOC | Less than 50-65% closure, numerous snags and stumps | Yes | |
| Mixed Coniferous Forest <ul style="list-style-type: none"> • Mix of pine, Douglas fir and larch • 4,200-4,300' elevation • Northwest slope • 50 to 60% canopy cover | Clustered lady's slipper | FSOC, SC | Closed canopy (>60% to 100% shade), late seral, primarily Douglas fir | No | |
| | Myotis and bats (6 species) | FSOC | Forest and forest edge along water | Yes, some species | |
| | Gray wolf | FE, SE | Variety of habitats, mostly forested in Oregon, abundant prey base | No | |
| | Northern goshawk | FSOC | Closed canopy (>65%) and sparse ground cover | No | |
| Regenerating Forest | Yellow breasted chat | FSOC | Woodland undergrowth, shrubby old pastures | No | |
| | Gray wolf | FE, SE | Variety of habitats, mostly forested in Oregon, abundant prey base | No | |

| Table 4-1. Continued. | | | | |
|---------------------------------------|------------------------------|-----------------------------------|---|--|
| General Mason Dam Habitat Type | Potential TES Species | Species Status¹ | TES Species Requirements within the General Habitat Type | Known From Study Area or Project Vicinity |
| Non-Forested Upland | | | | |
| Dry Grassland | No Species-see Table 6 | | | |
| Rock/Talus Slope | Myotis and bats (6 species) | FSOC | Rock fissures and caves near water | Yes, some species |

¹ FE=Federal Endangered, FT=Federal Threatened, FC=Federal Candidate for listing; FSOC=Federal Species of Concern
SE=State Endangered, ST=State Threatened, SC=State Candidate for listing;
² Existing data is used in the assessment for bull trout and no new surveys were conducted;
³ Bald eagle is known to forage over open water, the existing data supplied by the FS is used in this assessment and no new surveys were conducted.

| Table 4-2. TES Species that May Occur in Baker County but which do NOT have the Potential to Occur within the Mason Dam Study Area. | | | |
|--|------------------------------|------------------------------------|---|
| General Habitat | Potential TES Species | Species Status ¹ | Specific habitat features |
| Wetland/Aquatic Habitat | | | |
| Open Water-High elevation | Interior tailed frog | FSOC | Very cold, swift moving streams above 6,000' |
| Open water-Low elevation | Pacific lamprey | FSOC | Medium to large rivers containing shallow muddy backwater habitat and connected to the ocean |
| Riparian Forest | Yellow-billed cuckoo | FC | Riparian gallery forests > 25-100 acres |
| Alkaline wet/mesic meadow | Spectacular thelypody | FT, SE | Greasewood and wild rye dominated meadows between 3,000-3,500' |
| Upland Habitats | | | |
| Dry Grassland | Burrowing owl | FSOC | Very open grasslands with short stature vegetation |
| | Ferruginous hawk | FSOC | Avoids narrow canyons, forests |
| Low elevation, dry grassland or desert | Wallowa ricegrass | FSOC | Dry sandberg bluegrass grasslands |
| | Small footed myotis | FSOC | Desert and semi-arid habitats, not forested |
| | Pallid bat | FSOC | Desert and open grasslands |
| | Fringed myotis | FSOC | Desert and open grasslands |
| Sagebrush steppe | Cronquist's stickseed | FSOC, SE | Sandy soils with big sagebrush and Indian ricegrass, only in Vale area |
| | Cusick's lupine | FSOC, SE | Loose, rocky slopes in sparsely vegetated sagebrush and juniper habitat; only in Burnt River drainage |
| | Snake River goldenweed | FSOC, SE | Dry, rolling hills with open, calcareous soil, near Huntington |
| | Biennial stanleya | FSOC | Barren to sparsely vegetated clays |

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| Table 4-2. Continued | | | |
|---|---------------------------------------|-----------------------|--|
| General Habitat | Potential TES Species | Species Status | Specific habitat features |
| Sagebrush steppe | Northern sagebrush lizard | FSOC | Open sagebrush and mountain shrub on sandy soil |
| | Preble's shrew | FSOC | Semi-arid shrub-grass associations |
| | Pygmy rabbit | FSOC | Dense sagebrush stands in deep, loose soils |
| Dense, brushy habitats | Greater sage grouse | FSOC | Dependent on sagebrush |
| | Mountain quail | FSOC | Dense shrubs on steep slopes |
| High elevation forests, meadows or other specialized habitats | Grape-ferns and moonworts (5 species) | FSOC/SC | Mixed forb and grass openings within mesic coniferous forest generally between 5,000 to 6,000 ft; full sun to partial shade from canopy or understory; associated with spruce, lodgepole pine, western red cedar |
| | Red-fruited desert parsley | FSOC, SE | Steep slopes above 8,000' |
| | Olive-sided flycatcher | FSOC | Hi elevation coniferous forest with abundant standing, dead trees |
| | California wolverine | FSOC, ST | Subalpine forest and alpine meadows and fell fields |

¹ FE=Federal Endangered, FT=Federal Threatened, FC=Federal Candidate for listing; FSOC=Federal Species of Concern
SE=State Endangered, ST=State Threatened, SC=State Candidate for listing

4.1.2 Summary of Federal/State-Listed Species Pre-Field Screening

Of the 44 Federal or State listed or candidate species, or Federal species of concern with the potential to occur in Baker County:

- Existing data will be used to assess impacts to two species (bald eagle and bull trout).
- Potential impacts to the gray wolf will be based on an assessment of impacts to ungulate prey populations.
- Based on the preliminary habitat assessment, only three other listed or candidate species: the Columbia spotted frog, clustered lady's slipper and semaphore grass have potential habitat in the Mason Dam study area, with the likelihood of the two plant species occurring being relatively low.
- There are an additional 13 federal species of concern that could occur in the mid-elevation wetlands and forested habitats in the project area (see Table 4-1). Additional surveys and/or habitat evaluations were conducted for these species.

4.2 Forest Service Sensitive Species

4.2.1 Pre-Field Screening

As noted in Section 2.1.2, in July 2008 the FS provided a list of sensitive fish, wildlife and vascular plant species that could occur in the Mason Dam vicinity. However, the potential invertebrates and non-vascular species that could occur on the Wallowa-Whitman National Forest were not pre-screened. More detailed pre-field screenings were conducted for species within these two taxon than the other species. As a result, the pre-field screening results are listed separately for invertebrates, non-vascular plant species, and fish, wildlife and vascular plants.

Data used for the screening includes data developed for ICBEMP (Quigley and Arbelbide 1997), Powder River Subbasin Plan (2004) and Natureserve (2007 and 2008), as well as other specific literature cited below.

4.2.1.1 Invertebrates

Table 4-3 lists four aquatic mollusks and two terrestrial snails that could occur on the Wallowa-Whitman National Forest. The aquatic mollusks are primarily species of cold, medium to large rivers that lack major changes in water levels or are seasonally dewatered (Nadeau et al. 2005). These species typically require backwaters or other high flow refugia which are absent in the Powder River study area. These species also generally require fine substrates in which to burrow.

The only sensitive aquatic mollusk with any potential to occur in the Powder River is the western ridged mussel, but its occurrence is unlikely because of the lack of high flow refugia. However, a

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survey was conducted for the mussel and to evaluate the aquatic habitat potential for mollusks in general.

There is no habitat for the sensitive aquatic mollusks in the unnamed tributary.

The sensitive terrestrial snails occur in moist Douglas fir and spruce forests at higher elevations than the project study area. These species have no potential habitat in the study area.

4.2.1.2 Non-Vascular Plants

Pre-field screening for the non-vascular plants relied on the results from an intensive survey of the moss, lichen and liverwort flora of the Powder River and adjacent uplands below Mason Dam in 2006 (Stone et al. 2006), Christy and Wagner (2007), McCune and Geiser (1997), Glavich (2007), and review of unpublished species information provided by the FS.

The 2006 non-vascular plant surveys below Mason Dam did not locate any sensitive non-vascular species. This is not unsurprising, as most of the sensitive species are associated with higher elevation sites (above 5,000 feet), montane fens or bogs, calcareous substrates (or a combination of these 3 habitat characteristics), or much lower elevation sites (less than 2,300 feet) (see Table 4-4).

There is no habitat for the sensitive liverworts as they are all species of higher elevation sites. However, liverworts were still searched for during the 2008 surveys.

There is potential habitat for two moss species, *Rhizomnium nudum* and *Schistostega pennata*. Habitat for the former species could occur within the upland forests on rotting logs. Habitat for the *Schistostega pennata*, also known as goblin's gold or luminescent moss, could occur in some microhabitats within the talus/rock slope, or on overturned tree roots in the upland forest.

There is potential habitat for the two sensitive tree bark lichens (*Leptogium burnetiae*, *L. cyanescens*) in the Powder River riparian area and along the unnamed tributary on deciduous trees. The aquatic lichen, *Dermatocarpum meiophyllizum*, is mostly known from above 5,000 feet in elevation, but can occur at lower elevations. There is no habitat for the aquatic lichen in the unnamed tributary. It is not likely to occur in the Powder River, but because there is some potential for occurrence, it was surveyed for.

4.2.1.3 Fish, Wildlife and Vascular Plants

Wetland/Aquatic Dependent Species. The redband trout is known to occur in the Powder River. The west slope cutthroat trout is a Rocky Mountain species with a disjunct population in the John Day River. It has not been observed in the Powder River watershed. As per the agreed-upon study plan (Baker County [2006], FERC [2007], FERC[2008]), no new surveys for any fish species were conducted in either 2007 or 2008 and the existing data was used to assess impacts to these species.

There are four wetland/aquatic dependent SSSP species that may occur in the project vicinity, but

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which do not have the potential to occur in the Mason Dam study area (Table 4-5). These are the bufflehead (winters in Oregon on open water), the short-seeded waterwort and the lowland toothcup (annual mudflats around lakes and reservoirs), and Rafinesque's pondweed (shallow water of ponds and marshes). These species may occur in Phillips Lake or along its shoreline, but Phillips Lake is outside of the Mason Dam study area for all species except the bald eagle.

All other wetland/aquatic SSSP species were considered to have potential habitat in the project study area, as documented in Table 4-5.

Upland Forest Dependent TES Species. The many-flowered phlox and the gray moonwort are the only SSSP species with potential habitat within the forested portions of the project study area. Both were evaluated in the subsequent field survey.

Dry Grassland Dependent TES Species. As noted in Section 2.0, the grassland within the Mason Dam study area consists of small patches or linear strips of seeded mostly non-native species including crested and intermediate wheatgrass (*Agropyron cristatum*, *A. intermedium*). These habitats occur adjacent to the recreation area parking lot where there is considerable human and domestic dog use, and along the existing transmission line off Black Mountain Road. As a result, those species restricted to either large expanses of grassland or native grassland were identified as species with no potential to occur in the Mason Dam study area. These species include the upland sandpiper, green band mariposa lily and the prairie moonwort.

Rock/Talus Slope Dependent TES Species. The rock/talus slope habitat is mostly dry, but there is a small seepy area with aspen shade (see appendix Figure C-8) near the eastern end of the study area. This seep, as well as all other rock outcrops were surveyed for the Steller's rockbrake.

The membrane-leaved monkey flower occurs on moist, forested cliffs within the sagebrush steppe. This habitat does not occur within the Mason Dam study area. However, all seepy areas were surveyed intensively for sensitive species, including monkey flowers.

Other Species. Several of the potential SSSP species are restricted to unique habitats such as calcareous substrates (two moonwort species), mesic, early successional habitats (western moonwort) or Great Basin woodlands (broad-tailed hummingbird). There are no such habitats in the Mason Dam study area.

| Table 4-3. Forest Service Sensitive (SSSP) Invertebrate Species with the Potential to Occur in The Mason Dam Vicinity. | | | |
|---|-----------------------|--|-------------------------------|
| Scientific Name | Common Name | Specific Habitat | Habitat in Study Area? |
| Aquatic: Open water-riverine | | | |
| Fisherola nuttalli | Shortface lanx | Cold, medium to large rivers, more than 150 ft wide (such as the lower John Day, lower Snake, Deschutes); no large changes in water levels | No |
| Fluminicola fuscus | Columbia pebblesnail | | No |
| Gonidea angulata | Western ridged mussel | Freshwater creeks and rivers, in shallows, backwaters or other high flow refugia; permanent flow, not seasonally dewatered | Unknown but unlikely |
| Pristinicola hemphilli | Pristine springsnail | Low elevation, large rivers; known from Lower Snake and Lower Columbia Rivers | No |
| Terrestrial:Moist Upland Forest | | | |
| Polygyrella polygyrella | Humped coin | Moist Doug fir and spruce forests, known only from extreme Northeast Oregon | No |
| Pristiloma wascoense | Shiny tightcoil | Moderate to high elevation Doug fir forests, moist shaded cliffs, within moist patches of moss; not known from Oregon | No |

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| Table 4-4. Forest Service Sensitive Fish, Wildlife and Vascular Plant Species with the Potential to Occur in The Mason Dam Vicinity. | | | |
|---|----------------------------|---|-------------------------------|
| Scientific Name/ Habitat Type | Common Name | Specific Habitat | Habitat in Study Area? |
| Open Water/Riverine | | | |
| Fish¹ | | | |
| Oncorhynchus clarkii lewisii | West slope cutthroat trout | Cool, clear permanent water, substrate with a minimum of fine material, diverse food base from riparian and aquatic sources | No |
| Oncorhynchus mykiss | Inland redband trout | | Yes |
| Birds | | | |
| Bucephala albeola | Bufflehead | Winters on open water in Oregon | No |
| Plants | | | |
| Potamogeton diversifolius | Rafinesque's Pondweed | Shallow water in ponds, marshes | No |
| Wetland/Riparian | | | |
| Plants | | | |
| Carex lasiocarpa var. americana | Slender Sedge | Wetlands, generally organic soils | Yes |
| Carex retrorsa | Retorse Sedge | Shaded wetlands | Yes |
| Cyperus lupulinus ssp. lupulinus | Great Plains Flatsedge | Wetlands | Yes |
| Eleocharis bolanderi | Bolander's Spikerush | Wet meadow | Yes |
| Phacelia minutissima | Dwarf phacelia | Seasonal wetland | Yes |
| Platanthera obtusata | Small northern bog-orchid | Wet meadow, river gravel | Yes |

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| Table 4-4. Continued. | | | |
|--------------------------------------|-------------------------------|--|-------------------------------|
| Scientific Name/ Habitat Type | Common Name | Specific Habitat | Habitat in Study Area? |
| Trifolium douglasii | Douglas' Clover | Wet meadow | Yes |
| Elatine brachysperma | Short Seeded Waterwort | Muddy shores, annual mudflat | No |
| Rotala ramosior | Lowland Toothcup | Annual mudflat | No |
| Upland Forest | | | |
| Phlox multiflora | Many-flowered phlox | rocky places in forests and openings | Yes |
| Botrychium minganese | Gray moonwort | Variety of habitats | Yes |
| Grassland | | | |
| Birds | | | |
| Bartramia longicauda | Upland sandpiper | Extensive, open tracts of short grassland | No |
| Plants | | | |
| Calochortus macrocarpus var maculosa | Green band mariposa lily | Grassland | No |
| Botrychium campestre | Prairie moonwort | Glacial till, dry prairies and hillsides | No |
| Rock Slopes/Cliffs/Talus | | | |
| Cryptogramma stelleri | Steller's rockbrake | Moist, shaded cliffs | Yes |
| Mimulus hymenophyllus | Membrane-leaved monkey flower | Moist, forested cliffs within sagebrush steppe | No |

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| Table 4-4 Continued. | | | |
|---|--------------------------|--|-------------------------------|
| Scientific Name/ Habitat Type | Common Name | Specific Habitat | Habitat in Study Area? |
| Other Habitats | | | |
| Birds | | | |
| Selasphorus platycercus | Broad-tailed hummingbird | Breeds in mountain meadows, open woodland, riparian shrub primarily in the Great Basin and Southwestern US | No |
| Plants | | | |
| Botrychium hesperium | Western moonwort | Open, early successional habitats | No |
| Botrychium lineare | Slender moonwort | Calcareous substrates in the Lostine River drainage | No |
| Botrychium lunaria | Moonwort | Calcareous soils, open fields, woodland edges | No |
| ¹ Existing data is used for sensitive fish species in this assessment and no new surveys were conducted; | | | |

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| Table 4-5 Forest Service Sensitive (SSSP) Non Vascular Plant Species with the Potential to Occur in The Mason Dam Vicinity. | | | |
|--|--|---|-------------------------------|
| Scientific Name ¹ | Specific Habitat | Found in PR Surveys ² | Habitat in Study Area? |
| Liverworts | | | |
| <i>Barbilophozia lycopodioides</i> | Peaty soil on damp ledges of rock outcrops and cliffs; high elevation spruce-fir associations | No | No |
| <i>Jungermannia polaris</i> | High elevation in mountain hemlock and subalpine fir | No | No |
| <i>Peltolepis quadrata</i> | Alpine or subalpine calcareous or ultramafic rock outcrops | No | No |
| <i>Ptilidium pulcherrimum</i> | Cool, moist habitats on decaying wood, among boulders, at tree bases; generally considered boreal species | No | No |
| Mosses | | | |
| <i>Encalypta intermedia</i> | Protected overhangs on calcareous outcrops | No | No |
| <i>Helodium blandowii</i> | High elevation, montane fens | No | No |
| <i>Rhizomnium nudum</i> | Damp, shaded sites on organic soil, rotting logs | No | Yes; in microhabitats |
| <i>Schistidium cinclidonteum</i> | Wet rocks, rock crevices or intermittent streams above 5,000' | No | No |
| <i>Schistostega pennata</i> | Dark, damp microsites-cave openings, fallen tree rootballs | No | Yes; in microhabitats |
| <i>Scouleria marginata</i> | Rocks in or adjacent to low elevation (below 2,300') streams | No | No |
| <i>Splachnum ampullaceum</i> | Dung around bogs and fens | No | No |
| <i>Tetraphis geniculata</i> | Moist coniferous forest above 5,000' on well rotted logs | No | No |
| <i>Tomentypnum nitens</i> | Montane fens | No | No |
| <i>Tortula mucronifolia</i> | Rock outcrops in fir and higher elevation riparian forests; 5,000-7,000' | No | No |
| Lichens | | | |
| <i>Dermatocarpon meiophyllizum</i> | Aquatic lichen not likely to occur in shaded habitats with highly variable streamflow; tends to occur above 5,000' | No | Not likely |
| <i>Leptogium burnetiae</i> | Most common on the bark of deciduous trees, but can also occur on decaying logs and mossy rocks | No | Yes |
| <i>Leptogium cyanescens</i> | | No | Yes |
| <i>Peltigera pacifica</i> | Low elevation (below 2,200') soil lichen. | No | No |
| ¹ Common names not listed as not included on SSSP list. ² Intensive non-vascular species surveys of Powder River below Mason Dam, riparian habitat and adjacent forest conducted by Stone et al. (2006). | | | |

4.2.2 Summary of Forest Service Sensitive Species Pre-Field Screening

Of the 51 SSSP species with the potential to occur in either the WWNF or the Mason Dam vicinity:

- The only sensitive invertebrate with any potential to occur in the Powder River is the western ridged mussel, and its occurrence is unlikely because of the lack of high flow refugia. However, a survey was conducted for the mussel and to evaluate the aquatic habitat potential for mollusks in general.
- There is potential habitat for two sensitive mosses, two tree bark lichens and one aquatic lichen in selected microhabitats.
- Existing data will be used to assess impacts to the two SSSP fish species.
- There are no additional sensitive wildlife species with potential habitat in the study area, beyond those already being evaluated under the Federal and State ESA lists.
- There are an additional 10 sensitive vascular plant species with potential habitat.

4.3 TES Plant Species Phenology

The features required for identification of individual TES plant species vary. However, identification generally requires a flower, inflorescence (group of flowers) or fruit (fruiting body for fern allies). Table 4-6 summarizes the main features required for identification of the vascular plant species in tables 4-1 and 4-4, and for which surveys would be made. The distinguishing features are summarized from technical botanical details into less technical terms. For example, instead of discussing the importance of “intercostal membrane calyx morphology” for the many-flowered phlox identification, the table identifies that a mature flower is necessary for identification. The flowering times are then listed as the period in which surveys must be conducted. Other species, such as the Bolander’s spikerush require a fruit for identification and the fruiting times are listed as the necessary survey period.

The listed grasses, sedges and ferns produce reproductive structures in mid summer, with reproductive features recognizable into the fall. The other species have more restricted periods in which they can be identified. Douglas’ clover, northern bog-orchid and the clustered lady’s slipper flower between June to July. The least phacelia flowers in July. The many-flowered phlox flowers between June to August, and the gray moonwort is identifiable between July and August.

In any given year, plant phenology can vary according to weather conditions. The timing of plant emergence and flowering in 2008 was generally two weeks later than usual. As a result, the 2008 phenology of species with restricted survey periods (e.g., gray moonwort, Douglas’ clover) was verified by visiting known populations. This step ensured that surveys were conducted at the appropriate time for the 2008 conditions. The July 2008 surveys were conducted at a time when all of the target species would have been recognizable.

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Table 4-6. Structural Characteristics Required to Identify the Target TES Vascular Plants and the Months in which These Characteristics Can Be Best Observed.

| Scientific Name | Common Name | Key Features Required for Identification | Survey Months |
|---|---------------------------|--|--|
| <i>Botrychium minganense</i> | Gray moonwort | Pinnae (fern leaf parts) morphology, spore-bearing structures | July-August |
| <i>Cryptogramma stelleri</i> | Steller's rockbrake | Spore case (sori) distribution on fronds (fern leaves), rhizome morphology | June-October |
| <i>Carex lasiocarpa</i> var. <i>americana</i> | Slender sedge | Pistillate (female) spikes | late June-September |
| <i>Carex retrorsa</i> | Retorse sedge | Pistillate (female) spikes | July-October |
| <i>Cyperus lupulinus</i> ssp. <i>lupulinus</i> | Great Plains flatsedge | Pistillate (female) spikes, rhizome morphology | July-October |
| <i>Cypripedium fasciculatum</i> | Clustered lady's slipper | Leaf arrangement on stem, floral structure | June-July |
| <i>Eleocharis bolanderi</i> | Bolander's spikerush | Flower bracts, fruit | June-August |
| <i>Phacelia minutissima</i> | Least phacelia | Inflorescence and floral structures | July |
| <i>Phlox multiflora</i> | Many-flowered phlox | Floral structure | June-August |
| <i>Platanthera obtusata</i> | Small northern bog-orchid | Leaf arrangement on stem, floral structure | June-July |
| <i>Pleuropogon</i> = <i>Lophochlaena oreganus</i> | Oregon semaphore grass | Leaf characteristics, spikelet (grass flower) structure | Flowers late June-late July, fruit retained until fall |
| <i>Trifolium douglasii</i> | Douglas' clover | Leaflet #, floral structure | June-July |

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4.4 Field Survey Results

More than 200 vascular plant species were observed during the combined October 2007 and July 2008 surveys (see Appendix D). No listed or sensitive plant species were observed. However, species within the same genus as the sensitive species were often observed. For example, three species of clover (*Trifolium repens*, *wormskjoldii*, *longipes*) were observed, but the sensitive *T. douglasii* was not. There were nine sedge species identified, but none of them were sensitive species. There was a similar pattern for many of the TES/SSSP species. However, there were also genera for which no species were observed (e.g., *Botrychium*).

Thirty wildlife species/sign (22 birds, 7 mammals and 1 fish) were observed during the habitat assessments. There were no raptor nests observed in the study area, although there is an active osprey nest near the study area, on the north side of Highway 7. The only bird nests located within the study area during either survey were a robin and hummingbird nest that were in the planted horticultural trees in the recreation area in 2007. A rock wren was observed with a young brood on the dam face in 2008, indicating nesting in the area. No other bird nests or evidence of nesting were observed in 2008, and the planted trees have since been removed.

The non-vascular species surveys were targeted surveys. Although there were 11 lichens, and a number of moss species/genera identified in key microhabitats, none of these were sensitive species (see Appendix D). No liverworts were observed in the study area, but the common *Marchantia polymorpha* was observed upstream of the study area along the unnamed tributary.

The invertebrate surveys were also targeted surveys. There were no sensitive mussels observed and the instream habitat assessment verified the lack of suitable refugia. The cryptochian caddisfly was not observed. There is potential, but unoccupied habitat for the species in portions of the unnamed tributary.

Details of the surveys are discussed below by habitat type.

4.4.1 Wetland/Aquatic Dependent TES Species

4.4.1.1 Detailed Habitat Description

Powder River Wetland/Aquatic Habitats. Wetlands occur along the Powder River downstream of Mason Dam. There are approximately 850 feet of the Powder River included in the project study area. At the time of the October 2007 survey, the wetted channel averaged 30 feet in width, bordered by 10 to 15 feet of bare cobble on each side of the channel. This zone of fluctuation was bordered on the upslope side by a narrow vegetated riparian zone that averaged 10 feet in width⁴. Conversely, during the July 2008 surveys, the channel width extended 50 to 60 feet, with portions of the vegetated riparian zone under water. Between midsummer and fall, 2008, the stream water

⁴Distances and acres were field estimated; see Section 6.0 for habitat details.

surface level decreased by approximately 3.5 feet (1.53 at the gage which is at a wider, shallower river section). In contrast, the water level in the Powder River above Phillips Lake changed 0.13 feet during the same time period.

The stream bed substrate is large cobble with scattered boulders. There is little to no sediment accumulation within the active channel. Exceptions occur along the downstream sides of boulders where up to an inch of sediment deposition (mostly sand) can be found. There are aquatic vascular plant/algal beds within the portion of the channel containing permanent pools. These beds are dominated by water buttercup (*Ranunculus aquatilis*) along with green algae, blue green algae and aquatic mosses.

Between the dam base and the end of the stilling basin (a distance of approximately 150 feet), the adjacent upland is sparsely vegetated and dominated by weedy upland species such as teasel (*Dipsacus fullanum*), mullein (*Verbascum thapsus*), hounds' tongue (*Cynoglossum officinale*) and crested wheatgrass. The river channel here is unshaded.

Below the first rock weir placed by the FS at the end of the stilling basin, the riparian zone is vegetated. Between the rock weir and the recreation area foot bridge (approximately 360 feet, or 510 feet from the base of the dam), the habitat is dominated by bentgrasses and sedges (*Carex* spp), with shrub cover provided by red osier dogwood (*Cornus stolonifera*) and willow (*Salix* spp.) clumps, and some canopy cover by cottonwoods (*Populus trichocarpa*). The zone of lateral fluctuation slowly narrows in a downstream direction so that it is less than 10 feet below the foot bridge. Here, the riparian zone changes to a shrub community dominated by dogwood and alder (*Alnus incana*). Shrub cover is higher (30%) with shade also provided by scattered mature cottonwoods and large alders (25%) and by ponderosa pines on the upland terrace south of the river (another 20% cover). However, the wetland riparian habitat remains restricted in width. Soils are very cobbly both within the zone of fluctuation and the vegetated riparian area. There is no litter accumulation and very little soil development.

The few pines and cottonwoods within the riparian zone range from 10 to 15 inches dbh. There are three standing dead trees (snags).

Unnamed Tributary Wetland/Aquatic Habitats. Riparian wetlands also occur along a small unnamed stream just east of Black Mountain Road, crossing under the road near Mason Dam to enter Phillips Lake (see Section 6.0 for further information and Appendix A for vegetation maps). The unnamed tributary is a spring-fed stream with a narrow channel ranging from 1 to 3 feet wide and 1 foot deep. The water depth in the channel ranged in depth from 0 to 6 inches at the time of the fall 2007 surveys, with portions of the channel dry. The channel contained flow throughout the growing season in 2008 in the upper segment, but dried during the fall in the lower, steeper segment. Besides spring support, the tributary streamflow is likely also supplemented by snowmelt and other runoff, as the floodplain is 6 to 12 inches above the fall water level. The channel is mostly underlain by a gravel bed, with 0 to 2 inches of fines on top of the gravel. Deeper soils occur at one of the tributary spring heads, approximately 300 feet upstream of the study area.

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The entire riparian area, including the channel, ranges from 10 to 30 (50) feet wide and is dominated by riparian shrubs. Dominant shrub species include alder, red-osier dogwood and a mix of currants (*Ribes cereum*, *R. aureum*, *R. hudsonianum*, and *R. lacustre*). Shrubs provide 50 to 60 percent cover and are additionally shaded by the adjacent forest (50% cover) in most of the study area. The exception is under the existing power line where the cover is reduced to a total of 30 to 40 percent. Herbaceous species provide much less cover (30%) and are dominated by bentgrasses and blue wild rye (*Elymus glaucus*). There is a narrow, discontinuous strip of mesic ponderosa pine-snowberry habitat east of the riparian area before a strong slope break to the drier forest.

There is one clump of large aspen within the riparian habitat, but no other trees.

4.4.1.2 Federal/State Listed Species Assessment

Bald Eagle. The bald eagle was observed flying over Phillips Lake during the surveys and it is known to nest and winter there. Suitable habitat exists throughout the BEMA as depicted in Appendix A, Figures 3a and 3b (see Section 3.2.2 for additional details).

Spotted frog. No spotted frogs were observed in the October 2007 field surveys, which is not unsurprising as the frogs were likely already in hibernation. Therefore, the wetlands in the study area were evaluated for the potential as spotted frog habitat based on the criteria listed below. The 2007 assessment was re-evaluated during the July 2008 field surveys.

- Provides semi-permanent or permanent shallow water with a relatively constant water level
- Known to lack, or likely lack frog or fish predators
- Provides cover (wetland or upland, or dense litter)

OR

- Within a potential travel route to or from the above habitat

OR

- Able to provide hibernating habitat (deep silt or muck substrate, undercut streambank, or spring head)

None of the riparian wetlands along the Powder River within the study area meet any of the above criteria. The wetlands directly border the Powder River, which does have fish predators. The wetlands also are subject to substantial water level fluctuation during the frog's active season. Herbaceous or other low-to-the ground cover (such as litter) necessary for thermal and other protection is minimal. There are no adjacent wetlands meeting the above criteria, so the riparian corridor does not function as a regular travel corridor. There is no hibernating habitat as there is no deep substrate, or cut streambanks with overhanging cover to provide protection from freezing. The Powder River riparian area near the eastern end of the recreation area contains wetlands that are both isolated from the fish predators and water level fluctuations in the river and with dense cover and litter. This area is well outside the Mason Dam study area (approximately one mile) and thus was not evaluated for the species other than a quick visual comparison of this potentially suitable spotted

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frog habitat to the habitat within the study area.

The wetlands along the unnamed tributary lack fish predators, and provide much greater cover than the Powder River wetlands. The tributary is spring-fed, but also subject to seasonal water level fluctuations of 6 to 12 inches. As a result of the seasonal flooding, there is little to no litter accumulation and not much sediment deposition. Riparian soils are shallow to cobble.

The tributary spring head approximately 350 feet upstream of the study area contains deep soils with small areas of permanent water. This spring is outside of the study area and was not investigated in detail, but does contain some suitable spotted frog habitat elements. However, the actual use by the frog is likely limited by substantial horse trampling associated with the adjacent dispersed campsite.

According to Bull (2005), spotted frog use of streams and creeks is rare (less than 2% of the breeding sites) and restricted to slow moving creeks. The relatively high water level fluctuations limit the tributary as potential breeding habitat with hibernating habitat limited by lack of deep soils or other substrate to protect against freezing. The upstream spring might provide spotted frog habitat if protected but in its current condition does not. As a result, there are no known suitable habitats within at least 0.2 miles limiting the stream's value as a regular travel corridor.

Cryptochian Caddisfly. The cryptochian caddisfly is not known to occur in low gradient or lower order streams such as the Powder River, and both the large cobble/boulder substrate and lack of small branches and bark within the channel limit its suitability as cryptochia habitat.

The unnamed tributary contains a suitable gravel substrate and is heavily shaded along most of its length by a combination of riparian shrub and adjacent forest canopy. The exception is where the stream passes under the existing transmission line and total canopy cover is substantially decreased to 30 percent. Overall, there is an average of 160 pieces of small wood and bark/100 meters of stream length, with the degree of small wood in contact with the water surface variable. The other stream characteristics (width, depth and water regime) are within the range of appropriate habitat parameters.

In spite of detailed surveys for the species, the cryptochia was not observed. There were abundant stone case-building caddisflies in the small stream (identified as silverstreak caddisfly, *Hesperophylax designatus*, see Appendix C, Figure 5), but no caddisflies that build cases out of small transverse pieces of wood, a unique characteristic of the genus (Betts and Wisseman 1995).

The unnamed tributary could provide habitat for the cryptochian caddisfly, but it was not found there during detailed surveys for the species. Based on stream characteristics, the potential for future colonization within the unnamed tributary was rated as high, medium or low as follows:

- Study area upstream of transmission line (100 feet): Abundant small wood, almost all in contact with the stream. Appropriate substrate and shade. Colonization potential affected by heavy adjacent dispersed camping use and associated stream trampling. Habitat Rating:

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Low to Moderate Potential.

- Study area within transmission right-of-way(100 feet): Abundant small wood, almost all in contact with the stream. Appropriate substrate. Shade not adequate. Colonization potential affected by some adjacent dispersed camping use. Habitat Rating: Low Potential.
- Study area from transmission line to slope break: (547 feet): Abundant small wood, almost all in contact with the stream. Appropriate substrate and shade. Minimal human disturbance. Habitat Rating: High Potential.
- Study area from slope break to Mason Dam Road: (568 feet): Abundant small wood, approximately 50 percent in contact with the stream. Appropriate substrate and shade. Habitat Rating: Moderate Potential.

TES plants. The Oregon semaphore grass was not observed in the herbaceous wetlands bordering the Powder River in either 2007 or 2008. The lack of the state-threatened species was not unsurprising as the herbaceous wetland occurs in an area of relatively high stream power, subject to much water level fluctuation and floodplain scouring during the irrigation season. This wetland habitat is not similar to the backwater or sluggish water, depressional type wetland required by the semaphore grass.

TES Birds. The willow flycatcher and yellow-breasted chat are both species that occur in riparian shrub thickets dominated by willow, alder or other deciduous shrubs. Key habitat features include both a dense shrub layer and a lack of tree cover. The riparian shrub wetlands along the Powder River within the Mason Dam study area do not provide suitable habitat for these two species as the riparian shrubs are limited in width (10 foot strip). Additionally, the adjacent tree cover likely provides too much shade. The Powder River riparian area near the eastern end of the recreation area widens considerably with much higher shrub cover and a corresponding decrease in overhanging tree cover and may provide habitat for the willow flycatcher (although it has not been observed there; see Appendix G). This area is well outside the Mason Dam study area (approximately one mile) and thus was not evaluated for the species other than a quick visual comparison of this more well-developed riparian shrub habitat to the habitat within the study area.

The riparian shrub wetlands along the unnamed tributary have higher shrub cover (60%) than in the Powder River study area with a continuous shrub layer and slightly larger area (approximately 0.25 miles in length and from 10 to 30 feet wide). However, this riparian wetland is located within a moderately closed coniferous forest which provides 50 percent canopy cover over the riparian shrubs. This amount of tree cover precludes the unnamed tributary from providing suitable habitat for the willow flycatcher and yellow-breasted chat.

4.4.1.3 Forest Service Sensitive Species

Western Ridged Mussel. The western ridged mussel was not found in the stream surveys.

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As described in Section 4.4.1.1, the Powder River bed is dominated by large cobble with scattered boulders. There is little to no sediment deposition within the channel, even behind boulders. Pools within the low flow channel are dominated by beds of aquatic buttercup, aquatic mosses and algae. This habitat is not suitable for mussels in general, but especially the western ridged mussel. This species requires a firm mud to gravel substrate in which it can burrow at least half its length during the active season (approximately 2 ½ inches) and into which it can completely burrow during the winter. There is no such substrate within the Powder River study area. Although the species can occur along the edges of macrophyte beds, it does not grow within them. Additionally, the western ridged mussel requires relatively constant river flow with no abrupt changes such as a change of 3.5 feet from mid-summer to fall. The species also requires high flow refugia, such as backwaters where shear stresses are lower, minimizing chances of displacement. There are no such refugia in the study area. As a result, the Powder River does not provide habitat for the western ridged mussel.

Sensitive Lichens

Dermatocarpon meiohyllizum. This aquatic lichen attaches to rocks within stream channels and generally in open habitats. The species was not observed in either the 2006 nonvascular surveys of the Powder River by Stone and Ruchy (2006) or during the 2008 surveys for this project. The common, non-aquatic *Dermatocarpum miniatum* was observed on rocks adjacent to the recreation parking lot.

Leptogium spp. *Leptogium burnetiae* and *L. cyanescens* are tree bark lichens that primarily occur on deciduous trees such as alders, cottonwoods and willows (Stone and Ruchy 2006, McCune and Geiser 1997). The bark of these trees, especially the cottonwoods, contained the common *Melanelia elegantula* but not the rarer *Leptogium* species.

The common *Leptogium lichenoides* was observed on the rocks adjacent to the parking lot along with a number of other relatively common lichen species such as *Phaeophyscia decolor*, *Phaeophyscia sciastra*, *Umbilicaria hyperborea* and *Xanthoria elegans* (see Appendix C, Figure 10).

Sensitive Plants. Although there are small herbaceous wetlands adjacent to the Powder River and on the edges of the unnamed tributary, none of the SSSP plant species potentially occurring in wetlands were observed. There were nine sedge species and one bulrush (a sedge family member) observed, but none of the species were sensitive sedges and there were no species in the genus *Cyperus* observed. Similarly, there were three clovers observed in the wetlands, but none of them were the sensitive Douglas clover. The upland linear-leaved phacelia was observed, but not the wetland dwarf phacelia.

There were no spikerushes observed in the study area, although several spikerush species were observed during a casual review of the Phillips Lake shoreline (outside of the study area). There were no orchids observed in the study area.

4.4.2 Upland Forest Dependent TES Species

4.4.2.1 Detailed Habitat Description. Most of the Mason Dam study area is forested with the forests dominated by a warm-dry ponderosa pine habitat type, but with small areas of mixed coniferous forest and young second-growth. The canopy in all of the ponderosa pine dominated habitats is relatively open, with canopy closure ranging from 30 to 50 percent. Shrub cover varies from 5 to 30 percent. Herbaceous cover is generally high (60 to 80%). Tree sizes are mostly small to medium (10 to 15" dbh), with a few larger trees. The largest trees occur adjacent to the FS picnic area and dispersed camping pull-outs east of Black Mountain Road (i.e., adjacent to recreational facilities). As a result, trees that might otherwise naturally become snags or provide large diameter trees for cavity nesters are typically removed so as to not provide a hazard to recreational users. There are a few snags in the pine forest north of the existing transmission line, but otherwise the study area is mostly devoid of snags.

Approximately 15 percent of forested areas in the study area are dominated by a mixed coniferous forest (ponderosa pine, Douglas fir and larch) with a greater canopy closure (50 to 60%). Although providing higher cover than the adjacent ponderosa pine habitats, there are not a lot of large trees. Trees mostly have a dbh up to 15 inches, and have mostly not self-pruned (i.e., are heavily branched to the base). There are two snags, which also have cavities indicating some woodpecker use. The shrub cover is low (5%) and dominated by young Douglas and grand fir (less than 3.3 feet in height). Herbaceous cover (80%) is dominated by a mix of pinegrass and elk sedge. This forest habitat is also considered warm and dry and is in transition between a ponderosa pine dominated habitat to a Douglas fir dominated habitat.

There is a small area of ponderosa pine second growth north of the transmission line interconnect. There were a few older trees left uncut within the sale unit providing 15 percent canopy cover. There is also one snag, heavily used by cavity-nesting birds. The remainder of the habitat is dominated by young pines, which provide 35 percent cover, combined, in the shrub and sapling layers. Because the regeneration is clumped and not evenly distributed, the cover in these two strata varies from very dense to none. Herbaceous cover is 60 percent and dominated by elk sedge and prairie junegrass.

Snag density within the forested areas ranges from 0 per acre within and adjacent to the FS recreation areas to a high of between 0.5 to 0.7 snags per acre in the forested areas east of Black Mountain Road. For comparison, many snag-dependent species require densities of 5 to 10 snags per acre.

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4.4.2.2 Federal/State Listed Species Assessment

4.4.2.2.1 Open Coniferous Forest

Lewis and White-headed woodpeckers. Both Lewis and white-headed woodpeckers occur in open ponderosa pine forest, the dominant habitat type in the Mason Dam study area. However, both woodpecker species require large diameter trees, as well as numerous snags or stumps for nesting. The pine forest in the study area is dominated by trees less than 20 inches dbh. The exception occurs in the FS picnic area and adjacent to dispersed camping spots along Black Mountain Road. Here, trees are larger, with some trees up to 25 (37) inches dbh. However, there are no snags, stumps or trees with cavities in these areas. With different management to create snags or allow dead trees to remain, these areas could provide sensitive woodpecker species habitat. However, this is not feasible due to the liability of maintaining such “hazards” in recreational areas. Such habitat was formed naturally in other portions of the Mason Dam recreational area. The snags providing habitat for the white-headed woodpecker were removed as hazard trees and the species has not been observed in the recreational area since that time.

The remaining pine forest areas consist of lesser diameter trees. The only area with snags occurs north of the existing transmission line in the former Mountain Sale. Here the snags with cavities are small, likely excavated by pygmy nuthatch and not large enough for woodpeckers.

Although superficially providing sensitive woodpecker habitat (i.e., open pine canopy), the pine forests in the study area do not provide other required habitat elements and there is no habitat for the Lewis or white-headed woodpecker in the project area.

Myotis and Bats. The six sensitive bats/myotis species with the potential to occur in forested habitats within Baker County require a mix of elements for foraging and roosting. They are discussed separately in Section 4.3.4.

Gray Wolf. There are no known wolf occurrences in the vicinity of Mason Dam, with the nearest known occurrences being near the Eagle Cap Wilderness and northern Union County. According to ODFW (2007), all of the Blue Mountains could provide suitable habitat. The wolf can occur in a number of different habitat types, with the Oregon occurrences all in forested habitats.

The Mason Dam area provides suitable forested habitats with an abundance of deer prey, along with secondary prey such as beavers, ravens, eagles and fish. As such, the wolf could enter the Mason Dam area and occupy it in the future.

4.4.2.2.2 Mixed Coniferous Forest

Northern Goshawk. The northern goshawk requires large tracts of mature or old-growth conifers with canopy closure between 65 to 95 percent. The mixed coniferous forest is only moderately closed (50 to 60%) with a high ground cover (80%). Trees are relatively small (\bar{x} =13.7" dbh) indicating a mid, not a late seral successional stage. There is no goshawk habitat within the Mason Dam study area.

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TES Plants. The mixed coniferous forest was considered relatively low potential habitat for the clustered lady's slipper, with no habitat in the open ponderosa pine forest, and the field survey confirmed this. Although Douglas fir occurs in the mixed forest canopy and is dominating the new tree regeneration, the late seral stage associated with the lady's slipper does not occur. The lady's slipper phenology is such that key distinguishing features (fruits, leaf remnants) would have been visible even during the October 2007 surveys, or in flower during the July 2008 surveys. The species was not observed.

Myotis and Bats. The six sensitive bats/myotis species with the potential to occur in forested habitats within Baker County require a mix of elements for foraging and roosting. They are discussed separately in Section 4.3.4.

Gray Wolf. The gray wolf is discussed above in Section 4.3.2.2.1.

4.4.2.2.3 Regenerating Forest

Yellow-Breasted Chat. The yellow-breasted chat is a very secretive bird that can occur in young second-growth, as long as the new forest growth is very dense. The cover in the regenerating forest south of the existing transmission line is clumped, and does not provide the dense shrub cover required by this species. There is no habitat for the yellow-breasted chat in the Mason Dam study area.

Gray wolf. The gray wolf is discussed above in Section 4.3.2.2.1.

4.4.2.3 Forest Service Sensitive Species

Sensitive Mosses and Lichens. The sensitive mosses (*Rhizomnium nudum*, *Schistostega pennata*) and lichens (*Leptogium burnetiae*, *L. cyanescens*) that occur within forested areas occur in damp sites, such as fallen tree root balls, damp rotting logs, and damp organic soil. There were no areas of damp organic soil in the study area, although the seep at the head of unnamed tributary (outside of the study area) appears to have some organic matter accumulation. There were also no fallen trees with uprooted root balls. In general, downed trees and logs were relatively rare in the study area. The nonvascular flora on the fallen logs and also on the adjacent conifers was dominated by the lichens *Bryoria* spp., *Letharia vulpina* and *Nodobryoria abbreviata*. The sensitive *Leptogium* species were not observed. Mosses were less abundant but included species in common genera such as *Dicranum* and *Pohlia*. The sensitive mosses (*Rhizomnium nudum*, *Schistostega pennata*) were not observed.

Sensitive Plants. The forested area was searched in detail for grape-fern and moonwort species (*Botrychium* spp.), with an emphasis on particular microsites in which *Botrychium* species often occur, such as edges of riparian areas where soils are moist but not wet, and moist tree bases. No *Botrychium* species were observed during the July 2008 surveys, which were conducted at a time

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in which they would have been visible⁵.

The common *Phlox pulvinata* was observed in the surveys, but the rare *Phlox multiflora* was not.

4.4.3. Rock/Talus Slope Dependent TES Species

4.4.3.1 Detailed Habitat Description. The rock/talus slope habitat occurs along a steep slope east of the Mason Dan spillway, and between the FS recreation area parking lot and Black Mountain Road. The area is mostly open with a mix of grasses providing 20 percent ground cover with 10 to 15 percent cover provided by scattered ponderosa pines and a small clump of aspen at the slope base. The pines mostly occur on the upper slope near Black Mountain Road. Tree dbh generally ranges between 7 and 15 inches, with a few larger pines. There are no trees with noticeable cavities, but there is one snag mid-slope and two snags at the slope top. The snags at the slope top provide an overview of the lake and were used consistently by red-tailed hawk during the October field surveys. Shrub cover consists of scattered clumps of bitterbrush (*Purshia tridentata*), rabbitbrush and serviceberry (*Amelanchier alnifolia*).

There are two rock outcrops on the slope that have some small fissures and openings. There was no sign of bat use (guano) around the fissures or within the small openings (mostly less than 8" but one up to 18"). There are evident human trails to each of the rock outcrops including the largest opening, with evidence of human and dog disturbance at the entrance. There is a seep emerging at the base of these outcrops (see photographs in Appendix C) and portions of the rocks at the base of the outcrop are moist.

4.4.3.2 Federal/State Listed Species Assessment There are no TES species evaluated in this assessment that use rock outcrops exclusively for habitat. However, the six sensitive bats/myotis species with the potential to occur in forested habitats within Baker County could use the rock outcrops in combination with other habitat elements for roosting and foraging. These species are discussed together in Section 4.4.4.

4.4.3.3 Forest Service Sensitive Species

Schistostega pennata. This sensitive moss, also known as goblin's gold or luminescent moss, could occur in the small aspen seep area. The rock outcrops, opening and small fissures within the seep were searched specifically for the luminescent moss, and it was not found. It is likely that the seep emerging below the rocks and not within them results in a drier habitat than the luminescent moss can tolerate as the rock outcrops were shaded, but not particularly damp. This species was not observed in the 2006 moss surveys of the Powder River by Stone and Ruchy (2006) either.

Steller's rockbrake. The rock and talus slope, as well as rocky areas within the forest, were searched for the Stellar's rockbrake. This species was not observed, but the common ferns

⁵The *Botrychium* phenology was verified by a visit to a known *Botrychium* site.

Cystopteris fragilis, *Woodsia oregana* and *Woodsia scopulina* were observed.

4.4.4. Bats and Myotis

As noted in Section 3.3.2.1 and Table 3-4, the six sensitive bat and myotis species potentially occurring within the Mason Dam study area are found within coniferous forests, but these species also require a number of different habitat elements (e.g., rock outcrops, dense conifers near water, snags) for maternity, hibernation and daytime roosts. The specific mix of habitat elements varies among species.

Because there was no available bat survey data and the 2007 field assessment for this project occurred after either hibernation was initiated or the species had migrated, habitat was evaluated based on its potential for individual bat/myotis species use. Overall, it is likely that some of the sensitive bat species occur in the vicinity of Mason Dam, but that the habitat within the 40-acre study area has fairly low potential to support sensitive bat species. General limitations include (1) the lack of snags or trees with exfoliating bark for the species that roost in trees, (2) a high level of existing disturbance to small openings within rock outcrops and (3) lack of thermal protection adjacent to rock outcrops. Limitations for each species are discussed below.

The long eared myotis is most common in dense coniferous forests along streams or reservoirs. The forests within the Mason Dam study area are neither particularly dense, nor provide particularly high cover. Cover is highest in the mixed coniferous forest (50 to 60%), and higher density may be achieved within 20 years with natural development of multiple strata. In its current condition, the forest provides low potential long eared myotis habitat.

The long legged myotis and silver haired bat both prefer old growth habitat, but will use younger stands with high snag density. Densities of 8 to 9 snags per acre have been reported from high quality habitat for old-growth dependent bat species (Campbell et al. 1996). As noted by Taylor (1999), the preference for later successional stands reflects not only the greater availability of snags, but also the potential for greater production of bark crevices. Tree species such as Douglas fir and ponderosa pine tend to exfoliate by losing large pieces of bark at a time. Conversely, grand fir bark tends to peel like shingles on a roof providing more accessible crevices for roosting. There is no old growth in the Mason Dam study area, the dominant species is medium diameter ponderosa pine which does not generally produce accessible tree crevices for roosting and the snag density ranges from 0 to less than 1 per acre, much less than the preferred density for these species. As a result, the forested habitat is rated as low potential for long legged myotis and silver haired bat. The silver haired bat has been observed in California Gulch, approximately two miles south of the Mason Dam study area, and it is likely that management of the BEMA for higher densities of snag production and retention along the south shore of Phillips Lake would provide habitat for both the long legged myotis and silver haired bat.

The Yuma myotis occurs in a larger range of forested habitats than the other species, but tends to roost in buildings, caves or rock crevices adjacent to water. There are no such undisturbed habitats in the Mason Dam study area. The juxtaposition of the rock outcrops to Phillips Lake and the

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Powder River for insect foraging could provide high quality bat habitat. However, the consistent human use and exploration of the rocks and openings, as well as the lack of adjacent trees for thermal regulation, precludes their use as roosting habitat. There are rock outcrops with crevices and fissures located within the pine forest east of the study area and south of the FS picnic area. This area was not assessed in detail but was noted during the field surveys as an area in which the FS has previously targeted wildlife mitigation and enhancement efforts (see Appendices A and C), as it is close to both Phillips Lake and the Powder River, but is outside of and also not visible from the recreation area. These rock outcrops are less subject to human disturbance and the adjacent forest provides thermal cover.

There is no large or mine tunnel habitat for the western big eared bat in the Mason Dam study area. This species does not use rock crevices, fissures or tree bark for roosts.

These habitats were reviewed again during July 2008 and there were no observations made that warranted a change in the October 2007 assessment.

4.4.5 Summary of Survey/Field Assessment Results

4.4.5.1 Federal and State-Listed Species

The only wetland/aquatic dependent TES species known to occur in the Mason Dam study area is the bald eagle, which was observed foraging in Phillips Lake and known to nest in the forest adjacent to Phillips Lake. The bull trout is not known to occur in the study area, but does occur in the project vicinity and could expand into Phillips Lake in the future⁶. Impacts are assessed for this potential scenerio. The spotted frog is known from isolated wetlands adjacent to the Phillips Lake south shore and upstream of Phillips Lake. However, the high stream power and water level fluctuations in the Mason Dam study area wetlands limit their potential as spotted frog habitat. Although not included in the Mason Dam study area or field-assessed in this document, the wetlands approximately one mile east of Mason Dam may provide spotted frog habitat.

The Blue Mountain cryptochian caddisfly was not observed during detailed surveys for the species. The unnamed tributary contains a number of appropriate habitat elements for the species, such as a high number of small pieces of wood and appropriate shading. This suggests that the small stream could provide habitat in the future, but it is not currently occupied.

There is no habitat for the willow flycatcher, yellow breasted chat, Lewis woodpecker, white-headed woodpecker or northern goshawk in the Mason Dam study area. There may be potential habitat for the first two bird species in the Powder River riparian area near the eastern end of the recreation area. Here, the valley widens considerably with much higher shrub cover in the wetlands along with a corresponding decrease in overhanging tree cover. This area is well outside the Mason Dam study area (approximately one mile) and was not evaluated for the species, other than a quick visual

⁶The bull trout is known to occur in the Powder River upstream of Phillips Lake. ODFW suspects that bull trout could currently occur in Phillips Lake (Fagan 2008).

comparison of this more well-developed riparian shrub habitat to the habitat within the study area. The two woodpecker species are limited by a lack of large diameter trees combined with snags for perching or nesting. The white headed woodpecker does occur in the vicinity in areas with large trees and in which snags are retained. Such areas are outside of the Mason Dam study area.

There are no known wolf occurrences in the vicinity of Mason Dam, with the nearest known occurrences being near the Eagle Cap Wilderness and northern Union County. According to ODFW (2007), all of the Blue Mountains could provide suitable habitat. The wolf can occur in a number of different habitat types. The Oregon occurrences are all in forested habitats. The Mason Dam area provides suitable forested habitats with an abundance of deer prey, along with secondary prey such as beavers, ravens, eagles and fish. As such, the wolf could enter the Mason Dam area and occupy it in the future.

The silver haired bat is known from California Gulch, approximately two miles south of Mason Dam, and it is likely that other sensitive bat species occur in the project vicinity. However, the habitat within the 40-acre Mason Dam study area has fairly low potential to support sensitive bat species. General limitations include (1) the lack of snags or trees with exfoliating bark for the species that roost in trees, (2) a high level of existing disturbance to small openings within rock outcrops and (3) lack of thermal protection adjacent to rock outcrops. It is likely that management of the BEMA for higher densities of snag production and retention along the south shore of Phillips Lake would provide higher quality habitat for both the long legged myotis and silver haired bat than that within the Mason Dam study area. There is also an area east of the study area and south of the FS picnic area that could provide habitat for the Yuma myotis. This area was not assessed in detail but was noted during the field surveys as an area in which the FS has previously targeted wildlife mitigation and enhancement efforts (see Appendices A and C), as it is close to both Phillips Lake and the Powder River, but is outside of and also not visible from the recreation area.

Neither the Oregon semaphore grass nor the clustered lady's slipper were observed and both species would have been identifiable during the field surveys. The five Federal/State-listed grape-fern/moonwort species that occur in the Blue Mountains are known from elevations above 5,000 feet in mesic forest openings. With the exception of the mountain grape-fern, these species require full sun to only partial shade, relatively high soil moisture, and are associated with early successional habitats within the larger forest matrix. There are no such habitats (open, early successional and mesic) within the project area. The mountain grape-fern has been found in a range of light conditions, all above 5,800 feet elevation (more than 1,600 feet above the maximum project elevation). There are a number of FS sensitive moonworts that were also surveyed for, of which the gray moonwort had the highest potential to occur in the study area. However no grapefern-moonwort species at all were observed during the July 2008 surveys.

4.4.5.2 Forest Service Sensitive Species

No Forest Service Sensitive species were observed in the Mason Dam study area during the 2008 surveys.

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| Table 4-7. Summary of Field Assessment Results for Those Federal or State Listed Species with the Potential to Occur within the Mason Dam Study Area. | | | | | | |
|--|------------------------------|-----------------------------------|-------------------------|-------------------------|---|--|
| General Mason Dam Habitat Type | Potential TES Species | Species Status¹ | Species Observed | Habitat Observed | Nearest Potential or Known Habitat⁴ | |
| Wetland/Aquatic Habitat | | | | | | |
| Open Water ³ • Riverine • Bedrock/Cobble bed | Spotted Frog | FC | No | No | Potential habitat 1 mile east, Known habitat 2.5-3 miles west and southwest | |
| | Bald eagle | ST | Yes | Yes | Known habitat within study area | |
| | Bull trout | FC, ST | N/A | N/A | N/A | |
| | Blue Mt Cryptochia | FSOC | No | Yes, but unoccupied | Potential, but unoccupied habitat within study area; no documented nearby habitat | |
| Riparian Herbaceous Wetland | Oregon Semaphore Grass | ST | No | No | None | |
| Riparian Shrub • Along Powder River and small tributaries • Scattered cottonwood or aspen trees • Perennial water source | Willow flycatcher | FSOC | No | No | Potential habitat 1 mile east | |
| | Yellow breasted chat | FSOC | No | No | Potential habitat (maybe) 1 mile east | |

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| Table 4-7. Continued. | | | | | | |
|--|------------------------------|-----------------------------------|-------------------------|-------------------------|--|--|
| General Mason Dam Habitat Type | Potential TES Species | Species Status¹ | Species Observed | Habitat Observed | Nearest Potential or Known habitat⁴ | |
| Upland Forest | | | | | | |
| Dry coniferous forest-open • Ponderosa pine dominant • Less than 50% canopy cover • 3900 to 4300' elevation, various aspects | Gray wolf | FE, SE | No | Yes ⁵ | Northern Union County | |
| | Myotis and bats (6 species) | FSOC | No | No | Known habitat 2 miles east, Potential habitat possibly in BEMA and southeast of FS picnic area | |
| | Lewis woodpecker | FSOC | No | No | Potential habitat possibly in BEMA | |
| | White-headed woodpecker | FSOC | No | No | Potential habitat possibly in BEMA, historical observation 1 mile east | |
| Mixed Coniferous Forest • Mix of pine, Douglas fir and larch • 4,200-4,300' elevation • Northwest slope • 50 to 60% canopy cover | Clustered lady's slipper | FSOC, SC | No | No | None | |
| | Myotis and bats (6 species) | FSOC | No | No | See above | |
| | Gray wolf | FE, SE | No | Yes ⁵ | See above | |
| | Northern goshawk | FSOC | No | No | None | |
| Regenerating Forest | Yellow breasted chat | FSOC | No | No | Possibly, 1 mile south | |
| | Gray wolf | FE, SE | No | Yes ⁵ | See above | |

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| Table 4-7 Continued. | | | | | | |
|---|------------------------------|--|-------------------------|-----------------------------|--|--|
| General Mason Dam Habitat Type | Potential TES Species | Species Status ¹ | Species Observed | Habitat Observed | Nearest Potential or Known habitat ⁴ | |
| Non-Forested Upland | | | | | | |
| Dry Grassland | No Species-see Table 6 | | | | | |
| Rock/Talus Slope | Myotis and bats (6species) | FSOC | No | No | See above | |

¹ FE=Federal Endangered, FT=Federal Threatened, FC=Federal Candidate for listing; FSOC=Federal Species of Concern
SE=State Endangered, ST=State Threatened, SC=State Candidate for listing;
² Existing data is used in the assessment for bull trout and no new surveys were conducted;
³ Bald eagle is known to forage over open water, the existing data supplied by the FS is used in this assessment and no new surveys were conducted.
⁴ Potential nearby habitat not field assessed other than rapid visual review.
⁵ Habitat not occupied, but prey base is suitable if the species moved into the area in the future

Table 4-8. Summary of Field Assessment Results for Those Forest Service Sensitive (SSSP) Species with the Potential to Occur within the Mason Dam Study Area.

| General Mason Dam Habitat Type | Potential SSSP Species | Species Observed | Habitat Observed ¹ | Nearest Potential or Known habitat |
|---|----------------------------|------------------|-------------------------------|------------------------------------|
| Wetland/Aquatic Habitat | | | | |
| Open Water ² <ul style="list-style-type: none"> • Riverine • Bedrock/Cobble bed | Western ridged mussel | No | No | John Day River |
| | Dermatocarpon meiphyllizum | No | No | Wallowa Mountains |
| | West slope cutthroat trout | N/A | N/A | N/A |
| | Inland redband trout | N/A | N/A | N/A |
| Riparian Herbaceous Wetland | Slender sedge | No | N/A | Wallowa County |
| | Retorse sedge | No | N/A | Unknown |
| | Great Plains flatsedge | No | N/A | Wallowa County |
| | Bolander's spikerush | No | N/A | Wallowa County |
| | Dwarf phacelia | No | N/A | Unknown |
| | Small northern bog-orchid | No | N/A | Unknown |
| | Douglas' clover | No | N/A | Clover Creek, Union County |
| | Leptogium burnetiae | No | N/A | Unknown |
| Riparian Shrub/Forest <ul style="list-style-type: none"> • Along Powder River and small tributaries • Cottonwood or aspen trees | Leptogium cyanescens | No | N/A | Unknown |

| Table 4-8. Continued. | | | | | |
|---|------------------------------------|-------------------------|-------------------------------------|---|--|
| General Mason Dam Habitat Type | Potential TES Species | Species Observed | Habitat Observed¹ | Nearest Potential or Known habitat | |
| Upland Forest | | | | | |
| Damp shaded sites, tree rootballs, rotting logs | Rhizomnium nudum | No | No | None | |
| | Schistostega pennata | No | No | None | |
| | Leptogium burnetiae, L. cyanescens | No | No | None | |
| Openings, other habitats | Many-flowered phlox | No | N/A | None | |
| | Gray moonwort | No | N/A | None | |
| Non-Forested Upland | | | | | |
| Dry Grassland | No Species | | | | |
| Rock/Talus Slope | Schistostega pennata | No | No | None | |
| | Steller's rockbrake | No | N/A | None | |

¹ N/A=Gross habitat features observed, such as wet rocks and wetlands, but species evaluation based on presence during detailed surveys

² Existing data is used in the assessment for trout and no new surveys were conducted

5.0 TES SPECIES IMPACTS AND MITIGATION MEASURES

5.1 Federal and State-Listed Species

5.1.1 Introduction

There is known or potential habitat for the bald eagle and bull trout in the Mason Dam study area. The gray wolf is not known from the project vicinity. The Mason Dam area could provide suitable habitat for potential future wolf occupation. The Blue Mountain cryptochian caddisfly was not observed during detailed surveys for the species, but the unnamed tributary contains a number of appropriate habitat elements for the species. This suggests that the small stream could provide cryptochia habitat in the future, even though it is not currently occupied. Impacts and mitigation measures are discussed below for these four species.

There is known habitat for the spotted frog upstream of Phillips Lake and adjacent to the FS campgrounds on the South Shore of the lake. These areas are well outside of the project study area and would not be affected by either direct or indirect impacts.

There is no other habitat for TES species in the project area. There may be potential riparian wetland habitat for the spotted frog, willow flycatcher, and possibly yellow breasted chat approximately one mile south of Mason Dam in the easternmost portion of the FS recreation area. The white headed woodpecker has also been observed near this point. This habitat is well outside of the Mason Dam study area. Measures to maintain water quality (especially TDS and turbidity) and flow characteristics, as described in other study plan reports, will protect these habitats from adverse impacts due to the Mason Dam project.⁷

There may be suitable habitat for some bat species southeast of the Mason Dam study area (see Appendix A, Figure 4), and also within the BEMA. Measures to protect the bald eagle from indirect noise impacts should also protect any potential bat use of the BEMA. Enhancement measures are suggested for the potential bat habitat, and to also protect key habitat elements that could provide for other TES species in the future.

5.1.2 Bald Eagle

5.1.2.1 Impacts

The known bald eagle nesting site is located 2.5 miles from the base of Mason Dam and between 2.4 to 2.6 miles from the transmission line construction. There would not be any direct project

⁷Changes in flow characteristics such as the timing, duration, degree of fluctuation and both peak and base flow levels, as well as changes in sediment loads, have been shown to affect habitat for riparian dependent TES species (see for example, Gecy 1999, Gecy and Gecy 2004). However, the County will not be changing the operation of Mason Dam and will be implementing measures to ensure no adverse change in TDS levels as part of the water quality study.

impacts to the nests. Potential impacts to the bald eagle could occur if nesting sites were disrupted by noise or human activity during project construction or operation.

There are no noise studies specific to the Phillips Lake BEMA, so data obtained from other breeding bird-noise studies were reviewed to identify threshold levels of noise at which breeding could be disrupted. Jones and Stokes (2004) modeled the potential responses of nine breeding birds, including the bald eagle, to various levels of highway and associated construction noise. This study identified that noise levels greater than 45 decibels generally had the potential to affect breeding birds, whereas noise levels less than 45 decibels generally did not disrupt breeding. For comparison, 45 decibels is less than the noise level within an average house (50 decibels), but greater than an average library (40 decibels) or rustling leaves (20 decibels) (EPA 1981).

For purposes of this assessment, two measures were used to assess potential impacts to breeding bald eagles (1) the area in which the noise level could exceed 45 decibels and (2) the degree to which activities would be conducted within the 0.25 to 0.5 mile buffer zones recommended for Oregon by Anthony and Isaacs (1989).

The nominal noise levels at 50 feet during construction would be 85 decibels. Noise attenuation with distance was calculated using the methods described in Reagan and Grant (1977). Without any sound barriers, such as the dam face, trees, or landscape irregularities, construction noise would be reduced to a level below 45 decibels 1.2 miles from the source. However, both the adjacent forest and the presence of Mason Dam between the construction zone and the nest site would result in a more rapid noise attenuation rate in portions of the study area. As a result, construction noise at the base of the dam would be attenuated to 45 decibels within 0.3 miles (1,600 feet) and within 0.6 miles (3,200 feet) where there is a continuous stand of trees between the construction area and the nest. Construction noise would extend 1.2 miles only where construction would occur adjacent to areas with a lesser or discontinuous adjacent forest cover. Figure 3b in Appendix A depicts the area in which construction noise could exceed 45 decibels, as well as the area encompassed by the 0.5 mile recommended buffer for Oregon bald eagle nests. There are three noise contours marked, one for each of the three construction noise attenuation areas (below the dam, between the dam and the “Y” with the 1626 FS spur road, and between this junction and the substation). As depicted on Figure 3b, construction noise would be attenuated much more rapidly both below the dam and above the “Y”. These areas are also visually buffered from the nest site. The largest extent of impacts would occur from the transmission line between the dam and the “Y” as depicted on Figure 3b.

Construction noise would not be sufficient to disturb the bald eagle nest as the potential noise disturbance zones are still located more than 0.6 to 1.6 miles from the outer edge of the recommended nest buffer and from 1.1 to 2.1 miles from the nest itself. However, noise levels greater than 45 decibels could occur in foraging or mating areas at the eastern end of Phillips Lake.⁸

⁸It is important to note that a boat ramp occurs closer to the nest site than the proposed construction and that snowmobiles are allowed throughout the BEMA during winter. There are no reported or known adverse effects of either motor boats or snowmobiles on bald eagle nesting. Typical outboard motor and snowmobile noises are 80 decibels. Depending on the frequency and duration of

Because construction noise would be limited to portions of a 1 to 2 year construction period, and only a small part of the BEMA would be affected by noise, it is not likely that construction would affect the long term provision of alternative bald eagle nest sites.

Hydroelectric turbine noise outside a cement enclosure averages 60 to 62 decibels. During operation, noise levels would not exceed 45 decibels west of Mason Dam and, therefore, there would be no levels greater than 45 decibels within the BEMA. Operational noise could exceed 45 decibels up to 400 feet east of powerhouse, but this area is outside of the BEMA.

5.1.2.2 Mitigation

Impacts to bald eagles are limited to potential construction noise disruption of bald eagle foraging or other habitat at the eastern end of Phillips Lake. This would be a temporary displacement with no long term effects. There would be no construction noise impacts on the nest site itself, and no long term effects on the BEMA.

Construction noise impacts could be minimized even further, if necessary, by one or more of the following measures:

- Scheduling construction activities in the most exposed portion of the new transmission line (i.e., between the dam and the 1626 Y) to occur as much as possible between the end of August and December (earlier in summer, if the FS district biologist identifies that the nest has been vacated),
- Restricting construction activities during peak eagle dawn and dusk foraging times,
- Limiting the loudest construction activities during the critical January through March period, as disturbances are most likely to affect bald eagles when they occur in the early portion of the breeding season.

This analysis assumes that no blasting or helicopters will be used. Specifications should be written to ensure that this prohibition is included. The analysis also assumes that a concrete enclosure sufficient to provide a 10 decibel decrease in noise between the turbines and the outside of the enclosure would be constructed. If a different enclosure design is used then additional noise mitigation may need to be provided in the form of earthen berms, sound fences or dense, tall vegetation around the enclosure.

There is a small area of the BEMA west of Black Mountain Road that is mapped as occurring in the project study area. This area needs to be excluded from the area in which direct impacts can occur.

these activities, it is possible that the Mason Dam construction would not exceed ambient motorized recreational noise levels, although changes in the timing and duration of the noise would be important.

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Direct impacts in this area are unlikely however as it represents the west slope face of Mason Dam for which there are no planned facilities. Additionally, the indirect area of influence for the bald eagle in future documents needs to be revised to include the entire BEMA.

5.1.3 Bull Trout

5.1.3.1 Impacts

The bull trout is not known to occur in the study area, but does occur in the project vicinity and could expand into Phillips Lake in the future. The FWS has concluded that the operation and maintenance of Mason Dam by Reclamation was “not likely to adversely affect” the bull trout (FWS 2005c). The County would not change the operation of Mason Dam. However, impacts to this species could occur if it entered Phillips Lake and then was drawn through the hydroelectric turbines.

5.1.3.2 Mitigation

One of the Mason Dam project components is to install a fish screen over the currently unscreened intake. This would eliminate the entrainment through the dam that currently occurs, and prevent fish from entering the intake and being killed or injured by turbine blades once the hydroelectric facility is in operation. With proper screen design, there would be little or no impacts to TES or other fish species through entrainment and impingement. This conclusion was previously noted by FERC (2007).

5.1.4 Gray Wolf

5.1.4.1 Impacts

Potential future habitat for the gray wolf could be affected by the project if the primary wolf food base (deer) were impacted. There were abundant deer observations and sign (pellet groups, tracks) throughout and adjacent to the project area. The exception was along the dam face where the powerhouse would be constructed. Construction of the powerhouse would not affect any deer habitat. During construction, human activity and machinery noise would likely displace deer from forested habitats immediately adjacent to the construction. However, this displacement would be temporary and would not affect the long term availability of deer as wolf prey in the future.

5.1.4.2 Mitigation

There would be no impacts to future potential wolf habitat and therefore no mitigation is necessary.

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5.1.5 Blue Mountain Cryptochian Caddisfly

5.1.5.1 Impacts

The unnamed tributary does not contain the cryptochia, but has habitat suitable for colonization in some portions. Impacts to the stream in high potential habitat could affect future colonization opportunities.

5.1.5.2 Mitigation

Existing roads would be used for construction access, so that the only impacts to the potential caddisfly habitat would occur with the powerline crossing or sediment input to the stream during construction. These impacts could be minimized by (1) providing standard erosion control measures (e.g, sterile straw bales or wattles) where construction is adjacent to the stream, (2) crossing at the narrowest part of the stream in the low potential habitat under the existing powerline, and (3) minimizing branch or other shade removal from the stream.

5.2 Forest Service Sensitive Species

5.2.1 Introduction

The redband trout is the only Forest Service sensitive species in the Mason Dam study area.

5.2.2. Redband Trout

5.2.2.1 Impacts

The redband trout occurs in both the upper and lower Powder River, and according to ODFW (Fagan 2008), occurs in Phillips Lake. Impacts would be similar to redband trout in or entering Phillips Lake as those described for the bull trout.

Potential impacts to redband trout in the lower Powder River could occur through adverse changes in dissolved gas or TDS concentrations, either during construction or project operation. Potential adverse changes in water quality (turbidity, dissolved gases) are being addressed in a separate study.

5.2.2.1 Mitigation

Any necessary water quality mitigation measures will be developed in the Study Plan 1 Report that is being completed concurrently with this report.

5.3 Enhancement Measures

There are few snags and large trees in the Mason Dam study area, which along with the lower seral stage of the forests, limits appropriate habitat for a number of sensitive wildlife species. As trees grow and the seral stage changes, these areas could provide improved sensitive species habitat. If

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construction requires cutting of trees within the right-of-way, it will be important to preserve existing snags, trees with cavities and larger trees. An associated measure would be to protect the existing aspens from cutting or damage during construction. Deciduous trees, especially aspen, are important TES/SSSP species habitat elements.

The most important potential TES habitat occurs downstream of the Mason Dam study area. There are a number of noxious weeds in the Powder River riparian zone and FS recreation area parking lot. It will be important to ensure that the construction Standard Operating Procedures and/or the project weed control plan, being developed for the license application, include measures to prevent any expansion of the existing weeds within the riparian zone that could subsequently spread to the potential TES habitat. If additional enhancement is necessary, a more detailed assessment of the potential TES habitat should be conducted and enhancement measures developed for the wetland/riparian complex near the junction of FS Road 1145 and Highway 7.

Another potential TES enhancement area occurs approximately 400 feet south of the study area at the head of the unnamed tributary. This seep, adjacent wetland and small stream channel could be enhanced to provide TES habitat, with a variety of measures ranging from (1) a provision of barricades and a watering trough to eliminate the current heavy trampling, to (2) the relocation of the existing dispersed camping area to another location. As noted above, it is not likely that the Mason Dam project needs additional enhancement measures. However, if additional measures were necessary, this location would be suitable for potential caddisfly habitat enhancement.

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6.0 VEGETATION STUDY RESULTS

6.1 Introduction

The eight general habitat types (three wetland/aquatic and five upland habitats) identified for the TES species assessment were classified into 14 plant community types/associations. The wetland habitats were also characterized according to the Cowardin and HGM classifications (Cowardin et al. 1979, Adamus 2001). Table 6-1 provides a correlation among the different classifications for each habitat and community type. Appendix A, Figure 5 contains the vegetation map for the Mason Dam project.

Vegetation types are described separately below by wetland/aquatic habitats (Section 6.2) and upland habitats (Section 6.3). In this assessment, all of the riparian habitats were also wetlands, and all of the wetlands occurred along streams (so were riparian). Therefore, there was no need to distinguish which habitats were “wetlands” and which were “riparian”.

6.2 Wetland and Aquatic Habitats

6.2.1 Open Water

Open water is defined as an area with a depth greater than 3.3 feet (1 meter)(Cowardin et al. 1979). Open water habitat occurs within the Powder River, where water depths generally exceed 1 meter during the growing season. There is no FS community type classification for open water or within-channel riverine habitats. Neither is there an HGM class, as both of these classification systems apply only to vegetated habitats. The Cowardin classification, as identified on the NWI map is R3UB1H: upper riverine, unconsolidated cobble bottom, permanently flooded. The open water, riverine habitat is characterized by water depths of approximately five feet during the growing season, with relatively sudden reductions in the water depth by up to 3.5 feet when the irrigation flows cease (see Appendix C, Figures C-1 and C-2).

The stream bed substrate is large cobble with scattered boulders. There is little to no sediment accumulation within the active channel. Exceptions occur along the downstream sides of boulders where up to an inch of sediment deposition (mostly sand) can be found. There are aquatic vascular plant beds within the portion of the channel containing permanent pools. These beds contain aquatic buttercup (*Ranunculus aquatilis*) along with green algae, blue green algae and aquatic mosses.

There was one large piece of coarse woody debris (CWD) across the channel during the field surveys. Three additional pieces of CWD were added between October and December through beaver activity.

There are 0.78 acres of open water habitat in the study area.

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Table 6-1. Summary of Vegetation Classification Information for Wetland and Aquatic Habitats.

| General Mason Dam Habitat Type | Acres | Data Points | Preliminary Community Type Classification ¹ | Final Community Type Classification ² | Wetland Classification | | |
|-----------------------------------|-------------|-------------------|--|---|--|---|--|
| | | | | | Cowardin ³ | HGM Class ⁴ | HGM Subclass |
| Powder River | | | | | | | |
| Open Water ⁵ | 0.78 | 1 | N/A | N/A | R3UB1H | N/A | N/A |
| Riparian Herbaceous Wetland | 0.07 | 2b-1 2b-2 | AGDI cottonwood | Undefined, depauperate black cottonwood series; POTR15 CAAM association | PEMK on north bank PEMB on south bank | Riverine Flow Through Mix of Riverine Flow Through and Headwater Slope | Low gradient, sm floodplain channel |
| Riparian Shrub/Cottonwood | 0.52 | 2a | ALIN2/COST4 | POTR15/ALIN2-COST4 | PSSK | Riverine Flow Through | Low gradient, sml floodplain channel |
| Unnamed Tributary | | | | | | | |
| Riparian Shrub | 1.04 | 3-1 3-2 3-3 | ALIN2/COST4 | ALIN2/COST4 POTR5/ALIN2-COST4 COST4 | PSSC PFO/PSSC PSSC | Riverine Flow Through | Moderate gradient, moderately confined channel |
| Total Acres | 2.41 | | | | | | |

¹ See EcoWest. 2007. Draft TES Assessment. ² Crowe and Clausnitzer 1997, Powell et al. 2007

³ Cowardin et al. 1979 ⁴ Adamus 2001

⁵ N/A indicates that the classification system has no category for this habitat type

6.2.2 Powder River Riparian

Two wetland community types were identified along the Powder River during the preliminary habitat assessments: herbaceous wetland and alder-dogwood shrub wetland (see Section 4.3.1.1, and Table 6-1). These community types were re-classified to reflect newer information from the FS (e.g., Powell et al. 2007), resulting in a distinction of three riparian wetland community types along the Powder River:

- Shrub/Cottonwood wetland
- Herbaceous wetland: undefined cottonwood series
- Herbaceous wetland: big leaved sedge association

These wetlands are depicted in Appendix C, Figures C-1 through C-3.

6.2.2.1 Shrub/Cottonwood

The shrub/cottonwood habitat along the Powder River is classified as a POTR15/ALIN2-COST4 (black cottonwood/mountain alder-red-osier dogwood) community type. Black cottonwood (*Populus trichocarpa*) provides 5 percent cover, with 20 percent overhanging cover provided by ponderosa pine (*Pinus ponderosa*) rooted outside of the riparian zone. Dominant shrubs include mountain alder (*Alnus incana*, 25 % cover), red-osier dogwood (*Cornus stolonifera*, 15% cover) and peach-leaf willow (*Salix amalygoides*, 7% cover). Creeping bentgrass (*Agrostis stolonifera* var *alba*) is the dominant species in the herbaceous layer, providing 60 percent cover.

The current cottonwood size ranges from 10.5 to 11 inches dbh. There are 3 snags and 4 pieces of large CWD (3 of which were larger cottonwoods downed in 2008 by beaver). Snag and CWD density in 2008 was 0.06 and 0.08 per acre, respectively.

Flow releases from Phillips Lake provide the current hydrologic support for the shrub/cottonwood community. These releases are made according to a schedule set by the BOR and the Baker Valley Irrigation District (BVID). The NWI map for the Blue Canyon quadrangle did not map the vegetated areas adjacent to Powder River, likely because they are too narrow to map at the quadrangle scale (generally 12 to 15 feet each side of the river). However, the classification according to the Cowardin system is PSSK: palustrine scrub-shrub⁹. The “K” is a designation used when the amount and duration of flooding is primarily controlled by artificial means such as dam releases (see Figures C-1 and C-2). According to the HGM Classification, the wetlands are Riverine Flow Through (RFT), low gradient channel, small floodplain.

Because the hydrology for this community is artificially maintained, no seral designation is appropriate.

⁹According to the Cowardin system, the cottonwood would need to provide more than 25 percent cover for the habitat to be classified as a forested wetland. This differs from the FS classification in which 5 percent cover with some regeneration is sufficient to classify the habitat as a forested association.

There are 0.52 acres of cottonwood/shrub habitat within the study area.

6.2.2.2 Herbaceous Wetland

Herbaceous wetlands occur in three small patches (totaling 0.07 acres) within the Powder River riparian zone. One herbaceous wetland patch occurs along the north bank of the Powder River at the beginning of the vegetated zone below the stilling basin. The wetland is dominated by creeping bentgrass (80% cover), but young black cottonwoods provide 20 percent cover in the shrub layer. There are no trees, snags or CWD in the wetland. This wetland was originally classified as a bentgrass type (AGDI) but is more appropriately classified as an undefined depauperate association within the black cottonwood community type (POTR15 series). Flow releases from Phillips Lake provide the current hydrologic support for the wetland. The Cowardin classification is PEMK: palustrine emergent marsh, hydrology artificially maintained. The HGM class is RFT, low gradient channel, small floodplain. Because the hydrology for this community is artificially maintained, no seral designation is appropriate. However, it is possible that the community could succeed to cottonwood dominance in 20 to 30 years.

The other two herbaceous wetlands occur on the south bank of the Powder River. These wetlands have a mix of hydrologic support. They are supported in part by flow releases from Mason Dam, but also by hillslope seeps. They are much more diverse than the other wetland communities along the Powder River. Ponderosa and lodgepole pines provide 10 to 15 percent overhanging cover, with mountain alder and red-osier dogwood providing 10 to 15 percent cover. Creeping bentgrass remains a dominant (20% cover), but greater cover is provided by water sedge (*Carex aquatilis*, 25%) and big leaved-sedge (*Carex amplifolia*, 25%). Numerous other species occur in these seepy habitats (see Appendix D) including the more showy Lewis' monkey flower (*Mimulus guttaeus* var *guttatus*), cow's clover (*Trifolium wormskjoldii*), and Jacob's ladder (*Polemonium occidentale*). These seeps also support a large number of weed species, perhaps because their more gentle slope allows easy human access to the river. Hound's tongue (*Cynoglossum officinale*), creeping thistle (*Cirsium arvense*), and bull thistle (*Cirsium vulgare*) were the most common weed species, with teasel (*Dipsacus fullonum*) establishing in places.

There are no trees, snags or CWD in these two wetland seeps. The seeps were not originally classified separately. The FS classification is a *Carex amplifolia* association (CAAM), which is a stable community type not likely to change or succeed to another community. The Cowardin class is PEMB: palustrine emergent marsh, permanently saturated. The HGM class is Headwater Slope, with some characteristics of an RFT.

6.2.3 Tributary Wetlands

Riparian wetlands also occur along a small unnamed stream east of Black Mountain Road that enters Phillips Lake (see Appendix C, Figures C-4 and C-5). The unnamed tributary is spring-fed, with a narrow channel ranging from 1 to 3 feet wide and 1 foot deep. The water depth in the channel ranged in depth from 0 to 6 inches at the time of the fall 2007 surveys, with portions of the channel dry. The channel contained flow throughout the growing season in 2008 in the upper segment, but

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dried during the fall in the lower, steeper segment. Besides spring support, the tributary streamflow is likely also supplemented by snowmelt and other runoff, as the floodplain is 6 to 12 inches above the fall water level. The channel bed consists of gravel, with 0 to 2 inches of silt on top of the gravel. Deeper soils occur at one of the tributary spring heads, approximately 300 feet upstream, and outside of the study area.

During the TES surveys for the crytochian caddisfly, the tributary was divided into four segments based on slope, percent shade and degree of disturbance. These distinctions also correspond to changes in vegetation community type, as follows:

- The southern edge of the study area to a point at which the stream changes direction from north to northeast and from a 6 percent grade to 12 percent grade is generally an alder-dogwood community (ALIN2/COST4, undefined association; 0.48 acres), with two inclusions:
 - Within the transmission line right-of-way (0.06 acres), the tall shrub canopy has been removed so that while still the same potential community type, it would be considered an early seral version.
 - There is a small aspen clump along the tributary that is classified as aspen/alder-dogwood (POTR5/ALIN2-COST4) (0.12 acres).
- The study area from the slope break to Black Mountain Road (0.56 acres) is dominated by red-osier dogwood and is classified as COST4.

With the exception of the aspen clump, the community types are classified as PSSC: palustrine shrub-scrub, seasonally flooded according to the Cowardin classification. The aspen clump is a classified as PFO/PSSC: palustrine forested, with shrub-scrub understory, seasonally flooded. According to the HGM classification, all community types are RFT, moderate gradient, moderately confined.

Dominant shrub species in all of the communities include alder, red-osier dogwood and a mix of currants (*Ribes cereum*, *R. aureum*, *R. hudsonianum*, and *R. lacustre*). However, the percent dominance of both the shrub and herbaceous layers changes among the community types. Table 6-2 summarizes the differences in dominant species composition among the different community types.

In general, shrubs provide 50 to 60 percent cover and are additionally shaded by the adjacent forest (35 to 50% cover)(see Table 6-2). The exception is under the existing power line where the total tree and shrub cover is reduced to 30 percent. The POTR5/ALIN2-COST4 community (aspen clump) is the only community in which trees are rooted in the riparian habitat. In this 0.12 acre clump, there are 14 aspen stems ranging in size from 2.25 to 24 inches dbh, with an average of 9 inches dbh.

The herbaceous layer in all communities is dominated by creeping bentgrass, with blue wild rye

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(*Elymus glaucus*) a subdominant above the slope break and a combination of drooping woodreed (*Cinna latifolia*) and manna grass (*Glyceria elata*) subdominant below the slope break. Large-leaf avens (*Geum macrophyllum*) occurs throughout the riparian area.

The riparian wetlands contain an abundance of small pieces of wood and bark, with CWD limited to the aspen stand (3 pieces) and the lower COST4 community (5 pieces). There is one snag in the entire tributary study area and that occurs in the aspen stand. Overall, there is a density of approximately 1 snag and 7.7 pieces of CWD per acre.

The ALIN2/COST4 and POTR5/ALIN2-COST4 community types are generally stable communities that, according to Crowe and Clausnitzer (1997), may be variants of the ALIN2/COST4-mesic forb community type. Under current conditions, there are no indicators that these communities would change to another type. The exception is within the existing transmission line corridor where alders were cut or broken during the winter of 2007 to 2008 as a result of the high snowpack and/or maintenance activities. In this area, the resultant decrease in canopy cover led to a strong increase in weed species, especially the light-loving Fuller's teasel. The long-term successional status of this small area (0.06 acres) is not clear.

The COST4 community is maintained by high seasonal flows that subsequently decrease during the majority of the growing season. Absent a hydrologic change, the community is stable.

There are a total of 1.04 acres of riparian wetlands along the unnamed tributary, of which 0.48 acres of wetlands are located above the slope break (and within the potential construction area) and 0.56 acres below the slope break (and outside of the construction area).

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Table 6-2. Comparison of Dominant Species among the Different Tributary Wetland Community Types.

| Dominant Species | Community Type (% cover by dominant species) | | | |
|---------------------------------------|--|--|---------------------------|---------------|
| | ALIN2/COST4-canopy intact (DP 3-1, 2007) | ALIN2/COST4-canopy removed (DP3-1, 2008) | POTR5/ALIN2-COST4 (DP3-2) | COST4 (DP3-3) |
| Overhanging Trees | | | | |
| <i>Pinus ponderosa</i> | 10% | 10% | 35% | 20% |
| <i>Pseudotsuga menziesii</i> | 0 | 0 | 0 | 30% |
| Trees rooted within community | | | | |
| <i>Populus tremuloides</i> | 0 | 0 | 30% | 0 |
| Shrub/Sapling Layer | | | | |
| <i>Alnus incana</i> | 40% | 15% | 30% | 5% |
| <i>Cornus stolonifera</i> | 10% | 2% | 20% | 50% |
| <i>Ribes spp.</i> | 5% | 2% | 5% | 5% |
| Herbaceous Layer | | | | |
| <i>Agrostis stolonifera</i> | 30% | 30% | 25% | 15% |
| <i>Cinna latifolia/Glyceria elata</i> | 0 | 0 | 0 | 15% |
| <i>Dipsacus fullonum</i> | not a dominant | 15% | not a dominant | 0 |
| <i>Elymus glaucus</i> | 10% | 10% | 15% | 0 |
| <i>Geum macrophyllum</i> | 15% | 5% | 3% | 10% |

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6.2.4 Functional Assessment

Functional assessments were conducted for the (1) RFT, low gradient Powder River riparian wetlands as a group, (2) wetland seeps along the Powder River, and (3) tributary RFT, moderate gradient wetlands as a group. This is because the HGM methodology recommends wetland assessment by HGM class and subclass. Amphibian habitat assessments were not made using the HGM methodology. Instead this function was rated based on the field assessments for the spotted frog described in Section 4.4, in which no wetlands were identified as providing native amphibian habitat. Table 6-3 provides a comparison of the wetland functional assessments.

6.2.4.1 Powder River RFT Wetlands

The main HGM functions provided by the Powder River RFT wetlands are stabilization of the existing banks, thermo-regulation, some waterbird habit and biodiversity support. There is little to no sediment retention within the channel or the riparian wetlands, however, stabilization of the current streambank is a crucial function. Nutrient recycling functions (phosphorus retention, nitrogen removal) and the related primary production function are low. The season long flow releases and lack of local sediment or biomass retention limit the ability to provide these functions.

The fish habitat rating is based on the degree of shading, presence of permanent water, variety of depth classes and substrate. Aquatic habitat within the study area does not contain a mix of depth classes, or side channels, and there is no spawning gravel. However, the habitat is shaded in parts and the water remains cool right below the dam during the summer. As a result, the habitat is rated as moderate.

Under the Oregon HGM method (Adamus 2001), waterbird habitat includes habitat for those birds typically classified as waterbirds (e.g., herons), waterfowl and passerines (songbirds) that rely on wetland habitats. The Powder River wetlands are used by a number of relatively common passerines (e.g., American dipper) and have some important habitat structural elements. The wetlands lack sufficient size and interspersion for a high ranking. The RFT wetlands approximately 1 mile downstream contain much greater habitat interspersion and would likely rank much higher for waterbird habitat. These wetlands are outside of the study area and were not assessed, per se. Rather they were used as a general reference or comparison to the study area wetland structure and habitat diversity.

Biodiversity support contains a number of elements: high species richness within the wetland, support of rare or sensitive species, or provision of support for a habitat element that is regionally rare or declining. The Powder River RFT wetlands are not particularly diverse, nor do they support TES species. However, they contain a small cottonwood stand and cottonwoods are in decline regionally. As such, these wetlands are rated as moderate for biodiversity support.

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| Table 6-3. Comparison of Functions among Wetlands in the Mason Dam Study Area. | | | |
|---|------------------------------------|-----------------|---|
| Function | Rating by Wetland HGM Class | | |
| | PR-RFT low gradient | PR-Slope | Trib-RFT moderate gradient |
| Water storage and delay | L | L | M |
| Sediment stabilization | | | |
| Sediment retention | L | L | M |
| Bank stabilization | H | H | M |
| Phosphorus retention | L | M | M |
| Nitrogen removal | L | M | L |
| Thermo-regulation | H | H | H |
| Primary production | L | M | M |
| Fish Habitat | M | N/A | N/A |
| Amphibian habitat | L | L | L |
| Waterbird habitat | M | L | L |
| Biodiversity support | M | M | M-H |
| L=Low, L=Medium, H=High | | | |

6.2.4.1 Powder River Slope Wetlands

The two small Powder River slope wetlands differ from the RFT wetlands, in that they are supported hydrologically both by the river and by groundwater discharge. They are also located outside of the high water level and not subject to scour.

As for the adjacent RFT wetlands, the slope wetlands provide bank stabilization and thermo-regulation functions. Nutrient cycling and primary production functions are rated higher in the slope wetlands than the RFT wetlands. Both the greater soil development and lack of scour in the slope wetlands allow soil nutrient retention and adsorption. The deeper soils and dense herbaceous cover also provide substrates for the microbial and invertebrate activity important in nutrient cycling.

There are no fish in the slope wetlands.

Species diversity is relatively high in the slope wetlands and even though they contain no TES species or unique elements, they are rated moderate for biodiversity support.

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6.2.4.1 Tributary RFT Wetlands

The tributary wetlands are supported by a combination of upstream seasonal spring discharge and snowmelt. Seasonal water level fluctuations in the channel are up to 12 inches, with the floodplain inundated only in the spring. The floodplain is well vegetated with a mix of herbaceous and shrub species. These characteristics are indicative of a moderate potential for water storage during seasonal flooding events, instream sediment stabilization and phosphorus retention. Although these characteristics can also promote nitrogen removal, the dominance of the nitrogen-fixing alder suggests that more nitrogen may be exported from, than removed within, the wetland.

Primary production represents a combination of the wetlands' ability to both produce a high amount of leaf or other exportable biomass, and also provide the nutrients in a form readily used by aquatic biota. The dominant species within the tributary wetlands (e.g., alder, creeping bentgrass) are not known for very high biomass productivity, but alder provides a high quality leaf litter (see for example, Wipfli and Gregovich 2002). Additionally, the abundance of common caddisflies and other macroinvertebrates known to shred or process leaf litter results in a moderate rating for primary production.

There are no fish in the tributary.

Species diversity varies within the wetland, with the highest diversity below the slope break (outside the direct construction area). There are no TES species in the wetlands, but portions contain moderate to high potential habitat for the crytochian caddisfly. There is also a small aspen stand within the wetland. Aspen is in decline within the Blue Mountain area. Overall, the tributary wetlands are rated moderate to high for biodiversity support.

6.2.5 Wetland and Aquatic Habitat Summary

There are 0.78 acres of open water and 0.59 acres of riparian wetlands along the Powder River in the project study area. There are an additional 1.04 acres of riparian wetlands associated with a small tributary to Phillips Lake. Overall, there are 1.63 acres of riparian wetland and 0.78 acres of aquatic habitats within the Mason Dam project study area (total of 2.41 acres).

Wetland, aquatic and riparian habitats are considered unique habitat elements by the FS. Additional emphasis is placed on those areas with seeps or springs, cottonwoods or aspen, all of which occur in small areas of the riparian wetland habitats

6.3 Upland Habitats

There are five general upland habitats and eight plant community types. Table 6-4 provides a correlation among the different classifications for each habitat and community type.

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| Table 6-4. Summary of Vegetation Classification Information for Upland Habitats. | | | | | |
|--|--------------|------------------------|--|---|--|
| General Mason Dam Habitat Type | Acres | Data Points | Preliminary Community Type Classification ¹ | Final Community Type Classification ² | |
| Forested Upland | | | | | |
| Dry coniferous forest-open, Ponderosa pine dominant | 22.25 | 7a-1, 7a-2 7b 7c | PIPO/SYAL PIPO/CARU PIPO/CAGE | PIPO/SYAL PIPO/CARU PIPO/CAGE | |
| Regenerating Forest | 4.86 | 7d | Not classified | PIPO/CAGE, early seral | |
| Mixed Coniferous Forest | 7.52 | 8 | PSME/CAGE2 or PIPO/CAGE2 | PSME/CAGE2 | |
| Non-Forested Upland | | | | | |
| Dry Grassland | 4.14 | 4a 4b | Not classified | Non-native ruderal grassland ARTRV-PUTR2/FEID. | |
| Rock/Talus Slope | 5.93 | 5 | Not classified | Undefined, depauperate ponderosa pine series | |
| Bare³ | 7.33 | 6 | None | None | |
| Total Acres | 52.03 | | | | |

¹ See EcoWest. 2007. Draft TES Assessment. ² Johnson and Clausnitzer 1992, Powell et al. 2007

³ Parking lots, roads, existing dam and facilities, ≤5% vegetative cover

6.3.1 Upland Forest

6.3.1.1 Dry Coniferous Ponderosa Pine Forest

As noted in Section 4.1, most of the Mason Dam study area consists of forests dominated by ponderosa pine. The majority of the forested areas have a relatively open canopy ($\leq 50\%$) and can be characterized as “warm, dry forest” according to the FS classification system (Powell et al. 2007). There are three Ponderosa Pine plant associations and two seral stages within the study area. Each plant association-seral stage is discussed separately below. Table 6-5 provides a comparison of the key characteristics among the different ponderosa pine associations. Appendix C, Figures 6a and 6b provide representative habitat photographs.

Ponderosa Pine-Snowberry Association-Mid Seral. The ponderosa pine-snowberry association is also referred to as *Pinus ponderosa-Symphoricarpos albus* or PIPO/SYAL. The canopy is dominated by ponderosa pine (40% cover) with minor cover (less than 1% each) provided by Douglas fir (*Pseudotsuga menziesii*) and lodgepole pine (*Pinus contorta*) (see Appendix C, Figure C-6). There is a mix of tree sizes, with tree dbh mostly between 10 to 15 inches and an overall mean of 13 inches. A few trees have a dbh greater than 20 inches, with one 37 inch dbh tree. Conifer regeneration is spotty, with young ponderosa pine providing from 0 to 7 percent cover in the shrub/sapling layer.

Snowberry dominates the shrub layer (20 to 25% cover). Other shrubs or subshrubs include Oregon grape (*Mahonia repens*, 5% cover), green rabbitbrush (*Chrysothamnus viscidiflorus*, 5% cover) and bitterbrush (*Purshia tridentata*, 2% cover). Two stems of mountain mahogany (*Cercocarpus ledifolia*) were observed.

Herbaceous species dominants include pine grass (*Calamagrostis rubescens*, 10% cover), Idaho fescue (*Festuca idahoensis*, 20% cover), bearded wheatgrass (*Thinopyrum trichophorum*, 20% cover). Other common species include Geyer’s sedge (*Carex geyeri*), mountain brome (*Bromus carinatus*), prairie junegrass (*Koeleria cristata*) and yarrow (*Achillea millefolium*), all with 5 percent cover.

According to Johnson and Clausnitzer (1992), the PIPO/SYAL association is a mid seral association that will remain a ponderosa pine community through late seral stages, without replacement of the pine canopy by Douglas fir or other conifers. The conifer regeneration data (spotty, but where it occurs, it is all ponderosa pine) supports that conclusion.

This association occurs within the FS picnic area, adjacent to the Mason Dam slope and adjacent to the former campground on Black Mountain Road (now a dispersed camping spot). As a result, trees that might otherwise naturally become snags or provide large diameter trees for cavity nesters are typically removed so as to not provide a hazard to recreational users. There are no snags and 2 pieces of CWD (0.3 pieces per acre) in this association.

There are 5.20 acres of PIPO/SYAL in the Mason Dam study area.

Ponderosa Pine-Pinegrass Association-Mid Seral. The ponderosa pine-pinegrass association is also

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referred to as *Pinus ponderosa-Calamagrostis rubescens* or PIPO/CARU. The canopy is dominated by ponderosa pine (50% cover) with Douglas fir providing 10 percent cover. There is a mix of tree sizes, with tree dbh ranging between 5 and 23 inches. Trees are mostly between 10 to 15 inches, with an overall mean of 12.6 inches. Conifer regeneration includes both ponderosa pine (15% cover) and Douglas fir (5% cover) in the shrub/sapling layer.

The young conifers dominate the shrub layer (total of 20%). Snowberry (5% cover) and Oregon grape (7% cover) also occur.

Dominant herbaceous species include pine grass (25% cover), Idaho fescue (20 to 30% cover in scattered patches), Geyer's sedge (15% cover) and little sunflower (*Helianthella uniflora*, 10% cover). Bearded wheatgrass, wood strawberry, several lupine species (*Lupinus* spp.) and yarrow also occur with 3 to 5 percent cover.

According to Johnson and Clausnitzer (1992), the PIPO/CARU association is a mid seral association that will remain a ponderosa pine community through late seral stages, without replacement of the pine canopy by Douglas fir or other conifers. The dominance of ponderosa pine in the shrub and sapling layers over other conifers supports that conclusion.

The PIPO/CARU association occurs along Black Mountain Road and is separated from the road by relatively steep road cuts. As a result, snags are not routinely removed for safety. There are 3 snags (0.2 per acre) and 10 pieces of CWD (0.7 pieces per acre) in this association.

There are 8.92 acres of PIPO/CARU in the Mason Dam study area.

Ponderosa Pine-Geyer's Sedge Association-Mid Seral. The ponderosa pine-Geyer's sedge association is also referred to as *Pinus ponderosa-Carex geyeri* or PIPO/CAGE. The canopy is dominated by ponderosa pine (40% cover). There is a mix of tree sizes, with tree dbh mostly between 10 to 15 inches, and a mean of 13 inches. Conifer regeneration is dominated by Douglas fir (10% cover) in the shrub/sapling layer. Young ponderosa pine also provides 5 percent cover in this layer.

Snowberry and Oregon grape co-dominate the shrub layer (up to 15% cover each, but with a patchy distribution for a total shrub cover of 20%). Other shrubs include birch-leaved spirea (*Spirea betuloides*).

The dominant herbaceous species is Geyer's sedge (40% cover). Pinegrass provides 15 percent cover. Other common species include little sunflower, wood strawberry, lupines and showy penstemon (*Penstemon speciosus*).

According to Johnson and Clausnitzer (1992), the PIPO/CAGE association is a mid seral association that will remain a ponderosa pine community through late seral stages, without replacement of the pine by other conifers. However, the Douglas fir dominance of the conifer regeneration (10%) over ponderosa pine (5%) suggests that this habitat may succeed to a PSME/CAGE2 community, similar

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to the community described in Section 6.3.1.2.

This association occurs along Black Mountain Road and adjacent to the existing transmission line, interspersed among other community types in four different patches. There is 1 snag (0.1 per acre) and 5 pieces of CWD (0.6 pieces per acre) in this association. There are 8.13 acres of PIPO/CAGE in the Mason Dam study area.

Ponderosa Pine-Geyer's Sedge Association-Early Seral. The area north of the existing transmission line was logged in the 1990's. Remnant ponderosa pine trees left by the logging operation provide 15 percent canopy cover. The remnant trees are relatively large with a 25 to 26 inch dbh. Young ponderosa pines dominate the cover (35% cover in the shrub/sapling layer, on average)(see Appendix C, Figure C-7a). The young pines are clumped and not evenly distributed. As a result, the strata cover varies from 10 to 80 percent. The saplings are from 15 to 20 feet tall.

Snowberry and Oregon grape dominate the shrub layer where pine regeneration is sparse. These species also have a patchy distribution (5 to 15% cover each, depending on the patch, for a combined average total of 20% shrub cover).

Herbaceous species dominants include Geyer's sedge (40% cover) and prairie junegrass (20% cover). Other common species include timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*) and yarrow, all with 2 to 5 percent cover.

The tree, sapling and shrub layers are dominated by ponderosa pine, which is the only tree species establishing in the community. With Geyer's sedge dominating the understory, this community is classified as early seral PIPO/CAGE that will likely succeed to the same forest association as the adjacent habitats.

Early seral PIPO/CAGE occurs south of the existing transmission line. There are 3 snags (0.7 per acre) and 10 pieces of CWD¹⁰ (2.4 pieces per acre) in this association. There are 4.14 acres of early seral PIPO/CAGE in the Mason Dam study area.

¹⁰With the exception of the old log landing in which 25 variously-sized wood pieces were left.

Table 6-5. Comparison of Key Characteristics among Ponderosa Pine Associations.

| Plant Association and Dominant Species | Cover by Strata (%) | | | Tree dbh Range and mean (\bar{x}) | Snags (#/density per acre) | CWD (#/density per acre) | |
|--|---------------------|--------------------------|--------|---------------------------------------|--|--------------------------|--------|
| | Tree | | Shrub | | | | Herb |
| | Canopy | Sapling/ Shrub (Species) | | | | | |
| PIPO-SYAL Pinus ponderosa Symphoricarpos albus Festuca idahoensis | 40% | 0-7% (PIPO) | 20-35% | 60-80% | Mix of sizes, 7-37", but mostly 10-15" \bar{x} =13" | 0/0 | 2/0.3 |
| PIPO-CARU Pinus ponderosa Pinus ponderosa saplings Calamagrostis rubescens | 50% | 20% (PIPO) | 12% | 100% | Mix of sizes, 5-23", but mostly 10-15" \bar{x} =12.6" | 3/0.2 | 10/0.7 |
| PIPO-CAGE-mid seral Pinus ponderosa Symphoricarpos albus, Mahonia repens Carex geyeri | 40% | 15% (PSME) | 20% | 60% | Mix of sizes, 9-23", but mostly 12-15" \bar{x} =15" | 1/0.1 | 6/0.6 |
| PIPO-CAGE-early seral Pinus ponderosa Pinus ponderosa saplings Carex geyeri | 15% | 35% (PIPO) | 20% | 60% | Remnant trees 25-26" Saplings 15-20' tall | 3/0.7 | 10/2.4 |

6.3.1.2 Mixed Coniferous Forest

Approximately 15 percent of forested areas in the study area are dominated by a Douglas fir-mixed coniferous forest community. There is only one mid seral association in the study area. That is a Douglas Fir-Geyer's Sedge association, also known as *Pseudotsuga menziesii-Carex geyeri* or PSME/CAGE2.

The canopy is dominated by Douglas fir (45%). Ponderosa pine is a subdominant species with 15 percent cover. Larch (*Larix occidentalis*) and grand fir (*Abies grandis*) each provide 1 to 2 percent canopy cover (see Appendix C, Figure C-7b). Although providing higher canopy cover than the adjacent ponderosa pine habitats, there are few large trees. Trees range in size from 5 to 25 inches dbh, with a mean of 13.7 inches.

Shrub cover is variable, ranging from five percent cover and dominated by young Douglas and grand firs (less than 3.3 feet in height), to 35 percent cover and dominated by snowberry and birch-leaved spiraea. Other common shrub species include Oregon grape and wood's rose (*Rosa woodsii*).

Herbaceous cover is dominated by a mix of pinegrass (25%), elk sedge (25%) and blue wild rye (25%). Heart-leaved arnica also commonly occurs (5%).

According to Johnson and Clausnitzer (1992), PSME/CAGE2 is a climax association that will remain dominated by Douglas fir through late seral stages. The Douglas fir dominance of tree regeneration supports that conclusion. Canopy trees are relatively small (15" dbh) indicating a current mid, not a late seral successional stage

PSME/CAGE2 occurs east of Mason Dam Road between the 1636 Y and the transmission line. There are two snags (0.3 per acre) and 3 pieces of CWD (0.4 per acre).

There are 7.52 acres of PSME/CAGE2 in the Mason Dam study area.

6.3.2 Dry Grassland

The grassland within the Mason Dam study area consists of small patches or linear strips of seeded mostly non-native species including crested, intermediate and bearded wheatgrasses (*Agropyron cristatum*, *Thinopyrum intermedium*, *T. tricophorum*). These habitats occur (1) adjacent to the recreation area parking lot where there is considerable human and domestic dog use, and (2) along the existing transmission line crossing Black Mountain Road. These habitats were not given a preliminary community type classification during the TES assessment, as there is no specific classification for seeded grassland. To classify these habitats, the potential natural community type needs to be determined and successional relationships identified. The composition of the two grassland areas and their potential community types are described separately below.

6.3.2.1 Recreation Area Grassland

The grassland within the recreation area is dominated by herbaceous species that are 26 to 30 inches

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tall (see Appendix C, Figure C-8b) Dominant species include crested wheatgrass (30% cover), bearded wheatgrass (20%), cheat grass (*Bromus tectorum*; 25% cover), Idaho fescue (5% cover) and paniced willow-herb (*Epilobium paniculatum*, 5% cover). Other frequently-observed species include mullein (*Verbascum thapsus*), prickly lettuce (*Lactuca serriola*), hound's tongue, thistles (*Cirsium spp.*), diffuse knapweed (*Centaurea diffusa*) and tarweed (*Madia gracilis*).

There are scattered ponderosa pine and planted horticultural trees (*Acer plantanoides*, *Betula papyrifera*) that provide a total of 7 percent cover. Tree dbhs are 3 to 15 inches, with a mean of 7 inches. Sagebrush (*Artemisia tridentata*) and rabbitbrushes (*Chrysothamnus spp.*) provide 2 percent cover in the shrub layer. Conifer regeneration is absent.

There are no snags and no CWD in the grassland.

The potential natural community is not determinable for this habitat, as it was constructed and is maintained as a grassland. There is no conifer regeneration and native species are sparse. This habitat is best classified as a non-native ruderal community that has no associated FS community type classification.

There are 1.33 acres of ruderal grassland within the recreation parking lot area.

6.3.2.2 Transmission Line Grassland

The transmission line is dominated by a mix of grasses and forbs (18" tall, 75% total cover) and shrubs (2.5 to 3' tall, 20% total cover with an additional 15 percent cover in the low or subshrub layer) (see Appendix C, Figure C-8a). Dominant species in the herbaceous layer are intermediate and bearded wheatgrass (each with 20% cover). Other common species, each with 5 percent cover, include prairie junegrass, timothy (*Phleum pratense*), pinegrass, Geyer's sedge, Idaho fescue and yarrow.

Dominant species in the shrub layer are young ponderosa pine (3% cover), sagebrush (3% cover) and rabbitbrushes (15% cover). Creeping Oregon grape provides 15 percent cover in the low shrub layer. There are two mountain mahogany plants in the study area.

There are no trees in this community, but ponderosa pine provides 1 percent overhanging cover. There are no snags and 2 CWD pieces (0.7 per acre).

The potential natural community is a ponderosa pine community, likely a PIPO/CAGE community similar to the communities which border the transmission line. However, with ongoing maintenance, a forested community will not be attained. Instead, there is a trend towards a Mountain Big Sagebrush-Bitterbrush-Idaho Fescue community, also referred to as *Artemisia tridentata-Purshia tridentata/Festuca idahoensis* or ARTRV-PUTR2/FEID. The transmission line grassland would be an early seral form of that community.

There are 2.82 acres of grassland (early seral shrubland) within the transmission line corridor.

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6.3.3 Rock/Talus Slope

The rock/talus slope habitat is primarily located on a steep slope between the Mason Dam recreation area parking lot and the adjacent Black Mountain Road, east of Mason Dam (5.68 acres). There is an additional small rock outcrop area southeast of Mason Dam (0.12 acres).

The area is relatively open with 10 to 15 percent cover provided by scattered ponderosa pines and a small clump of aspen at the slope base (described separately below). The pines mostly occur on the upper slope near Black Mountain Road (see Appendix C, Figures 9 and 9a). Tree dbh primarily ranges between 7 and 15 inches with a few larger pines, and a mean of 9 inches dbh.

Shrub cover is also scattered with a total cover of 17 percent and a height of 3.5 to 4 feet. Serviceberry (*Amelanchier alnifolia*) is the most common shrub, providing 10 percent cover. Other shrub species include golden currant (*Ribes aureum*), green rabbitbrush, big sagebrush, bitterbrush, and western juniper (*Juniperus occidentalis*).

As for the other strata, the herbaceous cover is patchy. It is dominated by Idaho fescue, crested wheatgrass and cheatgrass, each with approximately 7 percent cover. The base of the talus slope adjacent to the road is quite weedy with a mix of thistles, cheatgrass, and mullein, with teasel and sweet clover concentrated at the eastern edge of the study area.

There are two rock outcrops on the slope that have some small fissures and openings. There is a seep emerging at the base of one of these outcrops (see Appendix C, Figure 9) and portions of the rocks at the base of the outcrop are moist. There is a small aspen clump at the base of these rocks (0.13 acres). The aspen trees range in size from 1 to 9 inches dbh, with a mean of 5.4 inches. The understory here is more diverse and contains golden currant, western goldenrod (*Euthamia occidentalis*), tall butterweed (*Senecio serra*), hoetail (*Equisetum hyemale*) and a number of ferns such as *Woodsia oregana* and *W. scopulina* on the adjacent rocks.

The rock outcrop southeast of Mason Dam is not seepy and has a sparse cover of buckwheats (*Eriogonum* spp), sagebrush buttercup (*Ranunculus glaberrimus*) and ferns (*Cystopteris fragilis*).

There is no specific FS community type classification for mid elevation rock/talus slopes. However, with the 15 percent cover of ponderosa pine, this community is best described as an early seral, undefined, depauperate association within the ponderosa pine series.

There are three snags (0.5 per acre) and 5 pieces of CWD (0.8 per acre).

There are a total of 5.93 acres of rock/talus slope habitat in the study area (5.68 acres of the main rock/talus slope, 0.12 acres of a disjunct rock outcrop, and 0.13 acres of aspen clump).

6.3.4 Bare

Bare areas (5% or less overall cover) occur at the existing dam and facilities, in the existing parking

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lot and along the Mason Dam and Black Mt. Roads. Although constructed and maintained as bare gravel areas, portions of each of the areas contain small patches of vegetation, often dominated by weedy species. A brief description of each of these areas is listed below.

Existing Dam and Facilities. The dam and facility area are maintained free of vegetation. There is an old road adjacent to the dam and immediately south of the existing facility area with 5 percent vegetation cover, with mullein, thistles (*Cirsium arvense*, *C. vulgare*) and cheatgrass comprising the cover. There is also a trace amount of teasel.

Parking Lot and Access Road. There is a small fringe of vegetation (a couple of inches wide) around portions of the existing parking lot. This results in a total of 1 percent cover by cheatgrass. The access road to the parking lot and dam has a greater roadside cover of up to 3 percent in some places. Species occurring along the road side include cheat grass, mullein and creeping thistle.

Black Mt Road. Black Mountain Road is bordered by a fringe of seeded grasses, such as bearded wheatgrass, cheat grass and orchard grass. There are small scattered patches of thistles, sulfur cinquefoil (*Potentilla recta*), spotted knapweed and yellow sweet clover along the road. These species provide small amounts of cover in scattered patches along the road, with an overall cover of less than 5 percent.

6.3.5 Upland Habitat Summary

There are four ponderosa pine associations totaling 27.11 acres and 7.52 acres of mixed coniferous forest in the study area (34.63 acres of upland forest). Dry grassland comprises 4.14 acres and rock/talus slope 5.93 acres. The remainder of the upland habitat is bare or sparsely vegetated ($\leq 5\%$)(7.33 acres).

The habitats are dominated by relatively common species. Unique components or special features include a 0.13 acre aspen clump. There are a few scattered stems of mountain mahogany, but nothing that would qualify as a mountain mahogany stand or association.

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6.4. Potential Impacts

Study Plan 2 requires that project-related actions that may influence the distribution of wetland and riparian habitats be identified. This section describes potential impacts that could occur to these habitats, separating them according to direct (Section 6.4.1) and indirect (Section 6.4.2) impacts. Impacts to upland habitats will be addressed during subsequent FERC permit steps.

6.4.1 Direct Impacts

There are three construction activities that could directly affect wetland and riparian habitats:

- Installation of new discharge valves, including construction equipment access to the installation point,
- Construction of the new underground transmission line along Black Mountain Road, and
- Construction of the interconnect between the existing and new transmission lines.

6.4.1.1 Discharge Valve Installation

Details regarding the number, type and necessity for new discharge valves are currently unknown. Therefore, for identifying potential impacts, a general construction area was delineated between the existing dam and the rock weir as the maximum impact area. This area includes two older access roads near the dam, and areas where there is a gentle bank slope to allow equipment access. The maximum delineated area is much larger than would be required and was delineated for the purposes of assessing potential, not actual, impacts.

The habitat area between the dam and the rock weir consists of 0.34 acres of open water, riverine, cobble bed. There is no bordering riparian vegetation in this area. The habitats next to the maximum construction area are generally bare. Depending on the construction methods, up to 0.34 acres of direct impacts could occur to the riverine, cobble bed habitat. There would be no direct impacts to the adjacent riparian wetlands.

However, it is likely that the discharge valves would be installed in a much smaller area, using the existing dam facilities for construction access. The more likely construction area would impact 0.05 acres of riverine, cobble bed habitat.

6.4.1.2 Transmission Line Construction

There are 0.48 acres of tributary riparian shrub wetlands located within the construction right-of-way (i.e., 50 feet from Black Mountain Road). All of these wetlands could be subject to direct impacts during construction. As discussed for the discharge valve installation, this includes the area potentially subject to impacts, but not the actual impacts, as the construction details are still being developed.

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6.4.1.2 Transmission Line Interconnect

Baker County plans to connect the existing and new transmission lines within the existing transmission line right-of-way. There are 0.06 acres of tributary riparian shrub wetland within the right-of-way that could be impacted.

6.4.2. Indirect Impacts

In general, indirect impacts to wetlands can occur through a variety of means such as changes in hydrology, changes in sediment routing or weed expansion. The degree to which these impacts could occur on the Mason Dam project is discussed below.

6.4.2.1 Hydrologic Impacts

Changes in the timing, duration or frequency of flooding can and will affect riparian wetlands. The BOR has specified that the current pattern of releases from Mason Dam can not be changed from current operations (see exhibits in Baker County [2006]). As a result, wetland impacts along the Powder River as a result of changes in flow release were not considered further.

Other potential impacts of the turbine operation could occur from changes in the velocity of the flow release into the Powder River, which could then affect within-stream hydraulics and sediment transport (B. Gecy, FS Plan hydrologist, pers. comm.). Release velocity depends on the position, height and configuration of the outlet and adjacent stilling basin. Additionally, changes in the inlet height could alter the outlet flow velocity, resulting in higher turbulence at the outlet.

Neither the intake location nor the height will be changed. The position of the new outlets near the existing discharge valves would result in most energy being dissipated in the stilling basin immediately below Mason Dam. If flow volume and timing approximate existing conditions and the new valves do not substantially change discharge velocities, then channel hydraulics will be essentially the same under project operation as current conditions and should result in no measurable changes in downstream channel conditions or affect riparian wetlands.

The tributary wetland hydrology could be affected if the transmission line interconnect was constructed above-ground without a culvert, or if open bed construction to lay a pipe and then refill was used without ensuring proper soil replacement. Directional drilling under the stream bed would avoid these impacts, as would including some rather simple specifications to the construction plans (e.g., how topsoil and subsoil are to be treated, proper culvert sizing).

6.4.2.2 Sedimentation Impacts

Sediment input to wetlands during construction would impact the mapped wetlands, and the impacts could extend well outside the mapped study area. This potential impact is easily minimized by use of standard erosion control measures that will likely be included in the project 401, 404/DSL and Construction Stormwater permit applications.

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Without erosion control measures along Black Mountain Road, up to 1.04 acres of tributary wetlands could be affected. On the Powder River, lack of erosion control adjacent to the discharge valve installation area could result in sediment filling the stilling basin or being dispersed downstream and affecting wetlands outside of the study area. Given the existing high stream power during irrigation season, it is not likely that any sediment would be deposited in the study area wetlands. These impacts are speculative, however, at this point and not likely to occur under standard Clean Water Act permit conditions.

6.4.2.3 Weed Expansion Impacts

There are a number of noxious weeds in or adjacent to the wetlands. These include creeping and bull thistle, diffuse knapweed and teasel. Introduction of noxious weed seeds that could establish in the study areas wetlands or downstream wetlands could have a large impact on riparian wetlands both within and downstream of the study area.

Teasel dramatically increased in the tributary wetland after the 2008 canopy removal, and teasel expansion could be an issue if additional canopy is removed along the stream.

Weed impacts and weed management strategies are discussed in Appendix H.

6.4.2.4 Miscellaneous Impacts

As in any project, accidental spills or unplanned movement of construction equipment outside the designated construction corridor could result in wetland impacts that propagate downstream. Implementation of Standard Operating Procedures (SOPs) regarding equipment maintenance and permissible travel routes near wetlands should prevent this impact.

6.4.3 Summary of Potential Impacts

The Mason Dam project design and associated construction details will not be complete until the preliminary license application is filed in August 2009. As a result, the impacts described herein represent potential impacts that would likely be avoided or minimized using standard construction procedures.

Potential impacts could include:

- Direct impacts to 0.05 to 0.34 acres of riverine, cobble bed habitat (non-wetland, but water of US), and
- Direct impacts to 0.48 acres of tributary habitat, indirect impacts up to 1.04 acres if the crossing affects tributary hydrology.

Indirect wetland impacts would most likely occur through sediment input during construction or weed expansion as a result of construction. These issues will be addressed in other plans or permits.

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Until these permits or plans are completed, it is too speculative to identify the potential magnitude or extent of impacts.

Unless the timing, frequency or duration of flow releases are changed from the current release pattern, or the discharge release velocity is substantially changed, there is no reason to expect riparian wetland impacts along the Powder River as a result of hydrologic changes associated with the Mason Dam project.

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APPENDIX A
MASON DAM PROJECT MAPS AND FIGURES

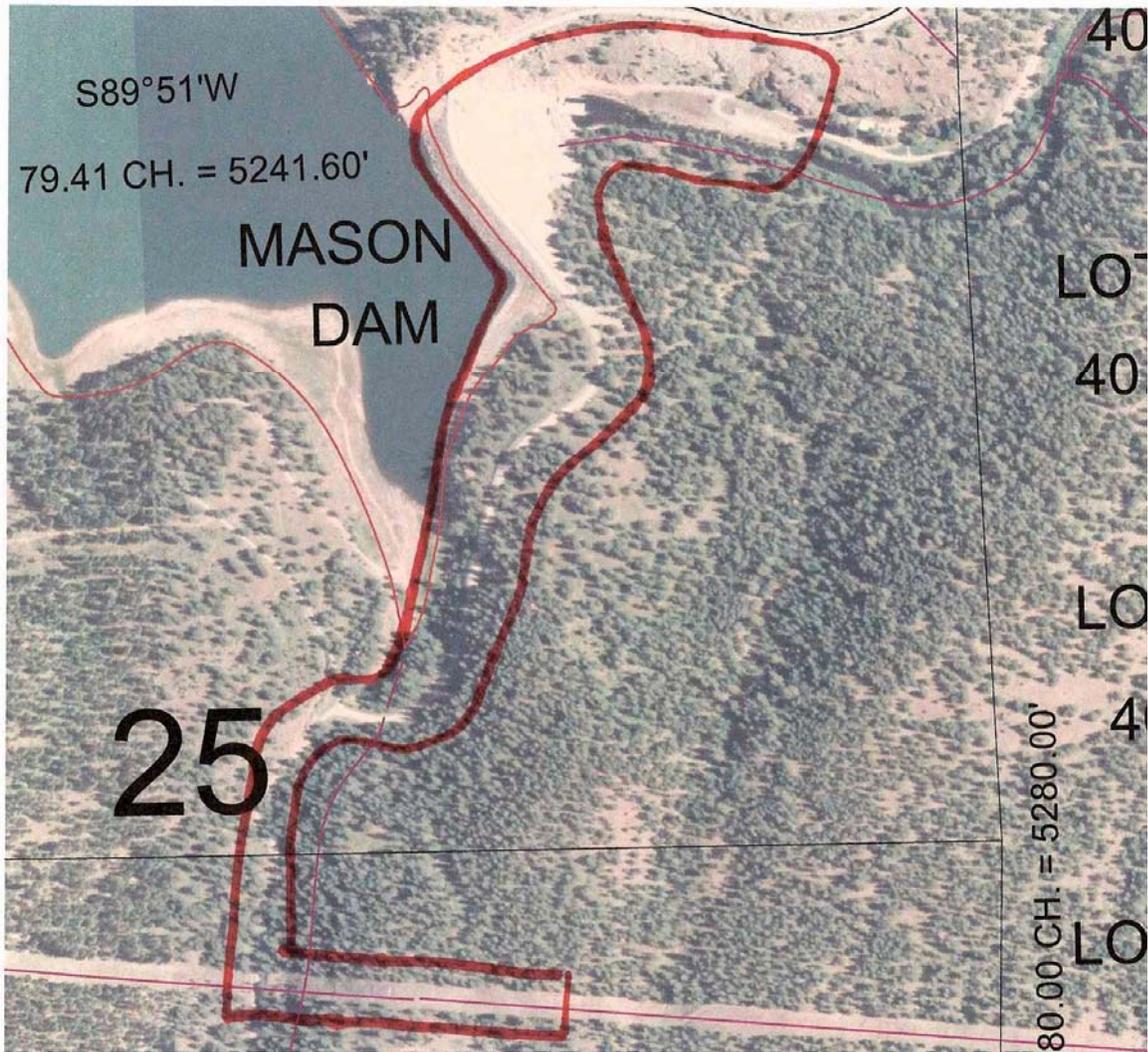


Figure 1. Mason Dam Study Area for TES Species as identified in Baker County (2006).

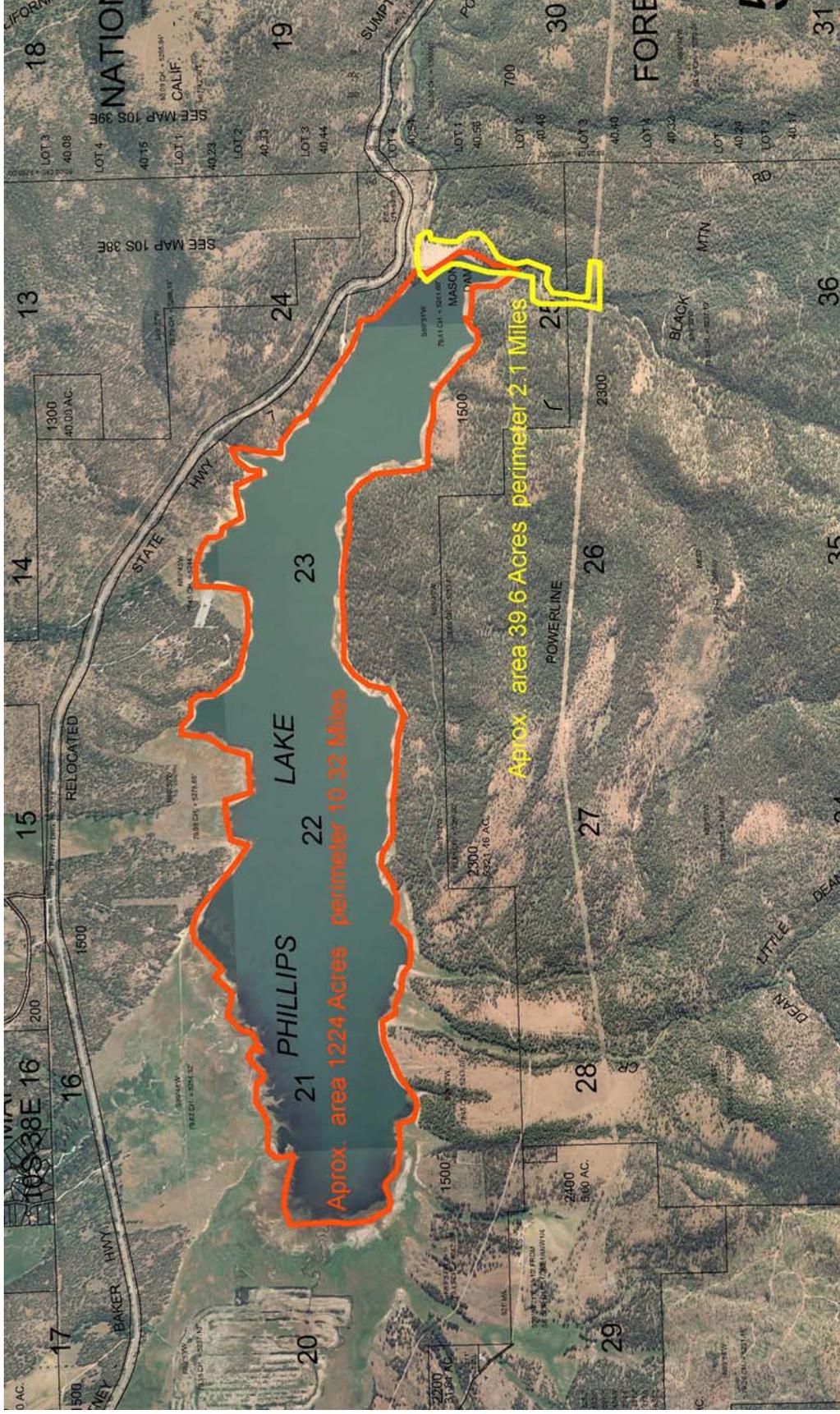


Figure 2. Mason Dam Project Study Area for TES Species and Additional Study Area for the Bald Eagle as identified in Baker County (2006).

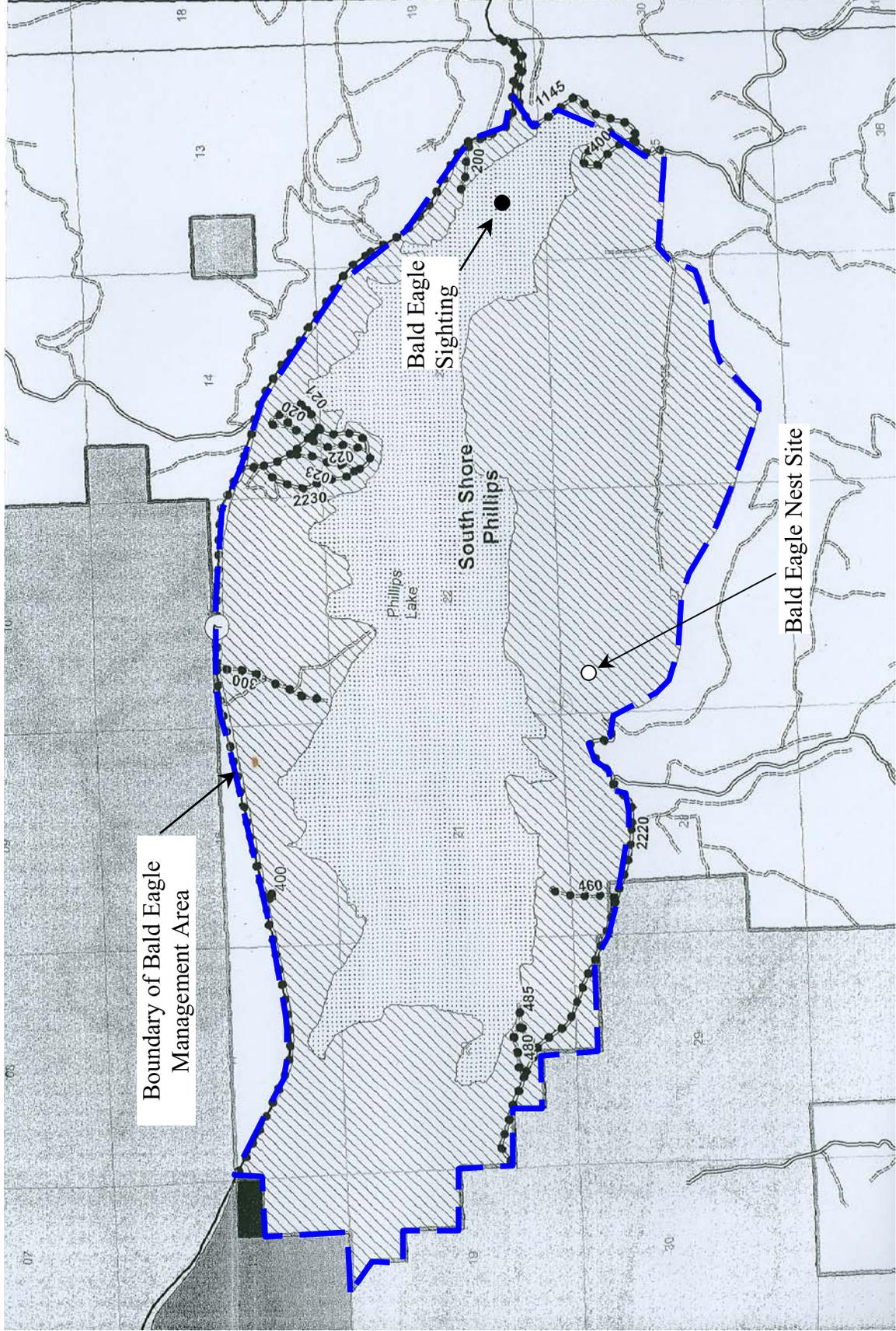


Figure 3a. Bald Eagle Nest Site and Boundaries of the BEMA at Phillips Lake. Location of Bald eagles observed foraging during the October surveys are also noted.

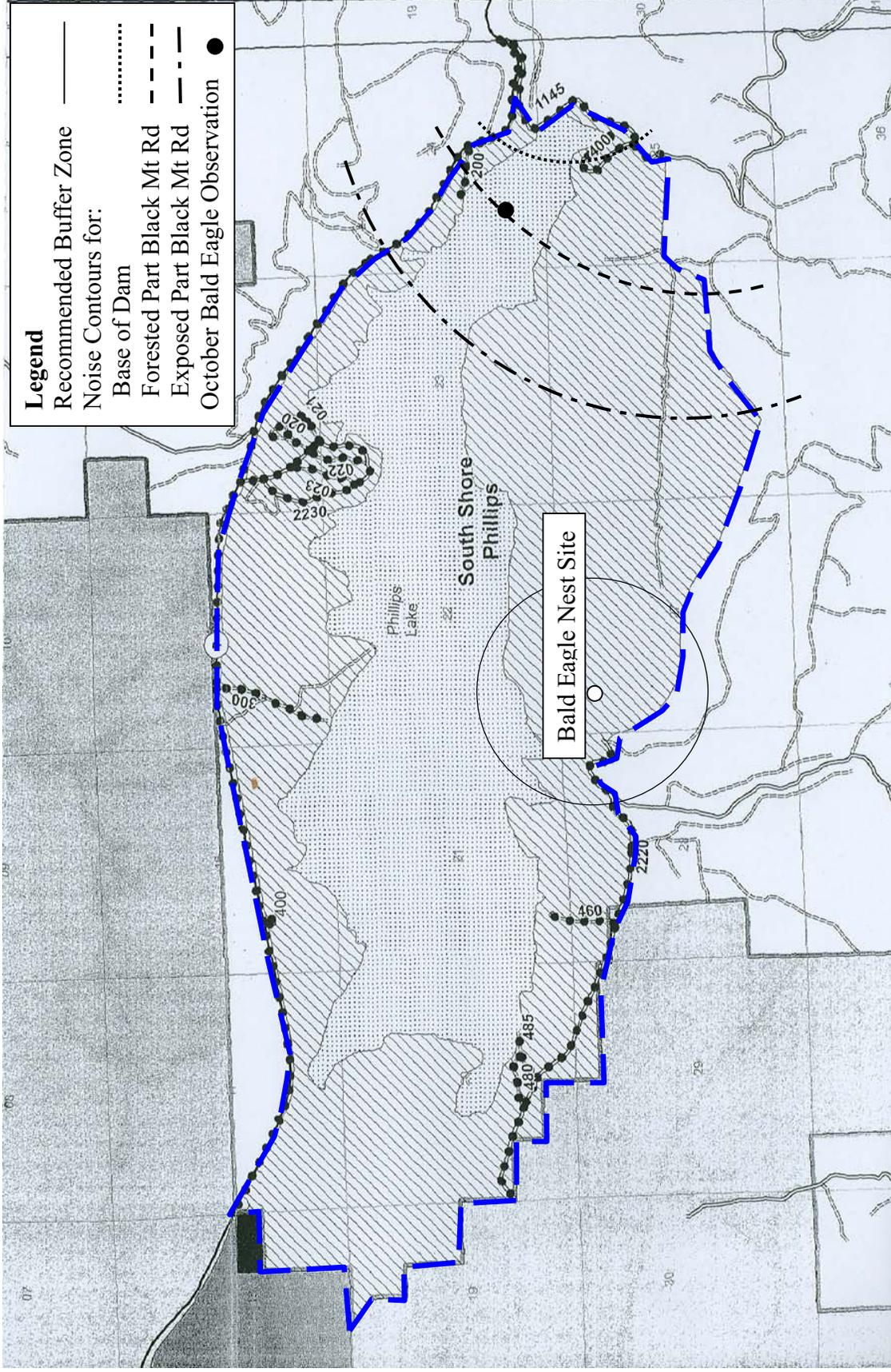


Figure 3b. Potential Construction Noise Impact Zones Within the BEMA in Relation to the Bald Eagle Nest Site. The literature-recommended up to 0.5 mile buffer zone (Anthony and Isaacs 1981) is also shown.

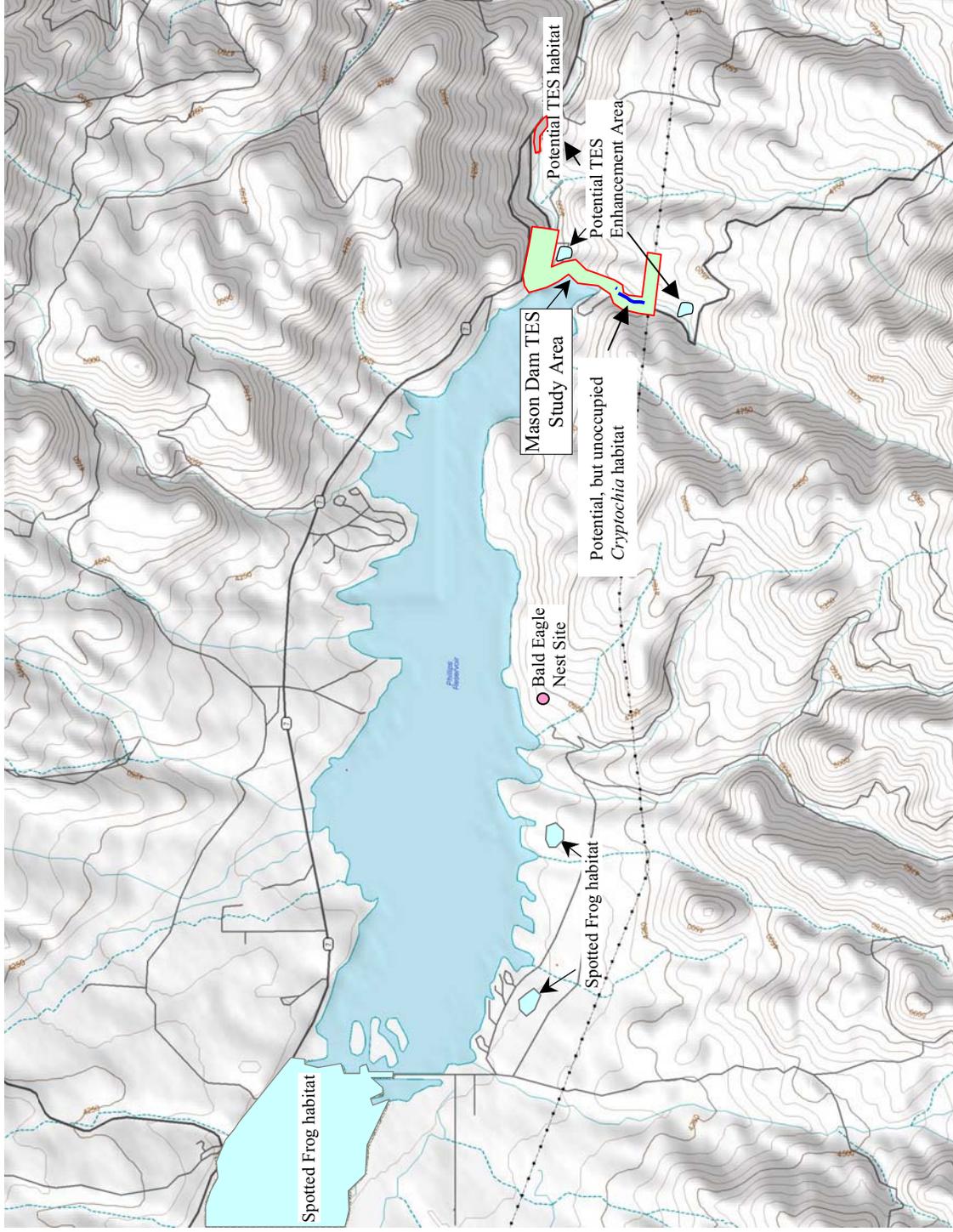
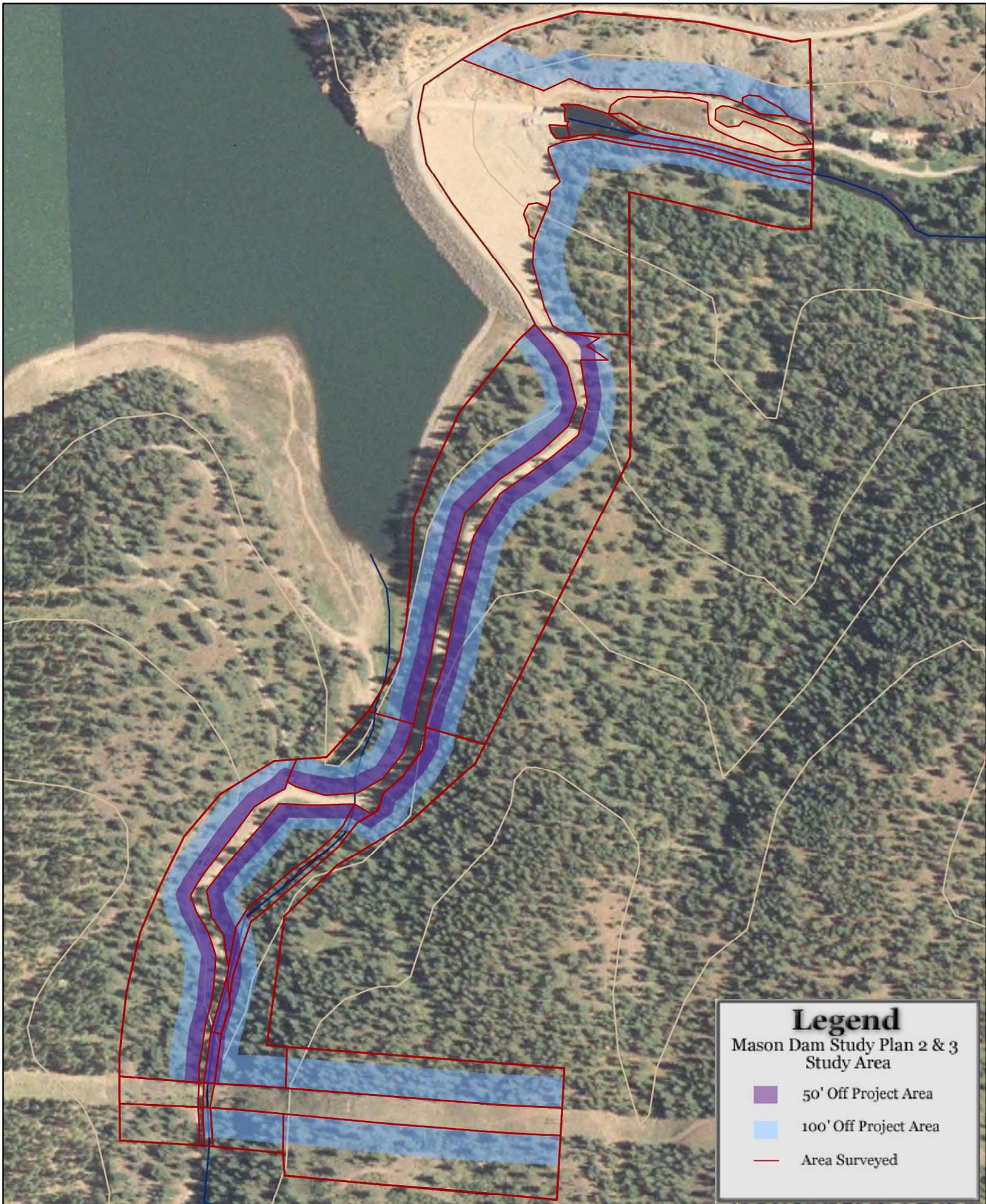


Figure 4. Known and Potential TES Habitat in the Vicinity of the Mason Dam Project. Potential TES habitat outside of the Study Area was not evaluated for occupancy in this report. See Figure 3 for BEMA boundaries and the indirect area of influence for the bald eagle.



Legend
Mason Dam Study Plan 2 & 3
Study Area

- 50' Off Project Area
- 100' Off Project Area
- Area Surveyed

Figure 5a Mason Dam Study Plan 2 and 3 Project Boundary

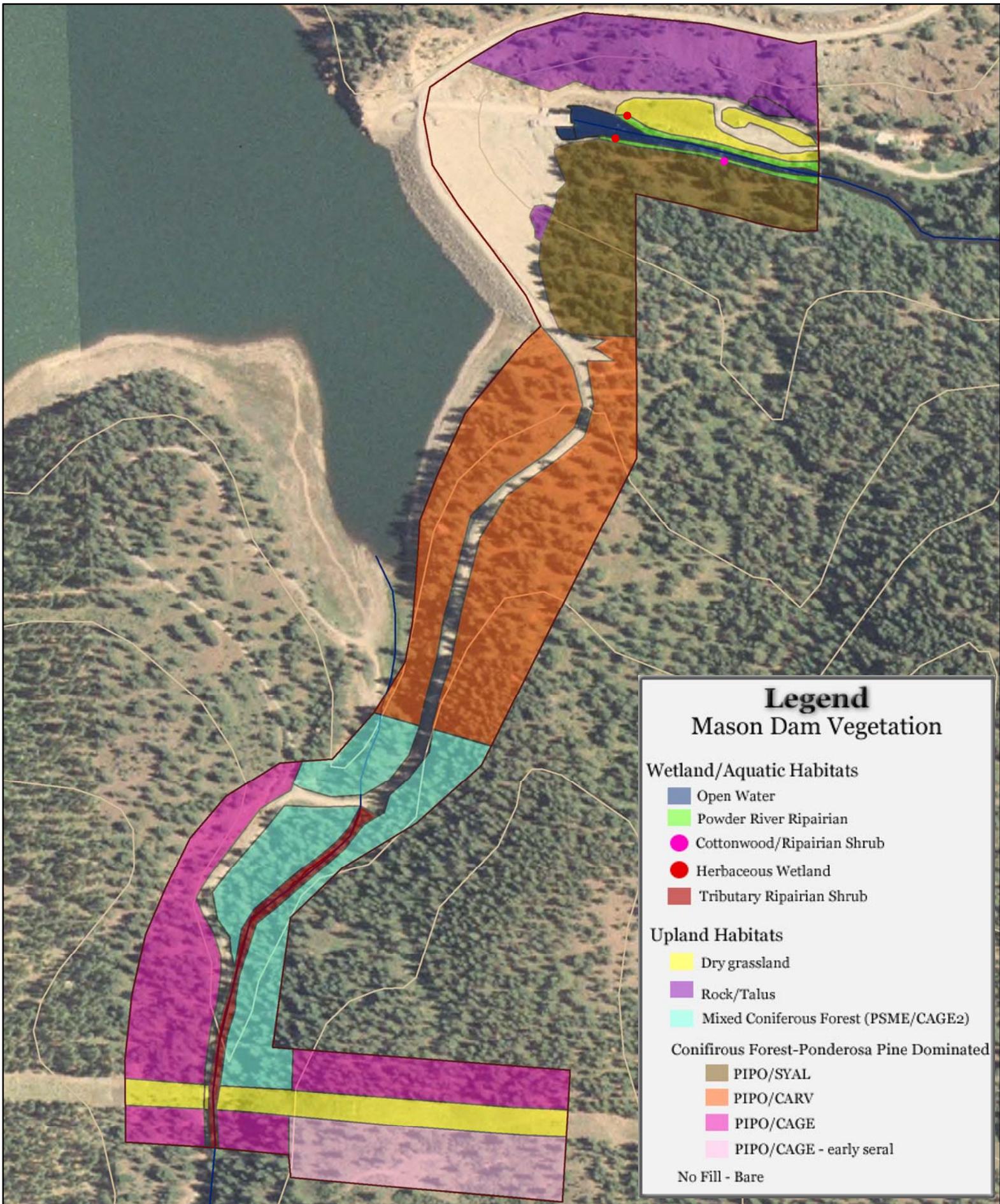


Figure 5b Mason Dam Vegetation

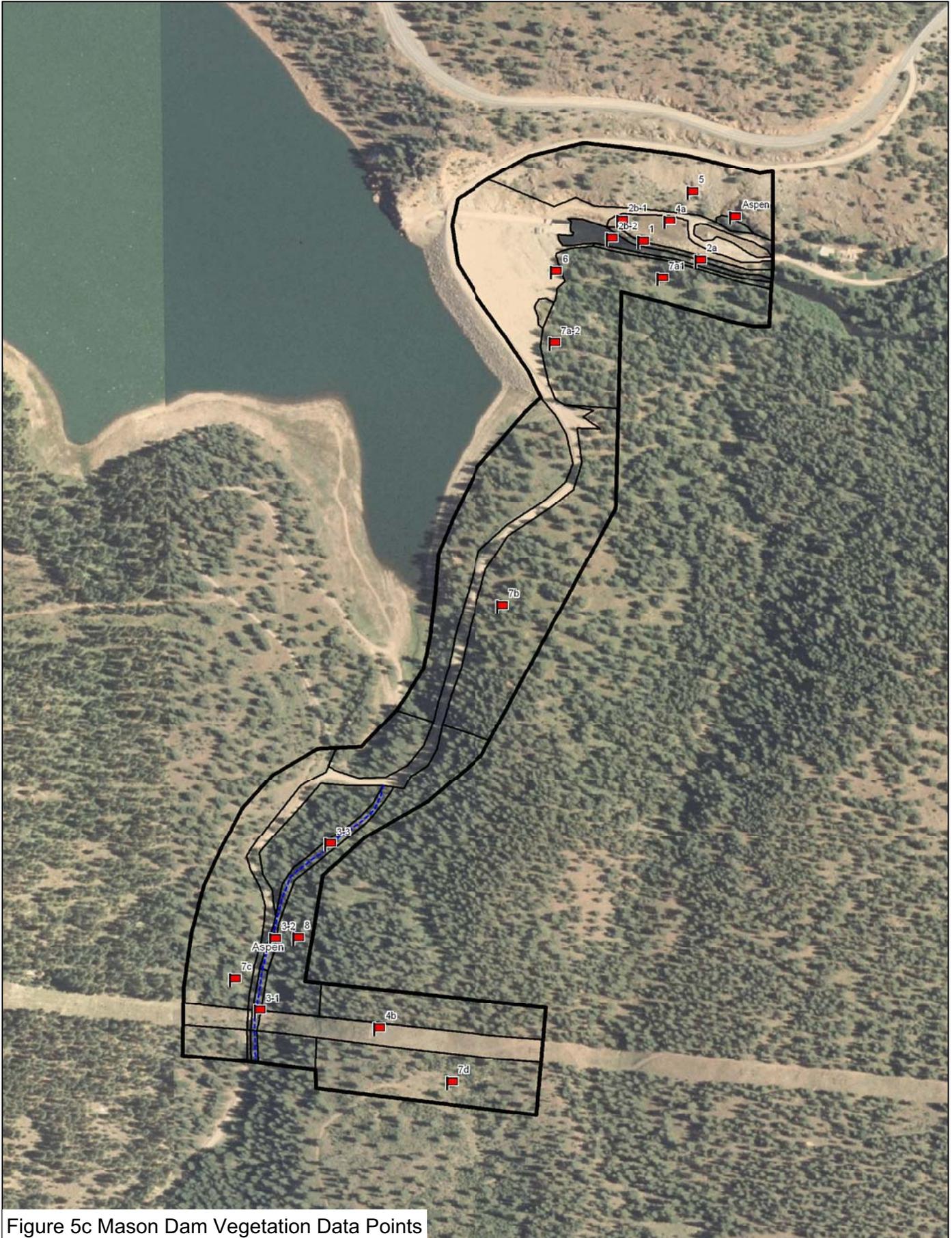


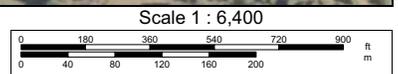
Figure 5c Mason Dam Vegetation Data Points

Data use subject to license.

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APPENDIX B
AGENCY LISTS

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

Greater sage-grouse
Olive-sided flycatcher
Willow flycatcher
Yellow-breasted chat
Lewis' woodpecker
Mountain quail
White-headed woodpecker

Centrocercus urophasianus
Contopus cooperi
Empidonax traillii adastus
Icteria virens
Melanerpes lewis
Oreortyx pictus
Plcooides albolarvatus

Reptiles and Amphibians

Rocky Mountain tailed frog
Northern sagebrush lizard

Ascaphus montanus
Sceloporus graciosus graciosus

Fish

Pacific lamprey

Lampetra tridentata

Invertebrates

Insects:

Blue Mountains cryptochian caddisfly

Cryptochia neosa

Plants

Wallowa ricegrass
Upward-lobed moonwort
Crenulate grape fern
Mountain grape fern
Twin-spike moonwort
Stalked moonwort
Clustered lady's-slipper
Cronquist's stickseed
Red-fruited desert parsley
Cusick's lupine
Snake River goldenweed
Biennial stanleya

Achnatherum wallowaensis
Botrychium ascendens
Botrychium crenulatum
Botrychium montanum
Botrychium paradoxum
Botrychium pedunculatum
Cypripedium fasciculatum
Hackelia cronquistii
Lomatium erythrocarpum
Lupinus cusickii
Pyrrocoma radiata
Stanleya confertiflora

DELISTED SPECIES

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.

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.

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

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.

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Threatened and Endangered Species:

The State of Oregon and the federal government maintain separate lists of Threatened and Endangered (T & E) species. These are species whose status is such that they are at some degree of risk of becoming extinct. View a list of the Oregon species listed by the state and federal governments (This will be a link to the table below).

Under State law (ORS 496.171-496.192)(<http://www.leg.state.or.us/ors/496.html>) the Fish and Wildlife Commission through ODFW maintains the list of native wildlife species in Oregon that have been determined to be either "threatened" or "endangered" according to criteria set forth by rule (OAR 635-100-0105)(<http://www.dfw.state.or.us/OARs/100.pdf>).

Plant listings are handled through the Oregon Department of Agriculture (<http://www.oregon.gov/ODA/PLANT/CONSERVATION/index.shtml>).

Most invertebrate listings are handled through the Oregon Natural Heritage Program (<http://oregonstate.edu/ornhic/inverts.html>).

Under federal law the U.S. Fish and Wildlife Service (<http://www.fws.gov/endangered/>) and National Oceanic and Atmospheric Administration (<http://www.nmfs.noaa.gov/pr/species/esa/>) share responsibility for implementing the federal Endangered Species Act of 1973 (Public Law 93-205, 16 U.S.C. § 1531), as amended (<http://epw.senate.gov/esa73.pdf>). In general, USFWS has oversight for land and freshwater species and NOAA for marine and anadromous species. In addition to information about species already listed, the USFWS-Oregon Field Office maintains a list of Species of Concern (<http://www.fws.gov/oregonfwo/Species/Lists/default.asp>).

Additional information about the federal programs in place in Oregon can be found at the following Web sites:

U.S. Fish and Wildlife-Oregon
<http://www.fws.gov/oregonfwo/>

Northwest Region of NOAA-Fisheries
<http://www.nwr.noaa.gov/ESA-Salmon-Listings/Index.cfm>

[List of Threatened and Endangered Wildlife Species in Oregon \[pdf\]](#) (link to pdf of list below (attached))

Threatened, Endangered, and Candidate Fish and Wildlife Species in Oregon (T=threatened, E=endangered, C=candidate, DPS=Distinct Population Segment)

| Common Name | Scientific Name | State status | Federal status |
|--|-------------------------------------|--------------|----------------|
| FISH | | | |
| Borax Lake Chub | <i>Gila boraxobius</i> | E | E |
| Lost River Sucker | <i>Deltistes luxatus</i> | E | E |
| Shortnose Sucker | <i>Chasmistes brevirostris</i> | E | E |
| Lower Columbia River Coho Salmon | <i>Oncorhynchus kisutch</i> | E | T |
| Modoc sucker | <i>Catostomus microps</i> | | E |
| Oregon Chub | <i>Oregonichthys crameri</i> | | E |
| Snake River Sockeye Salmon | <i>Oncorhynchus nerka</i> | | E |
| Upper Columbia River Spring Chinook Salmon | <i>Oncorhynchus tshawytscha</i> | | E |
| Foskett Speckled Dace | <i>Rhinichthys osculus</i> ssp | T | T |
| Hutton Spring Tui Chub | <i>Gila bicolor</i> ssp. | T | T |
| Lahontan Cutthroat Trout | <i>Oncorhynchus clarki henshawi</i> | T | T |
| Snake River Chinook Salmon (Fall) | <i>Oncorhynchus tshawytscha</i> | T | T |
| Snake River Chinook Salmon (Spring/Summer) | <i>Oncorhynchus tshawytscha</i> | T | T |
| Warner Sucker | <i>Catostomus warnerensis</i> | T | T |
| Green sturgeon (Southern DPS) | <i>Acipenser medirostris</i> | | T |

| Common Name | Scientific Name | State status | Federal status |
|--|--|--------------|-----------------------------|
| Columbia River Chum Salmon | <i>Oncorhynchus keta</i> | | T |
| Southern Oregon Coho Salmon | <i>Oncorhynchus kisutch</i> | | T |
| Lower Columbia River Steelhead | <i>Oncorhynchus mykiss</i> | | T |
| Middle Columbia River Steelhead | <i>Oncorhynchus mykiss</i> | | T |
| Snake River Steelhead | <i>Oncorhynchus mykiss</i> | | T |
| Upper Willamette River Steelhead | <i>Oncorhynchus mykiss</i> | | T |
| Lower Columbia River Chinook Salmon | <i>Oncorhynchus tshawytscha</i> | | T |
| Upper Willamette River Chinook Salmon | <i>Oncorhynchus tshawytscha</i> | | T |
| Bull Trout (Columbia DPS) | <i>Salvelinus confluentus</i> | | T |
| Bull Trout (Klamath DPS) | <i>Salvelinus confluentus</i> | | T |
| AMPHIBIANS AND REPTILES | | | |
| Green Sea Turtle | <i>Chelonia mydas</i> | E | E |
| Leatherback Sea Turtle | <i>Dermochelys coriacea</i> | E | E |
| Loggerhead Sea Turtle | <i>Caretta caretta</i> | T | T |
| Pacific Ridley Sea Turtle | <i>Lepidochelys olivacea</i> | T | T |
| Columbia spotted frog | <i>Rana luteiventris</i> | | C |
| Oregon spotted frog | <i>Rana pretiosa</i> | | C |
| BIRDS | | | |
| Short-tailed Albatross | <i>Diomedea albatrus</i> | E | E |
| Brown Pelican | <i>Pelecanus occidentalis</i> | E | E |
| California Least Tern | <i>Sterna antillarum browni</i> | E | E |
| Marbled Murrelet | <i>Brachyramphus marmoratus</i> | T | T |
| Northern Spotted Owl | <i>Strix occidentalis caurina</i> | T | T |
| Western Snowy Plover | <i>Charadrius alexandrinus nivosus</i> | T | T (Coastal population only) |
| Bald Eagle | <i>Haliaeetus leucocephalus</i> | T | |
| Yellow-billed cuckoo | <i>Coccyzus americanus</i> | | C |
| Streaked horned lark | <i>Eremophila alpestris strigata</i> | | C |
| MAMMALS | | | |
| Blue Whale | <i>Balaenoptera musculus</i> | E | E |
| Fin Whale | <i>Balaenoptera physalus</i> | E | E |
| Gray Wolf | <i>Canis lupus</i> | E | E |
| Humpback Whale | <i>Megaptera novaeangliae</i> | E | E |
| MAMMALS (cont'd) | | | |
| North Pacific Right Whale | <i>Eubalaena japonica</i> | E | E |
| Sei Whale | <i>Balaenoptera borealis</i> | E | E |
| Sperm Whale | <i>Physeter macrocephalus</i> | E | E |
| Sea Otter | <i>Enhydra lutris</i> | T | T |
| Columbian White-tailed Deer (Lower Columbia River population only) | <i>Odocoileus virginianus leucurus</i> | | E |
| Gray Whale | <i>Eschrichtius robustus</i> | E | |
| Washington Ground Squirrel | <i>Spermophilus washingtoni</i> | E | |
| Kit Fox | <i>Vulpes macrotis</i> | T | |
| Wolverine | <i>Gulo gulo</i> | T | |
| Northern (Steller) Sea Lion | <i>Eumetopias jubatus</i> | | T |
| Fisher | <i>Martes pennanti</i> | | C |

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 | ISSSSP Status | WAW | Mason Dam area |
|-------|-----------------------------|-----------------------------------|------------------------|----------------|-------------|------------------|---------------|---------------|-----|----------------|
| MA | CANIS LUPUS | GRAY WOLF | | FT | 2003 | None in OR or WA | Final 1987 | | D | UNKL |
| MA | LYNX CANADENSIS | CANADA LYNX | | FT | 2000 | Designated 2006 | None | | D | N |
| 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 | |
| FN | SALVELINUS CONFLUENTUS | BULL TROUT | COLUMBIA RIVER | FT | 6/10/1998 | Final 2005 | Draft 2002 | | D | Y |
| IG | CRYPTOMASTIX POPULI | HELLS CANYON LAND SNAIL | | | | | | SEN | S | N |
| IG | FISHEROLA NUTTALLI | SHORTFACE LANX | | | | | | SEN | D | |
| IG | FLUMINICOLA FUSCUS | COLUMBIA PEBBLESNAIL | | | | | | SEN | D | |
| IBI | GONDEA ANGULATA | WESTERN RIDGED MUSSEL | | | | | | SEN | S | |
| IG | POLYGYRELLA POLYGYRELLA | HUMPED COIN | | | | | | STR | S | UNK |
| IG | PRISTILOMA WASCOENSE | SHINY TIGHTCOIL | | | | | | STR | S | UNK |
| IG | PRISTINICOLA HEMPHILLI | PRISTINE SPRINGSNAIL | | | | | | STR | D | UNK |
| IG | RADIODISCUS ALBIETUM | FIR PINWHEEL | | | | | | SEN | S | N |
| IIIE | BOLORIA BELLONA | MEADOW FRITILLARY | | | | | | SEN | S | N |
| IIIE | BOLORIA SELENE | SILVER-BORDERED FRITILLARY | | | | | | SEN | S | N |
| IIIE | CALLOPHRYX JOHNSONI | JOHNSON'S HAIRSTREAK | | | | | | SEN | S | N |
| BI | BARTRAMIA LONGICAUDA | UPLAND SANDPIPER | | | | | | SEN | D | Y |
| BI | BUCEPHALA ALBEOLA | BUFFLEHEAD | | | | | | SEN | S | UNKL |
| BI | CENTROCERCUS UROPHASIANUS | GREATER SAGE-GROUSE | | | | | | SEN | S | N |
| BI | FALCO PEREGRINUS ANATUM | AMERICAN PEREGRINE FALCON | | | | | | SEN | D | N |
| BI | HALIAETUS LEUCOCEPHALUS | BALD EAGLE | | | | | | SEN | D | Y |
| BI | MELANERPES LEWIS | LEWIS' WOODPECKER | | | | | | SEN | D | UNKL |
| BI | PICOIDES ALBOLARVATUS | WHITE-HEADED WOODPECKER | | | | | | SEN | D | Y |
| BI | SELASPHORUS PLATYCERCUS | BROAD-TAILED HUMMINGBIRD | | | | | | STR | S | UNK |
| BI | PINICOLA ENUCLEATOR | PINE GROSBEEK | | | | | | STR | D | N |
| BI | TYMPANUCHUS PHASIANELLUS | COLUMBIAN SHARP-TAILED GROUSE | | | | | | SEN | D | N |
| BI | COLUMBIANUS | INLAND TAILED FROG | | | | | | SEN | D | N |
| HA | ASCAPHUS MONTANUS | COLUMBIA SPOTTED FROG | GREAT BASIN DPS | | | | | SEN | D | UNK |
| HA | RANA LUTEIVENTRIS | CALIFORNIA WOLVERINE | OUTSIDE WEST COAST DPS | | | | | SEN | D | N |
| MA | GULO GULO LUTEUS | FISHER | | | | | | SEN | S | N |
| MA | MARTES PENNANTI | WESTSLOPE CUTTHROAT TROUT | | | | | | SEN | D | UNK |
| FN | ONCORHYNCHUS CLARKII LEWISI | INLAND REDBAND TROUT (All stocks) | | | | | | SEN | D | Y |
| FN | ONCORHYNCHUS MYKISS | | | | | | | SEN | D | Y |

| Taxon | ScientificName | CommonName | ESU_DPS | Federal Status | Date Listed | Critical Habitat | Recovery Plan | ISSSSP Status | WAW | Mason Dam area |
|-------|--|---------------------------|---------|----------------|-------------|------------------|---------------|---------------|-----|----------------|
| BR | BARBILOPHOZIA LYCOPODIOIDES | LIVERWORT | | | | | | SEN | D | UNK |
| BR | ENCALYPTA INTERMEDIA | MOSS | | | | | | SEN | D | UNK |
| BR | HELODIUM BLANDOWII | MOSS | | | | | | SEN | S | UNK |
| BR | JUNGERMANNIA POLARIS | LIVERWORT | | | | | | SEN | D | UNK |
| BR | PELTOLEPIS QUADRATA | LIVERWORT | | | | | | SEN | D | UNK |
| BR | PTILIDIUM PULCHERRIMUM | LIVERWORT | | | | | | SEN | S | UNK |
| BR | RHIZOMNIUM NUUDUM (*) | MOSS | | | | | | SEN | S | UNK |
| BR | SCHISTIIDIUM CINCLIDODONTEUM | MOSS | | | | | | SEN | D | UNK |
| BR | SCHISTOSTEGA PENNATA (*) | MOSS | | | | | | SEN | S | UNK |
| BR | SCOULERIA MARGINATA | MOSS | | | | | | STR | S | UNK |
| BR | SPLACHNUM AMPULLACEUM | MOSS | | | | | | SEN | S | UNK |
| BR | TETRAPHIS GENICULATA (*) | MOSS | | | | | | SEN | S | UNK |
| BR | TOMETYPNUM NITENS | MOSS | | | | | | SEN | S | UNK |
| BR | TORTULA MUCRONIFOLIA | MOSS | | | | | | SEN | S | UNK |
| BR | DERMATOCARPUS METOPHYLLIZUM (*) | LICHEN | | | | | | SEN | S | UNK |
| LI | LEPTOGIUM BURNETIAE (*) | LICHEN | | | | | | SEN | S | UNK |
| LI | LEPTOGIUM CYANESCENS (*) | LICHEN | | | | | | SEN | S | UNK |
| LI | PELTIGERA PACIFICA (*) | LICHEN | | | | | | SEN | S | UNK |
| VA | ACHNATHERUM WALLOWAENSIS | WALLOWA RICEGRASS | | | | | | SEN | D | N |
| VA | ALLIUM GEYERI VAR. GEYERI | GEYER'S ONION | | | | | | SEN | D | N |
| VA | ARABIS HASTATULA | HELLS CANYON ROCKCRESS | | | | | | SEN | D | N |
| VA | ASPLENIUM TRICHOMANES-RAMOSUM | GREEN SPLEENWORT | | | | | | SEN | D | N |
| VA | BOTRYCHIUM ASCENDENS | UPWARD-LOBED MOONWORT | | | | | | SEN | D | Y |
| VA | BOTRYCHIUM CAMPESTRE | PRAIRIE MOONWORT | | | | | | SEN | D | Y |
| VA | BOTRYCHIUM CRENULATUM | CRENULATE MOONWORT | | | | | | SEN | D | Y |
| VA | BOTRYCHIUM HESPERIUM | WESTERN MOONWORT | | | | | | STR | D | Y |
| VA | BOTRYCHIUM LINEARE | SLENDER MOONWORT | | | | | | SEN | D | Y |
| VA | BOTRYCHIUM LUNARIA | MOONWORT | | | | | | SEN | D | Y |
| VA | BOTRYCHIUM MINGANENSE (*) | GRAY MOONWORT | | | | | | SEN | D | Y |
| VA | BOTRYCHIUM MONTANUM | MOUNTAIN GRAPE-FERN | | | | | | SEN | D | Y |
| VA | BOTRYCHIUM PARADOXUM | TWIN-SPIKED MOONWORT | | | | | | SEN | D | Y |
| VA | BOTRYCHIUM PEDUNCULOSUM | STALKED MOONWORT | | | | | | SEN | D | Y |
| VA | BUPLEURUM AMERICANUM | BUPLEURUM | | | | | | SEN | D | N |
| VA | CALOCHORTUS MACROCARPUS VAR. MACULOSUS | GREEN-BAND MARIPOSA-LILY | | | | | | SEN | D | Y |
| VA | CALOCHORTUS NITIDUS | BROAD-FRUIT MARIPOSA-LILY | | | | | | SEN | D | N |
| VA | CAREX ABRUPTA | ABRUPT-BEAKED SEDGE | | | | | | SEN | D | N |
| VA | CAREX ATROSQUAMA | BLACKENED SEDGE | | | | | | SEN | D | N |
| VA | CAREX CAPITATA | CAPITATE SEDGE | | | | | | SEN | S | N |
| VA | CAREX CORDILLERANA | CORDILLERAN SEDGE | | | | | | SEN | D | N |

| Taxon | ScientificName | CommonName | ESU_DPS | Federal Status | Date Listed | Critical Habitat | Recovery Plan | ISSSP Status | WAW | Mason Dam area |
|-------|-----------------------------------|------------------------------|---------|----------------|-------------|------------------|---------------|--------------|-----|----------------|
| VA | CAREX DIANDRA | LESSER PANICLED SEDGE | | | | | | SEN | S | N |
| VA | CAREX DIOICA (VAR. GYNOCRATES) | YELLOW BOG SEDGE | | | | | | SEN | D | N |
| VA | CAREX IDAHOA | IDAHO SEDGE | | | | | | SEN | S | N |
| VA | CAREX LASIOCARPA VAR. AMERICANA | SLENDER SEDGE | | | | | | SEN | D | Y |
| VA | CAREX MEDIA | INTERMEDIATE SEDGE | | | | | | SEN | D | N |
| VA | CAREX NARDINA | SPIKENARD SEDGE | | | | | | SEN | D | N |
| VA | CAREX PELOCARPA | NEW SEDGE | | | | | | SEN | D | N |
| VA | CAREX PYRENAICA SSP. MICROPODA | PYRENAEAN SEDGE | | | | | | SEN | D | N |
| VA | CAREX RETRORSA | RETROSE SEDGE | | | | | | SEN | D | Y |
| VA | CAREX SUBNIGRICANS | DARK ALPINE SEDGE | | | | | | SEN | D | N |
| VA | CAREX VERNACULA | NATIVE SEDGE | | | | | | SEN | D | N |
| VA | CASTILLEJA FRATERNA | FRATERNAL PAINTBRUSH | | | | | | SEN | D | N |
| VA | CASTILLEJA RUBIDA | PURPLE ALPINE PAINTBRUSH | | | | | | SEN | D | N |
| VA | CHEILANTHES FEEI | FEE'S LIP-FERN | | | | | | STR | S | N |
| VA | CRYPTOGRAMMA STELLERI | STELLER'S ROCKBRAKE | | | | | | SEN | S | Y |
| VA | CYPERUS LUPULINUS SSP. LUPULINUS | A CYPERUS | | | | | | SEN | D | Y |
| VA | CYPRIPEDIUM FASCICULATUM (*) | CLUSTERED LADY'S-SLIPPER | | | | | | SEN | D | Y |
| VA | ELATINE BRACHYSPERMA | SHORT SEEDED WATERWORT | | | | | | SEN | S | Y |
| VA | ELEOCHARIS BOLANDERI | BOLANDER'S SPIKERUSH | | | | | | SEN | S | Y |
| VA | ERIGERON DISPARIPILUS | WHITE CUSHION ERIGERON | | | | | | SEN | D | N |
| VA | ERIGERON ENGELMANNII VAR. DAVISII | ENGELMANN'S DAISY | | | | | | SEN | D | N |
| VA | GENTIANA PROSTRATA | MOSS GENTIAN | | | | | | SEN | S | N |
| VA | GENTIANELLA TENELLA SSP. TENELLA | SLENDER GENTIAN | | | | | | SEN | S | N |
| VA | HELIOTROPIMUM CURASSAVICUM | SALT HELIOTROPE | | | | | | SEN | S | N |
| VA | JUNCUS TRIGLOMIS VAR. ALBESCENS | THREE-FLOWERED RUSH | | | | | | SEN | D | N |
| VA | KOBRESIA BELLARDII | BELLARD'S KOBRESIA | | | | | | SEN | D | N |
| VA | KOBRESIA SIMPLICIUSCULA | SIMPLE KOBRESIA | | | | | | SEN | D | N |
| VA | LIPOCARPHA ARISTULATA | ARISTULATE LIPOCARPHA | | | | | | SEN | D | N |
| VA | LISTERA BOREALIS | NORTHERN TWAYBLADE | | | | | | SEN | D | N |
| VA | LOMATIUM RAVENII | RAVEN'S LOMATIUM | | | | | | SEN | S | N |
| VA | LYCOPODIUM COMPLANATUM | GROUND CEDAR | | | | | | SEN | D | N |
| VA | MIMULUS HYMENOPHYLLUS | MEMBRANE-LEAVED MONKEYFLOWER | | | | | | SEN | D | Y |
| VA | MUHLENBERGIA MINUTISSIMA | ANNUAL DROPSEED | | | | | | SEN | S | N |
| VA | OPHIOGLOSSUM PUSILLUM | ADDER'S-TONGUE | | | | | | SEN | D | N |
| VA | PELLAEA BRIDGESII | BRIDGES' CLIFF-BRAKE | | | | | | SEN | D | N |
| VA | PHACELIA MINUTISSIMA | DWARF PHACELIA | | | | | | SEN | D | Y |
| VA | PHLOX MULTIFLORA | MANY-FLOWERED PHLOX | | | | | | SEN | D | Y |
| VA | PLATANATHERA OBTUSATA | SMALL NORTHERN BOG-ORCHID | | | | | | SEN | D | Y |

| Taxon | ScientificName | CommonName | ESU_DPS | Federal Status | Date Listed | Critical Habitat | Recovery Plan | ISSSSP Status | WAW | Mason Dam area |
|-------|--------------------------------|-----------------------|---------|----------------|-------------|------------------|---------------|---------------|-----|----------------|
| VA | PLEUROFOGON OREGONUS | OREGON SEMAPHOREGRASS | | | | | | SEN | S | N |
| VA | POTAMOGETON DIVERSIFOLIUS | RAFINESQUE'S PONDWEED | | | | | | SEN | S | Y |
| VA | RORIPPA COLUMBIAE | COLUMBIA CRESS | | | | | | SEN | S | N |
| VA | ROTALA RAMOSIOR | LOWLAND TOOTHCUP | | | | | | SEN | S | Y |
| VA | RUBUS BARTONIANUS | BARTONBERRY | | | | | | SEN | D | N |
| VA | SALIX FARRIAE | FARR'S WILLOW | | | | | | SEN | D | N |
| VA | SALIX WOLFI | WOLF'S WILLOW | | | | | | SEN | D | N |
| VA | SAXIFRAGA ADSCENDENS SSP. | WEDGE-LEAF SAXIFRAGE | | | | | | SEN | D | N |
| VA | OREGONENSIS | PAYSON'S GROUNDSEL | | | | | | SEN | D | N |
| VA | SENECIO DIMORPHOPHYLLUS | VIOLET SUKSDORFIA | | | | | | SEN | S | N |
| VA | SUKSDORFIA VIOLACEA | ALPINE MEADOWRUE | | | | | | SEN | D | N |
| VA | THALICTRUM ALPINUM | ARROW-LEAF THELYPODY | | | | | | SEN | S | N |
| VA | THELYPODIUM EUCOSMUM | MOUNTAIN TOWNSENDIA | | | | | | SEN | D | N |
| VA | TOWNSENDIA MONTANA | PARRY'S TOWNSENDIA | | | | | | SEN | D | N |
| VA | TOWNSENDIA PARRYI | DOUGLAS' CLOVER | | | | | | SEN | D | Y |
| VA | TRIFOLIUM DOUGLASII | | | | | | | SEN | D | Y |
| VA | TROLLIUS LAXUS VAR. ALBIFLORUS | AMERICAN GLOBEFLOWER | | | | | | SEN | D | N |
| VA | UTRICULARIA MINOR | LESSER BLADDERWORT | | | | | | SEN | S | N |

Taxon:

Federal Status:

FE = Federal Endangered

FT = Federal Threatened

FPT = Federal Proposed Threatened

Non-Vascular Plants

BR = Bryophytes

LI = Lichens

Invertebrates

IA = Class Arachnida: Spiders, Scorpions, Mites & Ticks

IBI = Class Bivalva: Clams, Oysters & Mussels

ICL = Class Clitellata: Leeches & Earthworms

ICR = Class Crustacea: Crustaceans

IG = Class Gastropoda: Snails & Slugs

IIC = Order Collembola: Springtails

IICO = Order Coleoptera: Beetles & Weevils

IIHE = Order Hemiptera: True Bugs

IIHY = Order Hymenoptera: Ants, Bees & Wasps

IILE = Order Lepidoptera: Butterflies & Moths

IIOD = Order Odonata: Dragonflies & Damselflies

IIOR = Order Orthoptera: Grasshoppers, Crickets & Roaches

IIPL = Order Plecoptera: Stoneflies

IIIR = Order Trichoptera: Caddisflies & Water Moths

IT = Class Turbellaria: Flatworms

Vertebrates

BI = Birds

HA = Amphibians

HR = Reptiles

MA = Mammals

FA = Anadromous Fish

FN = Non-anadromous Fish

Vascular

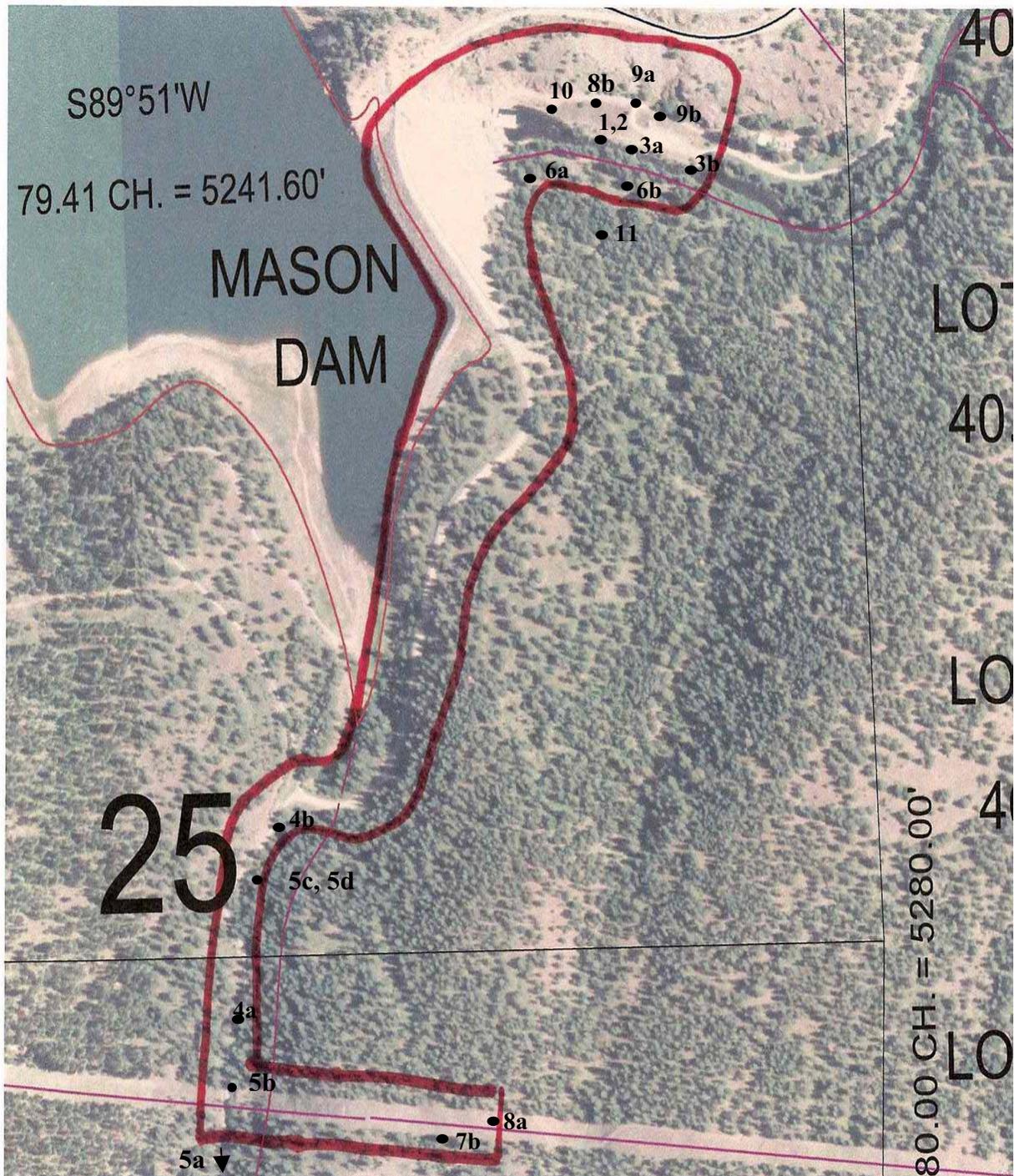
VA = Vascular Plants

ISSSSP Status:

SEN = Sensitive in OR

STR = Strategic in OR

APPENDIX C
REPRESENTATIVE HABITAT PHOTOGRAPHS



Appendix C. Approximate Location of Representative Habitat Photographs.



Figure C-1. Powder River below Mason Dam, July 2008 (top) and the Channel Bed Early October 2008 (bottom). Compare the top photograph to figure C-2 to see the amount of seasonal lateral fluctuation. The bottom photograph shows the cobble bed substrate and the dense macrophyte and algal beds limiting mussel habitat.



Figure C-2. Powder River Riparian Habitat below Mason Dam. Note the large zone of fluctuation (area of exposed cobble) and the narrow extent of riparian vegetation. These features plus the presence of fish predators limits this habitat for spotted frog. The lack of shrub cover limits the habitat for riparian-dependent bird species. There is no habitat for listed plant species

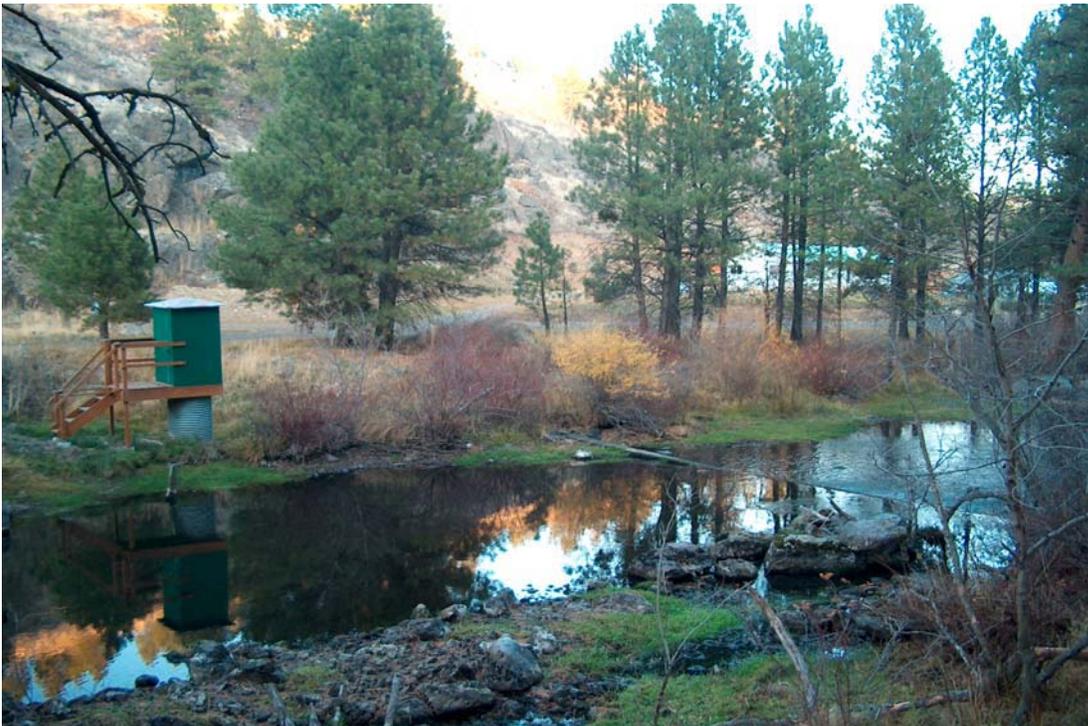


Figure C-3. Powder River Riparian Habitat at the FS Recreation Area Bridge (top) and the Eastern Study Area Boundary (bottom). Evidence of lateral water level fluctuations is still evident, although reduced. TES habitat is limited by the same factors as listed in figure C-2.



Figure C-4. Unnamed Phillips Lake Tributary, October 2007. There is little sediment in the channel, with seasonal water level fluctuations of 6 to 12 inches. The high stream power, water level changes and narrowness of the riparian corridor limit the tributary as spotted frog and TES riparian bird species habitat.



Figure C-5c. Aspens with the 0.12 acre aspen clump along the tributary.



Figure C-5d. Aspen-dominated riparian wetland along the unnamed tributary.



Figure C-6. Ponderosa Pine Forest in the Mason Dam Study Area. The forest is open and generally lacks snags. The largest trees occur within or adjacent to the recreational areas.



Figure C-7. Young PIPO/CAGE pine forest (top) and mid-successional mixed forest (PSME/CAGE2) (bottom).



Figure C-8. Transmission line grassland (top) and parking lot grassland (below).



Figure C-9a. Talus Slope/Rock Outcrops along FS Road 1145. The slopes contain numerous human trails, including trails to the small outcrop openings in the top photo.



Figure C-9b. Aspen Seep East of FS Road 1145. Although supporting wetland plants and providing potential microhabitats for sensitive mosses, no sensitive moss species were located.



Figure C-10. Boulders in the Powder River Recreation Area, July and October 2008. The lichen flora on the boulders is diverse but contains common and widespread lichen species such as *Xanthoria elegans* (orange, bottom photo) and *Umbilicaria hyperborea* (dark brown, bottom photo).



Figure C-11. Potential TES Enhancement Area. The rock outcrops with numerous fissures and small openings, combined with a lack of human disturbance and adjacent forest cover make this adjacent area suitable for TES habitat enhancement.

APPENDIX D

PLANT SPECIES OBSERVED DURING TES FIELD ASSESSMENTS

| Vegetation Type | Veg Status* | NRCS PLANTS Code | Scientific Name | WETLAND/RIP | | | | UPLAND | | | | | | | |
|-----------------|-------------|------------------|---|-------------|-------|----|---------|--------|-------|--------|--------|--------|-------|-------|--|
| | | | | AQUATIC | FO/SS | WM | Trib SS | GR | Talus | Pipo-1 | Pipo-2 | Pipo-3 | Young | Mixed | |
| | 1 | 2 | 3a | 3b | 4 | 5 | 7a | 7b | 7c | 7d | 8 | | | | |
| Tree | N | ABGR | Abies grandis | | | | | | | | | | | | |
| Tree | NN | ACPL | Acer platanoides | | | | | | | | | | | | |
| Tree | N | BEPA | Betula papyrifera | | | | | | | | | | | | |
| Tree | N | JUOC | Juniperus occidentalis | | | | | | | | | | | | |
| Tree | N | LAOC | Larix occidentalis | | | | | | | | | | | | |
| Tree | N | PICO | Pinus contorta | | | | | | | | | | | | |
| Tree | N | PIPO | Pinus ponderosa | | | | | | | | | | | | |
| Tree | N | POBAT | Populus balsamifera ssp. trichocarpa (P. trichocarpa) | | | | | | | | | | | | |
| Tree | N | POTR5 | Populus tremuloides | | | | | | | | | | | | |
| Tree | N | PREM | Prunus emarginata | | | | | | | | | | | | |
| Tree | N | PSME | Pseudotsuga menziesii | | | | | | | | | | | | |
| Tree | N | SAAM2 | Salix amygdaloides | | | | | | | | | | | | |
| Tree | N | SALUC | Salix lucida ssp. caudata (S. lasianдра var. caudata) | | | | | | | | | | | | |
| Shrub | N | ALIN2 | Alnus incana | | | | | | | | | | | | |
| Shrub | N | AMAL2 | Amelanchier alnifolia | | | | | | | | | | | | |
| Shrub | N | ARTR2 | Artemisia tridentata | | | | | | | | | | | | |
| Shrub | N | CELE3 | Cercocarpus ledifolius | | | | | | | | | | | | |
| Shrub | N | CHV18 | Chrysothamnus viscidiflorus | | | | | | | | | | | | |
| Shrub | N | C05E16 | Cornus sericea (C. stolonifera) | | | | | | | | | | | | |
| Shrub | N | CRDO2 | Crataegus douglasii | | | | | | | | | | | | |
| Shrub | N | ERNA10 | Ericameria nauseosa (Chrysothamnus nauseosus) | | | | | | | | | | | | |
| Shrub | N | LOIN5 | Lonicera involucrata | | | | | | | | | | | | |

| Vegetation Type | Veg Status N=Native NN=Nonnative U=Unknown | NRCS PLANTS Code | Scientific Name |
|-----------------|---|---------------------|--|
| Non-vasc lichen | N | BRYOR2 | Bryoria sp. |
| Non-vasc lichen | N | DEMI60 | Dermatocarpon miniatum |
| Non-vasc lichen | N | LEGA4 | Lecanora garovaglii |
| Non-vasc lichen | N | LELI60 | Leptogium lichenoides |
| Non-vasc lichen | N | LEVU2 | Letharia vulpina |
| Non-vasc lichen | N | MEEL5 | Melanelia elegantula |
| Non-vasc lichen | N | NOAB | Nodobryoria abbreviata |
| Non-vasc lichen | N | PHDE18 | Phaeophyscia decolor |
| Non-vasc lichen | N | PHSC60 | Phaeophyscia sciastra |
| Non-vasc lichen | N | UMHY2 | Umbilicaria hyperborea |
| Non-vasc lichen | N | XAEL60 | Xanthoria elegans |
| Liverwort | N | MAPO16 | Marchantia polymorpha (outside study area) |
| Moss | N | DICRA8 | Dicranum spp. |
| Moss | U | na | Distichum capillaceum |
| Moss | N | ENRH70 | Encalypta raptocarpa (E. raptocarpa) |
| Moss | N | POHLI2 | Pohlia sp. |
| Moss | N | POJU70 | Polytrichum juniperinum |

APPENDIX E
WILDLIFE SPECIES/SIGN OBSERVED DURING TES 2007 AND 2008
FIELD ASSESSMENTS

| Table E-1. Wildlife Species or Sign Observed in the Mason Dam Study Area during TES 2007 and 2008 Field Assessments. | | | | | | | | | |
|--|------------|---------------|----------------|--------------|------------------|-------------------|-----------|------------|--|
| Species | Open Water | Riparian Herb | Riparian Shrub | Mixed Forest | Open Pine Forest | Young Pine Forest | Grassland | Rock/Talus | |
| Raptors | | | | | | | | | |
| <i>Aquila chrysaetus</i> Golden eagle | | | | X | | | | | |
| <i>Buteo jamaicensis</i> Red Tailed Hawk | X | | | | | | | X | |
| <i>Haliaeetus leucocephalus</i> Bald eagle | X | | | | | | | | |
| <i>Pandion haliaetus</i> Osprey | X | | | | | | | | |
| Waterfowl | | | | | | | | | |
| <i>Anas platyrhynchos</i> Mallard | X | | | | | | | | |
| <i>Mergus merganser</i> Common merganser | X | | | | | | | | |
| Other Birds | | | | | | | | | |
| <i>Cinclus mexicanus</i> American dipper | X | | X | | | | | | |
| <i>Cyanocitta stelleri</i> Stellar's jay | | | | | X | | | | |

| Table E-1. Continued | | | | | | | | | | |
|---|--|--|--|--|--|---|--|---|---|---|
| <i>Parus atricapillus</i> Black capped chickadee | | | | | | | | X | | |
| <i>Parus gambeli</i> Mountain chickadee | | | | | | | | X | | |
| <i>Pica pica</i> Black-billed Magpie | | | | | | | | | X | |
| <i>Corvus corax</i> Raven | | | | | | | | | | X |
| <i>Picoides pubescens</i> Downy woodpecker | | | | | | | | X | | |
| <i>Sitta canadensis</i> Red breasted nuthatch | | | | | | X | | X | | |
| <i>Sitta pygmaea</i> Pygmy nuthatch * | | | | | | | | X | | |
| <i>Certhia americana</i> Brown creeper | | | | | | X | | X | | |
| <i>Sphyrapicus nuchalis</i> Red-naped sapsucker* | | | | | | | | | X | |
| <i>Turdus migratorius</i> American robin* | | | | | | | | | X | |
| Hummingbird* Species unknown | | | | | | | | | X | |
| <i>Salpinctes obsoletus</i> Rock wren | | | | | | | | | | X |
| Table E-1. Continued | | | | | | | | | | |
| <i>Chaetura vauxi</i> Vaux's Swift | | | | | | | | | | X |

| | | | | | | | | | | | | | | | | | | | | |
|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|
| Caspian tern <i>Sterna caspia</i> | X | | | | | | | | | | | | | | | | | | | |
| Mammals | | | | | | | | | | | | | | | | | | | | |
| <i>Odocoileus hemionus</i> Mule deer | X | | | | | | | | | | | | | | | | | | | X |
| <i>Cervus elaphus</i> Elk* | | | | | | | | | | | | | | | | | | | | X |
| <i>Castor canadensis</i> Beaver* | | | | | | | | | | | | | | | | | | | | |
| <i>Taxidea taxus</i> Badger* | | | | | | | | | | | | | | | | | | | | |
| <i>Tamias amoenus</i> Yellow pine chipmunk | | | | | | | | | | | | | | | | | | | | |
| <i>Tamiasciurus douglasii</i> Douglas squirrel | | | | | | | | | | | | | | | | | | | | |
| <i>Thomomys talpoides</i> Northern pocket gopher* | | | | | | | | | | | | | | | | | | | | X |
| Fish | | | | | | | | | | | | | | | | | | | | |
| <i>Perca flavescens</i> Yellow perch (carcass) | X | | | | | | | | | | | | | | | | | | | |
| * Sign only (tracks, scat, nests, other) | | | | | | | | | | | | | | | | | | | | |

APPENDIX F
VEGETATION STUDY DATA SHEETS

APPENDIX F-1
FS TES SURVEY FORMS

**USDA FOREST SERVICE 2008
PLANT SURVEY FIELD FORM
(® = Required Fields)**

General Information

| | | | | |
|---|----------------------|--|-------------------------------|------------------------------------|
| 1) SURVEY ID: ® 061601S00MD0078 | | 2) SURVEY NAME: MASON DAM PROJECT | | |
| 3) SURVEY STATUS: ® COMPLETE | | 4) TARGET: ® <i>TESP</i> | | 5) SOURCE OF WORK: CONTRACT |
| 6) Survey Type: ® GENERAL / SYSTEMATIC | | | | |
| 7) Survey Focus: ® TERRESTRIAL | | | | |
| 8) Estimate of Survey Area Size (acres): 34.63 | | | 9) No. of Traverses: 8 | |
| 10) Elevation: Min: 3910 Max: 4375 Average: 4090 | | | | 11) Elevation UOM: Feet |
| 12) State: ® | 13) County: ® | 14) Region: ® | 15) Forest: ® | 16) District: ® |
| OR | Baker | 06 | 16 | 01 |
| <p>17) Parameters of Survey (<i>Describe any ecological parameters, survey criteria or combinations of these used to focus the survey. (I.e., north slopes, specific habitat types, certain soils within certain forest conditions, survey timing, etc.):</i>)</p> <p>This survey includes upland habitats of dry coniferous Ponderosa pine and mixed coniferous forest.</p> | | | | |
| <p>18) Survey Comments (<i>Directions, area description, specific comments by visit date, etc.):</i>)</p> <p>See areas labeled "7a-1", "7a-2", "7b", "7c", "7d", and "8" of the attached map (Attachment 1) for a description of the survey. Attachment 1 is located at the end of all of the Mason Dam Project survey sheets.</p> | | | | |

Survey Visits

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

| 19) VISIT DATE ® | 20) LAST NAME ® AND FIRST NAME ® OF EXAMINERS FOR EACH VISIT |
|-------------------------|---|
| 10/30/2007 | GECY, LESLIE AND CHRISTIE, CHRIS |
| 11/01/2007 | GECY, LESLIE AND CHRISTIE, CHRIS |
| 11/02/2007 | GECY, LESLIE AND CHRISTIE, CHRIS |
| 07/23/2008 | GECY, LESLIE AND CHRISTIE, CHRIS |
| 07/29/2008 | GECY, LESLIE AND CHRISTIE, CHRIS |
| | |
| | |
| | |
| | |

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"

26) Completeness of species list: Complete **27) Cover Method** (if cover recorded): Actual

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

Only dominant plant information is provided below. See Attachment 2 for a complete species list for this survey.

| 29) NRCS Plant Code | 30) Scientific Name | 31) Life Form | 32) Habitat | 33) % Cover or Class | 34) Non- native |
|---------------------------|---|---------------------|----------------|----------------------------|-----------------------|
| PIPO | <i>Pinus ponderosa</i> | | Upland Forest | | n |
| PSME | <i>Pseudotsuga menziesii</i> | | Upland Forest | | n |
| PICO | <i>Pinus contorta</i> | | Upland Forest | | n |
| ABGR | <i>Abies grandis</i> | | Upland Forest | | n |
| JUOC | <i>Larix occidentalis</i> | | Upland Forest | | n |
| SYAL | <i>Symphoricarpos albus</i> | | Upland Forest | | n |
| PUTR2 | <i>Purshia tridentata</i> | | Upland Forest | | n |
| MARE11 | <i>Mahonia repens</i> | | Upland Forest | | n |
| CHVI8 | <i>Chrysothamnus viscidiflorus</i> | | Upland Forest | | n |
| SPBE2 | <i>Spiraea betulifolia</i> | | Upland Forest | | n |
| ROWO | <i>Rosa woodsii</i> | | Upland Forest | | n |
| THIN6 | <i>Thinopyrum intermedium</i> (<i>Agropyron trichophorum</i>) | | Upland Forest | | y* |
| FEID | <i>Festuca idahoensis</i> | | Upland Forest | | n |
| CARU | <i>Calamagrostis rubescens</i> | | Upland Forest | | n |
| CAGE2 | <i>Carex geyeri</i> | | Upland Forest | | n |
| BRCA5 | <i>Bromus carinatus</i> | | Upland Forest | | n |
| KOMA | <i>Koeleria macrantha</i> (<i>K. cristata</i>) | | Upland Forest | | n |
| ACMI2 | <i>Achillea millefolium</i> | | Upland Forest | | n |
| HEUN | <i>Helianthella uniflora</i> | | Upland Forest | | n |
| LUPIN | <i>Lupinus</i> spp. | | Upland Forest | | n |
| FRVI | <i>Fragaria virginiana</i> | | Upland Forest | | n |
| PHPR3 | <i>Phleum pratense</i> | | Upland Forest | | y* |
| POPR | <i>Poa pratensis</i> | | Upland Forest | | y* |
| ELGL | <i>Elymus glaucus</i> | | Upland Forest | | n |
| ARCO9 | <i>Arnica cordifolia</i> | | Upland Forest | | n |
| | | | | | |

Optional Location Information

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

| | |
|--------------------------------|--|
| 35) USGS Quad Number: | 36) USGS Quad Name: Blue Canyon & Phillips Lake |
| 37) Forest Quad Number: | 38) Forest Quad Name: |

| | | | | |
|---|----------------------------|----------------------|-----------------------|------------------------|
| 39) Legal Description: Required where public land survey is available. | | | | |
| Meridian: | Township and Range: | | | |
| Section: _____ | Q Sec: _____ | QQ Sec: _____ | QQQ Sec: _____ | QQQQ Sec: _____ |

| | | | | |
|---|----------------|--------------------------------|--|--|
| 40) 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: | | |

| | |
|--------------------------|----------------------|
| 41) UTM | |
| UTM Datum: NAD 83 | UTM Zone: 11T |
| Easting: 0420984.0 | Northing: 4947007.0 |
| Easting: 0420849.0 | Northing: 4946928.0 |
| Easting: 0420780.0 | Northing: 4946602.0 |
| Easting: 0420440.0 | Northing: 4946141.6 |
| Easting: 0420708.2 | Northing: 4946009.8 |
| Easting: 0420519.0 | Northing: 4946192.0 |

| | |
|--|-----------------|
| 42) GPS Equipment: Manufacturer: Garmin | Model: V |
|--|-----------------|

| |
|-----------------------------|
| 43) Metes and Bounds |
| |

44) Directions to Survey Area

From Baker City, Oregon travel southwest (towards Sumpter) on State Highway 7 for approximately 16 miles until you reach the Powder River Recreation Area. Turn left at the second entrance and continue west to the parking area closest to the dam. The survey area can be accessed from there (see Attachments 1).

45) Sketch of Survey Area

| | |
|---|-------------------------|
|  | <p>SEE ATTACHMENT 1</p> |
|---|-------------------------|

COMPLETE SPECIES LIST OF UPLAND FOREST TESP SURVEY

| NRCS PLANTS Code | Scientific Name | Vegetation Type | Habitat | Veg Status N=Native NN=Nonnative U=Unknown |
|---------------------------------|---|------------------------|----------------|--|
| ABGR | <i>Abies grandis</i> | Tree | Upland Forest | N |
| JUOC | <i>Juniperus occidentalis</i> | Tree | Upland Forest | N |
| LAOC | <i>Larix occidentalis</i> | Tree | Upland Forest | N |
| PICO | <i>Pinus contorta</i> | Tree | Upland Forest | N |
| PIPO | <i>Pinus ponderosa</i> | Tree | Upland Forest | N |
| PSME | <i>Pseudotsuga menziesii</i> | Tree | Upland Forest | N |
| CHVT8 | <i>Chrysothamnus viscidiflorus</i> | Shrub | Upland Forest | N |
| MARE11 | <i>Mahonia repens</i> | Shrub | Upland Forest | N |
| PUTR2 | <i>Purshia tridentata</i> | Shrub | Upland Forest | N |
| RIHU | <i>Ribes hudsonianum</i> | Shrub | Upland Forest | N |
| RICE | <i>Ribes cereum</i> | Shrub | Upland Forest | N |
| RIVI3 | <i>Ribes viscosissimum</i> | Shrub | Upland Forest | N |
| ROWO | <i>Rosa woodsii</i> | Shrub | Upland Forest | N |
| SPBE2 | <i>Spiraea betulifolia</i> | Shrub | Upland Forest | N |
| SYAL | <i>Symphoricarpos albus</i> | Shrub | Upland Forest | N |
| BRCA5 | <i>Bromus carinatus</i> | Herb Monocot | Upland Forest | N |
| BRTE | <i>Bromus tectorum</i> | Herb Monocot | Upland Forest | NN |
| CARU | <i>Calamagrostis rubescens</i> | Herb Monocot | Upland Forest | N |
| CAMAM9 | <i>Calochortus macrocarpus var. macrocarpus</i> | Herb Monocot | Upland Forest | N |
| CACO11 | <i>Carex concinnoides</i> | Herb Monocot | Upland Forest | N |
| CAGE2 | <i>Carex geyeri</i> | Herb Monocot | Upland Forest | N |
| ELEL5 | <i>Elymus elymoides (Sitanion hystrix)</i> | Herb Monocot | Upland Forest | N |
| ELGL | <i>Elymus glaucus</i> | Herb Monocot | Upland Forest | N |
| FEID | <i>Festuca idahoensis</i> | Herb Monocot | Upland Forest | N |
| FESU | <i>Festuca subulata</i> | Herb Monocot | Upland Forest | N |
| FRAT | <i>Fritillaria atropurpurea</i> | Herb Monocot | Upland Forest | N |
| IRMI | <i>Iris missouriensis</i> | Herb Monocot | Upland Forest | N |
| KOMA | <i>Koeleria macrantha (K. cristata)</i> | Herb Monocot | Upland Forest | N |

| | | | | |
|--------|---|--------------|---------------|--------|
| PHPR3 | <i>Phleum pratense</i> | Herb Monocot | Upland Forest | NN |
| POPR | <i>Poa pratensis</i> | Herb Monocot | Upland Forest | NN |
| POSE | <i>Poa secunda</i> (<i>P. sandbergii</i>) | Herb Monocot | Upland Forest | N |
| PRTR4 | <i>Prosarites trachycarpa</i> (<i>Disporum trachycarpum</i>) | Herb Monocot | Upland Forest | N |
| STAM2 | <i>Streptopus amplexifolius</i> | Herb Monocot | Upland Forest | N |
| THIN6 | <i>Thinopyrum intermedium</i> (<i>Agropyron trichophorum</i>) | Herb Monocot | Upland Forest | NN |
| TRGRG2 | <i>Triteleia grandiflora</i> var. <i>grandiflora</i> | Herb Monocot | Upland Forest | N |
| ACMI2 | <i>Achillea millefolium</i> | Dicot | Upland Forest | N & NN |
| ADBI | <i>Adenocaulon bicolor</i> | Dicot | Upland Forest | N |
| AGGR | <i>Agoseris grandiflora</i> | Dicot | Upland Forest | N |
| ANPI | <i>Anemone piperi</i> | Dicot | Upland Forest | N |
| ANLU2 | <i>Antennaria luzuloides</i> | Dicot | Upland Forest | N |
| ANRO2 | <i>Antennaria rosea</i> | Dicot | Upland Forest | N |
| AQFO | <i>Aquilegia formosa</i> | Dicot | Upland Forest | N |
| ARCO9 | <i>Arnica cordifolia</i> | Dicot | Upland Forest | N |
| ARSO2 | <i>Arnica sororia</i> | Dicot | Upland Forest | N |
| ARDR4 | <i>Artemisia dracunculoides</i> | Dicot | Upland Forest | N |
| ARLU | <i>Artemisia ludoviciana</i> | Dicot | Upland Forest | N |
| ASPU9 | <i>Astragalus purshii</i> | Dicot | Upland Forest | N |
| CALI4 | <i>Castilleja linariifolia</i> | Dicot | Upland Forest | N |
| CHUM | <i>Chimaphila umbellata</i> | Dicot | Upland Forest | N |
| CIAR4 | <i>Cirsium arvense</i> | Dicot | Upland Forest | NN |
| CICA6 | <i>Cirsium canovirens</i> | Dicot | Upland Forest | N |
| CLHI | <i>Clematis hirsutissima</i> | Dicot | Upland Forest | N |
| CYOF | <i>Cynoglossum officinale</i> | Dicot | Upland Forest | NN |
| DIAR | <i>Dianthus armeria</i> | Dicot | Upland Forest | NN |
| ERCO5 | <i>Erigeron corymbosus</i> | Dicot | Upland Forest | N |
| ERPU2 | <i>Erigeron pumilus</i> | Dicot | Upland Forest | N |
| ERLA6 | <i>Eriophyllum lanatum</i> | Dicot | Upland Forest | N |
| EUCO36 | <i>Eurybia conspicua</i> (<i>Aster conspicuus</i>) | Dicot | Upland Forest | N |
| FRVI | <i>Fragaria virginiana</i> | Dicot | Upland Forest | N |
| FRSP | <i>Frasera speciosa</i> | Dicot | Upland Forest | N |
| GABO2 | <i>Galium boreale</i> | Dicot | Upland Forest | N |
| GEV2 | <i>Geranium viscosissimum</i> | Dicot | Upland Forest | N |

| | | | | |
|--------|---|-------------|---------------|----|
| GETR | Geum triflorum | Dicot | Upland Forest | N |
| HEUN | Helianthella uniflora | Dicot | Upland Forest | N |
| HISCA | Hieracium scouleri var. albertinum | Dicot | Upland Forest | N |
| IPAG | Ipomopsis aggregata | Dicot | Upland Forest | N |
| LIRU4 | Lithospermum ruderale | Dicot | Upland Forest | N |
| LOTR2 | Lomatium triternatum | Dicot | Upland Forest | N |
| LULE3 | Lupinus leucophyllus | Dicot | Upland Forest | N |
| LUSES2 | Lupinus sericeus ssp. sericeus | Dicot | Upland Forest | N |
| LUPIN | Lupinus sp. | Dicot | Upland Forest | N |
| MIPE | Mitella pentandra | Dicot | Upland Forest | N |
| PACA15 | Packera cana | Dicot | Upland Forest | N |
| PESP | Penstemon speciosus | Dicot | Upland Forest | N |
| PHLI | Phacelia linearis | Dicot | Upland Forest | N |
| PHPU5 | Phlox pulvinata | Dicot | Upland Forest | N |
| POGL9 | Potentilla glandulosa | Dicot | Upland Forest | N |
| POGR9 | Potentilla gracilis | Dicot | Upland Forest | N |
| PORE5 | Potentilla recta | Dicot | Upland Forest | NN |
| PTAN2 | Pterospora andromedea | Dicot | Upland Forest | N |
| PYCA3 | Pyrocoma carthamoides | Dicot | Upland Forest | N |
| RAGLG | Ranunculus glaberrimus var. glaberrimus | Dicot | Upland Forest | N |
| SIME | Silene menziesii | Dicot | Upland Forest | N |
| SIOR3 | Silene oregana | Dicot | Upland Forest | N |
| SYFO2 | Symphotrichum foliaceum (Aster foliaceus) | Dicot | Upland Forest | N |
| THFE | Thalictrum fendleri | Dicot | Upland Forest | N |
| VETH | Verbascum thapsus | Dicot | Upland Forest | NN |
| CYFR2 | Cystopteris fragilis | Fern Allies | Upland Forest | N |

**USDA FOREST SERVICE 2008
PLANT SURVEY FIELD FORM
(® = Required Fields)**

General Information

| | | | | |
|---|----------------------|--|-------------------------------|------------------------------------|
| 1) SURVEY ID: ® 061601S00MD004 | | 2) SURVEY NAME: MASON DAM PROJECT | | |
| 3) SURVEY STATUS: ® COMPLETE | | 4) TARGET: ® TESP | | 5) SOURCE OF WORK: CONTRACT |
| 6) Survey Type: ® GENERAL, SYSTEMATIC | | | | |
| 7) Survey Focus: ® TERRESTRIAL, FEATURES | | | | |
| 8) Estimate of Survey Area Size (acres): 4.15 | | | 9) No. of Traverses: 4 | |
| 10) Elevation: Min: 3951 | | Max: 4354 | Average: 4152 | 11) Elevation UOM: Feet |
| 12) State: ® | 13) County: ® | 14) Region: ® | 15) Forest: ® | 16) District: ® |
| OR | BAKER | 06 | 16 | 01 |
| 17) Parameters of Survey <i>(Describe any ecological parameters, survey criteria or combinations of these used to focus the survey. (I.e., north slopes, specific habitat types, certain soils within certain forest conditions, survey timing, etc.):</i> | | | | |
| Survey area consists of seeded grasslands located adjacent to the Mason Dam recreation area parking lot, and along the existing transmission line crossing Black Mountain Road. | | | | |
| 18) Survey Comments <i>(Directions, area description, specific comments by visit date, etc.):</i> | | | | |
| See areas labeled "4a" and "4b" of the attached map (Attachment 1) for a description of the survey. Attachment 1 is located at the end of all of the Mason Dam Project survey sheets. | | | | |

Survey Visits

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

| 19) VISIT DATE ® | 20) LAST NAME ® AND FIRST NAME ® OF EXAMINERS FOR EACH VISIT |
|-------------------------|---|
| 7/23/2008 | GECY, LESLIE AND CHRISTIE, CHRIS |
| 10/31/2007 | GECY, LESLIE AND CHRISTIE, CHRIS |
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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"

26) Completeness of species list: Complete **27) Cover Method** (if cover recorded): Actual

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

Only dominant plant information is provided below. See Attachment 2 for a complete species list for this survey.

| 29) NRCS Plant Code | 30) Scientific Name | 31) Life Form | 32) Habitat | 33) % Cover or Class | 34) Non- native |
|---------------------------|---|---------------------|----------------|----------------------------|-----------------------|
| PIPO | <i>Pinus ponderosa</i> | | Dry Grassland | | n |
| n/a | Horticultural spp. (shrubs) | | Dry Grassland | | y* |
| ARTR2 | <i>Artemisia tridentata</i> | | Dry Grassland | | n |
| MARE11 | <i>Mahonia repens</i> | | Dry Grassland | | n |
| CHRYS | <i>Chrysothamnus</i> spp. | | Dry Grassland | | n |
| AGCR | <i>Agropyron cristatum</i> | | Dry Grassland | | y* |
| THIN6 | <i>Thinopyrum intermedium</i> (<i>Agropyron intermedium</i>) | | Dry Grassland | | y* |
| BRTE | <i>Bromus tectorum</i> | | Dry Grassland | | y* |
| FEID | <i>Festuca idahoensis</i> | | Dry Grassland | | n |
| EPBR3 | <i>Epilobium brachycarpum</i> (<i>E. paniculatum</i>) | | Dry Grassland | | n |
| THIN6 | <i>Thinopyrum intermedium</i> (<i>Agropyron trichophorum</i>) | | Dry Grassland | | y* |
| KOMA | <i>Koeleria macrantha</i> (<i>K. cristata</i>) | | Dry Grassland | | n |
| PHPR3 | <i>Phleum pratense</i> | | Dry Grassland | | y* |
| CARU | <i>Calamagrostis rubescens</i> | | Dry Grassland | | n |
| CAGE2 | <i>Carex geyeri</i> | | Dry Grassland | | n |
| ACMI2 | <i>Achillea millefolium</i> | | Dry Grassland | | n |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
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Optional Location Information

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

| | |
|-----------------------|---|
| 35) USGS Quad Number: | 36) USGS Quad Name: Blue Canyon & Phillips Lake |
|-----------------------|---|

| | |
|-------------------------|-----------------------|
| 37) Forest Quad Number: | 38) Forest Quad Name: |
|-------------------------|-----------------------|

39) Legal Description: Required where public land survey is available.

| | |
|----------------|---|
| Meridian: | Township and Range: |
| Section: _____ | Q Sec: _____ QQ Sec: _____ QQQ Sec: _____ QQQQ Sec: _____ |

40) 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: | |

41) UTM

| | |
|--------------------|---------------------|
| UTM Datum: NAD 83 | UTM Zone: 11T |
| Easting: 0420994.0 | Northing: 4947078.0 |
| Easting: 0420618.0 | Northing: 4946078.0 |

| | |
|---|----------|
| 42) GPS Equipment: Manufacturer: Garmin | Model: V |
|---|----------|

43) Metes and Bounds

| |
|--|
| |
|--|

44) Directions to Survey Area

From Baker City, Oregon travel southwest (towards Sumpter) on State Highway 7 for approximately 16 miles until you reach the Powder River Recreation Area. Turn left at the second entrance and continue west to the parking area closest to the dam. The survey area can be accessed from there.

.45) Sketch of Survey Area

| |
|---|
|  |
| SEE ATTACHMENT 1 |

COMPLETE SPECIES LIST OF DRY GRASSLANDS TESP SURVEY

| NRCS PLANTS Code | Scientific Name | Vegetation Type | Habitat | Veg Status N=Native NN=Nonnative U=Unknown |
|---------------------------------|---|------------------------|----------------|--|
| ACPL | Acer platanoides | Tree | Dry Grassland | NN |
| BEPA | Betula papyrifera | Tree | Dry Grassland | N |
| PIPO | Pinus ponderosa | Tree | Dry Grassland | N |
| AMAL2 | Amelanchier alnifolia | Shrub | Dry Grassland | N |
| ARTR2 | Artemisia tridentata | Shrub | Dry Grassland | N |
| CELE3 | Cercocarpus ledifolius | Shrub | Dry Grassland | N |
| CHVI8 | Chrysothamnus viscidiflorus | Shrub | Dry Grassland | N |
| ERNA10 | Ericameria nauseosa (Chrysothamnus nauseosus) | Shrub | Dry Grassland | N |
| MARE11 | Mahonia repens | Shrub | Dry Grassland | N |
| PUTR2 | Purshia tridentata | Shrub | Dry Grassland | N |
| RICE | Ribes cereum | Shrub | Dry Grassland | N |
| ACOC3 | Achnatherum occidentale (Stipa occidentalis) | Herb Monocot | Dry Grassland | N |
| AGCR | Agropyron cristatum | Herb Monocot | Dry Grassland | NN |
| BRCA5 | Bromus carinatus | Herb Monocot | Dry Grassland | N |
| BRTE | Bromus tectorum | Herb Monocot | Dry Grassland | NN |
| CARU | Calamagrostis rubescens | Herb Monocot | Dry Grassland | N |
| CAGE2 | Carex geyeri | Herb Monocot | Dry Grassland | N |
| DAGL | Dactylis glomerata | Herb Monocot | Dry Grassland | NN |
| ELEL5 | Elymus elymoides (Sitanion hystrix) | Herb Monocot | Dry Grassland | N |
| FEID | Festuca idahoensis | Herb Monocot | Dry Grassland | N |
| KOMA | Koeleria macrantha (K. cristata) | Herb Monocot | Dry Grassland | N |
| PHPR3 | Phleum pratense | Herb Monocot | Dry Grassland | NN |
| POBU | Poa bulbosa | Herb Monocot | Dry Grassland | NN |
| POPR | Poa pratensis | Herb Monocot | Dry Grassland | NN |
| POSE | Poa secunda (P. sandbergii) | Herb Monocot | Dry Grassland | N |
| THIN6 | Thinopyrum intermedium (Agropyron intermedium) | Herb Monocot | Dry Grassland | NN |
| THIN6 | Thinopyrum intermedium (Agropyron trichophorum) | Herb Monocot | Dry Grassland | NN |
| ACMI2 | Achillea millefolium | Dicot | Dry Grassland | N & NN |
| AMPA | Amaranthus palmeri | Dicot | Dry Grassland | N |

| | | | | |
|--------|---|-------|---------------|----|
| AMMEM2 | <i>Amsinckia menziesii</i> var. <i>menziesii</i> (<i>A. retrorsa</i>) | Dicot | Dry Grassland | N |
| ANLU2 | <i>Antennaria luzuloides</i> | Dicot | Dry Grassland | N |
| APAN2 | <i>Apocynum androsaemifolium</i> | Dicot | Dry Grassland | N |
| ARHI | <i>Arabis hirsutus</i> | Dicot | Dry Grassland | N |
| BASA3 | <i>Balsamorhiza sagittata</i> | Dicot | Dry Grassland | N |
| CEDI3 | <i>Centaurea diffusa</i> | Dicot | Dry Grassland | NN |
| CHCH | <i>Chenopodium chenopodioides</i> | Dicot | Dry Grassland | N |
| CIAR4 | <i>Cirsium arvense</i> | Dicot | Dry Grassland | NN |
| CIVU | <i>Cirsium vulgare</i> | Dicot | Dry Grassland | NN |
| CYOF | <i>Cynoglossum officinale</i> | Dicot | Dry Grassland | NN |
| EPBR3 | <i>Epilobium brachycarpum</i> (<i>E. paniculatum</i>) | Dicot | Dry Grassland | N |
| ERCH4 | <i>Erigeron chrysopsidis</i> | Dicot | Dry Grassland | N |
| ERPU2 | <i>Erigeron pumilus</i> | Dicot | Dry Grassland | N |
| GATR3 | <i>Galium triflorum</i> | Dicot | Dry Grassland | N |
| GRNA | <i>Grindelia nana</i> | Dicot | Dry Grassland | N |
| LASE | <i>Lactuca serriola</i> | Dicot | Dry Grassland | NN |
| LATHY | <i>Lathyrus</i> sp. | Dicot | Dry Grassland | U |
| LOTR2 | <i>Lomatium triternatum</i> | Dicot | Dry Grassland | N |
| LULE3 | <i>Lupinus leucophyllus</i> | Dicot | Dry Grassland | N |
| MACA2 | <i>Machaeranthera canescens</i> | Dicot | Dry Grassland | N |
| MAGR3 | <i>Madia gracilis</i> | Dicot | Dry Grassland | N |
| MELU | <i>Medicago lupulina</i> | Dicot | Dry Grassland | NN |
| MESA | <i>Medicago sativa</i> | Dicot | Dry Grassland | NN |
| MEOF | <i>Mellilotus officinalis</i> (<i>M. alba</i>) | Dicot | Dry Grassland | NN |
| PENST | <i>Penstemon</i> sp. | Dicot | Dry Grassland | N |
| PHLI | <i>Phacelia linearis</i> | Dicot | Dry Grassland | N |
| POAV | <i>Polygonum aviculare</i> | Dicot | Dry Grassland | NN |
| POGL9 | <i>Potentilla glandulosa</i> | Dicot | Dry Grassland | N |
| POGR9 | <i>Potentilla gracilis</i> | Dicot | Dry Grassland | N |
| PSST7 | <i>Pseudognaphalium stramineum</i> | Dicot | Dry Grassland | N |
| SIOR3 | <i>Silene oregana</i> | Dicot | Dry Grassland | N |
| SOMIM | <i>Solidago missouriensis</i> var. <i>missouriensis</i> | Dicot | Dry Grassland | N |
| SYFO2 | <i>Symphotrichum foliaceum</i> (<i>Aster foliaceus</i>) | Dicot | Dry Grassland | N |
| SYSPI | <i>Symphotrichum spathulatum</i> var. <i>intermedium</i> | Dicot | Dry Grassland | N |

| | | | | |
|------|----------------------|-------|---------------|--------|
| TAOF | Taraxacum officinale | Dicot | Dry Grassland | N & NN |
| TRDU | Tragopogon dubius | Dicot | Dry Grassland | NN |
| VETH | Verbascum thapsus | Dicot | Dry Grassland | NN |
| VEBR | Verbena bracteata | Dicot | Dry Grassland | N |

**USDA FOREST SERVICE 2008
PLANT SURVEY FIELD FORM
(® = Required Fields)**

General Information

| | | | | |
|---|----------------------|--|-------------------------------|------------------------------------|
| 1) SURVEY ID: ®® 061601S00MD005 | | 2) SURVEY NAME: MASON DAM PROJECT | | |
| 3) SURVEY STATUS: ® COMPLETE | | 4) TARGET: ® <i>TESP</i> | | 5) SOURCE OF WORK: CONTRACT |
| 6) Survey Type: ® GENERAL, SYSTEMATIC | | | | |
| 7) Survey Focus: ® TERRESTRIAL | | | | |
| 8) Estimate of Survey Area Size (acres): 5.93 | | | 9) No. of Traverses: 4 | |
| 10) Elevation: Min: 3948 Max: 4052 | | | Average: 3967 | |
| 11) Elevation UOM: Feet | | | | |
| 12) State: ® | 13) County: ® | 14) Region: ® | 15) Forest: ® | 16) District: ® |
| OR | Baker | 06 | 16 | 01 |
| 17) Parameters of Survey (<i>Describe any ecological parameters, survey criteria or combinations of these used to focus the survey. (I.e., north slopes, specific habitat types, certain soils within certain forest conditions, survey timing, etc.):</i>) | | | | |
| <p>This survey includes rock/talus slope habitat primarily located on a steep slope between the Mason Dam recreation area parking lot and the adjacent Black Mountain Road, east of Mason Dam. Also included is an additional small rock outcrop area southeast of Mason Dam.</p> | | | | |
| 18) Survey Comments (<i>Directions, area description, specific comments by visit date, etc.):</i>) | | | | |
| <p>See area labeled "5" of the attached map (Attachment 1) for a description of the survey. Attachment 1 is located at the end of all of the Mason Dam Project survey sheets.</p> | | | | |

Survey Visits

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

| 19) VISIT DATE ® | 20) LAST NAME ® AND FIRST NAME ® OF EXAMINERS FOR EACH VISIT |
|-------------------------|---|
| 10/31/2007 | GECY, LESLIE AND CHRISTIE, CHRIS |
| 7/23/2008 | GECY, LESLIE AND CHRISTIE, CHRIS |
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Optional Location Information

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

| | |
|---|---|
| 35) USGS Quad Number: | 36) USGS Quad Name: Blue Canyon, Phillips Lake |
| 37) Forest Quad Number: | 38) Forest Quad Name: |
| 39) Legal Description: Required where public land survey is available. | |
| Meridian: | Township and Range: |
| Section: _____ | Q Sec: _____ QQ Sec: _____ QQQ Sec: _____ QQQQ Sec: _____ |
| 40) 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: |
| 41) UTM | |
| UTM Datum: NAD 83 | UTM Zone: 11T |
| Easting: 0421023.0 | Northing: 4947114.0 |
| 42) GPS Equipment: Manufacturer: Garmin | |
| Model: V | |
| 43) Metes and Bounds | |
| | |

44) Directions to Survey Area

From Baker City, Oregon travel southwest (towards Sumpter) on State Highway 7 for approximately 16 miles until you reach the Powder River Recreation Area. Turn left at the second entrance and continue west to the parking area closest to the dam. The survey area can be accessed from there (see Attachment 1).

45) Sketch of Survey Area



SEE ATTACHMENT 1

COMPLETE SPECIES LIST OF ROCK/TALUS SLOPE TESP SURVEY

| NRCS PLANTS Code | Scientific Name | Vegetation Type | Habitat | Veg Status N=Native NN=Nonnative U=Unknown |
|-------------------------|---|------------------------|------------------|--|
| JUOC | Juniperus occidentalis | Tree | Rock/talus slope | N |
| PIPO | Pinus ponderosa | Tree | Rock/talus slope | N |
| POTR5 | Populus tremuloides | Tree | Rock/talus slope | N |
| PREM | Prunus emarginata | Tree | Rock/talus slope | N |
| SAAM2 | Salix amygdaloides | Tree | Rock/talus slope | N |
| AMAL2 | Amelanchier alnifolia | Shrub | Rock/talus slope | N |
| ARTR2 | Artemisia tridentata | Shrub | Rock/talus slope | N |
| CHVI8 | Chrysothamnus viscidiflorus | Shrub | Rock/talus slope | N |
| PRVI | Prunus virginiana | Shrub | Rock/talus slope | N |
| PUTR2 | Purshia tridentata | Shrub | Rock/talus slope | N |
| RIAU | Ribes aureum | Shrub | Rock/talus slope | N |
| ROWO | Rosa woodsii | Shrub | Rock/talus slope | N |
| SYAL | Symphoricarpos albus | Shrub | Rock/talus slope | N |
| AGCR | Agropyron cristatum | Herb Monocot | Rock/talus slope | NN |
| B RTE | Bromus tectorum | Herb Monocot | Rock/talus slope | NN |
| FEID | Festuca idahoensis | Herb Monocot | Rock/talus slope | N |
| HOJU | Hordeum jubatum | Herb Monocot | Rock/talus slope | N |
| THIN6 | Thinopyrum intermedium (Agropyron intermedium) | Herb Monocot | Rock/talus slope | NN |
| THIN6 | Thinopyrum intermedium (Agropyron trichophorum) | Herb Monocot | Rock/talus slope | NN |
| CIAR4 | Cirsium arvense | Dicot | Rock/talus slope | NN |
| CIVU | Cirsium vulgare | Dicot | Rock/talus slope | NN |
| CYOF | Cynoglossum officinale | Dicot | Rock/talus slope | NN |
| DIFU2 | Dipsacus fullonum (D. sylvestris) | Dicot | Rock/talus slope | NN |
| ERHE2 | Eriogonum heracleoides | Dicot | Rock/talus slope | N |
| ERST4 | Eriogonum strictum | Dicot | Rock/talus slope | N |
| EUOC4 | Euthamia occidentalis (Solidago occidentalis) | Dicot | Rock/talus slope | N |
| GATR2 | Galium trifidum | Dicot | Rock/talus slope | N |
| HECY2 | Heuchera cylindrica | Dicot | Rock/talus slope | N |

| | | | | |
|-------|---|-------------|------------------|----|
| MEOF | <i>Melilotus officinalis</i> | Dicot | Rock/talus slope | NN |
| NECA2 | <i>Nepeta cataria</i> | Dicot | Rock/talus slope | NN |
| PEDE4 | <i>Penstemon deustus</i> | Dicot | Rock/talus slope | N |
| RAGLG | <i>Ranunculus glaberrimus</i> var. <i>glaberrimus</i> | Dicot | Rock/talus slope | N |
| SESE2 | <i>Senecio serra</i> | Dicot | Rock/talus slope | N |
| SIAL2 | <i>Sisymbrium altissimum</i> | Dicot | Rock/talus slope | NN |
| SOMIM | <i>Solidago missouriensis</i> var. <i>missouriensis</i> | Dicot | Rock/talus slope | N |
| VETH | <i>Verbascum thapsus</i> | Dicot | Rock/talus slope | NN |
| CYFR2 | <i>Cystopteris fragilis</i> | Fern Allies | Rock/talus slope | N |
| EQHY | <i>Equisetum hyemale</i> | Fern Allies | Rock/talus slope | N |
| WOOR | <i>Woodsia oregana</i> | Fern Allies | Rock/talus slope | N |
| WOSC | <i>Woodsia scopulina</i> | Fern Allies | Rock/talus slope | N |

**USDA FOREST SERVICE 2008
PLANT SURVEY FIELD FORM
(® = Required Fields)**

General Information

| | | | | |
|--|----------------------|----------------------------------|--------------------------------|------------------------------------|
| 1) SURVEY ID: ® 061601S00MD002 | | 2) SURVEY NAME: MASON DAM | | |
| 3) SURVEY STATUS: ® COMPLETE | | 4) TARGET: ® <i>TESP</i> | | 5) SOURCE OF WORK: CONTRACT |
| 6) Survey Type: ® GENERAL / SYSTEMATIC | | | | |
| 7) Survey Focus: ® RIPARIAN | | | | |
| 8) Estimate of Survey Area Size (acres): 0.59 | | | 9) No. of Traverses: 6 | |
| 10) Elevation: Min: 3919 Max: 3924 Average | | | 11) Elevation UOM: Feet | |
| 12) State: ® | 13) County: ® | 14) Region: ® | 15) Forest: ® | 16) District: ® |
| OR | Baker | 06 | 16 | 01 |
| <p>17) Parameters of Survey (<i>Describe any ecological parameters, survey criteria or combinations of these used to focus the survey. (I.e., north slopes, specific habitat types, certain soils within certain forest conditions, survey timing, etc.):</i>)</p> <p>This survey includes riparian wetland habitats that occur along the north and south banks of the Powder River from Mason Dam downstream to the gauging station.</p> | | | | |
| <p>18) Survey Comments (<i>Directions, area description, specific comments by visit date, etc.):</i>)</p> <p>See areas labeled "2a", "2b-1", and "2b-2" of the attached map (Attachment 1) for a description of the survey. Attachment 1 is located at the end of all of the Mason Dam Project survey sheets.</p> | | | | |

Survey Visits

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

| 19) VISIT DATE ® | 20) LAST NAME ® AND FIRST NAME ® OF EXAMINERS FOR EACH VISIT |
|-------------------------|---|
| 11/02/2007 | GECY, LESLIE AND CHRISTIE, CHRIS |
| 07/02/2008 | GECY, LESLIE AND CHRISTIE, CHRIS |
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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"

26) Completeness of species list: Complete **27) Cover Method** (if cover recorded): Actual

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

Only dominant plant information is provided below. See Attachment 2 for a complete species list for this survey.

| 29) NRCS Plant Code | 30) Scientific Name | 31) Life Form | 32) Habitat | 33) % Cover or Class | 34) Non- native |
|---------------------------|--|---------------------|----------------------------|----------------------------|-----------------------|
| PIPO | <i>Pinus ponderosa</i> | | Riparian shrub/ wetland | | n |
| POBAT | <i>Populus balsamifera</i> ssp. <i>trichocarpa</i> (<i>P. trichocarpa</i>) | | Riparian shrub/ wetland | | n |
| ALIN2 | <i>Alnus incana</i> | | Riparian shrub/ wetland | | n |
| COSE16 | <i>Cornus sericea</i> (<i>C. stolonifera</i>) | | Riparian shrub/ wetland | | n |
| SAAM2 | <i>Salix amygdaloides</i> | | Riparian shrub/ wetland | | n |
| AGST2 | <i>Agrostis stolonifera</i> (<i>A. alba</i> var. <i>stolonifera</i>) | | Riparian shrub/ wetland | | y* |
| CAAM10 | <i>Carex amplifolia</i> | | Riparian shrub/ wetland | | n |
| CAAQA | <i>Carex aquatilis</i> var. <i>aquatilis</i> | | Riparian shrub/ wetland | | n |
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Optional Location Information

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

| | |
|--------------------------------|--|
| 35) USGS Quad Number: | 36) USGS Quad Name: Blue Canyon & Phillips Lake |
| 37) Forest Quad Number: | 38) Forest Quad Name: |

| | | | | |
|---|----------------------------|----------------------|-----------------------|------------------------|
| 39) Legal Description: Required where public land survey is available. | | | | |
| Meridian: | Township and Range: | | | |
| Section: _____ | Q Sec: _____ | QQ Sec: _____ | QQQ Sec: _____ | QQQQ Sec: _____ |

| | | | | |
|---|----------------|--------------------------------|--|--|
| 40) 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: | | |

| | |
|---------------------------|----------------------------|
| 41) UTM | |
| UTM Datum: NAD 83 | UTM Zone: 11T |
| Easting: 0421032.0 | Northing: 4947029.0 |
| Easting: 0420922.0 | Northing: 4947057.0 |
| Easting: 0420935.0 | Northing: 4947080.0 |

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|--|-----------------|
| 42) GPS Equipment: Manufacturer: Garmin | Model: V |
|--|-----------------|

| |
|-----------------------------|
| 43) Metes and Bounds |
| |

44) Directions to Survey Area

From Baker City, Oregon travel southwest (towards Sumpter) on State Highway 7 for approximately 16 miles until you reach the Powder River Recreation Area. Turn left at the second entrance and continue west to the parking area closest to the dam. The survey area can be accessed from there (see Attachment 1).

45) Sketch of Survey Area

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COMPLETE SPECIES LIST OF POWDER RIVER RIPARIAN WETLANDS TESP SURVEY

| NRCS PLANTS Code | Scientific Name | Vegetation Type | Habitat | Veg Status N=Native NN=Nonnative U=Unknown |
|---------------------------------|---|----------------------------|------------------------|--|
| PIPO | <i>Pinus ponderosa</i> | Tree | Riparian shrub/wetland | N |
| POBAT | <i>Populus balsamifera</i> ssp. <i>trichocarpa</i> (<i>P. trichocarpa</i>) | Tree | Riparian shrub/wetland | N |
| POTR5 | <i>Populus tremuloides</i> | Tree | Riparian shrub/wetland | N |
| PREM | <i>Prunus emarginata</i> | Tree | Riparian shrub/wetland | N |
| SAAM2 | <i>Salix amygdaloides</i> | Tree | Riparian shrub/wetland | N |
| SALUC | <i>Salix lucida</i> ssp. <i>caudata</i> (<i>S. lasiandra</i> var. <i>caudata</i>) | Tree | Riparian shrub/wetland | N |
| ALIN2 | <i>Alnus incana</i> | Shrub | Riparian shrub/wetland | N |
| AMAL2 | <i>Amelanchier alnifolia</i> | Shrub | Riparian shrub/wetland | N |
| COSE16 | <i>Cornus sericea</i> (<i>C. stolonifera</i>) | Shrub | Riparian shrub/wetland | N |
| CRDO2 | <i>Crataegus douglasii</i> | Shrub | Riparian shrub/wetland | N |
| LOIN5 | <i>Lonicera involucrata</i> | Shrub | Riparian shrub/wetland | N |
| RIAU | <i>Ribes aureum</i> | Shrub | Riparian shrub/wetland | N |
| RICE | <i>Ribes cereum</i> | Shrub | Riparian shrub/wetland | N |
| ROWO | <i>Rosa woodsii</i> | Shrub | Riparian shrub/wetland | N |
| SAEA | <i>Salix eastwoodiae</i> | Shrub | Riparian shrub/wetland | N |
| SOAU | <i>Sorbus aucuparia</i> | Shrub | Riparian shrub/wetland | NN |
| SPBE2 | <i>Spiraea betulifolia</i> | Shrub | Riparian shrub/wetland | N |
| AGST2 | <i>Agrostis stolonifera</i> (<i>A. alba</i> var. <i>stolonifera</i>) | Herb Monocot | Riparian shrub/wetland | NN |
| ALAE | <i>Alopecurus aequalis</i> | Herb Monocot | Riparian shrub/wetland | N |
| ALPR3 | <i>Alopecurus pratensis</i> | Herb Monocot | Riparian shrub/wetland | NN |
| BESY | <i>Beckmannia syzigachne</i> | Herb Monocot | Riparian shrub/wetland | N |
| CAAM10 | <i>Carex amplifolia</i> | Herb Monocot | Riparian shrub/wetland | N |
| CAAQA | <i>Carex aquatilis</i> var. <i>aquatilis</i> | Herb Monocot | Riparian shrub/wetland | N |
| CAAT3 | <i>Carex athrostachya</i> | Herb Monocot | Riparian shrub/wetland | N |
| CAMI7 | <i>Carex microptera</i> | Herb Monocot | Riparian shrub/wetland | N |
| CASU6 | <i>Carex subfusca</i> | Herb Monocot | Riparian shrub/wetland | N |
| ELCA4 | <i>Elymus canadensis</i> | Herb Monocot | Riparian shrub/wetland | N |
| GLST | <i>Glyceria striata</i> (<i>G. elata</i>) | Herb Monocot | Riparian shrub/wetland | N |
| JUARL | <i>Juncus arcticus</i> ssp. <i>littoralis</i> (<i>J. balticus</i>) | Herb Monocot | Riparian shrub/wetland | N |
| POTR2 | <i>Poa trivialis</i> | Herb Monocot | Riparian shrub/wetland | NN |
| SCM12 | <i>Scirpus microcarpus</i> | Herb Monocot | Riparian shrub/wetland | N |
| ACM12 | <i>Achillea millefolium</i> | Dicot | Riparian shrub/wetland | N & NN |
| ACCO4 | <i>Aconitum columbianum</i> | Dicot | Riparian shrub/wetland | N |

| | | | | |
|-------|--|-------------|------------------------|--------|
| AQFO | <i>Aquilegia formosa</i> | Dicot | Riparian shrub/wetland | N |
| ARAM2 | <i>Arnica amplexicaulis</i> | Dicot | Riparian shrub/wetland | N |
| CEAR4 | <i>Cerastium arvense</i> | Dicot | Riparian shrub/wetland | N & NN |
| CENU2 | <i>Cerastium nutans</i> | Dicot | Riparian shrub/wetland | N |
| CHAN9 | <i>Chamerion angustifolium (Epilobium angustifolium)</i> | Dicot | Riparian shrub/wetland | N |
| CIAR4 | <i>Cirsium arvense</i> | Dicot | Riparian shrub/wetland | NN |
| CIVU | <i>Cirsium vulgare</i> | Dicot | Riparian shrub/wetland | NN |
| CYOF | <i>Cynoglossum officinale</i> | Dicot | Riparian shrub/wetland | NN |
| DIFU2 | <i>Dipsacus fullonum (D. sylvestris)</i> | Dicot | Riparian shrub/wetland | NN |
| EPCI | <i>Epilobium ciliatum (E. glandulosum)</i> | Dicot | Riparian shrub/wetland | N |
| GABO2 | <i>Gallium boreale</i> | Dicot | Riparian shrub/wetland | N |
| GEMA4 | <i>Geum macrophyllum</i> | Dicot | Riparian shrub/wetland | N |
| GNPA | <i>Gnaphalium palustre</i> | Dicot | Riparian shrub/wetland | N |
| MEAR4 | <i>Mentha arvensis</i> | Dicot | Riparian shrub/wetland | N |
| MIGU | <i>Mimulus guttatus (M. guttatus var. guttatus)</i> | Dicot | Riparian shrub/wetland | N |
| MYLA | <i>Myosotis laxa</i> | Dicot | Riparian shrub/wetland | N |
| POOC2 | <i>Polemonium occidentale</i> | Dicot | Riparian shrub/wetland | N |
| POBI7 | <i>Potentilla biennis</i> | Dicot | Riparian shrub/wetland | N |
| PRVU | <i>Prunella vulgaris</i> | Dicot | Riparian shrub/wetland | N |
| RUSA | <i>Rumex salicifolius</i> | Dicot | Riparian shrub/wetland | N |
| SIOR | <i>Sidalcea oregana</i> | Dicot | Riparian shrub/wetland | N |
| TRLO | <i>Trifolium longipes</i> | Dicot | Riparian shrub/wetland | N |
| TRRE3 | <i>Trifolium repens</i> | Dicot | Riparian shrub/wetland | NN |
| TRWO | <i>Trifolium wormskjoldii (T. wormskjoldii)</i> | Dicot | Riparian shrub/wetland | N |
| VEAM2 | <i>Veronica americana</i> | Dicot | Riparian shrub/wetland | N |
| VIOLA | <i>Viola sp.</i> | Dicot | Riparian shrub/wetland | N |
| EQAR | <i>Equisetum arvense</i> | Fern Allies | Riparian shrub/wetland | N |
| EQHY | <i>Equisetum hyemale</i> | Fern Allies | Riparian shrub/wetland | N |

**USDA FOREST SERVICE 2008
PLANT SURVEY FIELD FORM
(® = Required Fields)**

General Information

| | | | | |
|--|----------------------|--|-------------------------------|------------------------------------|
| 1) SURVEY ID: ® 061601S00MD003 | | 2) SURVEY NAME: MASON DAM PROJECT | | |
| 3) SURVEY STATUS: ® COMPLETE | | 4) TARGET: ® <i>TESP</i> | | 5) SOURCE OF WORK: CONTRACT |
| 6) Survey Type: ® GENERAL/ SYSTEMATIC | | | | |
| 7) Survey Focus: ® RIPARIAN | | | | |
| 8) Estimate of Survey Area Size (acres): 1.04 | | | 9) No. of Traverses: 6 | |
| 10) Elevation: Min: 4100 | | Max: 4200 | Average: 4150 | 11) Elevation UOM: Feet |
| 12) State: ® | 13) County: ® | 14) Region: ® | 15) Forest: ® | 16) District: ® |
| OR | Baker | 06 | 16 | 01 |
| 17) Parameters of Survey (<i>Describe any ecological parameters, survey criteria or combinations of these used to focus the survey. (I.e., north slopes, specific habitat types, certain soils within certain forest conditions, survey timing, etc.):</i>) | | | | |
| This survey includes riparian wetland habitats that occur along a small unnamed stream, east of Black Mountain Road, which enters Philips Lake. | | | | |
| 18) Survey Comments (<i>Directions, area description, specific comments by visit date, etc.):</i>) | | | | |
| See areas labeled "3-1", "3-2", and "3-3" of the attached map (Attachment 1) for a description of the survey. Attachment 1 is located at the end of all of the Mason Dam Project survey sheets. | | | | |

Survey Visits

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

| 19) VISIT DATE ® | 20) LAST NAME ® AND FIRST NAME ® OF EXAMINERS FOR EACH VISIT |
|-------------------------|---|
| 11/2/2007 | GECY, LESLIE AND CHRISTIE, CHRIS |
| 07/29/08 | GECY, LESLIE AND CHRISTIE, CHRIS |
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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"

26) Completeness of species list: Complete **27) Cover Method** (if cover recorded): Actual

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

Only dominant plants information is provided below. See Attachment 2 for a complete species list for this survey.

| 29) NRCS Plant Code | 30) Scientific Name | 31) Life Form | 32) Habitat | 33) % Cover or Class | 34) Non- native |
|---------------------------|--|---------------------|----------------|----------------------------|-----------------------|
| PIPO | <i>Pinus ponderosa</i> | | Riparian shrub | | n |
| POTR5 | <i>Populus tremuloides</i> | | Riparian shrub | | n |
| ALIN2 | <i>Alnus incana</i> | | Riparian shrub | | n |
| SYAL | <i>Symphoricarpos albus</i> | | Riparian shrub | | n |
| COSE16 | <i>Cornus sericea</i> (<i>C. stolonifera</i>) | | Riparian shrub | | n |
| RIBES | <i>Ribes</i> spp. | | Riparian shrub | | n |
| SAAM2 | <i>Salix amygdaloides</i> | | Riparian shrub | | n |
| AGST2 | <i>Agrostis stolonifera</i> (<i>A. alba</i> var. <i>stolonifera</i>) | | Riparian shrub | | y* |
| ELGL | <i>Elymus glaucus</i> | | Riparian shrub | | n |
| DIFU2 | <i>Dipsacus fullonum</i> (<i>D. sylvestris</i>) | | Riparian shrub | | y* |
| CYOF | <i>Cynoglossum officinale</i> | | Riparian shrub | | y* |
| GEMA4 | <i>Geum macrophyllum</i> | | Riparian shrub | | n |
| CIRSI | <i>Cirsium</i> spp. | | Riparian shrub | | y* |
| JUEN | <i>Juncus ensifolius</i> | | Riparian shrub | | n |
| JUAR4 | <i>Juncus articulatus</i> | | Riparian shrub | | n |
| GALIU | <i>Galium</i> spp. | | Riparian shrub | | n |
| TRLO | <i>Trifolium longipes</i> | | Riparian shrub | | n |
| CILA2 | <i>Cinna latifolia</i> | | Riparian shrub | | n |
| GLST | <i>Glyceria striata</i> (<i>G. elata</i>) | | Riparian shrub | | n |
| EQHY | <i>Equisetum hyemale</i> | | Riparian shrub | | n |
| MIMO3 | <i>Mimulus moschatus</i> | | Riparian shrub | | n |
| CIAL | <i>Circaea alpina</i> | | Riparian shrub | | n |
| MAST4 | <i>Maianthemum stellatum</i> (<i>Smilacina stellata</i>) | | Riparian shrub | | n |
| | | | | | |
| | | | | | |

Optional Location Information

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

| | |
|-----------------------|---|
| 35) USGS Quad Number: | 36) USGS Quad Name: Blue Canyon & Phillips Lake |
|-----------------------|---|

| | |
|-------------------------|-----------------------|
| 37) Forest Quad Number: | 38) Forest Quad Name: |
|-------------------------|-----------------------|

39) Legal Description: Required where public land survey is available.

| | |
|----------------|---|
| Meridian: | Township and Range: |
| Section: _____ | Q Sec: _____ QQ Sec: _____ QQQ Sec: _____ QQQQ Sec: _____ |

40) 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: | |

41) UTM

| | |
|--------------------|---------------------|
| UTM Datum: NAD 83 | UTM Zone: 11T |
| Easting: 0420047.0 | Northing: 4946102.0 |
| Easting: 0420490.3 | Northing: 4946191.2 |
| Easting: 0420560.0 | Northing: 4946308.0 |

| | |
|---|----------|
| 42) GPS Equipment: Manufacturer: Garmin | Model: V |
|---|----------|

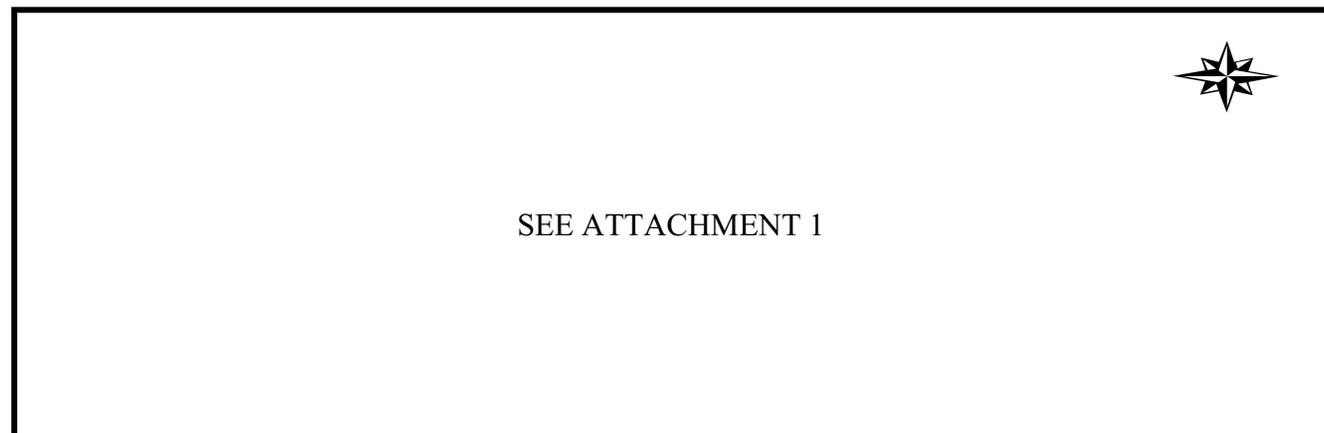
43) Metes and Bounds

| |
|--|
| |
|--|

44) Directions to Survey Area

From Baker City, Oregon travel southwest (towards Sumpter) on State Highway 7 for approximately 16 miles until you reach the Powder River Recreation Area. Turn left at the second entrance and continue west to the parking area closest to the dam. The survey area can be accessed from there (see Attachment 1).

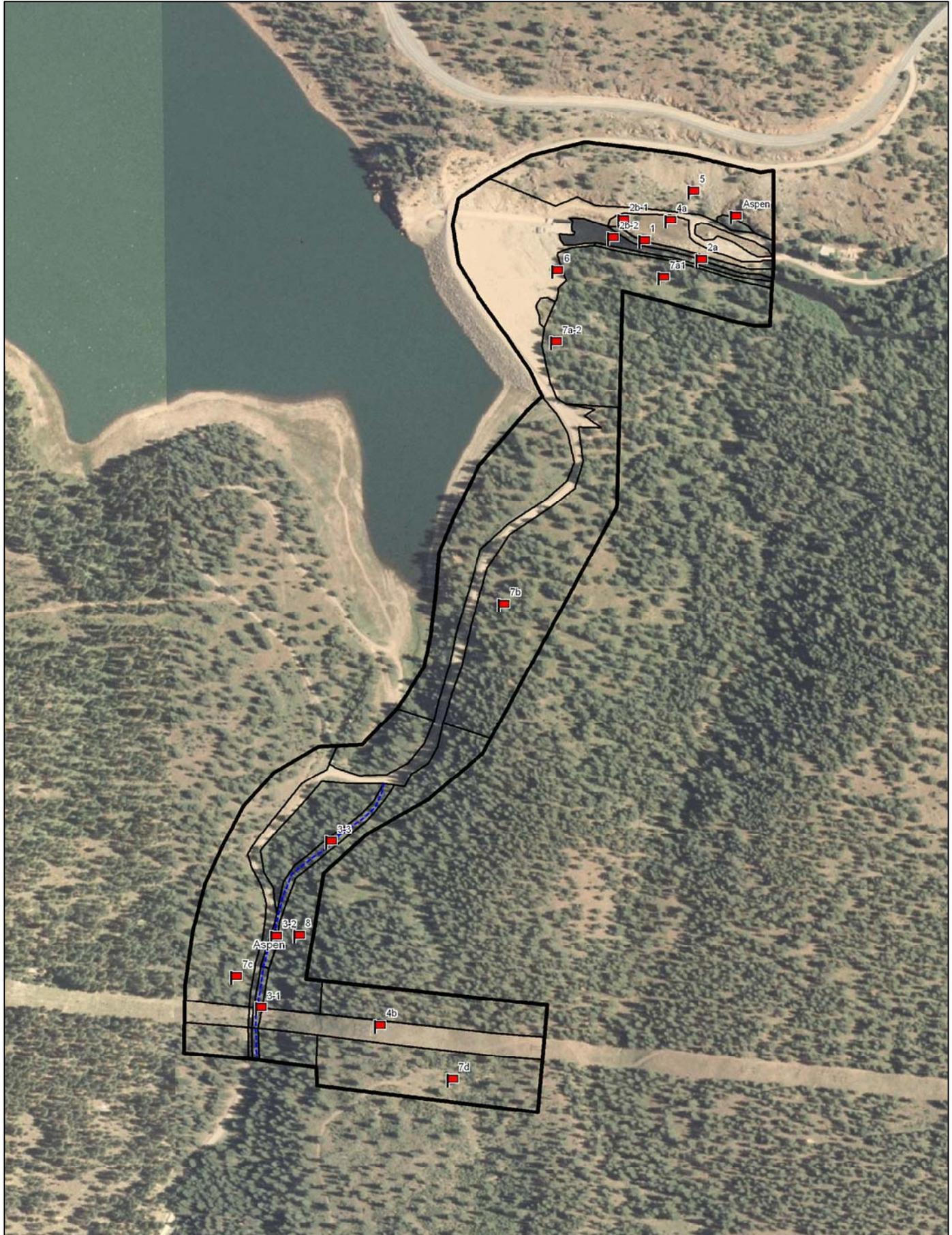
45) Sketch of Survey Area



COMPLETE SPECIES LIST OF TRIBUTARY RIPARIAN WETLANDS TESP SURVEY

| NRCS PLANTS Code | Scientific Name | Vegetation Type | Habitat | Veg Status N=Native NN=Nonnative U=Unknown |
|---------------------------------|--|------------------------|----------------|--|
| PIPO | <i>Pinus ponderosa</i> | Tree | Riparian shrub | N |
| POTR5 | <i>Populus tremuloides</i> | Tree | Riparian shrub | N |
| SAAM2 | <i>Salix amygdaloides</i> | Tree | Riparian shrub | N |
| ALIN2 | <i>Alnus incana</i> | Shrub | Riparian shrub | N |
| COSE16 | <i>Cornus sericea (C. stolonifera)</i> | Shrub | Riparian shrub | N |
| RIAU | <i>Ribes aureum</i> | Shrub | Riparian shrub | N |
| RICE | <i>Ribes cereum</i> | Shrub | Riparian shrub | N |
| RIHU | <i>Ribes hudsonianum</i> | Shrub | Riparian shrub | N |
| RILA | <i>Ribes lacustre</i> | Shrub | Riparian shrub | N |
| RONU | <i>Rosa nutkana</i> | Shrub | Riparian shrub | N |
| ROWO | <i>Rosa woodsii</i> | Shrub | Riparian shrub | N |
| RUPA | <i>Rubus parviflorus</i> | Shrub | Riparian shrub | N |
| SYAL | <i>Symphoricarpos albus</i> | Shrub | Riparian shrub | N |
| AGST2 | <i>Agrostis stolonifera (A. alba var. stolonifera)</i> | Herb Monocot | Riparian shrub | NN |
| CADE9 | <i>Carex deweyana</i> | Herb Monocot | Riparian shrub | N |
| CILA2 | <i>Cinna latifolia</i> | Herb Monocot | Riparian shrub | N |
| ELGL | <i>Elymus glaucus</i> | Herb Monocot | Riparian shrub | N |
| FESU | <i>Festuca subulata</i> | Herb Monocot | Riparian shrub | N |
| GLST | <i>Glyceria striata (G. elata)</i> | Herb Monocot | Riparian shrub | N |
| IRMI | <i>Iris missouriensis</i> | Herb Monocot | Riparian shrub | N |
| JUAR4 | <i>Juncus articulatus</i> | Herb Monocot | Riparian shrub | N |
| JUEN | <i>Juncus ensifolius</i> | Herb Monocot | Riparian shrub | N |
| MAST4 | <i>Maianthemum stellatum (Smilacina stellata)</i> | Herb Monocot | Riparian shrub | N |
| SCMI2 | <i>Scirpus microcarpus</i> | Herb Monocot | Riparian shrub | N |
| STAM2 | <i>Streptopus amplexifolius</i> | Herb Monocot | Riparian shrub | N |
| ACMI2 | <i>Achillea millefolium</i> | Dicot | Riparian shrub | N & NN |
| ACCO4 | <i>Aconitum columbianum</i> | Dicot | Riparian shrub | N |

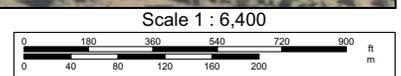
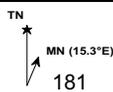
| | | | | | |
|-------|--|--|-------------|----------------|--------|
| ACRU2 | Actaea rubra | | Dicot | Riparian shrub | N |
| CAOL | Cardamine oligosperma | | Dicot | Riparian shrub | N |
| CIAL | Circaea alpina | | Dicot | Riparian shrub | N |
| CIAR4 | Cirsium arvense | | Dicot | Riparian shrub | NN |
| CIVU | Cirsium vulgare | | Dicot | Riparian shrub | NN |
| CYOF | Cynoglossum officinale | | Dicot | Riparian shrub | NN |
| DIFU2 | Dipsacus fullonum (D. sylvestris) | | Dicot | Riparian shrub | NN |
| EPCI | Epilobium ciliatum (E. glandulosum) | | Dicot | Riparian shrub | N |
| ERPH | Erigeron philadelphicus | | Dicot | Riparian shrub | N |
| FRVE | Fragaria vesca | | Dicot | Riparian shrub | N |
| GAAP2 | Galium aparine | | Dicot | Riparian shrub | N |
| GABO2 | Galium boreale | | Dicot | Riparian shrub | N |
| GATR2 | Galium trifidum | | Dicot | Riparian shrub | N |
| GATR3 | Galium triflorum | | Dicot | Riparian shrub | N |
| GEMA4 | Geum macrophyllum | | Dicot | Riparian shrub | N |
| HYCA4 | Hydrophyllum capitatum | | Dicot | Riparian shrub | N |
| MEAR4 | Mentha arvensis | | Dicot | Riparian shrub | N |
| MIGU | Mimulus guttatus (M. guttatus var. guttatus) | | Dicot | Riparian shrub | N |
| MIMO3 | Mimulus moschatus | | Dicot | Riparian shrub | N |
| MIPE | Mitella pentandra | | Dicot | Riparian shrub | N |
| MYLA | Myosotis laxa | | Dicot | Riparian shrub | N |
| OSBE | Osmorhiza berteroi (O. chilensis) | | Dicot | Riparian shrub | N |
| PEPR2 | Penstemon procerus | | Dicot | Riparian shrub | N |
| PRVU | Prunella vulgaris | | Dicot | Riparian shrub | N |
| RAUN | Ranunculus uncinatus | | Dicot | Riparian shrub | N |
| TRLO | Trifolium longipes | | Dicot | Riparian shrub | N |
| URDI | Urtica dioica | | Dicot | Riparian shrub | N & NN |
| VIOLA | Viola sp. | | Dicot | Riparian shrub | N |
| EQHY | Equisetum hyemale | | Fern Allies | Riparian shrub | N |



Data use subject to license.

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www.delorme.com Mason Dam Hydroelectric Project
FERC No. P-12686



Scale 1 : 6,400
Combined Vegetation and TES assessment 15-0
Final Report May 2009

APPENDIX F-2
DATA POINT ATTRIBUTE FILE

| Data point | Map datum | UTM grid zone | UTM easting | UTM northing | Sample area photo # | Special status species potential? | Special status species present? | Wetland hydrology source(s) | Wetland hydro-geomorphic classification (HGM) | Wetland dominant type classification (Cowardin) |
|------------|------------|---------------|-------------|--------------|---------------------|-----------------------------------|---------------------------------|-----------------------------|---|---|
| 1 | NAD 83 11T | | 0420961.2 | 4947053.0 | C-1,C-2 | yes | no | n/a | n/a | R3UB1H |
| 2a | NAD 83 11T | | 0421032.0 | 4947029.0 | C-1,C-2 | yes | no | Mason Dam Releases | Riverine Flow Through | PSSK |
| 2a | | | | | | | | | | |
| 2a | | | | | | | | | | |
| 2b-1 | NAD 83 11T | | 0420922.0 | 4947057.0 | C-2 | yes | no | Mason Dam Releases | Riverine Flow Through | PEMK |
| 2b-2 | NAD 83 11T | | 0420935.0 | 4947080.0 | C-2 | yes | no | Mason Dam Releases | Riverine Flow Through/ | PEMB |
| 2b-2 | | | | | | | | | | |
| 2b-2 | | | | | | | | | | |
| 3-1 | NAD 83 11T | | 0420047.0 | 4946102.0 | C-4a | yes | no | Springs, snowmelt | Riverine Flow Through/ Hedwater Slope | PSSC |
| 3-1 | | | | | | | | | | |
| 3-1 | | | | | | | | | | |
| 3-1 | | | | | | | | | | |
| 3-1 | | | | | | | | | | |
| 3-1 | | | | | | | | | | |
| 3-1 | | | | | | | | | | |
| 3-1 | | | | | | | | | | |
| 3-2 | NAD 83 11T | | 0420490.3 | 4946191.2 | C5-c,C5d | yes | no | Springs, snowmelt | Riverine Flow Through | PFO/PSSC |
| 3-2 | | | | | | | | | | |
| 3-2 | | | | | | | | | | |
| 3-2 | | | | | | | | | | |
| 3-2 | | | | | | | | | | |
| 3-3 | NAD 83 11T | | 0420560.0 | 4946308.0 | C4-b | yes | no | Springs, snowmelt | Riverine Flow Through | PSSC |
| 3-3 | | | | | | | | | | |
| 3-3 | | | | | | | | | | |
| 3-3 | | | | | | | | | | |

| | | | | | | | | | | | |
|------|--------|-----|-----------|-----------|------|--|-----|----|-----|-----|-----|
| 7a-2 | NAD 83 | 11T | 0420849.0 | 4946928.0 | C-6a | | yes | no | n/a | n/a | n/a |
| 7a-2 | | | | | | | | | | | |
| 7a-2 | | | | | | | | | | | |
| 7a-2 | | | | | | | | | | | |
| 7b | NAD 83 | 11T | 0420780.0 | 4946602.0 | n/a | | yes | no | n/a | n/a | n/a |
| 7b | | | | | | | | | | | |
| 7b | | | | | | | | | | | |
| 7b | | | | | | | | | | | |
| 7b | | | | | | | | | | | |
| 7b | | | | | | | | | | | |
| 7b | | | | | | | | | | | |
| 7b | | | | | | | | | | | |
| 7c | NAD 83 | 11T | 0420440.0 | 4946141.6 | n/a | | yes | no | n/a | n/a | n/a |
| 7c | | | | | | | | | | | |
| 7c | | | | | | | | | | | |
| 7c | | | | | | | | | | | |
| 7d | NAD 83 | 11T | 0420708.2 | 4946009.8 | C-7a | | yes | no | n/a | n/a | n/a |
| 7d | | | | | | | | | | | |
| 7d | | | | | | | | | | | |
| 7d | | | | | | | | | | | |
| 8 | NAD 83 | 11T | 0420519.0 | 4946192.0 | C-7b | | yes | no | n/a | n/a | n/a |
| 8 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |

| Plant community type/ association | Dominant/Sub-dominant trees | Dominant shrubs | Dominant Herbs | Cover dominant trees (%) | Cover dominant shrubs (%) | Cover dominant herbs (%) | Tree Dbn height (ft.) or in non-forested areas | Snag density (#/ acre) | Coarse woody debris density (#/ acre) |
|-----------------------------------|-----------------------------|---------------------------------|-----------------------------------|--------------------------|---------------------------|--------------------------|--|------------------------|---------------------------------------|
| | | | | | | | | | |
| n/a | n/a | n/a | Ranunculus aquatilis | n/a | n/a | 2 | n/a | n/a | n/a |
| POTR15/ALIN | Populus trichocarpa | Alnus incana | Agrostis stolonifera | 5 | 25 | 60 | 10.5-11 | 0.06 | 0.08 |
| | | Cornus sericea (C. stolonifera) | | | 15 | | | | |
| | | Salix amygdaloides | | | 7 | | | | |
| Undefined, det | n/a | Populus trichocarpa | Agrostis stolonifera | n/a | 20 | 80 | 1.5 (non-tree) | 0 | 0 |
| CAAM | n/a | Cornus sericea (C. stolonifera) | Agrostis stolonifera | n/a | 15 | 20 | 2 (non-tree) | n/a | n/a |
| | | | Carex amplifolia | | | 25 | | | |
| | | | Carex aquatilis var. aquatilis | | | 25 | | | |
| ALIN2/COST4 | n/a | Alnus incana | Agrostis stolonifera | n/a | 15 | 30 | 2 (non-tree) | 0 | 0 |
| | | Symphoricarpos alba | Elymus glaucus | | 5 | 10 | | | |
| | | Cornus sericea (C. stolonifera) | Dipsacus fullonum (D. sylvestris) | | 2 | 15 | | | |
| | | Ribes spp. | Cynoglossum officinale | | 2 | 5 | | | |
| | | | Geum macrophyllum | | | 5 | | | |
| | | | Cirsium spp. | | | 2 | | | |
| | | | Juncus ensifolius | | | 1 | | | |
| | | | Juncus articulatus | | | trace | | | |
| POTR5/ALIN2 | Populus tremuloide | Alnus incana | Agrostis stolonifera | 30 | 30 | 25 | 2.25-24 | 1.0 | 7.7 |
| | | Symphoricarpos alba | Elymus glaucus | | 20 | 15 | | | |
| | | Cornus sericea (C. stolonifera) | Geum macrophyllum | | 20 | 3 | | | |
| | | Ribes spp. | Galium spp. | | 5 | 2 | | | |
| COST4 | n/a | Alnus incana | Agrostis stolonifera | n/a | 5 | 15 | 15 | 1.0 | 7.7 |
| | | Symphoricarpos alba | Cinna latifolia | | trace | 10 | | | |
| | | Cornus sericea (C. stolonifera) | Glyceria striata (G. elata) | | 50 | 5 | | | |
| | | Ribes spp. | Equisetum hyemale | | 2 | 1 | | | |

| | | | | | | | | | |
|---------------|--------------------|------------------------|--|-----|-------|----|----------------|-----|------|
| | | Salix amygdaloides | Geum macrophyllum | | 3 | 10 | | | |
| | | | Galium triflorum | | | 3 | | | |
| | | | Mimulus moschatus | | | 1 | | | |
| | | | Circaea alpina | | | 1 | | | |
| | | | Maianthemum stellatum (Smilacina stellata) | | | 1 | | | |
| | | | | | | | | | |
| Non-native ru | Pinus ponderosa | Horticultural spp. | Agropyron cristatum | 7 | <1 | 30 | 2.5 (non-tree) | 0 | 0 |
| | | Artemisia tridentata | Thinopyrum intermedium (Agrop | | <1 | 20 | | | |
| | | | Bromus tectorum | | | 25 | | | |
| | | | Festuca idahoensis | | | 5 | | | |
| | | | Epilobium brachycarpum (E. paniculatum) | | | 5 | | | |
| | | | | | | | | | |
| ARTRV-PUTR | n/a | Pinus ponderosa (yc | Thinopyrum interme | n/a | 3 | 40 | 5-3 (non-tree) | 0 | 0.7 |
| | | Artemisia tridentata | Koeleria macrantha (K. cristata) | | 3 | 5 | | | |
| | | Mahonia repens | Phleum pratense | | 15 | 5 | | | |
| | | Chrysothamnus spp. | Calamagrostis rubescens | | 15 | 5 | | | |
| | | | Carex geyeri | | | 5 | | | |
| | | | Achillea millefolium | | | 5 | | | |
| | | | Festuca idahoensis | | | 5 | | | |
| | | | | | | | | | |
| Undefined, de | Pinus ponderosa | Amelanchier alnifolia | Agropyron cristatum | 15 | 10 | 7 | 7-15 | 0.5 | 0.8 |
| | Populus tremuloide | Ribes aureum | Bromus tectorum | 1 | 4 | 7 | | | |
| | | Chrysothamnus visc | Festuca idahoensis | | 2 | 7 | | | |
| | | Artemisia tridentata | | | 1 | | | | |
| | | Purshia tridentata | | | 1 | | | | |
| | | Juniperus occidentalis | | | trace | | | | |
| | | | | | | | | | |
| n/a | n/a | n/a | Cirsium spp. | n/a | n/a | <1 | n/a | 0 | 0 |
| PIPO/SYAL | Pinus ponderosa | Symphoricarpos alb | Thinopyrum interme | 40 | 20-25 | 20 | 13 (avg) | 0 | 0.15 |
| | Pseudotsuga menz | Purshia tridentata | Festuca idahoensis | <1 | 2 | 20 | | | |
| | Pinus contorta | | Calamagrostis rubes | <1 | | 10 | | | |
| | | | Carex geyeri | | | 5 | | | |
| | | | Bromus carinatus | | | 5 | | | |
| | | | Koeleria macrantha (K. cristata) | | | 5 | | | |
| | | | Achillea millefolium | | | 5 | | | |

| | | | | | | | | | |
|--------------|------------------|----------------------|----------------------------------|----|-------|----|----------|-----|------|
| PIPO/SYAL | Pinus ponderosa | Pinus ponderosa (yc) | Thinopyrum interme | 40 | 7 | 20 | 13 (avg) | 0 | 0.15 |
| | Pseudotsuga menz | Symphoricarpos albu | Festuca idahoensis | 1 | 20 | 20 | | | |
| | | Mahonia repens | Calamagrostis rubescens | | 5 | 10 | | | |
| | | Chrysothamnus visc | Carex geyeri | | 5 | 5 | | | |
| | | | | | | | | | |
| PIPO/CARU | Pinus ponderosa | Pinus ponderosa (yc) | Festuca idahoensis | 50 | 15 | 30 | 5-23 | 0.2 | 0.7 |
| | Pseudotsuga menz | Pseudotsuga menzie | Calamagrostis rubes | 10 | 5 | 25 | | | |
| | | Symphoricarpos albu | Carex geyeri | | 5 | 15 | | | |
| | | Mahonia repens | Thinopyrum intermedium (Agrop | | 7 | 5 | | | |
| | | | Helianthella uniflora | | | 10 | | | |
| | | | Achillea millefolium | | | 5 | | | |
| | | | Lupinus spp. | | | 3 | | | |
| | | | Fragaria virginiana | | | 3 | | | |
| | | | | | | | | | |
| PIPO/CAGE | Pinus ponderosa | Pinus ponderosa (yc) | Carex geyeri | 40 | 5 | 40 | 15 (avg) | 0.1 | 0.6 |
| | | Pseudotsuga menzie | Calamagrostis rubescens | | 10 | 15 | | | |
| | | Symphoricarpos albus | | | 15 | | | | |
| | | Mahonia repens | | | 15 | | | | |
| | | | | | | | | | |
| PIPO/CAGE, e | Pinus ponderosa | Pinus ponderosa (yc) | Carex geyeri | 15 | 35 | 40 | 25-26 | 0.7 | 2.4 |
| | | Mahonia repens | Koeleria macrantha (K. cristata) | | 10-15 | 20 | | | |
| | | Symphoricarpos albu | Phleum pratense | | 5-10 | 5 | | | |
| | | | Poa pratensis | | | 5 | | | |
| | | | | | | | | | |
| PSME/CAGE2 | Pseudotsuga menz | Symphoricarpos albu | Calamagrostis rubes | 45 | 20 | 25 | 5-25 | 0.3 | 0.4 |
| | Pinus ponderosa | Spiraea betulifolia | Carex geyeri | 15 | 15 | 25 | | | |
| | | Mahonia repens | Elymus glaucus | | 12 | 25 | | | |
| | | Rosa woodsii | Arnica cordifolia | | 2 | 5 | | | |

APPENDIX G

BAKER BIRD CLUB OBSERVATIONS WITHIN THE MASON DAM VICINITY

"PHILLIPS LAKE AND SURROUNDING AREA (including dredge tailings) BIRD SIGHTINGS

We saw others outside this area, including wood duck, Brewer's sparrow, Swainson's hawk, Virginia rail, vesper sparrow, and I've seen (in the past) a warbling vireo and gray catbird at the dredge park, and a veery at both the dredge park and the Powder River trail. I also picked up a rock wren at the railroad depot trail through the tailings.

4/28/07 and 5/5/07

| | |
|-----------------------------------|------------------------|
| Tree swallow | Mourning dove |
| Oregon junco | Great gray owl |
| American robin | Barn swallow |
| Western bluebird | Black-capped chickadee |
| Brown-headed cowbird | Spotted sandpiper |
| Cassin's finch | Vaux's swift |
| Red crossbill | Eurasian starling |
| Pine siskin | California quail |
| Clark's nutcracker | Yellow warbler |
| Red-breasted nuthatch | Merlin |
| White-breasted nuthatch | Common yellowthroat |
| Canada goose | Chipping sparrow |
| Mountain chickadee | Common merganser |
| Evening grosbeak | |
| Common raven | |
| Red-winged blackbird | |
| Spotted towhee | |
| Snadhill crane | |
| Yellow-rumped warbler (Audubon's) | |
| Brewer's blackbird | |
| Opsrey | |
| Common loon | |
| Western/Clark's grebe | |
| Killdeer | |
| Ring-billed gull | |
| Gadwall | |
| Ruby-crowned kinglet | |
| Mallard | |
| Red-shafted flicker | |
| Williamson's sapsucker | |
| Song sparrow | |
| Calliope hummingbird | |
| Western meadowlark | |
| Black-billed magpie | |
| Red-tailed hawk | |
| Bald eagle | |
| Sharp-shinned hawk | |
| Violet-green swallow | |
| Kingfisher | |
| Cliff swallow | |
| Pygmy nuthatch | |
| Steller's jay | |
| Ring-necked duck | |
| American coot | |
| Turkey vulture | |
| Cinnamon teal | |
| Mountain bluebird | |
| American avocet | |
| Green-winged teal | |
| Northern shoveler | |
| Pied-billed grebe | |
| American kestrel | |
| Northern rough-winged swallow | |
| White-crowned sparrow | |
| American dipper | |
| Townsend's solitaire | |
| Savannah sparrow | |
| Hairy woodpecker | |

APPENDIX H
NOXIOUS WEED ASSESSMENT

Noxious Weed Assessment

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1.0 Introduction

Baker County has applied to the Federal Energy Regulatory Commission (FERC) to develop hydroelectric energy at the existing Mason Dam. Mason Dam is located in Baker County, Oregon approximately 15 miles southwest of Baker City off of State Highway 7. The majority of the Project is located within the Wallowa-Whitman National Forest.

Mason Dam was built by the US Bureau of Reclamation (BOR) on the Powder River for irrigation, water delivery, and flood control. Water is stored behind Mason Dam in Phillips Lake (or Phillips Reservoir), and released during the irrigation season by Baker Valley Irrigation District. Water is generally stored between October and March and released April through September (Baker County 2006). Releases average approximately 10 cfs (cubic feet per second) between October and January, increase to an average 20 to 50 cfs during February and March and generally remain above 100 to 200 cfs through the remainder of the year.

1.1 Weed Assessment Study Area

The study area for the noxious weed survey consists of 100 feet beyond the area that contains the powerhouse and tailrace facilities, and the substation to the interconnect with IPC (Idaho Power) transmission line. It also includes 50 feet on each side of the underground power line that will be placed within the Black Mountain Road right of way. See Exhibit 7.5.1 for a map showing the Mason Dam noxious weed study area.

2.0 Study Goals and Objectives

The goals of the noxious weed survey of the Mason Dam Hydroelectric Project was to evaluate the effects of project construction, operation and maintenance, and other related activities on the location, distribution and abundance of noxious weed infestation in the Project area (see Exhibit 7.5.1). For the survey, the term “noxious weed” includes species listed on the Baker County Weed Control Noxious Weed List (see Exhibit 7.3) and any additional noxious weeds on the Wallowa-Whitman National Forest list (see Exhibit 7.4).

3.0 Methods

The noxious weed survey of the Mason Dam study area was performed using commonly accepted botanical survey methods to systematically locate and identify noxious weed presence and distribution. Survey methods are straight forward, and involve visually searching the study area for the presence of noxious weeds.

The objective was to measure the density and presence of individuals within a given area. Line transects provided the most efficient, cost-effective method to quantify this measurement. Noxious weeds from the Baker County Weed Control Noxious Weed List (Exhibit 7.3) and the Wallowa-Whitman National Forest list (Exhibit 7.4) were

documented on Forest Service forms, Invasive Plant field form (found in Exhibit 7.6 Attachment G) and Rangeland General Form (found in Exhibit 7.6 Attachment H). Noxious weeds are defined as any plants listed on Baker County's noxious weed list (Exhibit 7.3) and the Forest Service (Exhibit 7.4). Identification references for noxious weeds are listed in the bibliography.

3.1 Pre Field Screening

Existing information on noxious weeds in and near the Project area is limited. No known dedicated noxious weed surveys had been conducted in Forest Service-owned portions of the study area. A spreadsheet defining the features required for identification of noxious weeds generally requires a flowering and identifiability time table. Exhibit 7.1 summarizes the floral start and end time pertaining to identification.

3.2 Field Methods

Noxious and invasive weed species were observed during the Vegetation and TES studies. Field surveys were done using three linear transects, measuring 300' paralleling the Black Mountain Road, during the surveys that were conducted June-August in 2007 (BCWD 2007). As noted in section 2.0 of the combined Vegetation and TES report, the Mason Dam study area was subject to a complete vascular plant survey during the fall of 2007, July and August of 2008. During these surveys, a running list was maintained with notes pertaining to the location of noxious/invasive weed concentrations. The timing of the surveys were done to better quantify all noxious/invasive weeds present based on their identifiable time (ECW 2009).

4.0 Results

A total of 211 vascular plant species were observed and verified to species/subspecies during these surveys. Of the above 211 plant species 13 are on the noxious/invasive weed lists provided by Baker County (Exhibit 7.3) and Forest Service (Exhibit 7.4). In December 2008, the locations of the previously noted weed populations were mapped and the number of individuals tallied. The data collected during the previous surveys for the related botanical resources allowed these weed concentrations to be readily re-located. The weather during Fall 2008 was relatively mild and the ground was snow-free in early December. Some of the species had senesced and detailed data was not able to be collected. However, most of the weed species were still intact and able to be censused. In particular, all of the Baker County Class A and B weeds were still recognizable. Tables 1 and 2 provide an evaluation of which previously observed species were in suitable condition for an accurate late season census and which species were not. The following criteria were used to evaluate the accuracy of the late season census:

- **Excellent:** Species was readily identifiable in previously noted occurrences and able to be mapped in other small patches that were encountered. It is not likely that any occurrences were missed or species numbers underestimated due to the late mapping date.

- **Good:** Species was readily identifiable in previously noted occurrences. Some small patches may have been missed or the numbers slightly underestimated due to the late mapping date.
- **Fair:** Evidence of species visible in previously noted occurrences, allowing a general location to be mapped, but no tally possible. Some patches may have been missed
- **Poor:** Species observed during July 2008 surveys not able to be re-located. There were no noxious or invasive species in the Mason Dam study area that fell into this mapping category.

The December mapping included all species listed on the Baker County 2008 Noxious Weed List and the species listed as invasive species in the Wallowa-Whitman National Forest (WWNF) Invasive Plant Program EIS (<http://www.fs.fed.us/r6/w-w/projects/invasive-plants/index.shtml>). The WWNF Invasive Plant EIS addressed all 40 invasive species known on the WWNF and assigned each species a treatment priority by Ranger District (see Appendix A). According to the Regional Forester's List for the entire Pacific Northwest (PNW)(received in February 2009), there are additional invasive species that occur in the study area. These species are listed in table 2. Some of these species had been mapped as they can affect special habitats (e.g., sweet clover). However, other species, such as orchard grass and stinging nettle, which are invasive in western Oregon are not necessarily invasive in this locale. These species were not mapped as they were not identified as invasive species prior to the field work, and there was no indication that the species were acting as invasives during the field surveys.

However, as noted in section 6.4 of the TES/Vegetation report, the species of greatest concern in the study area due to (1) their highly invasive nature, (2) proximity to special habitats and (3) proximity to construction or staging areas are diffuse knapweed, creeping and bull thistles, teasel and sulfur cinquefoil. (ECW 2009)

5.0 Discussion/Recommendation

5.1 Discussion

Though construction details and project design have not been formulated, project related activities, especially ground disturbing activities will have potential impacts on noxious weeds establishing themselves in the project area. These activities include construction of the powerhouse, power line, substation, and travel in and out of the project area.

Project-related disturbance has a very high potential to spread noxious weeds with in the project site and onto adjacent land. Steps must be taken to minimize that potential. Since the project site includes NFD RD 1145 (Black Mountain Road), a well-traveled arterial road, all Baker County and US Forest Service listed species present on the site must be given high priority status for treatment.

5.2 Recommendation

For this study area, there are two types of management strategies to be considered, Site-specific or Adaptive Management approach. Due to the sensitivity of the surrounding

areas the management strategies must be consistent with an Early Detection, Rapid Response approach. For the following reasons, we submit that the noxious weed management strategies should not take a site-specific approach, but an adaptive management approach of the project area.

1. Considering the relatively small elements of scale, we believe it would be erroneous to focus on specific sites (including along the road or around structures), and potentially exclude areas of future weed encroachment of the species currently present.
2. This site-specific approach has the potential to ignore other species that may encroach once the site is opened to project-related disturbance.
3. The very nature of the noxious weed species present on the site requires a comprehensive rather than exclusive focus. Inherent within the nature of invasive noxious weeds is their ability to occupy new sites.

An adaptive management approach should be implemented consistent with the way Baker County treats other “A” and “B” listed weeds. Past history on similar projects have taught us that this approach will provide results that are more effective. We propose that the study area will be grid surveyed in June and again in September for the first 2 years post-project completion for all “A” and “B” listed weeds. Within this time frame, all noxious weeds will be treated using site-appropriate herbicides, consistent with the programmatic Forest Service noxious Weeds. After the initial 2 years, the site will be monitored and treated using effective methods, timing, and rates of appropriate herbicides.

Current EIS limitations, Scotch Thistle-*Onopordum ancathium* and Canada thistle-*Cirsium vulgare*, are best treated with a late spring or mid-fall application of Picloram (Tordon 22K). Unfortunately, with current court injunction limitations in place, there are no effective herbicide options available for Whitetop – *Cardia draba*. As the programmatic EIS is finalizes and in place, there may be additional options available for treatment of these weeds. For this reason, we highly recommend that these options be updated periodically to reflect current available herbicide technologies.

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Exhibit 7.1 Pre Field Noxious Weed List likely to occur in Baker County

Watch List-Few Known Sites, Controlled by Baker County Weed Department

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|---|---|--------------------------------------|--------------------------|--------------|-------------------------------|-------------------|-------|
| | | | | | PNW | Priority Level | Acres |
|  | Musk Thistle (<i>Carduus nutans</i>) | No | Flowers in Early June | * | Yes | 1 | 0 |
|  | Mediterranean Sage (<i>Salvia aethiopsis</i>) | No | June | July | Yes | 1 | 0 |
|  | Dyers Woad (<i>Isthis tinctoria</i>) | No | April | July | Yes | NL | |
|  | Common bugloss (<i>Anchusa officianalis</i>) <i>Moved from an "A" Designated Weed in 2006-07 to a "Watch List" Weed in 2008</i> | No | May | October * | Yes | 1 | 0 |

"A" Designated-Mandatory Control County-wide

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | ID Start | ID End | USFS Listed Baker District | | |
|---|--|--------------------------------------|----------|-----------|-------------------------------|-------------------|-------|
| | | | | | PNW | Priority Level | Acres |
|  | Tansy ragwort (<i>Senecio jacobaea</i>) | No | July | September | Yes | NL | |

“A” Designated-Mandatory Control County-wide Continued

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|---|--|--------------------------------------|-----------------------|----------------|-------------------------------|-------------------|--------|
| | | | | | PNW | Priority Level | Acres |
|  | Leafy spurge (<i>Euphorbia esula</i>) | No | mid-May | June ** | Yes | 1 | 51.60 |
|  | Rush skeletonweed (<i>Chondrilla juncea</i>) | No | July | September | Yes | 1 | 0 |
|  | Spotted knapweed (<i>Centaurea maculosa</i>) | Yes | August | September * | Yes | 1 | 0 |
|  | Diffuse knapweed (<i>Centaurea diffusa</i>) | Yes | June | September * | Yes | 1 | 417.85 |
|  | Dalmation toadflax (<i>Linaria dalmatica</i>) | No | July | September | Yes | 1 | 258.36 |
|  | Yellow star-thistle (<i>Centaurea solstitialis</i>) | No | June | Frost * | Yes | 1 | 9.93 |

“A” Designated-Mandatory Control County-wide Continued

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|---|--|--------------------------------------|-----------------------|----------------|-------------------------------|-------------------|-------|
| | | | | | PNW | Priority Level | Acres |
|  | Perennial pepperweed (<i>Lepidium latifolium</i>) | No | May | September | Yes | NL | |
|  | Purple loosestrife (<i>Lyrum salicaria</i>) | No | June | September | Yes | 1 | 0 |
|  | Black henbane (<i>Hyoscyamus niger</i>) | No | May | September | Yes | NL | |
|  | Jointed goatgrass (<i>Aegilops cylindrica</i>) | No | June | August * | No | NL | |
|  | Buffalobur (<i>Solanum rostratum</i>) | No | Mid- Summer | September * | No | NL | |

“A” Designated-Mandatory Control County-wide Continued

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|---|---|--------------------------------------|-----------------------------|--------------|-------------------------------|-------------------|--------|
| | | | | | PNW | Priority Level | Acres |
|  | Japanese knotweed (<i>Polygonum cuspidatum</i>) | No | July | October | Yes | 1 | 0 |
|  | Scotch thistle (<i>Onopordum acanthium</i>) | Yes | Purple Flower In June | * | Yes | 2 | 88.78 |
|  | Yellow flag iris (<i>Iris pseudacorus</i>) <i>Recently added to list in 2008</i> | No | April | May | No | NL | |
|  | Salt Cedar (<i>Tamarix ramosissima</i>) <i>Recently added to list in 2008</i> | No | April | October * | No | NL | |
|  | Whitetop (<i>Lepidium draba</i>) | No | Flower in early May | September | Yes | 2 | 104.34 |

“B” Designated-Widespread and/or of High Concern

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|---|---|--------------------------------------|--|-------------------------|-------------------------------|-------------------|--------|
| | | | | | PNW | Priority Level | Acres |
|  | Russian knapweed (<i>Centaurea repens</i>) | No | June | October | Yes | 2 | |
|  | Canada/Bull thistle (<i>Cirsium vulgare</i>) | Yes | July | October * | Yes | 2 | 470.91 |
|  | Venice mallow (<i>Hibiscus trionum</i>) | No | June | End of August | No | NL | |
|  | Yellow toadflax (<i>Linaria vulgaris</i>) | No | Flowering May Fruiting August | October November | No | 2 | 0 |
|  | Dodder (<i>Cuscuta campestris</i>) | No | June | October | No | 4 | 0 |
|  | Chickory (<i>Cichorium intybus</i>) | No | As early as March June | October | Yes | NL | |

“B” Designated-Widespread and/or of High Concern Continued

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|---|--|--------------------------------------|-----------------------|----------------|-------------------------------|-------------------|-------|
| | | | | | PNW | Priority Level | Acres |
|  | Teasel (<i>Dipsacus fullonum</i>) | Yes | July | October * | Yes | 2 | 22.02 |
|  | Common Tansy (<i>Tanacetum vulgare</i>) | No | July | October | Yes | NL | |
|  | Klamathweed (<i>Hypericum perforatum</i>) | No | June | September * | No | NL | 0 |
|  | Puncturevine (<i>Tribulus terrestris</i>) | No | July | October | Yes | 3 | 0 |
|  | Myrtle spurge (<i>Euphorbia myrsinites</i>) <i>Moved from an “A” Designated Weed in 2006-07 to a “B” Designated Weed in 2008</i> | No | May | June ** | No | NL | |
|  | Sulfur cinquefoil (<i>Potentilla recta</i>) <i>Recently added in 2008</i> | Yes | Late May | October | Yes | 2 | 80.89 |

“C” Designated-Widespread and/or Moderate Concern

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|---|--|--------------------------------------|---|---------------------|-------------------------------|-------------------|-------|
| | | | | | PNW | Priority Level | Acres |
|  | Poison hemlock (<i>Conium maculatum</i>) | No | June | September | Yes | 3 | 0 |
|  | Morningglory (<i>Convolvulus arvensis</i>) | No | | | Yes | 1 | 0 |
|  | Russian thistle (<i>Salsola iberica</i>) | No | Flowering July Fruiting August | Frost Winter | Yes | 3 | 0 |
|  | Medusahead wildrye (<i>Taeniatherum caput-medusae</i>) | No | May | September | Yes | 1 | 0 |
|  | Kochia (<i>Kochia scoparia</i>) | No | July | September | Yes | NL | |
|  | Common mullein (<i>Verbascum thapsis</i>) | Yes | June | * | Yes | NL | |

“C” Designated-Widespread and/or Moderate Concern Continued

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|--|---|--------------------------------------|-----------------------|-----------|-------------------------------|-------------------|-------|
| | | | | | PNW | Priority Level | Acres |
|  | Moth mullein (<i>Verbascum blattaria</i>) | No | June | September | No | NL | |
|  | Bur buttercup (<i>Ranunculus testiculatus</i>) | No | May | July | No | NL | |
|  | Water hemlock (<i>Cicuta douglasii</i>) | No | June | September | No | NL | |

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|---|--|--------------------------------------|-----------------------|-----------|-------------------------------|-------------------|-------|
| | | | | | PNW | Priority Level | Acres |
|  | Slender Meadow Foxtail (<i>Alopecurus myosuroides</i>) | NO | | | | 1 | |
| | Broadleaved Pepperweed (<i>lepidium latitollum</i>) | | | | | 1 | |
|  | Squarrose Knapweed (<i>Centaurea Triumfettii</i>) | No | June | September | | 1 | |
|  | Silverleaf Nightshade (<i>Solanum elaeagnifolium</i>) | No | | | | 1 | |

| | Common Name (<i>Scientific Name</i>) | Occurrence within Project Area | Flowering ID Start | ID End | USFS Listed Baker District | | |
|---|---|--------------------------------------|-----------------------|-------------|-------------------------------|-------------------|-------|
| | | | | | PNW | Priority Level | Acres |
| | Clary Sage (<i>senecio sp.</i>) | No | | | | 1 | |
|  | Stinking Willie (<i>Senecio jacobaca</i>) | No | | | | 1 | 3.0 |
|  | Creeping Thistle (<i>Cirsium arvense</i>) | | July | October | | 2 | 470.9 |
| | Italian thistle (<i>Cirsium subniveum</i>) | | July | October | | 1 | 2.19 |
| | Houndstounge (<i>Cynoglossum officinale</i>) | | June | September | | 3 | 210.8 |
| | Scotchbroom (<i>Cytisus scoparius</i>) | | May | June *** | | 1 | .32 |
| | | | | | | | |
| | | | | | | | |

- * Identified by fruit until hard frost
- ** the genus Euphorbia is recognizable year-round
- *** vegetatively identifiable most of the year
- NL Not Listed

Exhibit 7.2

Invasive Weed Species Observed in the Mason Dam Study Area

Exhibit 7.2.1 Noxious and Invasive Weed Species Observed in the Mason Dam Study Area During the July 2008 plant surveys.¹

| Species | Noxious or Invasive Weed Status ² | | Evaluation of December Mapping |
|---|--|--------------------------------|--------------------------------|
| | Baker County List | Baker Ranger District Priority | |
| <i>Centaurea diffusa</i> | A | 1 | Excellent |
| <i>Centaurea maculosa</i> (=<i>C. biebersteinii</i>) | A | 1 | Excellent |
| <i>Cirsium arvense</i> | Not on list | 2 | Good |
| <i>Cirsium vulgare</i> | B | 4 | Good |
| <i>Cynoglossum officinale</i> | Not on list | 3 | Good |
| <i>Dipsacus fullonum</i> | B | 2 | Excellent |
| <i>Potentilla recta</i> | B | 2 | Good |
| <i>Verbascum thapsus</i> | C | Not on list | Excellent |

¹ *Onopordum acanthium* (Class A, FS priority 2) was observed in spring 2007 by A. Grammon, but has not been observed since treatment. *Hypericum perforatum* (Class B, FS priority 2) has been previously observed in the vicinity by the FS but was not observed in the 2008 summer surveys.

² See table 3 for Baker County weed classes and Appendix A for Baker Ranger District Invasives priorities.

Exhibit 7.2.2 Invasive Weed Species on the PNW Regional List Observed in the Mason Dam Study Area During the July 2008 plant surveys that are not on any of the local lists.

| Species | Evaluation of December Mapping |
|-----------------------------|---------------------------------------|
| Bromus tectorum | Excellent |
| Dactylis glomerata | N/A not mapped ¹ |
| Lactuca serriola | Fair-Good |
| Melilotus officinale | Fair |
| Urtica dioica | N/A not mapped ¹ |

¹ These species were not on any list received during 2008 and are not known to threaten special habitats in this locale and therefore were not mapped.

Exhibit 7.3

2008 Baker County Noxious Weeds “Watch List”, “A”, “B” & “C” Designated Weeds “A” List Weeds are Eligible for Cost-Share

“Watch List” – Few Known Sites; Controlled by Weed Supervisor County-Wide

- | | |
|-----------------------|----------------------------|
| 1. Musk Thistle | <i>Carduus nutans</i> |
| 2. Mediterranean sage | <i>Salvia aethiopis</i> |
| 3. Dyers Woad | <i>Istaxis tinctoria</i> |
| 4. Common bugloss | <i>Anchusa officinalis</i> |

“A” Designated Weeds – Mandatory Control County-wide

- | | |
|-------------------------|-------------------------------|
| 1. Tansy ragwort | <i>Senecio jacobaea</i> |
| 2. Leafy spurge | <i>Euphorbia esula</i> |
| 3. Rush skeletonweed | <i>Chondrilla juncea</i> |
| 4. Spotted knapweed | <i>Centaurea maculosa</i> |
| 5. Diffuse knapweed | <i>Centaurea diffusa</i> |
| 6. Dalmation toadflax | <i>Linaria dalmatica</i> |
| 7. Yellow starthistle | <i>Centaurea solstitialis</i> |
| 8. Perennial pepperweed | <i>Lepidium latifolium</i> |
| 9. Purple loosestrife | <i>Lyrum salicaria</i> |
| 10. Black henbane | <i>Hyoscyamus niger</i> |
| 11. Jointed goatgrass | <i>Aegilops cylindrica</i> |
| 12. Buffalobur | <i>Solanum rostratum</i> |
| 13. Japanese knotweed | <i>Polygonum cuspidatum</i> |
| 14. Scotch Thistle | <i>Onopordum acanthium</i> |
| 15. Yellow flag iris | <i>Iris pseudacorus</i> |
| 16. Salt Cedar | <i>Tamarix ramosissima</i> |
| 17. Whitetop | <i>Lepidium draba</i> |

Whitetop is listed as an “A” weed in designated areas of the County. Pine Valley and West Baker Valley and Bowen Valley/Sumpter areas are Mandatory Control. Contact Baker County Weed Control for specific information at 523-0618.

“B” Designated Weeds – Widespread and/or of High Concern

- | | |
|-------------|-----------------------|
| 1. Whitetop | <i>Lepidium draba</i> |
|-------------|-----------------------|

NOTE!: Whitetop is a “B” weed in all other areas of the County not listed in the above section.

- | | |
|-----------------------|-----------------------------|
| 2. Russian knapweed | <i>Centaurea repens</i> |
| 3. Canada thistle | <i>Cirsium vulgare</i> |
| 4. Venice mallow | <i>Hibiscus trionum</i> |
| 5. Yellow toadflax | <i>Linaria vulgaris</i> |
| 6. Dodder | <i>Cuscuta campestris</i> |
| 7. Chickory | <i>Cichorium intybus</i> |
| 8. Teasel | <i>Dipsacus fullonum</i> |
| 9. Common Tansy | <i>Tanacetum vulgare</i> |
| 10. Klamathweed | <i>Hypericum perforatum</i> |
| 11. Puncturevine | <i>Tribulus terrestris</i> |
| 12. Myrtle spurge | <i>Euphorbia myrsinites</i> |
| 13. Sulfur cinquefoil | <i>Potentilla recta</i> |

“C” Designated Weeds – Widespread and/or of Moderate Concern

- | | |
|-----------------------|-----------------------------------|
| 1. Poison hemlock | <i>Conium maculatum</i> |
| 2. Morningglory | <i>Convolvulus arvensis</i> |
| 3. Russian thistle | <i>Salsola iberica</i> |
| 4. Medusahead wildrye | <i>Taeniatherum caput-medusae</i> |
| 5. Kochia | <i>Kochia scoparia</i> |
| 6. Common mullein | <i>Verbascum thapsis</i> |
| 7. Moth mullein | <i>Verbascum blattaria</i> |
| 8. Bur buttercup | <i>Ranunculus testiculatus</i> |
| 9. Water hemlock | <i>Cicuta douglasii</i> |

Exhibit 7.4

Wallowa-Whitman National Forest Weed Lists

Exhibit 7.4.1 Invasive species priorities by Ranger District

| Common Name | Wallowa-Whitman National Forests - Ranger Districts | | | | | | |
|--------------------------------|---|-------------------------|---------------------------|--------------------|--------------------|------------|-------------|
| | 01 Baker | 02 Wallowa Valley | 04 Hells Canyon NRA | 05 Eagle Cap | 06 La Grande | 07 Pine | 09 Unity |
| Russian Knapweed | 2 | 1 | 1 | 1 | 1 | 2 | 2 |
| Slender Meadow Foxtail | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Common Bugloss | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Whitetop | 2 | 1 | 1 | 1 | 2 | 2 | 2 |
| Musk Thistle | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Plumeless Thistle (Italian) | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Diffuse Knapweed | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| Spotted Knapweed | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Meadow Knapweed | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Yellow Star-Thistle | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| Squarrose Knapweed | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Rush Skeletonweed | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Canada Thistle | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Bull Thistle | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Field Bindweed | 3 | 2 | 2 | 2 | 3 | 3 | 3 |
| Poison Hemlock | 3 | 2 | 2 | 2 | 3 | 3 | 3 |
| Common Crupina | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Chaparral Dodder | 4 | 4 | 4 | 4 | 2 | 4 | 4 |
| Houndstongue | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Scotchbroom | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Common Teasel | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Leafy Spurge | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Meadow Hawkweed | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| St. Johnswort | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Broadleaved Pepperweed | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Dalmatian Toadflax | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Yellow Toadflax | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| Purple Loosestrife | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Scotch Thistle | 2 | 1 | 1 | 1 | 3 | 2 | 2 |
| Japanese Knotweed | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Sulfur Cinquefoil | 2 | 1 | 1 | 1 | 2 | 2 | 2 |
| Himalayan Blackberry | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mediterranean Sage | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| Prickly Russian Thistle | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Bouncingbet | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Clary Sage | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Stinking Willie | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Silverleaf Nightshade | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Medusahead | 3 | 1 | 1 | 1 | 3 | 3 | 3 |

| Wallowa-Whitman National Forests - Ranger Districts | | | | | | | |
|---|-------------|-------------------------|---------------------------|--------------------|--------------------|------------|-------------|
| Common Name | 01 Baker | 02 Wallowa Valley | 04 Hells Canyon NRA | 05 Eagle Cap | 06 La Grande | 07 Pine | 09 Unity |
| Puncturevine | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

Priority 1 = Generally State Class A or T listed species. Goal is to eradicate new populations and/or control existing populations of these aggressive and harmful species

Priority 2 = Goal is to contain existing populations of aggressive species

Priority 3 = Goal is to eradicate new populations and/or control existing populations of these less aggressive invasive species

Priority 4 = Goal is to contain existing populations of less aggressive invasive spp.

**Wallowa-Whitman National Forest
Invasive Plant Treatment Project
Proposed Action**

Exhibit 7.4.2. Acres of Invasive Plants by Ranger District

| Invasive Plant Scientific Name | Ranger District | | | | | | | Total |
|-----------------------------------|-----------------|-----------|---------------------|-----------|---------|---------|-------------------|----------|
| | Baker | Eagle Cap | Hells Canyon NRA | La Grande | Pine | Unity | Wallowa Valley | |
| Acroptilon repens | 21.03 | | 5.26 | | | | | 26.28 |
| Alopecurus myosuroides | | | 0.30 | | | | | 0.30 |
| Anchusa arvensis | | | 5808.26 | | | | | 5808.26 |
| Cardaria draba | 104.34 | | 555.51 | 87.72 | 475.30 | 250.12 | 15.30 | 1488.29 |
| Carduus nutans | | | | 1.62 | | 25.57 | | 27.19 |
| Centaurea biebersteinii | 75.79 | 34.54 | 416.92 | 31.79 | 11.43 | 123.87 | 211.23 | 905.58 |
| Centaurea debeauxii | | 0.03 | | | | | | 0.03 |
| Centaurea diffusa | 417.85 | 704.25 | 432.80 | 887.63 | 336.44 | 537.84 | 826.52 | 4143.33 |
| Centaurea solstitialis | 9.93 | | 867.24 | 418.67 | 571.81 | | 96.84 | 1964.49 |
| Centaurea sp. | 35.02 | | 2.15 | 2.30 | 31.37 | 10.21 | 37.54 | 118.60 |
| Centaurea triumfettii | 6.62 | | | | | | | 6.62 |
| Chondrilla juncea | | | 375.24 | | 15.32 | | | 390.56 |
| Cirsium arvense | 470.91 | 127.39 | 737.73 | 462.20 | 167.71 | 1226.81 | 200.03 | 3392.79 |
| Cirsium subniveum | 2.19 | | | | | | | 2.19 |
| Cirsium vulgare | | | | 22.20 | | | | 22.20 |
| Conium maculatum | | | 6.53 | | 0.62 | | | 7.16 |
| Convolvulus arvensis | | | | | 3.28 | | | 3.28 |
| Crupina vulgaris | | | | | | | 284.02 | 284.02 |
| Cuscuta sp. | | | 7.16 | | | | | 7.16 |
| Cyanopsis sp. | | 1.80 | | | | | 0.58 | 2.38 |
| Cynoglossum officinale | 210.85 | | | 39.84 | 406.23 | 321.46 | | 978.38 |
| Cytisus scoparius | 0.32 | | | 0.13 | | | 114.62 | 115.07 |
| Dipsacus fullonum | 22.02 | | | | | 8.07 | | 30.09 |
| Euphorbia esula | 51.60 | | 0.95 | 22.28 | | 26.55 | 0.63 | 102.01 |
| Hieracium caespitosum | | 9.23 | 6.87 | | | | 0.09 | 16.20 |
| Hypericum perforatum | 258.36 | | 212.92 | | 100.32 | 31.46 | | 603.06 |
| Lepidium latifolium | | | | | 0.70 | | | 0.70 |
| Linaria dalmatica | 77.70 | 2.92 | 14.90 | 1.68 | 136.85 | 301.98 | 191.65 | 727.68 |
| Linaria sp. | | | | | | | 3.79 | 3.79 |
| Linaria vulgaris | 34.86 | | 7.45 | | 6.23 | 0.06 | 1.92 | 50.52 |
| Lythrum salicaria | | | 2.53 | | | | | 2.53 |
| Onopordum acanthium | 88.78 | | 1142.96 | 16.77 | 20.56 | 96.79 | 426.46 | 1792.32 |
| Potentilla recta | 80.89 | | | 9.81 | 96.03 | | 0.09 | 186.82 |
| Salsola tragus | | | | | 9.73 | | | 9.73 |
| Senecio jacobaea | 3.00 | 0.51 | 0.95 | 7.39 | | 63.90 | 2.44 | 78.18 |
| Senecio sp. | | | 4.12 | | | | 4.30 | 8.42 |
| Solanum elaeagnifolium | | | 10.88 | | | | | 10.88 |
| Taeniatherum caput- medusae | | | 6.01 | | 916.39 | | | 922.40 |
| Tribulus terrestris | | | 12.30 | | | | | 12.30 |
| | | | | | | | | |
| Total | 1972.06 | 880.67 | 10637.94 | 2012.05 | 3306.35 | 3024.69 | 2418.05 | 24251.81 |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|-------------------------------|---------------------|--|------------|-----------------|--|
| <i>Acaena novae-zelandica</i> | biddy-biddy | Open, disturbed, well-drained sites, including stable dunes, open scrub, grassy areas, and trampled sites in coastal habitats where some summer moisture is available and frosts are infrequent. Plants thrive on poor soils and compete poorly with established vegetation. | perennial | shrub, subshrub | seed |
| <i>Acroptilon repens</i> | Russian knapweed | Prefers heavy, often saline soils of bottomlands and sub-irrigated slopes and plains. Commonly found along roadsides, riverbanks, irrigation ditches, pastures, waste places, clearcuts, croplands, and hayfields. Prefers similar sites to those occupied by basin wildrye (<i>Elymus cinereus</i>). Does not readily establish in healthy native vegetation, requires disturbance. | perennial | forb/herb | seed and deep growing, creeping roots (penetrate up to 8 feet depth) |
| <i>Alopecurus myosuroides</i> | blackgrass | Blackgrass prefers moist soils. It grows most abundantly in the low areas of fields and on heavy soils with a high winter water table, but is not confined to these areas. | annual | grass | seed |
| <i>Ammophila arenaria</i> | European beachgrass | Found along the west coast of the United States, it thrives in areas of active sand movement and most often occupies the windward slopes of exposed dunes. However, it may extend inland for several miles. It grows on well-drained soils with various mineral compositions, including the sands of the Pacific Coast. | perennial | grass | rhizomes, few low vigor seeds |
| <i>Anchusa arvensis</i> | small bugloss | Annual bugloss grows along roadsides, in disturbed habitats, pastures, and cultivated fields. | annual | forb/herb | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|--------------------------------|---------------------|---|-----------------------|-------------------------------|---|
| <i>Anchusa officianalis</i> | common bugloss | Often found in waste places and roadsides. | biennial perennial | forb/herb | seed |
| <i>Artemisia absinthium</i> | absinth wormwood | Frequently found near streams, lakes or irrigation ditches. | perennial | shrub/ subshrub/ forb/herb | seed |
| <i>Arctium minus</i> | lesser burdock | Commonly found growing along roadsides, ditchbanks, in pastures and waste areas. | biennial | forb/herb | seed |
| <i>Brassica rapa</i> | field mustard | Found in cultivated fields, roadsides and waste areas. | annual biennial | forb/herb | seed |
| <i>Bromus rigidus</i> | ripgut brome | Common in waste areas, roadsides and railroads. Is also invasive on rangelands. | annual | grass | seed |
| <i>Brachypodium sylvaticum</i> | slender false brome | Closed-canopy coniferous forests, riparian forests, forest edges, and upland prairies in full sun. Can become dominant in the understory of forests that it invades, forming nearly monospecific stands that appear to outcompete and completely exclude native forbs and grasses. Tom Kaye (Institute of Applied Ecology) reports that <i>B. sylvaticum</i> can competitively exclude other species (including endangered plants and butterfly species that depend on them) in the understory of coniferous forests it invades, and that it even inhibits establishment of tree seedlings by sequestering much-needed soil moisture. | perennial | grass | seed; though not rhizomatous, can resprout from small stem or root fragments when cut |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|----------------------------|--------------------------|--|--------------------|-----------|---|
| <i>Bromus tectorum</i> | cheatgrass | Although cheatgrass can be found in both disturbed and undisturbed shrub-steppe and intermountain grasslands (e.g., where dominant grasses are bluebunch wheatgrass [<i>Pseudoroegneria spicata</i>] and Idaho fescue [<i>Festuca idahoensis</i>]), the largest infestations are usually found in disturbed shrub-steppe areas, overgrazed rangeland, abandoned fields, eroded areas, sand dunes, roads, and waste places. | annual | grass | seed |
| <i>Buddleja 'davidii</i> | orange eye butterflybush | Prefers well drained, average soil. Once established, can thrive in fairly dry condition. | perennial | shrub | seed |
| <i>Carduus acanthoides</i> | spiny plumelless thistle | Infrequently to locally abundant in pastures, stream valleys, fields and roadsides. | biennial | forb/herb | seed |
| <i>Cardaria draba</i> | whitetop | Variety of non-shaded, disturbed conditions, including roadsides, waste places, fields, gardens, feedlots, watercourses, open grasslands, and along irrigation ditches. Found in variety of soil types, even in saline soils, except not found in acidic soils. Most aggressive, rapid expansion occurs in irrigated conditions or during moist years. | perennial | forb/herb | seed (viable up to 3 years) and deep creeping roots |
| <i>Carduus nutans</i> | musk thistle | Musk thistle thrives in disturbed areas, such as roadsides, grazed pastures, burned areas, and old fields, but also can invade deferred pastures and native grasslands. It can occur in almost all habitats except dense forests, high mountains, deserts, and frequently cultivated farmlands. | biennial perennial | forb/herb | seed (viable up to 10 years) |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|---|---------------------------|--|--------------------|-----------|--|
| <i>Cardaria pubescens</i> | hairy whitetop | Well adapted to moist habitats, especially sub-irrigated pastures, rangeland, roadsides, and ditch banks. | perennial | forb/herb | seed |
| <i>Carduus pycnocephalus</i> | Italian plumeless thistle | Invades pasture, range and forest lands along with roadsides, waste areas, ditch banks, stream banks and grain fields. | annual | forb/herb | seed |
| <i>Carduus tenuiflorus</i> | winged plumeless thistle | Infests roadsides and waste areas, and can be a major problem on hill pastureland. | annual | forb/herb | seed |
| <i>Centaurea biebersteinii</i> | spotted knapweed | Best adapted to well-drained, light-textured soils in areas that receive some summer rainfall. This includes ponderosa pine (<i>Pinus ponderosa</i>) and Douglas-fir (<i>Pseudotsuga menziesii</i>) forests and shrub-steppe habitats with bluebunch wheatgrass, needle-and-thread, and Idaho fescue. Infestations may change soil conditions to the advantage of this species (see 3.1.2) | biennial perennial | | seed (viable up to 8 years) and lateral shoots |
| <i>Centaurea cyanus</i> | garden cornflower | No description. | annual | forb/herb | seed |
| <i>Centaurea debeauxii</i> (C. pratensis) | meadow knapweed | Best adapted to well-drained, light-textured soils in areas that receive some summer rainfall. This includes ponderosa pine and Douglas-fir forests and shrub-steppe habitats with bluebunch wheatgrass, needle-and-thread, and Idaho Fescue. | perennial | forb/herb | seed |
| <i>Centaurea diffusa</i> | diffuse knapweed | Disturbed or overgrazed lands are prime habitat, but can also invade undisturbed grasslands, shrublands, riparian communities, forested benchlands, and rugged terrain. | biennial perennial | forb/herb | seed, tumbleweed |
| <i>Centaurea jacea</i> | brownray knapweed | Infests roadsides, waste areas, fields and pastures. | perennial | forb/herb | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|-------------------------------|----------------------|--|--------------------|-----------|--|
| <i>Centaurea melitensis</i> | Maltese star-thistle | Grows on various soil types; usually introduced on roadsides and waste areas. | annual biennial | forb/herb | seed |
| <i>Centaurea solstitialis</i> | yellow starthistle | Best adapted to open grasslands with deep well-drained soils and average annual precipitation of 10 to 60 inches. | annual | forb/herb | seed |
| <i>Centaurea triumfettii</i> | squarrose knapweed | Invasives juniper-Idaho fescue and big sagebrush-bunchgrass rangelands, and dry rocky sites of degraded juniper-shrub savanna with scattered western juniper and ponderosa pine. | perennial | forb/herb | seed |
| <i>Chondrilla juncea</i> | rush skeletonweed | Sandy to gravelly, well-drained soils or shallow soils. Seedlings require moisture for up to 6 weeks to develop a persistent root system. | perennial | forb/herb | seed |
| <i>Cirsium arvense</i> | Canada thistle | Prefers and is invasive in prairies and other grasslands and riparian areas with deep, well-aerated, mesic soils, but also occurs in almost every upland herbaceous community, especially roadsides, abandoned fields, and pastures. | perennial | forb/herb | seed and shoots from lateral roots (dormant buried seed viable up to 26 years) |
| <i>Cichorium intybus</i> | chicory | Widespread along roadsides and disturbed sites. | biennial perennial | forb/herb | seed |
| <i>Cirsium ochrocentrum</i> | yellow spine thistle | Can be found in dry sandy and gravelly soil in prairies, pastures and open disturbed sites. | biennial perennial | forb/herb | seed |
| <i>Cirsium undulatum</i> | wavyleaf thistle | Found in foothills, meadows and rangeland. | biennial perennial | forb/herb | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|-----------------------------|--------------------|---|------------|-----------------|---|
| <i>Cirsium vulgare</i> | bull thistle | Occurs in dry to moist habitat, fields, pastures, grasslands, roadways, forest clearings, rock outcrops, and along waterways. Does best in areas with moderate slope. It is not shade tolerant. | biennial | forb/herb | seed (viable 3 years or less) |
| <i>Clematis vitalba</i> | evergreen clematis | Found in forest lands and in the margins and openings of forested lands. It is also found in riparian areas established with willows, in waste areas, and in coastal and lowland areas (Cronk and Fuller 1995). | perennial | vine, subshrub | seed |
| <i>Convolvulus arvensis</i> | field bindweed | Cultivated fields, orchards, vineyards, gardens, pastures, abandoned fields, roadsides, waste places. Grows best on moist fertile soils. Tolerates poor, dry, gravelly soils, but seldom grows in wet soils. Inhabits regions with temperate, Mediterranean, and tropical climates. | perennial | vine, forb/herb | seed and long, deep (~10 feet) taproot that gives rise to lateral roots |
| <i>Conium maculatum</i> | poison hemlock | Tolerates poorly drained soils and frequents stream and ditch banks. Commonly occurs along roadsides, field margins, ditches, and in low-lying waste places. Can invade native riparian woodlands and open floodplains along waterways. | biennial | forb/herb | seed |
| <i>Cortaderia spp.</i> | pampas grass | Highly competitive with native plants once seedlings become established and is a substantial threat to the ecological quality of preserves, particularly in coastal and grassland sites. Particularly threatened habitats include coastal sand dunes and inland sand hills. | perennial | grass | seed |
| <i>Crupina vulgaris</i> | common crupina | Primary habitat is southern slopes in steep canyon grasslands, waste areas, arid hillsides, rangelands, and grassy slopes. | annual | forb/herb | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|-------------------------------|-----------------|---|------------|-----------|--|
| <i>Cyperus esculentus</i> | yellow nutsedge | Prefers moist, sandy soils. | perennial | sedge | seed, creeping rootstock, and/or small underground nutlets |
| <i>Cynoglossum officinale</i> | houndstongue | Well-adapted to forested areas, roadsides, meadows, pastures, and waste places, often found on gravelly, somewhat alkaline soils. | biennial | forb/herb | seed |
| <i>Cytisus scoparius</i> | Scot's broom | Found in pastures, forest, and wastelands. This nitrogen fixer which has prolific and vigorous growth patterns may have the ability to alter native plant succession. | perennial | shrub | seed (long-lived) |
| <i>Cytisus striatus</i> | striated broom | Found in open disturbed sites, such as logged or burned sites, roadsides, and pastures, and can invade +/- undisturbed grasslands, coastal scrub, oak woodlands, and open forests. Does not tolerate heavy shade, but can tolerate minimal shade along the edges of forest canopies. Drought-resistant. | perennial | shrub | seed |
| <i>Daucus carota</i> | wild carrot | Found in pastures, meadows, dry areas and rocky soils. | biennial | forb/herb | seed |
| <i>Dactylis glomerata</i> | orchardgrass | Found along roadsides and in disturbed habitats. | perennial | grass | seed |
| <i>Dipsacus fullonum</i> | Fuller's teasel | Found in moist sites, especially along irrigation ditches, canals and disturbed sites. | biennial | forb/herb | seed |
| <i>Dipsacus laciniatus</i> | cutleaf teasel | Grows in open, sunny habitats that range from wet to dry levels. Optimal conditions seem to be mesic habitats. Roadsides and heavily disturbed areas are the most common habitats of teasel. Teasel sometimes occurs in high quality prairies, savannas, seeps, and sedge meadows. | biennial | forb/herb | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|------------------------------|-------------------------|---|--------------------|-----------|---|
| <i>Digitalis purpurea</i> | purple foxglove | Found in logged areas, along roadsides and in coastal pastures. | biennial | forb/herb | seed |
| <i>Echium vulgare</i> | blueweed/vipers bugloss | Found in waste ground, roadsides, gravel bars, and sand bars. | biennial perennial | forb/herb | seed |
| <i>Elymus repens</i> | quackgrass | Tolerates a variety of soil types, including saline conditions, but grows most vigorously in soils of pH 6.5-8.0. Will dominate fields for several years after abandonment, but will not tolerate shade. In western North America, quackgrass invades wet meadows, wetland borders and other low-lying wet areas of grasslands and prairies. | perennial | grass | seed and rhizomes |
| <i>Euphorbia esula</i> | leafy spurge | Occurs in untilled, non-cropland habitats, including both disturbed and undisturbed sites, especially abandoned cropland, pastures, rangelands, woodlands, roadsides, and waste places. Tolerant of a wide range of soils from rich, moist soils of riparian zones to nutrient-poor, dry soils of western rangelands. It is most aggressive in semi-arid situations where competition from associated species is less intense, so invades most rapidly on dry hillsides, dry prairies, or rangelands. | perennial | forb/herb | seed (viable up to 8 years, usually germinate within 2) deep, spreading roots |
| <i>Foeniculum vulgare</i> | sweet fennel | Found along waste places, roadsides, riverbanks, and other nonagricultural situations (Parsons 1973) | biennial perennial | forb/herb | seed |
| <i>Genista monspessulana</i> | French broom | See Scot's broom (<i>Cytisus scoparius</i>). | perennial | shrub | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|---------------------------------|-----------------|--|-----------------|---------------|---------------------------------|
| <i>Geranium robertianum</i> | stinky bob | Highly adaptable. It is found in moist forests with varying amounts of canopy closure (i.e., from closed canopy to forest gaps to more open canopies), and on dry rocky outcrops. | annual biennial | forb/herb | seed |
| <i>Gypsophila paniculata</i> | babysbreath | Found in pastures, open areas and rangeland. | perennial | forb/herb | seed |
| <i>Hedera helix</i> | English ivy | Grows easily in many types of soil and in sun or shade. English ivy is fairly drought tolerant once it is established. | perennial | vine/subshrub | vegetative, stoloniferous, seed |
| <i>Heracleum mantegazzianum</i> | giant hogweed | Thrives in many habitats but does particularly well where the soil has been disturbed, such as on wasteground or on riverbanks, where erosion combined with a good supply of groundwater provide ideal conditions. | perennial | forb/herb | seed |
| <i>Hieracium aurantiacum</i> | orange hawkweed | Elevational range of 2000 to 5500 ft. in abandoned farmlands, pastures, lawns, fields, roadsides, mountain meadows, and forest clearings. They do not tolerate full shade, so they are not found in densely forested areas, but can dominate forest openings and margins. Prefer well-drained, coarse-textured soils moderately low in organic matter. | perennial | forb/herb | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|------------------------------|----------------------|--|-----------------|------------|-----------------------------|
| <i>Hieracium caespitosum</i> | meadow hawkweed | Elevational range of 2000 to 5500 ft. in abandoned farmlands, pastures, lawns, fields, roadsides, mountain meadows, and forest clearings. They do not tolerate full shade, so they are not found in densely forested areas, but can dominate forest openings and margins. Prefer well-drained, coarse-textured soils moderately low in organic matter. | perennial | forb/herb | seed |
| <i>Hieracium laevigatum</i> | Smooth hawkweed | Area of highest concentration is in Whatcom County, Washington, where it is most common along road shoulders. However, plants are starting to invade fields and other areas adjacent to roadside infestations. | perennial | forb/herb | seed |
| <i>Hyoscyamus niger</i> | black henbane | Disturbed open sites, roadsides, fields, waste places, and abandoned gardens. Grows best in sandy or well-drained loam soils with moderate fertility. Does not tolerate waterlogged soils. | annual biennial | forb/herb | seed (viable up to 4 years) |
| <i>Hypericum perforatum</i> | common St. Johnswort | Rangeland and pastures (especially when poorly managed), fields, roadsides, forest clearings in temperate regions with cool, moist winters and dry summers. Grows best in open, disturbed sites and on slightly acidic to neutral soils. Does not tolerate saturated soils. | perennial | forb/herb | seed and short runners |
| <i>Hypochoeris radicata</i> | hairy catsear | Found in disturbed sites, waste areas, lawns, gardens, pastures and cultivated fields. | perennial | forb/herb | seed |
| <i>Ilex aquifolium</i> | English holly | Grows in forests, parks, gardens and in plains and mountain areas | perennial | tree/shrub | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|-----------------------------|------------------------|---|--------------------|-------------------------|------------------------------|
| <i>Isatis tinctoria</i> | dyer's woad | Disturbed and undisturbed sites, roadsides, railroad rights-of-ways, fields, pastures, grain and alfalfa fields, forest and rangeland. Often grows on dry, rocky or sandy soils. | biennial perennial | forb/herb | seed and thick, deep taproot |
| <i>Kochia scoparia</i> | kochia | Commonly found in cultivated fields, gardens, roadsides, ditchbanks and waste areas. | annual | forb/herb | seed |
| <i>Lathyrus latifolius</i> | perennial pea | No description | perennial | vine/subshrub/forb/herb | seed and rhizomes |
| <i>Lactuca scariola</i> | prickly lettuce | A weed in orchards, ornamental stock, horticultural and agronomic crops, most irrigated crops, and roadsides. | annual biennial | forb/herb | seed and rhizomes |
| <i>Lepidium latifolium</i> | broadleaved pepperweed | Thrives in nutrient-rich soils. | perennial | forb/herb | seed |
| <i>Leucanthemum vulgare</i> | oxeye daisy | Fields, pastures, waste places, roadsides, railroads, prairies, slopes, disturbed sites. | perennial | forb/herb | seed and rhizomes |
| <i>Linaria dalmatica</i> | Dalmatian toadflax | Rapidly colonizes open or disturbed areas, especially roadsides, fences, rangelands, croplands, clearcuts, and pastures. Seedlings are ineffective competitors for soil moisture against established perennials and winter annuals, but, once established, both species of toadflax suppress other vegetation mainly by intense competition for limited soil water. Mature plants are particularly competitive with winter annuals and shallow-rooted perennials. Dalmatian toadflax prefers sandy or gravelly soil. It is most commonly found along roadsides, rangelands, dry forests and pastures but can adapt to fit a wide range of habitats. | perennial | forb/herb | seed and rhizomes |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|---------------------------------------|---------------------------------------|--|------------------------------|----------------------------|----------------------------|
| <i>Ligustrum vulgare</i> | European privet | Prefers fine and medium textured soils. | perennial | shrub | seed |
| <i>Linaria vulgaris</i> | butter and eggs | Found along roadsides, waste places, and cultivated fields. | perennial | forb/herb | seed and rhizomes |
| <i>Lotus corniculatus</i> | birdfoot deervetch | Found in fields, roadsides, and disturbed areas along railroads. | perennial | forb/herb | seed |
| <i>Lotus pedunculatus</i> | big trefoil | Big trefoil can grow in standing water, high acid soils, or soils with a high aluminum content. It does well in soils with low fertility. | perennial | forb/herb | seed |
| <i>Lythrum salicaria</i> | purple loosestrife | Grows in aquatic areas, including wetlands, bogs, along stream and river banks, lake shores, in ditches and disturbed wet soil areas. | perennial | forb/herb | seed and rhizomes |
| <i>Marrubium vulgare</i> | horehound | Widely distributed along roadsides, dry waste areas and in gardens. | perennial | forb/herb | seed |
| <i>Melilotus officinalis, M. alba</i> | yellow sweetclover, white sweetclover | Common along roadsides and waste areas (often first plants to appear on disturbed sites) and is sometimes promoted for soil stabilization and improvement. | annual biennial perennial | forb/herb | seed |
| <i>Onopordum acanthium</i> | Scotch cottonthistle | Invades most habitats, from dry to moist sites. Occurs in waste places, along roadsides, in dry meadows, rangelands, pastures, and sometimes waterways. | biennial | forb/herb | seed |
| <i>Phalaris arundinacea</i> | reed canarygrass | Found in wet areas along streams and in marshes. | perennial | grass | seed and rootstock |
| <i>Plantago lanceolata</i> | narrowleaf plantain | Found along roadsides, pastures and other disturbed sites such as lawns and gardens. | biennial perennial | forb/herb | seed |
| <i>Polygonum cuspidatum</i> | Japanese knotweed | Found along roadsides, waste areas, ditchbanks, wetlands, streambanks and hillsides. | perennial | subshrub, shrub, forb/herb | seed, rhizomes, vegetative |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|-------------------------------|----------------------|---|------------|-----------|----------------------------|
| <i>Polygonum polystachyum</i> | Himalayan knotweed | Grows in wet meadows and marshes of forested areas between 2500-4000 m (8200-13000 ft) elevation in its native range, but can be found to sea level in the Pacific Northwest. | perennial | forb/herb | seed and creeping rhizomes |
| <i>Potentilla recta</i> | sulphur cinquefoil | Found in open grasslands, shrubby areas, open forests, logged areas, roadsides, waste places, and abandoned fields. Sulfur cinquefoil is an early successional species that colonizes disturbed sites, as well as forest edges. It cannot survive shade, such as full forest canopy. Sulfur cinquefoil is becoming co-dominant with spotted knapweed on many sites and now is apparently replacing knapweed in some areas of western Montana. | perennial | forb/herb | seed |
| <i>Polygonum sachalinense</i> | giant knotweed | Giant knotweed shares habitat with Japanese knotweed. Both species are found along stream banks, in moist waste places, neglected gardens, roadsides, and railroad right-of-ways. In Washington it is more commonly found west of the Cascade Mountains. | perennial | forb/herb | seed and creeping rhizomes |
| <i>Ranunculus repens</i> | creeping buttercup | Most often found in lowland pastures and wet areas. | perennial | forb/herb | seed and creeping roots |
| <i>Rubus discolor</i> | Himalayan blackberry | Grows along roadsides, creek gullies, river flats, fence lines (Parsons and Amor 1968), and right-of-way corridors. <i>R. discolor</i> tends to prefer wet sites (Amor and Stevens 1976), but can also be found on dry roadsides in western parts of the region. | perennial | shrub | seed, adventitious root |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|------------------------------|-------------------------|---|-----------------|-----------------------|-------------------------------|
| <i>Rubus laciniatus</i> | cutleaf blackberry | Found in disturbed upland sites. It may often be found growing along fence rows, roadsides, railroad grades, and in disturbed pastures. | perennial | Vine/ shrub/ subshrub | seed, adventitious root |
| <i>Salvia aethiopsis</i> | Mediterranean sage | Invades pastures, meadows, rangeland and other open areas. | biennial | forb/herb | seed (tumbleweed) |
| <i>Salsola kali</i> | Russian thistle | Well-adapted in cultivated dryland agriculture, but is also found on disturbed wasteland, over-grazed rangeland, and irrigated cropland. | annual | forb/herb | seed (tumbleweed) |
| <i>Saponaria officinalis</i> | bouncingbet | Grows in moist ditches, waste places, near old homesites, along roadsides, and as a planted ornamental in some areas of the country. | perennial | forb/herb | seed |
| <i>Sasa palmata</i> | broadleaf bamboo | No description. | perennial | shrub, forb/herb | rhizomes, few low vigor seeds |
| <i>Salsola tragus</i> | prickly Russian thistle | Found in disturbed sites, rocky slopes, and flats, frequently occurring on clay soils. | annual | forb/herb | seed |
| <i>Secale cereal</i> | cereal rye | Found along established roadsides, waste places and open rangeland. | annual biennial | grass | seed |
| <i>Senecio jacobaea</i> | tansy ragwort | Invades cut-over forest lands, irrigated and non-irrigated pastures, woodland pastures, and fallow lands. Although it prefers light, well-drained soils in cool, moist climates and rarely is tolerant of high water tables or acidic soils, it can grow in most soil moisture regimes, even where there are hot, dry summers. It can over-winter in areas where temperatures reach -20°F or lower if there is good snow cover. | perennial | forb/herb | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|-----------------------------------|-----------------------|--|------------|---------------------|-------------------------|
| <i>Sonchus arvensis</i> | field sowthistle | Adapted to many soil types and moisture regimes, seems to prefer low, fine-textured soils, like loams, and does better under alkaline or neutral conditions. | perennial | forb/herb | seed and creeping roots |
| <i>Solanum dulcamara</i> | climbing nightshade | Typically found growing in moist waste areas, fence rows, drainage ditches and waterways, and may form large colonies or thickets. Also becomes established in orchards, vineyards and residential landscapes. | perennial | subshrub, forb/herb | seed, spreading stems |
| <i>Solanum elaeagnifolium</i> | silverleaf nightshade | Found in disturbed sites such as fallow fields, gardens, and vacant areas, especially those with sandy soil. | perennial | forb/herb | seed and rhizomes |
| <i>Taeniatherum caput-medusae</i> | medusahead | Areas most susceptible to invasion by medusahead are soils with high clay content, well-developed profiles, and those receiving run-off from infested areas (The Nature Conservancy 1988). Medusahead is displacing cheat grass on more mesic sites. | annual | grass | seed |
| <i>Tanacetum parthenium</i> | feverfew | Found in mountain scrub, rocky slopes, walls, waste places and gardens, but avoids acid soils. | perennial | forb/herb | seed |
| <i>Tanacetum vulgare</i> | common tansy | Prefers full sun and well-drained but moist soils and is prevalent along ditches, creeks, and roadways. Commonly occurs in disturbed areas at low elevations. | perennial | forb/herb | seed |
| <i>Tribulus terrestris</i> | puncturevine | Grows on disturbed sites where it needs relatively high temperatures for germination and growth. Adapted to a wide range of soil conditions. | perennial | forb/herb | seed |

Exhibit 7.4.3 Current Invasive Plant Species on National Forest Lands in the Pacific Northwest Region

| SCIENTIFIC NAME | COMMON NAME | HABITAT PREFERENCE | LIFE CYCLE | HABIT | MODE OF REPRODUCTION |
|--------------------------|--------------------|---|------------|----------------|---|
| <i>Ulex europaeus</i> | common gorse | Found along coastal areas of Oregon and Washington, often in upper elevation pasture land. | perennial | shrub | seed (viable for up to 30 years) |
| <i>Urtica dioica</i> | stinging nettle | Grows in shaded moist areas along streams, or in deep, rich, undisturbed soils. Difficult to distinguish from the native species of <i>Urtica</i> . | perennial | forb/herb | seed |
| <i>Ventenata dubia</i> | North Africa grass | Occurs in grain crops, rangeland and disturbed sites. | perennial | grass | seed |
| <i>Verbascum thapsus</i> | common mullein | Natural meadows and forest openings, where it adapts easily to a wide variety of site conditions. Prefers, but is not limited to, dry sandy soils. It is shade intolerant. Primarily a weed of pastures, hay fields, roadsides, rights-of-way, and abandoned areas. | biennial | forb/herb | seed (one plant can produce 100,000 to 180,00 seeds with viability up to 100 years) |
| <i>Vinca major</i> | bigleaf periwinkle | Grows most vigorously in moist soil with only partial sun, "but it will grow in the deepest shade, even in poor soil" (Bailey 1914). It is liable to cold damage during hard winters (Steam 1973). Hot, dry weather will cause it to die back. It is most frequently found as an escape in moist rich soils bordering gardens, lawns, roadsides, cemeteries, and shaded waste places, in localities where it has been planted extensively as ground cover (Muenscher 1955). | perennial | vine, subshrub | Seed, trailing and freely rooting branches |

Exhibit 7.5

Maps

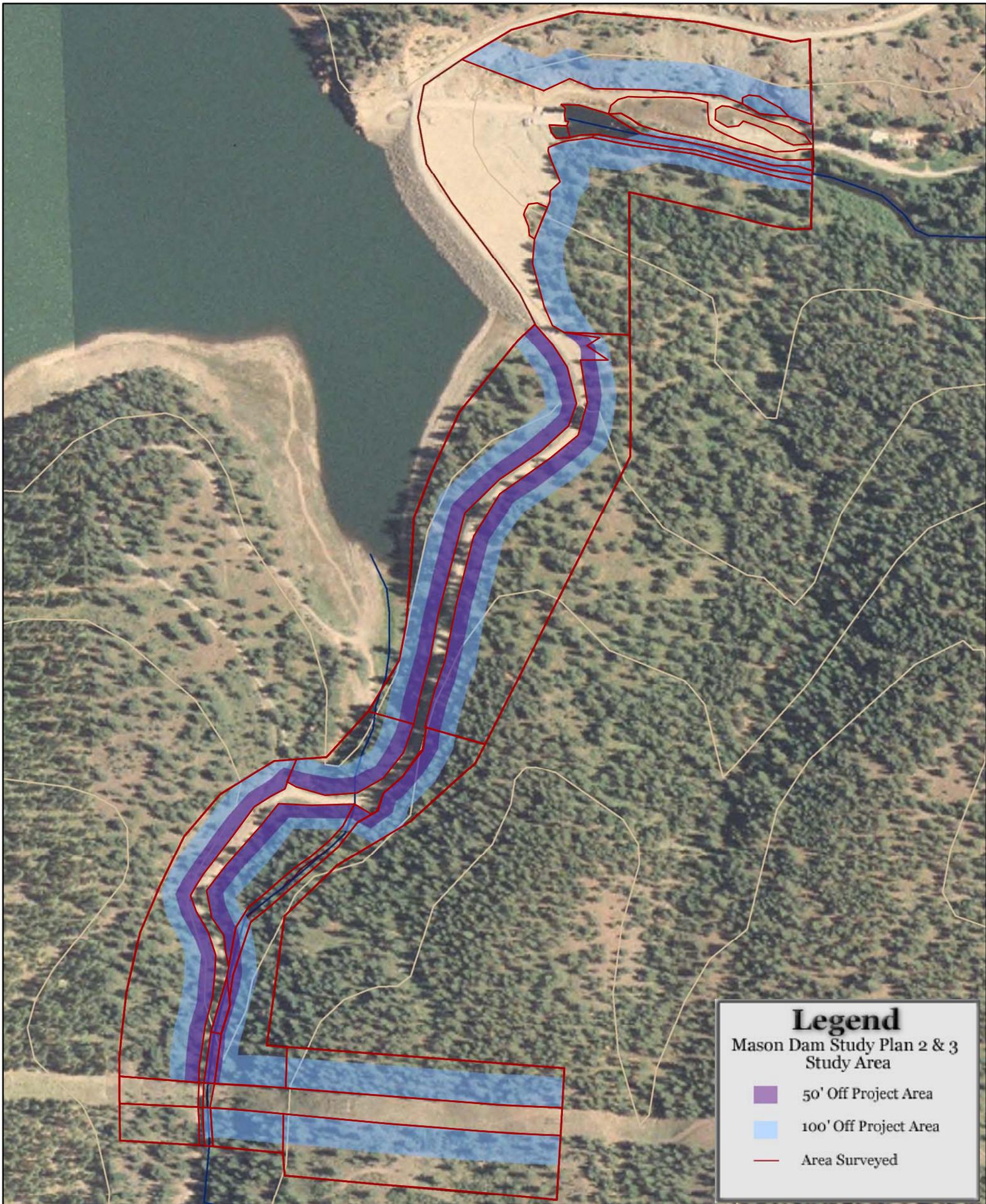
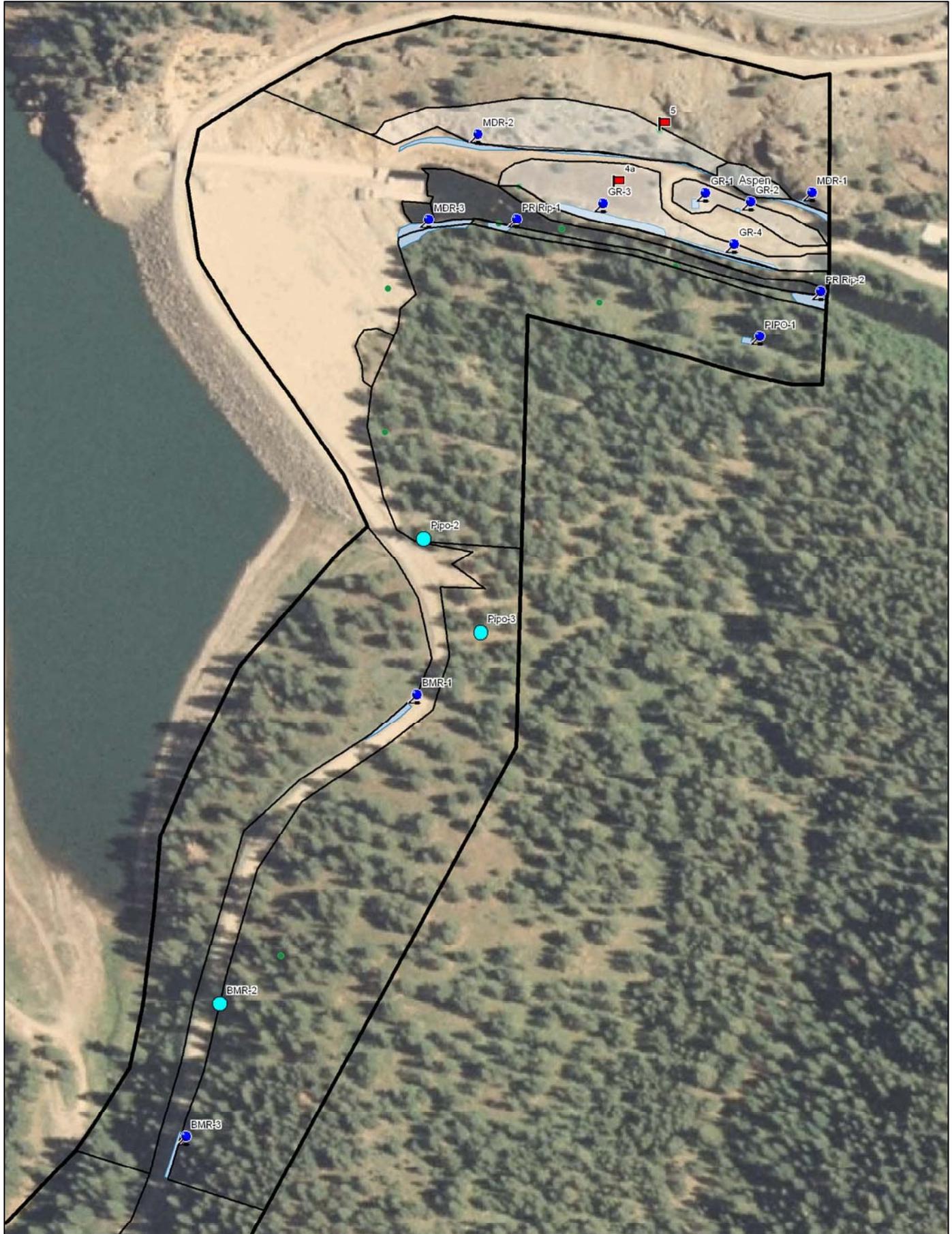


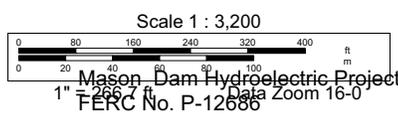
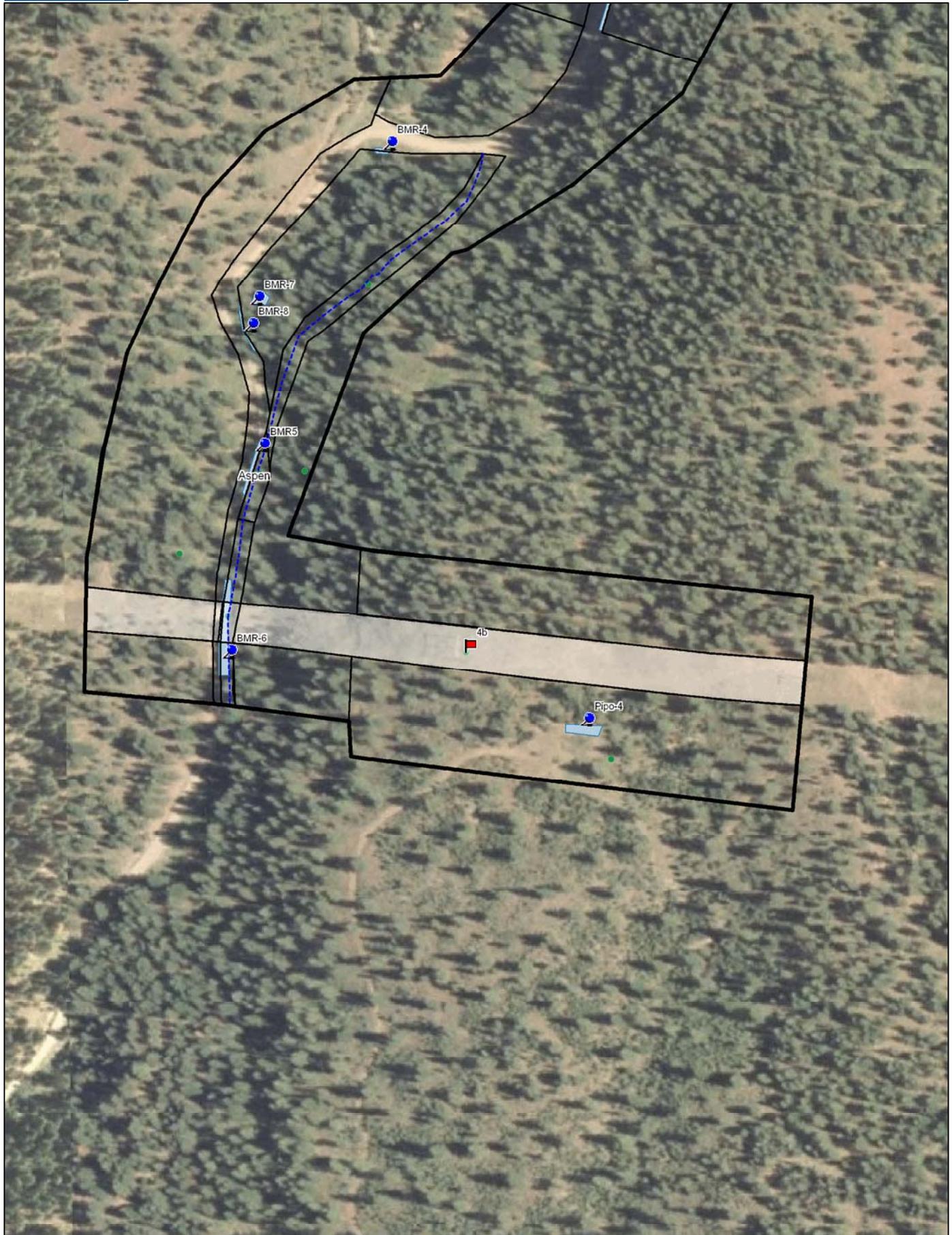
Exhibit 7.5.1 Mason Dam Study Plan 2 and 3 Project Boundary



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www.delorme.com Mason Dam Hydroelectric Project
FERC No. P-12686



| Exhibit 7.5.4 List of Noxious and Invasive Species Occurrences | | | | | | | | |
|--|-----------------------|---|------------|-------------|---------------------|---------------------|-----------|-------------|
| Hab Type | Occurrence # | Description | Area | Lineal Feet | PLANTS Code | Status | Cover (%) | |
| Bare | | | | | | | | |
| P. Lot Area | MDR-1 | moist area east of aspen patch | 1295 sqft | 100 | CIVU | B,4 | 125 | 20% |
| | | | | | DIFU2 | B,2 | 45 | 5% |
| | | | | | MEOF | Regional FS list | unk | 1% |
| | MDR-2 | rd edge at base of talus | 4750 sq ft | 659 | CIAR4 | 2 | 6 | t |
| | | | | | CIVU | B,4 | 1 | t |
| | | | | | BRTE | Regional FS list | na | 1-5% |
| | | | | | VETH | C, Regional FS list | 64 | <1% |
| | P.lot-gen | very minor (inches) around edges not mapped | na | na | CED13 | A,1 | 2 | <1% |
| | | | | | BRTE | Regional FS list | 62 | t |
| | | | | | LASE | Regional FS list | 2 | t |
| MDR-3 | | old road | 3438 sq ft | 100 | CIAR4 | 2 | 9 | 3% |
| | | includes part of adj forest edge | | | CIVU | B,4 | 21 | |
| | | | | | CIRSI | 2 | 7 | |
| | | | | | DIFU2 | B,2 | 157 | 5% |
| | | | | | BRTE | Regional FS list | 3 | t |
| | | | | | VETH | C, Regional FS list | 423 | 5% |
| BMR | BMR-1 | west edge, linear | 1003 sq ft | 115 | PORE5 | B,2 | 200 | 15% |
| | BMR-2 | west edge, spot | na | na | CEMA | A,1 | 1 | na |
| | BMR-3 | east edge, linear | 754 sq ft | 97 | CIAR4 | 2 | 8 | 5-7% of ROW |
| | | | | | DIFU2 | B,2 | 1 | |
| | | | | | VETH | C, Regional FS list | 24 | |
| | BMR-4 | south edge, at Y | 341 sq ft | 33 | CIAR4 | 2 | 50 | 10% |
| | | | | | VETH | C, Regional FS list | 1 | t |
| | BMR-5 | parallels aspen, linear | 917 sq ft | 100 | CYOF | 3 | 17 | 5-7% of ROW |
| | | | | CIAR4 | 2 | 5 | | |
| | | | | VETH | C, Regional FS list | 2 | | |
| BMR-6 | | extends from rd into tributary | 3370 sq ft | 200 | CYOF | 3 | 100 | 5% |
| | | | | | DIFU2 | B,2 | 969 | 20% |
| | | | | | CIAR4 | 2 | 54 | 3% |
| | | | | | CIVU | A,4 | 6 | t |
| | | | | VETH | C, Regional FS list | 65 | 3% | |
| BMR-7 | E side, below culvert | 792 sq ft | na | CIAR4 | 2 | 25 | 5% | |
| BMR-8 | east side, linear | unkn | 100 ft | MEOF | Regional FS list | unk | unk | |

| | | | | | | | | | |
|----------------------|---|-------------------------------|------------|-----|-------|---------------------|---------------------|-------|-----|
| GR | P. lot grassland general | polygon 4a | 1.32 ac | na | | BRTE | Regional FS list | na | 25% |
| | | scattered | | | | CYOF | 3 | | t |
| | Gr-1 | outhouse, 5 ft path around | na | 65 | | VEDH | C, Regional FS list | | |
| | | new, sm patch | 64 sq ft | na | | VEDH | A,1 | 2 | <1% |
| | Gr-2 | | | | | LASE | Regional FS list | 110 | 70% |
| | | | | | | VEDH | A,1 | 5 | 50% |
| | Gr-3 | N Bank Powder River | 3858 sq ft | 238 | | VEDH | A,1 | 147 | 10% |
| | | West of foot bridge | | | | DIFU2 | B,2 | 13 | 1% |
| | Gr-4 | | | | | CYOF | 3 | 1 | t |
| | | | | | | VEDH | 2 | 1 | t |
| T. Line grassland | N Bank Powder River | 2296 sq ft | 210 | | VEDH | C, Regional FS list | 15 | 1% | |
| | East of foot bridge extends into rip habit | | | | DIFU2 | B,2 | 354 | 25% | |
| Talus | 5-gen | 5.8 ac | na | | CYOF | Local FS list | 1 | t | |
| | | | | | DIFU2 | B,2 | 8 | <.05% | |
| Upland Forest | asp-gen | 5663 sq ft | na | | VEDH | Regional FS list | na | 5% | |
| | | | | | VEDH | C, Regional FS list | 50 | 1-2% | |
| PR Rip | Pipo-1 | in 7a, picnic area | 237 sq ft | na | VEDH | 2 | 22 | 1% | |
| | Pipo-2 | dispersed camp area | 200 sq ft | na | CYOF | B,4 | 2 | t | |
| PR Rip-1 | Pipo-3 | in 7b, 15' circle | 176 sq ft | na | VEDH | 3 | 1 | t | |
| | Pipo-4 | old log landing | 1400 sq ft | na | VEDH | C, Regional FS list | 246 | 15% | |
| PR Rip-2 | PR Rip-1 | DP 2b-1 west seep | 683 sq ft | na | VEDH | 2 | 45 | 5% | |
| | PR Rip-2 | polygon 2b-2 east seep | 1623 sq ft | na | CYOF | B,4 | 2 | t | |
| | | | | | VEDH | 2 | 196 | 15% | |
| | | | | | DIFU2 | B,4 | 15 | 2 | |
| | | | | | CYOF | B,2 | 38 | 7 | |
| | | | | | VEDH | 3 | 2 | t | |

LEGEND

Habitat Types

P.Lot=Existing Mason Dam Recreation Parking Lot
MDR=Mason Dam Road
BMR=Black Mountain Road
GR=Grassland
Pipo=Ponderosa Pine Forest
PR Rip=Powder River Riparian
Asp=Aspen
Gen=In general, weeds are scattered and not concentrated in this polygon

Status Codes

A, B, C Class A, B or C as per Baker County Noxious Weed List
1,2,3,4 Baker Ranger District Priority Number

PLANTS Code

BRTE Bromus tectorum
CED13 Centaurea diffusa
CEMA Centaurea maculosa
CIAR4 Cirsium arvense
CIVU Cirsium vulgare
CISRSI Cirsium spp.
CYOF Cynoglossum officinale
DIFU2 Dipsacus fullonum
LASE Lactuca serriola
MEOF Melilotus officinale
PORE5 Potentilla recta
VETH Verbascum thapsus

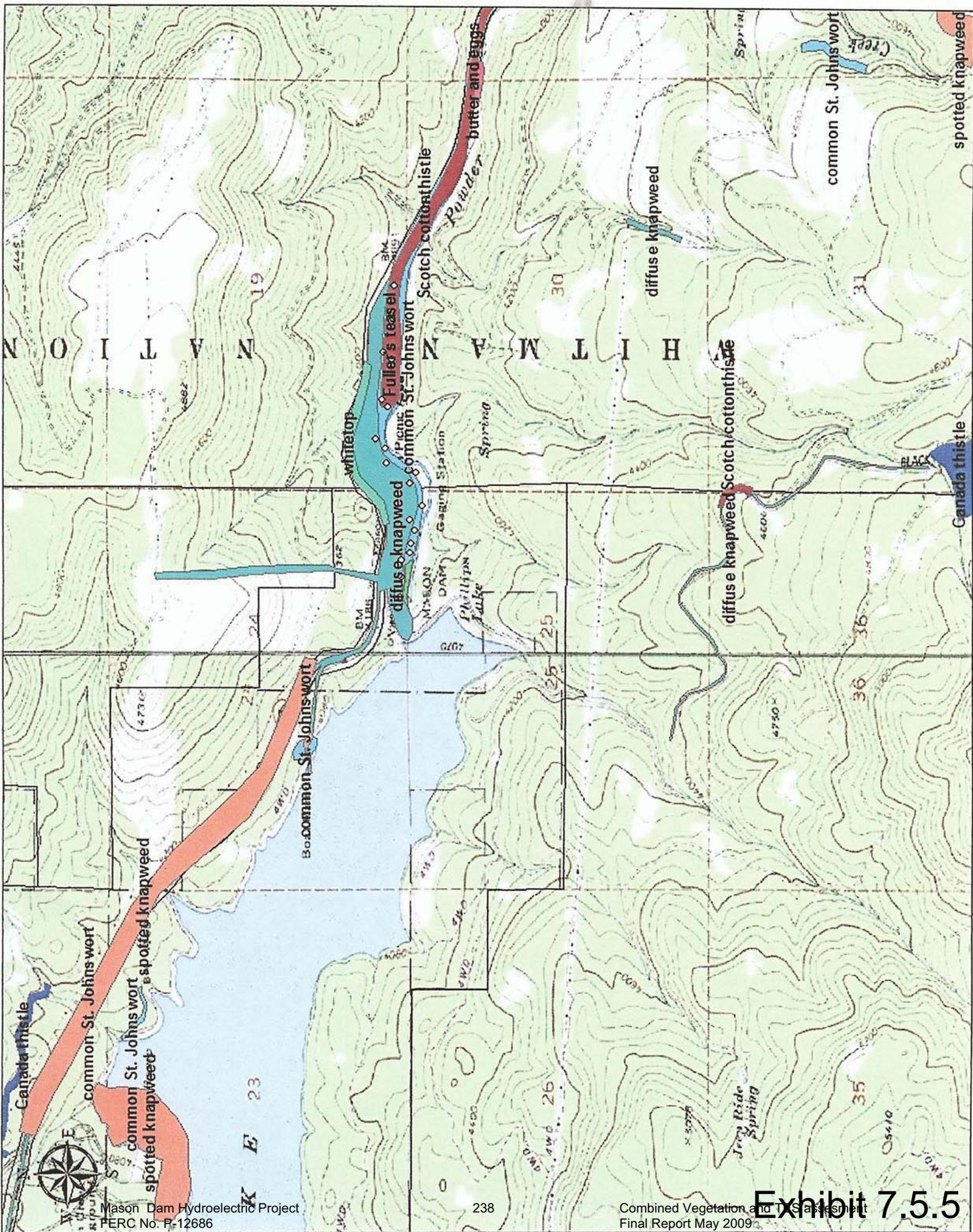


Exhibit 7.6 STUDY PLAN 2: Vegetation, Rare Plant and Noxious Weeds

These studies were requested by FERC and US Forest Service. In consultation with US Fish and Wildlife and the Oregon Dept. of Fish and Wildlife these issues also arose.

2.0 Introduction

Baker County filled for their preliminary license and received it on October 8, 2003 for the 3 MW Mason Dam Hydroelectric Project (Project No. P-12058-002). The project is run of release meaning Baker County does not and will not have any control over the release of the water at Mason Dam. The Bureau Of Reclamation and Baker Valley Irrigation District have control of the release of water and will not change water flows at Baker County's request.

The project consists of two small turbines that will be housed in a power plant at the base of Mason Dam. The power generated will be sent approximately 1 mile to an existing Idaho Power Company 138kv transmission line. The 34.5kv power line connecting the power plant to the substation and then to the 138kv transmission line will be buried in the Black Mountain Road right of way.

The project boundary consists of 100 feet beyond the area that contains the powerhouse and tailrace facilities, and the substation to the interconnect with IPC transmission line. It also includes 50 feet on each side of the underground power line that will be placed in the Black Mountain Road right of way.

2.1 Goals and Objectives

The goal of this study is to evaluate the effects of project construction, operation and maintenance and other related activities on the distribution and composition of botanical resources, including wetland and riparian habitats, rare plants, and noxious weeds, in the project area. The objectives of the study are to:

1. Identify, describe, classify, and delineate land map vegetation cover types on a map. Describe each cover type by species composition, successional stage, and aerial extent (acreage). Wetland classifications should distinguish the degree of inundation (seasonally flooded, permanently flooded) in areas affected by project construction, operation and maintenance.
2. Determine the extent and relative quality of wetlands and riparian habitat in the tailrace, along the Powder River and in areas that would be affected by project construction, operation and maintenance.
3. Determine the presence and distribution of rare plants and noxious weeds within the influence of project construction, operation and maintenance activities through ground truth mapping efforts.
4. Identify project-related actions that may influence the distribution of wetlands, riparian habitat, rare plants and noxious weeds.
5. After collection of the above information is complete prepare a report that includes the above mapping effort, and identifies, describes, and assesses the extent to which project-related actions and activities may affect riparian and

wetland habitats (and species dependent on these habitats), rare plants, and noxious weeds.

The project is proposed to work primarily in areas that have previously been disturbed. The goal to protect vegetation and rare plants and to control noxious weeds can be accomplished with a compilation of known and gathered data.

2.2 Relevant Resource Management Goals

All resource agencies are responsible for the protection of sensitive or threatened and endangered species. In making its license decision, the Commission must equally consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power generation. Any license issued shall be best adapted to a comprehensive plan for improving or developing a waterway for all beneficial public uses.

Wetlands, riparian habitat, rare plant communities, and invasive and noxious weeds are resources of particular interest because of their rarity and/or ecological functions. Ensuring that environmental measures pertaining to these resources are considered relevant to the Commission's public interest determination.

Control of noxious weeds is a priority in Baker County and we have a Weed Department that works with all resource agencies to formulate plans and control noxious weeds.

2.3 Background and Existing Information

Information on botanical resources in the following attachments:

1. A list of federally designated and special status species that have been documented or may occur in the Wallowa-Whitman National Forest or Powder River Subbasin. (Attachment A)
2. A list of state and federal special status plant species found in the Upper Powder River Subbasin. (Attachment B)
3. A map of wetland and deep-water habitats in the State of Oregon. (Attachment C)
4. A list of noxious weeds designated in the Baker County Noxious Weed Rating System. (Attachment D)

While this information is useful in narrowing the scope of the requested studies, we agree that an assessment of the area within the project boundary is necessary. As the project boundary and work area are all to be contained within previously disturbed areas, assessment for special status species, rare plants, wetlands and other types of vegetation can be accomplished in a cost effective manner. The issues associated with invasive and noxious weeds will be mitigated with effective baseline data, revegetation of disturbed areas and control of post construction weeds during the life of the project. Baker County intends to work with all agencies to identify and mitigate these issues.

2.4 Project Nexus

Project related activities, especially ground disturbing activities, related to construction of powerhouse, power lines and substation, could adversely affect wetland and riparian habitats and their associated wildlife and botanical resources. These could include special status species, and rare plant communities, through direct loss, disturbance or habitat alterations. If potential effects on these resources are identified, environmental measures may be developed to reduce or eliminate these effects. Baker County agrees that there is a project nexus within close proximity to the Project Boundary.

2.5 *Study Area and Methods*

A vegetation, rare plant, and noxious weed survey in the Mason Dam project area will identify the vegetation type, rare plant and noxious weed species, and their distribution and abundance in the project area. The following sections describe the planned survey.

2.5.1 Study Area

The study area is defined in section 2.0 as the project boundary.

2.5.2 Survey Methodology

The rare plant and noxious weed survey of the Mason Dam study area will be performed using commonly accepted botanical survey methods to systematically locate and identify rare plant and noxious weed presence and distribution. Survey methods are straightforward, and involve visually searching the study area for the presence of rare plants and noxious weeds. The timing of field surveys will be concurrent with the flowering times and identifiability of potential plant and weed species. A spreadsheet will be formulated by the surveyor of the plant and weed species found on attachments A, B, and D of their flowering and identifiability times prior to the field survey. Findings will be documented on Forest Service forms TES Plant Element Occurrence field forms (Attachment E) and TES Plant Survey field form (Attachment F) for the plant survey. Findings for the weed survey will be documented on Forest Service Invasives Plant field form (Attachment G) and Rangeland General Form (Attachment H). The following Forest Service reference guides will be used The Threatened, endangered and Sensitive Plants Survey field guide, The Threatened, Endangered and Sensitive Plant Element Occurrence field guide, and The Invasive Plant Inventory, Monitoring and Mapping Protocol field guide.

The vegetation survey of the Mason Dam study area will be done by using existing Forest Service GIS vegetation data. From this data, base maps will be created of the study area. Field sampling points will be selected from these maps. Each major cover type will be sampled. The general locations for each sample point will be assigned prior to fieldwork; exact location will be determined in the field to ensure that sample points are representative of the cover type. Major vegetative and structural characteristics will be documented using a plotless, rapid vegetation assessment technique. The following data will be collected at each point:

- Universal Transverse Mercator (UTM) coordinates
- Representative photograph(s)
- Species and estimated cover for dominant and subdominant trees and shrubs
- Estimated diameter at breast height (DBH) of dominant trees, or height of dominants in non-forested areas
- Plant community type

- Plant association, if defined for the habitat
- Estimated local density of snags and coarse woody debris
- Potential for or occurrence of special status species
- At wetland sites, observe source(s) of wetland hydrology
- At wetland sites, hydrogeomorphic classification
- At wetland sites, classification of dominant wetland types

Revisions to the draft maps will be digitized and final GIS vegetation coverage will be prepared, with all sampling information included in a layer of the GIS map data. The total acreage of each cover type will also be determined.

The focus of the rare plant survey will be on those listed on the State and Federal special status plant species in the Powder River Subbasin as listed in attachments A and B.

The noxious weed survey will be focused on Baker County Weed Control Noxious Weed List (see attachment D). Baker County's list is composed of four major classifications; the Watch List, the "A" List, the "B" List, and the "C" list.

The Watch List is defined as small, isolated and identified sites of very high concern. These sites are designated for periodic treatment by the Baker County Weed Supervisor. At this time, there are no known sites of this classification of noxious weeds within the project boundary.

The second classification, known as the "A" List, is defined as those noxious weeds that are found in limited numbers and distribution, but have a high likelihood of detrimentally affecting Baker County's agriculture and environment. The Baker County Board of Commission and the County Weed Board has designated these weeds "Mandatory Control" countywide.

The third classification, known as the "B" List, is defined as those weeds that are widespread, but still of economic and environmental concern throughout the county.

The fourth and final classification, known as the "C" list, is composed of weeds that are widespread and of moderate concern. This classification includes species that are ubiquitous throughout the county, and therefore are of lesser priority than the above-defined classifications.

Rare plants and noxious weeds will be identified using the Flora of the Pacific Northwest (Hitchcock and Cronquist, 1973) and Weeds of the West (Western Society of Weed Science, 2000).

Once identified, sites for each species will be quantifiably surveyed using the measurement of Density (the number of individual plants in a given unit of area) and Frequency (the number of species within a given site) using a Line-Transect methodology as outlined in Measurement of Terrestrial Vegetation (Bonham, 1989). Individual sites where species are located will be mapped using GPS and ArcView® technology. Given the modest size of the study area, this process will be a simple but highly effective method at defining the amount of individual plants within each species present in the study area.

2.5.3 Products

With this information:

1. A noxious weed report will be prepared by Baker County Weed Control that includes the above mapping effort. This report will include a description of the methodology used, dates of surveys, identify, describe and assess the extent to which project-related activities may potentially affect all noxious weeds present within the study area, and include the survey forms as an appendix to the report. In addition, this report will also outline effective noxious weed management strategies to address and alleviate project-related actions. The maps included in the noxious weed report should show any concentrations of weeds in relationship to any project facilities and disturbance areas as well as roads and trails.
2. A rare plant report will be prepared that discusses the methodology used, dates of surveys, the rare species found, their distribution, habitat associations, and include survey forms as an appendix to the report. If results indicate that there is a demonstrated impact or likely impact, a management plan will be developed to include some combination of avoiding impacts, protecting resources, and conducting mitigation as needed. The report should include maps showing any rare plants in relationship to any project facilities and disturbance areas as well as roads and trails.
3. A vegetation coverage report that will include study objectives, study area, methods, tabulated results, descriptions of habitats, and electronic GIS files of vegetation cover types and sample points.

2.6 *Level of Effort and Cost*

A literature review to obtain information on rare and special status species will need to be done. The mapping and survey efforts can be completed within one year.

Technicians would be expected to spend approximately one to two days to assess and review ground vegetation. With the relative low acreage of the project boundary and working in disturbed areas, aerial photos would be of little use. Baker County intends to contract with local agency personnel to do the appropriate mapping, assessment and report preparations.

It is proposed this study will begin with the field season starting in May 1, 2007 and ending in October 31, 2007. A draft report will be submitted by December 15, 2007. Comments will be due by January 15, 2008. The final report will be completed by February 15, 2008.

Attachment A

FEDERALLY LISTED THREATENED, ENDANGERED, PROPOSED, CANDIDATE SPECIES AND SPECIES OF CONCERN WHICH MAY OCCUR WITHIN BAKER COUNTY, OREGON

LISTED SPECIES^{1/}

Birds

Bald eagle *Haliaeetus leucocephalus* T

Fish

Bull trout (Columbia River Basin)^{3/} *Salvelinus confluentus* CH T

Plants

Howell's spectacular thelypody^{4/} *Thelypodium howellii* ssp. *Spectabilis* T

PROPOSED SPECIES

None

CANDIDATE SPECIES^{5/}

Birds

Yellow-billed cuckoo *Coccyzus americanus*

Amphibians and Reptiles

Columbia spotted frog *Rana luteiventris*

Plants

Slender moonwort *Botrychium lineare*

SPECIES OF CONCERN

Mammals

Pygmy rabbit *Brachylagus idahoensis*

Pale western big-eared bat *Corynorhinus townsendii pallescens*

California wolverine *Gulo gulo luteus*

Silver-haired bat *Lasionycteris noctivagans*

Small-footed myotis (bat) *Myotis ciliolabrum*

Long-eared myotis (bat) *Myotis evotis*

Fringed myotis (bat) *Myotis thysanodes*

Long-legged myotis (bat) *Myotis volans*

Yuma myotis (bat) *Myotis yumanensis*

California bighorn *Ovis canadensis californiana*

Preble's shrew *Sorex preblei*

Birds

Northern goshawk *Accipiter gentilis*

Western burrowing owl *Athene cunicularia hypugea*

Ferruginous hawk *Buteo regalis*

Greater sage-grouse *Centrocercus urophasianus*

Olive-sided flycatcher *Contopus cooperi*

Willow flycatcher *Empidonax trailli adastus*

Yellow-breasted chat *Icteria virens*

Lewis' woodpecker *Melanerpes lewis*

Mountain quail *Oreortyx pictus*

White-headed woodpecker *Picoides albolarvatus*

Amphibians and Reptiles

Tailed frog *Ascaphus truei*

Northern sagebrush lizard *Sceloporus graciosus graciosus*

Fishes

Interior redband trout *Oncorhynchus mykiss gibbsi*

Plants

Wallowa ricegrass *Achnatherum wallowaensis*

Upward-lobed moonwort *Botrychium ascendens*

Crenulate grape-fern *Botrychium crenulatum*

Mountain grape-fern *Botrychium montanum*

Twin spike moonwort *Botrychium paradoxum*

Stalked moonwort *Botrychium pedunculatum*

Clustered lady's-slipper *Cypripedium fasciculatum*

Cronquist's stickseed
Red-fruited desert parsley
Cusick's lupine
Oregon semaphore grass
Snake River goldenweed
Biennial stanleya

Hackelia cronquistii
Lomatium erythrocarpum
Lupinus lepidus var. *cusickii*
Pleuropogon oregonus
Pyrrocomma radiata
Stanleya confertiflora

(E) - Listed Endangered (T) - Listed 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

Species of Concern - Taxa whose conservation status is of concern to the Service (many previously known as Category 2 candidates), but for which further information is still needed.

* Consultation with NOAA's National Marine Fisheries Service may be required.

^{1/} U.S. Department of Interior, Fish and Wildlife Service, October 31, 2000, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12

^{2/} Federal Register Vol. 60, No. 133, July 12, 1995, - Final Rule - Bald Eagle

^{3/} Federal Register Vol. 63, No. 111, June 10, 1998, Final Rule - Columbia River and Klamath River Bull Trout

^{4/} Federal Register Vol. 64, No. 101, May 26, 1999, Final Rule - *Thelypodium howellii* ssp. *spectabilis*

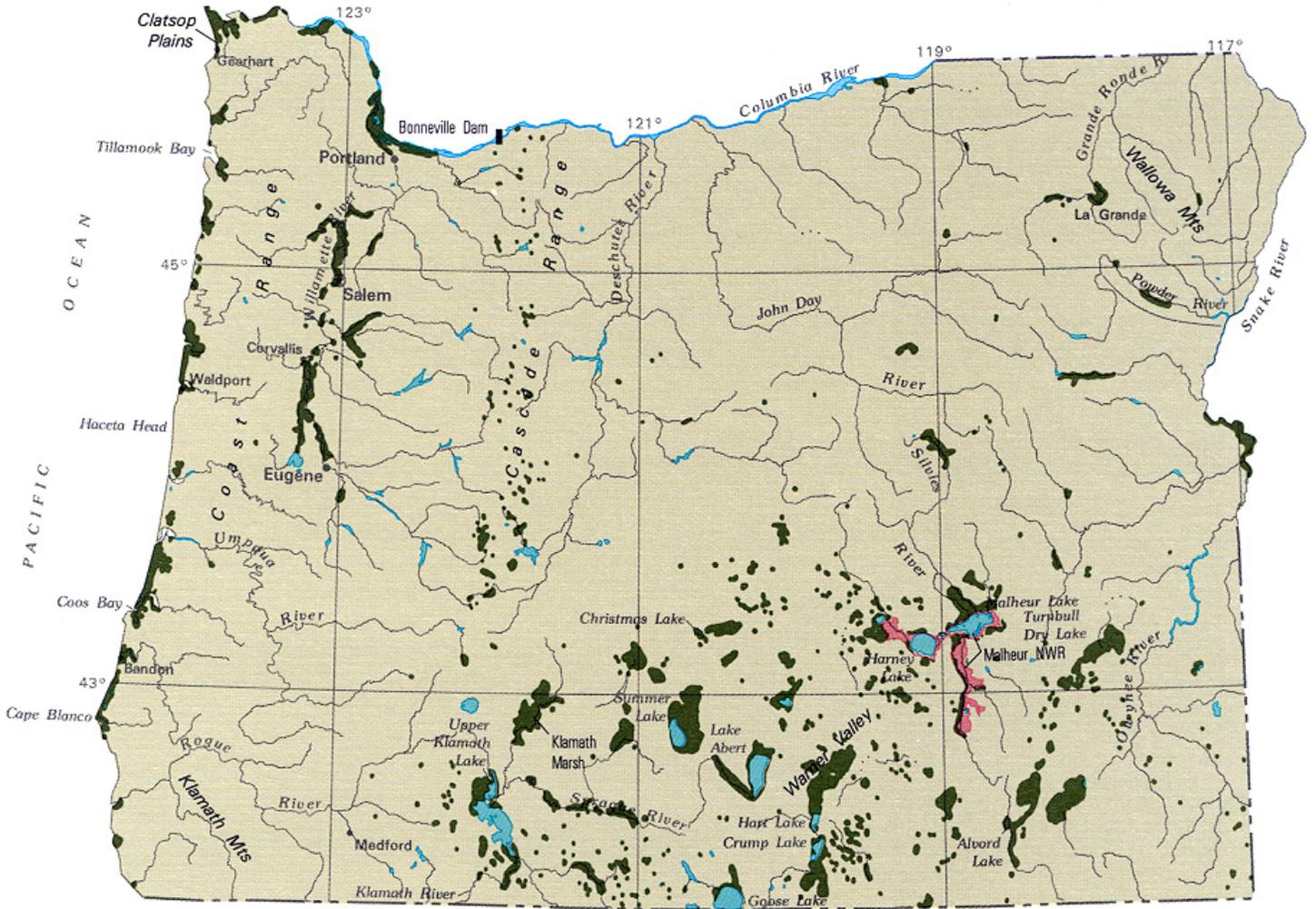
^{5/} Federal Register Vol. 69, No. 86, May 4, 2004, Notice of Review - Candidate or Proposed Animals and Plants

Attachment B
State and Federal Special Status Plant Species in the Powder River
Subbasin

Table from Powder River Subbasin Plan (10)

| Common Name | Scientific Name | Federal Status | State Status | Documented Locations (drainages) |
|--------------------------------|---------------------------------|-----------------------|---------------------|---|
| Upward-lobed moonwort | <i>Botrychium ascendens</i> | Species of Concern | Candidate Species | Powder, Upper John Day |
| crenulate moonwort | <i>Botrychium crenulatum</i> | Species of Concern | Candidate Species | |
| skinny moonwort | <i>Botrychium lineare</i> | Species of Concern | None | |
| Twin-spike moonwort | <i>Botrychium paradoxium</i> | Species of Concern | Candidate Species | Powder, Upper John Day, NF John Day |
| Clustered lady's-slipper | <i>Cypripedium fasciculatum</i> | Species of Concern | Candidate Species | |
| Red-fruited lomatium | <i>Lomatium erythrcarpum</i> | Species of Concern | Listed Endangered | Powder |
| Oregon semaphoregrass | <i>Pleuropogon oregonus</i> | Species of Concern | Listed Threatened | Powder |
| Snake River goldenweed | <i>Pyrrcoma radiata</i> | Species of Concern | Listed Endangered | |
| Howell's spectacular thelypody | <i>Thelypodium howellii</i> | Listed Threatened | Listed Endangered | Powder |

10. M. Cathy Nowak, Cat Tracks Wildlife Consulting. Powder River Subbasin Plan. May 28, 2004. Prepared for the Northwest Power and Conservation Council.

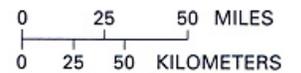


A WETLANDS AND DEEPWATER HABITATS

Distribution of wetlands and deepwater habitats—

This map shows the approximate distribution of large wetlands in the State. Because of limitations of scale and source material, some wetlands are not shown

- Predominantly wetland
- Predominantly deepwater habitat



Attachment D
Baker County Noxious Weeds List
2006-2007

“Watch List”, “A”, “B” & “C” Designated Weeds

“Watch List” – Known Sites; Controlled by Weed Supervisor County-Wide

- | | |
|-----------------------|-------------------|
| 1. Musk Thistle | Carduus nutans |
| 2. Mediterranean sage | Salvia aethiopsis |
| 3. Dyers Woad | Istaxis tinctoria |

“A” Designated Weeds – Mandatory Control County-wide

- | | |
|-------------------------|------------------------|
| 1. Tansy ragwort | Senecio jacobaea |
| 2. Leafy spurge | Euphorbia esula |
| 3. Rush skeletonweed | Chondrilla juncea |
| 4. Spotted knapweed | Centaurea maculosa |
| 5. Diffuse knapweed | Centaurea diffusa |
| 7. Dalmation toadflax | Linaria dalmatica |
| 8. Yellow starthistle | Centaurea solstitialis |
| 9. Perennial pepperweed | Lepidium latifolium |
| 10. Purple loosestrife | Lyrum salicaria |
| 11. Black henbane | Hyoscyamus niger |
| 12. Jointed goatgrass | Aegilops cylindrica |
| 13. Buffalobur | Solanum rostratum |
| 14. Common bugloss | Anchusa officinalis |
| 15. Japanese knotweed | Polygonum cuspidatum |
| 15. Myrtle spurge | Euphorbia myrsinites |
| 16. Scotch Thistle | Onopordum acanthium |
| 17. Whitetop | Lepidium draba |

Whitetop is listed as an “A” weed in designated areas of the County. Pine Valley, West Baker Valley and the Bowen Valley-Sumpter areas North and West of Oregon State Highway 7 are classified as Mandatory Control for whitetop.

“B” Designated Weeds – Widespread and/or of High Concern

- | | |
|-------------|----------------|
| 1. Whitetop | Lepidium draba |
|-------------|----------------|
- (Whitetop is a “B” weed in all other areas of the County not listed in the above section.)
- | | |
|---------------------|----------------------|
| 2. Russian knapweed | Centaurea repens |
| 3. Canada thistle | Cirsium vulgare |
| 4. Venice mallow | Hibiscus trionum |
| 5. Yellow toadflax | Linaria vulgaris |
| 6. Dodder | Cuscuta campestris |
| 7. Chickory | Cichorium intybus |
| 8. Teasel | Dipsacus fullonum |
| 9. Common Tansy | Tanacetum vulgare |
| 10. Klamathweed | Hypericum perforatum |
| 11. Puncturevine | Tribulus terrestris |

“C” Designated Weeds – Widespread and/or of Moderate Concern

- | | |
|-----------------------|----------------------------|
| 1. Water hemlock | Circuta maculata |
| 2. Poison hemlock | Conium maculatum |
| 3. Morningglory | Convolvulus arvensis |
| 4. Russian thistle | Salsola iberica |
| 5. Medusahead wildrye | Taeniatherum caput-medusae |
| 6. Kochia | Kochia scoparia |
| 7. Common mullein | Verbascum thapsis |
| 8. Moth mullein | Verbascum blattaria |
| 9. Bur buttercup | Ranunculus testiculatus |

R6 TES PLANT ELEMENT OCCURRENCE - FIELD FORM - USDA FOREST SERVICE 2005

Ⓡ = required field, Ⓡ* = conditionally required field, Ⓡ = R6 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: | | | |
| 25) Plant Count: Ⓡ | 26) Count Type: Ⓡ Genet/Ramet/Undetermined | | 27) Count: Ⓡ Actual or Est. |
| 28) Revisit needed - Yes or No | | 29) Revisit Date: | |
| 30) Revisit Justification: | | | |
| 31) Phenology (%) Ⓡ (Sum to 100%): Vegetative ____ Flower/Bud . . . ____ Fruit/Dispersed . ____ Seedlings/ Juvenile ____ | 32) Population Comments: (e.g., distribution, vigor, density, phenology, dispersal) | | |
| | 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: Ⓡ | |

Site Classifications

| Record taxonomic units of the given type(s) if published classifications exist for the area. | | | |
|--|------------|------------------|-----------|
| CLASS TYPE | CLASS CODE | CLASS SHORT NAME | CLASS 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, <i>or</i> 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 | |

Image Information ® (IF IMAGES TAKEN)

| 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: | | |

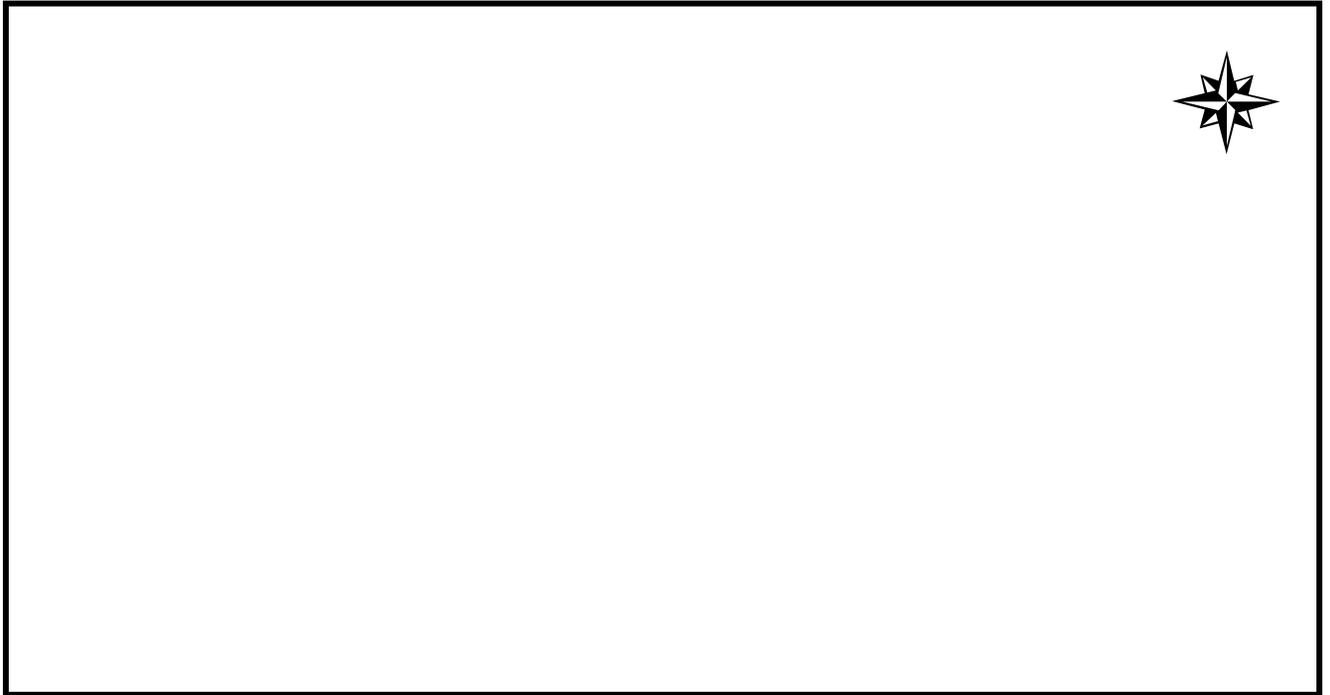
| | |
|----------------|-----------------|
| 85) UTM | |
| UTM Datum: | UTM Zone: |
| Easting: _____ | Northing: _____ |

| |
|---|
| 86) GPS Equipment Used (Manufacturer and Model): |
| |

| |
|-----------------------------|
| 87) Metes and Bounds |
| |

88) Directions to Site

89) Sketch of Site or Area



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 Equipment: Manufacturer: _____ | |
| Model: _____ | |
| 41) Metes and Bounds | |
| | |

42) Directions to Survey Area

43) Sketch of Survey Area



ATTACHMENT G

INVASIVES PLANT FIELD FORM

G

General Information

| | |
|------------------------|-------------------------|
| SITE ID _____ R | DATE (MMDDYYYY) _____ R |
| EXAMINER: LAST _____ R | FIRST _____ R |
| Middle Initial _____ | |

Data Elements

| | |
|---|--------------------------------|
| Plant Code _____ R | Common Name _____ |
| Genus _____ | Species _____ |
| Subspecies _____ | Variety _____ |
| Phenology _____ | Life Form _____ |
| Infested Area _____ R | Unit of Measure _____ R |
| Gross Area _____ | Unit of Measure _____ |
| Gross Area to Infested Area Calculation: Gross area X _____ (% of land area occupied by weeds) = _____ Infested Area | |
| Plant Status _____ | Plant Treatment Priority _____ |

Canopy Cover

| | | |
|--|------------------|------------------------------|
| <p>Canopy Cover is a required data element. You can describe canopy cover by either entering the actual percent, (<i>Canopy Cover Percent</i>) or by using canopy cover classes (<i>Canopy Cover Set</i> and <i>Cover Code</i>). R</p> | | |
| Canopy Cover Set _____ | Cover Code _____ | Canopy Cover Percent _____ % |

Distance to Water

| | |
|------------------------------------|-------------------------|
| Horizontal Distance to Water _____ | Unit of Measure _____ I |
| Vertical Distance to Water _____ | Unit of Measure _____ |

Associated Species

| | |
|-------------------------------|----------------------|
| Associated Species Code _____ | |
| Assoc. Genus _____ | Assoc. Species _____ |
| Assoc. Subspecies _____ | Assoc. Variety _____ |
| Associated Species Code _____ | |
| Assoc. Genus _____ | Assoc. Species _____ |
| Assoc. Subspecies _____ | Assoc. Variety _____ |
| Associated Species Code _____ | |
| Assoc. Genus _____ | Assoc. Species _____ |
| Assoc. Subspecies _____ | Assoc. Variety _____ |

ATTACHMENT H

RANGELAND GENERAL FORM – FOR INTERIM INVASIVE TOOL

(® INDICATES A REQUIRED FIELD)

Site Information

| | |
|--------------------------|-----------------------|
| SITE ID _____ ® | |
| DATE (MMDDYYYY) _____ ® | |
| Project Name _____ ® | Project Purpose _____ |
| Site Sample Type _____ ® | |

General Information

| | | | |
|---|-----------------------------------|-----------------------|----------------------|
| EXAMINER: | LAST Name _____ ® | FIRST Name _____ ® | Middle Initial _____ |
| Ownership _____ ® | | | |
| Region _____ ® | National Forest/Grassland _____ ® | District _____ ® | |
| Proclaimed National Forest/Grassland _____ | | | |
| Proclaimed National Forest/Grassland Name _____ | | | |
| State _____ ® | County Number _____ ® | County Name _____ | |
| Sample Area Size _____ | | Unit of Measure _____ | |

Location Information

| | |
|--------------------------|------------------------|
| QUADS | |
| USGS Quad Number _____ | USGS Quad Name _____ |
| Forest Quad Number _____ | Forest Quad Name _____ |

Data Entry is Required in at least one of the displayed location methods below.
 The site location can be described through at least one, and maybe more of the following methods.
 Users with GIS technology may link the location directly with that information. Some users may substitute Metes and Bounds (**Required.**)

| | | | | |
|---------------------------|--|--------------|---------------|----------------|
| Legal Description: | | | | |
| Meridian _____ | Township/Direction Range/Direction _____ | | | |
| SEC _____ | Q SEC _____ | QQ SEC _____ | QQQ SEC _____ | QQQQ SEC _____ |

| | | | | |
|-------------------------------------|-----------------|---------------|---------------|--|
| Latitude and Longitude | | | | |
| Geodetic Datum _____ | | | | |
| Lat dms: | Degrees _____ N | Minutes _____ | Seconds _____ | |
| Long dms: | Degrees _____ W | Minutes _____ | Seconds _____ | |
| Geodetic Datum _____ | | | | |
| GPS Latitude Decimal Degrees _____ | | | | |
| GPS Longitude Decimal Degrees _____ | | | | |

| | |
|-----------------|-----------------|
| UTM | |
| UTM Datum _____ | UTM Zone ____ |
| Easting: _____ | Northing: _____ |

Metes and Bounds: (narrative) Metes are the bearing and distance to get to someplace or to return to the place of origin. Bounds are the written directions going to something or someplace.

Management Area

| | |
|--------------------------------|----------------------|
| Allotment (RMU) Number _____ | Allotment Name _____ |
| Pasture (Sub-RMU) Number _____ | Pasture Name _____ |
| Key Area Number _____ | Key Area Name _____ |

| | |
|-------------------|-----------------|
| Area Number _____ | Area Name _____ |
|-------------------|-----------------|

| |
|---|
| Watershed HUC # ** _____ ® |
| HUC Name _____ |
| **Required for aquatic invasive species |

Site Information

| | |
|-------------------------|---------------------|
| Elevation Average _____ | Min Elevation _____ |
| Max Elevation _____ | Elevation UOM _____ |

| | |
|----------------------|---------------------------------|
| Aspect-Azimuth _____ | Aspect-Cardinal Direction _____ |
| Percent Slope _____ | Slope Position _____ |

Existing Vegetation Information

Please enter one or more of the three listed existing vegetation classification types.

| | |
|---------------------------|----------------------|
| Plant Community | |
| Class Set Name _____ | Class Code _____ |
| Class Name _____ | |
| SAF Cover Type Code _____ | SAF Cover Type _____ |
| SRM Cover Type Code _____ | SRM Cover Type _____ |

| |
|---|
| Dominant Life Form _____ ® |
| Dominant Species _____ (Genus, Species, Subspecies, Variety) |
| Co-Dominant Species _____ (Genus, Species, Subspecies, Variety) |
| Co-Dominant Species _____ (Genus, Species, Subspecies, Variety) |
| Co-Dominant Species _____ (Genus, Species, Subspecies, Variety) |

Potential Vegetation Information

| | |
|-------------------------------|------------------|
| Range Site/Eco Classification | |
| Class Code _____ | Class Name _____ |

| | |
|------------------------------|------------------------------|
| Habitat Type Code _____ | Habitat Type Name _____ |
| HT Phase Code _____ | HT Phase Name _____ |
| Plant Association Code _____ | Plant Association Name _____ |
| Seral Stage _____ | Ecological Status (%) _____ |

| |
|--------------------------------|
| Ecological Map Unit Code _____ |
| Ecological Map Unit Name _____ |
| Ecological Type Code _____ |
| Ecological Type Name _____ |

Soil/Geo Climate Information

| | |
|-----------------------------------|----------------------------|
| Soil Name _____ | Class Level _____ |
| Texture _____ | Common Landform Code _____ |
| Common Landform Description _____ | |
| Mean Annual Precipitation _____ | UOM _____ |

Reference

Include information in locating the starting point for the traverse leg and other important description information.

| |
|--|
| Narrative (detailed description of location, direction to site and map location if applicable.) |
| ----- |
| ----- |
| ----- |
| ----- |
| ----- |
| ----- |
| ----- |
| ----- |
| ----- |
| ----- |

Traverse information for start point to sample point.

| | |
|--------------------------------|-----------------------|
| Azimuth (degrees) _____ | Distance _____ |
| Distance UOM _____ | |

Photo/Image

| | |
|---|-------------------------------|
| Aerial Photo Information | |
| Photo Label _____ | Aerial Photo Set _____ |
| Photo Number _____ | Flight Line Code _____ |
| Photo Date\Time (mm/dd/yyyy hh:mm) _____ | |

| | |
|---------------------------|-----------------------------|
| Photo Information | |
| Photo Number _____ | Film Type _____ |
| File Name _____ | File Directory _____ |

Comments

Comments

APPENDIX I: TECHNICAL MEMORANDUM

DATE: May 5, 2009
TO: Jason Yencopal, Baker County
RE: **Mason Dam: ODFW Sensitive Species**
FROM: Leslie Gecy, EcoWest Consulting, Inc.

On March 16, 2009, the Oregon Department of Fish and Wildlife (ODFW) requested that the State sensitive wildlife species list, dated December 8, 2008 be considered in the Combined Study Plan 2/3 report (Combined Report). ODFW noted during the meeting that most of these species have been addressed under the discussions for federal and state-listed species in the Combined Report, and requested that (1) the list be acknowledged in the study plan report and (2) any additional sensitive species not previously discussed, be addressed. The ODFW list is attached as Appendix A to this memorandum and includes all sensitive species regardless of their location in the State.

EcoWest reviewed the State wildlife sensitive species to identify:

- Species that had already been addressed in the Combined Report
- Species that had the potential to occur in the project area or vicinity
- Any additional sensitive species with the potential to occur in the project area that had not previously been discussed.

To screen which species had the potential to occur in the project vicinity, the Wallowa-Whitman National Forest (WWNF) pre-field screening of the Regional Forester's Sensitive Species List for the Pacific Northwest (see Appendix B of the Combined Report) was examined. Those species identified by the FS with no potential to occur in the project vicinity were not considered further. The complete FWS list of species of concern for Oregon was also examined to identify which species the FWS had also determined were not likely to occur in the project vicinity. For example, a number of torrent salamanders (*Rhyacotriton* spp) are listed as sensitive by ODFW and also as species of concern by FWS on a statewide basis. However, the FWS has identified that these species are only likely to occur in western Oregon and would not likely occur east of the Cascades. As a result, these species were identified as not likely occurring in the project vicinity.

The results are discussed by major species group: fish, amphibians, reptiles, birds and mammals. Both the sensitive-critical and sensitive-vulnerable lists are discussed together for each group.

Unless otherwise noted, the species accounts in this section are summarized from data developed for ICBEMP (Quigley and Arbelbide 1997), Powder River SubBasin Plan (2004), Natureserve (2009), Jones et al. (2005), Csuti et al. (2001) and from data and summaries already presented in the

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Combined Report.

Fishes

Most of the fish species on the ODFW list represent geographically Distinct Population Segments (DPS), Evolutionarily Significant Units (ESU) or Species Management Units (SMU) of salmon, steelhead or redband trout. The inland redband trout (*Oncorhynchus mykiss gairderi*) is known to occur in the project vicinity but other *O. mykiss* subspecies are not known to occur. Similarly, the bull trout (*Salvelinus confluentus*) Columbia Basin DPS (also referred to as the Hell's Canyon bull trout SMU) is known to occur in the project vicinity, but not other bull trout SMUs. The only other fish species with the potential to occur in the project vicinity are the westslope cutthroat trout (*O. Clarki lewisi*) and the Pacific lamprey (*Lampetra tridentate*). All four species were addressed in the Combined Report (See Table 1 for the report section in which the species were discussed).

Amphibians

There are four amphibian species listed as critical on the ODFW list and 17 species listed as vulnerable. A number of the species are also listed as threatened, endangered, candidate or species of concern by the FWS on a statewide basis. However, many of these species are strictly restricted to western or southwestern Oregon. This includes the Oregon spotted frog (*Rana pretiosa*; federal Candidate), foothill yellow-legged, northern red-legged and Cascades frogs (*Rana boylei*, *R. aurora*, *R. cascadae*; federal species of concern), and the coastal tailed frog (*Ascaphus truei*, federal species of concern). In addition, all of the ODFW sensitive salamander species (*Dicamptodon copei*, *Rhyacotriton* spp., *Plethodon* spp., *Aneides* spp. And *Batrachoseps wrightorum*), are geographically restricted to the wetter western areas of the state.

The Northern leopard frog (*Lithobates pipiens*), western toad (*Anaxyrus boreas*), Rocky mountain tailed frog (*Ascaphus truei*) and the Columbia spotted frog (*Rana luteiventris*) have the potential to occur in the project vicinity. The Columbia spotted frog and Rocky Mountain tailed frog were addressed in the Combined Report (see Table 1). The Northern leopard frog and western toad are addressed below.

Northern leopard frog. The northern leopard frog has a relatively large range throughout much of the US and is still common in many areas. However, the historic populations in Oregon have declined and the species is restricted to southeast Oregon. The leopard frog habitat includes a variety of wetland/open water habitats requiring shallow, still permanent open water with rooted aquatic vegetation. They do not occupy areas with rapidly flowing water, areas with large seasonal fluctuations in water level, or areas with fish predator access. There is no available habitat for the leopard frog in the project area (see aquatic habitats descriptions in the Combined Report, section 6.2 and also the discussions regarding the Columbia spotted frog which has similar habitat requirements in sections 3.1 and 4.4).

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Table 1. ODFW Sensitive Fish, Amphibian and Reptile Species with the Potential to Occur In the Mason Dam Project Vicinity.

| Species | ODFW Sensitive Status | Federal Status | FS Status-WWNF | Addressed in Existing TES Report |
|---|---|-----------------------|-----------------------|---|
| Fish Species | | | | |
| West slope cutthroat trout <i>Oncorhynchus clarki lewisi</i> | Critical | None | Sensitive | Yes, section 4.2 |
| Bull trout-Hells Canyon SMU <i>Salvelinus confluentus</i> | Critical, also state listed as threatened | Threatened | Federally-Listed | Yes, section 3.1 and 5.1 |
| Pacific lamprey <i>Lampetra tridentata</i> | Vulnerable | Species of Concern | Federally-Listed | Yes, section 3.3 |
| Inland Columbia Redband trout <i>Oncorhynchus mykiss gairderi</i> | Vulnerable | None | Sensitive | Yes, section 4.2 and 5.2 |
| Amphibians | | | | |
| Columbia spotted frog <i>Rana luteiventris</i> | Vulnerable in Blue Mts | Candidate | Federally-Listed | Yes, section 3.1, 4.4 and 5.3 |
| Northern leopard frog <i>Lithobates pipiens</i> | Critical | None | None | No, see discussion in this memo |
| Rocky Mountain tailed frog <i>Ascaphus truei</i> | Vulnerable | Species of Concern | Sensitive | Yes, section 3.3 |
| Western toad <i>Anaxyrus boreas</i> | Vulnerable | None | None | No, see discussion in this memo |
| Reptiles | | | | |
| Northern sagebrush lizard <i>Sceloporus graciosus graciosus</i> | Critical | Species of Concern | None | Yes, section 3.3 |

Western toad. The western toad is known to occur in the Powder River watershed and Baker County. Substantial declines have occurred in many populations recently, with diseases, fungal infections and parasites thought to be large contributing factors. In the Cascades, common raven predation during the breeding season appears to have contributed significantly to declines of some populations. Habitat loss and non-native predators have also played a role in the species decline.

Western toads inhabit a variety of habitats such as slow-moving streams, shallow lake margins, and wetlands with shallow, stable open water. As described for the Columbia spotted frog (sections 3.1 and 4.4 of the Combined Report), these habitats may occur in the project vicinity but do not occur in the Mason Dam project area.

Reptiles

There are six reptile species on the ODFW sensitive species list including two turtles (*Chrysemys picta belii* and *Actinemys marmorata*) and three snakes (*Crotalus oregonus*, *Lampropeltis* spp). These species are either restricted to western or southwestern Oregon, or are locally common (e.g., the western rattlesnake [*Crotalus oregonus*,] which is considered sensitive in the Willamette Valley only). The northern sagebrush lizard (*Sceloporus graciosus graciosus*) is the only ODFW sensitive reptile species with the potential to occur in the Mason Dame project vicinity. This species was addressed in the Combined Report (section 3.3).

Birds

There are 48 sensitive bird species on the ODFW list. Most of these species fall into one of the following categories:

- Addressed in the Combined Report (e.g., white headed woodpecker, *Picoides albolarvatus*),
- Not considered sensitive by ODFW in the Blue Mountain Ecoregion (e.g., white-breasted nuthatch, *Sitta carolinensis aculeata*, or
- TES species that are not considered by the FWS or FS to occur in Baker County or within the Wallowa-Whitman National Forest (e.g., yellow-billed cuckoo [*Coccyzus americanus*], acorn woodpecker [*Melanerpes formicivorus*], red-necked grebe [*Podiceps grisegena*]).

Table 2 provides a summary of which species fall into each of these categories (already addressed in report, not sensitive locally, pre-screened on other agency lists) and which ODFW sensitive species have not been addressed in another fashion. The remaining 15 species are listed in Table 3 according to whether or not their Oregon geographical range overlaps the project vicinity. As noted in Table 3, the arctic peregrine falcon (*Falco peregrinus tundrius*), Cassin's and rhinoceros auklets (*Ptychoramphus aleuticus* and *Cerorhinca monocerata*) and the tufted puffin (*Fratercula cirrhata*) are either boreal forest or coastal species that do not occur in eastern Oregon. The grasshopper sparrow (*Ammodramus savannarum*) is an important indicator species in the Columbia Plateau Ecoregion of Oregon, but does not extend south of this ecoregion. These species are not discussed further. The other ten sensitive bird species listed in Table 3 are discussed individually below.

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Table 2. ODFW Sensitive Bird Species.

| Species | ODFW Status | Addressed in Study Plan 2/3 Report | | Pre-Screened by Agencies- TES Elsewhere but not Locally | | | Not Previously Addressed |
|--------------------------------|---------------------------|------------------------------------|-----------|---|------------------------|----------------------|--------------------------|
| | | FWS Baker Co List | WWNF List | Not ODFW Sensitive in EcoRegion | FWS List -elsewhere OR | FS List-elsewhere R6 | |
| Columbian sharp tailed grouse | Critical | | X | | X | | |
| Red necked grebe | Critical | | | X | | | |
| Ferruginous hawk | Critical-Columbia Plateau | | | | | | |
| Yellow Rail | Critical | | | X | | | |
| Upland sandpiper | Critical | | X | | | | |
| Yellowbilled cuckoo | Critical | | | X | | | |
| Burrowing owl | Critical | X | | | | | |
| Common nighthawk | Critical | | | X | | | |
| Lewis' woodpecker | Critical | X | | | | | |
| White headed woodpecker | Critical | X | | | | | |
| Streaked horned lark | Critical | | | X | | | |
| Purple martin | Critical | | | | X | | |
| Yellow breasted chat | Critical | X | | | | | |
| Oregon vesper sparrow | Critical | | | X | | | |
| Sage sparrow | Critical | | | X | | | |
| Western meadowlark | Critical | | | X | | | |
| Greater sage grouse | Vulnerable | X | | | | | |
| Spruce grouse | Vulnerable | | | | | | X |
| Mountain quail | Vulnerable | X | | | | X | |
| American white pelican | Vulnerable | | | | | | X |
| Snowy egret | Vulnerable | | | | | | |
| Northern goshawk | Vulnerable | X | X | | | | |
| Swainson's hawk | Vulnerable | | | | | | X |
| Ferruginous hawk | Vulnerable-Blue mts | X | X | | | | |
| American peregrine falcon | Vulnerable | | | | | X | |
| Arctic peregrine falcon | Vulnerable | | | | | | X |
| Greater sandhill crane | Vulnerable | | | X | | | |
| Black oystercatcher | Vulnerable | | | | X | | |
| Long-billed curlew | Vulnerable | | | | | | X |
| Franklin's gull | Vulnerable | | | | | | X |
| Cassin's auklet | Vulnerable | | | | | | X |
| Rhinoceros auklet | Vulnerable | | | | | | X |
| Tufted puffin | Vulnerable | | | | | | X |
| Flammeulined owl | Vulnerable | | | | | | X |
| Burrowing owl | Vulnerable-Basin/Range | | | X | | | |
| Great Gray owl | Vulnerable | | | | | X | |
| Acorn woodpecker | Vulnerable | | | X | | | |
| American three-toed woodpecker | Vulnerable | | | | | | X |
| Pileated woodpecker | Vulnerable | | | | | | X |
| Olive sided flycatcher | Vulnerable | X | | | | | |
| Willow flycatcher | Vulnerable | X | | | | | |
| Little willow flycatcher | Vulnerable | | | X | | | |
| Loggerhead shrike | Vulnerable | | | | | | X |
| White breasted nuthatch | Vulnerable | | | X | | | |

| Table 3. ODFW Sensitive Bird Species that have Not Been Previously Addressed | | | |
|---|--|--|---|
| Species | Geographical Range | Habitat | Potential Habitat in Project Vicinity |
| Geographic Range Includes Eastern Oregon | | | |
| Spruce grouse <i>Falcapennis canadensis</i> | Canada and northern US | Spruce-fir, spruce pine forests; dense cover close to ground | No |
| American white pelican (Breeding population) <i>Pelecanus erythrorhynchos</i> | Breeds in southern Oregon near the CA border; migrant through eastern OR | Open islands/ peninsulas in lakes and rivers; open marshes | No-breeding range is much further south; may occur as a migrant |
| Swainson's hawk <i>Buteo swainsoni</i> | Western US | Prairies and open arid land | No |
| Long billed curlew <i>Numenius americanus</i> | Occurs in Baker County | Grassy meadows, herbaceous wetlands | Yes |
| Franklin's gull <i>Leucophaeus pipixcan</i> | Northern prairies, extends into southeast Oregon | Large marshes, lake edges in sagebrush steppe and prairie | No |
| Flammulated owl <i>Otus flammeolus</i> | Western US, "ponderosa pine belt" | Ponderosa pine forest | Yes |
| American three-toed woodpecker <i>Picoides dorsalis</i> | Canada and US; occurs in Baker County | Dense spruce or lodgepole forests | No |
| Pileated woodpecker <i>Dryocopus pileatus</i> | North America, occurs in Baker Co | Ponderosa pine forest | Yes |
| Loggerhead shrike <i>Lanius ludovicianus</i> | North America | Open grassland or steppe | No |
| Bobolink <i>Dolichonyx oryzivorus</i> | Eastern US, extends into small portion of eastern Oregon | Tall grass prairie or agricultural fields | No |

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| Table 3. Continued | | | |
|---|--|--|--|
| Species | Geographical Range | Habitat | Potential Habitat in Project Vicinity |
| Geographic Range Does Not Include Eastern Oregon | | | |
| Arctic peregrine falcon <i>Falco peregrinus tundrius</i> | Breeds in tundra, winters in Latin and South America | Tundra, cliffs/talus, wetlands, estuaries | No |
| Cassin's auklet <i>Ptychoramphus aleuticus</i> | Coastal species | Ocean, coastal bluffs, offshore rocks, beaches | No |
| Rhinoceros auklet <i>Cerorhinca monocerata</i> | Coastal species | | No |
| Tufted puffin <i>Fratercula cirrhata</i> | Coastal species | | No |
| Grasshopper sparrow <i>Ammodramus savannarum</i> | East and Midwest US, small populations in Columbia Plateau | Open grassland | No |

Spruce grouse. The spruce grouse occurs in the northern latitudes of the US and Canada with its range extending only slightly into northeast Oregon. The grouse is associated strictly with boreal-type forests (spruce-fir, spruce-lodgepole pine, wet spruce) which do not occur in the Mason Dam project area or vicinity.

American white pelican. The American white pelican migrates through eastern Oregon, but its breeding population (not the migratory) is the population of concern. The pelican breeds in southern Oregon near the California border in Malheur, Harney and Lake counties. It is not known to breed in Baker County. Breeding habitat includes open islands or peninsulas within rivers or lakes, and open marshes. This habitat does not occur in the Mason Dam project area (see section 6.2 of the Combined Report). The pelican may rest in the project vicinity during migration, but there is no breeding habitat for it in the project area.

Swainson's hawk. The Swainson's hawk has a large range throughout the western and midwestern US and is known to occur in Baker County and in the Powder River watershed. Its habitat is similar to that of the ferruginous hawk (described in section 3.3 of the Combined Report), but within moister areas of farmland, sagebrush steppe or prairies. Swainson's hawks nest in wooded groves along streams, windbreaks, or other treed or brushy areas near large areas of open habitat. As described for the ferruginous hawk, these habitats do not occur within the Mason Dam project area.

Long billed curlew. The long billed curlew breeds in eastern Oregon and is known from Baker

County and the Powder River watershed. Habitat includes grassy meadows near water, generally with short grass. Breeding begins in March and is completed by July. Although an opportunistic feeder, the curlew often feeds on aquatic invertebrates and insect larvae by probing its long bill into the mud or soil. The only grassland in the Mason Dam project area near water is in the recreation area parking lot. This habitat is not suitable for curlew nesting (vegetation too tall, ongoing human and dog disturbance, soil not suitable for probing either in the grassland or the nearby Powder River) and no nest remnants were observed during the July 2009 surveys.

Franklin's gull. Franklin's gull is a northern prairie bird that is not common in Oregon. It breeds within prairie or steppe habitat in extensive marshes or shallow lake edges. Nests are made of grasses and other dead marsh plants and often are floating structures anchored to living plant stems. There is a breeding colony at the Malheur National Wildlife Refuge, but the gull is uncommon elsewhere in Oregon. The extensive marshes required for the colonial-nesting bird do not occur in the Mason Dam project area (see section 6.2 of the Combined Report).

Flammulated owl. The flammulated owl is closely associated with the western "yellow pine belt" which is dominated by ponderosa and Jeffrey pines. The preferred habitat is an open pine stand containing large, mature trees. In northeast Oregon, the average dbh of nest trees is 28 inches, with the nest trees in stands where the average dbh exceeds 20 inches (Bull et al. 1990). The owl is most often found on ridges and upper slopes in Oregon, and absent from warm and humid pine forests and mesic ponderosa pine/Douglas-fir (Bull et al. 1990). The owl occupies similar habitats as the Lewis woodpecker, described in section 3.3 of the Combined Report. As noted in section 4.4.2 of this report, the trees within the Mason Dam project area are mostly small to medium size (10 to 15 inches dbh). Although superficially providing habitat for the ponderosa pine-dependent species, the small tree size and lack of snags limit the habitat value for old growth cavity nesting species such as the flammulated owl.

American three-toed woodpecker. The American three-toed woodpecker is widespread in the US and Canada, and known to occur in Baker County. Nesting occurs in coniferous forest (primarily spruce), and less frequently in mixed forest. The woodpecker is associated with subalpine fir and Engelmann spruce at higher elevations, and lodgepole pine forests or in mixed-conifer forests with a lodgepole component at lower elevations. It prefers trees with thin, flaky bark such as spruce and lodgepole pine. Optimal habitat includes areas with 4.2-5.2 snags per acre, with snags occurring in clumps. Preferred snag size is 12-16 inches dbh and 20-40 feet tall, with bark still present.

The spruce or lodgepole habitat required by the three-toed woodpecker does not occur in the Mason Dam project area or its close vicinity. Additionally, the snag density in the project area is 0 to 0.7 snags/acre (see Combined Report section 6.3.1 and Appendix F), well under the density required by the woodpecker.

Pileated woodpecker. The pileated woodpecker is widely distributed in wooded areas of North America, and known to occur in Baker County. In northeast Oregon, the woodpecker nests are primarily in large ponderosa pine, with a mean dbh of 84 cm (33 inches)(Bull 1987). Nests are in shaded snag cavities, with cavity entrances well above the ground (over 30 feet), and often in trees

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over 100 years old.

The large size, old growth ponderosa pine required by the pileated woodpecker does not occur in the Mason Dam project area (see Combined Report section 6.3.1 and Appendix F). The woodpecker may occur in the project vicinity but there is no habitat for it in the project area.

Loggerhead shrike. Loggerhead shrikes historically occurred across North America, breeding in open country, including grasslands and shrub-steppes with scattered trees, tall shrubs, fence posts, utility wires, or other lookout posts. In Oregon, the shrike occurs in relatively undisturbed shrub-steppe or grassland habitat at low to middle elevations. The species is considered to be an important shrub-steppe indicator species. Although occurring in eastern Oregon, the habitats required by the loggerhead strike do not occur in the Mason Dam project area.

Bobolink. The bobolink occurs throughout much of the eastern and midwestern US, with a small portion of its range extending into eastern Oregon. It is known to breed in Baker County. Habitats include tall grasslands, croplands (grains) and hayfields with moderate to dense vegetation, moderately deep litter and little bare ground. Where no natural tall-grass prairie occurs, the bobolink is generally associated with irrigated hay fields and other agricultural crops that are similar in structure to tall-grass prairies. Bobolinks are strongly polygamous and nest in small, loose colonies, building loosely woven nests on the ground in dense, high grass. During migration they can be found in freshwater marshes, especially rice fields, and at coastal areas.

The only tall grassland in the Mason Dam project area is in the recreation area parking lot. However, the low vegetation density, lack of litter and degree of bare ground limits its value for bobolink and no nest remnants were observed during the July 2009 surveys.

Mammals

All except four of the mammal species on the ODFW sensitive species list were previously addressed, either in the Combined Report or in other agency screening. The white-tailed jackrabbit (*Lepus townsendii*) is fairly common in the western US, including eastern Oregon, but its range extends to the east of the Mason Dam project area in lower grassland and sagebrush steppe habitats and does not occur in the project vicinity. The ringtail (*Bassariscus astutus*) occurs only in southwest Oregon and its range does not overlap Baker or adjacent counties. The California myotis (*Myotis californicus*) occurs in low elevation habitats of the western US. The bat species roosts in man-made structures, other small crevices, on small desert shrubs or on the ground. It hibernates in caves, mines, tunnels or buildings. Maternity colonies may be formed in rock crevices, or in buildings. The California myotis is known to occur in Baker County near Brownlee Reservoir and similar low elevation habitats, but it is not likely to occur in the Mason Dam project area.

One ODFW sensitive bat species may occur in the project vicinity. The hoary bat (*Lasiurus cinereus*) occurs in forested habitats where it typically roosts in trees (foliage, bark, cavities) and rock crevices.

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Section 4.4.4 of the Combined Report notes that it is likely that sensitive bat species occur in the project vicinity but that roosting, maternity and hibernation habitat is limited within the project area. This is primarily due to human disturbance of the rock outcrops and lack of appropriately-sized trees. It is possible that the hoary bat uses the project area, especially for foraging, but use of the higher quality bat habitat described in section 4.4.4 for roosting is more likely.

Summary and Conclusions

Almost all of the 143 fish, reptile, amphibian, bird and mammal species considered sensitive by ODFW fall into one of the following categories:

- Previously addressed in the Combined Report
- Not considered sensitive by ODFW in the Blue Mountain Ecoregion
- TES species that are not considered by the FWS or FS to occur in Baker County or within the Wallowa-Whitman National Forest
- Range does not include eastern Oregon.

There are a few sensitive wildlife species that were not addressed in the Combined Report and whose range both includes eastern Oregon and whose general habitats (e.g., wetland, river, pine forest) are similar to those in the project area. These species are:

- Northern leopard frog: wetlands/open water habitats
- Western toad: wetlands/open water habitats
- Long-billed curlew: grassy meadows near water
- Flammulated owl: ponderosa pine forest
- Pileated woodpecker: ponderosa pine forest
- Hoary bat: forested habitats

Except for the hoary bat, the specific habitat elements required for these species do not occur within the Mason Dam project area. The wetland-dependent sensitive amphibians require shallow, stable water levels without predatory fish access, which does not occur in the project area (although it occurs in the project vicinity). The curlew requires moist, short grass meadows near water and suitable, soft substrate feeding habitat. The ponderosa-pine dependent species require large, old growth trees with a high snag density, not the smaller trees in the project area. As noted above, it is possible that the hoary bat uses the project area, especially for foraging, but use of the higher quality bat habitat described in section 4.4.4 of the Combined Report for roosting is more likely.

As a result, there are no new ODFW sensitive species/species groups, which haven't already been considered, that would be affected by the Mason Dam project. The avoidance and enhancement measures described in the Combined Report (e.g., existing snag retention, wetland impact

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minimization, weed control, bat habitat enhancement) would serve to protect and enhance habitat for potential future sensitive species occupation and for any existing hoary bat use.

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APPENDIX 1

ODFW SENSITIVE WILDLIFE SPECIES LIST



Oregon Department of Fish and Wildlife

SENSITIVE SPECIES LIST

Organized By Taxa

An asterisk (*) indicates that the species, Distinct Population Segment (DPS) or Evolutionarily Significant Unit (ESU) is federally listed as threatened or endangered by either NOAA's National Marine Fisheries Service or the U.S. Fish and Wildlife Service. Parenthetical scientific names are proposed taxonomic changes not yet adopted by the American Fisheries Society Committee on Names of Fishes.

FISH

Sensitive Species: Fish. USGS Hydrologic Unit (HU) distribution is based on current known distribution as described in the ODFW Native Fish Status Report, literature review, or expert information. A species or Species Management Unit (SMU) may be distributed in all or a portion of the HU where appropriate habitat exists. For anadromous species, the distribution does not include migration corridors. Figure 2 displays the location of the hydrologic units in Oregon.

| Common Name | Scientific Name | USGS HU distribution (current) |
|--|--|--|
| CRITICAL | | |
| Modoc Sucker* | <i>Catostomus microps</i> | Goose Lake (18020001) |
| Westslope Cutthroat Trout | <i>Oncorhynchus clarki lewisi</i> (Behnke 2002) | Upper John Day (17070201) |
| Chum Salmon (Columbia River ESU)* | <i>Oncorhynchus keta</i> | Lower Columbia (17080006), Lower Columbia-Clatskanie (17080003), Lower Willamette (17090012), Lower Columbia-Sandy (17080001) |
| Chum Salmon (Coastal Chum Salmon SMU/Pacific Coast ESU) | <i>Oncorhynchus keta</i> | Nehalem (17100202), Necanicum (17100201), Wilson-Trask-Nestucca (17100203), Yamhill (17090008), Siletz-Yaquina (17100204) |
| Steelhead (Klamath Mountains Province ESU, Klamath Summer Steelhead SMU) | <i>Oncorhynchus mykiss</i> | Upper Klamath River (18010206) |
| Steelhead (Lower Columbia River ESU/SMU, winter run)* | <i>Oncorhynchus mykiss</i> | Lower Columbia (17080006), Lower Columbia-Clatskanie (17080003), Lower Willamette (17090012), Lower Columbia-Sandy (17080001), Clackamas (17090011), Middle Columbia-Hood (17070105) |
| Steelhead (Lower Columbia River ESU/SMU, summer run)* | <i>Oncorhynchus mykiss</i> | Middle Columbia-Hood (17070105) |
| Steelhead (Middle Columbia River ESU, summer run)* | <i>Oncorhynchus mykiss</i> | Lower Deschutes (17070306), Trout (17070307), Upper Deschutes (17070301), Lower Crooked (17070305), Upper John Day (17070201), North Fork John Day (17070202), Middle Fork John Day (17070203), Lower John Day (17070204), Umatilla (17070103), Walla Walla (17070102) |
| Great Basin Redband Trout (Catlow Valley Redband Trout SMU) | <i>Oncorhynchus mykiss newberrii</i> (Behnke 2002) | Guano (17120008) |

2008 ODFW Sensitive Species List, organized by taxon

| Common Name | Scientific Name | USGS HU distribution (current) |
|--|--|---|
| Great Basin Redband Trout (Goose Lake Redband Trout SMU) | <i>Oncorhynchus mykiss newberrii</i> (Behnke 2002) | Goose Lake (18020001) |
| Great Basin Redband Trout (Warner Lakes Redband Trout SMU) | <i>Oncorhynchus mykiss newberrii</i> (Behnke 2002) | Warner Lake (17120007) |
| Great Basin Redband Trout (Fort Rock Redband Trout SMU) | <i>Oncorhynchus mykiss newberrii</i> (Behnke 2002) | Summer Lake (17120005) |
| Chinook Salmon (Upper Willamette River ESU, spring run/Willamette Spring Chinook SMU)* | <i>Oncorhynchus tshawytscha</i> | Molalla-Pudding (17090009), North Santiam (17090005), South Santiam (17090006), Mckenzie (17090004), Middle Fork Willamette (17090001), Coast Fork Willamette (17090002), Upper Willamette (17090003) |
| Chinook Salmon (Coastal Spring Chinook SMU) | <i>Oncorhynchus tshawytscha</i> | Wilson-Trask-Nestucca (17100203), Siletz-Yaquina (17100204), Alosea (17100205), Coquille (17100305), North Umpqua (17100301), South Umpqua (17100302) |
| Chinook Salmon (Lower Columbia River Chinook ESU/SMU, fall run)* | <i>Oncorhynchus tshawytscha</i> | Lower Columbia (17080006), Lower Columbia-Clatskanie (17080003), Lower Columbia-Sandy (17080001), Clackamas (17090011), Middle Columbia-Hood (17070105), Lower Willamette (17090012) |
| Chinook Salmon (Lower Columbia River Chinook ESU/SMU, spring run)* | <i>Oncorhynchus tshawytscha</i> | Lower Columbia-Sandy (17080001), Clackamas (17090011) |
| Oregon Chub* | <i>Oregonichthys crameri</i> | North Santiam (17090005), Upper Willamette (17090003), South Santiam (17090006), Mckenzie (17090004), Middle Fork Willamette (17090001), Coast Fork Willamette (17090002) |
| Umpqua Chub | <i>Oregonichthys kalawatseti</i> | Umpqua (17100303), North Umpqua (17100301), South Umpqua (17100302) |
| Bull Trout (Willamette Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Mckenzie (17090004), Middle Fork Willamette (17090001) |
| Bull Trout (John Day Bull Trout SMU)* | <i>Salvelinus confluentus</i> | North Fork John Day (17070202), Middle Fork John Day (17070203), Upper John Day (17070201) |
| Bull Trout (Umatilla Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Umatilla (17070103) |
| Bull Trout (Grande Ronde Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Upper Grande Ronde River (17060104), Wallowa River (17060105), Lower Grande Ronde (17060106) |
| Bull Trout (Imnaha Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Imnaha River (17060102) |
| Bull Trout (Hells Canyon Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Brownlee Reservoir (17050201), Powder River (17050203) |
| Bull Trout (Hood River Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Middle Columbia-Hood (17070105) |
| Bull Trout (Malheur River Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Upper Malheur (17050116) |
| Bull Trout (Odell Lake Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Upper Deschutes (17070301) |
| Bull Trout (Klamath Lake Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Upper Klamath Lake (18010203), Sprague (18010202) |

2008 ODFW Sensitive Species List, organized by taxon

| Common Name | Scientific Name | USGS HU distribution (current) |
|--|--|--|
| VULNERABLE | | |
| Goose Lake Sucker | <i>Catostomus occidentalis lacusanserinus</i> (Moyle 2002) | Goose Lake (18020001) |
| Alvord Chub | <i>Gila alvordensis</i> (<i>Siphateles alvordensis</i>) | Alvord Lake (17120009) |
| Miller Lake Lamprey | <i>Lampetra minima</i> (<i>Entosphenus minimus</i>) | Williamson (18010201), Sprague (18010202) |
| Western Brook Lamprey | <i>Lampetra richardsoni</i> | Columbia River system and coastal streams including the Rogue |
| Pacific Lamprey | <i>Lampetra tridentate</i> (<i>Entosphenus tridentata</i>) | Columbia River system and coastal streams including the Rogue |
| Coastal Cutthroat Trout (Lower Columbia Coastal Cutthroat Trout SMU/ Southwestern Washington/Columbia River ESU) | <i>Oncorhynchus clarkii clarkii</i> | Lower Columbia-Clatskanie (17080003), Lower Columbia (17080006), Lower Willamette (17090012), Middle Columbia-Hood (17070105), Lower Columbia-Sandy (17080001), Clackamas (17090011) |
| Coho Salmon (Coastal Coho Salmon SMU/Oregon Coast ESU)* | <i>Oncorhynchus kisutch</i> | Nehalem (17100202), Necanicum (17100201), Wilson-Trask-Nestucca (17100203), Siletz-Yaquina (17100204), Alsea (17100205), Suslaw (17100206), Siltcoos (17100207), Umpqua (17100303), Coos (17100304), South Umpqua (17100302), Coquille (17100305), Sixes (17100306), North Umpqua (17100301) |
| Coho Salmon (Southern Oregon/Northern California Coasts ESU/Rogue (and Klamath) Coho SMU)* | <i>Oncorhynchus kisutch</i> | Middle Rogue (17100308), Lower Rogue (17100310), Illinois (17100311), Upper Rogue (17100307), Applegate (17100309) |
| Inland Columbia Redband Trout | <i>Oncorhynchus mykiss gairdneri</i> | Lower Owyhee (17050110), Jordan (17050108), Middle Owyhee (17050107), South Fork Owyhee (17050105), East Little Owyhee (17050106), Lower Malheur (17050117), Upper Malheur (17050116), Bully (17050118), Willow (17050119), Burnt River (17050202), Lower Snake-Asotin (17060103), Walla Walla (17070102), , Lower Grande Ronde (17060106), Middle Fork John Day (17070203), Lower John Day (17070204), Brownlee Reservoir (17050201), Powder River (17050203), Imnaha River (17060102), North Fork John Day (17070202), Upper Grande Ronde River (17060104), Wallowa River (17060105), Willow (17070104), Umatilla (17070103), South Fork Crooked (17070303), Upper Crooked (17070304), Upper John Day (17070201), Little Deschutes (17070302), , Lower Crooked (17070305), Upper Deschutes (17070301), Trout (17070307), Middle Columbia-Hood (17070105), Lower Deschutes (17070306) |
| Great Basin Redband Trout (Malheur Lakes Redband SMU) | <i>Oncorhynchus mykiss newberrii</i> (Behnke 2002) | Silvies (17120002), Harney-Malheur Lakes (17120001), Silver (17120004), Donner Und Blitzen (17120003), |
| Great Basin Redband Trout (Chewaucan Redband Trout SMU) | <i>Oncorhynchus mykiss newberrii</i> (Behnke 2002) | Lake Abert (17120006) |
| Great Basin Redband Trout (Upper Klamath Basin Redband Trout SMU) | <i>Oncorhynchus mykiss newberrii</i> (Behnke 2002) | Sprague (18010202), Upper Klamath Lake (18010203), Williamson (18010201), Lost River (18010204), Upper Klamath River (18010206) |
| Steelhead (Upper Willamette River ESU, winter run/Willamette Winter Steelhead SMU)* | <i>Oncorhynchus mykiss</i> | Tualatin (17090010), Yamhill (17090008), Molalla-Pudding (17090009), North Santiam (17090005), South Santiam (17090006), Upper Willamette (17090003), Middle Willamette (17090007) |

2008 ODFW Sensitive Species List, organized by taxon

| Common Name | Scientific Name | USGS HU distribution (current) |
|---|------------------------------------|--|
| Steelhead (Oregon Coast ESU, summer run/Coastal Summer Steelhead SMU) | <i>Oncorhynchus mykiss</i> | Siletz-Yaquina (17100204), North Umpqua (17100301) |
| Steelhead (Oregon Coast ESU, winter run/Coastal Winter Steelhead SMU) | <i>Oncorhynchus mykiss</i> | Nehalem (17100202), Necanicum (17100201), Wilson-Trask-Nestucca (17100203), Siletz-Yaquina (17100204), Alsea (17100205), Siuslaw (17100206), Umpqua (17100303), Coos (17100304), North Umpqua (17100301), South Umpqua (17100302), Coquille (17100305), Sixes (17100306) |
| Steelhead (Klamath Mountains Province ESU, summer run/Rogue Summer Steelhead SMU) | <i>Oncorhynchus mykiss</i> | Upper Rogue (17100307), Middle Rogue (17100308), Applegate (17100309), Lower Rogue (17100310) |
| Steelhead (Snake River Basin ESU/Snake Summer Steelhead SMU)* | <i>Oncorhynchus mykiss</i> | Imnaha River (17060102), Upper Grande Ronde River (17060104), Wallowa River (17060105), Lower Grande Ronde River (17060106) |
| Chinook Salmon (Mid-Columbia River ESU/SMU, fall run) | <i>Oncorhynchus tshawytscha</i> | Lower Deschutes (17070306) |
| Chinook Salmon (Rogue Spring Chinook SMU) | <i>Oncorhynchus tshawytscha</i> | Upper Rogue (17100307), Middle Rogue (17100308) |
| Chinook Salmon (Middle Columbia Spring Chinook SMU) | <i>Oncorhynchus tshawytscha</i> | Lower Deschutes (17070306), Upper Deschutes (17070301), Lower Crooked (17070305), Upper John Day (17070201), North Fork John Day (17070202), Middle Fork John Day (17070203) |
| Chinook Salmon (Southern Oregon/Northern California Coast ESU, fall run/Rogue Fall Chinook SMU) | <i>Oncorhynchus tshawytscha</i> | Lower Rogue (17100310), Illinois (17100311), Chetco (17100312), Upper Rogue (17100307), Middle Rogue (17100308), Applegate (17100309), Sixes (17100306) |
| Millicoma Dace | <i>Rhinichthys cataractae</i> ssp. | Coos (17100304) |
| Bull Trout (Deschutes Bull Trout SMU)* | <i>Salvelinus confluentus</i> | Lower Deschutes (17070306), Upper Deschutes (17070301) |

2008 ODFW Sensitive Species List, organized by taxon

AMPHIBIANS

| Common Name | Scientific Name | Ecoregion |
|-------------------------------|--------------------------------|---|
| CRITICAL | | |
| Columbia Spotted Frog | <i>Rana luteiventris</i> | Columbia Plateau, Northern Basin and Range |
| Oregon Spotted Frog | <i>Rana pretiosa</i> | |
| Foothill Yellow-legged Frog | <i>Rana boylei</i> | Willamette Valley |
| Northern Leopard Frog | <i>Lithobates pipiens</i> | |
| VULNERABLE | | |
| Cope's Giant Salamander | <i>Dicamptodon copei</i> | |
| Columbia Torrent Salamander | <i>Rhyacotriton kezeri</i> | |
| Southern Torrent Salamander | <i>Rhyacotriton variegatus</i> | |
| Cascade Torrent Salamander | <i>Rhyacotriton cascadae</i> | |
| Larch Mountain Salamander | <i>Plethodon larselli</i> | |
| Del Norte Salamander | <i>Plethodon elongatus</i> | |
| Siskiyou Mountains Salamander | <i>Plethodon stormi</i> | |
| Clouded Salamander | <i>Aneides ferreus</i> | |
| Black Salamander | <i>Aneides flavipunctatus</i> | |
| Oregon Slender Salamander | <i>Batrachoseps wrightorum</i> | |
| Rocky Mountain Tailed Frog | <i>Ascaphus montanus</i> | |
| Coastal Tailed Frog | <i>Ascaphus truei</i> | |
| Western Toad | <i>Anaxyrus boreas</i> | |
| Northern Red-legged Frog | <i>Rana aurora</i> | Klamath Mountains, Willamette Valley |
| Cascades Frog | <i>Rana cascadae</i> | |
| Columbia Spotted Frog | <i>Rana luteiventris</i> | Blue Mountains, Eastern Cascades Slopes and Foothills |
| Foothill Yellow-legged Frog | <i>Rana boylei</i> | Coast Range, Klamath Mountains, West Cascades |

REPTILES

| Common Name | Scientific Name | Ecoregion |
|-------------------------------|---------------------------------------|-------------------|
| CRITICAL | | |
| Western Painted Turtle | <i>Chrysemys picta bellii</i> | |
| Western Pond Turtle | <i>Actinemys marmorata</i> | |
| Western Rattlesnake | <i>Crotalus oregonus</i> | Willamette Valley |
| VULNERABLE | | |
| Northern Sagebrush Lizard | <i>Sceloporus graciosus graciosus</i> | Columbia Plateau |
| Common Kingsnake | <i>Lampropeltis getula</i> | |
| California Mountain Kingsnake | <i>Lampropeltis zonata</i> | |

2008 ODFW Sensitive Species List, organized by taxon

BIRDS

| Common Name | Scientific Name | Ecoregion |
|-------------------------------|---|---|
| CRITICAL | | |
| Columbian Sharp-tailed Grouse | <i>Tympanuchus phasianellus columbianus</i> | |
| Red-necked Grebe | <i>Podiceps grisegena</i> | Breeding Population |
| Ferruginous Hawk | <i>Buteo regalis</i> | Columbia Plateau |
| Yellow Rail | <i>Coturnicops noveboracensis</i> | |
| Upland Sandpiper | <i>Bartramia longicauda</i> | |
| Yellow-billed Cuckoo | <i>Coccyzus americanus</i> | |
| Burrowing Owl | <i>Athene cunicularia</i> | Blue Mountains, Columbia Plateau, Eastern Cascades Slopes and Foothills, Klamath Mountains, Willamette Valley |
| Common Nighthawk | <i>Chordeiles minor</i> | Willamette Valley |
| Lewis's Woodpecker | <i>Melanerpes lewis</i> | |
| White-headed Woodpecker | <i>Picoides albolarvatus</i> | |
| Streaked Horned Lark | <i>Eremophila alpestris strigata</i> | Coast Range, Klamath Mountains, Willamette Valley |
| Purple Martin | <i>Progne subis</i> | |
| Yellow-breasted Chat | <i>Icteria virens</i> | Willamette Valley |
| Oregon Vesper Sparrow | <i>Poocetes gramineus affinis</i> | Klamath Mountains, Willamette Valley |
| Sage Sparrow | <i>Amphispiza belli</i> | Columbia Plateau |
| Western Meadowlark | <i>Sturnella neglecta</i> | Willamette Valley |
| VULNERABLE | | |
| Greater Sage-Grouse | <i>Centrocercus urophasianus</i> | Blue Mountains, Columbia Plateau, Eastern Cascades Slopes and Foothills |
| Spruce Grouse | <i>Falcapennis canadensis</i> | |
| Mountain Quail | <i>Oreortyx pictus</i> | Northern Basin and Range |
| American White Pelican | <i>Pelecanus erythrorhynchos</i> | Breeding Population |
| Snowy Egret | <i>Egretta thula</i> | Breeding Population |
| Northern Goshawk | <i>Accipiter gentilis</i> | |
| Swainson's Hawk | <i>Buteo swainsoni</i> | |
| Ferruginous Hawk | <i>Buteo regalis</i> | Blue Mountains, Eastern Cascades Slopes and Foothills |
| American Peregrine Falcon | <i>Falco peregrinus anatum</i> | |
| Arctic Peregrine Falcon | <i>Falco peregrinus tundrius</i> | |
| Greater Sandhill Crane | <i>Grus canadensis tabida</i> | Central Valley Population (Oregon Breeding Population) |
| Black Oystercatcher | <i>Haematopus bachmani</i> | |
| Long-billed Curlew | <i>Numenius americanus</i> | Blue Mountains, Columbia Plateau, Eastern Cascades Slopes and Foothills |
| Franklin's Gull | <i>Larus pipixcan</i> | |
| Cassin's Auklet | <i>Ptychoramphus aleuticus</i> | |
| Rhinoceros Auklet | <i>Cerorhinca monocerata</i> | |
| Tufted Puffin | <i>Fratercula cirrhata</i> | |
| Flammulated Owl | <i>Otus flammeolus</i> | |
| Burrowing Owl | <i>Athene cunicularia</i> | Northern Basin and Range |
| Great Gray Owl | <i>Strix nebulosa</i> | |

2008 ODFW Sensitive Species List, organized by taxon

BIRDS Continued

| Common Name | Scientific Name | Ecoregion |
|---|-------------------------------------|---|
| VULNERABLE continued | | |
| Acorn Woodpecker | <i>Melanerpes formicivorus</i> | Willamette Valley |
| American Three-toed Woodpecker | <i>Picoides dorsalis</i> | |
| Black-backed Woodpecker | <i>Picoides arcticus</i> | |
| Pileated Woodpecker | <i>Dryocopus pileatus</i> | Blue Mountains, Eastern Cascades Slopes and Foothills, Klamath Mountains |
| Olive-sided Flycatcher | <i>Contopus cooperi</i> | |
| Willow Flycatcher | <i>Empidonax traillii adastus</i> | Blue Mountains, Columbia Plateau, Eastern Cascades Slopes and Foothills, Northern Basin and Range |
| Little Willow Flycatcher | <i>Empidonax traillii brewsteri</i> | Coast Range, Klamath Mountains, West Cascades, Willamette Valley |
| Loggerhead Shrike | <i>Lanius ludovicianus</i> | Blue Mountains, Columbia Plateau, Eastern Cascades Slopes and Foothills |
| White-breasted Nuthatch (=Slender-billed Nuthatch) | <i>Sitta carolinensis aculeata</i> | Coast Range, Klamath Mountains, West Cascades, Willamette Valley |
| Western Bluebird | <i>Sialia mexicana</i> | Coast Range, Klamath Mountains, West Cascades, Willamette Valley |
| Grasshopper Sparrow | <i>Ammodramus savannarum</i> | |
| Bobolink | <i>Dolichonyx oryzivorus</i> | |

MAMMALS

| Common Name | Scientific Name | Ecoregion |
|------------------------------|--|---|
| CRITICAL | | |
| Townsend's Big-eared Bat | <i>Corynorhinus townsendii</i> | |
| Fisher | <i>Martes pennanti</i> | |
| VULNERABLE | | |
| California Myotis | <i>Myotis californicus</i> | |
| Fringed Myotis | <i>Myotis thysanodes</i> | |
| Long-legged Myotis | <i>Myotis volans</i> | |
| Hoary Bat | <i>Lasiurus cinereus</i> | |
| Silver-haired Bat | <i>Lasionycteris noctivagans</i> | |
| Spotted Bat | <i>Euderma maculatum</i> | |
| Pallid Bat | <i>Antrozous pallidus</i> | |
| Pygmy Rabbit | <i>Brachylagus idahoensis</i> | Willamette Valley |
| Black-tailed Jackrabbit | <i>Lepus californicus</i> | |
| White-tailed Jackrabbit | <i>Lepus townsendii</i> | Willamette Valley |
| Western Gray Squirrel | <i>Sciurus griseus</i> | Willamette Valley |
| Red Tree Vole | <i>Arborimus longicaudus</i> | Coast Range |
| Ringtail | <i>Bassariscus astutus</i> | |
| American Marten | <i>Martes americana</i> | Blue Mountains, Coast Range |
| Columbian White-tailed Deer* | <i>Odocoileus virginianus leucurus</i> | Coast Range (Columbia River Population) |

2008 ODFW Sensitive Species List, organized by taxon