

Biological Evaluation and Fisheries and Wildlife Report for the Tamarack Quarry Expansion Project

**Mt. Hood National Forest
Zigzag Ranger District
Clackamas County, Oregon**

May 2004

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1 INTRODUCTION

David Evans and Associates, Inc. (DEA) prepared this biological evaluation (BE) and Wildlife Report for the Tamarack Quarry Expansion Project on the Mt. Hood National Forest, Zigzag Ranger District, Clackamas County, Oregon. This BE was prepared to document compliance with the Northwest Forest Plan (USDA and USDI, 1994) and the Mt. Hood National Forest Land and Resource Management Plan (LRMP) (USDA, 1990). The applicant (USDA Forest Service [FS]) is seeking permission under the National Environmental Policy Act (NEPA) and related special uses permits to complete the project. This document addresses Endangered Species Act (ESA) listed fish and wildlife species; FS sensitive species of wildlife and fish; Northwest Forest Plan survey and manage species; and management indicator species that are known to occur, or are likely to occur, within the project area, as indicated by the FS. Potential effects to federally-listed northern spotted owl (*Strix occidentalis caurina*) are addressed in the Biological Assessment for this project.

It is FS policy to protect the habitat of federally listed and FS listed sensitive species from adverse modification or destruction, as well as to protect individual organisms from harm or harassment as appropriate on FS lands (FSM 2670.3). This BE assesses possible impacts the proposed project may have on FS-sensitive and management indicator species of wildlife, fish, and invertebrate species and their associated habitats that may occur on the Mt. Hood National Forest.

2 PROJECT LOCATION

The project area is located approximately four miles south of Government Camp and US Highway 26, in Section 2, Township 4 South, Range 8½ East, Willamette Meridian, Clackamas County, Oregon. The Tamarack Quarry is approximately 1.5 miles south of Trillium Lake. Figure 1 shows the project area and location.

The project area encompasses approximately 48 acres adjacent to (generally north and east of) the existing Tamarack Quarry. The existing quarry occupies approximately 22 acres. The project area also includes a corridor, approximately 3.1 miles long, along the existing haul route to the quarry from Highway 26. The haul route is along FS roads 2656 and 2656-955. References in this document to the “expansion area” are meant to only address the quarry expansion and not the haul route, whereas references to the “project area” includes the area described above.

3 PROPOSED ACTION

The proposed action is to expand the existing Tamarack Quarry (formerly known as the Mud Creek Quarry) to encompass up 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 ODOT and the FS for road maintenance and construction,

including improvements to US 26 and Oregon Route (OR) 35. Other uses may include road closures and site restoration, such as stream projects.

Vegetation removal and rock excavation would occur over the next 20 years, as rock is needed. ODOT anticipates removing 40,000 to 100,000 cubic yards of rock per year, although needs would vary with annual road and weather conditions. The FS would extract less than 10,000 cubic yards of rock per year for project work other than emergencies. ODOT and the FS would extract rock from the remaining seven acres within the current permitted area prior to entering the expansion area.

The existing quarry is surrounded by talus slopes and Douglas-fir-dominated, second-growth forest, although there are scattered late-seral remnant trees with mature snags and large down woody debris to the north. Other species in the tree layer include western hemlock, western red cedar, and western white pine. The shrub layer is dominated by Pacific rhododendron and dwarf oceanspray. The expansion area is classified as Matrix land in the LRMP. All existing vegetation in the expansion area would be removed for quarry operations.

Activities would include clearing vegetation, blasting, rock crushing, screening, batching, loading and hauling, importing excess materials (such as 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. Rock for sanding roads would be hauled out of the quarry and stockpiled at various locations: the junction of US 26 and OR 35, the Government Camp maintenance station, Bennett Pass, Parkdale, and the junction of OR 216 and US 26. Construction rock would be quarried as needed and used shortly after crushing.

Activities would be subject to timing restrictions. Blasting would be allowed after July 15 only. No noise-generating or hauling activities would occur at night, on weekends, during holidays, or any time between the first measurable snowfall and mid-April, except for emergencies. ODOT would be responsible for plowing two lanes with turnouts on the haul route, as needed, as early as the second full week of April. Typically the FS opens the road a week or two prior to Memorial Day weekend.

The haul route from its junction with US 26 to the quarry is approximately 3.1 miles long, entirely on National Forest System lands, 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, structural repairs, striping, placement of safety reflectors, and placement of additional traffic signs. ODOT would pay for a commensurate portion of haul route maintenance. Traffic control, which may include flaggers and signs, would be implemented during hauling. Typical hauling trucks have a 20-cubic-yard capacity. No culvert replacements, road widening, pull-out or turn-around construction would occur as part of the proposed action.

Figure 1. Vicinity

A FS geologist estimated the remaining volume of good quality rock to be at least two million cubic yards. The geologist estimated the volume of the remaining in-place rock based on the topographic information from a 1"=100' site map, the location of surface outcrops, limited drill hole information, an assumption that good quality rock extends north beyond the drill hole locations for about 250 feet, and allowing for 20 percent of the volume to be soil and poor quality rock. The basic assumption is that the spur ridge landform is mostly underlain by the same andesite rock unit. Due to the extensive rock outcrops on the south side of the spur ridge there was little need for subsurface exploration until plans developed to excavate an upper bench. The FS drilled three exploratory holes in 1978. These drill holes are located approximately 150 feet northeast of the present quarry development limit. The drill holes were approximately 120 to 200 feet deep and indicated there is 180 feet or more of good quality rock below about 6 to 20 feet of soil. Additional drilling would be completed to verify the presence of good quality rock before expansion.

Detailed excavation and reclamation plans would be developed, approved by the FS, and implemented as expansion occurs. A reclamation plan is a required condition of any approved plan of operations. The reclamation plan would provide details about how ODOT expects to accomplish reclamation objectives. A diagram showing how waste rock will be arranged in the mine and the final grade of the reclaimed area is a mandatory part of the reclamation plan. Reclamation would include filling and stabilizing the quarry, spreading waste rock across the quarried area, adding any topsoil and vegetation removed during excavation, and planting native vegetation. 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. The slope of the reclaimed quarry area would be between zero and ten percent. Portions of the quarry could be reclaimed in stages, depending on the final quarry excavation plan. ODOT has the option of hiring specialists to help with the revegetation portion of the reclamation or providing funding for FS assistance. The reclamation plan would follow the water and erosion control, soil salvage and replacement, and land shaping and revegetation best management practices described in the DOGAMI Mineral Land Regulation and Reclamation Program's manual aggregate mines (Open-File Report O-96-2). DOGAMI requires a reclamation plan to be submitted as part of the Division 30 Operating Permit application.

4 EXISTING CONDITIONS

Vegetation within the project area is within the Pacific Silver Fir Zone (USDA, 1982). Remnant old growth Douglas fir (*Pseudotsuga menziesii*) trees are scattered throughout the proposed expansion area and comprise what remains of the overstory canopy. Pacific silver fir (*Abies amabilis*), western hemlock (*Tsuga heterophylla*), mountain hemlock (*Tsuga mertensiana*) and western red cedar (*Thuja plicata*) occur in the midstory and understory within this area. Pacific rhododendron (*Rhododendron macrophyllum*)

dominates most of the expansion area, with scattered areas dominated by huckleberry (*Vaccinium* spp.). The herb layer is sparse, with bear-grass (*Xerophyllum tenax*) as the dominant herb. There is a high density of down woody debris and snags within the proposed expansion area.

The Salmon River watershed provides potential habitat for more than 230 species of wildlife. The watershed also provides special habitats including wetlands, rock outcrops, talus slopes, cliffs and waterfalls (USDA, 1995). Vegetation in the watershed was classified into stand structure classes for the Salmon River Watershed Analysis. Structure classifications were based on tree size and canopy closure. Two levels of structural categories were used in this analysis:

- Coarse level split into Open, Small Conifer, and Large Conifer.
- Finer breaks based primarily on canopy closure within these three classes.

Open: Vegetated areas that currently function as openings. These include:

- Grass/forb/shrub (GFS) (including grass/forb/shrub/advanced): Dominated by early seral vegetation and tree seedlings with less than 40 percent total tree canopy cover.
- Open Sapling/Pole (OSP): sapling and pole size trees dominate (less than 9 inches dbh) and canopy cover is 70 percent or less. Shrubs may be well established.

Small Conifer: Stands that have tree canopy closure over 40 percent and are dominated by tree sizes between 9 and 21 inches dbh, or sapling/pole stands over 70 percent closure. These stands include:

- Closed Sapling Pole (CSP): trees up to 9 inches dbh dominate the stand; canopy closure is greater than 70 percent. Early-seral understory vegetation begins to decline.
- Open Small Conifer (OSC): trees 9 to 21 inches dbh dominate the stand; canopy closure is 70 percent or less.
- Closed Small Conifer (CSC): trees 9 to 21 inches dbh dominate the stand; canopy cover is over 70 percent. A range of stands are represented—from dense young single-story stands with little understory vegetation to older stands with multiple layered canopies.

Large Conifer: Stands that have tree canopy closure of 40 percent or more and are dominated by trees greater than 21 inches in diameter. These stands include:

- Open Large Conifer (OLC): trees over 21 inches dbh dominate the stand, and canopy cover is 50 percent or less.

- Closed Large Conifer (CLC): trees over 21 inches dbh dominate the stand and canopy cover is over 50 percent.

Over 50 percent of the expansion area is composed of GFS stands with the remaining 50 percent of the expansion area are in the CSC structure stage. Within the CSC stands remnant late seral Douglas-fir and western hemlock trees occur. A majority of these trees are snags in various states of decay.

5 METHODS

A pre-field review of existing information and references for federally listed species was conducted for the project area. The Mt. Hood National Forest provided a list of the federally listed wildlife and fish species that could potentially occur in the project area. Habitat conditions for threatened and endangered species were evaluated in the expansion area on November 14, 2002. No surveys for threatened or endangered species were conducted for this project; however, several surveys have been conducted for species listed as “survey and manage” under the Northwest Forest Plan. Surveys were conducted on November 14, 2002; May 27, 2003; and October 10, 2003.

6 ENVIRONMENTAL CONSEQUENCES

6.1 THREATENED AND ENDANGERED SPECIES

6.1.1 Bald Eagle

6.1.1.1 Status

Bald eagles are federally listed as threatened by the USFWS (32 FR 4001). The species is currently being considered for de-listing from the federal list of endangered and threatened wildlife (60 FR 36010).

6.1.1.2 Life History and Habitat Requirements

The bald eagle is found along the shores of saltwater and freshwater lakes and rivers. Breeding territories are located in predominately coniferous, uneven-aged stands with old-growth components (Anthony et al., 1982). However, they may also be located within mature deciduous stands in association with water. Territory size and configuration are influenced by a variety of habitat characteristics, including availability and location of perch trees for foraging, quality of foraging habitat, and distance of nests from waters supporting adequate food supplies. Habitat models for nesting bald eagles show that eagles select areas with suitable forest structure, low human disturbance, and highly diverse or accessible prey (Livingston et al., 1990).

In Oregon, bald eagle nests are typically within one mile of water (Marshall et al 2003). Bald eagles typically build large stick nests in mature or old growth trees, which are generally used over successive years. A typical nest tree is dominant or co-dominant in the overstory, and is usually live, but often has a dead or broken top with a limb structure

to support the nest (Rodrick and Milner, 1991). The nest tree usually has an unobstructed view of nearby water, and has stout upper branches that form flight windows large enough to accommodate the bird's large wingspan (Grubb, 1976). The three main factors affecting distribution of nests and territories are proximity to water and availability of food, suitable trees for nesting, perching, and roosting, and the number of breeding-aged eagles (Stalmaster et al., 1985).

Wintering bald eagles concentrate in areas where food is abundant and disturbance is minimal. The birds use perches during the day, which are selected primarily according to their proximity to a food source (USFWS, 1986). Wintering bald eagles may roost communally at night near major foraging areas. Roosts typically are established in isolated areas in old growth stands that have trees taller than the surrounding trees.

Sufficient, consistent, accessible, and uncontaminated food resources may be the most critical components of winter and breeding habitat for bald eagles (USFWS, 1986; Stalmaster et al., 1985). Since eagles often depend on dead or weakened prey, their diet may vary locally and seasonally. Various carrion, including spawned salmon taken from gravel bars along wide, braided river stretches, are important food items during the fall and winter (Stalmaster et al., 1985). Waterfowl are taken as well, especially near hunting areas where crippled and dead birds occur. Anadromous and warm-water fishes, small mammals, carrion, and seabirds are consumed during the breeding season (USFWS, 1986, Anderson et al., 1986).

Critical nesting periods for the bald eagle are between January 1 and August 15. Key wintering periods are from November 15 to March 15.

6.1.1.3 Distribution and Occurrence in Project Area

Bald eagles are found throughout the state during the non-breeding season and may occur in the project area during this period. Bald eagles are uncommon to rare breeders outside their primary breeding areas in Oregon. The closest breeding area is along the Columbia River below Portland (Marshall et al., 2003). There are no known bald eagle nests within one mile of the project area (Isaacs, 2003; Isaacs, pers. comm., 2003).

Winter use of the project area is unlikely since bald eagles congregate in areas of abundant forage and low human disturbance. Due to the elevation of the lake (3601 feet), Trillium Lake may freeze during the winter, limiting forage opportunities. The recreational use within the project vicinity is high, which would further limit bald eagle use of this area.

6.1.1.4 Existing Habitat Conditions

In Oregon, bald eagle nests are generally located within one mile of water (Marshall et al., 2003). Trillium Lake is located over a mile north of the quarry and could provide bald eagle nesting and foraging habitat. The lake is seasonally stocked with fish but may not

provide a consistent prey base. The proposed quarry expansion area would not provide suitable nesting habitat for bald eagles. Because the lake freezes in the winter, the project area would not support wintering bald eagles.

6.1.1.5 Analysis of Project Impacts

The proposed project would not remove bald eagle nesting, winter roosting or foraging habitat.

Although bald eagles may migrate through the project area, suitable habitat for winter concentrations is lacking because the lake freezes over in the winter, blocking access to the prey base. As stated in the analysis for spotted owls, there will be infrequent noise above local ambient levels; but with no evidence of nesting activity at the lake, it can be assumed that the project will not have direct, indirect, or cumulative impacts to non-breeding bald eagles.

6.1.1.6 Determination of Effect

Based on the analysis of survey data for eagle occurrence at the lake and the lack of breeding activity, it is determined that the project will have **no effect** on bald eagles.

6.1.2 Canada Lynx

6.1.2.1 Status

The Canada lynx is a federally threatened species in the contiguous US distinct population segment (March 24, 2000, 65 FR 16051). This population segment includes the forested portions of 13 states, of which Oregon and Washington are included.

6.1.2.2 Life History and Habitat Requirements

In the southern portion of their North American range, lynx are associated with boreal forests typically found in higher elevations of montane regions (Whitmer et al., 1998). Lynx habitat west of the Cascades has been described as occurring in a dominant potential vegetation type of subalpine fir forest (Pengeroth, 2001). A common component of natal denning habitat appears to be large woody debris, either down logs or root wads. Den sites may be located in regeneration stands older than 20 years or in mature conifer or mixed conifer/deciduous forests (USDA and USDI, 1999). Lynx require a mosaic of forest seral stages connected by forested stands suitable for travel cover. Foraging habitat is usually near den sites. Home range sizes of lynx are quite variable. Generally, home range sizes at the southern extent of lynx range are larger than in northern boreal forest, due to lower prey densities and inherent habitat patchiness. Studies in Washington and Montana found home range sizes from 27 to 47 square miles (mi²) for males, and from 15 to 17 mi² for females. Large home range sizes indicate that lynx were required to travel extensively to locate sufficient prey resources (USDA and USDI, 1999). Lynx are highly

dependent on snowshoe hares (*Lepus americanus*) and Douglas squirrel (*Tamiasciurus douglasii*) as prey, especially during the winter (Whitmer et al., 1998).

6.1.2.3 Distribution and Occurrence within the Project Area

The Mt. Hood National Forest issued a Lynx Effects Determination letter on December 3, 2003 (Dyck, 2003). The following is cited in that determination letter. The USFWS published the following conclusions about lynx in Oregon. “There is no evidence that a lynx population ever occurred in Oregon (Verts and Carraway 1998; K. McKelvey and K. Aubry, Rocky Mountain Research Station, in litt. 2001). Only 12 verified records of lynx exist for Oregon for the past century (Verts and Carraway 1998, McKelvey et al. 200b). The majority of these records are from marginal or non-lynx habitats and correlate with cyclic highs in northern lynx populations (Verts and Carraway 1998; K. McKelvey and K. Aubry, Rocky Mountain Research Station, in litt. 2001). We do not consider compilations of anecdotal reports of lynx in Oregon reliable for the reasons described by McKelvey and Aubry (Rocky Mountain Research Station, in litt. 2001). Habitats in Oregon that are potentially suitable for lynx are naturally isolated from occupied habitats in Washington and Idaho. There are no records of lynx reproduction in Oregon. Based on the limited verified records of lynx, lack of evidence of lynx reproduction, frequency of occurrences in atypical habitat, and the correlations of such occurrences with cyclic highs, we believe that lynx occur in Oregon as dispersers that have never maintained resident populations”(Federal Register Volume 68, pp 40089-40090, July 3, 2003).

6.1.2.4 Existing Habitat Conditions

The Forest currently has no mapped lynx habitat. In January 2001 Standards and Guidelines for the management of lynx were addressed in the Final Environmental Impact Statement (FEIS) and Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (Survey and Manage ROD) (USDA and USDI, 2004). This FEIS and Survey and Manage ROD amended the Northwest Forest Plan and therefore the LRMP. The Northwest Forest Plan Standards and Guidelines direct that the Lynx Conservation and Assessment Agreement (LCAS) (Ruediger et al., 2000, as cited in Dyck, 2003) will be used and referenced in all determinations of effect for Canada lynx. Lynx habitat as described in the LCAS and subsequent interpretation is not expected to occur on the Mt. Hood National Forest. The LCAS identified subalpine fir plant associations as the primary vegetation component from which lynx habitat and lynx analysis units would be delineated. The FS ran this analysis based on plant association groups and identified approximately 1,270 acres of subalpine fir plant associations primarily on the east side of the Forest.

The LCAS identified a need for at least 10 square miles (6,400 acres) of primary vegetation to warrant delineation of a lynx analysis unit. “Based on studies at the southern part of the lynx range in western U.S., it appears that at least 10 mi² of primary

vegetation should be present within each LAU to support survival and reproduction” (Ruediger et al., 2000, as cited in Dyck, 2003). The Mt. Hood National Forest does not have the minimum criteria to develop a lynx analysis unit. Therefore there is no mapped lynx habitat on the Forest or any lynx analysis units within which to apply the LCAS habitat objectives (Dyck, 2003).

6.1.2.5 Analysis of Project Impacts

There is no suitable lynx habitat within the project area or the Mt. Hood National Forest. Winter tracking surveys have been conducted on the Forest during the winters of 1994/1995 and 1995/1996 and again in 2000 (USDA, 1995 and USDA, 1995/1996). No lynx were detected during these surveys. In addition, “Cascadia Wild!” in partnership with the Forest conducted snow tracking surveys in areas around Mt. Hood and did not detect any lynx tracks. The Forest has implemented the National Lynx Survey Protocol from 1998 through 2001. There were no verified lynx hair samples.

6.1.2.6 Determination of Effects

Since there is no lynx habitat and no presence of lynx within the project area or the Mt. Hood National Forest the proposed project will have **no effect** on the Canada lynx.

6.1.3 Fish

The closest stream to the Tamarack Quarry is Mud Creek, which is approximately 0.4 mile away. Mud Creek is a tributary to the Salmon River that has a natural anadromous fish barrier approximately 9 miles downstream of Trillium Lake. Because anadromous fish cannot access the project area and closest stream is over 0.4 mile from the quarry, the proposed project would have **no effect** on any of the ESA-listed fish found the lower reaches of the watershed. There are no intermittent or perennial channels in the expansion area. The Soil and Water Technical Report has a detailed discussion of surface water and hydrology. The checklist for *Documenting Environmental Baseline and Effects of Proposed Action(s) on Relevant Indicators* used by the National Marine Fisheries Service (NOAA Fisheries) was not prepared for this project because there will be no change from baseline conditions of the Mud Creek catchment and Salmon River due to the implementation of this project.

Bull trout may have historically occurred in the Salmon River watershed, but its presence has not been confirmed. Suitable habitat and isolation exists to support this species in the upper watershed (USDA, 1995). Since the closest potential bull trout habitat is 0.4 mile from the project area the proposed project would have **no effect** on this species.

6.2 ESSENTIAL FISH HABITAT CONSULTATION

Public Law 104-267, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish

new requirements for “Essential Fish Habitat” (EFH) descriptions in federal fishery management plans and to require federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH. “Essential Fish Habitat” means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (Magnuson-Stevens Act). The Pacific Fisheries Management Council (PFMC) has recommended an EFH designation for the Pacific salmon fishery that would include those waters and substrate necessary to ensure the production needed to support a long-term sustainable fishery (i.e., properly functioning habitat conditions necessary for the long-term survival of the species through the full range of environmental variation).

The Magnuson-Stevens Act requires consultation for all actions that may adversely affect EFH, and it does not distinguish between actions in EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location.

6.2.1 Identification of Essential Fish Habitat

Salmon fishery EFH includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above the impassable barriers identified by PFMC (PFMC, 2000). Chief Joseph Dam, Dworshak Dam, and the Hells Canyon Complex (Hells Canyon, Oxbow, and Brownlee Dams) are among the listed manmade barriers that represent the upstream extent of the Pacific salmon fishery EFH. Salmon EFH excludes areas upstream of longstanding naturally impassable barriers (i.e., natural waterfalls in existence for several hundred years) (PFMC, 2000).

6.2.2 Conclusion

Mud Creek is upstream of longstanding naturally impassable barrier, and therefore the project area is excluded from EFH.

6.3 FOREST SENSITIVE SPECIES

6.3.1 Wildlife

There are 16 wildlife species on the Regional Forester’s Sensitive Species List for the Mt. Hood National Forest. The wildlife species, their habitat associations, and suitable habitat within the project area are listed in Table 1.

Table 1. Effect Determination for Wildlife Species

Species	Alternative 1	Alternative 2	No Action
<i>Threatened and Endangered Species:</i>			
Bald eagle	No Effect	No Effect	No Effect
Northern spotted owl	MA-NLTAA	MA-NLTAA	MA-NLTAA
Canada lynx	No Effect	No Effect	No Effect
<i>R6 Sensitive Species (selected species – see Table 2):</i>			
Larch Mountain salamander	No Impact	No Impact	No Impact
Oregon slender salamander	No Impact	No Impact	No Impact
Pacific fringe-tailed bat	No Impact	No Impact	No Impact
Wolverine	No Impact	No Impact	No Impact
Pacific fisher	No Impact	No Impact	No Impact

MA-NLTAA = may affect-not likely to adversely affect

Table 2. Forest Service Sensitive Wildlife Species

Species	Habitat Requirements	Suitable Habitat In Project Area?
Baird's shrew (<i>Sorex bairdii permiliensis</i>)	Found in moist, cool areas within coniferous or deciduous forests especially damp meadows, mossy banks of small streams, marshes, and sphagnum bogs.	No suitable habitat in project area.
California wolverine (<i>Gulo gulo</i>)	Remote high elevation mixed coniferous forest with shale or rockslide areas.	No suitable habitat in project area.
Pacific fringe-tailed bat (<i>Myotis thysanodes vespertinus</i>)	Roosts and/or breeds in forest/riparian areas, caves, mines, and abandoned buildings. Forages along edges of open water, roads, and in forest openings.	Species has not been documented on the Mt. Hood NF.
Pacific fisher (<i>Martes pennanti</i>)	Inhabits mature, closed canopy, dense coniferous and mixed coniferous/deciduous forests along riparian corridors.	Although no riparian corridor, dense snags and down wood may provide habitat.
Harlequin duck (<i>Histrionicus histrionicus</i>)	Clear, clean, swiftly flowing second to fifth order streams.	No suitable habitat in project area.
Peregrine falcon (<i>Falco peregrinus</i>)	Nest on cliffs near large concentrations of waterfowl or flocking birds.	No suitable nesting or foraging habitat in project area.
Horned grebe (<i>Podiceps auritus</i>)	Inhabits areas with open water surrounded with emergent vegetation. Nests in inland marshes and winters in the shallow waters of the coast.	No suitable habitat in project area.
Bufflehead (<i>Bucephala albeola</i>)	Inhabits and nests near mountain lakes surrounded by forests containing snags. Preferred nesting trees are aspen, also nest in ponderosa pine or Douglas-fir. After breeding season, found in open water, along major rivers, and along the coast.	No suitable habitat in project area.
Gray flycatcher (<i>Empidonax wrightii</i>)	Found east of the Cascades in the arid interior of tall sagebrush, bitterbrush, and mountain mahogany.	No suitable habitat in project area.
Painted turtle (<i>Chrysemys picta</i>)	Inhabits quite, shallow waters of lakes, rivers, or streams, with a muddy or sandy substrate. They require basking sites and aquatic vegetation at the water edge.	No suitable habitat in project area.
Northwest pond turtle (<i>Emys marmorata marmorata</i>)	Marshes, sloughs, moderately deep ponds, and slow-moving portions of creeks and rivers.	No suitable habitat in project area.
Spotted frog (<i>Rana pretiosa</i>)	Waters with vegetated shorelines; slow flowing streams with decaying vegetation on the bottom.	No suitable habitat in project area.
Cope's giant salamander (<i>Dicamptodon copei</i>)	Clear, fast flowing streams or ponds with gravel bottoms in moist coniferous forests.	No suitable habitat in project area.
Larch Mountain salamander (<i>Plethodon larselli</i>)	Frequently found in talus slopes in forested areas or steep slopes in old growth forest but can occupy other substrates.	Marginal habitat may be present in project area. Survey conducted; no individuals detected.
Oregon slender salamander (<i>Batrachoseps wrightii</i>)	Found under bark or moss in mature and second-growth Douglas-fir forests, under rocks or logs in stand of moist hardwood forests, and in moist talus that has abundant woody debris.	Suitable habitat in project area. Habitat surveyed while conducting Larch Mtn. salamander surveys. No individuals detected.

Species	Habitat Requirements	Suitable Habitat In Project Area?
Cascade torrent salamander (<i>Rhyacotriton cascadae</i>)	Usually found on stones or objects in or near water or on overhanging vegetation. Forages on aquatic insects.	No suitable habitat in project area.

Source: Corkran et. al, 1996; Csuti et. al, 1997.

6.3.1.1 Analysis of Project Impacts

Timber removal would occur in the expansion area but the rate of the removal would occur slowly over 20-year period. No specific expansion plans have been developed, as the expansion would occur as needed. The stands within the expansion area are predominantly open canopy, early seral habitats. The removal of these stands and other structural stage classes present in the expansion area comprise less than a one percent reduction of each of these structures within the watershed. For example, 28,069 acres of the watershed are stands classified as closed small conifer structure class. Alternative 1 would remove only seven acres of this stand structure and Alternative 2 would not remove any stands within this stage class. No late seral structural classes occur in the expansion area.

The expansion area contains mature, remnant (over 21 in dbh) snags and downed logs. The Salmon River Watershed Analysis states that snag density in the watershed is low overall due to past high intensity fires and past management practices (USDA, 1995). Snag density is low in the Mud Creek catchment, however the subwatersheds adjacent to the expansion area (East and West Forks and Upper Salmon River) have a high density of large snags.

Both Alternatives 1 and 2 would remove snag and large down woody debris habitat in the expansion area that may impact sensitive species such as the Pacific fringe-tailed bat and the Pacific fisher. Higher quality habitat for wolverine and fisher occur in the adjacent East and West Forks subwatershed and in the Mt. Hood Wilderness in general. Potential suitable habitat exists in the expansion area for the Larch Mountain salamander, and Oregon slender salamander. Surveys were conducted for these species to FS protocol, and no individuals were located. The implementation of either Action Alternative would remove habitat for these species. This loss of habitat is offset by higher quality adjacent habitat outside of the expansion area and Matrix land allocations. This adjacent habitat in protected wilderness areas and meadow complexes is expected to provide the primary suitable habitat for listed wildlife species.

6.3.2 Fish

The closest stream to the Tamarack Quarry is Mud Creek, which is approximately 0.4 miles away. Mud Creek, a tributary to the Salmon River, has a natural anadromous fish barrier approximately 9 miles downstream of Trillium Lake. There are no intermittent or

perennial channels in the expansion area. The Soil and Water Technical Report has a detailed discussion of surface water and hydrology.

The only fish species on the Regional Forester's sensitive species list that is suspected to occur in the Salmon River watershed is the interior redband trout (USDA, 1995). Its closest potential habitat is over 0.4 miles from the quarry. The proposed project is expected to have **no impact** on the interior redband trout or anadromous salmonids defined in the Mt. Hood LRMP as management indicator species.

Riparian Reserves, as outlined in the Northwest Forest Plan, provide an area along all streams, wetlands, ponds, lakes, reservoirs, and unstable and potentially unstable areas where riparian-dependent resources receive primary emphasis. Riparian Reserves are also important to the terrestrial ecosystem, providing habitat within the riparian upland/transition zone, as well as providing connectivity within the watershed and among Late-Successional Reserves (USDA and USDI, 1994). The expansion area is not located within riparian reserves designated by the Northwest Forest Plan.

7 CONSERVATION MEASURES

- Blasting and quarry operations (including hauling) will be limited to daylight hours.
- Mufflers will be placed on equipment during operation to minimize noise.
- A blasting plan and quarry operation plan will be developed that outlines the hours of operations, blasting times.
- Refer to the Soil and Water report for erosion control measures.
- A reclamation plan will be developed and native vegetation will be used.

8 INTERRELATED, INTERDEPENDENT, AND CUMULATIVE IMPACTS

Secondary impacts include interrelated projects that have no independent utility apart from the proposed action, and interdependent projects that are a part of a larger action and depend on the larger action for justification. Cumulative impacts are defined as those impacts that "result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions" (40 CFR 1508.7). The cumulative effects of an action may be undetectable when viewed in the individual context of direct and even secondary impacts, but can nonetheless add to other disturbances and eventually lead to a measurable environmental change.

Future Federal actions are subject to the consultation requirements established in section 7 of the ESA, and therefore are not considered cumulative in the proposed action. There were no known significant non-Federal projects occurring near the project area, or within the watershed, that were available for the analysis of secondary or cumulative impacts. It

is anticipated that this project, even in combination with Federal projects, will not have a significant impact on Forest Service sensitive species.

9 CONCLUSION

Based on field investigations, review of literature and data, and conversations with FS staff, the following determinations were made:

- The proposed project would have *no effect* on:
 - **Canada Lynx**
 - **Bald eagle**
 - **Bull trout**

Based on field investigations and review of literature and data, the proposed project would result in the loss of up to 52 acres of potential habitat for the California wolverine, Pacific fringe-tailed bat, Pacific fisher, Larch Mountain salamander, and Oregon slender salamander. The project **will not impact the interior redband trout**.

10 SURVEY AND MANAGE AND WILDLIFE REPORT

This section addresses species classified as survey and manage species in the Record of Decision for Amendments to the Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (USDA and USDI, 1994) and those species classified as management indicator species in the LRMP for the Mt. Hood National Forest (USDA, 1990).

A portion of the Northwest Forest Plan was recently modified by the Survey and Manage ROD (USDA and USDI, 2004). The Survey and Manage ROD removed the Survey and Manage Mitigation Standards and Guidelines, replacing them with Special Status Species Policies. Under those policies, pre-project clearances must be completed prior to habitat-disturbing activities to determine the presence of special status (i.e., FS sensitive) species or their habitat.

The surveys were conducted prior to modification of the survey and manage direction. The new direction does not add species or survey requirements; therefore, surveys conducted prior to the Survey and Manage ROD would be more than adequate to comply with the new direction. For survey and manage species not included in the special status (i.e., FS sensitive) species programs, additional surveys will not need to be completed (USDA and USDI, 2004).

10.1 SURVEY AND MANAGE SPECIES

There are 14 species that may occur in or near the expansion area that are classified as survey and manage species in the ROD (USDA and USDI, 1994). Table 3 lists the terrestrial survey and manage species that may occur on the Zigzag Ranger District, their

habitat associations, their potential to occur within the expansion area, and whether surveys for them would be required prior to project implementation. There is no suitable habitat for aquatic survey and manage species within the expansion area, and no surveys are required.

Table 3. Survey and Manage Species on the Zigzag Ranger District

Species	Habitat Association	Potential to occur and survey requirements
Puget oregonian (<i>Cryptomastix devia</i>)	Low to mid-elevations mature to late-successional moist forests and riparian areas; in leaf litter and/or talus; big leaf maple and sword fern common; high canopy cover.	No suitable habitat since project high elevation and lacks leaf litter; no surveys were conducted.
Oregon megomphix (<i>Megomphix hemphilli</i>)	Moist conifer or hardwood forest up to 3,000 feet in elevation; big leaf maple and sword fern on forested slopes and terraces; moist leaf litter.	Project above 3,800 feet, no suitable habitat. No surveys conducted.
Crater lake tightcoil (<i>Pristiloma arcticum crateris</i>)	Moist conifer forests above 2,000 feet elevation; among mosses and other vegetation near wetlands, springs, seeps, and riparian areas.	No wetlands, seeps or riparian areas present in the expansion area; no surveys were conducted.
Evening fieldslug (<i>Derocerus hesperium</i>)	Low to mid-elevations from the western slopes of the Cascades to the Pacific; may be associated with a variety of low vegetation, litter, and debris.	Marginal habitat is present in the expansion area; surveys were conducted-species not present.
Warty jumping-slug (<i>Hemphillia glandulosa</i>)	Conifer logs and/or heavy ground cover of low vegetation, litter, and debris in moist conifer forests	Suitable habitat is present in the expansion area; surveys were conducted-species not present.
Larch Mountain salamander (<i>Plethodon larselli</i>)	Frequently found in talus slopes in forested areas or steep slopes in old growth forest but can occupy other substrates.	Marginal habitat is present in the expansion area; surveys were conducted-species not present.
Silver-haired bat (<i>Lasionycteris noctivagans</i>), fringed myotis (<i>Myotis thysanoides</i>), long-eared myotis (<i>M. evotis</i>), and long-legged myotis (<i>M. volans</i>)	Protection buffer species in matrix and adaptive management area land allocations where surveys are required. For other land allocations, surveys in suitable habitat recommended.	Snags in expansion area could provide roosting habitat for these species. No surveys are required.
Oregon red tree vole (<i>Arborimus longicaudus</i>)	Coniferous forests particularly old growth up to 6,000 feet in elevation.	Open canopy and low density of Douglas-fir trees does not provide habitat for this species. No surveys are required.

Source: USDI, 1999, 2001. * Also on the Regional Forester's Sensitive Species list

10.1.1.1 Terrestrial Mollusks

DEA completed a pre-disturbance terrestrial mollusk inventory to FS regional protocol standards for the project. The only mollusk species found during the surveys was the Malone jumping slug (*Hemphillia malonei*), which is no longer a survey and manage

species. The high level of down woody debris within the proposed expansion provides habitat for this species.

10.1.1.2 Bat Species

The old-growth forest within the expansion area provides roosting and foraging habitat for silver-haired bat, fringed myotis, long-eared myotis, and long-legged myotis. Depending on the preferred alternative selected, up to 52 acres of roosting and foraging habitat could be removed as part of this project. As the quarry expands, bats may not use the remaining day roosting habitat due to noise from quarry operations. Noise may also limit use of the surrounding habitat for day roost. Bats may continue to forage in the area since quarry operations would not occur during the evening.

10.2 MT. HOOD NATIONAL FOREST MANAGEMENT INDICATOR SPECIES

The following species are classified as management indicator species for the Mt. Hood National Forest: black-tailed deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), marten (*Martes americana*), and pileated woodpecker (*Dryocopus pileatus*). Potential impacts from the proposed project to these species are discussed below.

10.2.1.1 Deer and Elk

Elk utilize meadow areas and migrate elevationally by season. Black-tailed deer utilize brushy areas along forest edges, and adjacent early successional habitats (Csuti et al., 1997). Deer and elk occur within the vicinity of the project. High snow levels during the winter would deter use of the expansion area by both species. The expansion area provides suitable summer thermal cover habitat for both species. The project would remove up to 52 acres of thermal habitat, depending on the alternative selected. Noise from quarry operations may deter deer and elk use of the surrounding habitat within the project vicinity. Deer and elk habitat is not limited within the vicinity of the project. There is no suitable calving or fawning habitat within the expansion area, therefore no seasonal restrictions will be required.

10.2.1.2 Marten

Marten occupy forested habitats at all elevations, occasionally occurring in openings and alpine areas. Breeding habitat for marten is mature forest, with a significant large down wood component. Large diameter snags (greater than 21 inches) are an important habitat component for this species (Csuti et al., 1997). Martens have large home ranges, with female home range varying from 24 to 445 acres and male home range varying from 220 to 1,000 acres. The expansion area contains mature, remnant (over 21 in dbh) snags and downed logs. The Salmon River Watershed Analysis states that snag density in the watershed is low overall due to past high intensity fires and past management practices (USDA, 1995). Snag density is low in the Mud Creek catchment, however the catchment adjacent to the expansion area (East and West Forks and Upper Salmon River) have a high density of large snags. Depending on the alternative selected, the project could

remove up to 48 acres of habitat for this species. Noise from quarry operations may limit use of the surrounding habitat.

10.2.1.3 Pileated Woodpecker

Pileated woodpeckers inhabit old-growth and mature forests and second-growth forests with a significant snag and large down wood component (Rodrick and Milner, 1991). This species is dependent on large diameter trees with decay for nesting, roosting, and foraging (Marshall et al, 2003). This species has a large home range that can vary from 600 acres to over 2,000 acres (Marshall et al, 2003). The expansion area contains mature, remnant (over 21 in dbh) snags and downed logs. The Salmon River Watershed Analysis states that snag density in the watershed is low overall due to past high intensity fires and past management practices (USDA, 1995). Snag density is low in the Mud Creek catchment, however the catchment adjacent to the expansion area (East and West Forks and Upper Salmon River) have a high density of large snags. The expansion area provides high quality nesting, roosting, and foraging habitat for this species. During the field reconnaissance, evidence of pileated woodpecker use of the area was observed. Depending on the alternative selected, the project could remove up to 48 acres of habitat for this species. Noise from quarry operations may limit use of the surrounding habitat.

10.2.1.4 Salmonids

According to the Mt. Hood National Forest Plan standards and guidelines (FW-138), impacts on habitat for each fisheries management indicator species group (salmonids) shall be determined for each project affecting fisheries, in terms of habitat quality, quantity, and distribution (USDA, 1990). A natural fish barrier blocks access to the closest stream to the quarry. The project will not impact fish habitat quality, quantity or distribution.

11 CONSERVATION MEASURES FOR ALL SPECIES

- Blasting and quarry operations (including hauling) will be limited to daylight hours.
- Mufflers will be placed on equipment during operation to minimize noise.
- A blasting plan and quarry operation plan will be developed that outlines the hours of operations, blasting times.
- A reclamation plan will be developed and native vegetation will be used.

12 CONCLUSION

Based on field investigations, review of literature and data, the following determinations were made:

- The proposed project remove up to 48 acres of potential habitat for the wildlife management indicator species listed in the Mt. Hood Forest Plan. Implementation of the conservation measures will minimize noise disturbance to these species.

- The applicant will abide by all FS management recommendations for species discussed in this report.

13 PREPARERS AND CONTRIBUTORS

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