



File Code: 2670
Route To:

Date: February 1 , 2008

Subject: Biological Evaluation-Bridge Thin Project

To: Bridge Thin Team Leader/Analysis Files

I. Introduction

Purpose:

The purpose of this Biological Evaluation is to review the Bridge Thin project in sufficient detail as to determine whether the proposed action will result in a trend toward Federal listing of any sensitive botanical species.

Forest management activities that may impact populations of or alter habitat for PETS (proposed, endangered, threatened, or sensitive) species require a Biological Evaluation (FSM 2671.44) to be completed. The Biological Evaluation process (FSM 2672.43) is used to assist in determining the possible effects the proposed management activities have on:

- A. Species listed or proposed to be listed as endangered (E) or threatened (T) by the U.S. Fish and Wildlife Service (FWS).
- B. Species listed as sensitive (S) by the USDA Forest Service, Region 6. There are 73 plants listed on the Regional Forester's Sensitive Botanical List that are documented or suspected to occur on the Willamette National Forest (Attachment 1).

II. Description of the Proposed Project

Location:

The Bridge Thin Project area is within the McKenzie River / Elk Creek Subwatershed (6th field) of the McKenzie River/Quartz Creek Watershed (5th Field). The project area is 20,657 acres that lies East of the Finn Rock, and West of McKenzie Bridge.

Legal description of the project: Legal Locations: Within T.15S, R.4E, T.15S, R.5E, T.16S, R.4E, T.16S, R.5E; Willamette Meridian.; Lane County, Oregon.

Proposed Action:

The District Ranger on the McKenzie River Ranger District proposes to harvest timber on approximately 2,256 acres of the Bridge Thin Project Area, which would yield an approximate net estimate of 35.6 million board feet (MMBF) of wood products. This proposal, represented in Alternative B in the Bridge Thin Environmental Assessment, would include heavy thinning on 1,458 acres, moderate thinning on 398 acres, oak savanna restoration on 51 acres, wildlife forage thinning on 190 acres and fuels treatment on 178 acres. The timber sales from this proposal would likely occur over a four-year time span, beginning in fiscal year 2009.



III. Existing Environment and Survey Results

Regulatory Framework/Management Direction-Sensitive Plants/Rare and Uncommon Species

Forest Service Manual (FSM) 2670 direction is to ensure the viability of sensitive botanical species and to preclude actions that will contribute to the federal listing of a species. To ensure compliance with this direction, a biological evaluation is required for forest management activities that may alter habitat for proposed, endangered, threatened or sensitive species (*FSM 2671.44*) in order to determine the possible effects of the proposed activities on these species.

Amendment 158 to the Willamette Land and Resource Management Plan (USDA, 1990) adds four Conservation Strategies as amendments to the Forest Plan. The Conservation Strategies are for: *Aster gormanii*, *Ophioglossum pusillum*, *Cimicifuga elata* and *Frasera umpquaensis*. Conservation strategies include management plan and monitoring requirements as well as background material on status and distribution of the species.

Desired Future Condition-Sensitive Plants/Rare and Uncommon Botanical Species

The desired condition for Rare and Uncommon and sensitive botanical species is to maintain existing occurrences and to promote stand structure diversity and complexity that will provide more suitable potential habitat for many of these species in the future.

Sensitive/Rare and Uncommon Botanical Species:

Current management direction mandates conservation of several categories of rare plants on the Willamette National Forest (Attachment 1). The Endangered Species Act mandates protection of federally listed Threatened and Endangered species. No federally listed Threatened and Endangered, or Proposed plants occur in the project area. Sensitive species are protected by USDA Forest Service regulations and manual direction (*FSM 2672.4*).

Numerous sensitive plants on the Regional Forester's Sensitive Species list have potential to occur in the Bridge Thin project area, which encompasses a wide range of western Cascade forest habitats. Prefield reviews are conducted to determine which species from the Regional Forester's List for the Willamette National Forest are known from the project area or have suitable habitat present and potentially occur in the project area.

Prefield review for the Bridge Thin project indicated there are known populations of *Cimicifuga elata* and *Romanzoffia thompsonii* in the project area. (see Table 1).

Table 1. Sensitive Species in the Bridge Thin Project Area

Proposed Units	Sensitive Species	Buffer
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Proposed Units	Sensitive Species	Buffer
2	<i>Cimicifuga elata</i>	180 ft.
86	<i>Romanzoffia thompsonii</i>	180 ft.
3, 26, 95	<i>Peltigera pacifica</i>	180 ft.
80, 95	<i>Usnea longissima</i>	180 ft.

Regulatory Framework/Management Direction-Special Habitats

Willamette National Forest Land and Resource Management Plan (USDA, 1990) has a provision “special wildlife and plant habitats not currently identified in non-harvest management areas shall be maintained. This should include the ecotone and a buffered area sufficient to maintain the microclimate of the site”.

The Willamette National Forest Special Habitat Management Guide (Dimling and McCain, 1996) outlines habitat types and their importance to wildlife species, describes how to map habitats, and provides a methodology to delineate the buffer to maintain microclimate.

Desired Future Condition-Special Habitats

The desired future condition for special habitats is maintenance of the habitat through time. This may mean manipulating the stand to the edge of the habitat or buffering it from management activity.

Existing Condition-Special Habitats

Special habitats are non-forested habitats that are limited in size and distribution across the landscape. It is important to consider the biological diversity and ecosystem function of these small, scattered habitats for a number of reasons. Special habitats often play important roles for not only for full-time wildlife residents of the sites, but also for those who use them seasonally, or for only a portion of their life cycles. Numerous factors contribute to the creation or maintenance of special habitats. Among such factors, topography and hydrology often determine the microclimatic conditions at these sites.

More than twenty special habitats were located in the Bridge Thin project area during summer 2007 surveys. They range in size from one-half acre up to 6 acres. Sensitive plant populations also exist in or adjacent to four documented special habitats in the project area. The special habitats documented in the Bridge Thin project area and the buffer sizes recommended in the Willamette National Forest Special Habitat Management Guide are listed in Table 3.

Table 3. Special Habitats in the Bridge Thin Project Area

Proposed Units	Special Habitat	Buffer
26	Swamp	1 acre
95	Swamp	1 acre
95	Pond	1 acre
3	Pond	1 acre

Proposed Units	Special Habitat	Buffer
85	Dry meadow	NA- underburn proposed/exposure recommended
86	Dry meadow	NA-unit dropped
31	Dry meadow	180 ft.
32	Rock outcrop	180 ft.
32	Dry meadow	180 ft.
80	Dry meadow (Usnea site)	1 acre
35/36	Dry meadow	180 ft.
37	Dry meadow/rock outcrop openings	½ acre around cluster
33	Vine maple/rock outcrop	NA-unit dropped
6	Rock outcrop	180 ft.
29	Swamp	1 acre
105 *southern border, outside unit	Rock garden	NA-no effect expected, outside of unit
15	Rock outcrop	100 ft. around cluster
56	Rock outcrop and seep/wet meadow	180 ft.
11/ 12	Mesic meadow	180 ft.
43	Swamp/seep	180 ft. each
91	Swamp	1 acre

Regulatory Framework/Management Direction-Invasive Plants

Final EIS for Pacific Northwest Region Invasive Plant Program, Preventing and Managing Invasive Plants (*USDA Forest Service PNW Region, May, 2005*) amends the Willamette NF Land and Resource Management Plan and prescribes the need for prevention, inventory, early detection & rapid response on new populations, restoration of treatment sites and cooperation with other agencies and landowners.

Amendment 259 Willamette Land and Resource Management Plan (USDA, 1990) has four sections. It prescribes that prevention be integrated into all management activities; manual control may occur anywhere without additional environmental analysis; biological controls approved by USDA may be released on the Forest; a variety of control methods are available to treat weed infestations, depending on a site-specific analysis.

The Willamette National Forest *Integrated Weed Management Plan (IWMP 1999)* for managing invasive weeds states that each infestation of weeds will be managed according to its classification; new invaders will be eradicated using all control methods available and will have highest priority. Established infestations will be kept in check through biological and manual

control methods. The last category, potential invaders, will be treated as new invaders if they are discovered on national forest lands. The following documents guide the treatment of competing and unwanted vegetation in the Pacific Northwest:

- Guide to Noxious Weed Prevention Practices (2001)
- Executive Order 13112 (February 3, 1999)
- Mediated Agreement (1988)
- Noxious Weed Control and Eradication Act (2004)
- Willamette National Forest Noxious Weed Prevention Guidelines (2005)

Desired Future Condition-Invasive Plants

The desired condition is prevention of new invader establishments and a cessation of established weed spread with a corresponding reduction in established weed presence. Allowing for the return of disturbed areas to a more natural condition helps retain sensitive species habitat and other special native habitats, and impedes noxious weeds from dominating these areas. This condition can be advanced through implementation of good management practices, minimizing disturbance where possible, and executing mitigation measures such as invasive weed removal and native species revegetation.

Existing Condition-Invasive Plants

Invasive plants on the Willamette National Forest are categorized as potential invaders, new invaders and established invaders and control strategies will differ, depending on species' classification.

- **Potential invaders** are those species located in adjacent National Forest or other lands that have a high probability of being detected on the Forest in the foreseeable future (next 15 years) because potential habitat exists here.
- **New invaders** are those weed species just entering the National Forest and whose populations are possible to eradicate.
- **Established infestations** include weed species that are so widespread on the Forest they are not likely to eradicate. Some species, such as blackberry, can have both new invader populations that are less than 10 plants and are outliers as well as established infestations such as those that are found bordering streams at lower elevations.

Several species of “new invader” plants are documented in the Bridge Stewardship project area. Some new invader species have greater potential to outcompete native plants and are more difficult to control than others, however all of them are capable of adverse ecological impacts. The new invader species known to occur in the Bridge Stewardship project area are listed below in Table 2:

- False brome (*Brachypodium sylvaticum*)-False brome is a perennial grass species of Eurasian origin. It has short bunches of bright green leaves that persist into fall and early winter. False brome can quickly become the dominant plant species in forest understories and in streamside corridors, demonstrating both shade-tolerance and moisture tolerance. Once established, false brome is spread by road maintenance equipment. From the road shoulder, the species can move into forested stands, especially those with openings such

as thinned timber sale units. Seed is short-lived, so treatments for 3 years or less can exhaust the seed bank. Small populations may be manually controlled but large populations require herbicide application to eradicate because the populations, once established, can grow exponentially in short periods of time.

- Spotted knapweed (*Centaurea maculosa*)-Biennial or short-lived perennial with a stout taproot. Can have one or more stems, branched 1-3 feet tall. Produces purpleish-pink ray flowers. Introduced from Eurasia as contaminant of alfalfa and clover seed. Early spring growth makes spotted knapweed competitive for soil moisture and nutrients.
- Deadly nightshade (*Solanum dulcamara*)-A trailing or climbing perennial with spreading stems. Flowers are star-shaped with purple petals, and yellow or orange anthers. Native to Europe, but widely spread across North America. Typically found in moist waste areas, along fence rows, and drainage ditches and may form large thickets. All parts of the plant are toxic. The plants bright red berries seem to attract young children.
- Yellow toadflax (*Linaria vulgaris*)-Perennial, 1 to 2 feet tall, reproducing by seed and underground root stock. Flowers are 1 inch long with bearded, orange throat. Native of Eurasia, introduced to the United States in 1800's as an ornamental. Extensive root system makes control difficult.
- English ivy (*Hedra helix*)- English ivy is an evergreen climbing vine that attaches to the bark of trees, brickwork, and other surfaces by way of small rootlike structures which exude a sticky substance that helps the vines adhere to various surfaces. Older vines have been reported to reach 1 foot in diameter. Leaves are dark green with white veins, waxy to somewhat leathery, and arranged alternately along the stem. Leaf forms include a 3 to 5-lobed leaf (the most common) and an unlobed rounded leaf often found on mature plants in full sun that are ready to flower. Vines may grow for up to ten years before producing flowers. Under sufficient light conditions, terminal clusters of small, pale yellow-green flowers are produced in the fall. The flowers are attractive to flies and bees in search of late season nectar sources. The black-purple fruits have a thin fleshy outer covering, contain one to three hard, stone-like seeds and may persist through the winter if not eaten first.
- Field bindweed (*Convolvulus arvensis*)-Perennial with an extensive root system, often climbing for forming dense tangled mats. Leaves are more or less arrowhead-shaped, with white to pink trumpet-shaped flowers. This non-native was introduced from Europe and has become serious problem across most of the United States because of it is remarkably adaptable. Difficult to eradicate because roots may reach depths of 20 feet. Bindweed can be found at altitudes up to 10,000 ft. and produces seed viable up to 50 years.

- Deptford pink (*Dianthus armeria*) is a species of *Dianthus* ("pink") native to most of Europe, from Portugal north to southern Scotland and southern Finland, and east to Ukraine and the Caucasus. It is a herbaceous annual or biennial plant growing to 60 cm tall. The leaves are hairy, dark green, slender, up to 5 cm long. The flowers are 8–15 mm diameter, with five petals, bright reddish-pink; they are produced in small clusters at the top of the stems from early to late summer.
- Everlasting peavine (*Lathyrus latifolius*)-Perennial with broadly winged stems 2 to 7 feet long, and more or less climbing growth habit. Flowers are approximately 1 inch long, pink, red, or white. Native to Europe.

Table 2. Invasive Plants in the Bridge Thin Project Area

Invasive Species	Proposed Units	Recommended treatments (in addition to Ch. 2 mitigation measures, design criteria, and BMPs)
False brome (<i>Brachypodium sylvaticum</i>)	42, 43, 29-32, 26, 91, 3, 2, 19, 95	Mechanical Chemical
Spotted knapweed (<i>Centaurea maculosa</i>)	32, 9, 22, 71, 19, 6	Mechanical Chemical
Field Bindweed (<i>Convolvulus arvensis</i>)	43	Mechanical Chemical
Yellow toadflax (<i>Linaria vulgaris</i>)	40	Manual/Mechanical/Chemical
Deadly nightshade (<i>Solanum dulcamara</i>)	26, 95,	Mechanical Chemical
Everlasting peavine (<i>Lathyrus latifolius</i>)	91, 27, 102	Mechanical Chemical
English ivy (<i>Hedra helix</i>)	3	Manual/Mechanical/Chemical
Deptford pink (<i>Dianthus armeria.</i>)	68, 6, 103	Mechanical Chemical
* Evergreen blackberry (<i>Rubus laciniatus</i>)	82, 83,	Manual/Mechanical/Chemical

* Established species, but considered new invader population

Manual=hand pulling/digging before seed production

Mechanical=mowing/cutting just after flowering has ended, *but* before seed matures

Chemical=use of one or more herbicides approved for application in the Willamette National Forest Integrated Weed Management EA (March 2007)

Proposed actions may introduce or spread invasive and non-native plants. In most cases, the risk of worsening the Forest noxious weed problem can be minimized through proper inventory and project design. Implementation equipment and disturbance from yarding, road maintenance, and fuels treatments resulting from either alternative can provide an opportunity for invasive plants to establish and out-compete native vegetation.

Most noxious weeds are shade-intolerant so canopy closure can be particularly effective at minimizing weed establishment. Forest and Regional (USDA, 2004) policy recommends revegetation of disturbed sites with native species from *local genetic stock*.

Because the vast majority of the Forest's invasive plant infestations occur along road shoulders, road maintenance represents a particular risk for inadvertently spreading weeds. Road maintenance activities across the Forest risk the spread of new invader species from one watershed to another. Activities such as grading, brushing and mowing, culvert upgrades, and ditch cleaning can contribute to the spread of invasive plants along road corridors by transporting seeds from infested sites to uninfested areas.

To mitigate the spread of existing noxious weeds and reduce the risk of introducing other invasive species into the Bridge Stewardship project area, the following measures will be used:

- Off road or ground disturbing equipment will be washed prior to entering National Forest land. Equipment will be free of all seed and debris that may contain plant seeds such as soil and vegetation.
- Material brought in for construction, such as fill soil, gravel, and straw will be free of vegetative material and invasive plant seed.
- Monitoring for changes in existing populations or new occurrences of invasive plants in the project area.
- Retain barriers of undisturbed vegetation between weed infested areas and project areas.
- Treat existing infestations prior to project implementation to minimize seed spread.
- Clean equipment prior to coming on to the Forest and potentially between projects or sites, depending on the occupancy of weeds at the affected areas. Use appropriate clauses 154 to ensure contractors whose vehicles operate off the road surface are cleaning vehicles appropriately. See Appendix 1 for contract clauses (WO-C6.36 & WO-CT6.36).

- Work in weed-free areas prior to moving to weed-infested areas.
- Avoid putting landings, yarding stations, staging and equipment storage areas, in weed infested areas. Provide timber and other contractors with a map of infestations in the prework process. Weed infestations will be identified on the sale map.
- Revegetate site as soon as possible (during the appropriate planting or seeding window) following disturbance. Revegetation may include topsoil replacement, site prep such as ripping, planting, seeding, fertilizing and weed-free mulching as necessary. Monitor sites and reseed or replant as necessary.

IV. Impacts of the Proposed Project

Alternative A: No-Action

Direct and Indirect Effects-Sensitive/Rare and Uncommon Species

This alternative would have no direct or indirect effect on sensitive plants or rare botanical species. There would be no ground-disturbance or disturbance of the microclimate with this alternative.

Selecting Alternative A may have potential adverse effects on certain species of sensitive fungi. Without management action, downed wood accumulation would likely increase over time. Landscapes with heavy fuel loads are at greater risk of high-intensity, stand replacing fires. As a result, high intensity fire is more likely to sterilize the soil, thus destroying fungal spores and mycelium found in organic mater on the surface and uppermost soil horizons.

There are established populations of invasive plants in the Bridge Thin project area, which are tolerant of closed canopy conditions and are capable of prolific growth. Alternative A indirectly poses a low risk of adverse effects to potential sensitive habitat occurring in the project area because it does not promote additional resources for shade-tolerant invasive plant species.

Alternative A: No-Action

Direct and Indirect Effects-Invasive Plants

Selecting this alternative would allow the same level of invasive plant control as currently programmed. New and potential invader plant populations documented in the Bridge Thin project area would remain highest priority in receiving treatment and monitoring.

The No-Action alternative would not provide an opportunity to further contain or control invasive plant populations, or reduce the current rate of spread of these species within the project area. This alternative does nothing to manage established new invader populations along forest Road 1900408 beyond those practices addressed in the Willamette National Forest Integrated Weed Management EA (March 2007).

Alternative A-No Action

Direct and Indirect Effects-Special habitats

Selecting the No-Action alternative would allow for the same level of special habitat management annually programmed. This alternative would have no adverse effect on special habitats.

Effects Common to Alternatives B and C

Direct and Indirect Effects-Sensitive/Rare and Uncommon Species

No direct or indirect effects on sensitive plants or rare botanical species are expected with either alternative. All known sensitive plant occurrences have been mapped and would be protected with a 180 ft. *no-disturbance* buffer to maintain the viability of the populations. The buffer would maintain the microclimate for those species requiring cover or moisture retention and aid in protecting other species from physical damage during project implementation. This buffer applies to all harvest activities, ground disturbing activities, and fuels treatments.

Cimicifuga and Romanzoffia are species often found associated with special habitats such as riparian areas, and steep, rocky seeps. These unique features are limited across the project area landscape. The main threats to these plants and habitats are disturbance and changes in hydrology. Of the respective action alternatives, Alternative C proposes the least thinning, particularly in riparian areas; therefore, potential adverse effects to Cimicifuga and Romanzoffia would be lowest with this alternative.

Peltigera and Usnea are lichens found in or associated with moist coniferous forests at low to mid elevations. The Peltigera sites in the Bridge Thin project area are on bare mineral soil and rock. The sites were located in units proposed for harvest, ground-based yarding, and fuels treatments. The likelihood of adverse effects on the Peltigera sites from the proposed actions is low with 180 ft. no-disturbance buffers.

Usnea substrate is alder and small diameter trees in the Bridge Thin project area. Direct effects may occur from torching during under burning or damage from other fuels treatments such as grapple or hand piling. Habitat fragmentation is a concern as well, because Usnea disperses mainly by thallus fragments, and occasionally by soredia. More so, Usnea is very sensitive to air pollution, and is at moderate risk of indirect impacts from residual smoke from fuels treatments (McCune & Geiser 1997). Alternative C poses the least risk of adverse effects to sensitive species because it proposes the least disturbance in suitable habitat.

Fungi are difficult to identify in the field, often requiring chemical and microscopic spore analysis. Apart from taxonomy, fungal relationships in ecosystems and seemingly sporadic fruiting from year to year add to the complexity of fully understanding these organisms. Indirectly, canopy removal would have the most impact fungi that are sensitive to microclimatic change. Subsequent slash pile/fuels treatments have potential to affect some fungi species in the Bridge Thin project area. Without knowing the presence or absence of these fungi, a reasonable assumption is that there may be some localized effects to them from timber felling, yarding and fuels treatments. However, these actions have a low risk of adverse effects to sensitive fungi and are not likely to cause a trend toward federal listing of a particular species.

Alternative B has the greatest risk of potential adverse effects to known sensitive plants or suitable habitat for those *potentially* occurring in the Bridge Thin project area because it proposes to harvest more acreage in potential habitat.

Cumulative Effects-Sensitive/Rare and Uncommon Species

The analysis area for sensitive and rare botanical species cumulative effects is the Bridge Thin Project area. There are no planned activities adjacent to the analysis area, therefore actions beyond this analysis area would have no effect on sensitive species, or other rare botanical species potentially located in the Bridge Thin analysis area.

Implementation of the proposed action or any action alternatives would not have measurable cumulative effects on sensitive plants in the project area because of the buffer and no-disturbance mitigation. Based on the analysis of this project there would be no incremental change to existing populations of sensitive species or other botanical species in the project area due to selecting any alternative detailed in the Bridge Thin EA.

Direct and Indirect Effects-Invasive Plants

Alternatives B and C both would have congruent direct impacts on invasive plants because both propose similar acres of harvest or fuel treatments and miles of road maintenance. The ground disturbance caused from implementation may provide suitable conditions for invasive plants to establish or out-compete native vegetation.

Most of the invasive plant populations in the Bridge Thin project area are established along roads and are mainly spread by vehicular traffic. However, false brome and English ivy occur in units proposed for harvest, ground-based yarding, and under-burning fuels treatments.

Without mitigation measures, selecting either of the alternatives would result in high risk of further spreading or introducing invasive plants. Without mitigation measures, the proposed actions would have a high risk of spreading invasive plants onto adjacent properties by hauling across ownership boundaries. However, the effect Alternative B would have on invasive species compared to Alternative C is not likely to contrast much because the difference in proposed road maintenance is approximately less than one mile.

Cumulative Effects-Invasive Plants

The cumulative effects analysis area for invasive plants is the entire Bridge Thin project area are associated with ground-disturbance activities and adjacent roads. This analysis addresses known distribution of invasive plants and likely travel routes for the proposed projects.

Past management activities in the last 50 years include road construction, road maintenance, and timber harvest. Included in these activities are the Eugene Water and Electric Board (EWEB) power line corridor and vegetation management activities. Because of the design criteria and mitigation measures, there is no expected increase of cumulative effects on invasive plants. The potential opportunities afforded by this project would provide additional resources to treat the new invader species in the Bridge Thin project area, and assist in reaching the goal of control and eventual eradication of *new* invader plants. This would result in an overall net improvement of invasive plants in the Bridge Thin project area.

With the exception of false brome and English ivy, most invasive plants found in the project area are shade-intolerant and generally confined to roadsides and open areas. Being sessile organisms, adaptations in pollination and seed dispersal are necessities of survival for plants. One of many ecological advantages of invasive or non-native plants is the lack of native competition to keep populations balanced. More so, prolific propagation and the ability to disperse large amounts of seed is probably the greatest advantage invasive plants have in native ecosystems.

Even without past or present management actions, invasive plants would still be present from natural and biological vectors. Invasive plants are present on the properties of adjacent landowners and along the Highway 126 corridor. However, past harvest and road maintenance activities within the Bridge Thin project area have provided additional opportunities for establishment and spread of invasive plants. Some management actions, such as harvest and yarding, result in short-term disturbance conducive for invasive plant establishment. The effects of these actions are greatest at the on-set of implementation and often decrease over time and with stand succession.

Other management activities like road construction or maintenance often result in longer-term effects to invasive plant infestations. This is because roads serve dual functions by acting as suitable ground for the establishment of invasive plants and by providing the plants access to a host of potential vectors.

Implementing any of the alternatives detailed in the Bridge Thin EA would have a non-measurable cumulative effect on invasive plants because both action alternatives propose to decommission 0.3 miles of road and the No-Action alternative proposes no road management all.

Direct and Indirect Effects-Special habitats

The action alternatives would have no direct or indirect impact on special habitats. Special habitats would also be buffered from harvest and ground disturbing activities. These buffers would maintain the microclimate, hydrology, and prevent damage to the areas during project implementation.

The main direct impacts to special habitats from the proposed actions are removal of overstory and ground disturbance. Without the 180 ft. buffer and no-disturbance mitigation, reduced cover could potentially decrease humidity and increase temperature earlier in the growing season, thus altering habitat viability.

By comparison, Alternative B proposes to harvest and treat fuels on more acres than Alternative C; therefore, it poses the higher risk of adverse impacts to special habitats in the Bridge Thin project area.

Cumulative Effects-Special Habitats

The analysis area for special habitat cumulative effects is the Bridge Thin Project area. This area was chosen because activities outside the analysis area would have no effect on special habitats located within the project analysis area.

Implementation of the proposed action or any action alternatives would not have measurable cumulative effects on sensitive plants in the project area because of the no-disturbance mitigation. Based on the analysis of this project there will be no incremental change to existing populations of special habitats in the project area as a result of selecting any alternative detailed in the Bridge Thin EA

V. Determination/Conclusion

Risk Determination-Sensitive Plants/Rare and Uncommon Species

It is my determination that implementation of this project will have “no impact” on sensitive botanical species known to occur in the Bridge Thin project area because of the no-disturbance buffers. Because of the no-disturbance buffer and mitigation, the likelihood of adverse effects to sensitive plants in the Bridge Thin project area is low.

For unknown fungi, implementation of this project “may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species”.

Risk Determination-Invasive Plants

The risk of adverse effects to invasive plants in the Bridge Thin project area is moderate with specific mitigation measures, design criteria, and best management practices. To mitigate the spread of existing invasive plants and reduce the risk of introducing other invasive species into the Bridge Thin project area, the following measures will be used:

- Off road or ground disturbing equipment will be washed prior to entering National Forest land. Equipment will be free of all seed and debris that may contain plant seeds such as soil and vegetation.
- Material brought in for construction, such as fill soil, gravel, and straw will be free of vegetative material and invasive plant seed.
- Monitoring for changes in existing populations or new occurrences of invasive plants in the project area.
- Retain barriers of undisturbed vegetation between weed infested areas and project areas.
- Treat existing infestations prior to project implementation to minimize seed spread.
- Clean equipment prior to coming on to the Forest and potentially between projects or sites, depending on the occupancy of weeds at the affected areas. Use appropriate clauses 154 to ensure contractors whose vehicles operate off the road surface are cleaning vehicles appropriately. See Appendix 1 for contract clauses (WO-C6.36 & WO-CT6.36).
- Work in weed-free areas prior to moving to weed-infested areas.

- Avoid putting landings, yarding stations, staging and equipment storage areas, in weed infested areas. Provide timber and other contractors with a map of infestations in the prework process. Weed infestations will be identified on the sale map.
- Revegetate site as soon as possible (during the appropriate planting or seeding window) following disturbance. Revegetation may include topsoil replacement, site prep such as ripping, planting, seeding, fertilizing and weed-free mulching as necessary. Monitor sites and reseed or replant as necessary.

Risk Determination-Special Habitats

It is my determination there is a low to moderate risk of adverse impacts to special habitats in the Bridge Thin project area from proposed actions with the no-disturbance buffer and mitigation.

Unit	Risk Assessment	Connected Actions and Rationale	Mitigation Measures Relative to Unit (prior to implementation)
26	Moderate	-known sensitive sites -BRSY populations on adjacent roads -proposed fuels underburn on 15 acres	-avoid fuel treatments in sensitive plant locations -mechanical treatment of BRSY before seed matures -chemical treatment of BRSY later in growing season
32	Moderate	-existing BRSY and CEMA pop. in unit -proposed underburn on 123 acres	-mechanical treatments before seed matures -chemical treatments later in growing season
80 * Alt. B only	Moderate	-known sensitive sites -proposed fuels underburn on 10 acres -RUDI populations in unit	-cut canes and grub RUDI root crowns -avoid underburning fuels due to air quality issues with lichen
3	Low	-known sensitive sites -grapple or hand pile fuels -HEHE in unit, BRSY on adjacent road	-avoid disturbance to known sites -manual treatment of HEHE -mechanical

			treatment -chemical treatment
29	Low	-BRSY on adjacent road -underburn/grapple or hand pile fuels	-mechanical and chemical treatments of roadside populations
43	Low	-BRSY on adjacent road -underburn/grapple or hand pile fuels	-mechanical and chemical treatments of roadside populations
91 * Alt. B only	Low	-BRSY, HEHE, and LALA in unit and on adjacent road	-manual, mechanical, and chemical treatments

Prepared by: /s/Burtchell Thomas Date: February 1, 2008
 Burtchell Thomas, Botanist
 McKenzie River Ranger District

Attachment 1: Summary of Potential Habitat and Presence for Sensitive Botanical Species

Species	Prefield Review	Species Presence
<i>Agoseris elata</i>	habitat present	No
<i>Arabis hastatula</i>	habitat not present	No
<i>Arnica viscosa</i>	habitat not present	No
<i>Asplenium septentrionale</i>	habitat not present	No
<i>Aster gormanii</i>	habitat not present	No
<i>Boletus pulcherrimus</i>	habitat present	No
<i>Botrychium minganense</i>	habitat present	No
<i>Botrychium montanum</i>	habitat present	No
<i>Botrychium pumicola</i>	habitat not present	No
<i>Bridgeoporus nobillissimus</i>	habitat not present	No
<i>Calamagrostis breweri</i>	habitat not present	No
<i>Carex livida</i>	habitat not present	No
<i>Carex scirpoidea</i> var. <i>stenochlaena</i>	habitat not present	No
<i>Castilleja rupicola</i>	habitat not present	No
<i>Chaenotheca subroscida</i>	habitat present	No
<i>Cimicifuga elata</i>	habitat present	Unit 2
<i>Coptis trifolia</i>	habitat present	No
<i>Cordyceps capitata</i>	habitat not present	No

<i>Corydalis aqua-gelidae</i>	habitat not present	No
<i>Cortinarius barlowensis</i>	habitat present	No
<i>Cudonia monticola</i>	habitat not present	No
<i>Dermatocarpon luridum</i>	habitat not present	No
<i>Eucephalis(Aster) vialis</i>	habitat present	No
<i>Frasera umpquaensis</i>	habitat not present	No
<i>Gentiana newberryi</i>	habitat not present	No
<i>Gomphus kaufmanii</i>	habitat present	No
<i>Gyromitra californica</i>	habitat present	No
<i>Hypogymnia duplicata</i>	habitat present	No
<i>Iliamna latibracteata</i>	habitat present	No
<i>Leptogium burnetiae</i> var. <i>hirsutum</i>	habitat present	No
<i>Leptogium cyanescens</i>	habitat present	No
<i>Leucogaster citrinus</i>	habitat present	No
<i>Lewisia columbiana</i> var. <i>columbiana</i>	habitat not present	No
<i>Lobaria linita</i>	habitat not present	No
<i>Lupinus sulphureus</i> var. <i>kincaidii</i>	habitat present	No
<i>Lycopodiella inundata</i>	habitat not present	No
<i>Lycopodium complanatum</i>	habitat not present	No
<i>Montia howellii</i>	habitat not present	No
<i>Mycenia monticola</i>	habitat not present	No
<i>Nephroma occultum</i>	habitat not present	No
<i>Ophioglossum pusillum</i>	habitat not present	No
<i>Pannaria rubiginosa</i>	habitat present	No
<i>Pellaea andromedaefolia</i>	habitat not present	No
<i>Peltigera neckeri</i>	habitat present	No
<i>Peltigera pacifica</i>	habitat present	Unit(s) 3, 26, and 95
<i>Phaeocollybia attenuata</i>	habitat present	No
<i>Phaeocollybia dissiliens</i>	habitat present	No
<i>Phaeocollybia pseudofestiva</i>	habitat present	No
<i>Phaeocollybia sipei</i>	habitat present	No
<i>Pilophorus nigricaulis</i>	habitat not present	No
<i>Polystichum californicum</i>	habitat not present	No
<i>Potentilla villosa</i>	habitat not present	No
<i>Pseudocyphellaria rainierensis</i>	habitat present	No
<i>Ramalina pollinaria</i>	habitat present	No
<i>Ramaria amyloidea</i>	habitat present	No
<i>Ramaria aurantiisiccescens</i>	habitat present	No

<i>Ramaria gelatinaurantia</i>	habitat present	No
<i>Ramaria largentii</i>	habitat present	No
<i>Rhizomnium nudum</i>	habitat not present	No
<i>Romanzoffia thompsonii</i>	habitat present	Unit 86
<i>Scheuchzeria palustris</i> <i>var. Americana</i>	habitat not present	No
<i>Schistostega pennata</i>	habitat not present	No
<i>Scouleria marginata</i>	habitat not present	No
<i>Sisyinchium</i> <i>sarmentosum</i>	habitat present	No
<i>Sowerbyella rhenana</i>	habitat not present	No
<i>Tetraphis geniculata</i>	habitat not present	No
<i>Thorluna disimilis</i>	habitat not present	No
<i>Usnea longissima</i>	habitat present	Unit(s) 80 and 95
<i>Utricularia minor</i>	habitat not present	No
<i>Wolffia borealis</i>	habitat not present	No
<i>Wolffia columbiana</i>	habitat not present	No

ATTACHMENT 2: **Regional Forester's Sensitive Botanical Species List for the Willamette National Forest FY 2007.** Species of federal, state and local importance are included on the R-6 list.

Species	Occurrence on WNF	ONHP Status	State Status	Federal Status	Habitat Types
<i>Agoseris elata</i>	S	2			MM,DM
<i>Arabis hastatula</i>	D	1		SofC	RO
<i>Arnica viscosa</i>	S	2			RS
<i>Asplenium septentrionale</i>	S	2			RO
<i>Aster gormanii</i>	D	1			RS
<i>Boletus pulcherrimus</i>	D	1			CF
<i>Botrychium minganense</i>	D	2			RZ,CF
<i>Botrychium montanum</i>	D	2			RZ,CF
<i>Botrychium pumicola</i>	S	1	LT		HV
<i>Bridgeoporus nobilissimus</i>	D	1			CF
<i>Calamagrostis breweri</i>	D	2			MM,RZ
<i>Carex livida</i>	S	2			WM
<i>Carex scirpoidea</i>	D	2			RO
<i>var. stenochlaena</i>					
<i>Castilleja rupicola</i>	D	2			RO
<i>Chaenotheca subroscida</i>	D	3			CF
<i>Cimicifuga elata</i>	D	1	C		CF
<i>Coptis trifolia</i>	S	2			WM,CF
<i>Cordyceps capitata</i>	D	unlisted			CF
<i>Corydalis aqua-gelidae</i>	D	1	C		RZ,CF
<i>Cudonia monticola</i>	D	not listed			CF
<i>Dermatocarpon luridum</i>	S	3			RZ on rock
<i>Eucephalis (Aster) vialis</i>	S	1	LT	SofC	CF
<i>Frasera umpquaensis</i>	D	1	C		MM
<i>Gentiana newberryi</i>	D	2			MM
<i>Gomphus kaufmanii</i>	D	3			CF
<i>Gyromitra californica</i>	D	2			CF
<i>Hypogymnia duplicata</i>	S	3			CF
<i>Iliamna latibracteata</i>	S	2			CF,RZ
<i>Leptogium burnetiae</i>					
<i>var. hirsutum</i>	S	3			CF
<i>Leptogium cyanescens</i>	D	3			CF
<i>Leucogaster citrinus</i>	D	3			CF
<i>Lewisia columbiana</i>	D	2			RS
<i>var. columbiana</i>					
<i>Lobaria linita</i>	D	2			RO
<i>Lupinus sulphureus</i>					
<i>var. kincaidii</i>	S	1	LT	LT	MM,DM
<i>Lycopodiella inundata</i>	D	2			WM
<i>Lycopodium complanatum</i>	D	2			CF
	Occurrence	ONHP	State	Federal	Habitat

Species	on WNF	Status	Status	Status	Types
<i>Montia howellii</i>	D	4	C		RZ
<i>Mycenia monticola</i>	D	not listed			CF
<i>Nephroma occultum</i>	D	4			CF
<i>Ophioglossum pusillum</i>	D	2			WM
<i>Pannaria rubiginosa</i>	D	2			CF
<i>Pellaea andromedaefolia</i>	S	2			RO
<i>Peltigera neckeri</i>	D	not listed			CF
<i>Peltigera pacifica</i>	D	not listed			CF
<i>Phaeocollybia attenuata</i>	D	4			CF
<i>P. dissiliens</i>	D	3			CF
<i>P. pseudofestiva</i>	D	3			CF
<i>P. sipei</i>	D	3			CF
<i>Pilophorus nigricaulis</i>	D	2			RO
<i>Polystichum californicum</i>	D	2			RO
<i>Potentilla villosa</i>	D	2			RS, RO
<i>Pseudocyphellaria</i>					
<i>rainierensis</i>	D	4			CF,RZ
<i>Ramalina pollinaria</i>	D	2			CF, RZ
<i>Ramaria amyloidea</i>	D	2			CF
<i>R. aurantiisiccescens</i>	D	4			CF
<i>R. gelatiniaurantia</i>	D	3			CF
<i>R. largentii</i>	D	3			CF
<i>Rhizomnium nudum</i>	D	2			CF
<i>Romanzoffia thompsonii</i>	D	1			RS
<i>Scheuchzeria palustris</i>	D	2			WM
<i>var. americana</i>					
<i>Schistostega pennata</i>	D	2			CF
<i>Scouleria marginata</i>	S	3			RZ
<i>Sisyrrinchium sarmentosum</i>	S	1	C	SofC	MM,DM
<i>Sowerbyella rhenana</i>	D	3			CF
<i>Tetraphis geniculata</i>	S	2			CF
<i>Thorluna disimilis</i>	D	2			CF
<i>Usnea longissima</i>	D	3			CF,RZ
<i>Utricularia minor</i>	D	2			SW
<i>Wolffia borealis</i>	S	2			SW
<i>Wolffia columbiana</i>	S	2			SW

Occurrence on Willamette National Forest:

S = Suspected

D = Documented

Oregon Natural Heritage Program (ORNHP):

1 = Taxa threatened or endangered throughout range.

2 = Taxa threatened or endangered in Oregon but more common or stable elsewhere.

3 = Species for which more information is needed before status can be determined, but which may be threatened or endangered (Review).

4 = Species of concern not currently threatened or endangered (Watch).

Oregon State Status:

LT = Threatened

LE = Endangered

C = Candidate

Federal Status: These plant species were originally published as CANDIDATE THREATENED (CT) in the Smithsonian Report, **Federal Register**, July 1, 1975, or as PROPOSED ENDANGERED (PE) in a later report, **Federal Register**, June 16, 1976. The latest **Federal Register** consulted was dated September 30, 1993. Updated listings appear periodically in the Notice of Review (USFWS); the status of several species is categorized as follows:

LE = Listed as an Endangered Species

LT = Listed as a Threatened Species

PE = Proposed as an Endangered Species

PT = Proposed as a Threatened Species

C = Candidate for Listing as Threatened or Endangered

Sof C = Species of Concern; taxa for which additional information is needed to support proposal to list under the ESA.

Habitat Types:

MM = Mesic meadows

WM = Wet meadows

DM = Dry meadows

RZ = Riparian zones, floodplains

CF = Coniferous forest

RS = Rocky slopes, scree

RO = Rock outcrops, cliffs

DW = Dry open woods

HV = High volcanic areas

SW = Standing water

ATTACHMENT 3: Field reconnaissance survey levels for determining presence potential for TES species.

Level A:	Aerial photo interpretation and review of existing site records. Determination of the potential for a listed species to occur within the proposed project area. No field surveys completed.
Low potential:	Less than 40% potential for listed species inhabiting the project area.
Moderate potential:	40-60% potential for a listed species inhabiting the proposed project area.
High potential:	Greater than 60% potential for listed species inhabiting the proposed project area.
Level B:	Single entry survey of probable habitats. Areas are identified by photos and existing field knowledge. Field surveys are conducted during the season most favorable for species identification.
Low intensity:	Selected habitat surveys (approximately 5-10% of area) are conducted with a single entry for listed species inhabiting the proposed project area.
Moderate intensity:	Selected habitat surveys (approximately 10-40% of area) are conducted with a single entry for listed species inhabiting the proposed project area.
High intensity:	Selected habitat surveys (approximately 40-60% of area) are conducted with a single entry for listed species inhabiting the proposed project area.
Level C:	Multiple entry surveys are conducted for listed species likely to inhabit the proposed project area.
Low intensity:	Selected habitat surveys (approximately 5-10% of area) are conducted with repeated entries for listed species inhabiting the proposed project area.
Moderate intensity:	Selected habitat surveys (approximately 10-60% of area) are conducted with

repeated entries for listed species
inhabiting the proposed project area.

High intensity:

Selected habitat surveys (approximately
60-80% of area) are conducted with
repeated entries for listed species
inhabiting the proposed project area.

ATTACHMENT 4:

**Conclusions Of Effects For Use In Biological Evaluations and Assessments
USDA Forest Service - Regions 1, 4, and 6
August, 1995**

Listed Species:

1. No Effect

Occurs when a project or activity will not have any “effect”, on a listed species, or critical habitat.

2. May Affect - Likely to Adversely Affect (LAA)

If the determination in the biological assessment is that the project May Affect - Likely to Adversely Affect a listed species or critical habitat, formal consultation must be initiated (50 CFR 402.12). Formal consultation must be requested in writing through the Forest Supervisor (FSM 2670.44) to the appropriate FWS Field Supervisor, or NOAA Fisheries office.

3. May Affect - Not Likely to Adversely Affect (NLAA)

If it is determined in the biological assessment that there are “effects” to a listed species or critical habitat, but that those effects are not likely to adversely affect listed species or critical habitat, then written concurrence by the FWS or NOAA Fisheries is required to conclude informal consultation (50 CFR 402.13).

4. Beneficial Effect

Written concurrence is also required from the FWS or NOAA Fisheries if a beneficial effect determination is made.

Requests for written concurrence must be initiated in writing from the Forest Supervisor to the State Field Supervisor (FWS or NOAA).

Proposed Species:

Whenever serious adverse effects are predicted for a proposed species or proposed critical habitat, conferencing is required with the FWS or NOAA Fisheries.

1. No Effect

When there are “no effects” to proposed species, conferencing is not required with FWS or NOAA.

2. Not Likely to Jeopardize the Continued Existence of the Species or Result in Destruction or Adverse Modification of Proposed Critical Habitat

This conclusion is used where there are effects or cumulative effects, but where such effects would not have the consequence of losing key populations or adversely affecting “proposed critical habitat”. No conferencing is required with FWS or NOAA if this conclusion is made. However, for any proposed activity that would receive a “Likely To Adversely Affect” conclusion if the species were to be listed, conferencing may be initiated.

3. Likely to Jeopardize the Continued Existence of the Species or Result in Destruction or Adverse Modification of Proposed Critical Habitat

This conclusion must be determined if there are significant effects that could jeopardize the continued existence of the species, result in adverse modification or destruction of proposed critical habitat, and/or result in irreversible or irretrievable commitments of resources that could foreclose options to avoid jeopardy, should the species be listed. If this is the conclusion, conferencing with FWS or NMFS is required.

Sensitive Species:

1. No Impact (NI)

A determination of “No Impact” for sensitive species occurs when a project or activity will have no environmental effects on habitat, individuals, a population or a species.

2. May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species (MIIH)

Activities or actions that have effects that are immeasurable, minor or are consistent with Conservation Strategies would receive this conclusion. For populations that are small - or vulnerable - each individual may be important for short and long-term viability.

3. Will Impact Individuals or Habitat With a Consequence That the Action May Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species (WIFV)

Loss of individuals or habitat can be considered significant when the potential effect may be:

1. Contributing to a trend toward Federal listing (C-1 or C-2 species);
2. Results in a significantly increased risk of loss of viability for a species; or,
3. Results in a significantly increased risk of loss of viability for a significant population (stock).

4. Beneficial Impact (BI)

Projects or activities that are designed to benefit, or that measurably benefit a sensitive species should receive this conclusion.

ATTACHMENT 5:

**Conclusions Of Effects For Use In Biological Evaluations and Assessments
USDA Forest Service - Regions 1, 4, and 6
August, 1995**

Listed Species:

1. No Effect

Occurs when a project or activity will not have any “effect”, on a listed species, or critical habitat.

2. May Affect - Likely to Adversely Affect (LAA)

If the determination in the biological assessment is that the project May Affect - Likely to Adversely Affect a listed species or critical habitat, formal consultation must be initiated (50 CFR 402.12). Formal consultation must be requested in writing through the Forest Supervisor (FSM 2670.44) to the appropriate FWS Field Supervisor, or NOAA Fisheries office.

3. May Affect - Not Likely to Adversely Affect (NLAA)

If it is determined in the biological assessment that there are “effects” to a listed species or critical habitat, but that those effects are not likely to adversely affect listed species or critical habitat, then written concurrence by the FWS or NOAA Fisheries is required to conclude informal consultation (50 CFR 402.13).

4. Beneficial Effect

Written concurrence is also required from the FWS or NOAA Fisheries if a beneficial effect determination is made.

Requests for written concurrence must be initiated in writing from the Forest Supervisor to the State Field Supervisor (FWS or NOAA).

Proposed Species:

Whenever serious adverse effects are predicted for a proposed species or proposed critical habitat, conferencing is required with the FWS or NOAA Fisheries.

1. No Effect

When there are “no effects” to proposed species, conferencing is not required with FWS or NOAA.

2. Not Likely to Jeopardize the Continued Existence of the Species or Result in Destruction or Adverse Modification of Proposed Critical Habitat

This conclusion is used where there are effects or cumulative effects, but where such effects would not have the consequence of losing key populations or adversely affecting “proposed critical habitat”. No conferencing is required with FWS or NOAA if this conclusion is made. However, for any proposed activity that would receive a “Likely To Adversely Affect” conclusion if the species were to be listed, conferencing may be initiated.

3. Likely to Jeopardize the Continued Existence of the Species or Result in Destruction or Adverse Modification of Proposed Critical Habitat

This conclusion must be determined if there are significant effects that could jeopardize the continued existence of the species, result in adverse modification or destruction of proposed critical habitat, and/or result in irreversible or irretrievable commitments of resources that could foreclose options to avoid jeopardy, should the species be listed. If this is the conclusion, conferencing with FWS or NMFS is required.

Sensitive Species:

1. No Impact (NI)

A determination of “No Impact” for sensitive species occurs when a project or activity will have no environmental effects on habitat, individuals, a population or a species.

2. May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species (MIIH)

Activities or actions that have effects that are immeasurable, minor or are consistent with Conservation Strategies would receive this conclusion. For populations that are small - or vulnerable - each individual may be important for short and long-term viability.

3. Will Impact Individuals or Habitat With a Consequence That the Action May Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species (WIFV)

Loss of individuals or habitat can be considered significant when the potential effect may be:

4. Contributing to a trend toward Federal listing (C-1 or C-2 species);
5. Results in a significantly increased risk of loss of viability for a species; or,
6. Results in a significantly increased risk of loss of viability for a significant population (stock).

4. Beneficial Impact (BI)

Projects or activities that are designed to benefit, or that measurably benefit a sensitive species should receive this conclusion.

