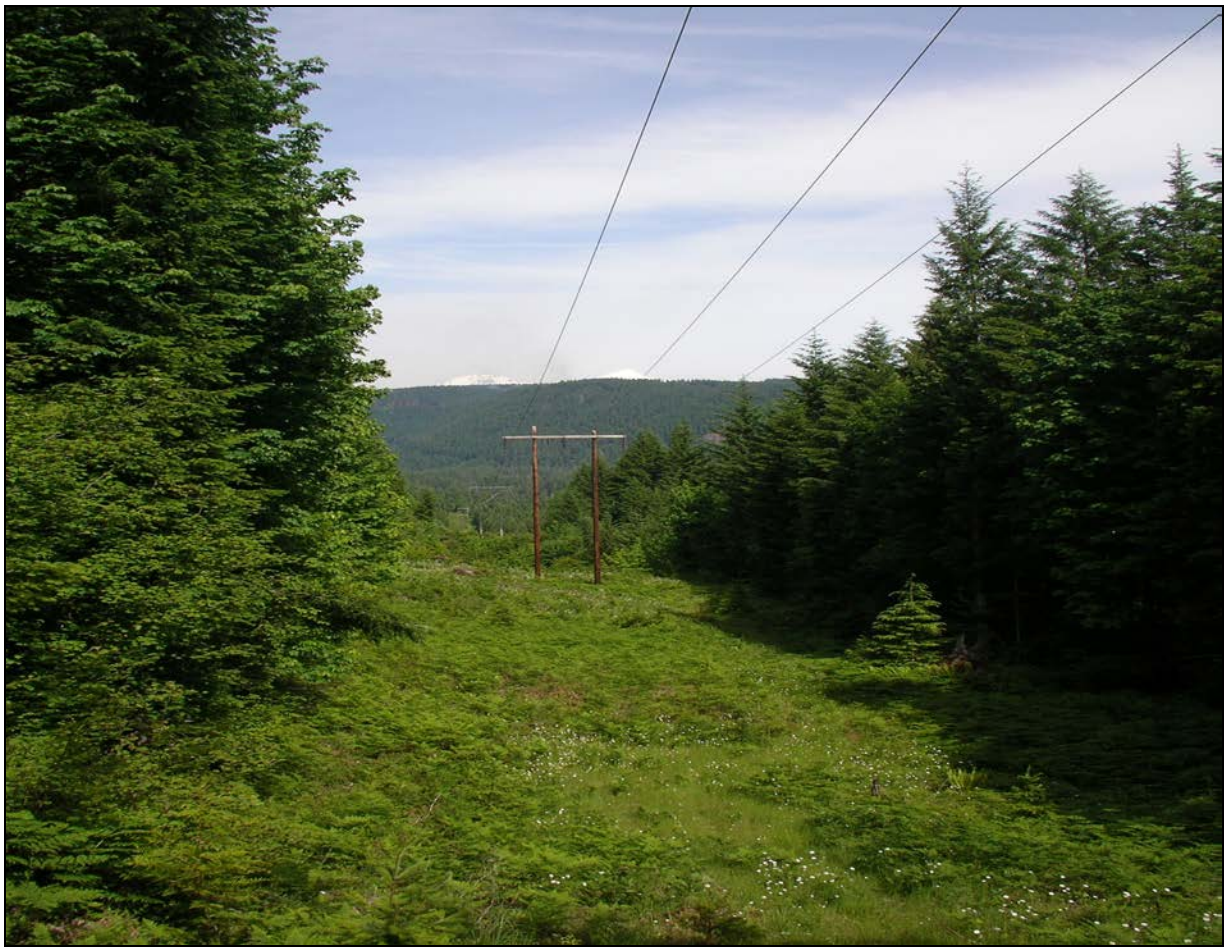
Exhibit E

Carmen-Smith Hydroelectric Project
(FERC No. 2242)

November 2016 Amended and Restated
Vegetation Management Plan

Submitted by:

Eugene Water & Electric Board



November 2016 Amended and Restated

Vegetation Management Plan

Final Plan

Prepared for
Eugene Water & Electric Board
Eugene, Oregon

Prepared by
Stillwater Sciences
Arcata, California

November 2016

Stillwater Sciences

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1 INTRODUCTION

The Eugene Water & Electric Board (EWEB) owns and operates the Carmen-Smith Hydroelectric Project (Project) under license No. 2242 from the Federal Energy Regulatory Commission (FERC). The Project is located on the upper McKenzie River in Linn and Lane Counties, Oregon. EWEB has developed this Vegetation Management Plan (VMP) to guide the management of vegetation and address vegetation-related issues at the Project during the term of the New License for the Project.

The VMP represents the culmination of the vegetation resources evaluation and planning effort conducted as part of the relicensing process for the Project.

The specific actions EWEB shall implement in this VMP were identified and developed based, in part, on the results of terrestrial resource studies conducted by EWEB for the relicensing of the Carmen-Smith Project. EWEB developed these studies collaboratively with a Terrestrial Technical Subgroup comprised of many of the settlement parties. EWEB documented the results of these studies in *Botanical Field Surveys and Evaluation of Project Effects* technical report (Stillwater Sciences 2006a) and *Vegetation and Wetland Mapping and Characterization* technical report (Stillwater Sciences 2006b).

1.1 Areas Covered by this VMP

This VMP covers all lands within the FERC Project boundary and those lands adjacent to the FERC Project boundary that are either affected by Project operations or have the potential to be affected by Project operations.

1.2 Related Resource Management Plans

A number of other resource management plans developed for the Project reference or address vegetation-related management issues. These management plans include the plans for aquatics, wildlife, recreation, roads and historic properties, all included as part of the Settlement Agreement, and the plans for transmission line management and fire suppression, which will be developed following New License issuance. The Parties will resolve any inconsistency between this VMP and other resource management plans by following the dispute resolution process in Section 7 of the Settlement Agreement.

2 PLANNING AND COORDINATION

The Parties agree to coordinate and to cooperate in implementation of this VMP, including the provisions of Sections 2.2.2.1 and 2.2.2.2. Such coordination and cooperation will be assisted by creation of a permanent work group, the Vegetation Management Plan Work Group ("VWG"). EWEB shall convene the VWG in accordance with Section 2.2.2 to discuss and to coordinate the vegetation management activities in this VMP.

2.1 Roles and Responsibilities

The VWG will function throughout the period of time the New License is in effect. The VWG will include representatives from any interested Party including but not limited to EWEB, the United States Fish and Wildlife Service ("USFWS"), and the United States Department of Agriculture Forest Service ("USDA Forest Service"). Each Party participating on the VWG will designate at least one representative and an alternate to serve on the VWG. The initial representatives and alternates are listed in Attachment A to this VMP. Changes to the initial representatives or alternates listed in Attachment A will be made in accordance with the provisions of Section 8.12 of the Settlement Agreement (Attachment B).

EWEB is responsible for implementing this VMP. The USDA Forest Service has approval authority over activities involving National Forest System ("NFS") lands. USFWS has regulatory authority over species listed under the Endangered Species Act of 1973 ("ESA") and critical habitat designated under the ESA.

2.1.1 In consultation with the VWG members when appropriate, EWEB shall:

- Prepare all study, design, operating or implementation plans or reports necessary to implement this VMP, consistent with Standard Construction Scheduling[1].
- Fund implementation of this VMP.
- Conduct any necessary environmental analyses and obtain any required authorizations to implement this VMP from federal, state and local governments.
- Implement and maintain all actions required under this VMP.
- Monitor actions implemented under this VMP to evaluate compliance with this VMP including performance standards.
- Implement contingency actions when actions implemented under this VMP do not achieve compliance with this VMP including performance standards.

[1] "Standard Construction Scheduling" means that EWEB will establish contractual construction schedule deadlines that are reasonably attainable by working normal 40-hour weeks. EWEB will require construction contractors to perform their work within normal working hours (Mondays through Fridays between the hours of 7 a.m. and 5 p.m.). EWEB will not require contractors to work overtime, extra shifts, or on national holidays as a baseline schedule assumption. EWEB will consider authorizing special work hour adjustment requests from a contractor on a case by case basis as necessary to accommodate fire season constraints, wildlife related restrictions, equipment/material delivery delays, or similar circumstances. EWEB's construction contract will include liquidated damage or other appropriate penalties for late completion of work if the causes are within the contractor's control as well as the right to require the use of overtime or additional work shifts if EWEB desires to accelerate the contractor's work.

- Make required reports to the VWG members and Federal Energy Regulatory Commission ("FERC") and other governmental entities, as appropriate.
- Make necessary updates or amendments to this VMP after consultation with the other Parties and receipt of any necessary approvals, as described in Section 2.2.
- Assign a designated EWEB representative knowledgeable in vegetation to the VWG.

2.1.2 USDA Forest Service will:

- Review and approve, as appropriate, any environmental compliance and permitting and other authorizations for VMP actions on NFS lands.
- Issue required permits and authorizations for VMP actions on NFS lands, which include activities within the McKenzie Wild and Scenic River corridor not otherwise included in the New License, consistent with 36 CFR 251 and other applicable laws.
- Provide VWG members with periodic updates to lists of special-status vegetation species on NFS lands.

  Advise EWEB regarding any restrictions placed on habitats or activities due to listing of threatened and endangered species, critical habitat designations, and Biological Opinions related to NFS lands.
- Provide input to the VWG members on activities under this VMP that may affect vegetation within USDA Forest Service's regulatory authority.
- Assign a designated USDA Forest Service representative knowledgeable in vegetation to the VWG.

2.1.3 USFWS will:

- Review and approve, as appropriate, any documents, including study, design, operating and implementation plans identified herein as requiring USFWS action.
- Provide VWG members periodic updates to lists of threatened and endangered species and critical habitat under the ESA and species proposed for listing in the area of the Project.
- Provide input to the VWG members on activities under this VMP that may affect vegetation within USFWS' regulatory authority.
- Assign a designated USFWS representative knowledgeable in vegetation to the VWG.

2.1.4 Representatives of any Party may:

- Provide input to the VWG members on activities under this VMP.

2.2 Implementation, Coordination, and Approval

2.2.1 Implementation

EWEB shall implement and maintain the actions in this VMP according to the timelines in this VMP.

2.2.2 Coordination and approval

EWEB shall:

- Coordinate, consult with, and convene meetings of the VWG.
- Convene a meeting of the VWG at least annually. There may be times when a more frequent or less frequent schedule for convening meetings than annually will be necessary. Meetings will be scheduled less frequently than annually only with the consensus of the VWG. For purposes of this VMP, consensus means that any decision must be acceptable to, or not opposed by, all representatives of the members of the VWG.
- Make best efforts to prepare and distribute to the VWG members an agenda and all meeting materials at least fourteen days before each meeting.
- Prepare draft notes of each meeting including a list of attendees and meeting handouts, agreements or decisions made in the meeting and actions to be taken, provide the notes to the VWG members for review and comment within a reasonable period of time, and provide to the VWG members final notes that include the comments.
- Provide at least 30 days' written notice before each meeting unless unexpected circumstances require input from the VWG members on shorter notice.

For annual meetings, EWEB shall convene the VWG within the first quarter of each calendar year, unless EWEB determines it is appropriate to convene the annual meeting in a different quarter based on activities implemented under the New License. For any annual meeting, EWEB shall summarize the actions implemented under the VMP for the previous calendar year and will provide the summary to the VWG members either in writing or by posting on EWEB's website. In the summary, EWEB shall also summarize the actions EWEB plans to implement under the VMP for the current calendar year.

2.2.2.1 Consultation process

EWEB shall, where this VMP requires consultation with the VWG before EWEB files with FERC any study, operating or implementation plan, report, or facility design: (i) where specified in this VMP, consult with the VWG during the development of the draft study, plan, report, or design, (ii) provide the VWG members with a copy of the draft study, operating or implementation plan, report, or facility design and all data supporting that draft study, operating or implementation plan, report, or facility design, and (iii) allow a minimum of 30 days (which EWEB may reasonably extend upon request of a member of the VWG if needed to facilitate consultation) for the VWG members to comment and to make recommendations, unless a different time period is established under the New License or this VMP or is directed by FERC.

During the consultation period, EWEB shall convene at least one meeting of the VWG to discuss the draft study, operating or implementation plan, report, or facility design and reach consensus and if consensus cannot be reached proceed as described below. EWEB shall provide to the VWG members a final version of the study, operating or implementation plan, report, or facility design at the time that EWEB provides the final version of the document for approval pursuant to Section 2.2.2.2 below.

If a member of the VWG does not respond to a request for consultation within 30 days, or as such period may have been extended, that member is not considered for purposes of obtaining

consensus. If no members of the VWG respond to the request for consultation within 30 days, or as such period may have been extended, EWEB may file the study, operating or implementation plan, report, or facility design with FERC.

When consultation is required under this VMP and consensus is not reached by the VWG prior to the date EWEB is required to make a submission to FERC, EWEB shall make the submission to FERC according to the schedule provided in this VMP or the New License, or as directed by FERC, and will describe to FERC how EWEB's submission accommodates any comments and recommendations of the VWG members. If EWEB's submission does not adopt a recommendation, the submission will include EWEB's reasons based on Project-specific information. EWEB shall provide FERC with a copy of any comments and recommendations provided by the VWG members during the consultation. Any VWG member may seek to resolve the consultation disagreement in accordance with the dispute resolution process in Section 7 of the Settlement Agreement. The VWG members may submit their own comments to FERC. If applicable, once the dispute resolution process is completed, EWEB shall file the study, operating or implementation plan, report or facility design with FERC.

2.2.2.2 Agency approval process

Where this VMP or the New License requires consultation with the VWG and approval by one or more Governmental Parties, EWEB's submission of a study, operating or implementation plan, report, or facility design to the VWG members will also constitute submission for approval to such Governmental Party, if a member of the VWG. When approval of a Governmental Party is required, EWEB shall provide to the Governmental Party a final version of the study, operating or implementation plan, report, or facility design on which approval is sought. Unless a different time period is established in the New License or in this VMP or is directed by FERC, EWEB shall, where approval by a Governmental Party is required, allow a minimum of 30 days for the Governmental Party to provide its approval before EWEB files any study, operating or implementation plan, report, or facility design with FERC. If consensus is achieved by the VWG pursuant to Section 2.2.2.1, such approval shall be deemed to have been obtained. Each Governmental Party who is a member of the VWG with approval authority will document its approval in writing to EWEB, which approval or approvals EWEB shall include in any filing with FERC. Unless otherwise required by the New License or this VMP or directed by FERC, EWEB shall, if requested by any Governmental Party with approval authority, grant a 30-day extension for the completion of consultation. Any Governmental Party or Parties will endeavor to make approval decisions during consultation whenever possible.

If a Governmental Party does not respond to a request for approval within 30 days, or as such period may have been extended, the obligation for obtaining approval from that Governmental Party will be deemed to have been satisfied for purposes of meeting the requirements of the New License and this Settlement Agreement. If no Governmental Parties with approval authority respond to the request for approval within 30 days, or as such period may have been extended, EWEB may file the study, operating or implementation plan, report or facility design with FERC.

When approval of a Governmental Party is required under this VMP and approval has not been provided, EWEB or the Governmental Party may seek to resolve the lack of approval in accordance with the dispute resolution process in Section 7 of the Settlement Agreement. If the dispute has not been resolved after the dispute resolution process outlined in Sections 7.1, 7.1.1, and 7.1.2 of the Settlement Agreement or approval has not been provided prior to the date that

EWEB is required to make a submission to FERC, EWEB shall make the submission to FERC according to the schedule provided in this VMP or the New License, or as directed by FERC, and will describe to FERC why approval was not provided. In such instance, the Governmental Party whose approval was required may submit its own explanation as to why approval was not provided. EWEB or the Governmental Party may seek to resolve the lack of approval in accordance with the dispute resolution process in Section 7 of the Settlement Agreement. If applicable, once the dispute resolution process is completed, EWEB shall file the study, operating or implementation plan, report or facility design with FERC. If resolution was not achieved through dispute resolution, then the Governmental Party may submit its own explanation as to why resolution was not achieved.

2.2.2.3 Expedited consultation and agency approval process

When consultation under Section 2.2.2.1 above or Governmental Party approval under Section 2.2.2.2 above is required and the time provided for consultation in Section 2.2.2.1 or approval in Section 2.2.2.2 is not reasonably available because EWEB must implement an action under the New License within a shorter period of time due to extraordinary circumstances beyond EWEB's reasonable control, EWEB shall provide notice to the Work Group and Governmental Party, as applicable, that: (a) an expedited consultation and approval process will occur within the time available, (b) the location, date and time for the process, (c) the subject for the process, and (d) why EWEB must take action within the shorter period of time. EWEB shall complete as much of the consultation and approval process as can occur in the time reasonably available before EWEB must implement the action. If consultation is not completed or an approval is not obtained within the time available, EWEB may implement the action to the extent allowed by law, but the Parties may still require that the consultation process in Section 2.2.2.1 above and the approval process in Section 2.2.2.2 above, as applicable, be completed after EWEB has implemented the action.

2.2.2.4 Consultation and Approval Process for Measures in the McKenzie Wild and Scenic River Corridor

Where this VMP requires consultation with the FWG and approval or authorization by the USDA Forest Service for measures that will be undertaken in the McKenzie Wild and Scenic River corridor that FERC does not require in the New License, EWEB shall follow the consultation requirements described in Section 2.2.2.1 and the agency approval process described in 2.2.2.2.

Before initiating any habitat or ground-disturbing measures in the McKenzie Wild and Scenic River corridor located on NFS lands, EWEB shall obtain from the USDA Forest Service and file with the Commission any appropriate authorization for the occupancy and use of NFS lands for measures not otherwise included in the New License.

2.3 Periodic Plan Review and Revision

EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service, will periodically review this VMP to determine if revisions are needed. The first such review will occur 5 years after New License issuance unless otherwise agreed to by consensus of the VWG in consultation with the VWG. Subsequent reviews will occur every 5 to 10 years after that time unless otherwise agreed to by consensus of the VWG in consultation with the VWG to determine if and what specific revisions are needed. EWEB shall summarize any needed revisions at a meeting of the VWG, and 30 days prior to that meeting, distribute draft revisions to the VWG for

review. Based on discussion at the VWG meeting, EWEB shall develop a revised draft VMP for review within 90 days after the meeting. EWEB shall provide all members of the VWG an opportunity to review and to comment on, and to reach consensus on the revised draft VMP in accordance with the procedures in Section 2.2.2.1 of this VMP. Any VWG member may seek to resolve a lack of consensus in accordance with the dispute resolution process in Section 7 of the Settlement Agreement. EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service, will then prepare a final revised VMP. If a required approval is not obtained, any VWG member may seek to resolve the lack of approval in accordance with the dispute resolution process in Section 7 of the Settlement Agreement.

In submitting the final revised VMP to FERC, EWEB shall also submit documentation of all VWG and agency consultation, agency approvals, copies of comments and recommendations on the draft and revised VMP, and specific descriptions of how the comments and recommendations were accommodated by the final revised VMP. If EWEB does not adopt a recommendation, the filing will include EWEB's reasons, based on project-specific information.

Revisions to the VMP will not be required to be implemented until EWEB is notified by the Commission that the revisions to the VMP are approved. Upon Commission approval, EWEB shall implement the revised VMP, including any changes required by the Commission.

EWEB may make minor (non-substantial) changes to this VMP consistent with the provisions of Articles 2 and 3 of the New License, provided, however, that EWEB provides a minimum of 30 days advance notice of the minor changes to the VWG (unless circumstances beyond the reasonable control of EWEB require shorter advance notice) and no member of the VWG contends that the proposed changes are not minor. If any member of the VWG objects that the proposed changes are not minor, EWEB shall proceed through the consultation process in Section 2.2.2.1 above for the proposed changes. If EWEB elects, the objection by the member of the VWG that the proposed changes are not minor may also be considered during the consultation process.

3 OBJECTIVES

The objectives of this plan are to provide for the:

- Protection of special-status plant species on Project-affected lands.
- Protection and enhancement of culturally significant plants on Project-affected lands.
- Eradication, containment, or control of noxious/invasive non-native weeds on Project-affected lands.
- Restoration and enhancement of selected riparian, wetland, and meadow areas on Project-affected lands.
- Revegetation with native vegetation and enhancement of areas affected by Project-related land-disturbing activities or areas selected for noxious/invasive non-native weed removal.
- Enhancement of early seral vegetation (e.g., forage for elk and deer and habitat for pollinators and landbirds) along selected portions of the transmission line right-of-way.
- Improvement of dead wood habitat along the transmission line right-of-way.
- Protection of late successional old-growth habitat located on Project-affected lands to the extent reasonably possible.

4 ELEMENTS

4.1 Protection of Special-Status Plant Species

A goal of this VMP is to maintain well-distributed, viable populations of special-status plant species within the Primary Study Area (PSA), as defined in the botanical field surveys technical report completed for relicensing (Stillwater Sciences, 2006a.). Special-status plant species consist of species listed under the federal or state Endangered Species Act (ESA), the USDA Forest Service Region 6 Sensitive and Strategic Species, and Survey and Manage Species on Project-affected lands. EWEB shall catalogue special-status plant population information, and will monitor and protect special-status plant populations, as provided in Section 4.1 of the VMP.

4.1.1 Database maintenance

EWEB has developed and shall maintain for the duration of the New License a database of special-status plant species known to occur within the PSA for botanical studies conducted for the Project. The database consists of a Geographic Information System (GIS) layer of point locations for special-status species and copies of USDA Forest Service Region 6 Threatened and Endangered and Sensitive Plant Sighting Forms. In addition, the database provides the location and status (i.e., population size and general condition) of each of the special-status species so EWEB may assess population health over time.

Currently, the following vascular and non-vascular special-status species are known to occur within the Project PSA*:* *Botrichium virginianum* (rattlesnake fern or Virginia grape-fern); *Ophioglossum pusillum* (northern adder's tongue); *Sidalcea cusickii* (Cusick's checkermallow), and *Nephroma occultum* (a kidney lichen). Table 4-1 provides general location and population information for each occurrence of a special-status plant in the PSA.

Table 4-1. Summary of special-status vascular and non-vascular species occurrences in the PSA, 2005.

Scientific name	Common name	Status[1] (Federal/ Regional/ ORNHP)	General location	Number of new populations documented during 2005 surveys	Number of previously documented populations found during 2005 surveys	Approximate number of individuals in 2005 population
Vascular plants						
Botrychium virginianum	rattlesnake fern or Virginia grape-fern	SoC / — /—	Beaver Marsh	0	2	10–25 in each
Ophioglossum pusillum	northern Adder's-tongue	— / FSS / 2	Deer Creek to Trail Bridge Road	1	0	50–75
Sidalcea cusickii	Cusick's checkermallow	— / — / 4	Carmen-Cougar transmission line corridor	1	1	New population: 3 Relocated population: 25–50
Non-vascular plants						
Nephroma occultum	cryptic paw lichen	— / FSS / 4	Carmen Bypass Reach	2	0	NA

[1] "—" = No special status applies
SoC = Federal Species of Concern; additional information is needed to support a proposal to list under the ESA
FSS = USDA Forest Service, Region 6 Sensitive Species
Oregon Natural Heritage Program (ORNHP) codes:
2 = Threatened, endangered, or extirpated from Oregon, but secure or abundant elsewhere
4 = Watch (of concern, but not currently threatened or endangered)

4.1.2 Periodic monitoring

4.1.2.1 Five-year PSA surveys

Within two years after New License issuance EWEB, in consultation with the VWG and subject to USDA Forest Service approval, shall prepare a plan for conducting surveys of the PSA for special-status species plants every five years for the New License term. The first survey shall be completed within three years of New License issuance. EWEB shall include as a part of the survey plan the protocol for surveying special-status vascular and non-vascular species as provided below. EWEB shall implement the plan and schedule after USDA Forest Service approval.

EWEB shall use the following protocol for surveying special-status vascular species:

- Surveys shall follow the "intuitive controlled" method described in the Survey and Manage Program of the Northwest Forest Plan (Whiteaker et al. 1998).
- Surveys shall be floristic in nature and designed to identify plants to species, subspecies or variety, as necessary to verify the special-status species taxon, using taxonomic keys

for the Pacific Northwest (e.g., Gilkey and Dennis 2001, Pojar and MacKinnon 2004, Hitchcock and Cronquist 1973).

- Complete surveys to established protocols for the entire PSA shall be conducted two to three times throughout the survey year in order to locate all potentially occurring special-status plant species during appropriate phenological periods and to prepare an accurate inventory of the PSA.
- To the extent feasible, all known populations of special-status vascular plant species shall be relocated and any newly-located populations of special-status species shall be added to the current list of special-status species. Population information shall be documented using USDA Forest Service Region 6 Threatened and Endangered and Sensitive Plant Sighting Forms (Willamette National Forest). These forms include information about population size, surrounding habitat and evidence of disturbance to allow assessment of the overall health of the population at the time of the survey. The locations and boundaries of each population in the field shall be recorded using a geographical positioning system (GPS) or mapping onto an orthophoto field basemap.
- Photographs shall be taken to document diagnostic identification characteristics, growth forms, and habitat characteristics. For re-located and newly-identified special-status vascular populations, photos from an established point that can be returned to in future visits will be taken.

EWEB shall use the following protocol when surveying for special-status non-vascular species:

- Contract with experts to survey potential suitable habitat where special-status non-vascular species are more likely to occur.
- To the extent feasible, re-locate all known populations of special-status non-vascular species and also document all newly-located populations of special-status species from a current list of those considered to be special-status. Document population information using USDA Forest Service Region 6 Threatened and Endangered and Sensitive Plant Sighting Forms (Willamette National Forest). These forms include information about population size, surrounding habitat and evidence of disturbance to allow assessment of the overall health of the population at the time of the survey. Record the locations and boundaries of each population in the field using a GPS or mapping onto an orthophoto field basemap.
- For re-located and newly-identified special-status non-vascular species populations, take photographs from an established point that can be returned to in future visits. Vouchers are required to confirm species identification.

4.1.2.2 Focused site surveys

EWEB shall conduct a focused site survey for both vascular and nonvascular special-status species prior to any EWEB scheduled activities that involve ground, vegetation or habitat disturbance for the specific PSA area where the disturbance will occur. In conducting a focused site survey, EWEB shall follow the protocol established for conducting the scheduled five-year PSA surveys described in Section 4.1.2.1 and use the most current special-status plant species lists from EWEB's vascular and non-vascular special-status species database. EWEB shall provide 30 days written notice to the VWG prior to conducting a focused site survey.

4.1.3 Database updating

EWEB, in consultation with the VWG, shall annually review updates to ESA-listed species, USDA Forest Service Region 6 Sensitive Species, and Survey and Manage Species' lists to ascertain if new species with potential habitat in the PSA have been added or if species have been removed from the lists identifying special-status species. The annual review shall occur prior to the field season (i.e., fall or winter). EWEB shall use the most recent updated special-status species lists in conducting the scheduled five-year and focused site surveys.

Following each scheduled five-year survey and each focused site survey, EWEB, in consultation with the VWG, shall update the vascular and non-vascular special-status species database with information on the status and health of the special-status populations obtained from the survey. If additional populations of special-status species are located, EWEB shall add these species' population information to the database of special-status species known to occur within the Project PSA, will update the GIS layer with the additional point locations for the additional populations, and will file with the USDA Forest Service new USDA Forest Service Region 6 Threatened and Endangered and Sensitive Plant Sighting Forms.

4.1.4 Additional baseline monitoring for specific species

Within 6 months after New License issuance, EWEB shall prepare and, after consultation with the VWG, and subject to approval by the USDA Forest Service implement a schedule and plan for conducting a survey of three documented special-status species, *Botrichium virginianum* (rattlesnake fern or Virginia grape-fern), *Ophioglossum pusillum* (northern adder's tongue), and *Nephroma occultum* (a kidney lichen), to evaluate the baseline range of variability for each species within the PSA. EWEB shall include in the plan the actions specific to each species described below.

4.1.4.1 *Botrychium virginianum* (Rattlesnake fern or Virginia grape-fern)

Botrychium virginianum was more widespread in 1998 (Salix Associates) than observed during 2005 relicensing studies (Stillwater Sciences 2006a). Potential explanations for the difference in population numbers include

- There is a normal variation in appearance of above ground portions of the plants, as has been observed in other species of *Botrychium* (Montgomery 1990).
- The population is declining in size, due to a decline in suitable habitat over time for the species.
- The dense undergrowth in the area limited the surveyors' ability to accurately estimate current population size.

EWEB shall perform an annual survey for five consecutive years, beginning in 2008, to assess the baseline range of variability of the populations located within the PSA. EWEB shall collect the following information as a part of each survey:

- The extent of the populations at Beaver Marsh. A more intensive survey in 2008 of the potential habitat at Beaver Marsh revealed more *B. virginianum* plants than feasibly can be counted. Therefore, the extent of the populations were delineated (i.e., borders for the southern and western populations marked but no complete census) and then EWEB set up permanent belt line transects to be monitored for five years. The belt line transects were selected to pass through a population cluster and the end points of the transect were

permanently marked. The survey consisted of counting the number of plants in each 1 m x 1m cell on both sides of the transect, with additional habitat information, as described below recorded.

- The extent of the population within the belt line transects producing fertile stalks versus remaining only vegetative. This information will assist in determining the natural range in spore production.
- General habitat characteristics for *Botyrichium virginianum* at Beaver Marsh and specifically within the belt line transects, including associated plant species (which may change through time if habitat changes) and any evidence of disturbance.
- The following hydrologic characteristics within the belt line transects: soil moisture; water depth or amount of open water; and seasonal duration of inundation. The specific hydrologic regime at a site may affect the viability of *Botyrichium virginianum* populations at Beaver Marsh. Given that there is a proposal to add more water to the site (EWEB 2006), changes to the hydrology shall be strictly monitored.
- Photographs of populations at established photopoints.

4.1.4.2 *Ophioglossum pusillum* (Northern Adder's tongue)

There are few extant populations of *Ophioglossum pusillum* in Oregon and little is known about the factors affecting the natural range in population size from year to year. It has been noted that plants may remain dormant from year to year (Dimling et al. 1996), implying high variability in population size between years with variable spring and summer precipitation. Given this uncertainty in the baseline variability of *Ophioglossum pusillum*, EWEB shall perform an annual survey for five consecutive years, beginning in 2008, to assess the baseline range of variability of the populations located within the PSA. EWEB shall collect the following information as a part of each survey:

- The extent of the population within the area where it was located in 2005. The population of *Ophioglossum pusillum* documented in 2005 was small; however, a more intensive survey of the area in 2008 resulted in defining a much larger population size. Therefore, clusters of occurences at the site were mapped and then EWEB set up a permanent belt line transect to be monitored for five years. The belt line transects were selected to pass through the main population cluster and the end points of the transect were permanently marked. The survey consisted of counting the number of plants in each 1 m x 1m cell on both sides of the transect, with additional habitat information, as described below recorded. The number of plants in each outlying cluster were also counted in 2008.
- The spring/summer precipitation record for the population occurrence area from available sources to evaluate the effect of high levels of precipitation on emergence.
- The extent of the population within the belt line transect producing fertile stalks as compared to the population remaining only vegetative. This will assist in evaluating the natural range in spore production within the population occurrence area.
- General habitat characteristics within the population occurrence area, including the hydrologic characteristics. The hydrologic characteristics of *Ophioglossum pusillum* habitat play a pivotal role in the species' survival. Changes to the hydrology of any pond or wetland that supports this species can be detrimental (Dimling et al. 1996). EWEB measured the following parameters along the belt line transect: soil moisture; water depth or amount of open water; and seasonal duration of inundation.
- Photographs of populations at established photopoints.

4.1.4.3 *Nephroma occultum* (lichen)

During 2005 relicensing surveys, both populations of *Nephroma occultum* were found on old (i.e., 40–50 years) *Taxus brevifolia* trees, and likely extend out farther through the tree canopy than where the observations were made. In 2008, EWEB conducted a ground survey to assess the full population extent and provide more accurate population boundaries for the *Nephroma occultum* populations. The survey protocol followed guidelines outlined within the *Survey Protocols for Survey & Manage Category A & C Lichens in the Northwest Forest Plan area* (Derr et al. 2003). The lower canopy and recently fallen lichen litter, trees, and branches were examined for the epiphytic *N. occultum* within a buffer zone of a 100 m (approximately 300 ft) circumference of the 2005 known occurrences. Further extension of the survey area occurred if new individuals were located within the buffer zone. EWEB shall provide survey results to the VWG and FERC within 90 days of survey completion. EWEB shall provide survey results to the VWG and FERC within 90 days of survey completion.

4.1.5 Special-status species protection policies

For the term of the New License, EWEB shall implement a special-status species protection protocol for Project-related operation or maintenance activities scheduled in an area where a known special-status plant population is located. Under the protocol, EWEB shall educate employees annually about the importance of existing special-status plant populations, and the need for Project personnel to consult with EWEB's Environmental Management Department before beginning any work on the Project that involves disturbing ground, vegetation or habitat., EWEB, in consultation with the VWG, shall conduct focused site surveys as provided in Section 4.1.2.2 above to evaluate potential impacts to known locations of special-status species within the PSA. EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service, shall determine which of the following three alternatives will apply to specific Project operation and maintenance work that may affect special-status plant species populations:

- EWEB shall avoid Project operation and maintenance work in an area that supports a special-status species population.
- EWEB shall conduct Project operation and maintenance work in an area that supports a special-status species population, but minimize impacts by retaining a qualified botanist to (1) establish a buffer around the special-status plant population, and (2) oversee the work. For vascular plants, the size of the buffer will depend on the nature of the work and the type(s) of potential direct or indirect adverse impacts potentially associated with such the work, but in no event will the buffer less than 15 meters (50 feet). For *Nephroma occultum*, EWEB shall establish a one or two tree height buffer (i.e., where average tree height 170 feet) around the work area.
- EWEB shall work in the area with unavoidable impacts and, in consultation with the VWG and subject to approval by the USDA Forest Service, shall develop and implement mitigation activities.

Once work in an area is complete, EWEB shall conduct a follow-up survey to evaluate if unanticipated impacts to the population occurred and what mitigation efforts EWEB shall conduct to address those impacts.

4.1.6 Post-implementation monitoring

After each scheduled five-year PSA survey conducted pursuant to Section 4.1.2.1 above, EWEB, in consultation with the VWG, shall evaluate the results of the field surveys to evaluate any long-term trends or short-term declines in special-status plant populations. If EWEB finds that a special-status plant species population does not meet the applicable performance standard in Section 4.1.7, EWEB shall develop, in consultation with the VWG and subject to approval by the USFWS and USDA Forest Service, and implement a more detailed monitoring program to determine the reason for not meeting the performance standard. If failure to meet the performance standard resulted from Project-related activities, EWEB shall develop, in consultation with the VWG and subject to approval by the USFWS and USDA Forest Service, and implement additional monitoring and, if necessary, contingency actions such as supplemental planting or habitat enhancement in accordance with Section 4.1.8.1 below.

Following ground-, vegetation-, or habitat-disturbing activities performed by EWEB at sites where special-status species occur, EWEB shall inspect the sites to document whether the special-status species have been disturbed.

If contingency actions are warranted (e.g., a plant will be re-introduced to a site because, after further investigation, the population was determined to be in decline), then subsequent monitoring will assess project success.

4.1.7 Performance standards

EWEB shall implement the measures in this Section 4.1 to (1) maintain viable populations of special-status plant species, (2) maintain viable habitat where the special-status plant species are currently located within the PSA, and (3) minimize any adverse impact to special-status species occurring at the sites where EWEB conducts ground-, vegetation-, or habitat-disturbing activities.

As provided in Table 4-2 below, EWEB, in consultation with the VWG, shall determine a threshold population size for each special-status plant species within the PSA, which will be applied as a performance standard. Current information from prior surveys for each special-status plant species is summarized in Table 4-2.

Table 4-2. Performance standards for special-status species within the PSA.

Scientific name	Common name	General location	Population information to date	Assessment of baseline range of variability	Defining a performance standard
Botrychium virginianum	rattlesnake fern or Virginia grape-fern	Beaver Marsh	2 populations: in 1998, hundreds of individuals; in 2005, 10–25 individuals in each population; in 2008, hundreds of individuals.	The low number observed in 2005 could be part of normal variation in appearance of above ground portions of the plants, as has been observed in other species of *Botrychium* (Montgomery 1990). Given the uncertainty in baseline variability, EWEB shall perform annual surveys for five years in order to assess a baseline range of variability as provided in Section 4.1.4.1 above.	After completion of the 5 annual surveys provided for in Section 4.1.4.1 to establish a baseline range of variability in population size, EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service, shall develop a threshold population below which EWEB shall initiate discussion with the VWG regarding appropriate management measures.
Ophioglossum pusillum	northern Adder's-tongue	Deer Creek to Trail Bridge Road	1 population: in 2005, 50–75 individuals; in 2008, hundreds of individuals.	It has been noted that plants may remain dormant from year to year (Dimling et al. 1996), thus implying high variability in population size between years where spring/summer precipitation varies greatly. Given the uncertainty in baseline variability, EWEB shall perform annual surveys for five years in order to assess a baseline range of variability as provided in Section 4.1.4.2 above.	After completion of the 5 annual surveys provided for in Section 4.1.4.2 to establish a baseline range of variability is established, EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service, shall develop thresholds below which EWEB shall initiate discussion with the VWG regarding appropriate management measures.
Sidalcea cusickii	Cusick's checkermallow	Carmen-Cougar transmission line corridor	1 population of 3 individuals documented in 2005; 1 population of 25–50 individuals documented in 1998 and 2005.	The number of plants observed at the revisit site has remained relatively stable between visits. Therefore, no additional surveys are required to establish a range of variability.	Population 1: no net loss. Population 2: maintain population at ≥ 70 % of the current 25–50 individuals.

Scientific name	Common name	General location	Population information to date	Assessment of baseline range of variability	Defining a performance standard
Nephroma occultum	cryptic paw lichen	Carmen Bypass Reach	2 populations documented in 2005; confirmed both in 2008 and extended the size of the second population.	Pursuant to Section 4.1.4.3 above, EWEB shall complete a survey in high probability habitat to more accurately assess the size/ extent of the population.	After completion of the survey provided in Section 4.1.4.3 above, EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service, shall establish a threshold EWEB shall initiated with the VWG regarding appropriate management methods.

4.1.8 Contingency actions

4.1.8.1 Performance standard maintenance based on scheduled five-year survey

If, based on the results of a scheduled five-year survey conducted in accordance with Section 4.1.4, the performance standard for a special-status plant species population is not maintained, EWEB shall re-survey the population during the following field season. EWEB shall provide the results to the VWG when they are available and discuss the re-survey results at the next annual meeting of the VWG scheduled pursuant to Section 2 above. If based on the re-survey results EWEB, in consultation with the VWG and subject to approval by the USFWS and USDA Forest Service, concludes that a performance standard for a special-status plant species population is not maintained, EWEB, in consultation with the VWG and subject to approval by the USFWS and USDA Forest Service, shall develop and implement a site-specific plan designed to maintain the performance standard.

4.1.8.2 Unanticipated impacts from ground-, vegetation-, or habitat-disturbing actions

Pursuant to Section 4.1.5 above, EWEB shall conduct a survey after completing an action that disturbs the ground, vegetation, or habitat in an area that may affect special-status plant species. If the survey provided for in Section 4.1.5 identifies unanticipated impacts to a special-status plant species population, EWEB shall provide written notice to the VWG members within 48 hours after the survey, and shall schedule a VWG meeting to discuss the survey results within 30 days after the survey. If an unanticipated impact to a special-status plant species population occurs on National Forest System land, EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service, shall develop and implement a site-specific plan to mitigate the impact. If an unanticipated impact to a special-status plant species population occurs on private property, EWEB, in consultation with the VWG, shall discuss with the landowner possible mitigation actions to address the impact, including re-planting of the species or habitat restoration.

4.2 Protection of Culturally Significant Plant Species

EWEB shall implement the measures in this Section 4.2 to (1) maintain viable populations of culturally significant plant species, (2) maintain viable habitat where the culturally significant plant species are currently located within the PSA, and (3) minimize any adverse impact to populations of culturally significant species of high enough density for cultural use within the PSA occurring at the sites where EWEB conducts ground, vegetation, or habitat-disturbing activities. As provided in this Section 4.2, EWEB shall monitor and protect the culturally significant plant populations of high enough density for cultural use within the PSA.

4.2.1 Database maintenance

EWEB has developed and will maintain a database of populations of culturally significant species within the PSA. To the extent allowed by law, EWEB shall limit access to the database to EWEB, EWEB's consultants and contractors, the USDA Forest Service, the Native American tribes that are party to the Settlement Agreement (Confederated Tribes of the Grand Ronde Community of Oregon; Confederated Tribes of Siletz Indians of Oregon; Confederated Tribes of the Warm Springs Reservation of Oregon), and FERC. The database contains the general location of populations of culturally significant plant species as well as specific information on populations of culturally significant species of high enough density for cultural use within the PSA. To the extent allowed by law, EWEB shall discuss the information pertaining to this list only with the Tribes, the USDA Forest Service, FERC and other parties as may be agreed among the Tribes, USDA Forest Service and EWEB.

4.2.2 Periodic monitoring

4.2.2.1 Five-year PSA surveys

Within two years after New License issuance, EWEB, in consultation with the Tribes and subject to approval of the USDA Forest Service, shall prepare a plan and schedule for conducting one survey of the PSA for culturally significant plant populations during each five-year period for the New License term. The first survey needs to be completed within three years of New License issuance. EWEB shall include as a part of the survey plan protocols for highlighting populations where a particular culturally significant plant is in high enough density for cultural use. Where a species is merely present at a site, EWEB shall note the occurrence of the species on the overall species list. EWEB shall conduct the surveys at the same time as scheduled five-year surveys for special-status plants provided in Section 4.1.2.1 above.

4.2.2.2 Focused site surveys

EWEB shall conduct a site survey for culturally significant plant species before any scheduled EWEB activities that involve ground, vegetation or habitat disturbance in the vicinity of an existing, known culturally significant plant population within the PSA. The focus will be on identifying locations where a particular culturally significant plant is in high enough density for cultural use. EWEB shall provide 45 days written notice to the Tribes and USDA Forest Service prior to conducting a focused site survey.

4.2.3 Database updating

Following each scheduled five-year survey pursuant to Section 4.2.2.1, EWEB shall update the culturally significant plant database with information on the status and health of the culturally significant populations obtained from the survey.

4.2.4 Culturally significant plant protection policies

For the term of the New License, EWEB shall implement a culturally significant plant species protection protocol relating to Project-related operation and maintenance activities scheduled in the area where a known culturally significant plant population in high enough density for cultural use is located. Under the protocol, EWEB shall educate employees about the general importance of culturally significant plants, instruct Project personnel to consult with EWEB's Environmental Management Department before beginning any work on the Project that involves disturbing ground, vegetation, or habitat, and, in consultation with the USDA Forest Service and the Tribes, conduct focused site surveys as provided in Section 4.2.2.2 above to evaluate potential impacts to known locations of culturally significant species populations in high enough density for cultural use within the PSA. EWEB, in consultation with the USDA Forest Service and the Tribes, and subject to approval by the USDA Forest Service, shall determine which of the following three alternatives will apply to specific Project operation and maintenance work that may affect culturally significant plant populations:

- EWEB shall avoid Project operation and maintenance work in an area that supports a culturally significant plant species population in high enough density for cultural use.
- EWEB shall conduct Project operation and maintenance work in an area that supports a culturally significant plant species population in high enough density for cultural use, but minimize impacts by retaining a qualified botanist to (1) establish a buffer around the culturally significant plant population, and (2) oversee the work. The size of the buffer will be dependent on the nature of the work and the type(s) of potential direct or indirect adverse impacts potentially associated with such work, but in no event will the buffer be less than 15 meters (50 feet).
- EWEB shall work in the area with unavoidable impacts to a culturally significant plant species population in high enough density for cultural use and, in consultation with the Tribes and the USDA Forest Service, and subject to approval by the USDA Forest Service, shall develop and implement mitigation activities.

Once work in an area is complete, EWEB shall conduct a follow-up survey to evaluate if unanticipated impacts to the population occurred and what mitigation efforts EWEB shall conduct to address those impacts.

4.2.5 Post-implementation monitoring

After each scheduled five-year PSA survey conducted pursuant to Section 4.2.2.1 above, EWEB, in consultation with the Tribes and the USDA Forest Service, will evaluate the results of the field surveys to evaluate any long-term trends or short-term declines in culturally significant plant populations. If EWEB finds that a culturally significant plant species population does not meet the performance standard in Section 4.2.6 below, EWEB, in consultation with the Tribes and the USDA Forest Service, and subject to approval by the USDA Forest Service, shall develop and implement additional monitoring and, if necessary, contingency actions as provided in Section 4.2.7 below.

4.2.6 Performance standards

EWEB shall implement the measures in this Section 4.2 to (1) maintain viable populations of culturally significant plant species, (2) maintain viable habitat where the culturally significant plant species are currently located within the PSA, and (3) minimize any adverse impact to populations of culturally significant species of high enough density for cultural use within the PSA occurring at the sites where EWEB conducts ground, vegetation, or habitat-disturbing activities. EWEB shall not disturb or adversely affect a culturally significant plant population unless EWEB, in consultation with the Tribes and USDA Forest Service and subject to approval by the USDA Forest Service, determines that avoidance of the disturbance or affect is not reasonably practical.

4.2.7 Contingency actions

4.2.7.1 Performance standard maintenance based on scheduled five-year survey

If, based on the results of a scheduled five-year survey conducted in accordance with Section 4.2.2.1 above, the performance standard for culturally significant plant populations in Section 4.2.6 is not maintained, EWEB shall re-survey the population during the following field season. EWEB shall provide the results of the re-survey to the Tribes and the USDA Forest Service and schedule a meeting to discuss the re-survey results. If based on the re-survey results EWEB, in consultation with the USDA Forest Service and the Tribes and subject to approval by the USDA Forest Service, concludes that the performance standard has not been maintained, EWEB, in consultation with the Tribes and the USDA Forest Service, and subject to approval by the USDA Forest Service, shall develop and implement a site-specific plan designed to maintain the performance standard

4.2.7.2 Unanticipated impacts from ground-, vegetation-, or habitat-disturbing actions

Pursuant to Section 4.2.4 above, EWEB shall conduct a survey after completing an action that disturbs the ground, vegetation or habitat in an area that may affect culturally significant plant populations of high enough density for cultural use. If the survey provided for in Section 4.2.4 identifies unanticipated impacts to a culturally significant plant population, EWEB, in consultation with the Tribes and the USDA Forest Service, and subject to approval by the USDA Forest Service shall develop and implement a site-specific plan to mitigate the impact.

4.3 Noxious/Invasive Non-native Weed Management

As provided in this Section 4.3, EWEB shall conduct actions to monitor, control, and eradicate noxious/invasive non-native plant populations.

4.3.1 Database maintenance

EWEB has developed and will maintain a database of targeted, noxious/invasive non-native weeds known to occur within the PSA. Currently, 19 noxious/invasive non-native weed species are know to occur within the PSA. Table 4-3 below identifies the 19 noxious/invasive non-native

weed species in the database. EWEB shall annually review the list to assess if EWEB should add to the database any additional noxious/invasive non-native weeds with the potential to occur within the PSA.

Table 4-3. Summary of populations of high and low priority terrestrial noxious/invasive non-native weeds occurrences within the PSA, 2005.

Scientific name	Common name	Status[1] (State/WNF)
High priority weeds		
Brachypodium sylvaticum	false brome	B / NI
Centaurea diffusa	diffuse knapweed	B / NI
Centaurea maculosa	spotted knapweed	B, T / NI
Centaurea pratensis	meadow knapweed	B / NI
Hedera helix	English ivy	B / NI
Lathyrus latifolius	everlasting peavine	-- / NI
Melilotus alba	white sweetclover	-- / NI
Phalaris arundinacea	reed canary grass	-- / NI
Polygonum cuspidatum	Japanese knotweed	B / NI
Rubus armeniacus	Himalaya blackberry	B / NI
Rubus laciniatus	evergreen blackberry	-- / NI
Solanum dulcamara	climbing nightshade	-- / NI
Low priority weeds		
Cirsium arvense	Canada thistle	B / EI
Cirsium vulgare	bull thistle	B / EI
Cytisus scoparius	Scotch broom	B / EI
Hypericum perforatum	St. John's wort	B / EI
Senecio jacobaea	tansy ragwort	B, T / EI
Aquatic weeds		
Myriophyllum spicatum	Eurasian watermilfoil	B
Potamogeton crispus	curly leaf pondweed	--

[1]**Oregon Department of Agriculture noxious weed ratings:**

B = A weed of economic importance that is regionally abundant, but may have limited distribution in some counties. Where implementation of a fully-integrated statewide management plan is infeasible, biological control shall be the main control approach.

T = A priority noxious weed designated by the State Weed Board as a target weed species for which the Department will implement a statewide management plan.

Willamette National Forest (WNF) noxious and non-native weed classification codes:

NI = New Invaders: noxious weeds that are in the early stages of invasion, occur in limited, definable areas, and have not yet naturalized to the point that resource damage is occurring.

EI = Existing Infestations: noxious weeds that have spread to the point that they have become naturalized and are causing resource damage. Populations are spread throughout the WNF in disturbed areas and infestations may not be feasible to eradicate.

"—" = No special status applies.

4.3.2 Periodic monitoring

Within two years after New License issuance, EWEB, in consultation with the VWG and subject to USDA Forest Service approval, shall prepare a plan for conducting surveys for noxious/invasive non-native weed species present within the PSA every five years for the New License term. The first survey shall be completed within three years of New License issuance. EWEB shall include in the plan measures to evaluate and document the changes in known populations of noxious/invasive non-native weeds, to measure the effectiveness of eradication and control measures, and to ascertain whether new populations or new species of noxious/invasive non-native weeds have established. EWEB shall conduct the scheduled five-year surveys at the same time as the scheduled five-year surveys for special-status plant species provided in Section 4.1.2 and culturally significant plant species provided in Section 4.2.2.

EWEB shall include in the plan measures for conducting specific surveys of noxious/invasive non-native weed species that are targeted for eradication or control in a Treatment Plan developed pursuant to Section 4.3.4. EWEB shall conduct surveys for the targeted species in the first, third and fifth years following treatment as provided in the Treatment Plan. If EWEB, in consultation with the VWG, determines that the Treatment Plan control objectives for the targeted species have been achieved (i.e., the treated population is reduced below an acceptable threshold level of abundance), monitoring of the targeted species will reduced to the scheduled five-year surveys. If EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, determines that Treatment Plan control objectives have not been achieved, EWEB shall continue monitoring of the targeted species every two years until the Treatment Plan control objectives are achieved.

4.3.3 Database and plan updating

Following each scheduled five-year survey pursuant to Section 4.3.2, EWEB shall update the noxious/invasive non-native weeds database with information obtained from the survey. If EWEB documents the occurrence of a new population of noxious/invasive non-native weeds, EWEB shall prepare and submit to the USDA Forest Service a Willamette NF sighting form, and shall update EWEB's GIS database.

EWEB shall meet annually with the VWG to review the results of each scheduled five-year survey, to evaluate changes in noxious/invasive non-native weed species' composition and distribution, and to establish eradication and control measures that EWEB shall implement in the following year. EWEB shall schedule and hold each annual meeting before the field season. EWEB, in consultation with the VWG, shall update annually the eradication and control Treatment Plan developed pursuant to Section 4.3.4 below as appropriate to enhance the effectiveness of noxious/invasive non-native weed treatment measures and control objectives. EWEB, in consultation with the VWG, will annually review the USDA Forest Service targeted species' lists for the addition of new species with potential habitat within the PSA.

4.3.4 Weed control and eradication methods

Within one year after New License issuance, EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service, shall prepare a plan and schedule for the eradication and

control of specific noxious/invasive non-native species at specific sites within the PSA (Treatment Plan). EWEB shall include in the Treatment Plan the following components:

1. Performance goals (see Table 4.4 of this plan) and contingency actions (see Section 4.3.8 of this plan) for the targeted species; rapid response measures for responding to increases in the specific noxious/invasive non-native weed populations, and measures for responding to newly identified noxious/invasive non-native weed species.
2. The Treatment Plan and the measures included within the Plan shall be consistent with the Willamette National Forest's Prevention Plan (USDA Forest Service 2005); the Integrated Weed Management EA and Decision Notice (USDA Forest Service 2007a and 2007b), and any subsequent document governing weed treatment.
3. Measures that focus control and eradication efforts on three to four segments of the Project transmission line each year.
4. Maintenance measures designed for eradication or control of individual species, such as repeated mowing from one season to the next or repeated application of an herbicide from one year to the next.
5. Alternative treatment methods for implementation if EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, determines that measures to eradicate or control or eradication a particular species are ineffective following a specific implementation period (e.g., five years).
6. A specific prioritization for eradication and control of noxious/invasive non-native weeds within the PSA, including along the Project transmission line corridor.

General categories of treatment methods include the following:

- Manual and mechanical—hand pulling with various tools, mowing, cutting, and burning. These treatments are often the most labor intensive and commonly the most successful for smaller infestations.
- Biological—approved use of biological control agents such as insects and fungi that damage or kill the host plant, or the grazing by sheep, cows, horses, or goats. Biological control agents, if proven successful, can be applied to a large infested area. Grazing can also be applied to both small and large infestations. Disadvantages of grazing may be the effect (i.e., trampling or eating) on native species, including special interest species at a particular site.
- Chemical—treatment with a variety of chemicals approved for use in designated habitats. Chemical treatment is often the quickest and lowest cost response to an infestation. However, there are potential detrimental effects on habitat quality when herbicides are used. For instance, herbicides applied adjacent to stream corridors can affect water quality and habitat for fish and macroinvertebrates. Herbicide use on NFS lands is currently restricted by USDA Forest Service policy. Future changes to USDA Forest Service herbicide use policy may allow the use of certain herbicides in certain areas.
- Integrative—treatment that combines categories of treatment; for example, mowing or cutting followed by herbicide application. Integrative treatments are often the most creative and can be the most effective, though results may vary from site to site, depending on site characteristics.

Attachment C provides a summary of typical treatment measures for certain noxious/invasive non-native weed species.

4.3.5 Prioritization of control and eradication efforts

EWEB, in consultation with the USDA Forest Service, will develop and include in the Treatment Plan prepared pursuant to Section 4.3.4 above, and implement a specific protocol for prioritization for eradication and control of noxious/invasive non-native weeds within the PSA Project boundary, including along the Project transmission line corridor. Each year, the weeds within the appointed area or transmission line segments will be eradicated and/or controlled. Revegetation efforts (including enhancement of culturally significant and elk forage material) will follow control or eradication.

4.3.6 Weed establishment and spread prevention measures

For the term of the New License, EWEB shall provide annual training to EWEB employees on measures to prevent the spread of noxious/invasive non-native weeds within the PSA. EWEB shall specifically educate employees and contractors working on Project land on implementation of appropriate weed management measures, including washing equipment between job sites, proper disposal of soil and vegetation, and the use of weed-free seed and mulching mixes in revegetation efforts. EWEB shall implement the education program as part of its Employee Awareness Training Program.

When restoration and revegetation projects are initiated (see Sections 4.5 and 4.6), EWEB shall supplement existing native shrub and grass seed sources with appropriate native seed mixes using weed-free (sterile) mulching mixes and weed-free native seed mixes in order to limit weed reestablishment and spread. These seed mixes will include elk forage material and/or culturally significant species into the mix, as appropriate. EWEB, in consultation with the VWG, will develop thresholds to determine if the revegetation effort is successful in keeping out weeds as part of established success criteria (see Section 4.5.4), and implement contingency actions as needed to meet or exceed these thresholds.

4.3.7 Performance standards

These performance standards were developed for the various targeted weed species (e.g., reduction in population number below a certain threshold, in a given number of years) on both the current extent of the invasion and the biology of the targeted species. The targeted species are separated into the following categories (USDA Forest Service 2007).

- Eradication Feasible: New invaders that exist in low numbers within the PSA.
- Containment Feasible: Established infestations (as well as a few instances of new invaders [e.g., *Rubus* spp.] present in multiple populations), in areas where eradication efforts are more limited (e.g., use of herbicides along riparian corridors).

The performance goal for new invaders is eradication and the performance goal for already established infestations is containment (Table 4-4). If eradication is not feasible for some of the new invaders, then EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, shall implement measures designed to control the populations to less than 5% and successive surveys will evaluate the potential success of eradication efforts.

Table 4-4. Performance standards for weed eradication and control of targeted noxious/invasive non-native weeds within the PSA.

Scientific name	Common name	Performance goal
New invaders		
Hedera helix	English ivy	Eradication of known, existing populations within five years after New License issuance.
Polygonum cuspidatum	Japanese knotweed	Eradication of known, existing populations within five years after New License issuance.
Centaurea diffusa	diffuse knapweed	Eradication of known, existing populations within ten years after New License issuance.
Centaurea maculosa	spotted knapweed	Eradication of known, existing populations within ten years after New License issuance.
Centaurea pratensis	meadow knapweed	Eradication of known, existing populations at Carmen Diversion and Smith reservoirs within ten years after New License issuance.
Phalaris arundinacea	reed canary grass	Eradication of known, existing populations at Carmen Diversion and Smith reservoirs within ten years after New License issuance.
Solanum dulcamara	climbing nightshade	Eradication of known, existing populations within five years after New License issuance.
Brachypodium sylvaticum	false brome	Eradication of known, existing populations within five years after New License issuance.
Lathyrus latifolius	everlasting peavine	Eradication of known, existing populations within five years after New License issuance.
Melilotus alba	white sweetclover	Eradication of known, existing populations within five years after New License issuance.
Rubus armeniacus	Himalaya blackberry	Targeted removal along sections of the transmission line corridor and containment elsewhere within PSA as provided in the Treatment Plan developed pursuant to Section 4.3.4.
Rubus laciniatus	evergreen blackberry	Targeted removal along sections of the transmission line corridor and containment elsewhere within PSA as provided in the Treatment Plan developed pursuant to Section 4.3.4.
Established infestations		
Cirsium arvense	Canada thistle	Targeted removal along sections of the transmission line corridor and containment elsewhere within PSA as provided in the Treatment Plan developed pursuant to Section 4.3.4.
Cirsium vulgare	bull thistle	Targeted removal along sections of the transmission line corridor and containment elsewhere within PSA as provided in the Treatment Plan developed pursuant to Section 4.3.4.
Cytisus scoparius	Scotch broom	Targeted removal along sections of the transmission line corridor and containment elsewhere within PSA as provided in the Treatment Plan developed pursuant to Section 4.3.4.
Hypericum perforatum	St. John's wort	Monitor populations during the scheduled five-year survey provided for in Section 4.3.2. Consider containment if infestation level increases.
Senecio jacobaea	tansy ragwort	Eradication of known existing populations within 10 years after New License issuance.

Scientific name	Common name	Performance goal
Aquatics		
Myriophyllum spicatum	Eurasian watermilfoil	Initiate treatment as provided in the Treatment Plan developed pursuant to Section 4.3.4.
Potamogeton crispus	curly leaf pondweed	Eradication of known existing populations within five years after New License issuance.

4.3.8 Contingency actions

EWEB, in consultation with the VWG, will identify and implement alternative treatment methods if efforts to control or eradication a particular species are determined to be ineffective following a specific implementation period (e.g., five years). Proposed alternative treatments will be subject to review and approval by the VWG.

4.4 Botanical Interpretation and Education Program

EWEB shall develop a botanical resources education and outreach component of the Project's interpretation and education (I&E) program described in the *Recreation and Aesthetic Resources Management Plan* (RAMP; Action 21) (Martha Goodavish Planning & Design and Stillwater Sciences 2008a). EWEB, in consultation with the VWG, in coordination with the Recreation and Aesthetic Resources Work Group (RAWG) and subject to approval by the USDA Forest Service, shall include in the botanical resources education and outreach program the following components:

1. Measures for providing educational materials to visitors to Project campgrounds, day use areas, and reservoirs relating to preventing the spread of terrestrial and aquatic noxious/invasive non-native species (e.g., weedy plants and invasive animals), and protecting native plant species (including special-status and culturally significant plant species) and dead wood habitat.
2. Measures for making available educational signs, brochures, and other display-type materials at Project-related recreation sites, such as boat ramps, campgrounds, day use areas, kiosks, and trailheads.
3. Measures for providing an educational program at the Carmen-Smith Visitor Kiosk that EWEB shall locate at Trail Bridge Campground (see the RAMP, Action 14). EWEB shall include in the educational program information regarding noxious/invasive non-native weeds and invasive animals (e.g., zebra mussels), and practices to prevent the spread of such species. EWEB shall update the educational materials to address noxious/invasive non-native weed species added to EWEB's database, as provided in Section 4.3.3 above. EWEB shall include in the educational materials information regarding the importance of protecting special-status species and culturally significant species that occur within the PSA.
4. Measures to provide written information to the private landowners along the Project's transmission line corridor explaining EWEB and the USDA Forest Service's actions designed to control and eradicate noxious/invasive non-native weed species. EWEB shall provide an educational workshop for private landowners along the Project's transmission line corridor regarding noxious/invasive non-native weed control and eradication if

EWEB, in consultation with the VWG, determines that there is sufficient interest or need for such a workshop. EWEB shall offer the educational workshop once every 5–10 years during the New License term based on the level of the interest or need among the private landowners along the transmission line corridor.

4.5 Revegetation and Enhancement of Selected Sites

EWEB shall provide for the revegetation of areas targeted for restoration, enhancement, and/or weed control and eradication throughout the term of the New License. As provided in this Section 4.5, EWEB, in consultation with the VWG, and subject to the approval of the USDA Forest Service, shall revegetate targeted areas with native plant species, including culturally significant and early seral stage plants. The following types of areas are planned for revegetation and enhancement:

- areas targeted for removal and control of weeds;
- campgrounds designated for rehabilitation or reconstruction;
- recreational setback areas around Project reservoirs;
- riparian areas being managed to increase stream shading, in-channel course woody debris or riparian vegetation;
- specific locations along the transmission line corridor where EWEB implements habitat enhancement measures; and
- Project areas where EWEB implements Project construction pursuant to the FERC New License (e.g., the fish passage facilities).

EWEB and the settlement parties have identified the following areas for possible revegetation efforts:

- the Trail Bridge Reservoir margin along Highway 126;
- dispersed recreation sites located along the Smith Bypass Reach; and
- the Project transmission line corridor.

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, shall restore and monitor the selected areas in accordance with the protocols specified in this Section 4.5.

4.5.1 General revegetation with native species: species mixes and application measures

Within one year after New License issuance, EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall develop and implement a schedule and plan for restoring and revegetating areas within the PSA where EWEB has implemented noxious/invasive non-native weed eradication or control measures pursuant to Section 4.3 above.

EWEB shall include in the revegetation plan the following components:

1. Relevant guidance on the use of native plant materials from the USDA Forest Service Manual 2070—Native Plant Materials (Manual 2070).
2. A provision for the development of site-specific revegetation plans (e.g., wildlife forage, wetland or riparian vegetation restoration, etc.) will include specific goals for restoration

and planting, including container types, seeding methods and other planting details. In order to ensure full coordination between this plan and the *Wildlife Management Plan* (Stillwater Sciences 2008a) a site-specific revegetation plan relating to the Project transmission line corridor shall include measures designed to enhance early seral stage vegetation to the potential of each specific transmission line corridor area, which may be dependent on the magnitude of weed control measures implemented within those areas. EWEB, in consultation with the VWG and in coordination with the Wildlife Work Group, shall determine the appropriate planting mix that EWEB shall use for early seral stage vegetation at specific areas along the transmission line corridor. Standard planting mixes for early seral stage vegetation are provided in Table D-3 in Attachment D.

To minimize the risk of foraging animals being hit by vehicles along Highway 126, EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service, shall identify priority sites for implementation of forage enhancement measures in those areas along the transmission line corridor greater than 1/4 mile from Highway126, unless the McKenzie River creates a barrier between the highway and the transmission line corridor.

3. Supplementation of existing native shrub and grass seed sources with appropriate native seed mixes using weed-free (sterile) mulching mixes and weed-free native seed mixes to limit weed reestablishment and spread. The seed mixes may include elk forage material and culturally significant species. The plan shall also provide that EWEB shall use appropriate seed mixes for erosion control and revegetation of riparian areas. Standard mixes for erosion control and riparian areas are provided in Tables D-1 and D-2 in Attachment D, respectively.
4. Use of native plant materials for revegetation projects where timely natural regeneration of the native plant community is not likely to occur (Manual 2070, Standard 13). EWEB shall use genetically local native seeds or cuttings to the extent that they are available. Local material is defined as plant materials originating from the Western Cascades province, preferably from the McKenzie River watershed. If genetically local native species are not available, EWEB may use non-invasive non-native species for revegetation projects, preferably non-local stock in order to avoid polluting the local gene pool of natives.
5. Measures to promote native forage material (i.e., diverse early seral habitats) for wildlife such as elk and deer, and to promote habitat for landbirds and pollinators, along portions of the Project transmission line corridor selected by EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service.

4.5.2 Enhancement of culturally significant species along the transmission line

EWEB, in consultation with the interested Tribes and the USDA Forest Service, shall identify candidate culturally significant species for planting at sites for enhancement of culturally significant species along the Project transmission line corridor. EWEB, in consultation with the Tribes and the USDA Forest Service, shall develop and implement a schedule and plan for the enhancement of culturally significant species along the transmission line corridor. The plan shall identify the site for planting, the species to be planted, and the planting application rates for each site. To the extent allowed by law, EWEB, the Tribes and the USDA Forest Service will maintain their consultations, the plan and implementation of the plan confidential as provided in Section 4.2.1.

4.5.3 Post-implementation monitoring

Within one year after New License issuance, EWEB, in consultation with the VWG, shall prepare a schedule and plan for conducting annual monitoring of sites EWEB revegetated pursuant to this Section 4.5.

The plan shall provide for EWEB to conduct the annual monitoring for five years after completion of the revegetation at each site. EWEB shall conduct each annual monitoring event at approximately the same time each year to allow identification, and if needed provide for the replacement, of plants that have died. EWEB shall conduct the first annual monitoring event for each site during late spring/early summer to coincide with the flowering periods of most herbaceous species, and to aid in species identification and the accurate assessment of percent herbaceous cover. If EWEB, in consultation with the VWG, determines that a second monitoring event is needed to assess woody species survival, EWEB shall implement the second monitoring event after the summer season at the end of the growing season and prior to leaf drop.

EWEB shall establish permanent vegetation monitoring plots at each site. If more than one planting zone has been established at a site, EWEB shall establish transects perpendicular to the planting zones to capture the maximum amount of diversity (Vasey et al. 2002, Schile et al. 2004), and establish the permanent monitoring plots along the transects. EWEB shall determine plot size based on the vegetation type (e.g., riparian forest versus herbaceous) being surveyed. At each plot, EWEB shall collect information regarding plant density and survival; percent cover of native herbaceous species; percent cover of targeted, invasive weeds; and vigor and/or height of woody species. EWEB shall also establish fixed locations for photo monitoring to monitor site changes over time.

4.5.4 Performance standards

EWEB shall revegetate targeted areas in a manner designed to (1) provide a high degree of native cover appropriate for the specific habitat and (2) establish self-sustaining vegetation areas. EWEB, in consultation with the VWG, shall use the following general performance guidelines to develop performance standards that are tailored for specific projects (Table 4-6):

- Survival of Native Woody Species: Total planted density of native woody species, which includes both surviving planted stock and natural recruitment of native woody species, should meet or exceed 90% survival (Year 1), 85% survival (Year 2), and 80% survival (Years 3–5). Survival estimates should be made for all plantings and separated by species. Woody plants must have aboveground living material or they will be considered dead.
- Vigor of Native Woody Species: The surviving woody species need to show signs of health and vigor, meaning at least 80 percent of the surviving woody species have a vigor rating of “4”. Healthy plants are free of disease and insect infestation.
- Percent Cover of Herbaceous Container Plants: Herbaceous container plants should meet or exceed 25% cover (Year 1), 50% cover (Year 2), and 75% cover (Years 3–5).
- Vigor of Herbaceous Container Plants: The surviving herbaceous species need to show signs of health and vigor, meaning at least 80 percent of the surviving woody species have a vigor rating of “4”. Healthy plants are free of disease and insect infestation.

- Percent Cover of Invasive Weeds: Percent cover will be used to evaluate the success of weed control activities. The focus of weed control will be on particularly invasive, non-native species that create serious problems in Oregon's native ecosystems, as defined by the USDA Forest Service. The percent cover free of invasive weeds classified as established infestations is 80%. The percent cover free of new invaders (except for *Rubus armeniacus* [Himalaya blackberry] and *Rubus laciniatus* [evergreen blackberry]) is 100%.

Table 4-5. Summary of performance standards for revegetation.

Vegetation category	Survival	Percent Cover	Vigor	Percent cover free of invasive weeds
Native Woody Species (Trees and Shrubs)	Year 1: 90% Year 2: 85% Years 3–5: 80%	N/A	80% with Vigor = 4	80%
Native Herbaceous Container Plants	N/A	Year 1: 25% Year 2: 50% Years 3–5: 75%	80% with Vigor = 4	80%
Invasive Weeds[1]	N/A	≤ 20%	N/A	100% for new infestations (with the exceptions of *Rubus armeniacus* and *R. laciniatus*) and 80% for established infestations

[1] As defined by Willamette National Forest.

4.5.5 Maintenance actions

EWEB, in consultation with the VWG, shall develop and implement maintenance actions where necessary to achieve the applicable performance standards. Maintenance actions may include re-planting of species and revegetation with an erosion control mix for areas that are newly constructed. For areas specifically targeted for early seral stage vegetation enhancement, EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, shall develop and implement maintenance actions designed to ensure the persistence of the early seral conditions over the New License term.

4.5.6 Contingency actions

EWEB, in consultation with the VWG, shall develop and implement alternative treatment methods if EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, determines that revegetation efforts are not meeting applicable performance standards. For specific components such as enhancement of culturally significant plants or early seral stage vegetation, alternative treatment methods may include adaptive management to ascertain which species tolerate which growing sites the best.

4.5.7 Timeline

EWEB, in consultation with the VWG, shall prioritize selected areas for revegetation during the first calendar year following New License issuance. EWEB shall initiate revegetation at the

selected areas within one year of New License issuance, and for subsequent activities, within one year of completion of a ground-disturbing project, restoration or enhancement of a selected riparian, wetland or meadow, weed control or weed eradication effort.

4.6 Restoration and Enhancement of Selected Areas

EWEB shall provide for the protection, restoration, and enhancement of selected riparian, wetland, and meadow areas within the Project PSA. As provided in this Section 4.6, EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall restore and monitor habitat at the selected sites in accordance with the protocols specified in the following sections. Within one year after New License issuance, EWEB, in consultation with the VWG, shall develop and implement a plan, as provide in Section 4.6.9, for implementation of the riparian, wetland and meadow restoration and enhancement actions.

4.6.1 Enhancement and restoration of riparian vegetation

The following general riparian areas for restoration and enhancement efforts during the term of the New License:

- Trail Bridge, Carmen Diversion, and Smith reservoir perimeters
- Smith Bypass Reach
- Deer Creek

Recreational use has impacted riparian vegetation around Trail Bridge and Carmen Diversion reservoirs and in the area of the Smith Reservoir boat ramp. Enhancement measures for riparian vegetation at the Trail Bridge, Carmen Diversion and Smith reservoirs are provided for as part of the recreation facilities redesign and reconstruction efforts described in the *Recreation and Aesthetic Resources Management Plan* (Martha Goodavish Planning & Design and Stillwater Sciences 2008a). EWEB, in consultation with the VWG, and in coordination with the Recreation and Aesthetic Resources Work Group, and subject to approval by the USDA Forest Service shall establish a recreational setback at each of the reservoirs that is designed to improve riparian vegetation and promote the re-growth of riparian vegetation above the shoreline. EWEB's actions to promote the re-growth of riparian vegetation may include active revegetation of sections of a reservoir perimeter following the guidelines and suggested species mixes described in Section 4.5 above. EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Servie shall also evaluate possibilities for vegetation enhancement below the high-water mark at Trail Bridge Reservoir.

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, shall develop and implement detailed measures designed to increase riparian health and long-term recruitment of large woody debris along the Smith Bypass Reach. The measures may include planting trees, encouraging growth of conifers between the road and the channel, and maintaining or enhancing large woody debris through operating procedures providing for the removal of trees that fall onto the road and the placement of those trees either between the road and the channel, or within the channel. In conducting the revegetation measures provided for in this Section 4.6, EWEB shall follow the guidelines and suggested species mixes described in Section 4.5.

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall develop and implement a plan and schedule designed to restore riparian function along Deer

Creek. As a part of the plan, EWEB shall relocate the transmission lines away from the immediate riparian zone. Relocating the transmission lines will include replacing Transmission Towers 23 through 28 with towers located adjacent to the existing Deer Creek Road, and re-configuring the transmission lines vertically, so that they are perpendicular to the ground. In conducting the restoration actions after relocation of the transmission line, EWEB shall follow the guidelines and suggested riparian vegetation species mixes described in Section 4.5, focusing specifically on recruitment of appropriate native trees and shrubs in an effort to increase shading along this section of the creek.

The plans for restoration shall provide that EWEB shall supplement existing native shrub and grass seed sources with appropriate native seed mixes using weed-free (sterile) mulching mixes and weed-free native seed mixes to limit weed reestablishment and spread. The seed mixes may include elk forage material and culturally significant species.

4.6.2 Restoration of selected wetlands

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall develop and implement a plan and schedule for restoration of the wetlands along the transmission line corridor that have been affected by ongoing Project maintenance. In the plan, EWEB shall identify for restoration wetland sites 1, 10 and 11 of the *Vegetation and Wetland Mapping and Characterization* technical report (Stillwater Sciences 2006b) that were forested prior to construction of the Project and are now maintained at an early seral stage as part of the general maintenance of the transmission line. These sites were previously dominated by *Pseudotsuga menziessii* (Douglas-fir) and *Tsuga heterophylla* (Western hemlock). EWEB may, however, plant at these sites a different suite of tree species or wetland shrubs suitable for planting under the transmission line corridor, including, but not limited to, *Ribes* spp. (currants and gooseberries), *Salix* spp. (willows), *Rubus spectabilis* (salmonberry) and *Lysichiton americanum* (yellow skunk cabbage).

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall develop and implement a plan and schedule to restore habitat at Beaver Marsh. As a part of the plan EWEB, in consultation with the VWG, shall evaluate methods for routing additional water into the marsh. EWEB shall monitor the effects of this addition of water, including the effects on the special-status species *Botrichium virginianum* (rattlesnake fern or Virginia grape-fern).

4.6.3 Evaluation of habitat quality of select meadows

EWEB shall review meadow sites 2, 3, 4 and 5 identified in the *Vegetation and Wetland Mapping and Characterization* technical report (Stillwater Sciences 2006b) to assess the quality of habitat at each of the sites. In its review, EWEB shall use the USDA Forest Service Special Habitat Management Guide (Dimling and McCain 1996) and identify the type of each of the meadows. Based on an analysis of the data collected, EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall determine if any of the sites are candidates for restoration or enhancement under the Willamette National Forest Standard and Guideline FW-2.1.1. If any of the meadows are designated as candidates for restoration or enhancement measures, EWEB shall determine the procedure for such restoration or enhancement in consultation with the VWG, and subject to approval by the USDA Forest Service.

4.6.4 Vegetation management at recreation sites

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, shall develop a protocol for management of vegetation at campgrounds and other recreation sites. EWEB shall design and implement the protocol to be consistent with the *Recreation and Aesthetic Resources Management Plan* (Martha Goodavish Planning & Design and Stillwater Sciences 2008a).

4.6.5 Post-implementation monitoring

EWEB shall monitor restoration and enhancement of riparian, wetland, and meadow areas by monitoring the revegetation site as provided in the revegetation monitoring protocol (see Section 4.5.3).

4.6.6 Performance standards

EWEB shall restore or enhance targeted riparian, wetland, and meadow sites in a manner designed to (1) provide a high degree of native cover appropriate to the specific habitat; (2) establish a system (e.g., wetland) that functions ecologically; and (3) establish self-sustaining vegetation area. Performance standards for each of the areas currently targeted are provided below.

Table 4-6. Performance standards for restoration and enhancement of selected riparian vegetation, wetland, meadow, and recreation areas within the PSA.

Resource type	Sites	Proposed actions	Desired future condition	Performance standard
Riparian vegetation	Trail Bridge Reservoir perimeter	Create a recreational setback using defined angler access trails and promote the re-growth of riparian vegetation.	Enhancement of riparian vegetation.	Establishment and survival of planted & volunteer species according to revegetation guidelines (Section 4.5.4).
	Carmen Diversion Reservoir perimeter			
	Smith Reservoir boat ramp			
	Smith Bypass Reach	Revegetate dispersed camp sites with riparian vegetation and encourage growth of conifers; strategic placement of fallen trees either between the road and the channel or within the channel.	Enhancement of riparian vegetation, woody debris within the channel, and dead wood habitat on the forest floor.	Establishment and survival of planted & volunteer species according to revegetation guidelines (Section 4.5.4).
	Deer Creek	Relocate the transmission line from the immediate riparian zone and revegetate the area with riparian vegetation.	Restore riparian function.	Establishment and survival of planted & volunteer species according to revegetation guidelines (Section 4.5.4).

Resource type	Sites	Proposed actions	Desired future condition	Performance standard
Wetlands	Sites 1, 10, and 11	Revegetate with low-stature trees.	Restore wetlands to a forested type.	Establishment and survival of planted species according to revegetation guidelines (Section 4.5.4).
	Beaver Marsh	Route additional water into the marsh and monitor the effects, including the effects on *Botrichium virginianum* (rattlesnake fern or Virginia grape-fern)	Abate reduction in open-water habitat in the center of the marsh and encroachment of upland plants into the fringe zone while maintaining viable populations of *Botrichium virginianum*	Re-establish marsh habitat that is closer to pre-Project condition.
Meadows	Sites 2, 3, 4, and 5	Survey and analyze in order to assess the quality of habitat at each of the sites. Determine if any of the sites are candidates for restoration.	Restore via revegetation of selected areas.	Establishment and survival of planted species according to revegetation guidelines (Section 4.5.4).
Recreation areas	Recreation sites and areas identified in the RMP	To be developed as required by the RAMP	Restore vegetation to mitigate recreationalist impacts to soils, water, historic, and aesthetic resources	Establishment and survival of planted species according to revegetation guidelines (Section 4.5.4)

4.6.7 Maintenance actions

EWEB, in consultation with the VWG, subject to approval by the USDA Forest Service, shall develop and implement maintenance actions, which may include re-planting, where necessary to achieve the applicable performance standards.

4.6.8 Contingency actions

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall develop and implement alternative treatment methods if EWEB in consultation with the VWG, and subject to approval by the USDA Forest Service, determines that restoration and enhancement efforts are not meeting the applicable performance standards.

4.6.9 Timeline

Within one year after New License issuance, EWEB, in consultation with the VWG, shall develop and implement a plan and schedule for implementation of the riparian, wetland, and meadow restoration and enhancement actions provided in this Section 4.6. EWEB shall identify in the plan priorities to guide restoration and enhancement of selected areas. The plan shall

provide that EWEB shall initiate riparian restoration projects within one year after completion of the Deer Creek transmission line corridor relocation actions and that EWEB shall restore or enhance at least two riparian, meadow or wetland sites every five years for the term of the New License.

4.7 Management of Dead Wood Habitat

EWEB shall promote the recruitment of dead wood (i.e., snags and downed wood) habitat along roads within the Project boundary consistent with the *Roads, Waste Area, and Staging Area Management Plan* (Martha Goodavish Planning & Design and Stillwater Sciences 2008b) and the current edition of the USDA Forest Service *Field Guide for Danger Tree Identification and Response*, the transmission line corridor consistent with the *Transmission Line Management Plan* (to be completed subsequent to New License issuance), and the reservoir shoreline consistent with the *Aquatics Management Plan* (Stillwater Sciences 2008b) in order to restore snag numbers and to maintain a balance among different dead wood decay classes. Within two years after New License issuance EWEB in consultation with the VWG and subject to approval of the USDA Forest Service, shall develop a comprehensive plan and schedule for promoting recruitment of dead wood habitat consistent with Sections 4.7.l and 4.7.2. The recruitment of dead wood is designed to increase the habitat quality and connectivity for wildlife species such as invertebrates, mollusks, amphibians, woodpeckers, and mammals (e.g., marten, fisher, and shrews).

4.7.1 Downed wood placement

Currently, EWEB manages downed wood collected from project reservoirs and roads to enhance (1) the amount of in-channel coarse wood along the Smith Bypass Reach, and (2) the amount of terrestrial downed wood along the transmission line corridor. Within two years after New License issuance, EWEB, in consultation with VWG, and subject to approval by the USDA Forest Service shall develop a comprehensive plan and schedule for continuing such efforts and providing for the movement and placement of any large down wood generated by a variety of Project-related activities, including reservoir "sweeping." EWEB shall include in the plan a measure to complete a baseline snag and downed wood survey of the Project within three years of New License issuance. EWEB shall design the plan in a manner that is consistent with the provisions of Section 4.5 (Large Woody Debris Management) of the Aquatics Management Plan (Stillwater Sciences 2008b) and will provide for leaving any additional, terrestrial downed wood (i.e., from natural recruitment of felling of hazard trees) in and adjacent to the transmission line corridor right-of-way to the extent reasonably practicable (i.e., while allowing access to the transmission line corridor and in conjunction with other efforts to manage weeds, promote elk forage, and reduce wildfire fuel loading). The goal of the plan shall be to create 91.4 m/0.4 hectare (300 linear ft/acre) of downed wood in terrestrial habitat, counting only down wood with a minimum diameter of 0.3 m (12 in) or greater of decay class I (boles and branches with bark, twigs and needles intact and no moss or other vegetation growing on them [Daniels et al. 1997] and class II (boles and branches with bark mostly intact but lacking needles and minimal moss or vegetation [Daniels et al. 1997]). For large logs longer than 6.1 m (20 ft) and at least (12 in) in diameter, the plan will give priority to instream fish habitat enhancement measures. The plan shall include measures to identify wood that is not needed or not acceptable for instream placement and to move that wood to terrestrial areas deficient in large down wood habitat in the Project area.

4.7.2 Snag creation and placement

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, shall:

1. Create snag habitat from identified hazard trees adjacent to the transmission line right-of-way to the extent reasonably practicable (i.e., while still allowing access to the transmission line corridor and in conjunction with other efforts to manage weeds, promote elk forage, and reduce wildfire fuel loading).
2. Replace snags cut during Project-related activities on a 1:1 basis within a reasonable distance to both the lost snag and the Project boundary. Snags will be replaced within two years after the loss. Snags created will be of equal or greater diameters and heights than those cut if trees suitable for treatment exist within 1/4 mile of the transmission line. The number and location of snags created shall be determined by EWEB, in consultation with the VWG and subject to approval by the USDA Forest Service. EWEB shall leave snags felled in place if reasonably practicable but may move snags that may interfere with or create a hazard to use of the transmission line road or other Project-related activities. Snags felled, if left in place, will be felled towards wherever the least amount of large logs exist at the time of felling.
3. Create and manage 500 snags during the New License term as mitigation for snags that will continue to be precluded from areas due to Project-related activities. EWEB shall create the snags in consultation with the VWG, and subject to approval by the USDA Forest Service, within five years after New License issuance. EWEB shall monitor created snags every five years for the New License term. EWEB shall create additional snags within two years as needed to replace those lost during the New License term.

4.7.3 Post-implementation monitoring

EWEB shall monitor the condition of created downed wood habitat and snags every five years during the term of the New License. As a part of the monitoring, EWEB shall estimate the density of downed wood in the transmission line right-of-way every five years using a sub-sampling approach. EWEB shall maintain and update at least annually a database that tracks the placement of downed wood and creation of snags. Results from the monitoring effort shall be used to plan any additional down wood and snag creation such that agreed or specified levels are retained during the New License term.

4.7.4 Performance standards

- Downed wood: EWEB shall actively manage all downed wood, either a result of natural recruitment or Project maintenance activities, to maximize the amount of habitat created within the PSA. The goal will be to create 300 lineal feet/ acre of downed wood, counting a minimum diameter of 12” of decay class I and II (using the five class decay class system).
- Snags: EWEB shall actively manage for 500 snags with a minimum diameter of 14 inches within the PSA. Diameters greater than 20 inches are preferred. Location of these snags will be determined in consultation with the VWG, and subject to approval by the USDA Forest Service. EWEB shall replace snags that have fallen (as determined in the five-year survey) within two years. EWEB shall replace snags cut during Project-related activities on a 1:1 basis within two years of loss. Snags created will be of equal or greater diameters and heights than those cut. EWEB, in consultation with the VWG, and

subject to approval by the USDA Forest Service, shall determine the number and location of snags created.

4.7.5 Maintenance actions

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall develop and implement maintenance actions to ensure that the performance goals are met. The maintenance actions shall include replacement of snags, as described above as described in Section 4.7.2 above, within five years of the loss.

4.7.6 Contingency actions

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall develop and implement an approach for increasing recruitment of downed wood and snags if EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service, determines that snag and downed wood enhancement efforts are not meeting the performance standards for number, volume, size, height (for snags), and decay class of downed wood and snags.

4.7.7 Timeline

EWEB, in consultation with the VWG, and subject to approval by the USDA Forest Service shall begin implementing the actions in this Section 4.7 as provided in the plan developed pursuant to Section 4.7 above.

5 REPORTING REQUIREMENTS

EWEB shall prepare an annual report regarding EWEB's implementation of this VMP. EWEB shall provide a draft of the annual report to the VWG for a 30-day comment period on the draft report. At the request of a VWG member, EWEB shall extend the comment period for an additional 30 days. EWEB shall submit a final report and response to comments on the draft report to the Commission within 90 days after the end of the comment period. EWEB shall include, at a minimum, the following information in the annual report:

1. A summary of the actions that EWEB implemented during the previous calendar year.
2. A discussion of any substantial differences between the actions provided in this VMP and the actions that EWEB implemented, including explanations for any substantial differences.
3. A summary of the actions EWEB plans to implement for the current calendar year.
4. A discussion of any substantial differences between the implementation schedule in this VMP and the schedule for the actions EWEB plans to implement in the current calendar year, including an explanation for any substantial differences.
5. Documentation of consultation with the VWG and approval by the agencies with approval authority regarding actions EWEB implemented under this VMP in the previous calendar year.
6. Results of any monitoring that occurred during the previous calendar year, conclusions that EWEB draws from the monitoring results, and any changes to this VMP EWEB proposes based on the monitoring results. EWEB shall consult with the VWG and obtain any necessary approvals as provided in Sections 2.2.2.1, 2.2.2.2, 2.2.2.3, and 2.3 of this VMP regarding any proposed changes to this VMP based on the monitoring results.

EWEB shall notify the VWG members within 48 hours and then discuss the matter with the VWG members within 30 days, if post-construction monitoring indicates that special-status or culturally significant species have been disturbed.

6 REFERENCES CITED

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Attachments

Attachment A

Vegetation Management Plan Representatives

ATTACHMENT A
VEGETATION MANAGEMENT PLAN REPRESENTATIVES

Eugene Water and Electric Board

Lead:
Kris Stenshoel
Vegetation Compliance Coordinator
PO Box 10148
Eugene, OR 97405
Phone:541-685-7125
Email: Kris.Stenshoel@eweb.org

Alternate:
Andrew Talabere
Senior Biologist
PO Box 10148
Eugene, OR 97405
Phone: 541-685-7397
Email: Andrew.Talabere@eweb.org

USDA Forest Service:

Lead:
Ruby Seitz
Wildlife Biologist
McKenzie River Ranger District
57600 McKenzie Highway
McKenzie Bridge, OR 97413
Phone: 541-822-7256
Email: ruseitz@fs.fed.us

Alternate:
Burtchell Thomas
District Botanist
McKenzie River Ranger District
57600 McKenzie Highway
McKenzie Bridge, OR 97413
Phone: 541-822-7258
Email: Bthomas03@fs.fed.us

Oregon Parks and Recreation Department:

Lead:
Alice Beals
Program Coordinator
725 Summer Street NE, Suite C
Salem, OR 97301
Phone: 503-986-0761
Email: Alice.Beals@Oregon.gov

Alternates:
Scott Nebeker
Park Development Administrator
725 Summer St NE, Ste. C
Salem, OR 97301
(503) 986-0756
Scott.Nebeker@oregon.gov

National Marine Fisheries Service:

Lead:
Stephanie Burchfield
1201 NE Lloyd Blvd, Suite 1100
Portland, OR 97232
Phone: 503-236-4720
Email: Stephanie.burchfield@noaa.gov

Alternate:
Marc Liverman
Manager, Willamette Branch
1201 NE Lloyd Blvd, Suite 1100
Portland, OR 97232
Phone: 503-230-2336
Fax: 503-231-2318
Email: Marc.liverman@noaa.gov

US Fish and Wildlife Service:

Lead:
Ann Gray
2600 SE 98th Ave, Suite 100
Portland, OR 97266
Phone: 503-231-6179
Email: ann_e_gray@fws.gov

Alternate:
Chris Allen
Fish and Wildlife Biologist
2600 SE 98th Ave, Suite 100
Portland, OR 97266
503-231-6179
Chris_Allen@fws.gov

Oregon Department of Environmental Quality:

Lead:
Chris Stine
Hydroelectric Specialist
1102 Lincoln Street, Suite 210
Eugene, OR 97401
Phone: 541-686-7810
Email: stine.chris@deq.state.or.us

Alternate:
Marilyn Fonseca
Natural Resource Specialist
811 SW 6th Ave.
Portland, OR 97204
Phone: 503-229-6804
Email: Fonseca.marilyn@deq.state.or.us

Oregon Department of Fish and Wildlife:

Lead:
Ken Homolka
Hydropower Program Leader
4034 Fairview Industrial Drive SE
Salem, OR 97302
Phone: 503-947-6090
Fax: 503-947-6070
Email: Ken.Homolka@state.or.us

Alternate:
Dave Harris
4192 North Umpqua Highway
Roseburg, OR 97470
Phone: 541-440-3353
Email: Dave.A.Harris@state.or.us

Jeff Ziller
3150 E. Main Street
Springfield, OR 97478
Phone: 541-726-3515
Email: Jeffrey.S.Ziller@state.or.us

Confederated Tribes of the Grande Ronde Community of Oregon:

Lead:
Michael Karnosh
Ceded Lands Program Manager
9615 Grand Ronde Road
Grand Ronde, OR 97347
Phone: 503-879-2383
Email: michael.karnosh@grandronde.org

Confederated Tribes of Siletz Indians of Oregon:

Lead:
Tom Downey
PO Box 549
Siletz, OR 97380
Phone: 541-444-8226
Email: tomd@ctsi.nsn.us

Alternate:
Stan Van de Wettering
Tribal Biologist
PO Box 549
Siletz, OR 97380
Phone: 541-444-8294
Email: StanV@ctsi.nsn.us

Confederated Tribes of the Warm Springs Reservation of Oregon:

Lead:
Brad Houslet
Fisheries Department Manager
Warm Springs Branch of Natural Resources
PO Box C
Warm Springs, OR 97761
Phone: 541-553-2039
Fax: 541-553-1994
Email: bhouslet@wtsbnr.org

McKenzie Flyfishers:

Lead:
Bob Bumstead
Conservation Chairperson
1770 Skyline Boulevard
Eugene, OR 97403
Phone: 541-342-1606
Email: bumstead@pacificu.edu

Trout Unlimited:

Lead:
Chandra Ferrari
175 Mountain Vista Ave SE
Salem, OR 97306
Phone: 916-214-9731
Email: cferrari@tu.org

Alternate:
Darek Staab
PO Box 8090
Bend, OR 97709
Phone: 560-461-5735
Email: dstaab@tu.org

Rocky Mountain Elk Foundation:

Lead:
Bill Richardson
Oregon State Chair
24550 Ervin Road
Philomath, OR 97370
Phone: 541-929-5365
Email: wildlife@peak.org

Attachment B

Section 8.12 of the Settlement Agreement

8.12 Notice.

Except as otherwise provided in this Section 8.12, any notice required by this Agreement will be written and will be sent by first-class mail or comparable method of distribution (including e-mail) to all Parties still in existence or their successors and will be filed with FERC if required by this Agreement. For the purpose of this Agreement, a notice will be effective seven days after the date on which it is mailed or otherwise distributed. When this Agreement requires notice in less than seven days, notice will be provided by telephone, facsimile, or electronic mail and will be effective when provided. For the purpose of notice, the list of authorized representatives of the Parties as of the Effective Date is attached as Exhibit I. The Parties will provide notice as provided in this Section 8.12 of any change in the authorized representatives designated in Exhibit I, and EWEB shall maintain the current distribution list of such representatives.

Attachment C

Control methods for targeted weeds

Table C-1. Summary of general methods suggested for controlling the targeted species in the Primary Study Area (PSA).

Scientific name	Common name	Proposed methods of control				Notes
		Manual and mechanical	Biological	Chemical	Integrative	
Brachypodium sylvaticum	false brome	• For small populations, dig or remove by hand (Tu 2002; S. Fritts, Botanist, USDA Forest Service, McKenzie River Ranger District, pers. comm., September 2005). • Treat with Waipuna (False Brome Working Group 2004). • Till, mulch, and plant competitively (False Brome Working Group 2004). • Mow repeatedly or graze before seed set (Tu 2002).		• Apply Hexazinone (Velpar formulatio) or one glyphosate (Accordformulation) (Tu 2002). • Apply Accord® with surfactant Activar 90®, followed in the next year by Velpar® (Tu 2002). • Apply Fusilade, Accord, or Accord + Plateau (False Brome Working Group 2004). • Inject Glyphosate (Aquamaster formulation) into the stem (USDA Forest Service 2007). • Apply Impazapyr (Habitat formulation) with backpack spot sprayer (USDA Forest Service 2007).	• Brush and mow (False Brome Working Group 2004). • Treat with Rodeo and then seed with a native species (S. Fritts, Botanist, USDA Forest Service, McKenzie River Ranger District, pers. comm., September 2005).	• The False Brome Working Group should be contacted prior to any treatment to determine the most up-to-date findings on success of various treatments. • The seed is short-lived, so treatment of 3 years or less can be effective at exhausting the seed bank.
Centaurea diffusa	diffuse knapweed	• Hand-pull before seed set; repeat treatment several time during growing season to hit rosette, immature and mature plant stages (USDA Forest Service 2007). • Burn in areas where seasonal or occasional fires are part of the natural ecosystem (Zimmerman 1997).		• Spot treat with Picloram (Tordon formulation) (Carpenter and Murray 1998).		

Scientific name	Common name	Proposed methods of control				Notes
		Manual and mechanical	Biological	Chemical	Integrative	
Centaurea maculosa	spotted knapweed	• For small populations, dig up plants including the root crown (USDA Forest Service 2007; S. Fritts, Botanist, USDA Forest Service, McKenzie River Ranger District, pers. comm., September 2005). • Mow repeatedly (USDA Forest Service 2007).	• Two gall flies, *Urophora affinis* and *Urophora quadrifasciata* and a moth, *Metzneria paucipunctella* attack seed capitula (Mauer et al. 1987). • A beetle attacks the roots, *Shenoptera jugoslavica* (Mauer et al. 1987).	• Spot treat with Picloram (Tordon formulation); re-application might be necessary (Mauer et al. 1987). • Apply Tricopyr ester (Garlon 3 formulation; S. Fritts, Botanist, USDA Forest Service, McKenzie River Ranger District, pers. comm., September 2005).		
Centaurea pratensis	meadow knapweed	• For small populations, dig up plants including the root crown (USDA Forest Service 2007; S. Fritts, Botanist, USDA Forest Service, McKenzie River Ranger District, pers. comm., September 2005).	• *Urophora quadrifasciata* is a gall fly that attacks the seed head (WSNWCB 2007).	• Apply Glyphosate, picloram, Tordon, 2,4-D, and triclopyr + clopyralid; annual applications for several years are needed (Peachey et al. 2007).	• Apply herbicide and follow with establishment of a competitive crop (i.e. perennial grass) (Peachey et al. 2007).	
Hedera helix	English ivy	• Remove vines using pruners; pull vines from forest floor and down from trees (Bossard et al. 2000).		• Apply 50% Glyphosate solution to cut stump (Holloran et al. 2004).	• String trimmer to remove most of the leaves and young stems and then spray triclopyr (Garlon 4A formulation) plus a surfactant (Bossard et al. 2000).	
Lathyrus latifolius	everlasting peavine	• Remove by hand (San Francisco Recreation and Parks Department 2005).		• Apply 2% Garlon 4. Most practical on steel erodable slopes where pulling is inappropriate (San Francisco Recreation and Parks Department 2005).		

Scientific name	Common name	Proposed methods of control				Notes
		Manual and mechanical	Biological	Chemical	Integrative	
Melilotus albus	white sweetclover	• For small populations, hand pull in late summer/early fall (Hanson 1987, Eckardt 1987). • Burn in the dormant season (late fall or early spring) to stimulate germination in the subsequent growing season, and follow with a later spring burn the next season (Kline 1984) or early or mid-May burn if can't do later spring (Johnson 1987 as cited in Eckardt 1987). • Mow the first-year plants in mid-to-late August, leave the crops to dry, then burn again in mid-to-late September (Heitlinger 1987 as cited in Eckardt 1987).			• Burn in the dormant season and follow with application of 2,4-D (Eckardt 1987).	
Phalaris arundinacea	reed canary grass	• For small populations, hand pull, making sure to dig out the root mass, 2–3 times per year for five years (Lyons 1998). • Solarize (i.e., 2–3 years of treatment with black or clear plastic) and then reseed with native grasses (*Elymus glaucus* and *Bromus carinatus*) (S. Fritts, Botanist,		• Apply Glyphosate in three rounds (Rodeo formulation) (S. Fritts, Botanist, USDA Forest Service, McKenzie River Ranger District, pers. comm., September 2005).	• Apply Glyphosate (Rodeo formulation) early in the season and then disk (Lyons 1998).	

Scientific name	Common name	Proposed methods of control				Notes
		Manual and mechanical	**Biological**	**Chemical**	**Integrative**	
		USDA Forest Service, McKenzie River Ranger District, pers. comm., September 2005; Lyons 1998). • Burn in late spring (Lyons 1998).				
Polygonum cuspidatum	Japanese knotweed	• Where infestations are small, cut repeatedly every 2–3 weeks from April to August with: machete, loppers, pruning shears, weed-eater or mower (Murray McHugh 2006). • Pull if infestation is in soft soil. Be sure to remove as much of the root system as possible (Murray McHugh 2006). • Cover with geotextiles, making sure new stems don't escape, for one to two growing seasons (Murray McHugh 2006).	• Graze with goats (Murray McHugh 2006).	• Apply Picloram in the spring (TNC 1989, Sieger 1991).	• Cut and then apply Glyphosate (Roundup or Rodeo formulations) (Sieger 1991).	• As long as some rhizomes remain in the soil, *Polygonum cuspidatum* returns once management is relaxed (Beerling 1990, Nature Conservancy Council 1989, Palmer 1990; all in cite in Sieger 1991).
Rubus armeniacus	Himalaya blackberry	• Cut or use a weed wench and then burn slash piles (Bossard et al. 2000). • For small populations, remove rootstocks by hand digging (Bossard et al. 2000).	• Graze with sheep, cattle, horses or goats (Bossard et al. 2000).	• Apply Fosamine, Amitrole-thiocyanate, or Triclopyr ester (Garlon formulation) (Bossard et al. 2000).	• Cut or use a weed wench and then revegetate with fast-growing shrubs or graze with sheep or goats (Bossard et al. 2000). • Cut multiple times with a tractor-mounted or ground mower or by scythes and follow with herbicide treatment (Bossard et al. 2000).	

Scientific name	Common name	Proposed methods of control				Notes
		Manual and mechanical	Biological	Chemical	Integrative	
Rubus laciniatus	evergreen blackberry	• Depending on size of patch, cut by hand (loppers, hand clippers, brush saws), back hoe, or mow (GOERT 2002).	• Graze with goats, pigs or chickens (King County Department of Natural Resources and Parks 2005).	• Apply Glyphosate, Triclopyr, 2,4-D or Metsulfuron (GOERT 2002).	• Hand-cut or mow and follow with herbicide treatment (King County Department of Natural Resources and Parks 2005).	
Solanum dulcamara	climbing nightshade	• Pull, dig or cut back small populations; repeat treatment as necessary (King County Department of Natural Resources and Parks 2007). • Mow repeatedly (King County Department of Natural Resources and Parks 2007).		• Spot spray with a broadleaf herbicide or Glyphosate (King County Department of Natural Resources and Parks 2007, Francis 2004).		
Cirsium arvense	Canada thistle	• Cultivate at regular intervals of 20 days (Bossard et al. 2000). • Mow repeatedly at three-week intervals (Bossard et al. 2000).		• Clopyralid or clopyralid + 2, 4-D (Bossard et al. 2000).	• Graze with sheep, cattle, or goats when plants are young, in combination with herbicide (Bossard et al. 2000).	
Cirsium vulgare	bull thistle	• Mow or hand cut shortly before plants flower (Randall 2000); remove stems from area as cut stems can still produce viable seed (Randall 2000, CWMA 2007).	• *Urophora stylata* is an approved gall forming fruit fly (Randall 2000).	• Apply 2,4-D at 0.5 kg/ha; Dicamba at 0.15 kg/ha; or Picloram at 1 kg/ha (CWMA 2007); most effective when rosettes are targeted. An autumn or spring application recommended (CWMA 2007).	• Improve the health of native plants as bull thistle is not shade-tolerant and does not compete well in areas populated with tall grasses and forbs (CWMA 2007).	
Cytisus scoparius	Scotch broom	• Pull with weed wenches and then remove seedlings for five to ten years (Bossard et al. 2000). • Cut with a saw; timing important (Bossard et al. 2000).	• Graze heavily with goats during the growing season for four to five years (Bossard et al. 2000).	• Apply 2% Glyphosate (Roundup formulation) with surfactant added to foilage (Bossard et al. 2000). • Apply Tricopyr ester (25%; Garlon formulation) in Hasten, Penevator, or other seed press oil (75%) to basal bark with	• Burn pretreated or cut broom (Bossard et al. 2000).	

Scientific name	Common name	Proposed methods of control				Notes
		Manual and mechanical	**Biological**	**Chemical**	**Integrative**	
		• Burn (Bossard et al. 2000). • Cut in fall and then burn in late spring (Bossard et al. 2000). • If stems are less than an inch, pull; if greater than an inch, cut or mow flush with ground; follow up with re-treatment of resprouts (S. Fritts, Botanist, USDA Forest Service, McKenzie River Ranger District, pers. comm., September 2005).		wick (Bossard et al. 2000).		
Hypericum perforatum	St. John's wort	• Hand pull or dig young plants repeatedly (USDA Forest Service 2007).	• Use *Chrysolina quadridgemina*, a leaf feeding beetle (CDFA 2000).		• Improve natural areas (increased soil fertility) and reseed with desirable vegetation (CDFA 2000).	
Senecio jacobaea	tansy ragwort	• Remove by hand and bury or burn removed plants (Bossard et al. 2000). • Over-plant with tree or shrub cover to shade out (Bossard et al. 2000). • Hand pull or mowing (USDA Forest Service 2007).	• Use Tansy flea beetle *(Longitarsus jacobaeae*) (Bossard et al. 2000).	• Apply Dicamba (Banvel formulation); moderately effective but can't be grazed afterward (Bossard et al. 2000).		

Scientific name	Common name	Proposed methods of control				Notes
		Manual and mechanical	Biological	Chemical	Integrative	
Myriophyllum spicatum	Eurasian watermilfoil	• For smaller populations, repeatedly remove with sturdy hand rake starting in early summer (PCA 2005). • For larger populations, repeatedly remove with large harvesting equipment starting in early summer (PCA 2005). • Suspend a blocking screen that hangs vertically from a cable to a depth of 4 m (PCA 2005).		• Apply Fluridone (Sonar AS formulation), ideally before or during early stages of growth (PCA 2005) with follow-up hand pulling of surviving plants (WAPMS 2004). • Apply 2-4,D, Diquat, Diquat and complexed copper, Endothall dipotassium salt, or Endothall and complexed copper (WAPMS 2004).		
Potamogeton crispus	curly leaf pondweed	• Remove using weed harvesters, hand cutting or raking; dispose of the remnants by trash disposal (Indiana Department of Natural Resources 2006).		• Apply Diquat or Endothall (Aquathol K formulation) over isolated beds when water temperatures are 55 degrees in the spring (Crowell 2003). • Apply Fluridone (Sonar formulation) early in the spring for large-scale treatments (Crowell 2003).		

Attachment D

Standard revegetation mixes for selected habitats

Table D-1. Standard seed mix for erosion control.

Scientific name	Common name	Vegetation type	Application rate (lb/acre)
Year 1; post-disturbance			
Triticum aestivum	winter wheat, *sterile only*	perennial grass	15
Avena spp.	oats	annual grass	15
Year 2; fall planting			
Achillea millefolium	yarrow	perennial forb	3–6
Bromus carinatus	California brome	perennial grass	15
Camas quamash	blue camas	perennial forb	NA[1]
Clarkia amoena	four-spot	annual forb	3–6
Collinsia grandiflora	large innocence	annual forb	3–6
Collomia grandiflora	large-flowered collomia	annual forb	3–6
Elymus glaucus	blue wildrye	perennial grass	15
Eriophyllum lanatum	wooly sunflower	perennial subshrub	3–6
Gilia capitata	globe gilia	annual forb	3–6
Lomatium utriculatum	common lomatium	perennial forb	3–6
Lotus crassifolius var. *crassifolius*	big deervetch	annual forb	3–6
Madia gracilis	slender tarweed	annual forb	3–6
Prunella vulgaris var. *lanceolata*	mountain self-heal	perennial forb	3–6
Sanguisorba occidentalis	Western burnet	annual forb	3–6

[1]Bulbs of *Camassia quamash* (blue camas) may be added in to the mix at certain sites, where appropriate.

Table D-2. Standard mix for riparian areas.

Scientific name	Common name
Trees[1]	
Acer macrophyllum	big-leaf maple
Alnus rubra	red alder
Cornus nuttallii	mountain dogwood
Fraxinus latifolia	Oregon ash
Pseudotsuga menziesii	Douglas-fir
Thuja plicata	Western red cedar
Tsuga heterophylla	Western hemlock
Shrubs	
Acer circinatum	vine maple
Cornus sericea	Western dogwood
Ribes bracteosum	stink currant
Ribes lacustre	prickly currant or stink currant
Rubus spectabilis	salmonberry
Salix scouleriana	Scouler's willow
Salix sitchensis	Sitka willow
Spiraea douglasii	Douglas spiraea
Herbs	
Athyrium felix-femina	Western lady fern
Camassia quamash	blue camas
Carex obnupta	slough sedge or coast carex
Carex deweyana	Dewey's taper-fruit sedge
Carex utriculata	beaked sedge
Claytonia sibirica	candy flower or Siberian spring beauty
Juncus effusus	common rush
Juncus ensifolius	sword-leaved rush
Mitella breweri	Brewer's mitrewort
Mitella ovalis	small Bishop's cap
Polystichum munitum	Western sword fern
Scirpus microcarpus	small-fruited bulrush
Tolmiea menziesii	pig-a-back plant

[1]Trees will be added in to a site (e.g., restoration along Deer Creek) as appropriate.

Table D-3. Standard planting mix for early seral stage vegetation.

Scientific name	Common name
Forbs	
Claytonia sibirica	candy flower or Siberian spring beauty
Clintonia uniflora	queen's cup; bride's bonnet
Epilobium angustifolium	fireweed
Eriophyllum lanatum	woolly sunflower
Heracleum lanatum	cow parsnip
Iris chrysophylla	yellow-flowered iris
Linnaea borealis var. *longiflora*	twin flower
Lomatium dissectum	fern-leaved lomatium
Lomatium utriculatum	common lomatium
Lotus crassifolius var. *crassifolius*	big deervetch
Lotus purshianus	Spanish clover
Maianthemum dilatatum	false lily-of-the-valley
Oxalis oregana	redwood sorrel
Rupertia physodes	California tea; forest scurfpea
Sanguisorba occidentalis	Western burnet
Senecio triangularis	arrowleaf groundsell; arrow-leaved ragwort
Trifolium spp.	clover (*native only*)
Valeriana sitchensis var. *sitchensis*	Sitka valerian
Graminoids	
Agrostis scabra	rough bentgrass
Bromus carinatus	California brome
Bromus vulgaris	Columbia brome
Danthonia intermedia	timber oat-grass
Deschampsia caespitosa	tufted hairgrass
Elymus glaucus	blue wildrye
Festuca idahoensis	Idaho fescue
Festuca idahoensis ssp. *roemeri*	Roemer's fescue
Shrubs	
Acer circinatum	vine maple
Berberis aquifolium	Oregon grape
Berberis nervosa	dwarf Oregon grape
Ceanothus integerrimus	deerbrush
Ceanothus sanguineus	redstem ceanothus
Chrysolepis chrysophylla	giant chinquapin
Cornus sericea	redosier dogwood
Corylus cornuta var. *californica*	California hazelnut
Ribes sanguineum	redflower currant
Rubus parviflorus	thimbleberry
Rubus spectabilis	salmonberry
Rubus ursinus	California blackberry
Salic scouleriana	Scouler's willow
Salix sitchensis	Sitka willow
Sambucus mexicana	blue elderberry
Sambucus racemosa	red elderberry
Spiraea douglasii	Douglas spirea; rose spirea

Scientific name	Common name
Symphoricarpos albus	common snowberry
Symphoricarpos mollis	creeping snowberry
Vaccinium ovalifolium	oval-leaf huckleberry
Vaccinium parvifolium	red huckleberry
Trees	
Cornus nuttallii	Pacific dogwood
Prunus emarginata	bitter cherry
Rhamnus purshiana	cascara buckthorn
Sorbus sitchensis var. *grayi*	mountain ash