Environmental Assessment

Reconstruction of the North Sauk River Road

Snohomish County, WA

FEMA-1499-DR-WA (Public Assistance)

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FEMA

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TABLE OF CONTENTS

FONSI FONSI-1

1.0 PURPOSE AND NEED FOR ACTION 1
1.1 Introduction 1
1.2 Purpose and Need for Action 1
1.3 Location and Background 1

2.0 ALTERNATIVES 5
2.1 Alternatives Analyzed in this EA 5
2.1.1 Alternative A – No Action Alternative 5
2.1.2 Alternative B – East Alignment with Low Walls 5
2.1.3 Alternative C – DNR Road 6
2.1.4 Alternative D – Modified DNR Road (Preferred Alternative) 6
2.2 Alternatives Considered But Not Carried Forward 7

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES 13
3.1 Soils, Geomorphology, and Streambank Stability 13
3.1.1 Affected Environment 13
3.1.2 Environmental Consequences 14
3.2 Hydrology and Water Quality 19
3.2.1 Affected Environment 19
3.2.2 Environmental Consequences 21
3.3 Vegetation and Wetlands 24
3.3.1 Affected Environment 24
3.3.2 Environmental Consequences 26
3.4 Fish and Wildlife 28
3.4.1 Affected Environment 28
3.4.2 Environmental Consequences 30
3.5 Threatened and Endangered Species 32
3.5.1 Affected Environment 32
3.5.2 Environmental Consequences 35
3.6 Recreation Resources 38
3.6.1 Affected Environment 38
3.6.2 Environmental Consequences 39
3.7 Visual Resources 40
3.7.1 Affected Environment 40
3.7.2 Environmental Consequences 41
3.8 Environmental Justice 42
3.8.1 Affected Environment 42
3.8.2 Environmental Consequences 43
3.9 Cultural Resources 43
3.9.1 Affected Environment 43
3.9.2 Environmental Consequences 44
3.10 Transportation and Access 45

3.10.1 Affected Environment....45
3.10.2 Environmental Consequences....46
3.11 Socioeconomics....47
3.11.1 Affected Environment....47
3.11.2 Environmental Consequences....47
3.12 Cumulative Impacts....48

4.0 CONSULTATION AND COORDINATION....51
4.1 Scoping....51
4.2 Agency and Tribal Coordination....52
4.3 Other Laws and Regulations....53

5.0 BIBLIOGRAPHY....55
5.1 Literature Cited....55
5.2 Personal Communications....57
5.3 Internet Sources....58

6.0 LIST OF PREPARERS....61

APPENDICES

Appendix A – Critical Areas Report (Bound Separately)
Appendix B – Mitigation Measures
Appendix C – Comments and Responses for March 2005 Draft EA
Appendix D – Comments and Responses for June 2006 Draft EA

List of Tables

Table 3.3-1. Plant Species Known to Occur in the Project Area 25
Table 3.4-1. Anadromous and Resident Fish of the North Sauk River Road Project Area 29
Table 3.5-1. Federally Listed or Proposed Species that Occur in the North Sauk River Road
Project Area 33
Table 3.5-2. Recent Chinook Salmon Redd Counts in the North Sauk River Road Project Vicinity 34
Table 3.8-1. Race and Ethnicity Profile of Census Tract 537, Snohomish County, WA..43
Table 3.11-1. Estimated Cost of Each Alternative for the North Sauk River Road Project 47
Table 4.1-1. Agency Staff that Attended the February 23, 2004 North Sauk River Road Scoping Meeting...51
Table 4.1-2. Staff that Attended the September 21, 2004 North Sauk River Road Tribal Scoping Meeting 51

List of Figures

Figure 1-1. General Vicinity Map for North Sauk River Road Repair 3
Figure 2-1. North Sauk River Road Alternative Alignments – B, C, and D 9
Figure 2-2. USFS Roads and North Sauk River Road Project Area 11
Figure 3-1. Hydrology, Topography, and Landscape Features 15

List of Photographs

Photo 1. North Sauk River Road washout from downstream end looking upstream..2
Photo 2. View from upstream end of washout looking downstream 2

ACRONYMS AND ABBREVIATIONS

BA	Biological Assessment
BMP	Best Management Practice
CAO	Critical Areas Ordinance
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
Corps	U.S. Army Corps of Engineers
dbh	diameter at breast height
DNR	Department of Natural Resources
DPS	Distinct Population Segment
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
ESCP	Erosion and Sedimentation Control Plan
ESU	Evolutionarily Significant Unit
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wet
FCo	Federal Species of Concern
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FR	Federal Register or Forest Road
FT	Federal Threatened
ft	feet
HPA	Hydraulic Project Approval
mgpd	million gallons per day
MSE	mechanical stabilized earth
NEPA	National Environmental Policy Act
NF	North Fork
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
OBL	Obligate
OHWM	Ordinary High Water Mark
ORV	outstandingly remarkable value
P.L.	Public Law
PHS	Priority Habitats and Species
PT	Proposed Threatened
RM	River Mile
ROW	right-of-way
SC	State Candidate

ACRONYMS AND ABBREVIATIONS

SHPO	State Historic Preservation Office
TMDL	Total Maximum Daily Load
U.S.C.	United States Code
UPL	Upland
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
WAU	Watershed Assessment Unit
WDF	Washington Department of Fisheries (now WDFW)
WDFW	Washington Department of Fish and Wildlife
WDOE	Washington Department of Ecology
WRIA	Water Resource Inventory Area
WSCC	Washington State Conservation Commission
WSR	Wild and Scenic River
WSRA	Wild and Scenic River Act

1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

Record rainfall occurred in Washington State during October 15-23, 2003 that led to extensive flooding throughout the region. Flooding along the Sauk River in Snohomish County caused erosion of about 1,000 feet (ft) of the North Sauk River Road east of the town of Darrington. Snohomish County requested funding from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) to repair the road. Because the river now occupies the footprint of the old road and the concern for potential effects to fish and the Wild and Scenic values of the river, several alternatives were developed to reconstruct a new alignment. Because the North Sauk River Road would be moved away from the river, outside of its former footprint, FEMA must complete an Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA). Pursuant to FEMA's regulations found in 44 Code of Federal Regulations (CFR) Part 10, FEMA prepared this EA for funding of the reconstruction of the road.

1.2 PURPOSE AND NEED FOR ACTION

The purpose of FEMA's Public Assistance Program is to assist communities in recovering from damages caused by natural disasters. The purpose of the action alternative presented in this EA is to restore the North Sauk River Road to its original predisaster function and capacity.

The need for the project is to provide continual public vehicle access to Sauk Prairie Road for 22 properties held by 15 owners and a private timber company along a maintained roadway. The only vehicle access to these properties was lost when the Sauk River washed away about 1,000 feet of the North Sauk River Road, which connects to Sauk Prairie Road.

1.3 LOCATION AND BACKGROUND

The North Sauk River Road washout is located at approximately River Mile (RM) 23, along the right bank (east) upstream of the town of Darrington (Figure 1-1). The road washout is located about 1.3 miles from the intersection with Sauk Prairie Road (Photo 1). Adjacent forest land is owned by the Washington Department of Natural Resources (DNR).

Currently, residents must walk around and beyond the washout to reach their properties. Snohomish County installed a locked gate near the intersection with Sauk Prairie Road, and residents have vehicle access to the remaining road section. The road is barricaded with concrete blocks near the washout. Snohomish County also secured the area to protect life and property by clearing debris off the road, placing road barriers at the downstream end of the washout, and creating a small vehicle turn-around for the property owners at the end of the road.

Photo 1. North Sauk River Road washout from downstream end looking upstream.

Photo 2. View from upstream end of washout looking downstream.

Insert Figure 1-1.

Back of Figure 1-1.

2.0 ALTERNATIVES

The following sections describe alternatives analyzed in detail in this EA, as well as alternatives that were initially considered but not carried forward in the full analysis.

2.1 ALTERNATIVES ANALYZED IN THIS EA

Evaluation of the range of potential alternatives to restore vehicle access resulted in four alternatives carried forward for analysis: (1) Alternative A – the No Action Alternative, (2) Alternative B – an East Alignment, (3) Alternative C – the DNR Road, and (4) Alternative D – the Modified DNR Road. The following sections describe these four alternatives. Alternative D was added following comments received on the March 2005 Draft EA.

2.1.1 Alternative A – No Action Alternative

NEPA requires the analysis of the No Action Alternative, against which the effects of the "action alternatives" can be evaluated and compared. For the North Sauk River Road project, the No Action Alternative would keep the road in its current state of disrepair. No effort would be made to restore vehicle access to private residences or the private timberland farther upstream from the road washout. Snohomish County would continue to maintain the remainder of the road from the washout to Sauk Prairie Road. FEMA funding, while available for reconstruction of a damaged road, is not available for a buy-out program with unwilling sellers. Thus, Snohomish County would be responsible for the cost of any buy-out program.

2.1.2 Alternative B – East Alignment with Low Walls

Under Alternative B, the North Sauk River Road would be constructed along the 563 ft elevation contour, east of the washout portion (and river channel) and above the ordinary high water mark (OHWM) (Figure 2-1). The new road would be similar in construction to the remaining portions, an unimproved gravel road 22 ft wide and 1,450 ft long. The design minimizes cuts into the hillside, and mechanical stabilized earth (MSE) walls would be used to stabilize fill. These structures would be needed on the fill slope to accommodate the seepage of water that is evident along the toe of the slope. MSE wall systems are typically constructed of free-draining granular materials that allow seepage and maintain the integrity of the road prism. In addition to the drainage issues, some areas of the road corridor contain old landslide debris that would require stabilization. Under Alternative B, the MSE walls on the downslope side of the road would be up to 8 ft high and visible from the opposite side of the river. No features would be constructed within the OHWM, but some construction equipment may need to work from within the active channel. Depending on the flows, water may or may not be present in this portion of the channel during construction. Blasting would be required along the exposed bedrock at the downstream end of the site to move the road into the adjacent bedrock slope and away from the river. Once past the topographic constraint of the ridge, the road would be moved farther from the river. Alternative B would employ Best Management Practices (BMPs) to minimize construction-related erosion and sedimentation (see

Appendix B). Construction would be completed over one construction season during the summer when rainfall is significantly less frequent than the rest of the year. All State standards for water quality and stormwater control would be met. All action alternatives would use gravel from a permitted source.

Construction timing for Alternative B would meet the in-water work window of July 1 – August 15 as listed for the Sauk River by the Washington Department of Fish and Wildlife (WDFW) (for salmon and bull trout). Adjacent upland work would be ongoing before and after the in-water work window, but other action alternatives (C and D) could be constructed in one season. Alternative B would meet FEMA mandates to return the function of the road at the lowest reasonable cost.

2.1.3 Alternative C – DNR Road

Alternative C (Figure 2-1) would traverse through a DNR clearcut at about the 680 ft elevation contour, reaching a high point of about 760 ft, and then descending to connect with an existing DNR road at the upstream end above the damaged section of the North Sauk River Road (upslope and east of the river channel and washout). The reconstructed road segment under this alternative is about 100 to 250 linear ft from the river channel and from 30 to 300 ft above the river elevation. The length of new road construction for Alternative C is about 2,900 ft. At the upstream end of the project, about 700 ft of existing DNR road would need to be graded, widened in places, and new gravel added. On the downstream end, the new road would begin about 350 ft from the damaged section. The road is designed according to Snohomish County standards for a primitive, gravel road. The width of the road would be 20 ft in most places but would expand to 22 ft in areas that require a guard rail. The exact location of the alignment would be determined following additional engineering studies. The new alignment would traverse the clearcut where slopes are up to 50 degrees (Snohomish County 2004) and would join the existing DNR road, which intersects the North Sauk River Road 250 ft upstream of the damaged road segment. The road would cross 13 Type 5 streams and one Type 4 stream, which would require culverts ranging from 24 to 48 inches in diameter. Some of the crossings may require box culverts. These streams are not fish-bearing and all but one are ephemeral. Fills and cuts would be balanced along this alignment. The 200 ft of the old roadbed that would remain on the upstream and downstream end would be blocked to prevent vehicle access.

Construction would be completed over one construction season, during the summer when rainfall is significantly less frequent than the rest of the year. All State standards for water quality and stormwater control will be met.

2.1.4 Alternative D – Modified DNR Road (Preferred Alternative)

Alternative D (Figure 2-1), the Preferred Alternative, involves construction of approximately 1.2 miles of road traversing the DNR clearcut referred to in Alternative C as well as a stretch of approximately 250 ft of mature timber dominated by Douglas-fir (*Pseudotsuga menziesii*). The new road would connect with the existing DNR road at the upstream end above the damaged section of the North Sauk River Road (upslope and east of the river channel and washout). This new road segment ranges from 200 to 1,000 linear ft from the river channel and from 10 to 240 ft above the river elevation. The existing DNR road would, as in Alternative C, need regarding and widening in places with new gravel. The width of the new road would be 18 ft in most places, reducing to 14 ft in constrained areas. The road would cross 14 Type 5 streams and one Type 4 stream, which would require culverts ranging from 18 to 24 inches in diameter. Some of the crossings may require box culverts. These streams are not fish-bearing and all but one are ephemeral. The road would sag (contoured concrete to allow overflow) at the crossings, allowing high flows to overtop the road and preventing a road washout. This sag would be hardened to prevent erosion during high flows. The remaining 200 ft of the old roadbed would be blocked to prevent vehicle access. Alternative D would restore year-round access to the private residences and move the road segment from the 100-year floodplain; hence, it would not be affected by channel migration of the Sauk River.

Construction would be completed over one construction season, during the summer when rainfall is significantly less frequent than the rest of the year. All State standards for water quality and stormwater control will be met.

2.2 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

A number of alternatives were reviewed but eliminated from further consideration due to environmental effects, failure to meet the project purpose, or cost. The first option considered was to reconstruct the road along the pre-existing centerline. It quickly became apparent that this was not a viable option. The river bend has moved into the location of the old roadway. Reconstruction of the road along this alignment would require extensive fill and slope protection, and high flows would continue to erode and overtop the road. Because of the long-term erosion, costs, and the effects to aquatic resources and the Wild and Scenic River values (see Section 3.6), this option is not viable.

A second road alignment considered the use of an abandoned DNR road that intersects the Sauk Prairie Road about 200 yards north of the river from the North Sauk River Road intersection. This road ascends upward about 300 ft above the river. During the scoping process, commenters suggested that this road could be extended downslope to meet the upstream end of the North Sauk River Road. This option would require the extensive purchase of right-of-way (ROW) and clearing of second-growth forest, which would be substantially more expensive than the alternatives that were carried forward for analysis. In addition, the road would cross through DNR-managed forests and an existing gravel mining claim, which would require negotiations and likely add to the costs. A second, shorter road alternative through DNR land has been carried forward in the alternatives analysis.

A third road option initially considered was the use of the existing Forest Roads (FR) #24 and #22 on lands administered by the U.S. Forest Service (USFS), which make an approximately 16-mile loop from the Sauk Prairie Road to the upper North Fork (NF) Road upstream of the current washout. There are four existing washouts on FR 22 on USFS land and a large landslide just outside the USFS boundary on the North Sauk River

Road (Figure 2-2). The large landslide downstream (northwest) of these repairs will likely never be repaired because of its size and potential effects to the aquatic and Wild and Scenic resources of the river (pers. comm., Hamilton 2004). In addition, FR 24 reaches elevations of 3,300 ft, which would preclude year-round access due to snow. The length of the road, higher elevation and issues with snow, and upgrade costs removed this alternative from further consideration.

Several design options were considered for reconstructing the road near the existing river bank. These options would have required construction activities within or immediately adjacent to the current river channel for approximately 200 linear feet. In addition, extensive bank protection would have been required to prevent erosion during storm events. The potential effects to aquatic resources and the Wild and Scenic River values were deemed excessive, and these options were dropped from further consideration.

And lastly, several agencies suggested that buy-out of the properties be considered as an alternative. Land owners have been approached about the option of buy-out but do not prefer this option. Under the Public Assistance Program's alternative project policy, property buy-out using FEMA funds is not an option for alternative projects. Snohomish County could pursue the condemnation option on their own, but there would be no Federal action involved and no need for NEPA documentation. From a functional standpoint, the No Action Alternative addresses this option as described in further detail above.

Insert Figure 2-1.

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Insert Figure 2-2.

Back of Figure 2-2.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The following sections address the existing conditions by resource and the potential effects of the alternatives considered. Cumulative impacts are discussed separately for all resources in Section 3.12. Measures to minimize project impacts are incorporated into the three action alternatives (i.e., Alternatives B, C, and D).

3.1 SOILS, GEOMORPHOLOGY, AND STREAMBANK STABILITY

3.1.1 Affected Environment

The project site is situated at the base of the southwest-facing slope of Gold Mountain. Geology in this area, as mapped by Tabor et al. (1988 – cited in Elekes 2004), consists of Darrington Phyllite (bedrock) overlain by Holocene-age landslide deposits. The loose, granular soils of these historical landslide deposits are generally shallow along steep slopes (>45 percent) of the project area, and exposed bedrock is now evident in places along the altered riverbank and upslope from the North Sauk River Road washout.

Shallow, loose granular soils of the project region formed from collapsed eroded faces of recessional outwash that was deposited into the expanding floodplain by retreating glacial ice. The age of deposition of these landslide deposits is thought to be late Pleistocene or early Holocene (10,000-13,000 years old). Although under existing climatic and geologic conditions many of these landslide deposits remain stable atop the underlying bedrock, changes and extremes in river geomorphology, surface hydrology, and surrounding land uses may result in slumping and surficial slides.

According to Snohomish County Soil Survey data, the loose landslide deposits forming surface soils in the project area are classified as Pilchuck sandy loam. This soil type is formed in alluvium and is regionally found within floodplains, typically in long, narrow bands along dynamic river systems. Pilchuck sandy loam is an excessively drained soil characterized by high permeability and slow run-off rates. Included in this unit are small areas of soils that have a surface layer of loam, gravelly loam, or cobbly loam in the upper part of the substratum. The steeper slopes along the river are classified as the Elwell-Olomount complex, 15 to 30 percent. This map unit is found on mountainsides and ridgetops. The unit is about 65 percent Elwell silt loam and about 20 percent Olomount gravelly loam but intricately intermingled and impractical for separate mapping. The complex is well drained but often shallow above bedrock (U.S. Soil Conservation Service 1983).

In addition to existing data on geology of the project region (e.g., Tabor et al. 1988, U.S. Soil Conservation Service 1983), reconnaissance studies on surface soils confirming specific site geology were conducted by W&H Pacific in February and April 2004 and by EDAW, Inc. in August 2004. Observations made during these field studies provided justification for geological division of the project area into two distinct terrains: (1) a downstream section consisting of steep slopes with shallow bedrock overlain by till, fill, and colluvium/landslide deposits; and (2) an upstream section dominated by flat fluvial terrace deposits (Figure 3-1). The ancient landslide deposits are stable, but small surficial slides were noted in several places. Soils on the slopes may be shallow in places, and proper drainage is a concern for road construction in the Elwell-Olomount complex. The upstream and downstream portions of the project area are divided by a recent debris flow. Land and debris movement in this localized area likely resulted from upslope clearcutting and resultant increases in surface stormwater runoff. An active stream channel remains in this area with evidence of continued ephemeral surface flow including gravel sorting, drift lines, and debris accumulations.

With the washout of the North Sauk River Road, the downstream section now includes areas of exposed bedrock and shallow landslides along the riverbank and steep slopes with numerous seeps and surface flows. Ephemeral flows in ravines percolate into the porous substrate at the base of the slope. The road in this section was established on compact, non-stratified sandy fill on top of Pilchuck soils, which are common along watercourses. Pilchuck soils are stable but need proper drainage for road construction (U.S. Soil Conservation Service 1983). The upstream half of the project area includes a fairly level fluvial terrace with a loose surface layer of non-stratified, gravelly sand mantled by a thin layer of fine sandy deposits. The one small Type 4 stream on the site drains into these deposits, and there is no surface water flow connection to the river.

Geomorphologic forces resulting from the movement of the Sauk River channel at the project site would continue to erode the right bank. Elekes (2004) notes that the new channel profile is 6 to 7 ft lower in elevation, as evidenced by a drop terrace marking the boundary between the old channel and the new channel alignment. In addition, a massive stable log jam matrix of woody debris and sediment just upstream of the washout along the left bank of the Sauk River diverts flow and erosive geomorphological forces toward the unstable right bank at the project site. Continued erosion along the right bank in the project area has resulted in the recent collapse of a large Douglas-fir at the south end of the road washout. Because the left bank of the new river corridor is significantly higher in elevation than the new channel profile along the right bank, the river is expected to remain in its current location for an extended period of time (Elekes 2004). However, geomorphological forces will continue to undermine right bank stability in those areas where loose sediment deposits remain.

3.1.2 Environmental Consequences

3.1.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, project geology would remain in post-washout conditions as currently exist. Surface conditions are unstable in many locations along the river and North Sauk River Road where the washout and associated localized slides have undercut steep slopes. Barring any major channel shift, which appears unlikely in the foreseeable future, the river channel will continue to migrate into the right bank alluvial deposits. It is likely that surficial sliding and slumping along portions of the existing roadbed will continue and the area will be a sediment source for some time.

Insert Figure 3-1.

Back of Figure 3-1.

3.1.2.2 Alternative B – East Alignment with Low Walls

Under Alternative B, the road would be realigned east of the existing alignment. Direct impacts from the footprint of this new alignment would alter surface soils in the southern section of the project area. Currently, soils in this potential ROW location consist of a native sandy-loam in the Pilchuck series, a soil type typical of forested floodplains in the region. Construction activity within 20 ft of the river would disturb the duff layer and soil structure, mobilize soil particles, and even with BMPs contribute to minor sedimentation increases in the Sauk River. Construction would occur during the dry season, minimizing the potential for significant rainfall events and the corresponding runoff.

Within the northern section of the project area, the ROW alignment under Alternative B would require blasting of the steep slopes and placement of MSE walls. Screening measures would be required to keep blast debris from entering the river channel. Along the northern section of the project area under Alternative B, the roadway alignment would be stabilized with high (8 ft) MSE walls to reduce the need for cut-slopes. These walls would accommodate slope seepage and ephemeral surface runoff while supporting fill needed for the new roadway alignment. The MSE wall also would affect the channel migration capability of the river. The base of the MSE wall would be above the OHWM, but higher flows would reach the base of the wall. Detailed hydrologic modeling to determine the elevation of stormflows in relation to the elevation of the base of the wall has not been completed at this time. All road options are out of the officially designated FEMA 100-year floodplain, although because of the recent channel movement the FEMA map for the right bank is now inaccurate. Further investigation and design will be necessary to determine the specific engineering needs for each road segment. Depending on the depth to bedrock and the soil and drainage characteristics, the roadbed would be placed on bedrock, native soil, or imported material.

The downstream portion of the project area, where the MSE wall is needed, consists of phyllite bedrock overlain with till. This metamorphic rock is very resistant to erosion, but the overlaying till is not. Portions of the riverbank in this area have exposed bedrock while other areas have an overlying till layer. Thus, the MSE wall would restrict erosion in those areas where bedrock is not exposed. In the long term, river movement would be minimal in the downstream portion of the project area because of the underlying bedrock when compared to the alluvial deposits farther upstream.

The upstream portion of the alignment is flat and would not require blasting. In addition, in the upstream half the road alignment would be 100 to 125 ft from the river because there are no topographic constraints. Over time, the river channel may continue to migrate into this flat, alluvial area and could ultimately damage a new alignment at some unknown future date. Adding deflectors along the river side of the alignment in anticipation of this future event could protect the road from future channel migration. Engineering considerations will need to account for drainage and soil stability in the vicinity of the old landslide debris in the middle section of the alignment. This would likely include removal of unstable soils and placement of rock-filled rectangular baskets to provide stability and groundwater seepage beneath the road base. Culverts placed under the roadbed in this area would account for surface flows from the adjacent DNR clearcut.

Because of adherence to stormwater control standards, construction BMPs, and construction timing windows, no additional mitigation measures are necessary. Alternative B would affect the channel migration capacity of the Sauk River, would cause minor temporary erosion and sedimentation during construction, and would require a moderate amount of blasting for the downstream segment.

3.1.2.3 Alternative C – DNR Road

As with Alternative B, the DNR road alignment (Alternative C) would require clearing and grading that would disturb soils. Road standards would be the same as Alternative B, but the road in Alternative C is substantially farther from the river (100 to 250 ft) than in Alternative B. Thus, soil disturbance would have a negligible effect on aquatic resources. The DNR route (2,900 ft of new road) is longer than Alternative B (1,450 ft of new road), but there is substantial vegetation between this alignment and the river that would aid in soil stability and retention. To ensure slope stability across the several ephemeral drainages, the use of properly sized culverts and potentially box culverts would be installed as necessary. Alternative C would traverse soils of the Elwell-Olomount complex, which are generally suitable for road-building with appropriate drainage considerations (U.S. Soil Conservation Service 1983 and Elekes 2004).

Significant blasting would be required where the new alignment would ascend from the existing North Sauk River Road at the downstream end of the project. Small bedrock outcrops and bedrock covered by a thin overburden are present adjacent to the road in this location. To minimize the need for blasting and to use a milder grade, the alignment would avoid a steep hillslope and begin the ascent to the 760-ft elevation farther downstream from this steep slope. Blasting would still be required, however. BMPs would be employed to keep blast material from entering the river. Because this section of the new road is 100 ft from the river, the containment of blast material can easily be accomplished. The remaining 80 percent of the alignment would not require blasting. Because this road alignment is away from the river, there would be negligible effects to geomorphology. Because of the adherence to stormwater control standards, construction BMPs, and construction timing windows, no additional mitigation measures are necessary.

3.1.2.4 Alternative D – Modified DNR Road

The Modified DNR Road would involve clearing and grading similar to Alternatives B and C, as discussed above. Alternative D would be located farthest from the Sauk River compared with the other alternatives (i.e., A, B, and C): approximately 1,000 ft at the downstream starting point, 200 ft east of the sandbar and damaged North Sauk River Road area, and 300 ft at the upstream endpoint. The positioning of this alignment would minimize the necessity for blasting as it would avoid a steep slope and begin the ascent to the 760-ft elevation farther downstream from this steep slope. However, some blasting would be required in the northern sections of the construction area. The exact amount will depend on the final design. These portions of the slopes would be supported with MSE walls, gravity block walls, and rock buttresses. BMPs would be employed to prevent sediment from entering the river. The blast zone would be at least 200-500 ft from the river so this could easily be accomplished. The presence of forested and vegetated land between the proposed construction realignment area and the river would aid in soil stability and retention. The remainder of the road would not require blasting. As in Alternative C, Alternative D would pass through soils of the Elwell-Olomount complex (U.S. Soil Conservation Service 1983). Where appropriate, culverts 18-24 in diameter would be installed to ensure proper drainage access, and box culverts may be installed as necessary. Construction would occur during the dry season when all but one of the drainages are dry. In addition, the Type 5 drainages drain directly into a roadside ditch or into porous sediments at the base of the slope and into the ground. There is no surface water flow to the river from these drainages and thus no effects to water quality. The one Type 4 drainage in the middle of the project area drains into porous alluvial sediments on a long, flat bench. No surface water flows into the river from this drainage.

The Modified DNR Road is longer than the road segments in Alternatives B and C discussed above, with a total length of approximately 1.2 miles. The new road segment would be moved out of the 100-year floodplain where the road and the surrounding soils are would not be affected by channel migration of the Sauk River or by soil erosion. Because of the adherence to stormwater control standards, the lack of surface water connections to the river from the small drainages, construction BMPs, and construction during the dry season, no additional mitigation measures are necessary.

3.2 HYDROLOGY AND WATER QUALITY

3.2.1 Affected Environment

The Skagit River basin has a drainage area of approximately 3,200 square miles and includes headwaters to the north in British Columbia. It is the largest basin tributary to Puget Sound and the largest basin in Washington outside of the Columbia River (Pickett 1997). The Sauk River drainage is a subbasin within the Skagit River watershed and includes 736 square miles in the southernmost portion of the larger Skagit River basin. The Sauk River subbasin includes all areas of the Skagit River basin extending south into Snohomish County. The Sauk River is the largest tributary to the Skagit River with about 59 mainstem miles and numerous tributaries, including the Suiattle and White Chuck Rivers (WDF 1975).

Sauk River flows are often subject to extremes in fluctuation. U.S. Geologic Survey (USGS) flow data over 79 years of records indicate that Sauk River flows upstream of Darrington have fluctuated from a mean daily flow of 443 cubic ft/second (cfs) to a maximum of 44,000 cfs (RM 32.5). Downstream of Darrington (RM 5.4), mainstem flows are higher from increased contributing surface waters. Downstream of Darrington, Sauk River flows range from 1,080 to 106,000 cfs (USGS Flow Data 2006). The project site lies approximately midway between the two USGS flow gage stations collecting data on the Sauk River. River flows at the project site likely fall between flow measurements collected from these gage stations. The FEMA designated 100-year floodplain for this section of the Sauk River is out of date and does not reflect recent channel movement. The designated floodplain appears to follow the main river channel prior to the October 2003 flood and subsequent channel movement. The 100-year floodplain extends up to 300 ft into the forest on the left bank, opposite the project site.

A large logjam just upstream of the road washout directs flows toward the right bank. The channel migration that coincided with the October 2003 floods moved the channel east toward the right bank and lowered the thalweg (deepest point of the channel) compared to the channel's previous location. Thus, the river is not likely to shift away from the right bank in the foreseeable future (Elekes 2004).

In addition to the Sauk River itself, specific hydrological surface features at the project site include: a number of seeps and small surface drainages flowing down steep slopes in the northern section of the project site; a stream channel supporting ephemeral flows in the debris flow chute separating the northern and southern sections of the project area; and a small ephemeral stream flowing north into a wetland complex along the east side of the North Sauk River Road at the upstream end of the project site. Ravines in the hillslope carry surface flows during the rainy season. On four site visits over the summer and early fall, there was no surface flow in these ravines. The one exception is the large ravine in the middle of the project area, which contains some landslide debris toward the bottom end. This ravine had some minor surface seeps present even in the middle of the summer where the gradient flattens. The soils of this flat terrace are very porous sands and gravel, and the minor flow evident at the base of the slope seeps into the soil where the gradient flattens. Surface flow above this point was intermittent. There is no surface water connection to the Sauk River from this small drainage or any of the ephemeral drainages. All surface water seeps into the ground at the base of the hillslope. Once the late fall rains commenced, surface flows were present in the ravines, depending on the time of observation in relation to recent rainfall. These surface water flows meet the DNR Water Typing criteria for Type 5 Waters that are seasonal, non-fish bearing streams (WAC 222-16-031). The larger stream that had some flow during the summer would be classified as Type 4 Waters, a permanent, non-fish bearing stream. None of these ravines discharge directly into the river but percolate into the ground as the gradient is reduced, or they flow into roadside ditches and percolate into the ground.

Given the extreme soil permeability and the position of the project site at the base of a steep elevation, seeps and small surface channels are to be expected – especially at the base of the steep slopes. Although seeps in the downstream section continue to collect in channel remnants from the roadside ditch, none of these surface flows meet criteria for Snohomish County jurisdictional streams.

The Sauk River subbasin comprises the southern portion of the Upper Skagit Water Resource Inventory Area (WRIA #4). WRIAs define watershed areas monitored by the Washington Department of Ecology (WDOE) for water quality impairments, contamination, and degradation. Portions of streams and rivers not meeting basic water quality requirements are included on a 303(d) list. No surface waters within the Sauk River subbasin are included on WDOE's 303(d) list, and only three small portions of streams in north Skagit County are 303(d) listed for all of WRIA #4. Thus, to date there is no need for a Total Maximum Daily Load (TMDL) plan for the watershed. This very limited number of 303(d) listings provides an indication of the general health and quality of water existing in the Sauk River basin and the general watershed of the upper Skagit River. However, water quality monitoring data for the Sauk River subbasin is sporadic. Limited sampling in the mid- and lower South Fork Sauk River indicated summer temperatures of between 10 and 15 °C in 1992, and were given a rating of fair to good regarding temperature (WSCC 2003). Additional water quality monitoring was recommended for the Sauk River subbasin by USFS (1996).

Peak flow impairments have been analyzed in the Sauk River subbasin based on land cover and road density. Using these criteria, four Watershed Assessment Units (WAUs) within the Sauk River subbasin have been classified as likely impaired: Hilt, Rinker, Sauk Prairie, and Dan Creek WAUs (all downstream of the project). Two WAUs were rated as functioning with a sensitivity to land use, while all other WAUs were rated as functioning (WSCC 2003). Increased peak flows and sedimentation leading to aggradation and channel shifting in the Sauk River have been noted by the USFS (1996). Water use is relatively low in the Sauk River basin where an estimated 0.17 million gallons per day (mgpd) of surface water and 0.07 mgpd of groundwater are extracted (USGS 1998).

Lands within the Sauk River drainage include undeveloped forests and areas managed for silviculture. Very few rural communities and developed areas with potential for point-source pollutant contributions are included within the Sauk River subbasin. Thus, the Sauk River has a very limited potential for water quality impairments. While Sauk River contaminant risk may be minimal, sediment loading within the river can become extreme depending upon precipitation and land use alteration. Sauk River sediment load becomes especially high during periods of fall/winter rains and when increased surface flow from snowmelt conveys loose surface substrate from surrounding lands (WSCC 2003). Downstream of the project, the Sauk River flows through the town of Darrington, near lumber storage yards, and farms that are a source of non-point pollution.

3.2.2 Environmental Consequences

Executive Order (EO) 11988 directs Federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development. The effects of each of the alternatives to floodplains, hydrology, and water quality are discussed below.

3.2.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, site hydrology and water quality would be unaltered from existing post-washout conditions. It is likely that some Sauk River channel migration would continue, particularly during high flow events, and further erode the right bank in the upstream alluvial terrace. The channel is likely to continue eroding this area because of the large logjam just upstream of the road washout that directs flow toward the right bank and the lower elevation of the new channel. This may induce some minor landslides where relatively unstable slopes are undermined by river erosion. The project area is likely to remain a minor sediment source to the river for the foreseeable future as the riverbank and portions of the old roadbed continue to erode. Eastward movement of the 100-year floodplain would coincide with erosion of the right bank.

3.2.2.2 Alternative B – East Alignment with Low Walls

Because the downstream section of the Alternative B alignment is adjacent to the existing river bank, construction would cause minor adverse effects to water quality during construction. Though the extent of potential in- and near-water work would depend on water level and flows in the Sauk River during the time of construction (July 1 – August 15), it is likely that work below the OHWM would increase the amount of sediment flowing to the river, even with the implementation of BMPs. The amount of sediment entering the river channel during construction would be minor, however, especially considering the naturally occurring high sediment load. Furthermore, in-water work, if necessary, would likely impact river water quality by increasing turbidity and the amount of suspended sediments. All potential impacts from construction would be minor and short-term.

For about 125 ft in the downstream section of this alignment, the road is directly adjacent to the existing riverbank. Exposed bedrock may restrict channel migration in this vicinity. The downstream portion of the project area has not been substantially eroded during the recent storm events, but high flows, depending on the final engineering design, may reach the MSE walls on the downslope side of the road. The combination of existing bedrock and the bottom of the MSE wall also would act as a barrier to channel migration in this vicinity. The road would be constructed outside of the FEMA 100-year floodplain; however, because of likely channel migration in the upstream portion of Alternative B, the floodplain may shift east over time and toward this portion of the road alignment. Snohomish County standards would be used in designing and constructing surface water conveyance from the road surface. The road would be an unimproved gravel surface and would have minor contributions to soil runoff, similar to the existing segments of road and the section of road present prior to the washout.

Patterns and direction of river flows and geomorphic forces would be altered by implementation of Alternative B, but this alternative was designed to minimize impacts to the river hydrology while maintaining the integrity of the road. Because of the adherence to stormwater control standards, construction BMPs, and construction timing windows, no additional mitigation measures are necessary.

3.2.2.3 Alternative C - DNR Road

Hydrology and water quality impacts from Alternative C would be substantially less than those described in Alternative B because the vast majority of the road would be constructed 100 to 250 ft from the river. Alternative C would be constructed outside the FEMA 100-year floodplain and would not be affected by channel migration. Construction BMPs would minimize excessive erosion potential during and after construction. Nine ravines crossed by this alternative would require culverts or box culverts to pass storm flows. The culverts would be armored with gabions to protect against washouts, and the road crossings would sag to permit high flows to pass over the roadway. Restoration with native plantings would be implemented following construction disturbance around each ravine crossing. The new road section would be a long-term source of sediment, but the amount would be negligible, particularly considering the distance from the river. Because of the adherence to stormwater control standards, construction BMPs, and revegetation measures, no additional mitigation measures are necessary.

3.2.2.4 Alternative D – Modified DNR Road

Alternative D would involve the fewest impacts among the action alternatives regarding hydrology and water quality due to the distance between the Modified DNR Road and the Sauk River (200-1,000 ft). As in Alternative C, Alternative D would be located well outside the FEMA 100-year floodplain where it would be outside the reach of changes in channel migration and river bank erosion. New road construction would cross 14 ravines, each of which would be fitted with culverts 18-24 inches in diameter, or with box culverts as needed to facilitate drainage flows. The culverts would be armored with gabions to protect against washouts, as in Alternative C. The new road would sag at ravine crossings to permit high flows to pass over the roadway, and the sag would be hardened to prevent erosion during high flows. One of the ravines that would be crossed is a Type 4 perennial stream. Any vegetation removal surrounding ravine crossings would be followed with native plant restoration.

Construction would occur during the dry season and would not case any sedimentation to reach the Sauk River because of standard BMPs that would be employed and because any surface water occasionally in the drainage ravines percolates into the ground at the base of the slope. The Modified DNR Road could be a long-term source of sediment in some areas, but the road would be 200-1,000 ft from the Sauk River with a densely vegetated buffer in between the road and the river. Design and installation of stormwater control features also will prevent sediment from reaching the river in overland flow. Overall, the new road would be such a significant distance from the river it would provide a negligible source of sediment and would have no effect to the river's channel migration. Potential effects to aquatic species are discussed in Sections 3.4 and 3.5. Because of the adherence to stormwater control standards, construction BMPs, and revegetation measures, no additional mitigation measures are necessary.

3.3 VEGETATION AND WETLANDS

3.3.1 Affected Environment

Vegetation communities in the undeveloped forested areas surrounding the project site are typical of the lowland forests of the Pacific Northwest. The deciduous-coniferous tree canopy in the project area is dominated by Douglas-fir and bigleaf maple (*Acer macrophyllum*). This tree canopy, along with a dense understory of salmonberry (*Rubus spectabilis*), vine maple (*Acer circinatum*), and other native shrub species, provides extensive shading and limits the density of groundcover and low-lying herbaceous plants. In areas where the native forest community has been recently disturbed (e.g., immediately adjacent to the North Sauk River Road and in areas with recent slide activity) fast-growing, early successional tree species such as red alder (*Alnus rubra*) and black cottonwood (*Populus balsamifera*) have established as saplings and constitute an increased component of the native forest plant community. Black cottonwood and red alder dominate the flat alluvial deposits of the upstream half of this alignment, while the downstream area is dominated by Douglas-fir and bigleaf maple. The DNR clearcut is dominated by young Douglas-fir trees with a variety of upland shrubs. Table 3.3-1 lists the plant species observed during the August 2004 site reconnaissance studies.

Small localized areas with surface saturation and limited hydrophytic plant species were observed at the base of the steep slopes in the northern section of the project area during the reconnaissance studies. In general, hydrophytic plant species found in these areas were limited to horsetail (*Equisetum* spp.), species also known to be associated with sandy/gravelly soils in disturbed areas. Such areas likely developed within the constructed drainage course that previously existed adjacent to the North Sauk River Road and do not meet the criteria for a wetland.

All three factors defining a jurisdictional wetland including a hydrophytic wetland plant community, hydric soils, and wetland hydrology were noted in several small wetlands in the project area. The largest wetland (0.2 acre) is located in the DNR clearcut and is dominated by a mixed deciduous and young conifer overstory. The second largest (0.1 acre) is located near the upstream portion of the project area adjacent to the existing road. Obligate wetland plants established in this area include skunk cabbage (*Lysichiton americanum*) and sedge (*Carex* spp.).

Smaller seep wetlands that range from 0.1-0.7 acre occur on the flanks of Gold Mountain. Wetlands along the original alignments close to the river were delineated by EDAW (2004), and those along the later developed DNR alternative were delineated by Landau Associates (2004). Both reports are available under separate cover (Appendix A).

A remnant band of old-growth/mature Douglas-fir was left at the downslope end of the clearcut, adjacent to the existing road, and extends up the ridge forming a narrow band (250 ft wide) between clearcuts of different ages.

Table 3.3-1. Plant Species Known to Occur in the Project Area.

	Species	Scientific Name	Status	Project Area Occurrence	Notes
Tree Canopy	Douglas-Fir	*Pseudotsuga menziesii*	FACU	Overstory	• More abundant in northern section.
	Western Red Cedar	*Thuja plicata*	FAC	Overstory	• Limited densities in the northern section.
	Western Hemlock	*Tsuga heterophylla*	FACU-	Overstory	• Limited densities in the northern section.
	Bigleaf Maple	*Acer macrophyllum*	FACU	Overstory	• Most abundant overstory species.
	Red Alder	*Alnus rubra*	FAC	Overstory	• Pervasive in disturbed areas/early successional.
	Black Cottonwood	*Populus balsamifera*	FAC	Overstory	• Saplings pervasive in disturbed areas/early successional.
Shrub Layer	Vine Maple	*Acer circinatum*	FACU	Shrub	• Dense, taller shrub species.
	Cascara	*Rhamnus purshiana*	FAC-	Shrub	• Limited densities/single individuals.
	Salmonberry	*Rubus spectabilis*	FAC+	Shrub	• Most common/dense shrub species.
	Thimble Berry	*Rubus parviflorus*	FACU+	Shrub	• Limited densities in shrub layer.
	Indian Plum	*Oemleria cerasiformis*	FACU	Shrub	• Taller shrub found throughout project site.
	Ocean Spray	*Holodiscus discolor*	FACU	Shrub	• More common in northern project section.
	Common Snowberry	*Symphoricarpos albus*	FACU	Shrub	• Together with salmonberry forms dense shrub layer.
	Red Osier Dogwood	*Cornus stolonifera*	FACW	Shrub	• Isolated individuals along river near debris chute.
	Red Elderberry	*Sambucus racemosa*	FACU	Shrub	• Limited densities in riparian forest.
	Devils Club	*Oplopanax horridus*	FAC	Shrub	• Limited densities in riparian forest.
Understory	Common Horsetail	*Equisetum arvense*	FAC	Herb	• Found along disturbed roadside areas.
	Scouring Rush	*Equisetum hyemale*	FAC	Herb	• Found where surface waters and sandy soils exist.
	Sword Fern	*Polystichum munitum*	FACU	Herb	• Common component of riparian forest community.
	Deer Fern	*Blachnum spicant*	FAC+	Herb	• Common component of riparian forest community.
	Lady Fern	*Athyrium filix-femina*	FAC	Herb	• Common component of riparian forest community.
	Salal	*Gaultheria shallon*	FACU	Shrub	• Low-lying shrub included in herb layer.
	Bracken Fern	*Pteridium aquilinum*	FACU	Herb	• Fern of wet and disturbed areas.
	Skunk Cabbage	*Lysichiton americanum*	OBL	Herb	• Obligate wetland species found in site wetlands.
	Fringecup	*Tellima grandiflora*	FAC	Herb	• Most pervasive ground cover found along road.

OBL: Plants that almost always occur (estimated probability >99%) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1%) in nonwetlands. **FACW**: Plants that usually occur (estimated probability 67% to 99%) in wetlands, but also occur (estimated probability 1% to 33% in nonwetlands). **FAC**: Plants with a similar likelihood (estimated probability 34% to 66%) of occurring in both wetlands and nonwetlands. **FACU**: Plants that sometimes occur (estimated probability 1% to <33%) in wetlands, but occur more often (estimated probability 67% to 99%) in nonwetlands. **UPL**: Plants that rarely occur (estimated probability <1%) in wetlands, but occur almost always (estimated probability >99%) in nonwetlands under natural conditions.

This band of trees does not meet the definition of an old-growth stand as defined by DNR (WDNR 2005). These criteria include:

- Many large trees (>100 cm diameter at breast height [dbh])
- A multi-storied understory
- Occurrence of large snags (>50 cm dbh, 15 m tall)
- Accumulation of large dead tree boles

While there are individual old-growth trees in this buffer, the stand would not be considered an old-growth stand. This stand does not support the same community and ecological functions as larger stands of old-growth with a multi-layered understory and a predominance of large snags and logs, but small stands of large trees do provide diversity among the more dominant younger forest (Sillet and Goslin 1999). This buffer is referred to as "mature forest" but individual old-growth trees occur here. The overall riparian composition in the Sauk River subbasin is moderate with 57 percent mid-seral, 39 percent late seral, and 4 percent early seral forest cover, not including the White Chuck or Suiattle River watersheds (USFS 1996). A greater percentage of late seral stage forest exists upstream of the confluence of the North and South Forks of the Sauk River compared to downstream areas.

Large woody material recruitment is somewhat impaired in the Sauk River subbasin downstream of the confluence of the North and South Forks of the Sauk River. This is specifically related to the lower levels of conifer cover for the Sauk Prairie, Rinker, and Dan Creek WAUs, which flow through USFS land and into the mainstem Sauk River downstream of the project area. Large woody material recruitment in the immediate project area appears fair to good because of large conifers near the riparian zone on both the right and left riverbanks (WSCC 2003).

3.3.2 Environmental Consequences

Executive Order 11990 directs Federal agencies to minimize the destruction, loss, or degradation of wetlands, as well as to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for: (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. The following sections describe the effects to vegetation and wetlands from the three alternatives.

3.3.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, vegetation and wetlands would remain unaltered from current conditions. Continued erosion of the right bank may reduce vegetative cover in some areas while other portions of the road may eventually be colonized by pioneer species such as red alder. Recruitment of woody material into the channel may increase over time as the channel continues to erode the right bank previously occupied by the road.

3.3.2.2 Alternative B – East Alignment with Low Walls

Under Alternative B, approximately 1.3 acres of native vegetation would be cleared (assuming a 40-ft wide ROW). Vegetation in this area is typical of a previously disturbed early successional forest with deciduous overstory tree species and an understory of salmonberry (*Rubus spectabilis*), snowberry (*Symphoricarpos albus*), elderberry

(*Sambucus racemosa*), and vine maple (*Acer circinatum*). Several individual mature Douglas-fir trees may need to be removed in the downstream section of the alignment, depending on the final design location. Both Alternatives B and C would avoid the removal of large Douglas-fir trees to the extent possible. The wetland at the upstream end of the Alternative B alignment can easily be avoided because there are no topographic constraints in this area. In addition, there would be minor, temporary effects to upland vegetation from the use of heavy equipment in the road vicinity. Construction of the road would have a minor adverse effect on woody material recruitment by removing several large conifers in the downstream portion of the project area. The upstream portion of the Alternative B alignment is dominated by deciduous trees such as alder and cottonwood that are less persistent in river systems as woody debris.

3.3.2.3 Alternative C – DNR Road

The downstream end of the Alternative C alignment would need to cross the remnant band of scattered old-growth Douglas-fir that was left as a buffer along the bottom of the DNR clearcut. An estimated six Douglas-fir trees, from 1 to 5.5 ft dbh, would be cut. The number of large trees removed would be minimized by shifting the roadway as feasible. Once above this buffer strip, the alignment would traverse through the DNR clearcut, which is a mix of 12- to 20-ft tall Douglas-fir and an assortment of upland shrubs. Little understory ground cover is present in this dense clearcut. The upstream end of the alignment would join an existing DNR road where vegetation clearing would be minimal. About 2.7 acres of vegetation would be cleared along this alignment (based on a 40-ft wide right-of-way). Similar to Alternative B, temporary damage to vegetation adjacent to the ROW would occur during construction. The vast majority of vegetation removal would occur in the DNR clearcut. Alternative C would have negligible effects to woody material recruitment to the Sauk River. Removal of large conifers would be minimized to the extent possible and would be limited to the downstream section of the road that traverses the forested buffer between the remaining road and the DNR clearcut. The vast majority of the route is more than 200 ft from the river and would remove upland shrub and pole-sized Douglas-fir.

A total of about 0.14 acre of Category III and IV (under the Snohomish County rating system) wetland would be affected by Alternative C. Though each of these wetlands are small, the aggregate effects would require a U.S. Army Corps of Engineers (Corps) requirement for a Clean Water Act Section 404 Nationwide Permit and coordination with Snohomish County. It may be possible to avoid some wetlands, pending the final engineering design. If not, then appropriate mitigation would need to be developed and implemented to meet the Corps' permit requirements and those of Snohomish County. The Corps requires a 1:1 mitigation ratio (mitigation area:affected area), while Snohomish County would require a mitigation ratio ranging from 1.5:1 to 4:1, with additional mitigation for damage to wetland and stream buffers. Mitigation could consist of enhancing existing nearby wetlands and wetland and stream buffers and possibly restoring and revegetating a section of remaining roadbed.

3.3.2.4 Alternative D – Modified DNR Road

The Modified DNR Road Alternative would entail the removal of about 3.8 acres of clearcut vegetation, 0.2 acre of mature forest, and 0.09 acre of wetland (based on a 28-ft wide right-of-way, as well as more detailed clearing limits included in revised engineering plans). A smaller right-of-way calculation was used to match the smaller road corridor, lack of guard rails, USFS primitive road standards that will be used, and constriction to one lane in places. These estimates are considered conservative. An unknown number of old-growth/mature trees would be removed, but efforts will be made to minimize the number by shifting the roadway under the final design where possible. The clearcut area consists of a mixture of Douglas-fir and assorted upland shrubs, as described in Alternative C. The upstream end of the new road alignment would join an existing DNR road where vegetation removal would be minimal. As in both Alternatives B and C, some temporary damage to vegetation along the ROW would occur during construction, particularly within the DNR clearcut. Any vegetation removal would be followed with subsequent native plant restoration along the new alignment. Due to the significant distance between the Alternative D alignment and the Sauk River (200–1,000 ft), the Modified DNR Road would have negligible effects on woody material recruitment. Any timber removal would be limited to the downstream section of the project area traversing the forested buffer bisecting the DNR clearcut area.

A total of about 0.09 acre of Category III and IV (under the Snohomish County and WDOE rating system) wetland would be affected by Alternative D. Though each of these wetlands is small, the aggregate effects may require a Clean Water Act Section 404 Nationwide Permit with the Corps. It may be possible to avoid some wetlands, pending the final engineering design. The current calculations for wetland disturbance are conservative and are just below the 0.1 acre threshold for a required nationwide Clean Water Act Section 404 permit. Coordination with the Corps after the final design is available would be conducted by Snohomish County. In either scenario, Snohomish County will need to comply with its environmental and sensitive area regulations. The Corps requires a 1:1 mitigation ratio (mitigation area:affected area), while Snohomish County would require a mitigation ratio ranging from 1.5:1 to 4:1, with additional mitigation for damage to wetland and stream buffers. Mitigation could consist of enhancing existing nearby wetlands and wetland and stream buffers and restoring and revegetating a section of remaining roadbed. Snohomish County will coordinate with the agencies during the permitting process on these details.

3.4 FISH AND WILDLIFE

3.4.1 Affected Environment

The native riparian corridor and managed forests surrounding the project area provide suitable habitat for a broad array of terrestrial wildlife species. Federally listed species under the Endangered Species Act (ESA) are discussed in Section 3.5.

During the August 2004 site reconnaissance, EDAW biologists detected a variety of wildlife species common to forests of the Pacific Northwest including: chickadee

(*Poecile atricapillus* and *P. rufescens*), American crow (*Corvus brachyrhynchos*), belted kingfisher (*Ceryle alcyon*), dark-eyed junco (*Junco hyemalis*), American robin (*Turdus migratorius*), brown creeper (*Certhia americana*), spotted towhee (*Pipilo maculatus*), red-tailed hawk (*Buteo jamaicensis*), and black-tailed deer (*Odocoileus hemionus*). This list of potentially occurring wildlife species is likely to be augmented in the spring and summer by migratory species – such as the yellow warbler (*Dendroica petechia*), spotted sandpiper (*Actitis macularia*), and common merganser (*Mergus merganser*) – that preferentially breed along the river and in riparian habitat and upland habitats.

Small mammals likely to occur in the vicinity include deer mouse (*Peromyscus maniculatus*), Pacific jumping mouse (*Zapus trinotatus*), shrew mole (*Neurotrichus gibbsii*), Douglas squirrel (*Tamiasciurus douglasii*), and mountain beaver (*Aplodontia rufa*). Amphibians common to the vicinity include the Pacific treefrog (*Pseudacris regilla*), Cascade frog (*Rana cascadae*), rough-skinned newt (*Taricha grandulosa*), northwestern salamander (*Ambystoma gracile*), and ensatina (*Ensatina eschscholtzii*). Common reptiles in the vicinity include common garter snake (*Thamnophis sirtalis*) and western fence lizard (*Sceloporus occidentalis*).

The Sauk River supports a diversity of resident and migratory fish species. Most notable is the extensive variety of resident and anadromous salmonid species (i.e., salmon and trout) that comprise a thriving recreational sport fishery on the river. Table 3.4-1 lists the common species that occur in the Sauk River or its tributaries in the vicinity of the project area.

Table 3.4-1. Anadromous and Resident Fish of the North Sauk River Road Project Area.

Species	Scientific Name	ESU/DPS	Federal Status	Project Area Use
Chinook Salmon	*Oncorhynchus tshawytscha*	Puget Sound ESU	FT, SC	Rearing and migration.
Coho Salmon	*Oncorhynchus kisutch*	Puget Sound/Strait of Georgia ESU	Fco	Rearing and migration.
Chum Salmon	*Oncorhynchus keta*	Puget Sound/Strait of Georgia ESU	–	Spawning and rearing.
Sockeye Salmon	*Oncorhynchus nerka*	(No designated ESU)	–	Rearing and migration.
Pink Salmon	*Oncorhynchus gorbuscha*	(No designated ESU)	–	Rearing and migration.
Steelhead	*Oncorhynchus mykiss*	Puget Sound ESU	PT	Migration, spawning and rearing.
Cutthroat Trout	*Oncorhynchus clarki clarki*	Puget Sound ESU	–	Resident – all life stages.
Rainbow Trout	*Oncorhynchus mykiss*	(No designated ESU)	–	Resident – all life stages.
Mountain Whitefish	*Prosopium williamsoni*	(No designated ESU)	–	Resident – all life stages.
Bull Trout	*Salvelinus confluentus*	Coastal Washington/ Puget Sound DPS	FT, SC	Rearing and migration.

Status: **FT**=Federal Threatened; **SC**=State Candidate; **Fco**=Federal Species of Concern, **PT**=Proposed Threatened
ESU: Evolutionarily Significant Unit; **DPS**: Distinct Population Segment
Sources: StreamNet Pacific NW website; NOAA Fisheries website; and WDFW website.

Non-game resident fish species occurring in the Sauk River along the project site include: sculpin (*Cottus* spp.), largescale sucker (*Catostomus macrocheilus*), and other small non-game coldwater species. These species hold no State or Federal protected status and are not specifically monitored by managing resource agencies. Although non-salmonid resident fish species are not considered a part of the Sauk River sport fishery, these species commonly occur throughout the subbasin and larger Skagit River watershed. Together, Sauk River anadromous and resident fish species constitute one of the "outstandingly remarkable values" contributing to the Federal designation of the Sauk River as a Wild and Scenic River by the National Park Service (see Section 3.6).

3.4.2 Environmental Consequences

3.4.2.1 Alternative A – No Action Alternative

The No Action Alternative would avoid potential construction impacts at the project site and would have no adverse effects on fish and wildlife. Human disturbance of the area would be reduced because of the lack of vehicle access.

3.4.2.2 Alternative B – East Alignment with Low Walls

Temporary disturbance effects to area fish and wildlife resulting from construction of Alternative B would be greater than those associated with Alternative C because of the greater amount of blasting and the alignment's proximity to the river. Noise disturbance from blasting under Alternative B could be substantial and preclude use of surrounding habitat by area wildlife during construction.

To accommodate the new eastern alignment, approximately 1.3 acres of upland and dense riparian forest would be converted to roadway. Forest in this area includes a dense overstory of deciduous tree species including bigleaf maple and red alder, and a substantial shrub layer dominated by dense salmonberry and snowberry. This riparian forest type provides suitable foraging, nesting, and refugia habitat for a variety of terrestrial wildlife species. Natural regeneration or restoration of native forest in vacated sections of the existing ROW alignment may, over time, provide some additional forest and shrub cover near the river. Given the regional context of nearby forestry practices and the range of natural forested areas, impacts from habitat loss resulting from implementation of Alternative B are considered minor, long-term adverse effects. Portions of the old roadbed may be colonized by pioneer species such as red alder. The old roadbed could provide a mitigation opportunity by ripping the road surface and planting with native vegetation.

Similar to the existing road section, Alternative B would remove habitat used by migratory and resident birds, small mammals, reptiles, and amphibians. Vehicle traffic on roads can be a major contributor to small mammal, amphibian, and reptile mortality as individuals move from one area to another during daily or seasonal travels.

Road corridors adversely affect small mammals and amphibians from vehicle mortality, increased predation along road edges, and direct mortality from road construction

(Trombulak and Frissell 1999). The required MSE walls in Alternative B would pose barriers to movement for some small mammals and most amphibians.

Resident and migratory fish would be temporarily affected from the noise and general disturbance of the construction near the river. The project would comply with work windows allowed by WDFW and in coordination with the National Oceanic and Atmospheric Administration (NOAA) Fisheries. Construction would occur during the low-flow season and in-water work would be minimal. The magnitude of stress to fish generally increases as turbidity level increases and particle size decreases (Bisson and Bilby 1982). Because fish can readily disperse, many species may simply relocate when sediment load is increased (Barton 1977). For instance, avoidance of turbid waters has been observed in juvenile coho salmon (*Oncorhynchus kisutch*), arctic grayling *(Thymallus arcticus)*, and rainbow trout (O. *mykiss)* (Newcombe 1994; Newcombe and Jensen 1996). This avoidance can expose fish to increased predation and energy expenditure. Because there would be little, if any, in-water work, turbidity effects would be negligible.

The project would have long-term effects on the channel-migration capability of the river because armoring (the MSE wall) would be necessary to maintain the stability of the road prism. This would have a long-term adverse effect on aquatic resources in this vicinity. Bank modification typically reduces the available habitat for salmon and trout (Beamer and Hendersen 1998) and in general reduces aquatic productivity (Dillon et al. 1998). In general, riverbank modification, over the long term, has been shown to reduce salmonid access to habitat for spawning (Schmetterling et al. 2001) and affect sediment dynamics, floodplain/stream interaction, and nutrient dynamics (Li 1994; Schoof 1980).
Thus, modification of the streambank would represent a long-term adverse modification for aquatic habitat along 200 ft of the Sauk River.

3.4.2.3 Alternative C – DNR Road

This alternative would require the clearing of 2.7 acres of vegetation, which would have a corresponding effect on wildlife. Most of the required clearing would occur in the young clearcut, which is comprised of small Douglas-fir and dense upland shrubs. Songbirds and small mammals that frequent the dense vegetation of the clearcut would be directly affected. Though previously disturbed from forestry practices, the landscape would be bisected by a new road, adding to the list of disturbance factors of the vicinity.
However, relocating the road alignment upslope and away from the river would provide substantial benefits for fish and wildlife above the alignment proposed for Alternative B. Some blasting near the river may be required for the initial downstream segment, but most construction activity would be 100 to 250 ft from the river, significantly reducing potential effects to fish and aquatic systems. Construction noise would affect wildlife as they would modify their behavior to avoid the project area and the associated human activity. Vehicle access and human disturbance would increase once the road is rebuilt to levels consistent with the pre-washout conditions. Effects to wildlife would be negligible because of the limited access of the road, the unimproved condition, and the blockages farther upstream that limit use of the road.

The small wetlands along this alignment do offer some habitat diversity for wildlife in contrast to the upland young clearcut. These wetlands, although small in area, often provide habitat (Snodgrass et al. 2000) for a number of amphibians that would be directly affected from loss of habitat. Wetland impacts would be avoided and minimized according to EO 11990. Impacts to this wetland would require mitigation coordination with the Corps and Snohomish County.

3.4.2.4 Alternative D – Modified DNR Road

This alternative would require the clearing of 3.8 acres of vegetation. While most of the vegetation and timber clearing would occur in the DNR clearcut area (as discussed in Alternative C), an unknown number of trees would require removal within the mature Douglas-fir stand bisecting the clearcut areas. The new road would traverse approximately 250 ft of this buffer, and efforts would be made to minimize tree removal by shifting the road where feasible. Though the clearcut provides marginal wildlife habitat value, the loss of 3.8 acres would have a corresponding effect on wildlife that currently use this area. Alternative D would minimize the need for blasting by avoiding some of the steeper slopes and gradually approaching the climb to the 800-ft elevation, although some blasting would still be necessary. This would temporarily disturb wildlife present in the area, but due to the distance from the river (200–1,000 ft) any effect on fish would be negligible. Wildlife would likely temporarily avoid the project area due to a combination of construction noise and human presence. Following construction of the new road, vehicle access and human disturbance would increase to levels consistent with pre-washout conditions. Amphibians would incur effects due to installation of MSE walls as discussed in Alternative B but on a smaller scale. Alternative D would instead require fewer blastings and fewer, shorter MSE walls. Effects to wildlife would be limited due to the limited access of the road and the blockages farther upstream, limiting road usage.

As discussed in Alternative C, the small wetlands in the project area do provide habitat for several amphibian species that would be directly affected from any loss of habitat. Wetland impacts would be avoided and minimized according to EO 11990. Impacts to this wetland would require mitigation coordination with the Corps and Snohomish County.

3.5 THREATENED AND ENDANGERED SPECIES

3.5.1 Affected Environment

Threatened and endangered species include all plant and wildlife species designated by the U.S. Fish and Wildlife Service (USFWS) and NOAA Fisheries as threatened, endangered, or as candidates for listing under the ESA. Federally listed or proposed species potentially occurring in the project vicinity are listed in Table 3.5-1. There is no marbled murrelet (*Brachyramphus marmoratus*) habitat in the project area, and the nearest documented marbled murrelet occurrence is about 2 miles south of the project on USFS land. In addition, the general disturbed nature of the project area does not provide habitat for the northern spotted owl (*Strix occidentalis*). The nearest occurrences of spotted owls are located on USFS land about 2.25 miles south and southeast of the project area. There would be no effect to these species from implementation of any of the three action alternatives. A separate Biological Assessment has been prepared to meet FEMA's obligation under the ESA.

Table 3.5-1. Federally Listed or Proposed Species that Occur in the North Sauk River Road Project Area.

Species	Scientific Name	Status	Project Area Occurrence	Notes:
Bald Eagle	*Haliaeetus leucocephalus*	FT, ST	Incidental and foraging.	• WDFW PHS data indicate a winter roost within 2 mi. • Potential for year-round occurrence.
Chinook Salmon	*Oncorhynchus tshawytscha*	FT, SC	Rearing and migration.	• Occurrence likely limited to spring-run Chinook. • Puget Sound ESU.
Steelhead	*Oncorhynchus mykiss*	PT	Rearing and migration.	• Occurrence likely winter-run steelhead. • Puget Sound ESU.
Bull Trout	*Salvelinus confluentus*	FT, SC	Rearing and migration.	• Coastal WA/Puget Sound DPS • Resident, fluvial, adfluvial, and anadromous.

Status: **FT**=Federal Threatened; **SC**=State Candidate; **Fco**=Federal Species of Concern, **PT**=Proposed Threatened
Source: WDFW 2004c.

3.5.1 1 Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is protected as a State and Federal threatened species in Washington common to the Skagit River watershed and is likely to occur in the immediate project vicinity throughout the year. The USFWS has proposed delisting the bald eagle (64 FR 36454-36464). Each winter, hundreds of bald eagles converge in the upper Skagit River watershed, drawn by the thousands of spawned-out and dead salmon that accumulate along area rivers (USFWS website). Eagles come from as far north as the Yukon and Alaska to feast on this nutritious and easily collected food source.

Eagles of the upper Skagit River watershed, which includes the Sauk River subbasin, constitute one of the two largest seasonal concentrations of bald eagles in the lower 48 states (WDFW 2004c). Regional eagle migration reaches its peak in late December and early January when the largest numbers of eagles are likely to occur in the project vicinity. WDFW Priority Habitat and Species (PHS) data identify a winter communal roost site approximately 1.5 miles northeast of the project site. Birds using this roost during the winter may forage along the Sauk River and in the riparian forest habitat of the project area. Eagles have large home ranges, and regional breeding and resident birds may occur at the project site throughout the year. There are no known eagle nests within 2 miles of the project area.

During a site visit on December 31, 2004, one adult and five immature bald eagles were observed along the Sauk River between Sauk Prairie Road and the large landslide upriver from the project. Late in the afternoon, seven eagles (undetermined age) were circling high to the northeast of the project, possibly in the vicinity of the known winter roost (Keany 2004).

3.5.1 2 Chinook Salmon

The Skagit River and its tributaries, including the Sauk River, constitute what was historically the predominant system in Puget Sound containing naturally spawning chinook (*Oncorhynchus tshawytscha*) populations (WDF et al. 1993, Myers et al. 1998). Along the project site, the Sauk River mainstem supports spring-, summer-, and fall-run chinook stocks. Spring-run chinook salmon in the Puget Sound Evolutionarily Significant Unit (ESU), the most common chinook stock occurring in the project vicinity, typically return to freshwater in April and May and spawn in August and September (WDF et al. 1993). Summer-run fish begin their freshwater migration in June and July and spawn in September, while fall-run chinook salmon begin to return in August and spawn from late September through January (WDF et al. 1993). Although the majority of chinooks in the Puget Sound ESU emigrate to the ocean as subyearlings (Myers et al. 1998), rearing or migrating juvenile chinook may occur in the Sauk River throughout the year. Up-migrating and spawning adults are likely to occur in the project area from April through January, with peak concentrations of spring-run stocks occurring in June through August. The Sauk River in the project area has been proposed by NOAA Fisheries as critical habitat for the Puget Sound chinook salmon ESU. Table 3.5-2 shows recent chinook salmon redd counts in the general project vicinity.

Table 3.5-2. Recent Chinook Salmon Redd Counts in the North Sauk River Road Project Vicinity.

River Reach	Date	Number of Redds
Mouth of Suiattle River to Darrington Bridge	9/10/04	68
	9/23/04	22
	10/06/04	94
Darrington Bridge to White Chuck River*	9/10/04	Not surveyable
	9/23/04	15
	10/06/04	12

*Redds primarily in lower 2 miles of this reach. Source: WDFW 2004 unpublished data.

3.5.1.3 Steelhead

Six populations of steelhead have been described in the Skagit Basin – three winter-run and three summer-run. All but one of these is known to be native origin with wild production; one summer run is of unknown origin with wild production (WSCC 2003). Winter-run steelhead trout spawn in the Sauk River as well as the White Chuck and the

Suiattle and summer-run steelhead spawn farther south in the North and South Fork Rivers (WDFW 2002). The Puget Sound ESU of steelhead was proposed as threatened by NOAA on March 29th, 2006 (NOAA 2006). Critical habitat has not been designated at this time. The Puget Sound ESU consists mostly of winter-run steelhead with some stocks of summer-run steelhead. While resident steelhead reside entirely in freshwater, anadromous steelhead spend 1 to 3 years in freshwater and another 1 to 3 years in the ocean prior to returning upstream to spawn. Summer-runs generally migrate upstream from May to October and spawn from February to June. Winter-runs typically migrate upstream from November to April and spawn from March to June. When both runs are present, the summer-runs will spawn farther upstream (Busby et al. 1996).

3.5.1 4 Bull Trout

The Skagit River basin supports the largest natural population of bull trout (*Salvelinus confluentus*) extant in Puget Sound. Bull trout in the project vicinity are known to use the Sauk River mainstem for migration and juvenile rearing (StreamNet website). The Sauk River provides spawning and rearing habitat for anadromous, fluvial, and resident life history forms of bull trout, with spawning occurring in an estimated 28 tributaries (USFWS 1998). Migratory adults will move near spawning areas in August before extreme low flows, and spawn in water temperatures of about 8°C, which usually occurs in mid-September through October. Resident fish that live and spawn in the river may spawn beside migratory fish. The fluvial populations (those fish that migrate to tributaries from the mainstem river) are usually larger than those that reside all year in the smaller tributaries. After hatching, juveniles typically rear in the parent stream for 2 years and then migrate in the spring to larger waters for rearing to adulthood. At age 5, they migrate back to their natal tributary to spawn.

WDFW classifies the Lower Skagit River subbasin as supporting “healthy” populations of bull trout (WDFW 2004b). The USFWS has proposed designating critical habitat for the Coastal/Puget Sound DPS (Distinct Population Segment) that includes the Sauk River.

3.5.2 Environmental Consequences

A preliminary draft Biological Assessment (BA) has been forwarded to USFWS and NOAA Fisheries for an informal review. Once public and agency comments have been incorporated into the NEPA EA, the BA will be finalized and formally submitted for agency review.

3.5.2.1 Alternative A – No Action Alternative

There would be no adverse effects to threatened or endangered species under the No Action Alternative. Without repair of the North Sauk River Road, disturbance in the project area would be reduced and portions of the existing ROW would likely revert to native riparian forest habitat, a beneficial effect to both terrestrial and aquatic species. Without stabilization of eroded right bank slopes, there remains the potential for additional bank slides and washouts that act as minor sediment sources to the Sauk River.

3.5.2.2 Alternative B – East Alignment with Low Walls

Bald eagles commonly occur in the basin during the winter but not during the summer when construction would occur. Thus, construction would not affect the known eagle roost located over 1 mile away from the site and on the opposite side of Gold Mountain. Vegetation clearing may, depending on the final design route, remove several large Douglas-fir trees. While these trees could be used as eagle perches because of their proximity to the river, there is no shortage of large trees along this reach of the Sauk River. Thus, the effects of vegetation modification on bald eagles are expected to be negligible.

Salmon and bull trout could be affected in the short-term by construction and in the long-term by altered river morphology. Temporary adverse effects to water quality from construction would be caused by minor amounts of sediment mobilized from soil disturbance. BMPs would minimize but not eliminate these effects. In addition, the noise, vibration, and blasting near the river's edge are likely to modify fish behavior in the immediate vicinity during the construction period. Construction will comply with required in-water work windows for this reach of the Sauk River, but there would be little, if any, in-water work required.

There would be minor long-term effects to the river hydrology from installation of the MSE walls, which would prevent erosion of the streambank adjacent to the road. This would cause adverse effects on the channel migration capacity of the river. An approximately 125-ft section of the road would require an MSE wall in proximity to the river. While outside the OHWM, storm flows would reach the toe of the MSE wall in this 125-ft section. Hydrologic modeling has not been completed to provide a precise estimate of the timing and duration of these storm events in relation to the base elevation of the MSE wall.

In general, revetment structures do not provide adequate habitat for juvenile fish that may use the margin of the river (Bisson and Bilby 1982; Beamer and Henderson 1998). The MSE wall base, when in the wetted perimeter of storm flows, would provide less suitable habitat than a natural riverbank edge that has surface variations, associated woody debris, and cobble (Fischenich 2000). The situation may be mitigated to a small extent because this area is on the outside of the river bend where velocities are higher, particularly during high flow events when the water would reach the base of the MSE wall. It is likely that fish, particularly juveniles, would avoid this high velocity area and seek refuge in lower velocity sections of the river. At flows equal to or less than the OHWM, the MSE wall would not affect the quality of aquatic habitat. Other than construction-related BMPs, no additional mitigation measures are necessary.

For this alternative there would be **No Effect** to bald eagles. For chinook salmon, steelhead and bull trout the determination would be **May Affect, Not Likely to Adversely Affect**.

3.5.2.3 Alternative C – DNR Road

A few large Douglas-fir trees that could serve as eagle perches would be removed during construction. The vast majority of the alignment would traverse a clearcut where there is no eagle habitat. Given the abundance of large trees along the river in the project area, the removal of a few large trees from construction would have no effect to bald eagles.

Because the Alternative C alignment would be far removed from the river and floodplain, the effects to listed fish are significantly reduced relative to Alternative B. Blasting that is needed at the downstream end of the project would occur about 100 ft or more from the river, depending on the final road location. BMPs would be implemented to prevent material from reaching the river. Noise from construction may cause some change in fish behavior in the project area, but given the distance of the construction from the river (minimum 100 ft), these effects would be negligible.

The downstream junction of the new road and the remnant section of road is about 30 ft in elevation above the river and 100 ft in linear distance from the river. After this point, the road ranges from 150–250 ft from the river. Construction on the remainder of the road would not affect aquatic resources as it would be conducted during the summer. Careful engineering calculations would be required for the several ephemeral stream crossings along the alignment to ensure that culverts have adequate capacity and that hydrologic connections are maintained. These streams do not support fish and do not flow directly into the river but percolate into the ground at the toe of the slope. Construction during the dry period and the implementation of BMPs would ensure that there would be no effects to water quality from construction. Culvert crossings would be designed to withstand storm flows, and the roadbed would dip at these crossings to allow for overflow during high flow events. Because the road would be away from the river, there would be no long-term effects to listed fish and no additional mitigation measures are necessary.

There would be **No Effects** to bald eagles from implementation of Alternative C. For chinook salmon, steelhead, and bull trout, the determination is **May Affect, Not Likely to Adversely Affect**.

3.5.2.4 Alternative D – Alternative DNR Road

Alternative D would involve the removal of an unknown number of individual old-growth Douglas-fir trees in a mature buffer bisecting the DNR clearcuts. These trees are approximately 250 – 300 ft from the river. None of the remnant large trees closer to the river would be removed. The majority of the new road would pass through the DNR clearcut, which contains no bald eagle habitat. Large trees are present along the existing road, on the opposite side of the river, and upstream and downstream of the project. This habitat provides an abundance of large trees in the project area in which bald eagles may perch. There are no known winter roost areas, nesting sites, or specific concentrated areas of use in the project area that would be affected by construction. Construction would occur during the summer when there is little use of the river by bald eagles.

Removal of large trees significantly upslope from the river would not affect the ability of bald eagles to perch in the river corridor or in the project Action Area.

Construction related vegetation removal and blasting would be significantly less compared to both Alternatives B and C. Alternative D would follow an elevation contour ranging from about 550 to 760 ft and would range from about 200 to 1,000 ft in linear distance from the river. This alternative would place the new road outside of the FEMA 100-year floodplain. Because of the large distance from the river and the dense vegetation between the proposed road and the river, noise from construction would not affect the river or fish.

Because BMPs would be employed to prevent material from reaching the river, the large distance between the road and the Sauk River, the lack of any surface water connections from the several slope drainages to the river, and use of proper stormwater design, there would be no effects to listed fish species that occur in the river. The new alignment would traverse one Type 4 and nine Type 5 streams, which would require installation of culverts either 18 or 24 inches in diameter or box culverts if necessary. In some cases, hardened concrete low points (sags) would be used at the crossing to allow stormwater to flow over the road. None of these steep drainages support fish, all but one are ephemeral, and all of the drainages percolate directly into the ground at the toe of the slope. Because the road would be 200 – 1,000 ft from the river, there would be no effects to listed fish and no additional mitigation measures are necessary.

There would be **No Effects** to bald eagles, chinook salmon, steelhead, or bull trout from the construction and operation of Alternative D.

3.6 RECREATION RESOURCES

3.6.1 Affected Environment

The North Sauk River Road provides access to private residences and private timber company lands along the eastern bank of the Sauk River. The existing road was constructed and is currently maintained by Snohomish County. In its current condition, the North Sauk River Road does not provide public access to any developed recreation facilities; however, the Sauk River is a designated Wild and Scenic River (WSR) segment by Congress (Listed on November 10, 1978; WSRA P.L. 90-542, as amended 16 U.S.C. 1271-1287). A large landslide near the USFS boundary upstream of the project site prevents access to FR 22 and recreation facilities on USFS land (Figure 2-1).

Portions of the Skagit River system (the Skagit River, North and South Forks of the Cascade River, Suiattle River, Sauk River, and the North Fork of the Sauk River) were designated a WSR in 1978. The Sauk River from its mouth on the Skagit River to its junction with Elliot Creek, about 2 miles northeast of Barlow Pass, was included in this designation. In total, 158.5 miles of river within the Skagit River system are designated WSR reaches, including 99 miles classified as Scenic and 58.5 miles classified as Recreational. The Sauk River is classified as a Scenic River. The "outstandingly remarkable" values (ORV) of the Skagit River system are wildlife (specifically wintering bald eagles), fish, and scenery (NPS website).

The primary recreational activities on the Sauk River include angling and whitewater boating (pers. comm., P. Kincare 2004). Steelhead trout (*Oncorhynchus mykiss*) is the primary sport fishery on the Sauk River. The steelhead trout season on the Sauk River begins on June 1 and runs through February 28 (WDFW 2004a). On March 29, 2006, NOAA Fisheries proposed the Puget Sound ESU be listed as a threatened species. Critical habitat has not been designated at this time and a final decision should be made within one year. The Sauk River does provide rearing and spawning habitat for steelhead trout; hence, a listing of the species would affect the steelhead fishing season (NOAA 2006, WDFW 2002). The Sauk River also provides habitat for listed chinook salmon and bull trout (see Sections 3.4 and 3.5). Anglers generally use drift boats year-round on the Sauk River, though low water levels occasionally limit their use in late summer/early fall. Private whitewater boating occurs on the Sauk River year-round when flows permit. The commercial whitewater rafting season generally begins in April and lasts through July, when flow conditions on the Sauk River are most favorable for boating. There are no official boat access points in the project area.

3.6.2 Environmental Consequences

The Sauk River is a designated WSR. Under Section 7 of the WSR Act, Federal agencies, including FEMA, cannot "assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values" of a designated WSR reach (USFS 1997). As such, each of the alternatives is described below in terms of its impacts to the three WSR Act objectives: (1) to maintain a free-flowing river, (2) to maintain water quality, and (3) to protect and maintain designated ORVs.

3.6.2.1 Alternative A – No Action Alternative

Under Alternative A, the washout segment of the North Sauk River Road would not be restored. This alternative would not affect recreation resources beyond the existing conditions. The washout of the North Sauk River Road has not changed the "free-flowing" nature of the river, nor has it affected water quality beyond what is reasonably expected from normal shoreline erosion. More information regarding water quality is provided in Section 3.2—Hydrology and Water Quality. Additionally, none of the Sauk River's ORVs would be affected by the washout. Specifically, the washout likely has little to no effect on wildlife in the area, only temporary effects on the river's fishery (potentially from short-term increases in sedimentation and turbidity), and negligible effects on the visual quality of the area.

3.6.2.2 Alternative B – East Alignment with Low Walls

Under Alternative B, the washout segment of the North Sauk River Road would be reconstructed, with the alignment shifted to the 563-ft elevation contour.

Construction would likely temporarily impact the river's water quality and wildlife and fish ORVs during construction, but would not result in long-term adverse impacts to recreation resources. Because construction would occur during low flows, there is no need to restrict river flow during this period.

Depending on the exact elevation of the bottom of required MSE walls near the river, these structures would limit the channel migration of the river into the right bank at the downstream end of the alignment, thus affecting the "free-flowing" condition of the river, a criterion used in determining effects to Wild and Scenic River reaches. The function of this structure is to protect the bank stability adjacent to the road. The construction of an MSE wall that is up to 8 ft tall also may result in long-term impacts to the visual character of the area. Visual impacts associated with this alternative are described in detail in Section 3.7. Reconstruction of the road would allow limited recreational use of the river upstream to the large landslide adjacent to the USFS boundary, where not encumbered by private land.

3.6.2.3 Alternative C – DNR Road

Because this alignment is away from the river corridor, it would not affect the free flow of the river or any ORVs of the Wild and Scenic designation. Access for anglers would be improved over the current conditions and allow access to upstream portions of the river corridor that was possible prior to the 2003 flood. Construction would cause negligible, short-term effects to recreational use of the immediate vicinity by limiting access.

3.6.2.4 Alternative D – Modified DNR Road

Similar to Alternative C, this alternative would have no effect on the free flow of the river or the wildlife or fish ORVs of the Wild and Scenic designation due to its significant distance from the river (minimum 200 ft linear distance). Construction of the new road would renew access to the upstream portions of the river corridor that were available to anglers prior to the 2003 flood. Access to the river would be limited during construction, which would cause negligible, short-term effects to recreation.

3.7 VISUAL RESOURCES

3.7.1 Affected Environment

The general visual character of the Sauk River corridor, including the washout section of the North Sauk River Road, is mountainous with periodic vistas of forested hillsides and river valleys. The vegetation along the road, including the washout section, is typical of the Puget Sound lowland basin. The deciduous-coniferous tree canopy is dominated by Douglas-fir and bigleaf maple, while the understory consists primarily of native shrub species. The edge of the clearcut on Gold Mountain is bordered by a strip of old-growth Douglas-fir that is about 100 ft wide. Large trees are widely scattered with deciduous species, such as bigleaf maple, among the Douglas-fir. Away from the river, much of the southwest-facing slope of Gold Mountain is managed for timber production, and large swaths near the washout area have been recently clearcut and are visible from the river.

The washout of approximately 1,000 ft of the North Sauk River Road has resulted in an altered riverbank marked by exposed bedrock and shallow landslides. Due to private land ownership along the river corridor, topography, and limited public access, the washout section of the road is not highly visible at the landscape level. The primary key observation points of the washout section of the North Sauk River Road are likely from the river itself, with some limited views from the road and from private lands across the river. The Sauk River is a designated WSR reach, classified as a Scenic river (see Section 3.6.1), and as such, importance is placed on maintaining the scenic quality of the viewshed, especially for boaters on the river.

3.7.2 Environmental Consequences

Potential impacts to the WSR designation are described primarily in Section 3.6 — Recreation Resources. However, because scenery is one of the river's ORVs, it is discussed here in more detail.

3.7.2.1 Alternative A – No Action Alternative

Under Alternative A, the washout segment of the North Sauk River Road would not be restored and there would be no effects to visual resources. The existing washout is comparable to other washouts along the Sauk River and is not visually inconsistent with natural features upstream or downstream of this section. Segments of the damaged road are likely to be eroded by future channel migration while other areas would naturally revegetate and would not detract from the visual character of the area in the long term. Additionally, no WSR objectives, including maintaining the visual character of the area (a designated ORV), would be compromised under this alternative.

3.7.2.2 Alternative B – East Alignment with Low Walls

Construction would have temporary impacts on the visual character of the river, by increasing noise and human activity significantly beyond typical background levels. The constructed MSE wall may, however, affect the long-term visual character of the area. Due to its height, the new wall would be visually inconsistent with adjacent natural areas and would likely detract from the visual quality of the area. As visitors to the area (primarily boaters on the river) become accustomed to the MSE wall though, the potential longer term visual effect may lessen. Additionally, the new wall would likely be comparable to the level of development associated with existing bridges crossing the river. However, this new man-made element would parallel the river in comparison to existing infrastructure elements in the area, such as the Sauk Prairie Road bridge. While unimproved roads are present along the river corridor and residences on private land occur in scattered locations, the artificial nature of the MSE wall would be a new visual intrusion. Earth-toned colors, a natural rock-like face, and vegetation plantings would reduce but not eliminate the effect. Design of the MSE wall should be coordinated with USFS staff regarding visual impacts to river users.

3.7.2.3 Alternative C – DNR Road

Construction of the Alternative C alignment would cause minor, temporary adverse visual effects to users of the river corridor. The noise and increased human activity would be a minor disturbance element to anyone using the river. Aside from these temporary effects during construction, building this alignment would not cause adverse effects to the visual quality of the vicinity. The DNR alignment would be away from the river and partially screened by existing vegetation. Over the long term, vegetation growth along the DNR clearcut would obscure the road from the river. No mitigation measures beyond construction BMPs are necessary for this alternative.

3.7.2.4 Alternative D – Modified DNR Road

The Modified DNR Road would cause minor, short-term adverse visual effects to anglers and other visitors along the river corridor, but on a smaller scale compared to Alternative C. Because Alternative D is 200 -1,000 ft from the road, any visual effects would be minimal and temporary. Any cleared areas would be restored with vegetation following construction, and eventually vegetation growth would obscure the new road and the DNR clearcut from the river. No mitigation measures beyond construction BMPs are necessary for this alternative.

3.8 ENVIRONMENTAL JUSTICE

In the past decade, the concept of Environmental Justice has emerged as an important component of Federal regulatory programs, initiated by Executive Order No. 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations. This Executive Order directed each Federal agency to "make achieving environmental justice by avoiding disproportionately high or adverse human health or environmental effects on minority and low-income populations" a part of its mission. EO 12898 emphasized that Federally recognized Native tribes or bands are to be included in all efforts to achieve environmental justice (Section 6.606).

3.8.1 Affected Environment

The demographics of the affected area were examined to determine the presence of minority populations, low-income populations, or tribal peoples in the area potentially impacted by the three alternatives. The race and ethnic profile of the local census tract from the 2000 census is presented in Table 3.8-1.

As part of the NEPA scoping process, letters were sent to Tribal contacts, as detailed in Chapter 4, Consultation and Coordination. Snohomish County as a whole has a smaller percentage of Native Americans (1.4 percent), and a larger contingent of African Americans (1.7 percent) and Asians (5.8 percent, compound to Census Tract 537). The Sauk-Suiattle Tribal lands are in Census Tract 537 as reflected in the larger percentage of Native Americans here.

Table 3.8-1. Race and Ethnicity Profile of Census Tract 537, Snohomish County, WA.

Race or Ethnicity	Percentage of Population
White	94.5
Black or African American	0.1
American Indian or Alaskan Native	3.9
Asian	0.4
Some other race	0.9
Hispanic or Latino* (of any race)	1.0

Source: 2000 Census
*Percentage adds to more than 100% because Hispanic and Latino is a category of ethnicity and includes more than one race category (black, white, etc.)

3.8.2 Environmental Consequences

Under the No Action Alternative, conditions would remain the same at the site, and there would be no disproportional impacts to low income or minority populations. The actions in Alternative B, C, and D are limited in scope, would return the previous function of the road, and would have no effects to low income or minority populations. A further discussion of socioeconomics is found in Section 3.11.

3.9 CULTURAL RESOURCES

3.9.1 Affected Environment

The following narrative describes the compliance with Section 106 of the National Historic Preservation Act. This refers to the federal review process designed to ensure that historic properties are considered during the planning and execution of federal projects. The review process is administered by the Advisory Council on Historic Preservation, an independent federal agency, with assistance from the State Historic Preservation Office. There are no historic structures in the vicinity, but cultural resources are described below.

Cultural resources include resources of historical and/or archaeological significance. For purposes of this document: the term “archaeological resources” is used to refer to prehistoric or historical subsurface sites or objects; and the term “historic resources” is used to refer to above-ground historic buildings, sites, objects, structures, or districts.

According to geospatial data of the Washington State Historic Preservation Office (SHPO), which documents the occurrence of National and State Historic Register resources, Historic Property Inventories, and Historic/Archaeological Sites and Districts, there are no documented historic or archaeological resources in the vicinity of the project site (SHPO 2004). However, members of the Sauk-Suiattle Tribe and the Skagit River Cooperative have affirmed that the area containing the project site is known to be within a region of historic tribal inhabitation. Sauk-Suiattle Tribal members indicated that artifacts had been found during the original road construction, but could offer no details or documentation regarding the issue. USFS staff were able to supply a citation that verified the occurrence of artifacts during the road construction (Onat et al. 1980). There is no information available regarding the location of those materials along the North Sauk River Road (pers. comm., Hollenback 2005). In addition, the Sauk-Suiattle Tribe has noted the general cultural importance of the Sauk River corridor to their people, who have historically made use of its resources and used the river as a travel corridor.

3.9.2 Environmental Consequences

3.9.2.1 Alternative A – No Action Alternative

Under Alternative A, the roadway would not be restored. Therefore, this alternative would not result in construction impacts to cultural resources. It is possible that some artifacts may be in or near the existing road prism that could be affected by continued riverbank erosion. The extent of this possibility is unknown.

3.9.2.2 Alternative B – East Alignment with Low Walls

Information provided by the USFS indicates that some artifacts were found in the general vicinity of the North Sauk River Road during its original construction, but there is no documentation indicating where along the road from Darrington to the USFS boundary that the artifacts were found. If any archaeological resources are encountered during construction, activity will be stopped and a qualified archaeologist will survey the vicinity. The archaeologist will consult with the SHPO, the Sauk-Suiattle Tribe, and the Skagit River System Cooperative. A report will be prepared that documents the findings and outcome of the consultations. Given the implementation of these measures, Alternative B would not affect cultural resources and no additional mitigation measures are necessary.

3.9.2.3 Alternative C – DNR Road

Because the DNR road would be constructed away from the river, it is even less likely than the Alternative B alignment that any artifacts would be encountered during construction. As in Alternative B, construction would be halted if any artifacts are encountered. A qualified archaeologist would be called in to survey and document the findings. Consultation would include the Tribal entities and the SHPO. With the implementation of these measures, there would be no effects to cultural resources from construction of Alternative C.

No additional mitigation measures are necessary.

3.9.2.4 Alternative D – Modified DNR Road

Due to its significant distance from the river, Alternative D would be the least likely of the alternatives to encounter archaeological artifacts during construction. As discussed above, discovery of any artifact during alignment would require activity to be stopped until a qualified archaeologist had been called to survey the site and document and report the findings. The archaeologist would consult with the SHPO and the Tribal entities.

Implementation of these measures as outlined would lead Alternative D to have no effect on cultural resources, and no additional mitigation measures would be necessary.

3.10 TRANSPORTATION AND ACCESS

3.10.1 Affected Environment

The vicinity of the proposed project is served by a limited network of roads that include local highways and primitive gravel roads. The North Sauk River Road is a gravel roadway that extends southward from its intersection with Sauk Prairie Road, about 0.6 mile east of Darrington, WA, along the eastern bank of the Sauk River. The road provides access to 22 properties held by 16 owners (two single-family residences) and a private timber company land holding.

After the washout occurred, North Sauk River Road was closed to general vehicular traffic. As previously discussed, Snohomish County has installed a locked gate near the intersection with Sauk Prairie Road and barricaded the washout area with concrete blocks. However, local residential property owners continue to have vehicle access to the section of road between the locked gate and the washout. Only two properties have year-round residents. The 90-acre privately owned forest tract, located about 1.25 miles upstream of the washout and 0.25 mile downstream of the road-blocking landslide, has an approved Forest Practices Application on file with DNR. The current road status prevents transportation of timber from this site to the nearest timber mill in Darrington.

Upstream of the washout, North Sauk River Road extends along the river to connect to FR 22, North Side Sauk Road. FR 22, a single-lane gravel road, continues south along the river to an intersection with FR 2420, then proceeds south to its terminus at the Mountain Loop Highway near the confluence of White Chuck River with Sauk River. The North Side Sauk Road is currently inaccessible from its southern terminus due to a washout of White Chuck Bridge near the Mountain Loop Highway as well as multiple additional washouts of the road between the White Chuck Bridge and the washout of North Sauk River Road (USFS website and pers. comm., Hamilton 2004) (Figure 2-1).

FR 2420, Dan’s Creek Divide Road, traverses the south and northeast slopes of Gold Mountain to join FR 24, Dan’s Creek Road. FR 24 is a one-lane gravel road that connects to Sauk Prairie Road north of Gold Mountain. On Sauk Prairie Road, the intersection with Dan’s Creek Road is about 1 mile east of the intersection with North Sauk River Road. As of October 2004, FR 24 was temporarily closed for culvert and washout repairs (pers. comm., Hamilton 2004).

Approximately 300 feet east from the intersection of Sauk Prairie Road with North Sauk River Road, a roadway under the ownership of DNR extends south from Sauk Prairie Road. The road provides access to a gravel mining quarry adjacent to Sauk Prairie Road and then proceeds farther south, into DNR forestland. The southern terminus of this roadway spur is located approximately 0.6 mile northeast of the project site. The road is overgrown with brush and young red alder beyond the gravel mine.

3.10.2 Environmental Consequences

3.10.2.1 Alternative A – No Action Alternative

Under Alternative A, the roadway would not be restored. In addition, FR 22 and FR 24 cannot be expected to provide reliable vehicular access to the private properties on North Sauk River Road south of project site because of snow at upper elevations and a large landslide just outside the USFS boundary (pers. comm., Hamilton 2004) (Figure 2-1). Only two properties are occupied year round. Therefore, Alternative A would result in minor adverse impacts to transportation, as the owners of property along North Sauk River Road would not have vehicular access to their properties restored. There would be no regional transportation effects because the North Sauk River Road is blocked by a large landslide farther upriver.

3.10.2.2 Alternative B – East Alignment with Low Walls

Alternative B would re-establish vehicle access for landowners with the same type of road (20-ft-wide gravel) present prior to the washout. The road would be built to standards similar to the existing segments. The upstream portion of the road may still be vulnerable to channel migration and the corresponding erosion associated with flood flows. This alluvial terrace (Figure 3-1) is composed of river sediments and is much more susceptible to erosion and channel migration than the downstream portion of the project area. Evidence of continued erosion since the October 2003 flood was noted on several site visits throughout 2004. A road constructed in this alluvial terrace would have to include engineering considerations for future channel migration toward the road. In addition, it is possible that other areas of the road upstream of this project could be affected by future flooding. It is difficult to assess the potential for this to occur, but given the recent dynamics of the river, there is reason to assume that it is likely at some time in the future. If this were to occur, vehicle access would again be eliminated.

All action alternatives would result in temporary increases in construction traffic through Darrington and along the short section of Sauk Prairie Road leading to the site. Road construction would occur over one summer construction season. Following construction, there would be minimal traffic along the road from residents, landowners, the one private timber company, and recreation users. The level of traffic would resume to the pre-flood levels.

3.10.2.3 Alternative C – DNR Road

This alternative also would re-establish vehicle access to the affected properties, but because it is upslope and away from the river, it would not be vulnerable to future channel migration. This route is a bit longer and less direct than Alternative B but would substantially reduce effects to aquatic resources. Because this alternative is away from the river floodplain, it would not be affected by future channel migration and would better ensure long-term vehicular access to the affected properties.

3.10.2.4 Alternative D – Modified DNR Road

This alternative would involve constructing a new road outside of the 100-year floodplain, effectively placing it beyond the reach of impacts from future channel migration. Because the new road would be farther upslope from Alternatives B and C and a minimum of 200 ft from the Sauk River, it would not be affected by migration of the Sauk River channel. The new alignment would be a 14- to 18-ft wide gravel road with road cut-outs for passing. The Modified DNR Road would be approximately 1.2 miles long, the most extensive of the alternatives, but would provide the most consistent and long-term access to the affected properties.

3.11 SOCIOECONOMICS

3.11.1 Affected Environment

The four primary industry types in the local area are manufacturing; education, health, and social services; construction; and agriculture, forestry, fishing and hunting, and mining (U.S. Census 2000). The median household income in 2000 was $35,052, and approximately 8.3% of households live below the poverty level.

The North Sauk River Road provides access to 22 residential properties, of which 5 are currently undeveloped, in addition to a private 90-acre commercial timber property. Two of the residences are occupied year-round while the others are used as seasonal cabins. The commercial timber operation has an approved Forest Practices Application on file with the DNR.

3.11.2 Environmental Consequences

The estimated cost of each alternative is provided in Table 3.11-1.

Table 3.11-1. Estimated Cost of Each Alternative for the North Sauk River Road Project.

Alternative	Cost
No Action Alternative –does not include buy-out	$0
Alternative B	$1,300,000
Alternative C	$6,100,000
Alternative D	$4,350,000

Source: Elekes 2004, VanWormer 2006.

The No Action Alternative could be implemented without buy-out of the properties by simply closing the damaged road. There would be little project cost associated with this option, but there would be no vehicle access for landowners. While individual property owners would be inconvenienced from such action, there would be minimal socioeconomic impacts at the macro scale. The small timber operation is the only revenue-generating business that would be affected.

The costs of building Alternatives B, C, or D are substantial because of the difficult terrain and the physical and environmental constraints of the site. The new road segments in Alternatives C and D are more than twice as long as Alternative B and would require mitigation for effects to wetlands and streams. These costs would be born by Federal, State, and County tax-payers. There would be no direct costs applied to the affected landowners.

All of the action alternatives would include a temporary influx of construction workers and movement of workers and material. This would cause a minor increase in demand for local services such as food, gas, and lodging. While not significant, these effects would benefit the local economy.

Because the area is zoned for one structure per lot, there will be minimal further development along the rebuilt road. Adjacent DNR land and nearby USFS land will not be developed. Under Alternatives B, C, or D, the existing timber operation would continue operations under an approved DNR permit, which will have benefits for the landowner but will not have major socioeconomic benefits.

3.12 CUMULATIVE IMPACTS

Cumulative impacts are those that result from the incremental impact of a proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other action (40 CFR 1508.7). Only those resources associated with cumulative effects are discussed below.

The project is in rural Snohomish County in an area dominated by Federally owned forest, with scattered private and State-owned land. Land-disturbing activities in the basin include forestry and associated road building, residential housing construction, and minor amounts of mining (WSCC 2003). A number of flood repair road projects are being planned in the basin on Federal and County land, including culvert and bridge washout repairs on USFS land and a number of road shoulder repairs in the Sauk River and larger Skagit River drainage. Timber harvest on Federal and State lands has been modified in recent years to reduce effects to several aquatic and terrestrial species protected under the ESA. In addition, Federal, State, County, and Tribal efforts in watershed management have been initiated and are ongoing, providing benefits to a number of resources associated with river and stream corridors. Lastly, Snohomish County is in the process of updating its Critical Areas Ordinance (CAO), which will provide restrictions for land development near sensitive natural resources and requirements for mitigation of impacts.

For aquatic and terrestrial natural and physical resources, there would be no cumulative impacts associated with the No Action Alternative. Natural processes would continue to erode the right bank, but this is the natural occurrence in a dynamic alluvial river system.

Under Alternative B, construction would occur close to the river and would cause minor amounts of sediment to enter the river from construction and in the long term. Though insignificant in comparison to other man-made and natural sediment sources (roads, natural landslides), the road would be an added source. The scale of the effects to aquatic resources is negligible in comparison to the scale of effects from forestry, previously constructed unimproved roads, and natural events in the basin. The road would re-establish vehicle access for landowners and could lead to future development of five properties that are currently undeveloped. The new road section would be a primitive gravel road according to Snohomish County standards, and similar to what was present prior to the washout. Thus, future use would be similar to what was present in the recent past. The area is zoned as one house per lot so development would be minimal and would not significantly contribute to basin-wide cumulative effects from land clearing. Increase in recreation use would be limited because repairing this road section would provide upstream access only to the large landslide that is adjacent to the USFS boundary. Even after the project road repair, there would be no access to USFS land via the North Sauk River Road.

Road repair and vehicle access would allow transport of harvested timber from the 90-acre private forest parcel upstream of this project. Forestry practices would follow DNR rules for protection of natural resources, but there would be some increase in sediment reaching the Sauk River from soil disturbance and truck traffic. Providing access would allow the landowner to transport and sell timber.

While Alternatives B, C, and D would repair this damaged section of road, it is possible that sections of the road upstream of this project could be damaged by future floods. This could eliminate access again to the private properties while the repaired road section remained intact.

Alternative C would have similar but lesser cumulative impacts compared to Alternative B. The road would be longer under Alternative C and would remove a greater area of young clearcut vegetation, but because it is farther from the river there would be substantially less than even the negligible effects from Alternative B regarding natural and physical resources.

Of the four alternatives, Alternative D would have the least cumulative effects. While it would be the longest, measuring approximately 1.2 miles in length, it would be the greatest distance from the Sauk River (200-1,000 ft), significantly reducing any impacts to aquatic resources. Construction would include the removal of an unknown number of trees from the mature timber section of the project area. However, these trees are widely spaced and BMPs would be employed to minimize tree removal by shifting the alignment where feasible. The majority of the new road would pass through the DNR clearcut, similar to Alternative C. Alternative D would provide the most consistent access to landowners and cause negligible effects regarding natural and physical resources.

4.0 CONSULTATION AND COORDINATION

4.1 SCOPING

A NEPA scoping meeting was held on February 23, 2004 and was attended by those listed in Table 4.1-1. Snohomish County staff then held a public meeting with FEMA participation in Darrington regarding the road repairs on March 13, 2004. The primary comments from residents centered on the need to repair the road as quickly as possible.

Table 4.1-1. Agency Staff that Attended the February 23, 2004 North Sauk River Road Scoping Meeting.

Agency	Staff
FEMA	Jerry Creek
FEMA	Bill Gadberry
FEMA	Herman Huggins
FEMA	Charles Lawson
Washington State Emergency Management Division	Virginia Haas
Washington State Emergency Management Division	Clarin Blessing
USFS	Sue Baker
Snohomish County	David Campbell
Snohomish County	Owen Carter
Snohomish County	Pete Michael
Snohomish County	Chris Danilson
Snohomish County	Steve Thompson
Snohomish County	Lorna Smith
NOAA Fisheries	Sean Gross
NOAA Fisheries	Tom Sibley
U.S. Fish and Wildlife Service	Jim Muck
U.S. Forest Service	Jim Chu

As conceptual alternatives were not yet developed at the scoping phase, general concerns of the agencies were discussed at this meeting. A meeting with the Sauk-Suiattle Tribe and the Skagit River System Cooperative, which represents Tribal concerns in the Skagit River drainage, was held on site at the Sauk-Suiattle Tribal office on September 21, 2004 (Table 4.1-2).

Table 4.1-2. Staff that Attended the September 21, 2004 North Sauk River Road Tribal Scoping Meeting.

Representative	Tribal Entity
Norma Joseph	Sauk-Suiattle Tribe
Doug McMurtrie	Sauk-Suiattle Tribe
Shari Brewer	Sauk-Suiattle Tribe
Jason Joseph	Sauk-Suiattle Tribe
Bob LaRock	Skagit River System Cooperative
Jim Keany	EDAW/FEMA
Jonathan Childers	EDAW/FEMA

An additional scoping meeting was held on September 23, 2004 in Seattle and was attended by USFS, NOAA Fisheries, the Skagit River System Cooperative, FEMA, and Snohomish County staff. The Sauk-Suiattle Tribe, USFWS, and WDFW were invited but did not attend. USFWS could not attend the meeting but did attend a site visit with NOAA Fisheries on October 8, 2004.

After reviewing scoping comments and collecting additional site information, a final update meeting was held on December 8, 2004 to discuss the alternatives and the schedule of the NEPA EA. This meeting was attended by Snohomish County Washington Emergency Management Division, FEMA, NOAA Fisheries, USFWS, USFS, and the Skagit River System Cooperative. WDFW and the Sauk-Suiattle Tribe were invited but did not attend the meeting.

Primary issues raised by the public, Tribes, and agencies included the following:

- Timely restoration of road access
- Road alignment effects to aquatic systems and listed fish
- Potential for new road to be affected by channel migration
- Potential archaeological resource effects
- Option of landowner buy-out to preclude need for road rebuilding
- Effects of building close to river

A Draft EA was made available for public comment in March 2005. Comments received on this draft are presented in Appendix C. Subsequent to receiving these comments, a new Preferred Alternative was added (Alternative D) and a revised Draft EA was released for public comment in June 2006. Comments received on this June 2006 EA are located in Appendix D. Two formal comment letters were received for this latest Draft EA, in addition to one e-mail and a verbal comment (see Appendix D). These comments noted that the addition of the new alternative significantly reduces the potential impacts.

4.2 AGENCY AND TRIBAL COORDINATION

FEMA has had continued coordination with Tribal entities, and State and Federal resource agencies throughout the NEPA process. The Tribes and agencies provided comment on the Draft EA, and these comments have been addressed and incorporated into the final document, as appropriate. In addition, a separate BA has been prepared for review by USFWS and NOAA Fisheries, as mandated by the ESA. Any recommendations that come out of that process will be incorporated into the Final BA and NEPA document.

During discussions with NOAA Fisheries and USFWS, these agencies strongly recommended seeking alternative road alignments other than those near the Sauk River that were being considered early in the process. The concern was the potential for unavoidable effects to listed salmon and bull trout that occupy the Sauk River mainstem and likely continued hydrologic effects of the river on any road close to the river. The review of additional alternatives eventually lead to the conceptual design for Alternatives C and D.

Several meetings (9/21/2004, 9/23/2004, 12/8/2004) and additional phone calls (pers. comm., Johnson 2004, Brewer 2005) were conducted with Tribal entities in regard to cultural resources. While the SHPO had no data on the project vicinity, they requested that results of the Tribal coordination be sent to their office. Upon completion of the NEPA process, this information will be sent to the SHPO's office.

4.3 OTHER LAWS AND REGULATIONS

State, Federal, and local laws that apply to the project, depending on the alternative, include the following:

- Endangered Species Act
- Section 106 – National Historic Preservation Act
- State of Washington National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Guidelines
- Sections 404 and 401 of the Clean Water Act
- Section 10 of the Rivers and Harbors Act
- State Water Quality Standards for Construction Projects
- State Hydraulic Project Approval
- State/Snohomish County Shoreline Management Regulations
- Snohomish County Critical Areas Ordinance
- Snohomish County Grading Code
- Snohomish County Drainage Code
- Snohomish County Cultural Resources Code

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Appendix A

Critical Areas Report
(Bound Separately)

Appendix B

Mitigation Measures

Appendix C

Comment/Response
on the Draft EA (March 2005)

Appendix D

Comment/Response
on the Draft EA (June 2006)