

Botany Biological Evaluation, NWFP Report, and Noxious Weed Risk Analysis
for
Tamarack Quarry Expansion Project

THREATENED, ENDANGERED & SENSITIVE PLANT BIOLOGICAL EVALUATION

PROJECT LOCATION AND DESCRIPTION

The project is located approximately four miles south of Government Camp and US Highway 26, in Section 2, Township 4 South, Range 8 1/2 East, Willamette Meridian, Clackamas County, Oregon (see Figure 1). The Tamarack Quarry is approximately one mile south of Trillium Lake. The haul route for the quarry is along Forest Service (FS) roads 2656 and 2656-955. The project area encompasses approximately 52 acres adjacent to (generally north and east of) the existing Tamarack Quarry. The existing quarry occupies approximately 22 acres, although it is currently permitted to expand to 29 acres.

The proposed action is to expand the existing Tamarack Quarry (formerly known as the Mud Creek Quarry) to encompass approximately 50 to 70 acres of National Forest system land. Rock would be excavated from the existing quarry and the expansion area. The excavated material would be used by Oregon Department of Transportation (ODOT) and the FS for road maintenance and construction, including improvements to Highway 26 and Oregon Highway 35. Activities would include clearing vegetation, blasting, rock crushing, screening, batching, loading and hauling, importing excess materials (e.g., from slides and ditch cleanings) for reprocessing or quarry reclamation, and short-term stockpiling of excavated rock and soils. Materials would be stockpiled on-site either for reprocessing or for use in reclamation. Sanding rock would be hauled out of the quarry and stockpiled at various locations: junction of Highway 26 and Highway 35, Government Camp maintenance station, Bennett Pass, Parkdale, and junction of Highway 216 and Highway 26. Construction rock would be quarried as needed and used shortly after crushing.

The haul route is approximately 3.1 miles long and includes FS roads 2656 and 2656-955. FS road 2656 is surfaced with asphalt. FS spur road 955 is gravel surfaced. No improvements would be made to the haul route except for routine maintenance, which may include resurfacing, striping, placement of safety reflectors, and placement of additional traffic signs.

Detailed reclamation plans would be developed and implemented as expansion occurs. Overburden soil has been and would continue to be saved for use during later reclamation of the quarry. The soil would be pushed back into the quarry benches and floors and planted with erosion-preventing, native grasses and other vegetation when the excavation is completed. Portions of the quarry could be reclaimed in stages, depending on the final quarry excavation plan.

INTRODUCTION

All Forest Service projects, programs, and activities are to be reviewed for possible effects on Proposed Endangered, Threatened, and Forest Service Sensitive Species and the findings documented in the Decision Notice (FSM 2672.4). There is no potential habitat for any USFWS Threatened or Endangered Plants on the Mount Hood National Forest. However, twenty-seven plants on the Regional Forester's List of Sensitive Plants and Their Habitats may be found on the Clackamas River and Zigzag Ranger Districts of the Mt. Hood National Forest. These species are listed on the following pages.

There are three steps in a plant biological evaluation that fulfill the requirements dictated by the USFS Manual (2672.42, 2672.43). Step 4 may also be required in certain circumstances. The steps are as follows.

Step 1. Pre-field Review: Each area to be affected by management actions is investigated for Sensitive Plant habitat in the pre-field review. The following sources are consulted to determine whether potential habitat exists: R-6 Regional Forester's and Mt. Hood National Forest Potential Endangered, Threatened, and Sensitive Plant Handbook, Oregon Natural Heritage Database and the Mt. Hood NF Database records, previous botanical surveys, aerial photos, USGS topographic maps, and knowledge provided by individuals familiar with the area. Each plant on the Mt. Hood NF Sensitive Plant List is considered. Most Sensitive Plants tend to be found in riparian zones, meadows, bogs, scree slopes, rocky outcrops, and high volcanic areas. These are considered high priority habitat.

Step 2. Field Reconnaissance: Field reconnaissance is conducted on a priority basis. The first priority is those units or project areas which have been identified as having high probability habitats in or surrounding the unit/project area. The next priority is all other units/project areas. Surveys for the first priority units include, at a minimum, an intense search of all high probability habitat during the season when plant identification is possible. Surveys for second priority habitat are composed of a field check of the unit to search for habitat that may not have been found in the pre-field review. If a sensitive plant is found, R-6 Site forms are completed and sent to the Mt. Hood NF Headquarters Office and the Oregon Natural Heritage Database.

Step 3. Risk Assessment: If a Sensitive Plant is found on or adjoining a site where action is proposed, a risk assessment (analysis of the effects of a proposed action on species and their habitats) must be performed. A risk assessment considers (a) the likelihood of beneficial/adverse effects, and (b) the consequences of these effects on a Sensitive Plant population to determine what the cumulative effects would be to the overall population. Management recommendations are given to mitigate for adverse effects.

Step 4. Botanical Investigation: When initial risk assessment reaches the conclusion "Unknown Impact (UI)" a Botanical Investigation is required. This procedure involves additional investigation that essentially becomes background information for a conservation strategy. The result is a determination of significance of effects on species conservation and population objectives.

STEP 1. PRE-FIELD REVIEW OF EXISTING INFORMATION

The following sources were consulted: R-6 Regional Forester's and Mt. Hood National Forest Potential Endangered, Threatened, and Sensitive Plant Handbook, Oregon Natural Heritage Database and the Mt. Hood NF Database records, previous botanical surveys, aerial photos, and USGS topographic maps.

Region 6 Threatened, Endangered, or Sensitive Plants documented or suspected on the Clackamas River and Zigzag Ranger Districts of the Mt. Hood National Forest are contained in the following two tables. The tables were updated in May 1999.

Documented

Plant Name	Habitat	TNC	USFWS	ODA	ONHP
<i>Aster gormanii</i> Gorman's aster	Dry cliffs, talus, rock slopes	G3S3	___	___	1
<i>Botrychium montanum</i> mountain grape-fern	Forested wet	G3S2	___	___	2
<i>Calamagrostis breweri</i> Brewer's reedgrass	Subalpine moist, grassy	G3S2	___	___	2
<i>Carex livida</i> pale sedge	Wet-dry meadow, bog	G5S2	___	___	2
<i>Cimicifuga elata</i> tall bugbane	Forested mesic	G3S3	___	C	1
<i>Coptis trifolia</i> 3-leaflet goldthread	Forested wet & mesic	G5S1	___	___	2
<i>Corydalis aquae-gelidae</i> cold water corydalis	Forested wet	G3S3	___	C	1
<i>Diphasiastrum complanatum</i> ground cedar	Forested mesic	G5S2	___	___	2
<i>Erigeron howellii</i> Howell's daisy	Moist-dry cliffs, talus, rocky slopes	G2S2	___	C	1
<i>Fritillaria camschatcensis</i> Indian rice	Moist-dry meadow	G5S1	___	___	2
<i>Lewisia columbiana</i> <i>v. columbiana</i> Columbia lewisia	Dry cliffs, talus, rocky slopes	G4T4S2	___	___	2
<i>Lycopodiella inundata</i> bog club moss	Meadow – wet, bog	G5S2	___	___	2
<i>Ophioglossum pusillum</i> adder's tongue	Wet-dry meadow, bog	G5S1	___	___	2
<i>Scheuchzeria palustris</i> <i>v. americana</i> scheuchzeria	Wet meadow, bog	G5T5S2	___	___	2
<i>Sisyrinchium sarmentosum</i> pale blue-eyed grass	Moist-dry meadow	G2S1	SoC	C	1
<i>Suksdorfia violacea</i> violet suksdorfia	Cliffs, talus, rocky slopes	G4S1	___	___	2

Plant Name	Habitat	TNC	USFWS	ODA	ONHP
<i>Taushia stricklandii</i> Strickland's taushia	Moist-dry meadow	G4S1	—	—	2
<i>Wolffia columbiana</i> water-meal	Pond, lake, gently flowing water	G5S1	—	—	2

Suspected

Plant Name	Habitat	TNC	USFWS	ODA	ONHP
<i>Agoseris elata</i> tall agoseris	Moist-dry meadow	G4S1	—	—	2
<i>Botrychium lanceolatum</i> lance-leaved grape fern	Forested wet	G5S3	—	—	2
<i>Botrychium minganense</i> moonwort	Forested wet	G4S2	—	—	2
<i>Botrychium pinnatum</i> pinnate grape fern	Forested wet	G5S2S3	—	—	2
<i>Montia howellii</i> Howell's montia	Moist-dry lowlands	G3S2	—	C	4
<i>Phlox hendersonii</i> Henderson's phlox	Subalpine, dry, rocky, scree	G4S1	—	—	2
<i>Potentilla villosa</i> villous cinquefoil	Subalpine, dry, rocky, scree	G4S1	—	—	2
<i>Romanzoffia thompsonii</i> mistmaiden	Wet, rocky, sunny	G3S3	—	—	1
<i>Wolffia borealis</i> dotted water-meal	Pond, lake, gently flowing water	G5S1	—	—	2

TNC (Natural Heritage)

- G Global rank
- G1 Critically imperiled throughout range
- G2 Imperiled throughout its' range
- G3 Rare, threatened, uncommon in range
- G4 Not rare, apparently secure in range
- G5 Widespread, abundant & secure in range
- S State rank
- S1 Critically imperiled in Oregon
- S2 Imperiled in Oregon
- S3 Rare, threatened or uncommon in Oregon

ODA (Oregon State Status)

- LE Listed Endangered Species
- LT Listed Threatened Species
- PE Proposed Endangered Species
- PT Proposed Threatened Species
- C Candidate for Listing as T or E

ONHP (Oregon Natural Heritage Program)

1. Contains taxa threatened with extinction or presumed to be extinct throughout their entire range
2. Contains taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon
3. Contains species for which more information is needed before status can be determined
4. Contains taxa of concern which are not currently threatened or endangered

USFWS (US Fish and Wildlife Service)

- LT Listed Threatened
- LE Endangered
- PT Proposed Threatened
- PE Proposed Endangered
- C Candidate taxa for which the USFWS has sufficient information to support a proposal to list under the ESA
- SoC Species of Concern. Former C2 candidates which need additional information in order to propose as T or E under the Endangered Species Act. USFWS is reviewing for consideration as Candidates for listing under the ESA.

Survey Level A: Aerial photo interpretation and review of existing records. This is a determination of the potential for a listed species to occur within the proposed project area. No field surveys are done at this point.

Discussion/Results of Pre-field Review

Records and maps cited in Step 1, page 2 were consulted. The following results were obtained:

- A. Sensitive Plant sites previously documented within the proposed project areas:
No sensitive plant sites are known to occur within the project area.
- B. Sensitive Plant sites previously documented adjacent to the proposed project area(s) that are potentially impacted by the project: N/A
- C. XX Refer to the following table for any Sensitive Plant sites and their habitat that are likely to occur within the proposed project area or are likely to occur in areas outside the proposed project area that may be impacted by project activities. See Figure 2. A Biological Evaluation is not complete without the completion of Step 2, Field Reconnaissance, if habitat is likely to occur within the proposed project area.

Species	Potential Habitat Present?	Species	Potential Habitat Present?
<i>Agoseris elata</i>	No	<i>Lewisia columbiana</i> <i>v.columbiana</i>	No
<i>Aster gormanii</i>	Yes	<i>Lycopodiella inundata</i>	No
<i>Botrychium lanceolatum</i>	Yes	<i>Montia howellii</i>	No
<i>Botrychium minganense</i>	Yes	<i>Ophioglossum pusillum</i>	No
<i>Botrychium montanum</i>	Yes	<i>Phlox hendersonii</i>	No
<i>Botrychium pinnatum</i>	Yes	<i>Potentilla villosa</i>	No
<i>Calamagrostis breweri</i>	No	<i>Romanzoffia thompsonii</i>	No
<i>Carex livida</i>	No	<i>Scheuchzeria palustris</i> <i>v.americana</i>	No
<i>Cimicifuga elata</i>	No	<i>Sisyrinchium sarmentosum</i>	No

Species	Potential Habitat Present?	Species	Potential Habitat Present?
<i>Corydalis aquae-gelidae</i>	No	<i>Suksdorfia violacea</i>	No
<i>Coptis trifolia</i>	No	<i>Taushia stricklandii</i>	No
<i>Diphysastrum complanatum</i>	No	<i>Wolffia borealis</i>	No
<i>Erigeron howellii</i>	No	<i>Wolffia columbiana</i>	No
<i>Fritillaria camschatensis</i>	No		

D. _____ No Sensitive Plant species or their habitats are likely to occur within the proposed project area or in areas adjacent to the project that may be affected by project activities. If no Sensitive species or their habitats are present, then Biological Evaluation is complete at this stage.

STEP 2. FIELD RECONNAISSANCE

A field reconnaissance was conducted for all Sensitive Plant species and their habitats known to occur or suspected to occur within all areas affected by project activities.

Survey Level

Level B – Level A plus 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. Salix Associates completed a field review of the site on July 24, 2003.

Level C – Level A plus multiple entry survey for listed species likely to inhabit the project area. Conducted at different dates when species identifiable at different times of the season are suspected to occur within areas affected by the project.

Survey Design

Design 1/Field Check

The surveyor gives the area a quick “once over” but does not walk completely through the project area. The entire project area has not been examined.

Design 2/Cursory

The surveyor gives the area a “once over” by walking through the project area. The entire project area has not been examined.

Design 3/Limited Focus

The surveyor closely examines one or more habitat specific locations within the project area but does not look at the rest of the area.

Design 4/General

The surveyor gives the area a closer look by walking through the project area and walking around the perimeter of the area or by walking more than once through the area. Most of the project area is examined.

Design 5/Intuitive Controlled

The surveyor has a closer look by conducting a complete examination of specific areas of the project after walking through the project area and perimeter or by walking more than once through the area.

Design 6/Complete

The surveyor has walked throughout the area being examined until nearly all of the area has been examined.

Results and Discussion of Survey:

Species	Species Present?	Species	Species Present?
<i>Agoseris elata</i>	No	<i>Lewissia columbiana</i> <i>v.columbiana</i>	No
<i>Aster gormanii</i>	No	<i>Lycopodiella inundata</i>	No
<i>Botrychium lanceolatum</i>	No	<i>Montia howellii</i>	No
<i>Botrychium minganense</i>	No	<i>Ophioglossum pusillum</i>	No
<i>Botrychium montanum</i>	No	<i>Phlox hendersonii</i>	No
<i>Botrychium pinnatum</i>	No	<i>Potentilla villosa</i>	No
<i>Calamagrostis breweri</i>	No	<i>Romanzoffia thompsonii</i>	No
<i>Carex livida</i>	No	<i>Scheuchzeria palustris</i> <i>v.americana</i>	No
<i>Cimicifuga elata</i>	No	<i>Sisyrinchium sarmentosum</i>	No
<i>Corydalis aquae-gelidae</i>	No	<i>Suksdorfia violacea</i>	No
<i>Coptis trifolia</i>	No	<i>Tauschia stricklandii</i>	No
<i>Diphasiastrum complanatum</i>	No	<i>Wolffia borealis</i>	No
<i>Erigeron howellii</i>	No	<i>Wolffia columbiana</i>	No
<i>Fritillaria camschatensis</i>	No		

_____ The above-listed Sensitive Plant species were located either within the project area or in an area outside the project boundary that may potentially be impacted by the proposed project. Proceed to Step 3. Risk Assessment. Biological Evaluation is not yet complete.

OR

XX No Sensitive Plant species were located within the proposed project area or in an area outside the project boundary that may potentially be impacted by the proposed project. It is unlikely that surveys at other times of year would locate any Sensitive Plants. Biological Evaluation is complete. This conclusion is equivalent to “No impact” risk assessment for Sensitive Plants.

Surveyed by Salix Associates Survey Dates July 24, 2003
 Survey Level B Survey Design 5 and 6

STEP 3. RISK ASSESSMENT

The determination of risks to populations of Sensitive Plants takes into consideration the size, density, vigor, habitat requirements, location of the population, and the consequence of an adverse effect on the species as a whole within its range and within the Mt. Hood National Forest. Determine the risk assessment for each sighting of Sensitive Plant species located within the project area, or outside the project area which may be impacted by project activities.

Risk Assessment Levels for Sensitive Species:

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.

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.

If risk assessment is MIIH, identify the cause(s) and effect(s) and describe mitigation measures necessary to reduce risks:

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 to a species, or
3. Results in a significantly increased risk of loss of viability to a significant population (stock).

If risk assessment is WIFV, identify the cause(s) and effect(s) and describe mitigation measures that, if adopted, would reduce the effects to a level so that the project would not cause a trend toward federal listing or a loss of viability.

Beneficial Impact (BI)

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

Unknown Impact (UI)

The risk to Sensitive Species is unknown, proceed to Step 4. Botanical Investigation.

Species:

Site:

Risk Assessment:

STEP 4. BOTANICAL INVESTIGATION

Additional information is required to determine the significance of the proposed project's effects on a Sensitive Plant species over its entire range. The investigation may require additional inventory information and an assessment of cumulative effects on the species over its entire range. Address the estimated impact on project area populations, regional species viability, statewide species viability, and total (entire range) species viability. Consider cumulative effects, gene pool diversity, and both long and short term changes in habitat. Include references and any documentation from consultation with USFWS. Note: Consultation is required for listed or proposed species and recommended for category 1 or 2 candidate species.)

For each species determine:

1. habitat requirements
2. effects of proposed management activities on required habitats of the species
3. cumulative effects of current and planned activities on the species as a whole

Results of Botanical Investigation:

Species:

Site:

Risk Assessment:

Biological Evaluation Summary of Effects

Species	Alternative 1 Proposed Action	Alternative 2 No Action
<i>Agoseris elata</i>	NI	NI
<i>Aster gormanii</i>	NI	NI
<i>Botrychium lanceolatum</i>	NI	NI
<i>Botrychium minganense</i>	NI	NI
<i>Botrychium montanum</i>	NI	NI
<i>Botrychium pinnatum</i>	NI	NI
<i>Calamagrostis breweri</i>	NI	NI
<i>Carex livida</i>	NI	NI
<i>Cimicifuga elata</i>	NI	NI
<i>Corydalis aquae-gelidae</i>	NI	NI
<i>Coptis trifolia</i>	NI	NI
<i>Diphasiastrum complanatum</i>	NI	NI
<i>Erigeron howellii</i>	NI	NI
<i>Fritillaria camschatensis</i>	NI	NI
<i>Lewisia columbiana</i> <i>v. columbiana</i>	NI	NI
<i>Lycopodiella inundata</i>	NI	NI
<i>Montia howellii</i>	NI	NI
<i>Ophioglossum pusillum</i>	NI	NI
<i>Phlox hendersonii</i>	NI	NI
<i>Potentilla villosa</i>	NI	NI
<i>Romanzoffia thompsonii</i>	NI	NI
<i>Scheuchzeria palustris</i> <i>v. americana</i>	NI	NI
<i>Sisyrinchium sarmentosum</i>	NI	NI
<i>Suksdorfia violacea</i>	NI	NI
<i>Taushia stricklandii</i>	NI	NI
<i>Wolffia borealis</i>	NI	NI
<i>Wolffia columbiana</i>	NI	NI

NI	No Impact
MIH	May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species.
WIFV	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. (Trigger for a Significant Action per NEPA)
BI	Beneficial Impact
UI	Unknown Impact

NORTHWEST FOREST PLAN SURVEY AND MANAGE FUNGI, LICHEN, BRYOPHYTE AND VASCULAR PLANT REPORT

Species Requiring Pre-disturbance Surveys

The *Record of Decision and Standards and Guidelines for Amendments to Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines, January 2001* amends the *Northwest Forest Plan*. It sets forth both a revised list of species requiring surveys prior to habitat-disturbing activities and species requiring management of known sites.

The following is a list of botanical Survey and Manage species requiring surveys prior to habitat-disturbing activities, for which there may be habitat on the Zigzag and Clackamas River Ranger Districts. This list includes species for which there are no formal protocols (in bold); these species were considered equivalent to those with protocols for the purpose of this report. The vascular plant and fungus (noble polypore, *Bridgeoporus nobilissimus*) survey was conducted by Salix Associates on 24 July 2003, and the bryophyte and lichen survey was conducted by Ron Hamill of Cryptogam Research Associates on 5 August 2003. USFS search protocols were followed for all species and species groups.

Botrychium minganense (vascular plant)
Botrychium montanum (vascular plant)
Bridgeoporus nobilissimus (fungi)
Coptis trifolia (vascular plant)
Corydalis aquae-gelidae (vascular plant)
Cypripedium fasciculatum (vascular plant)
Cypripedium montanum (vascular plant)
Galium kamtschaticum (vascular plant)
Hypogymnia duplicata (lichen)
***Leptogium burnetiae* var. *hirsutum* (lichen)**
***Leptogium cyanescens* (lichen)**
Lobaria linita (lichen)
***Platismatia lacunosa* (lichen)**
Pseudocypellaria rainierensis (lichen)
***Ramalina thrausta* (lichen)**
Schistostega pennata (moss)
Tetraphis geniculata (moss)

Results of Pre-Disturbance Surveys

No conks of noble polypore were located, however stumps and snags searched in the area provide suitable habitat. No rare bryophytes or lichens were found during the survey.

The lichen community is only moderately developed and dominated by alecteroid (pendulous) and green-algal foliose taxa. Frequently encountered taxa include: *Alectoria sarmentosa*, *Bryoria* spp. *Hypogymnia* spp. and *Platismatia* spp. Cyano-lichens (nitrogen-fixing) are poorly represented and restricted to infrequently encountered thalli of terrestrial species in talus areas.

The bryophyte community is also moderately developed and is dominated by terrestrial species. Commonly encountered bryophytes include; *Rhytidiopsis robusta*, *Dicranella varia*, *Dicranum* spp, *Racomitrium* spp.,. Talus areas exhibited the highest levels of species richness.

Known Site Management Recommendations

Zigzag and/or Clackamas River Ranger District records and the Inter-Species Management System (ISMS) were searched for Known Sites of Survey and Manage botanical species requiring management. The following Survey and Manage Species within the project area or adjacent to the project area which will be affected by project activities were found:

Carol Horvath, Botanist

Date

Noxious Weed and Invasive Non-Native Species Risk Assessment

Noxious weeds and invasive non-native plant species have been introduced to North America intentionally or unintentionally from other countries. The associated natural predators and diseases that controlled them in their native lands are not present in the United States. As non-native plant infestations increase, they threaten biological diversity and rare habitats, and can alter ecosystem processes such as fire frequency and intensity, hydrologic cycles, and soil erosion rates. They can also poison livestock and reduce the quality of recreational experiences. There are an estimated 2,000 invasive and noxious weed species in the U.S and nearly 600 in Oregon.

Noxious weeds are nuisance species that are targeted for control by the Oregon State Department of Agriculture (ODA). In the 1998 Final EIS for Managing Competing and Unwanted Vegetation, the Forest Service established that coordinated efforts for noxious weed control are necessary to prevent adverse effects on the environment.

Forest Service Manual direction requires that Noxious Weed Risk Assessments be prepared for all projects involving ground-disturbing activities. For projects that have a moderate to high risk of introducing or spreading noxious weeds, recent Forest Service policy requires that decision documents must identify noxious weed control measures that will be undertaken during project implementation (FSM 2081.03, 11/29/95). To be in compliance with the EIS for Managing Competing and Unwanted Vegetation, it is also recommended the applicable portions of *Standard Procedures to Reduce the Risk of Spreading Weeds* be implemented in all projects, regardless of weed risk ranking.

Risk Ranking

Factors and Vectors considered in determining the risk level for the introduction or spread of noxious weeds are:

FACTORS

- A. Known noxious weeds in close proximity to project area that may foreseeably invade project.
- B. Project operation within noxious weed population.
- C. Any of vectors 1-8 in project area.

VECTORS

- 1. Heavy equipment (implied ground disturbance including compaction or loss of soil "A" horizon.)
- 2. Importing soil/cinders/gravel/straw or hay mulch.
- 3. Off-road vehicles or all-terrain vehicles.
- 4. Grazing.
- 5. Pack animals (short term disturbance).
- 6. Plant restoration.
- 7. Recreationists (hikers, mountain bikers, etc.).
- 8. Forest Service or other project vehicles.

High, moderate, or low risk rankings are possible. For the high ranking the project must contain either a combination of factors A+C or B+C above. The moderate ranking contains any of vectors #1-5 in the project area. The low ranking contains any of vectors #6-8 in the project area or known weeds within or adjacent to the project area, without vector presence.

Weed Risk Ranking Results

Project	Factors A, B, and C	Vectors 1, 2, 6, and 8	Risk Ranking High
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Standard Procedures to Reduce the Risk of Spreading Noxious Weeds

- 1. Clean heavy equipment prior to arrival on Forest Service land to prevent introduction of new noxious weed seed. The contract administrator or project activity coordinator will inspect all project equipment before it is allowed to operate at the project site. The equipment shall be free of soil clumps and vegetative matter or other debris that could contain or hold seeds. Cleaning of the equipment may include pressure washing and shall be done outside of the National Forest boundary.
- 2. If horses or pack animals are used, clean hooves and groom animals prior to arrival on site. Use weed free feed for 3 days prior to arrival on site and throughout duration of project.
- 3. Save topsoil on site from areas to be disturbed and replace over disturbed soil before replanting.
- 4. If soil disturbance occurs, revegetate with site appropriate, locally collected native seed or native plants. When these are not available, use noninvasive and nonpersistent non-native species. When seed is used it should be either certified noxious weed free or from

Forest Service native seed supplies. Check with the District Botanist for appropriate species.

5. Protect soil from compaction by applying bark chips or straw mulch. If straw mulch is incorporated, use either mulch from fields that grow State of Oregon Certified grass seed (which is certified free of Oregon noxious weeds) or other sources that are determined to be free of noxious weeds. Mulch species shall preferably be from native seed sources or annual rye or cereal grain fields.
6. If gravel or soil is imported from outside of the project area, consult with the District Botanist to ensure that weeds are not introduced from the supply source.

Noxious Weed Survey Results

Noxious weed surveys were conducted beginning at Highway 26 at the north end, along both sides of USFS Road 2656 and Road 955 into the quarry, for a total of just over 3 miles. Numerous locations of several species were found and mapped. They are listed on the table below, and marked on Figures 3 and 4.

Latin Name	Common Name	Location and Frequency
<i>Cirsium arvense</i>	Canada thistle	One small location, roadside near middle of quarry.
<i>Cirsium vulgare</i>	bull thistle	Few plants roadside in 3 locations, in south half of quarry.
<i>Cytisus scoparius</i>	Scot's broom	2 roadside plants: 1 at NW corner of quarry, 1 at SW corner
<i>Digitalis purpurea</i>	foxglove	2 roadside plants at NW corner of quarry, and one small population on west side of entrance road near Hwy. 26.
<i>Hypericum perforatum</i>	St. John's wort	Numerous scattered populations along entrance road. Two small, roadside populations in south portion of quarry. Scattered elsewhere in quarry.
<i>Lotus corniculatus</i>	birdsfoot trefoil	Scattered populations along entrance road.
<i>Phalaris arundinacea</i>	reed canarygrass	One patch on east side of Road 2656 about 1/4 mile south of Hwy. 26. A second patch on west side of Road 2656, about 3/4 mile south of Hwy. 26.

Recommendations Special to this Project

1. Prior to project implementation, all identified noxious weeds should be removed. This includes pulling, bagging in plastic bags, and burying all noxious weeds including St. Johns wort and bull thistle. Scot's broom can be pulled or cut at the main stem at ground level. Scot's broom does not need bagging, only burying. If burying can be accomplished in the soil disposal area soon after bagging or cutting, all cut or bagged vegetation may be buried at the site. Herbicides would not be used.
2. A FS botanist would survey the quarry annually for noxious weeds and would draft a report as to the findings. (Alternatively, a qualified botanist would conduct a survey and prepare a report for review and approval by a FS botanist.) Additional weed control (bagging, cutting, burying) would be done annually if justified by the botanist's report.
3. Heavy equipment brought to the quarry from off the Forest should be free of soil clumps and vegetative matter or other debris that could contain seeds prior to entering the Forest.
4. Should material from outside the Mt. Hood National Forest boundaries be imported to the quarry, a FS botanist would be consulted prior to the material being transported to ensure noxious weeds are not imported to the quarry.
5. To protect from erosion, all exposed soil areas would be seeded, mulched, and fertilized by September 30 of each year where the area is disturbed. Grass species used would comply with the Mt. Hood National Forest policy on the use of native plants and be certified free of Oregon and All States noxious weeds. Mulch would be applied to the entire seeded area and to consist of straw from fields that grow State-Certified grass seed (which is certified free of Oregon noxious weeds) or other sources determined to be free of noxious weeds. Mulch species preferably will be from native seed sources, annual rye, or cereal grain fields. Mulch should be applied at a rate of 3,000 pounds per acre.

Carol Horvath, Botanist

Date