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United States Government **Department of Energy**

Bonneville Power Administration

memorandum

DATE: 7/19/02

REPLY TO ATTN OF: KEP-4

SUBJECT: Supplement Analysis for the Transmission System Vegetation Management Program FEIS (DOE/EIS-0285/SA-70)

TO: Bill Erickson - TFP/Walla Walla
Natural Resource Specialist

Proposed Action: Vegetation Management on sections of the McNary-Ross, McNary-Horse Heaven, Horse Heaven-Harvarlum, Harvarlum-Big Eddy, and Hanford-John Day Transmission lines. The treatment areas are identified in Step 1 of the Planning Steps shown below. The work will involve the control of noxious weeds in the subject rights-of-ways (ROWs).

Location: The ROWs are located in Umatilla and Sherman Counties, Oregon and Benton and Klickitat Counties, Washington, all being in the Walla Walla and Redmond Regions.

Proposed by: Bonneville Power Administration (BPA).

Description of the Proposed Action: BPA, in cooperation with the various County Noxious Weed Control Boards and associated landowners, will provide resources to assist landowners in controlling noxious weeds on the subject ROWs. The Weed Board will perform all activities on behalf of BPA.

Analysis: This project meets the standards and guidelines for the Transmission System Vegetation Management Program Final Environmental Impact Statement (FEIS) and Record of Decision (ROD).

Planning Steps

1. Identify facility and the vegetation management need.
The affected areas of work and related information are:

Corridor Name	Corridor Length & kV	Easement width	Miles of Treatment
McNary Ross McNary Horse Heaven	16 miles	500	16 miles Substation to Substation
Horse Heaven Harvarlum McNary Ross	1/1 to 26/5 Horse Heaven Harvarlum	500	26 miles
Horse Heaven Harvarlum McNary Ross	26/5 to 30/5	250	5 miles
Horse Heaven Harvarlum McNary Ross	30/5 to 58/1	500+	28 mile
Harvarlum Big Eddy McNary Ross	1/1 to 1/4	500	1 mile
Hanford John Day	95/4 to 96/2	300	1 mile
Hanford John Day	96/2 to 99/3	1225	3 miles

Staff from the Klickitat County Weed Board conducted surveys along the project corridor for noxious weeds between July 31 and August 28, 2001. The surveyors noted occurrences of noxious weeds along the route, and recorded the number of the nearest tower to the noxious weeds population.

The survey showed that the listed noxious weeds are non-native species that need to be controlled to prevent any additional spread of these weeds and encroachment of habitat for native species on the right-of-way. These noxious weed species will be controlled using an Integrated Vegetation Management Approach (IVM) using a combination of manual, mechanical, herbicides, and biological methods.

The results of the noxious weed survey are shown on the accompanying checklist.

2. Identify surrounding land use and landowners/managers.

The subject ROW corridors cross mostly private land (94% of lands crossed) as well as tribal, federal, and state lands in eastern Washington and Oregon bordering the Columbia River. The project corridor originates in Umatilla City, Oregon, crosses over Columbia River, travels west through Benton and Klickitat Counties in Washington, crosses back over the Columbia River, and ends in Sherman County, Oregon.

Land use within the corridor is primarily agriculture (irrigated cropland, dryland wheat farming, and grazing). Irrigated agricultural uses in the project corridor include poplar tree farms, orchards, and a variety of crops such as potatoes, corn, onions, carrots, and asparagus. Some crops change annually. There are approximately 1,409 acres of irrigated and non-irrigated cropland, 3,064 acres of grazing land, and 2 acres of substation/wildlife land use in the project corridor. There are no lands designated as prime farmland in the project corridor.

Table 3-1 in the associated checklist summarizes the land uses and the corresponding Bonneville structure numbers within the project corridor. Residential and industrial/commercial land is also adjacent to the corridor.

3. Identify natural resources and any mitigation measures.

A total of 15 streams, the Columbia River, and 146 dry washes cross the project corridor. Of the streams and river, 11 are considered fish bearing or potentially fish bearing and five are non-fish-bearing. Section 3 of the attached checklist identifies the natural resources present in the area of the proposed work. The following outlines resources found along with applicable mitigation measures.

Threatened/Endangered Fish Species and Essential Fish Habitat

Essential Fish Habitat (EFH) for two fish species (chinook and coho) that are protected under the provisions of the Magnuson-Stevens Act (16 U.S.C. 1855(b) are found in the project area. All streams identified as either fish bearing or potentially fish bearing are included in designated EFH for these two fisheries. Chinook Salmon that utilize the streams intersected by the project corridor are not currently federally listed, while Coho Salmon are a candidate for federal protection. However, Steelhead Trout are federally listed as a threatened species, and occur, or are likely to occur in the same streams along the project corridor as Chinook or Coho Salmon. Since steelhead trout are a federally listed species and their distribution overlaps with both Chinook and Coho, the analysis of current conditions and potential impacts to this species also serve to describe all potential impacts to EFH.

Salmon/Steelhead T&E Streams

Several streams and rivers have been identified as potential habitat for Salmon/Steelhead T&E species. When performing vegetation management on State and/or private lands within 122 m (400 ft.) of these listed stream, available methods of control include manual, mechanical, spot and localized herbicide treatment, broadcast treatments, and biological treatments. Although no mechanical methods is allowed within 100 feet of these identified streams except for tower sites and access roads.

Non-Fish-Bearing Streams

Several non-fish-bearing streams that drain into the Columbia River exist within the project corridor. Available methods of control include manual, mechanical and herbicide. No mechanical methods will be used within 50 feet of a stream and only on access roads and tower sites. Only practically non-toxic and slightly toxic formulations shall be used for herbicide applications.

Non-Fish-Bearing Dry Washes

There are 146 non-fish-bearing dry washes that also cross the project corridor. Dry washes are defined as channels lacking any semblance of a riparian zone and are intermittent, primarily providing seasonal drainage off of hills (WDFW 2000). If the washes are flowing during vegetation control, methods will be similar to those for non-fish bearing streams. If no water is present, then available methods will be all allowable manual, mechanical, spot, localized and broadcast herbicide treatment as well as allowable biological treatments as outlined in the Vegetation Management EIS.

Other Streams

For control on land 100 ft of a stream, water or wetlands, the available methods include all manual, spot and localized herbicide, and biological treatments. No mechanical treatments within 50 feet of streams or wetlands will be allowed.

By following all appropriate buffers as outlined in the Vegetation Management EIS, no effects on the T&E fish species or essential fish habitat are anticipated.

Threatened, Endangered Plant or Animal Species and Other Sensitive Species

Also addressed during the noxious weed survey was the presence of any Threatened or Endangered Plant or Animal Species and other sensitive species. Although the U.S. Fish and Wildlife has identified one threatened and one candidate plant species in the area, none were found in the work corridor. The Washington Natural Heritage Program has also identified potential habitat for three state sensitive plant species, none of which were found in the project corridor. The U.S. Fish and Wildlife has identified the bald eagle as he only listed wildlife species known to occur in the project vicinity. During the field surveys, bald eagles were detected in selected areas, however no bald eagle nesting or roosting habitat occurs in the work corridor based on Washington Department of Fish and Wildlife Priority habitats Species data and results of field surveys. Habitat for 29 different state-listed species occurs within or near the corridor.

Mitigation measures for these Threatened, Endangered or Other Sensitive Species (as outlined in pages 3 thru 73 in the McNary-John Day Draft EIS) are referenced in Section 3.4 of the checklist.

Seasonal Wetlands

Due to the possibility of the presence of listed species in seasonal wetland areas, no herbicides will be used until further review is completed. If this review shows that these species do not exist on the Right-of-way, treatments can proceed according as indicated in the Vegetation Management EIS and herbicide label. These future treatments will be limited to seasonally dry wetlands where no surface water is present. At no time will herbicides be applied to surface water.

4. Determine vegetation control and debris disposal method

Vegetation will be removed using manual, mechanical and chemical methods as described in Section 4 of the attached checklist. The checklist describes prescriptions to be used for both fish bearing and non-fish bearing streams. No debris disposal is anticipated for the proposed treatment activities.

A licensed contractor would undertake the proposed work. The contractor will receive a list of required mitigation measures (management prescriptions) to follow as well as a set of maps delineating the transmission line and potential sensitive resource areas. Prior to the beginning of the work, the contractor will be provided with a set of the project maps, as well as with the attached list of management prescriptions from the Vegetation Management EIS.

The Contractor will also notify federal, state or tribal entities in advance before applying herbicides on those lands. Applications on BLM lands is restricted to certain herbicides and conditions for the control of noxious weeds, therefore only those herbicides that are approved for both BLM and Bonneville will be used. The work will be planned and implemented according to the recently completed Environmental Impact Statement for the control of Vegetation on Bonneville Power facilities.

If all vegetation control methods, as outlined in the Vegetation Management EIS are followed, no effect on any natural resources should occur.

5. Determine revegetation methods, if necessary.

Revegetation needs will be determined as work progresses. Any areas identified with limited ground cover will be reseeded with native plant species.

6. Determine monitoring needs.

An inspector will monitor the work being performed at the time of the initial work. Follow-up inspections will be preformed during routine regular patrols, either by ground (BPA or Weed Board) or aerial. If required, follow-up monitoring, herbicide applications and re-seeding, if necessary, will occur.

7. Prepare appropriate environmental documentation.

This Supplement Analysis finds that 1) the proposed actions are substantially consistent with the Transmission System Vegetation Management Program FEIS (DOE/EIS-0285) and ROD, and; 2) there are no new circumstances or information relevant to environmental concerns and bearing on the proposed actions or their impacts. Therefore, no further NEPA documentation is required.

/s/ Kenneth Hutchinson
Ken Hutchinson
Environmental Scientist - KEPR

CONCUR: */s/ Thomas C. McKinney* DATE: 07/19/2002
Thomas C. McKinney
NEPA Compliance Officer

cc:
L. Croff – KEC-4
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P. Key – LC-7
J. Meyer – KEP-4
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M. Johnson – TF/DOB-1
M. Richardson – TFP/Walla Walla
R. Coila – TFP/Walla Walla
M. Ward – TFPF/Pasco
W. Banker – TFRK/The Dalles
Environmental File – KEC
Official File – KEP-4 (EQ-14)

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Vegetation Management Checklist

1. IDENTIFY FACILITY AND THE VEGETATION MANAGEMENT NEED

1.1 Describe Right-of-way.

Corridor Name	Corridor Length & kV	Easement width	Miles of Treatment
McNary Ross McNary Horse Heaven	16 miles	500	16 miles Substation to Substation
Horse Heaven Harvarlum McNary Ross	1/1 to 26/5 Horse Heaven Harvarlum	500	26 miles
Horse Heaven Harvarlum McNary Ross	26/5 to 30/5	250	5 miles
Horse Heaven Harvarlum McNary Ross	30/5 to 58/1	500+	28 mile
Harvarlum Big Eddy McNary Ross	1/1 to 1/4	500	1 mile
Hanford John Day	95/4 to 96/2	300	1 mile
Hanford John Day	96/2 to 99/3	1225	3 miles

See Handbook — **List of Right-of-way Components** for checkboxes and the requirements for the components **Rights-of-way**, **Access Roads**, **Switch Platforms**, **Danger Trees**, and **Microwave Beam paths**.

Noxious Weeds:
Umatilla, Benton, Klickitat, and Sherman counties

1.2 Describe the vegetation needing management.

See handbook — **List of Vegetation Types, Density, Noxious Weeds** for checkboxes and requirements.

Noxious Weed Species

Staff from the Klickitat County Weed Board conducted surveys along the project corridor for noxious weeds between July 31 and August 28, 2001. The surveyors noted occurrences of noxious weeds along the route, and recorded the number of the nearest tower to the noxious weeds population.

The results of the noxious weed survey indicate that diffuse knapweed (*Centaurea diffusa*) is by far the most prevalent noxious weeds occurring on the corridor. Diffuse knapweed populations occur in 55 of the corridor miles (70%) on the route. In 48 of these corridor miles, diffuse knapweed was

found near at least three of the five or six towers typically located in a corridor mile. In the remaining 24 corridor miles, occurrences of diffuse knapweed are more isolated. Diffuse knapweed is most prevalent near the east end of the corridor, between corridor miles 1 and 20. Another concentration of diffuse knapweed was found between corridor miles 42 and 50.

Ten additional noxious weeds were located during the survey. None was found as frequently or as widespread as diffuse knapweed. Of the ten additional species found, yellow starthistle (*Centaurea solstitialis*) was the most prevalent. Yellow starthistle populations were found in portions of 15 of the corridor miles (19%). In six of these corridor miles, yellow starthistle populations were found near at least three of the towers within the corridor mile. Occurrences in the other nine corridor miles were isolated. Yellow starthistle is most prevalent between corridor miles 54 and 58.

Puncture vine (*Tribulus terrestris*) and kochia (*Kochia scoparia*) populations were found in 12 of the corridor miles (15%). In approximately half of these occurrences for each species, populations were found consistently through most of the corridor mile. The other corridor miles had more isolated occurrences.

White top (*Cardaria draba*) was found near most towers between corridor miles 49 and 51. An additional isolated occurrence of white top was noted near tower 69/3. Spotted knapweed (*Centaurea maculosa*), perennial pepperweed (*Lepidium latifolium*), rush skeletonweed (*Chondrilla juncea*), Canada thistle (*Cirsium arvense*), Indigo bush (*Amorpha fruticosa*), and Russian knapweed (*Centaurea repens*) were also located at isolated points along the route.

No noxious weeds were found between corridor miles 34 through 42, 64 through 66, and 70 through 71.

A summary of locations of noxious weeds within McNary-Ross transmission line corridor mile is presented in Table 3-11.

Table 3-11: Locations of Noxious Weed Species Along the Project Corridor

Species Name	Common Name	McNary-Ross Corridor Miles	
		Major Occurrences[1]	**Isolated Occurrences[2]**
Centaurea diffusa	Diffuse knapweed	1-20; 27; 29; 37; 42-50; 53; 62-63; 67; 71-74;	31; 38; 39; 51; 55; 58; 60
Centaurea solstitialis	Yellow starthistle	54-58; 69	2; 51-53; 60; 71; 72-74;
Tribulus terrestris	Puncture vine	6; 10; 24-26	8; 9; 30-33; 54
Kochia scoparia	Kochia	27; 48-50; 68; 74	14; 16-18; 22; 26
Centaurea maculosa	Spotted knapweed	none	17-20
Lepidium latifolium	Perennial pepperweed	none	1; 11; 21; 45; 46; 48; 53; 71
Chondrilla juncea	Rush skeletonweed	69	4; 13; 27; 43; 58; 62;

Species Name	Common Name	McNary-Ross Corridor Miles	
		Major Occurrences[1]	Isolated Occurrences[2]
Cirsium arvense	Canada thistle	none	21; 22; 24; 27; 28; 73; 74
Cardaria draba	White top	49-51	69
Amorpha fruticosa	Indigo bush	none	33
Centaurea repens	Russian knapweed	53	27

[1] Major occurrences are corridor miles with populations found near at least three of five towers within that corridor mile.
[2] Isolated occurrences are corridor miles with populations found near one or two of five towers within that corridor mile.

Vegetation

The vegetation in this area is influenced by the topography, climate, and soils of the region. The proposed transmission line project lies within the Columbia River basin province of eastern Washington and Oregon (Franklin and Dyrness 1973). This is an area within the rainshadow east of the Cascade Mountains, in a portion of eastern Washington and Oregon that is too arid to support natural upland forest (Daubenmire 1970).

The area is characterized by flat buttes, rolling hills, basalt cliffs, terraces, and scablands including rock outcroppings interspersed with wet areas. Portions of the project corridor cross irrigated agricultural cropland, particularly in the eastern half of the corridor. Cattle rangeland is prevalent along the western half of the corridor.

Shrub-steppe communities dominated by bunchgrasses and sagebrushes dominate the dry, rocky areas of central and eastern Washington (Franklin and Dyrness 1973). Within the corridor, shrub-steppe and mixed grasslands are the most common plant communities, comprising approximately 61% of the corridor.

Other vegetation communities present include agricultural areas, scabland/lithosol (shallow soils) communities, riparian corridors, and ruderal communities in developed areas. Past disturbance of the corridor has influenced the types of plant communities present. Throughout the study area, the invasive species cheatgrass is at least codominant in most of the plant communities.

The distribution of plant communities along the corridor is shown in Figure 3-3. The seven major plant communities identified along the corridor are described below.

Grazed Shrub-Steppe

Grazed shrub-steppe communities are the most prevalent vegetation in the project corridor, dominating the central and western portions of the corridor (approximately 38%).

These communities are dominated by shrubs and grasses and have been disturbed by human activities, especially grazing of livestock, and include big sagebrush, gray rabbitbrush, and a mixture of grasses including bluebunch wheatgrass, needle and thread grass, and Idaho fescue.

Cheatgrass, a nonnative, invasive grass, also dominates the community and is, in fact, the most prevalent grass found. Total grass coverage ranges from 80% to 60%. Shrub coverage ranges from 10% to 35%. A number of forbs are occasionally present in these communities, including western yarrow, silky lupine, fiddle-necks, rosy pussytoes, hairy milkvetch, and several buckwheat and fleabane species. Forb coverage is generally under 5%.

Shrub-Dominated Shrub-Steppe

Portions of the shrub-steppe communities along the project corridor tend to have a higher coverage of shrub species, apparently because they have been less disturbed. These portions are located between structures 3/2 and 4/1 and between structure 20/4 and Glade Creek (Figure 3-3). The largest examples of shrub-dominated shrub-steppe communities are found from I-82 west to Plymouth Road, and from structure 19/1 west to Glade Creek. Shrub-dominated communities cover approximately 3% of the corridor.

The shrub-dominated communities are differentiated from grazed shrub-steppe communities by taller, denser shrub coverage, higher species diversity, greater coverage of intact cryptogamic crusts, and a lower percentage of invasive species. Therefore, these areas represent a more native shrub-steppe community than the grazed and otherwise disturbed shrub-steppe found elsewhere along the project corridor.

The shrub-dominated communities have the same vegetation as the shrub-steppe described above, but there is more big sagebrush and gray rabbitbrush, and in addition the communities have bitterbrush, green rabbitbrush, and grasses, bottlebrush squirreltail, and Sandberg's bluegrass. Cheatgrass is present, but reduced in coverage relative to the grazed shrub-steppe areas. Forb coverage is similar to the grazed shrub-step, with more species present, including prickly-pear cactus and Carey's balsamroot.

Grasslands

Grassland communities are present throughout the project corridor but most prevalent at each end of the corridor, and in the west-central portion of the corridor. Overall, grassland communities comprise approximately 20% of the project corridor.

Mixed grasses, both native and nonnative, dominate the grassland communities. These communities are similar to shrub-steppe, with a greatly reduced coverage of shrub species. Shrub species in grasslands comprise less than 10% of the cover and in many areas are not present at all.

Species dominance within a given area of grassland varies over the length of the project corridor. The dominant species tend to be one or more of the following: bluebunch wheatgrass, Idaho fescue, foxtail barley, needle and thread grass, bottlebrush squirreltail, and Sandberg's bluegrass. Invasive nonnative species—including cheatgrass, bulbous bluegrass, and medusa-head wild rye—are also present in most of the grassland communities along the project corridor, and are often among the dominant species.

Scablands/Lithosol Communities

Much of the project corridor (particularly the western half) has shallow soils (lithosols). Numerous rock outcrops and exposed basalt surfaces are located along the route. However, a portion of the corridor (approximately 5 miles between structures 70/1 and 74/1) is noticeably more exposed, with soils shallower than those along most of the remainder of the corridor. In this area, referred to as scabland, a mosaic of small but distinct grassland, wetland, and shrub-steppe communities is present. Many of these communities include the same plant species found in the grassland and shrub-steppe communities, but the grassland communities tend to dominate. Typical grasses include foxtail barley, bluebunch wheatgrass, Sandberg's bluegrass, and squirreltail bottlebrush. Cheatgrass (an invasive nonnative) is the dominant grass present. Patches of shrub-steppe dominated by both gray and green rabbitbrush are found where the soils are deeper. The small depressional emergent wetlands present are dominated by soft rush and bulrush species.

Agriculture

Agriculture is dominant in the eastern half of the project corridor and in small pockets to the west, accounting for approximately 31% of the agricultural vegetation along the corridor. Several types of agricultural vegetation occur, including irrigated grain fields, row crops, cottonwood plantations, and fruit orchards. Crop irrigation circles in wheat and other grain production along with row crops are the most common of these agricultural activities, and are most prevalent between structures 14/5 and 32/4. Cottonwood plantations in several stages of production are found immediately west of Glade Creek (structure 21/5). Apple and other small-tree fruit orchards are located on either side of Chapman Creek (structures 54/1 to 54/4).

Riparian Areas

Most of the larger streams crossed by the project corridor have narrow and sloping riparian areas dominated by shrubs and small trees. Shrub species found in these riparian areas include smooth sumac, red elder, nootka rose, and pearhip rose. Tree species include red alder, cottonwood, willows, and occasionally black locust.

At Alder Creek (structure 33/3), the entire riparian zone is dominated by indigo bush, a Benton County Class B-Designate noxious weed. Indigo bush is minor or absent in the riparian zones of the other drainages crossing the corridor.

Small groves of up to 20 trees are scattered near the west end of the project corridor. Trees in these small wooded areas consist of black locust and tree-of-heaven.

In the following places the landowner may be provided herbicides for noxious weed control.

Noxious weed board performs almost all of the work. If BPA does provide herbicides to landowners in the future, they will be provided with the appropriate environmental information.

Others as requested	Tordon 22K (Picloram), Trooper/Vanquish (Dicamba), 2,4-d. TELAR

Tordon is being considered since it is one of the most effective products know to control knapweeds and other broadleaf species. Care must be taken due to its persistence and ground and surface water issues.

VEGETATION

The following mitigation measures would be observed to reduce impacts on vegetation:

As much as practical, be careful not to disturb low-growing plants. When possible, use only selective vegetation control methods (such as spot herbicide applications) that have little potential to harm non-target vegetation.

Use only those biological control agents (insects) that have been tested to ensure they are host-specific.
When possible, wash vehicles that have been in weed-infested areas (removing as much weed seed as possible) before entering areas of no known infestations.
Consider, if appropriate, reseeding after noxious weed treatments.
Where cost-effective and to the extent practicable, use regionally native plants for landscaping.
Use seeds, seedlings, or plants that are consistent with management objectives and adapted to climatic conditions, soils, landscape position, and the site itself.
Use native seed/plants if the species meet the objectives of the re-vegetation project, if the costs are project.
If native seed mixes are not reasonably priced or available in needed quantities, consider a seed mix with some percentage of native seeds.
Use high-purity seed; take actions to prevent purchase of seed contaminated with noxious weeds.
Apply mitigation measures (such as timing restrictions, or specific method use) resulting from T&E determinations or consultations.
Follow herbicide product label directions for appropriate uses, restrictions etc.
Use herbicide-thickening agents (as appropriate), label instructions, and weather restrictions to reduce the drift hazard to non-target plants.
Do not apply pellet herbicides within three times (3X) the crown width (or dripline) of an off-right-of-way tree.
In the rare case of an herbicide spill, follow all herbicide spill requirements, including containment and clean-up procedures.
Visit rights-of-way after treatments to determine whether target vegetation was controlled and whether non-target plants were affected.

Suggested Seed mixture to reduce and prevent noxious weeds.

Approved and Suggested seeds	*Native	Reason for seeding
Mixes can be developed form the following seed species. Based on site and adaptation. Name Sheep fescue (Festuca ovina) N Smooth Brome I Canada bluegrass (Poa compressa) N Big Bluegrass N Intermediate Wheatgrass I Bluebunch Wheatgrass N Pubesent Wheatgrass N Sand dropseed N Needlegrass N Crested Wheatgrass I Perennial Ryegrass I Sickle-keeled lupine N And/or Lupinus bicolor N clovers I Alfalfa I	N-Native I=Introduced	Re-seeding and Fertilization after noxious weed treatments has been shown to be effective in preventing the re-establishment of noxious weeds and which reduces the need for future herbicide applications

1.3 List measures you will take to help promote low-growing plant communities. If promoting low-growing plants is not appropriate for this project, explain why.
See Handbook — for requirements and checkboxes.

N/A

1.4 Describe overall management scheme/schedule.
See Handbook - **Overall Management Scheme/Schedule**.

Initial entry – BPA in cooperation with the County Noxious Weed Control Board will provide resources to assist landowners in controlling noxious weeds on the listed lines. The Weed Board performs all activities of BPA at this time. Survey, and application.

When listed noxious weeds are present in the ROW, a cooperative effort to control noxious weeds is also proposed with landowners and the County Noxious Weed Control Board.

These listed noxious weeds are non-native species that need to be controlled to prevent any additional spread of these weeds and encroachment of habitat for native species on the right-of-way. These noxious weed species will be controlled using an Integrated Vegetation Management Approach (IVM) using a combination of manual, mechanical herbicides, and biological methods.

Noxious Weeds- The selection of methods and herbicides for noxious weed management will be based on their location and proximity to water resources. Treatment will be spot, localized and broadcast treatments (see descriptions). Non-selective treatments using ground and aerial broadcast treatment may be required in areas of high infestation of weeds on the ROW, and access roads and tower sites. Localized and Broadcast Granular treatments will also be considered.

2. IDENTIFY SURROUNDING LAND USE AND LANDOWNERS/MANAGERS

2.1 List the types of landowners and land uses along your corridor.

See Handbook — **Landowners/Managers/Uses** for requirements, and **List of Landowners/Managers/Uses** for a checkbox list.

Land Ownership and Uses within Project Corridor

The existing Bonneville corridor (the site for the proposed transmission line) crosses mostly private land (94% of lands crossed) as well as tribal, federal, and state lands in eastern Washington and Oregon bordering the Columbia River. The project corridor originates in Umatilla City, Oregon, crosses over Columbia River, travels west through Benton and Klickitat Counties in Washington, crosses back over the Columbia River, and ends in Sherman County, Oregon.

Land use within the corridor is primarily agriculture (irrigated cropland, dryland wheat farming, and grazing). Irrigated agricultural uses in the project corridor include poplar tree farms, orchards, and a variety of crops such as potatoes, corn, onions, carrots, and asparagus. Some crops change annually. There are approximately 1,409 acres of irrigated and non-irrigated cropland, 3,064 acres of grazing land, and 2 acres of substation/wildlife land use in the project corridor. There are no lands designated as prime farmland in the project corridor.

Table 3-1 summarizes the land uses and the corresponding Bonneville structure numbers within the project corridor. Residential and industrial/commercial land is also adjacent to the corridor (see discussion in the following section on Land Uses Adjacent to Project Corridor).

Land Uses Adjacent to Project Corridor

The residential areas adjacent to the transmission line corridor are rural and of low density, with single-family houses, barns, and accompanying outbuildings. The residences are concentrated in the cities of Plymouth (structure 4/1), Paterson (structures 16/1 to 16/5), and North Roosevelt and West Roosevelt (corridor miles 48 and 49, respectively) in Washington and Umatilla City (corridor mile 1) and Rufus (corridor mile 78) in Oregon. In addition, single residences, small groupings of houses, or small farm complexes are located in the vicinity of structures 6/1, 7/2, 10/4, 22/3, 29/3, 30/1, 68/1, 68/5, and 69/4. Paterson Elementary School is located in the vicinity of structure 16/3.

Table 3-1: Summary of Land Uses within the Project Corridor by County and Structure Number

County	Land Use	Structure Numbers
Umatilla	Substation	McNary Substation
Benton	Irrigated cropland	6/3 to 6/11 14/2 to 16/3 18/2 to 20/3 21/5 to 27/1 28/3 to 29/1
	Grazing land	16/3 to 18/2 11/2 to 14/1 20/3 to 21/5 27/1 to 28/3
Klickitat	Grazing land	32/4 to 33/1 33/3 to 54/1 54/4 to 60/3 61/3 to 76/2
	Orchards and vineyards	30/1 to 32/4
	Vineyards only	33/1 to 33/3 54/1 to 54/4
	Dryland grain farming	60/3 to 61/3
Sherman	Grazing land	77/4 to 78/1
	Dryland grain farming	76/2 to 77/4
	Irrigated cropland	78/1 to John Day Substation

The industrial/commercial facilities near the project corridor include Watts Brothers Frozen Foods near structure 14/2; Paterson Onion near structure 17/5; a gravel quarry at 22/3; Mercer Ranch in the vicinity of corridor miles 28 and 29; Stimson Lane Wine and Spirits, Columbia River Farms, Central Services, and Columbia Water and Power District in the area between structures 31/4 to 33/3; McBride's Cattle and Quarter Horse Ranch and Alder Ridge Vineyard near structure 38/5; and the Goldendale aluminum plant, near structure 73/5.

The following mitigation measures would apply to agricultural areas.

Prevent the spread of noxious weeds by cleaning seeds from equipment before entering cropland.
If using herbicides on grazing lands, comply with grazing restrictions as required per herbicide label.
For rights-of-way adjacent to agricultural fields, observe appropriate buffer zones necessary to ensure that no drift will affect crops.
If using herbicides near crops for consumption, comply with herbicide-free buffer zones, if any, as per label instructions.
For rights-of-way near organic farms, observe appropriate buffer zones, or provide for the owner to maintain the right-of-way, by way of a vegetation management agreement.
If reseeding, determine whether any of the adjacent properties are being, or will in the immediate future be, used for growing grass seed, especially high-purity strains.

If reseeding near grass seed fields, consult with the area seed certification and registration authority to determine whether buffer zones are necessary, appropriate grass mixtures allowed, and appropriate modes of seeding used

2.2 Describe method for notifying right-of-way landowners and requesting information (i.e., doorhanger, letter, phone call, e-mail, and/or meeting). Develop landowner mail list, if appropriate.

See Handbook — **Methods for Notification and Requesting Information** for requirements.
Scoping due to the McNary John Day EIS has been extensive. Letters, Public Meetings and a Draft EIS exists. The result of this public involvement indicates that Noxious Weed management is an important factor in this project.

2.3 List the specific land owner/landuse measures — determined from the handbook or through your consultations with the entities — that will be applied.

See handbook — **Requirements and Guidance for Various Landowners/Uses** for requirements and guidance, also **Residential/Commercial**, **Agricultural**, **Tribal Reservations**, **FS-managed lands**, **BLM – managed lands**, **Other federal lands**, **State/ Local Lands.**.

At the McNary Substation, the proposed line would cross a Corps managed wildlife refuge. The corridor also crosses property managed by the BLM (about 5 miles between corridor miles 36 through 42), and three properties managed by the Washington Department of Natural Resources (DNR) (about 1 mile at corridor mile 21, 1 mile at corridor mile 44, and 1 mile at corridor mile 67).

1. The Contractor will notify federal, state, or tribal entities in advance before applying herbicide on those lands.

2. Application on BLM lands is restricted to certain herbicides and conditions for the control of noxious weeds, use only those herbicides that are approved for both BLM use and Bonneville use.

Those herbicides presently approved for both Bonneville and BLM—Washington, Eastern Oregon*, Idaho, and Montana Districts—are as follows:

Bromacil	Glyphosate+ 2,4-D
Bromacil+Diuron	Hexazinone
Diuron	Imazapyr
Chlorsulfuron	Mefluidide
Clopyralid	Metsulfuron methyl
2,4-D	Picloram
Dicamba	Picloram+ 2,4-D
Dicamba + 2,4-D	Sulfomturon methyl
Diuron	Tebuthiuron
Glyphosate	Triclopyr

Eastern Oregon and Washington continues under herbicide injunction except for control of noxious weeds. This herbicide list would then apply only for the use on noxious weeds.

3. Work will be planned and implemented according to the recently finished Environmental Impact Statement for the Control of Vegetation on Bonneville Power facilities. This analysis document can be accessed via the BPA's web Site located at:

http://www.efw.bpa.gov/cgi-bin/PSA/Introduction

OTHER FEDERAL LANDS

Notify and cooperate with other federal agencies when scheduling site-specific right-of-way vegetation control activities on their lands.

2.4 Review any existing landowner agreements (e.g. tree/brush Permits or Agreements). List in table above any provisions that need to be followed and where they are located.
See handbook — **Landowner Agreements** for requirements.

Span		Landowner	Agreement ID number (?)
To	From		
15/5+ 349	16/2+ 845	Barbee Orchards McNary Ross	90199
18/2+	18/4+ 500	Stimpson Farms McNary Ross	980575
12/3+ 560	23/3+ 220	Sandpiper Farms	990212
27/4	30/3	Mercer Ranches	990212
30/3	30/4	Mercer Ranches	9800031
54/2- 400	54/3+ 500	Sundale Orchard	93225
31/4+ 500	32/5	Winemakers LLC	970391
30/4	31/3	Columbia Ridge Orchards LLC	980171

2.5 List any known casual informal use of the right-of-way by non-owner publics. List any constraints or measure's to take due to the informal use.
See handbook — **Casual Informal Use of Right-of-way** for requirements.

Farm Workers and Other Ag Workers

2.6 List other potentially affected people, agencies, or tribes (that are not landowners/managers) that need to be notified or coordinated with. Describe method of notification and coordination.

See handbook — **Other Potentially Affected Publics** for requirements and suggestions.

At corridor miles 32 and 35 the transmission line corridor crosses two tribal properties owned by members of the Yakima Nation. Over each property, between 500 and 1,100 feet of corridor crosses the land. Bonneville is considering moving the entire corridor off the tribal lands (see Corridor Miles 32 and 35 Alternatives, Chapter 2, for details). The Yakama Nation Reservation is located 25 miles north of the corridor.

The Portland District of the Corps has developed or is developing Columbia River Treaty Fishing Access 20 sites in all, 14 of which are located at Lake Umatilla. Nine sites have been developed at Lake Umatilla and five more are in development planning stage, with construction expected in 2002-2003.

All of these sites are off of the ROW.

3. IDENTIFY NATURAL RESOURCES

See Handbook — **Natural Resources**

3.1 List any water resources (streams, rivers, lakes, wetlands) that may be impacted by vegetation control activities. For each water body, describe the control methods and requirements or mitigation measures that will be used.

See Handbook — **Water Resources** for requirements for working near water resources including buffer zones.

A total of 15 streams, the Columbia River, and 146 dry washes cross the project corridor. Of the streams and river, 11 are considered fish bearing or potentially fish bearing and five are non-fish-bearing. Table 3-7 lists the streams crossed and the fish they may contain. Figure 3-2 shows the location of all streams and the river surveyed.

Table 3-7 summarizes the streams intersected by the project corridor.

Table 3-7: Streams Intersected by the Project Corridor

Streams	Location	Fish Species Utilization[1]
Columbia River	between towers 2/2 and 2/3	steelhead trout Middle Columbia River (T) Snake River basin (T) Upper Columbia River (E) chinook salmon Upper Columbia River Spring (E) Snake River Spring/Summer (T) Snake River Fall (T) sockeye salmon Snake River (E)
Washington Streams		
Fourmile Canyon	between towers 6/2 and 6/3	non-fish bearing stream
Unnamed Tributary to Columbia River	between towers 13/1 and 13/2	non-fish bearing stream
Glade Creek	between towers 21/4 and 21/5	potential coho salmon (of the lower Columbia River/southwest Washington ESU) (C) and resident fish use
Unnamed Tributary to Glade Creek	between towers 22/5 and 23/1	potential coho salmon (C) and resident fish use
Dead Canyon	between towers 27/2 and 27/3	resident fish use
Alder Creek	between towers 33/3 and 33/4	potential steelhead trout (of the Middle Columbia River ESU) (T) and resident fish use
Pine Creek	between towers 41/5 and 42/1	potential steelhead trout (T) and resident fish use
Wood Gulch	between towers 48/3 and 48/4	steelhead trout (T) and resident fish use
Old Lady Canyon	between towers 52/5 and 53/1	non-fish bearing stream
Chapman Creek	between towers 54/2 and 54/3	chinook salmon (of the Middle Columbia River Spring-Run ESU) (NW), coho salmon (C), steelhead trout (T) and resident fish use
Rock Creek	between towers 61/3 and 61/4	chinook salmon (NW), steelhead trout (T), and resident fish use
JU Canyon	between towers 66/3 and 66/4	potential resident fish use
Oregon Streams		
Scott Canyon	between towers 97/4 and 98/1	potential resident fish use
Gerking Canyon	between towers 78/1 and 79/1	non-fish bearing stream

Streams	Location	Fish Species Utilization[1]

[1] Species Status Codes appear in parenthesis (i.e. T= threatened, E= endangered, C= candidate; NW= not warranted).
Source: Carlson pers. comm.; Dugger pers. comm.; Pribyl pers. comm.; NMFS 2001; SteamNet 2001; USFWS 2001; WDFW 2001; Lautz 2000.

Most of the streams within the project area flow toward the Columbia River and perpendicular to the project corridor. Floodplains are limited because of the deeply incised canyons with narrow valley floors. Several of the stream channels within the survey corridor also exhibit extensive downcutting, which is likely caused by a combination of natural processes and adjacent land use activities that increase the frequency, duration, and magnitude of high flows (Lautz 2000).

Streams crossing the project corridor are generally low gradient (less than at 5% slope), and have straight to meandering channel patterns. Peak stream flows occur in the spring during snowmelt and spring rains.

Many of the streams surveyed are ephemeral and are completely dry during the summer months. Those streams crossing the corridor east of Alder Creek generally have a higher percentage of fine materials in the streambank and bed, derived from gravelly alluvial deposits mantled by eolian sands (SCS 1988).

Grassland and forbs are the dominant riparian vegetation along most of the streams intersected by the project corridor. These include Glade Creek, the unnamed tributary to Glade Creek, Dead Canyon, Wood Gulch, and Rock Creek. Alder Creek has riparian vegetation of mainly shrubs and seedlings, but only along that portion of the bank that is wetted during high flows. Wood Gulch has riparian vegetation that includes clusters of small trees, but these are not the dominant vegetation form.

Essential Fish Habitat

The proposed action could affect two fisheries protected by the Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Act (16 U.S.C. 1855(b)): which includes the chinook and coho salmon fisheries. All streams identified as either fish bearing or potentially fish bearing in the project area are included in designated EFH for these two fisheries. Chinook salmon that utilize the streams intersected by the project corridor are not currently federally listed, while coho salmon are a candidate for federal protection. However, steelhead trout are federally listed as a threatened species, and occur, or are likely to occur in the same streams along the project corridor as chinook or coho salmon. Since steelhead trout are a federally listed species and their distribution overlaps with both chinook and coho, the analysis of current conditions and potential impacts to this species also serve to describe all potential impacts to EFH.

Listed Species

Based on information provided by the U.S. Fish and Wildlife Service (USFWS 2001), the following species which are listed under the Endangered Species Act are known to occur in the Columbia River, as they migrate upstream through the project area (NMFS 2001):

- Snake River spring/summer and fall chinook salmon (threatened),
- Upper Columbia River spring chinook salmon (endangered),
- Lower Columbia River coho salmon (candidate),
- Snake River sockeye salmon (endangered),
- Middle Columbia River steelhead trout (threatened),
- Snake River basin steelhead trout (threatened), and
- Upper Columbia River steelhead trout (endangered).

Three species of anadromous salmonids are known to occur in the fish-bearing streams crossed by the project corridor: Chinook salmon, coho salmon, and steelhead trout.

Fall Chinook salmon use the lower reaches of Rock Creek and Chapman Creek. Juvenile coho salmon have also been documented in the lower reaches of Chapman Creek. Potential coho salmon habitat has been identified in the lower portion of Glade Creek. Coho in this area are believed to be hatchery strays, but some minor wild breeding may also exist.

Rock Creek summer steelhead trout are the only anadromous salmonids indigenous to streams along the project corridor. Streams in the project area used by steelhead for spawning and rearing include the lower and middle reaches of Rock Creek, lower Chapman Creek, and lower Wood Gulch. There is potential spawning and rearing habitat present in Pine Creek and Alder Creek (Lautz 2000).

Pine Creek has barrier culverts at SR 14, which have been identified by the Washington Department of Fish and Wildlife and scheduled for repair during the 2003-2005 biennium (Cierebiej pers. comm.). All of the streams identified as fish bearing along the project corridor may support resident trout populations as well.

Bull trout and coastal cutthroat trout may also be present in some of the fish-bearing streams crossed by the project corridor. Bull trout are federally listed as a threatened species, and coastal cutthroat trout are proposed for listing (USFWS 2001).

The Washington Department of Fish and Wildlife has conducted electrofishing surveys in the fish-bearing streams along the project corridor, but has not documented that either bull trout or coastal cutthroat trout are present. One cutthroat trout was documented in Luna Creek, a tributary to Rock Creek, but it is believed to be a hatchery planted resident (Dugger pers. comm.).

TREATMENTS:

SALMON T&E STREAMS

State and/or private lands within 400 ft. of a listed stream. Available: manual, mechanical, spot and localized herbicide, broadcast treatments, and biological treatments. No mechanical within 100 feet of streams except for tower sites and access roads.

Manual: Hand tools and chainsaws.

Mechanical: None within 100 feet of stream. Except for Access Roads and Tower sites.

Herbicide: Herbicide treatment will occur using the buffers established in the Vegetation EIS as follows:

Table III-1: Buffer Widths to Minimize Impacts on Non-target Resources

Herbicide & Adjuvant Ecological Toxicities and Characteristics	Buffer Width from Habitat Source per Application Method (i.e., stream, wetland, or sensitive habitat)				
	Spot	Localized	Broadcast[1]	Aerial[2]	Mixing, Loading, Cleaning
Practically Non-Toxic to Slightly Toxic	Up to Edge[3,4]	Up to Edge[3,4]	10.7m[3,4] (35 ft.)	30.5m[4] (100 ft.)	30.5m[5] (100 ft.)
Moderately Toxic, or if Label Advisory for Ground/ Surface Water	7.6m[3,4] (25 ft.)	10.7m[3,4] (35 ft.)	30.5m[3,4] (100 ft.)	76.2m[4] (250 ft.)	76.2m[5] (250 ft.)
Highly Toxic to Very Highly Toxic	10.7 m[3,4] (35 ft.)	30.5m[3,4] (100 ft.)	Noxious weed control only. Buffer as per local ordinance	Noxious weed control only. Buffer as per local ordinance	76.2m[5] (250 ft.)

[1] Using ultra low volume (ULV) nozzles with orifice size and spray pressure set to produce droplets at a minimum of 150 microns, boom or nozzle heights at the lowest possible height, and cross-wind speed of less than 10 mph.[3]

[2] Using ULV nozzles with orifice size and spray pressure set to produce droplets at a minimum of 150 microns, minimizing air shear relative to nozzle angle and aircraft speed, boom length at 70% or less of wingspan/rotor, swath adjustment not to exceed 60 feet based on maximum cross-wind speed of less than 10 mph, minimum safety clearance application height, and herbicide tank mixture dynamic surface tension is less than 50 dynes/cm.[3]

[3] Goodrich-Mahoney, J.W., Determination of the Effectiveness of Herbicide Buffer Zones in Protecting Water Quality, Electric Power Research Institute, Report No. TR-113160, September 1999

[4] Calculated from: A Summary of Ground Application Studies, Spray Drift Task Force, 1997

[5] BPA Best Management Practice

Non-Fish-Bearing Streams

Several non-fish-bearing streams that drain into the Columbia River exist within the project corridor (see Figure 3-2). These include the following streams on the Washington side, from east to west: Fourmile Canyon, the unnamed tributary to the Columbia River, Old Lady Canyon, and 2 unnamed tributaries to the Columbia River. On the Oregon side, Gerking Canyon is the only non-fish-bearing stream along the project corridor; it is located near the town of Rufus.

Non-Fish-Bearing Dry Washes

There are 146 non-fish-bearing dry washes that also cross the project corridor. Dry washes are defined as channels lacking any semblance of a riparian zone and are intermittent, primarily providing seasonal drainage off of hills (WDFW 2000). Most of the dry washes are located between Alder Creek and Wood Creek on the steep south-facing slopes of the Columbia River gorge, and drain into the Columbia River.

OTHER STREAMS:

Land 100 ft of a stream, water and wetlands. Available: all manual, spot and localized herbicide, and biological treatments. No mechanical treatments within 50 feet of streams or wetlands.

Manual: Hand tools and chainsaws.

Mechanical: None, within 50 feet of streams or wetlands. Only on Access Roads and Tower sites.

Herbicide: Only practically non-toxic formulations and slightly toxic (to aquatic species) formulations of glyphosate (such as Rodeo®), dicamba (Trooper/Vanquish), Telar, Escort, clopyralid, picloram, and 2-4-d may be prescribed for wick, and spot-foliar treatments (localized). Ground Broadcast treatments can be completed with the appropriate buffers on noxious weeds, access roads and tower sites.

Waterbody	T&E?	Method	Herbicide	Application Technique	Buffer
Essential Fish Habitat	yes	Manual Biological Herbicide mechanical	2,4-d dicamba clopyralid chlorsulfuron metsulfuron picloram	Spot, localized Ground Broadcast, and Aerial Broadcast	See specs
Non-Fish-Bearing Streams	no	Manual Biological Herbicide mechanical	2,4-d dicamba clopyralid chlorsulfuron metsulfuron picloram	Spot, localized Ground Broadcast, and Aerial Broadcast	See specs
Non-Fish-Bearing Dry Washes	no	Manual Biological Herbicide mechanical	2,4-d dicamba clopyralid chlorsulfuron metsulfuron picloram	Spot, localized Ground Broadcast, and Aerial Broadcast	See specs

Buffers:

- Non-toxic and slightly toxic formulations of Glyphosate, Escort, Telar, and Garlon 3A may be used to the waters edge when using spot and localized treatments.
- Garlon 4* may be used when more than 35 feet from streams and seasonally dry wetlands. When not within a T & E salmon stream.

- The buffers for dicamba, 2,4-d, clopyralid, and Picloram are 25 feet for spot treatment and 35 feet for localized treatments, 100 feet for ground broadcast, and 250 for aerial applications.
- Ground Broadcast treatment buffers will be 35 feet for approved formulations of Glyphosate, Escort, Telar, and Garlon 3A.

WATER RESOURCES

The following mitigation measures would be applied for water resources.

In riparian areas, use selective control methods and take care not to affect non-target vegetation.
In riparian areas, leave vegetation intact, where possible.
For all methods using machinery or vehicles (i.e. chainsaws, trucks, graders) keep the equipment in good operating condition to eliminate oil or fuel spills.
Do not wash equipment or vehicles at a stream.
Follow herbicide product label directions for appropriate uses, restrictions etc.
Use herbicide thickening agents (as appropriate), label instructions, and weather restrictions to reduce the drift hazard to water resources.
Ensure that there is no danger of granular herbicides being washed from the areas of application.
Notify inspector and the State of any amount of herbicide spill in or near water.
Always use siphon prevention devices/methods when filling herbicide tanks from domestic water supplies.
Consider climate, geology and soil types in selecting the herbicide with lowest relative risk of migrating to water resources.
Protect surface water and groundwater by observing all riparian buffer widths and herbicide-free zone.
Before herbicide application, thoroughly review the right-of-way to identify and mark, if necessary, the buffer requirements.
Monitor to determine whether desired results for water resources were achieved or whether follow-up mitigation measures are necessary (e.g., erosion control measures).

3.2 If planning to use herbicides, list locations of any known irrigation source, wells, or springs (landowners maybe able to provide this info if requested).

See Handbook — **Herbicide Use Near Irrigation, Wells or Springs** for buffers and herbicide restrictions.

None Known

Span	Well/irrigation/or/spring	Herbicide	Buffer	Other notes/measures
	When present	Low toxicit, Garlon 3A, Glyphosate, Escort Clopyrali,Garlon 4	50 ft	

3.3 List below the areas that have Threatened or Endangered Plant or Animal Species and the name of the species, and any special measures that need to be taken due to their presence. Attach any BAs, T&E maps, or letters from US Fish and Wildlife.

See Handbook — **T&E Plant or Animal Species** for requirements and determining presence.

Threatened, Endangered, and Other Sensitive Species

The U.S. Fish and Wildlife Service have identified one federally listed threatened species (Utes ladies' tresses) and one candidate plant species (northern wormwood) as having potential habitat present within the project corridor. Neither species was found during field surveys conducted in July 2001.

Washington State Sensitive Species

The Washington Natural Heritage Program (WNHP) has identified potential habitat in or adjacent to the project corridor for two state sensitive plant species (Pauper's milk vetch and Snake River cryptantha) between structures 47/1 and 48/3. Both species occur in dry, open, flat, or sloping areas in stable or stony soils, where the overall cover of vegetation is relatively low. Pauper's milk vetch is also associated with big sagebrush-blue bunch wheat grass shrub-steppe communities.

Neither plant species was found during field surveys conducted in July 2001. However, the field surveys verified that favorable habitat for both species is present in the WNHP-identified areas, between structures 47/1 and 48/2.

Potential habitat for a third state sensitive species, Piper's daisy, has also been identified by WNHP approximately 2 miles north of the project corridor, at structures 33/4 to 35/3. The field surveys of the project corridor found no Piper's daisy individuals or populations.

Federally Listed Species

The U.S. Fish and Wildlife Service has identified the bald eagle as the only listed wildlife species known to occur in the project vicinity. A winter foraging and roosting area is located approximately 2,300 feet south of the corridor on an island in the Columbia River near the town of Paterson. During field surveys in February 2001 and October 2001, bald eagles were detected in the vicinity of Rock Creek and near McNary Dam. However, no bald eagle nesting or roosting habitat occurs in the project corridor based on Washington Department of Fish and Wildlife Priority Habitats Species data and results of field surveys.

The U.S. Fish and Wildlife Service have also identified the spotted frog and the Mardon skipper butterfly as candidate wildlife species potentially occurring in the project vicinity. Potential habitat for spotted frogs occurs in wetlands and stream margins along the corridor. Habitat for the Mardon skipper consists of native prairie vegetation such as Idaho fescue and blue violet. No habitat was found within the project corridor for Mardon Skipper.

MITIGATION: WETLANDS

Due to the possibility of the presence of listed species in seasonal wetland areas, no herbicides will be used until further review is completed. Once this review has been done which show that these species do not exist on the Right-of-way, treatments can proceed according the BPA EIS and herbicide label. These future treatments will be limited to seasonally dry wetlands were no surface water is present. At no time will herbicides be applied to surface water.

Sensitive-Status Species

Habitat for 29 different state-listed species occurs within or near the corridor. Habitat for these species varies from grazed and nongrazed shrub-steppe, agricultural lands, grasslands, cliffs, and riparian areas (see Table 3-17).

Table 3-17: Sensitive Wildlife Species Potentially Occurring in the Project Corridor and Project Vicinity

Common Name	Habitat Type[1]	Sightings or Recordings in Project Vicinity	Washington State Rank	Oregon State Rank	Federal Status
Western burrowing owl	F, B	X	Candidate	State critical	Species of concern
Bald eagle	F	X	Threatened	Threatened	Threatened
Golden eagle	F, B	X	Candidate	None	None
Ferruginous hawk	F, B	X	Threatened	State critical	Species of concern
Prairie falcon	F, B	X	Monitor	None	None
Merlin	F, B		Candidate	None	None
Northern goshawk	F	X	Candidate	State critical	None
Peregrine falcon	F		Endangered	Endangered	Species of concern
Western meadowlark	F, B		None	State critical	None
Loggerhead shrike	F, B		Candidate	Sensitive	Species of concern
American white pelican	F	X	Endangered	State vulnerable	None
Harlequin duck	F		Species of concern	Status unclear	Species of concern
Long-billed curlew	F		None	State vulnerable	None
Sandhill crane	F		Endangered	Sensitive	None
Sage thrasher	F, B		Candidate	Sensitive	None
Oregon vesper sparrow	F, B		Candidate	State Critical	Species of concern
Sage sparrow	F, B		Candidate	State critical	None
Streaked horned lark	F, B		Candidate	Sensitive	Species of concern
Black-tailed jackrabbit	F, B	X	Priority	None	None

Common Name	Habitat Type[1]	Sightings or Recordings in Project Vicinity	Washington State Rank	Oregon State Rank	Federal Status
Pygmy rabbit	F, B		Endangered	State vulnerable	Possible emergency listing
Western pocket gopher	F, B		Candidate	None	Species of concern
Woodhouse's toad	F, B	X	None	Sensitive	None
Northern leopard frog	F, B		Endangered	Sensitive	None
Oregon spotted frog	F, B		Endangered	Sensitive	Candidate
Painted turtle	F, B		None	Sensitive	None
Western rattlesnake	F, B		None	Sensitive	None
Striped whip snake	F, B		Candidate	None	None
Sagebrush lizard	F, B		None	Sensitive	Species of concern
Mardon skipper	None		Endangered	None	Candidate

[1] F: foraging; B: breeding
[2] Observed during site surveys or recorded on Priority Habitat Species maps in the project vicinity.

Waterfowl

By definition, waterfowl include ducks, geese, and swans (order Anseriformes).

The Columbia River basin is a wintering and breeding area for waterfowl. Waterfowl rest during migration and forage in wetlands, agricultural fields, and other open water bodies. Shallow wetlands are located near streams crossed by the project corridor. Waterfowl also feed in agricultural fields near Paterson (Haines pers. comm.). Open water habitat occurs within the project corridor at the major stream crossings shown on Figure 3-4.

However, the most extensive open water habitat occurs in the vicinity of the existing transmission lines at Rock Creek (corridor mile 61) and the Columbia River crossings at McNary and John Day Dams. Waterfowl use these areas for feeding and loafing, but to a lesser degree than at the Umatilla National Wildlife Refuge and agricultural fields.

Much of the shoreline of the Columbia River in the project vicinity has been altered by construction of roads and other developments in the riparian area. However, mainstem dams and other impoundments along the Columbia River have created some wetlands that are attractive to waterfowl, notably those at the Umatilla National Wildlife Refuge located 0.1 to 4 miles south of the project corridor from corridor mile 11 to 28. This refuge is a migratory stopover for geese,

mallards, green-winged teal, northern pintail, cinnamon teal, northern shoveler, gadwall, American widgeon, bufflehead, and common golden-eye. The harlequin duck, a federal species of concern, is a rare winter visitor.

Raptors

Raptors (such as hawks, eagles, falcons, and owls) use grasslands, cliffs, and agricultural lands. They forage along the edges of fencerows, over grassy areas, across ruderal areas (lands used for agriculture or grazing), and near open water. Such habitats are relatively common in the project vicinity. Sensitive-status raptors known to occur in the project vicinity include bald eagle, western burrowing owl, golden eagle, goshawk, prairie falcon, osprey, peregrine falcons, and merlin.

The only raptors known to nest within 0.25 mile of the project corridor are red-tail hawk, prairie falcon and the burrowing owl. Red-tail hawks, a state-monitor species in Washington, nest in large trees, transmission line structures, and rocky cliffs (Bechard et al. 1990). Red-tail hawks are known to have nested in transmission line towers at corridor miles 21, 35 and 41.

Prairie falcons, a state-monitor species, nest on rocky outcrops (and transmission towers) and forage on small mammals in shrub-steppe habitats. Prairie falcons were found nesting on cliffs adjacent to the project corridor at corridor miles 55 and 66.

Burrowing owls inhabit the shrub-steppe lands throughout eastern Washington. Factors important to good burrowing owl habitat include openness, short vegetation and burrow availability (Plumpton and Lutz 1993). Burrowing owls are tolerant of humans and occur in agricultural areas, provided natural areas with burrows are available (WDFW 2000). Burrowing owls depend on burrows created by ground-dwelling mammals, such as ground squirrels, badgers and marmots. Burrowing owls nest in the utility line corridor near corridor mile 19.

Golden eagles, a state-monitor species, require large open areas for feeding. Nests are usually located on cliffs or large trees (Anderson and Bruce 1980), but can also be found on transmission lines (Steenhoff 1993). Human disturbance is thought to be a major factor in golden eagle nest failure (Rodrick 1991). A golden eagle nest site, discovered in 1995, was located 0.6 mile from the corridor in the vicinity of the Goldendale aluminum plant. No nesting activity was detected during surveys conducted in February 2001.

Ferruginous hawks, a federal species of concern, are also associated with shrub-steppe in eastern Washington and Oregon. Their distribution and abundance are generally limited by the availability of nest sites and prey abundance (WDFW 1993). Most nest sites occur on cliffs, although artificial structures such as power line towers are also used for nesting and perching (Steenhoff 1993). The ferruginous hawk is known to avoid areas with agricultural machinery, and areas with over 50% of the land in cultivation (Gilmer and Stewart 1983, Bechard et al.1990). The nearest known ferruginous hawk nest is located approximately 1 mile north of the project corridor at mile 13.

Peregrine falcons nest on cliffs near abundant sources of prey (Ratcliffe 1993). During helicopter surveys conducted for another project, a pair of peregrine falcons was detected in the vicinity of Rock Creek (Jones & Stokes 1995). No nests were detected in the vicinity of Rock Creek (corridor mile 61) during nest surveys conducted in spring 2001 as a part of the McNary-John Day study. During the nonbreeding season, peregrine falcons generally follow the movements of shorebirds and waterfowl and have been reported to move through eastern Washington from late November

through January (Ennor 1991). Likely peregrine falcon foraging habitat includes waterfowl areas between the McNary Dam and Paterson, open water near Rock Creek, and the two Columbia River crossings.

A juvenile northern goshawk was detected by Washington Department of Fish and Wildlife biologists in the vicinity of the tree farm just west of Glade Creek near corridor mile 21 (PHS 2001). This tree farm is harvested every 6 to 10 years and would not be expected to provide nesting habitat for northern goshawk (Bevis pers. comm.). The northern goshawk is primarily found in forested areas of Washington, but could migrate through the project vicinity.

Merlin, a state candidate species, is an occasional winter visitor at the Umatilla National Wildlife Refuge. Merlins nest in trees near open grasslands, forest edges, cliffs or lakeshores (Bechert and Ball 1983, Trimble 1975). They also feed on small mammals, reptiles, birds, and insects. Scattered groves of trees provide nest structure in grassland habitats devoid of cliffs.

Shorebirds and Other Water Birds

Shorebirds are long-billed, flocking, highly migratory birds of the order Charadriiformes that inhabit shore and some upland habitats. Other water birds include loons (order Gaviiformes), grebes (order Podicipediformes), pelicans (order Pelecaniformes), herons (order Ciconiiformes); cranes, rails, and coots (order Gruiformes). Species of all of these groups of birds occur in the Columbia River basin.

Few wetlands are located within the project corridor, however main stem dams and other impoundments along the Columbia River in the project vicinity have created wetlands attractive to shorebirds for foraging and breeding. The only sensitive-status shorebird known to occur in the project vicinity is the long-billed curlew. Long-billed curlew nest in grasslands and spend the winter near swamps and river systems. Long-billed curlews were detected at Glade Creek by Washington Department of Fish and Wildlife biologists (PHS 2001) and are common visitors to the Umatilla National Wildlife Refuge (see Chapter 5 References for website address).

American white pelicans, a state-listed bird, are known to forage on islands located about 3 miles south of the project corridor. Pelicans are commonly seen in the wildlife refuge in summer through fall, and were observed during the spring 2001 surveys flying east of Paterson.

The sand hill crane is also an occasional spring and fall visitor to the Umatilla National Wildlife Refuge. Other common shorebirds known to frequent the refuge include the greater and lesser yellowlegs, western sandpipers, and killdeer.

Shorebirds may also use habitats along the corridor near Chapman Creek, Rock Creek, Alder Creek, Glade Creek, Wood Gulch, Pine Creek, JU Canyon, and wetlands near the Goldendale aluminum plant at the west end of the corridor. Killdeer were observed at Pine Creek during the spring 2001 surveys.

Passerines

Passerines include birds commonly referred to as perching birds or songbirds, which are the largest wildlife group inhabiting the project corridor and vicinity. This group includes state priority

species, the sage thrasher, sage sparrow, and loggerhead shrike. These birds are associated with habitats containing dense sagebrush, which occurs only in a few areas along the project corridor.

The project corridor also contains potentially suitable habitat for the streaked horned lark and western meadowlark. Other more common passerines expected to occur along the corridor include song sparrows, brown-headed cowbirds, white-crowned sparrows, and Brewer's blackbirds. These species are adapted to the open cropland, grasslands, grazed shrub-steppe, and shrub-steppe habitats that occur along the corridor. Passerines likely use the riparian shrub and small-tree habitats along Glade Creek, Alder Creek, Pine Creek, Chapman Creek, JU Canyon, Rock Creek, and Wood Gulch.

Mammals

Mule deer occur across a wide range of vegetation types, from scrublands to desert scrub (Wallmo 1981). However, most deer activity would occur in riparian areas where shrubs and topography provide food and hiding cover, respectively (Hamlin and Mackie 1989). Mule deer fawning areas consists of low shrubs and small trees on benches or slopes within 600 feet of water (Thomas 1976). Mule deer are known to occur in the Rock Creek watershed (PHS 2001) and in the Umatilla National Wildlife Refuge (Caballero pers. comm.). The primary mule deer concentration area is more than 2 miles north of the crossing location at Rock Creek (PHS 2001).

Other mammals known or expected to occur in the project corridor and vicinity include the black-tailed jackrabbit and white-tailed jackrabbit. Habitat occurs in the corridor for sensitive-status pygmy rabbit, western pocket gopher, Washington ground squirrel, and sagebrush vole.

During the spring 2001 surveys, four areas with burrows were identified in shrub-steppe habitat within the project corridor. Mammals known to use burrows include the pygmy rabbit, Washington pocket gopher, and Columbian and Townsend's ground squirrel. The pygmy rabbit is a species currently under review for federal listing, and is the only rabbit known to excavate his or her own burrows. A historical detection of pygmy rabbit occurred about 0.5 mile south of the corridor near corridor mile 62 (PHS 2001). Pygmy rabbits are associated with deep soils and feed on sagebrush (Nowak 1983).

The Western pocket gopher is an herbivore that consumes grasses and forbs and burrows in friable soil to nest (Ingles 1965). The Townsend's ground squirrel is common in sagebrush, rather rare in bitterbrush, and may invade croplands of alfalfa and grain in spring and winter. Like the pygmy rabbit and western pocket gopher, it excavates long burrows in sandy friable soil in shrub habitat (Whitaker 1980). The Washington ground squirrel is absent from the north side of the Columbia River.

Other common mammals expected to occur in the project corridor and vicinity includes coyote, fox, badger, cottontail, skunk, and mice. Cougar may also occasionally move through the corridor to feed on deer, particularly in winter. Most wildlife activity likely occurs on uncultivated lands, although waterfowl, mice, deer, and voles are also known to feed in the irrigated areas.

Amphibians

Habitat for amphibians occurs in wetlands and riparian zones of the streams along the project corridor and vicinity. Woodhouse's toad is a sensitive status amphibian species known to occur in

the project vicinity near Rock and Alder Creeks. Great Basin spade foot was detected in the western portion of the corridor (Klickitat County) by Jones & Stokes biologists in 1995 and is to be expected near wetlands and springs. Northern leopard frogs were historically reported south of the project corridor, but recent surveys have failed to detect them (McAllister 1999). The nearest known Oregon spotted frog population is 32 miles northwest at Conboy National Wildlife Refuge.

Reptiles

There have not been any reports of sensitive-status reptiles in the project vicinity; however, suitable habitat is present for the following species.

The painted turtle is a state-sensitive in Oregon, but is not considered state-sensitive in Washington. Painted turtles have not reported in the project area, but could occur based on habitat and historic range. This species occurs within or near open water wetlands or slow-moving river bodies or slack-water areas of rivers. Such habitat occurs at the Corps Wildlife Natural Area. Because they lay their eggs in upland sites as far as several hundred feet from bodies of water (Nussbaum et al. 1982), they are susceptible to land use activities that cause disruption of their egg sites.

The western rattlesnake is not known to occur in the project area, but may occur within the project area based on habitat and historic range. This species occurs in many areas of eastern Washington and inhabits rocky slopes, sagebrush flats, grasslands, and juniper woodlands, all of which are prevalent in the project area. They are most common near den areas, which are normally south facing rocky slopes that are not shaded by vegetation.

The striped whip snake has not been reported in the project area, but it may occur based on habitat and historic range. The striped whip snake occurs in grasslands, sagebrush flats and dry rocky canyons. Habitat for the striped whip snake occurs in grasslands, sagebrush flats or dry rocky canyons, habitats that are prevalent throughout the project area.

The sagebrush lizard has not been reported in the project area, but may occur based on habitat and historic range. Sagebrush lizards are commonly found in sagebrush and juniper forests of the Columbia River basin, with detections occurring in Klickitat and Benton Counties.

Other species of snakes and lizards not classified as sensitive are expected to inhabit grassland, rocky outcrops, and shrub-steppe along the project corridor.

Habitat Types and Special Habitat Types

The five habitats present within or near the project corridor and project vicinity include ruderal areas (made up of grazed shrub-steppe, agricultural lands, and grasslands), cliffs, shrub-dominated shrub-steppe, stream riparian zones, and tree stands. These are described below.

Ruderal

Ruderal lands (those areas utilized for agriculture, grazing, grasslands, and irrigated cropland), include vegetation communities that are fairly typical of the Columbia River basin. The eastern half of the corridor, from corridor mile 1 to 48, passes through flat, mostly cultivated croplands and

grasslands interspersed with native grazed shrub-steppe. Center pivot irrigation circles near Paterson have been planted with corn to attract waterfowl and are designated hunting areas.

Rock Outcrops/Cliffs

Outcrops and cliffs are primarily located outside the corridor along and near the western half of the project west of the town of Roosevelt. Rock outcrops and cliffs provide habitat for hawks and other birds to nest and perch. The outcrops and cliffs also provide roosting habitat for bats and habitat for mammals and reptiles.
Prairie falcons, ferruginous hawks, and golden eagles are known to nest on rock outcrops in the general project vicinity. Red-tailed hawks and turkey vultures were observed near cliffs and rock outcrops during spring 2001 field surveys. Cliff areas (shown in Figure 3-4) are located within 0.25 mile of the project corridor at corridor miles 3, 40, 55, 56, 57, 72, and 73**.**

Shrub-Steppe

Prior to European settlement, shrub-steppe was the dominant vegetation type in the project vicinity. Historical conversion of land to agriculture has resulted in fragmentation of the shrub-steppe communities. Today, only isolated remnants of quality shrub-steppe exist along the project corridor and project vicinity (see Figure 3-4).

Shrub-steppe (even when fragmented) provides essential habitat for many native and sensitive-status birds such as sage sparrow, vesper sparrow, sage thrasher, and loggerhead shrike, as well as raptors. Four priority species inhabit shrub-steppe in the project vicinity—the ferruginous hawk, golden eagle, burrowing owl, and prairie falcon, and other species rely on this habitat seasonally, particularly during winter.

Riparian

Most stream valleys along the project corridor are dry draws. However, shrubs or small trees occur in the riparian zones of Glade Creek, Alder Creek, Pine Creek, Wood Gulch, Chapman Creek, and JU Canyon (see Figure 3-4). Passerines, deer, and waterfowl are known to use these riparian habitats. Long-billed curlew, great blue heron, coyote, and deer are known to forage in the Glade Creek riparian area. Eagles and other raptors occasionally forage in the waterfowl use areas near the Columbia River. No hawk, bald eagle, or great blue heron nesting habitat occurs in riparian areas within the project corridor.

Benton County has identified five streams within the project vicinity as Conservation Reserve Areas. Conservation Areas are areas recognized in the Benton County Comprehensive Plan as areas of high wildlife value. The county requires that a "Site Analysis" be prepared for regulated developments or activities in Fish and Wildlife Conservation areas shown on Map 13 of the Benton County Comprehensive Plan. The Conservation Reserve Area includes the Columbia River, Fourmile Canyon, Bing Canyon, Glade Creek, and Dead Canyon. Of these five riparian corridors, only Glade Creek supports shrubs or small trees within the immediate riparian zone.

Tree Stands

Trees are scarce along the project corridor, and in the project vicinity, except for a few scattered stands, cottonwood tree plantations or individual trees associated with homes or farms. Black

locust and tree-of-heaven are the most common species at these scattered sites. These upland trees provide habitat for nesting and roosting birds and bats and provide forage for browsing mule deer.

Four areas of woodland have been identified within the project corridor (Figure 3-4).

§ A cottonwood plantation near Glade Creek (corridor mile 21.5) that is harvested every 10 years, and provides short-term breeding and cover habitat for passerines or hawks.

§ A grove of tree-of-heaven and black locust provides habitat for tree-nesting birds located at structure 69/4 (near the west end of the line).

§ A small woodland near corridor mile 55 consisting of 50-foot-tall acacia and locust trees that provides nesting habitat for passerines.

§ A stand of cottonwood trees, located north of the McNary Substation in the Corps' wildlife viewing area.

§ A row of poplars, perpendicular to the project corridor, just east of Chapman Creek (corridor mile 54).

Span		**T&E Species**	**Method/mitigation or avoidance measures**
To	**From**		
47/1	48/3	Pauper's milkvetch (H) Snake River Cryptantha (H) Bald Eagle Spotted Frog	Habitat Roosting and Foraging Habitat 2300 feet south of Patterson Wetlands and stream margins of area. No Sightings

3.4 List any other measures to be taken for enhancing wildlife habitat or protecting species.
See Handbook — **Protecting Other Species** for requirements.

Span		**Species**	**Measures: See Previous**
To	**From**		
Fill-in		Waterfowl	Columbia River Crossings and Rock Creek Mile 61
		Red Tail hawk	Nest in towers mile 21,35, and 41
		Prairie Falcon	Cliff next to mile 55 and 66
		Burrowing owl	Nesting in the ROW corridor mile 19
		Peregrine Falcon	Forage in the winter months Mcnary to Paterson area and rock creek area.
		Shorebirds	Use riparian areas along ROW

MITIGATIONS:
Threatened, Endangered or Other Sensitive Species:
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§ Between January 1 and July 30, avoid using helicopters within 0.25 mile of cliffs identified as Priority Habitat by the Washington Department of Fish and Wildlife (use ground-based equipment near cliffs.

§ **Mitigation for burrowing owls.** , If Possible, avoid disturbance within 160 feet of occupied burrows during the non-breeding season of September 1 through January 31 or within 250 feet during the breeding season of February 1 through August 31.

§ **Mitigation for peregrine falcon.** , If possible avoid disturbance within 0.25 mile of any active nests during the breeding season (March through June).

§ **Mitigation for prairie falcon.** , If Possible, avoid construction activities between February 15 and July 15 within 0.25 mile of active nests.

§ **Mitigation for red-tail hawk.** , If Possible, avoid construction activities within 320 feet between February 15 and July 15.

§ **Mitigation for other raptors.** Consult with Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife.
Aquatic Organisms: The listed herbicides except Picloram and Triclopyr TEA (Garlon 4) are practically non-toxic or slightly toxic to aquatic organisms. The moderately toxic Picloram and the highly toxic Triclopyr BEE will be applied according to prescribed buffers. The other products will not be applied directly to water.

Wildlife Species: The listed herbicides are practically non-toxic or slightly toxic to birds and mammals. When applied according to label there would be no effect on wildlife species. Do not use aerial broadcast methods in sensitive areas.

3.5 List any visually sensitive areas and the measures to be taken at these areas.
See Handbook — **Visual Sensitive Areas** for requirements.

Sensitive Viewpoints

Sensitive viewpoints include residences in Umatilla City and Rufus, Oregon (at the east and west ends of the corridor, respectively) and in Plymouth, Paterson, and Roosevelt, Washington. There are also small groupings of houses and small farm complexes scattered along the corridor outside of these settlements.

Other sensitive viewpoints include segments of SR 14 where the project corridor is in close proximity to the highway (particularly corridor miles 1 through 16 and where the corridor crosses SR 14 at corridor miles 13 and 70) and from various recreational sites in relatively close proximity to the project corridor.

For this segment, viewers include travelers on SR 14, agricultural workers and industrial workers, recreationalist at Crow Butte State Park, tribal members at the Crow Butte CRTFAS, and residents near structures 22/3, 29/3, and 30/1.

Weed management should not have an affect on visual resources unless large areas of land are treated.

3.6 List areas with cultural resources and the measures to be taken in those areas.
See Handbook – **Cultural Resources** for requirements.

The 79-mile portion of project corridor that lies within Oregon and Washington State is within the Mid-Columbia Study Unit. The Mid-Columbia Study Unit is one of fourteen study units designated by the Office of Archaeology and Historic Preservation (OAHP) to identify, evaluate, and protect cultural resources throughout Washington State and the region (Galm et al. 1987).

Archival records indicate ten known archaeological sites along the corridor. Near the corridor, there are at least 70 additional archaeological sites recorded within a 1-mile radius of the proposed transmission line. Of these 70 sites, 26 (37%) are underwater behind the John Day Dam.

Historical data demonstrate continuous use of the Mid-Columbia Study Unit from the time of the first Euro-American exploration through the arrival of a trans-continental railroad, a state highway system, and construction of two federal dams.

No impacts to cultural resources are anticipated during the continuing operation and maintenance of the proposed McNary-John Day Transmission Line. The vegetation within the right-of-way is not dense, so it is not expected that any ground disturbing mechanical type vegetation clearing would be required. If any maintenance activities need to occur outside of the tower locations or off the access roads, a review of the sensitive areas would be required in order to avoid impacting resources.

3.7 List areas with steep slopes or potential erosion areas and the measure and methods to be applied in those areas.
See Handbook – **Steep/Unstable Slopes** for requirements.

Span		Describe sensitivity	Method/mitigation measures
To	From		
		Throughout project area.	Do not use ground (soil)-disturbing mechanical equipment to clear on slopes over 20%. Avoid using granular or total vegetation management (non-selective) herbicides on slopes over 10%. Do not use herbicides that have surface water advisories. Perform mechanical clearing when the ground is dry enough to sustain heavy equipment.

SOILS

§ The following mitigation measures would be observed to reduce impacts on soils:

§ Do not use ground-disturbing mechanical equipment to clear on slopes over 20%.

§ Use mechanical clearing or heavy equipment when the ground is sufficiently dry to sustain the equipment and excessive rutting will not occur.

§ Re-seed or re-plant seedlings on slopes with potential erosion problems and/or take other erosion control measures as necessary.

3.8 List areas of spanned canyons and the type of cutting needed.
See Handbook – **Spanned Canyons** for requirements.

N/A

4. DETERMINE VEGETATION CONTROL METHODS

4.1 List Methods that will be used in areas not previously addressed in steps above.
See Handbook — **Manual, Mechanical, Biological, and Herbicides** for requirements for each of the methods.

Manual: Hand tools.

Mechanical: None, within 50 feet of streams or wetlands.

Biological: Approved biological agents will be distributed as appropriate and based on availability

Herbicide: glyphosate, dicamba (Trooper/Vanquish), Telar, Escort, clopyralid, picloram, and 2-4-d may be prescribed for wick, and spot-foliar treatments (localized). Broadcast treatment can be completed using ground broadcast methods or aerial application with the appropriate buffers.

APPLICATION METHOD DESCRIPTIONS

Spot Herbicide Application

A spot application treats individual plant(s) with the least amount of chemicals possible. The methods include, but are not limited, to the following:

Wick and carpet roller applications.

The herbicide is wiped on the plant(s) (noxious weeds) using hand held or equipment mounted rope wicks, sponges, fiber covered wipers, or carpet wiper designs. This application devise uses saturated ropes, wick or sponges that are used to apply the herbicide selectively on the plant. This method is effective where drift or sensitive water sources are a concern.

Localized Herbicide Application.

"Localized" herbicide application is the treatment of individual or small groupings of plants. This application method is normally used only in areas of low-to-medium target-plant density.

The application methods for this application group include, but are not limited to, the following:

Low-volume foliar treatment:

Herbicides are applied with the use of a backpack sprayer, all terrain vehicle (ATV), or tractor with a spray gun. Herbicide is applied to the foliage of individual or clumps of plants during the growing season, just enough to wet them lightly. A relatively high percentage of herbicide is used mixed with water. Thickening agents are added where necessary to control drift. Dyes may also be added to see easily what areas have been treated.

Localized granular application.

Granular or pellet forms of herbicide are hand-applied to the soil surface beneath the driplines of an individual plant, or as close to a tree trunk or stem base as possible. Herbicide is applied when there is enough moisture to dissolve and carry the herbicide to the root zone—but not so much water that it washes the granules off-site.

Broadcast Ground Herbicide Application

Broadcast herbicide applications treat an area, rather than individual plants. Broadcast applications are used to treat rights-of-way that are thickly vegetated (heavy stem density), access roads, and noxious weeds. The application methods for this group include, but are not limited to, the following:

High-volume foliar treatments.

Herbicides are applied by truck, ATV, or tractor with a spray gun, broadcast nozzle, or boom. A hydraulic sprayer mounted on a rubber-tired tractor or truck or tracked-type tractor is used to spray foliage and stems of target vegetation with a mixture of water and a low percentage of herbicide. The herbicide mixture is pumped through hoses to a hand-held nozzle. A worker activates the

nozzle and directs the spray to the target vegetation. Boom application methods involve a fixed nozzle or set of nozzles that spray a set width as the tractor passes over an area.

Broadcast granular treatment.
Hand, belly grinder, truck or tractor spreads granular forms of herbicide. The herbicide is spread over a relatively large area, such as in an electric yard, or around tower legs.

Aerial Herbicide Application
Aerial herbicide applications are used to treat large areas that usually have heavy, dense vegetation needing control (including noxious weeds); steep slopes that make other methods unsafe; or poor road access. The application methods for this group include the following:

Helicopter.
Booms attached to a helicopter deliver herbicide to the target area. The helicopter may fly above or below transmission-line conductors.

Biological Requirements
Noxious Weeds Only

Use only those biological control agents (insects) that have been tested to ensure they are host-specific.

Biological Methods

The biological methods discussed here are biological agents: **plant-eating insects or pathogens** (agents such as bacteria or fungus that can cause diseases in target plants) that weaken or destroy noxious weeds. Because most noxious weeds originate in other countries, they can gain a competitive advantage over native plants because the natural enemies found in their homelands are often missing. With biological controls, selected natural enemies of a weed are introduced and managed to control weed spread.

Biological control agents affect noxious weeds both directly and indirectly:

Direct impact destroys vital plant tissues and functions.

Indirect impact increases stress on the weeds, which may reduce their ability to compete with desirable plants.

Biological: Approved biological agents will be distributed as appropriate and based on availability