

**Crescent Ranger District  
Deschutes National Forest**

**Environmental Assessment**

**Big Marsh Creek – 6020 Road Crossing Replacement**

**September 2002**

USDA Forest Service  
Crescent Ranger District  
Deschutes National Forest  
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# TABLE OF CONTENTS

## **SECTION 1 – INTRODUCTION & ISSUES**

Introduction and Background	1
Purpose of the Proposed Action	1
Need for the Proposed Action	1
Direction From the Forest Plan	1
Proposed Action	2
Scoping Summary and Issues	2
Decision to be Made	3

## **SECTION 2 – ALTERNATIVES**

Alternatives Analyzed	4
Alternative 1 – No Action	4
Alternative 2 – Proposed Action	4
Project Design and Mitigation Measures	5

## **SECTION 3 – ENVIRONMENTAL EFFECTS**

Wildlife (PETS, MIS, and Survey & Manage species)	6
Plants (PETS, and Survey & Manage species)	9
Hydrology & Water Quality	9
Cultural Resources	10
Wild & Scenic River Values	10
Noxious Weeds	10
Other Disclosures	10

## **SECTION 4 – CONSULTATION WITH OTHERS**

Public Notification and Participation	12
List of Preparers	12

<b>Figure 1-Vicinity Map</b>	13
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# Section 1 – Purpose and Need

## A. Introduction and Background

This document presents the environmental analysis conducted for reconstructing the Big Marsh Creek crossing on Forest Road 6020 at milepost 1.6. This project is located in T25S, R7E, Section 6. Road 6020 is a primary collector Forest Service route connecting Road 60 (the Windigo Pass road) with Oregon Route 58 southeast of Crescent Lake. It is a single-lane gravel road that receives moderate use and provides secondary access to the recreation facilities around Crescent Lake. Refer to Figure 1 for the project location map.

### 1. *The Purpose of the proposed action*

The purpose of the proposed action is to improve the existing crossing, which currently consists of four 60-inch diameter corrugated metal culverts. These culverts were originally installed in a relatively shallow reinforced embankment. Fish passage problems will be alleviated and hydrologic functions improved.

### 2. *The need for the proposed action*

This crossing was identified as one of the top five priorities for replacement according to the Region 6 Culvert Inventory on the Deschutes National Forest. This is because it presents a barrier to upstream passage of juvenile redband trout, a Pacific Northwest Region sensitive species, due to in-culvert water velocities.

The Big Marsh 6<sup>th</sup> field watershed was designated as a Tier 1 Key Watershed, which contributes directly to the conservation of at-risk resident fish populations, including the redband trout (Big Marsh Watershed Analysis, 1997). Key Watersheds are to be given the highest priority for watershed restoration (Northwest Forest Plan Record of Decision B-19).

## B. Direction from the Forest Plan

The 1990 Deschutes National Forest Land and Resource Management Plan (Forest Plan) as amended guides all natural resource management activities and provides standards and guidelines for the Deschutes National Forest. Forest Plan Standards and Guidelines for stream crossings require structures to be adequate to accommodate anticipated high stream flows and to allow fish passage (Standard and Guideline RP-28).

The Big Marsh Creek crossing at Forest road 6020 is located within a Wild and Scenic River corridor as designated by the Forest Plan and the Omnibus Oregon Wild and Scenic River Act of 1988. A site-specific Management Plan was prepared for the Big Marsh Creek Wild and Scenic River corridor in 2001. The goal of the Management Plan is to protect and enhance the resource values for which the stream was included in the Wild and Scenic Rivers System, and to maintain the current character with an emphasis on identifying and rehabilitating degraded resources.

The Wild & Scenic River Management Plan requires that proposals that may alter the bed or banks of Big Marsh Creek be evaluated under Section 7 of the Wild and

Scenic Rivers Act to determine any adverse effects to the free-flowing character of the river. That analysis is included in the project record, and has been summarized in the Environmental Effects Section.

The Forest Plan provides direction on the design and construction of stream crossings. Applicable standards and guidelines include RP-18 through RP-29.

The project also lies within the area covered by the Northwest Forest Plan (NWFP) and is allocated as Congressionally Reserved, which means they are lands with congressional designations. In this case, the congressional designation is the Wild and Scenic River corridor along Big Marsh Creek.

The project area is also within a Riparian Reserve. The Northwest Forest Plan defines Riparian Reserves as portions of a watershed where riparian-dependent resources receive primary emphasis and where special standards and guidelines apply. Standards and guidelines prohibit and regulate activities in Riparian Reserves that would retard or prevent attainment of the Aquatic Conservation Strategy Objectives. Other applicable standards and guidelines from the Northwest Forest Plan include RF-1 through RF-7.

### **C. Proposed Action**

The proposed action is to replace the current 4-culvert structure with a single, open-bottom arch structure. The existing structure would be removed to streambed elevation, with embankment materials being conserved and the culverts being removed from National Forest Land. Footing sites would be dewatered using channelizing, sheet piling, or other techniques depending on stream discharge rate, and concrete footings would be formed and poured, after which— when concrete structural strength requirements have been met – the culvert would be bolted together and backfilled to create the new crossing. The crossing would then be paved.

The instream portion of the work would be conducted during the lowest stream discharge rate period possible, consistent with the instream working guidelines established by Oregon department of Fish and Wildlife to protect downstream aquatic resources from sediment deposition (July 1 – October 15).

In order to minimize streamside and instream disturbance in the immediate project area, no temporary bypass crossing would be constructed. Therefore, the road would be closed to traffic for approximately 4 weeks. Implementation will likely take place in late summer 2003.

### **D. Scoping Summary and Issues**

Public involvement in the planning process began in December 2001 when notification of the proposed action was sent to more than 200 individuals, agencies, and organizations. Notice of the project was also published in the *Schedule of Projects for the Ochoco and Deschutes National Forests*, and was posted on the Deschutes National Forest's web site.

One comment was received during the initial scoping period. The Oregon Department of Fish and Wildlife expressed support for the proposed project. The interdisciplinary team did not identify any key issues.

The following items and environmental components will be considered in the Effects section in Chapter 3, as a way to compare the alternatives:

- Wildlife (PETS, MIS, and Survey & Manage species)
- Plants (PETS, and Survey & Manage species)
- Hydrology & Water Quality
- Fisheries
- Cultural Resources
- Wild & Scenic River Values
- Noxious Weeds

### **E. Decision to be Made**

The Crescent District Ranger will decide whether or not to replace the existing Big Marsh Creek crossing with a bottomless arch structure and what conditions will apply during implementation. The decision will be based on information contained in this document and supporting information contained in the analysis file, such as the Biological Evaluation.

## Section 2 – Alternatives

This chapter describes the alternatives that were developed by an interdisciplinary team to display management options that respond to the purpose and need listed in Section 1.

The proposed action was developed by Forest Engineers in response to the need for an improved crossing at Road 6020. Construction of a temporary bypass was considered during project development. In order to minimize impacts to the riparian area, however, a temporary bypass was not included in the proposed action. During scoping and analysis, no issues arose that called for development of an alternative to the proposed action to consider in detail.

### **A. Alternatives Analyzed**

#### ***1. Alternative 1 (No Action)***

As required by the National Environmental Policy Act, the No Action alternative forms a basis for describing and comparing the effects of the proposed action. In this case, no action means that the current crossing structure would remain in place. It would not be replaced with an open bottom arch structure.

#### ***2. Alternative 2 (Proposed Action)***

The current crossing structure would be replaced with an open-bottom arch structure, approximately 30 feet wide and 5 to 6 feet high. The existing structure would be removed to streambed elevation, with embankment materials being conserved and the culverts being removed from National Forest Land. Footing sites would be dewatered using channelizing, sheet piling, or other techniques depending on stream discharge rate, and concrete footings would be formed and poured, after which – when concrete structural strength requirements have been met – the culvert would be bolted together and backfilled to create the new crossing. The surface of the crossing would then be paved.

The instream portion of the work would be conducted during the lowest stream discharge rate period possible, with the instream working guidelines established by Oregon department of Fish and Wildlife to protect downstream aquatic resources from sediment deposition (July 1 – October 15). Stream crossing by equipment would be allowed within the construction limits (i.e. within the footprint of the embankment). No crossings would be allowed outside of this area.

In order to minimize streamside and instream disturbance in the immediate project area, no temporary bypass crossing would be constructed. Therefore, the road would be closed to traffic for approximately 4 weeks. Implementation will likely take place in late summer of 2003.

#### **a. Mitigation Measures and Project Design**

*Noxious Weeds:*

- Ensure that equipment used in the project is clean and free of dirt and plant parts before coming to the project site.

*Water Quality:*

To protect water quality, the following Road System Best Management Practices will be followed (R-1, R-2, R-3, R-6, R-9, R-14):

- Implementation of the project should occur during low water flow period (July 15 – October 15).
- Place certified weed free straw bales immediately downstream of the project. Place silt paper up stream of the straw bales. Attempt to remove the silt paper with sediment captured in it.
- Hazard spill booms will be required on project.
- Equipment will be fueled at least 300 feet from the stream channel.

*Public Safety:*

- Construction warning and information signs will be placed at the ends of Road 6020 and at its junction with Road 5814 to warn forest visitors of the closure at the Big Marsh Creek crossing. Information will be provided to campers at the mushroom camp and, if closure occurs during its operating season, to the Boy Scout camp.

## Section 3 – Environmental Effects

This section of the environmental analysis considers the environmental consequences of implementation of the two alternatives. The following issues and environmental components did not shape the range of alternatives, but analyzing the effects to them is important for assessing how well the alternatives meet the purpose and need for the project and protect other resources.

The sections on effects for wildlife and plants are summarized from the Biological Evaluations for threatened, endangered, and sensitive fish, wildlife, and plant species and the wildlife specialist’s report. For more details, these documents appear in the Analysis File.

### 1. Wildlife

#### a. Proposed, Endangered, Threatened, or Sensitive Animals and Fish

Table 1. Summary of Conclusion of Effects from Biological Evaluation

<b>Proposed (P), Threatened (T), Endangered (E) Species</b>	
Species	Alternative 2 (Proposed Action)
Northern Bald Eagle (T)	No Effect
Northern Spotted Owl (T)	No Effect
Northern Spotted Owl Critical Habitat	No Effect
Canada Lynx (T)	No Effect
Bull Trout (T)	No Effect
<b>Region 6 Sensitive Species</b>	
Oregon spotted frog	No Impact
Horned grebe	No Impact
Rednecked grebe	No Impact
Bufflehead duck	No Impact
Harlequin duck	No Impact
American peregrine falcon	No Impact
Western sage grouse	No Impact
Yellow rail	No Impact
Tricolor blackbird	No Impact
California wolverine	No Impact
Pacific fisher	No Impact
Pygmy rabbit	No Impact
Interior redband trout	May impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species.



The proposed action will meet all applicable Project Design Criteria required in the *Joint Aquatic and Terrestrial Programmatic BIOLOGICAL ASSESSMENT For Federal Lands Within the Deschutes Basin* (Programmatic BA) prepared by the Forest Service and Bureau of Land Management.

**Northern Spotted Owl** (Threatened) – Recent surveys in the project area determined that the nearest spotted owl activity center is 6 miles away from the project site. The project is outside of Critical Habitat and any Late Successional Reserve. The area affected is not owl habitat. Because there is no suitable nesting, roosting, or foraging habitat or dispersal habitat that would be impacted, there will be no negative effects in the short or long-term from either alternative. Alternative 2 would have no effect on the northern spotted owl or any spotted owl critical habitat unit.

**Northern Bald Eagle** (Threatened) – The project area is not considered essential habitat for eagles. Any bald eagle use within the area is expected to be incidental. Alternative 2 would not affect any suitable eagle habitat and therefore would have no negative effects in the short- or long-term. Implementation of the project would have no effect on the northern bald eagle.

**Canada Lynx** (Threatened) – The proposed action does not take place within an identified Lynx Analysis Unit or alter lynx habitat. Implementation of the project would have no effect on the lynx.

**Bull Trout** (Threatened) - There are no known records of bull trout in Big Marsh Creek, although it is suspected that bull trout may have used the headwater spring area for spawning. Historically, bull trout were found in Crescent Lake, Crescent Creek, and the Little Deschutes River system. Currently, bull trout are found only in Odell Lake and Trapper Creek. Big Marsh Creek is not part of the Odell Lake stream system. Implementation of the project would have no effect on bull trout.

**Oregon Spotted Frog** (Sensitive) – The reach of Big Marsh Creek at the crossing is currently too swift to be Oregon spotted frog habitat. Adjacent habitat would be left undisturbed. Project implementation would have no impact on the Oregon spotted frog.

**Harlequin Duck** (Sensitive) – Big Marsh Creek may provide harlequin duck habitat. The project is limited to the area where the road crosses Big Marsh Creek. Adjacent vegetation would not be disturbed, and timing of the project would occur after nesting would be completed. Therefore, the project would have no impact to harlequin ducks.

**Peregrine Falcon** (Sensitive) – The project area is not within or near any potentially suitable nesting habitat. It would not alter foraging habitat or alter foraging opportunities. Therefore, the project would have no impact on the peregrine falcon.

**California Wolverine** (Sensitive) – Changing the crossing structure of the road on Big Marsh Creek would not alter the use of the area by wolverine. Activities would not take place within or adjacent to potential denning habitat. Project implementation would have no impact on the California wolverine.

**Pacific Fisher** (Sensitive) – Changing the crossing structure of the road on Big Marsh Creek would not alter resting and foraging activities of the fisher. The project would

not take place within or adjacent to potential denning habitat. Project implementation would have no impact on the Pacific fisher.

**Interior Redband Trout (Sensitive)** – Redband trout, a Region 6 Sensitive Species, are found in low numbers present Big Marsh Creek.

Under Alternative 1 the culverts would remain and juvenile fish would be unable to move upstream. Bank full widths will continue to be constricted, producing more stress on streambanks and continuing bank erosion and contribution of fine sediment.

Alternative 2 would improve fish passage. During implementation, some fine sediments (< 6.4 mm diameter) may be introduced to the system when the culvert fill/overburden is removed. This additional amount will not significantly add to the fines already in the system nor will it directly affect redband trout. Long-term impacts include increased passage for juvenile redband trout due to reduced gradients and removal of a hydraulic jump. Bank full widths will not be constricted. Therefore, reduced stress on the streambanks will occur creating a more stable system with less bank erosion and contribution of fine sediment. Increased access to the meadow and headwater reaches will be provided with the new crossing.

Implementation of the project “May impact individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the population or species.”

**Other Region 6 Sensitive Species** - The following species have no habitat and do not occur in the project area: Horned grebe, red necked grebe, bufflehead duck, yellow rail, tricolor blackbird, pygmy rabbit, western sage grouse. Implementation of Alternative 2 would have no impact to these species.

#### **b. Survey & Manage Animal Species**

Vertebrate and mollusk species from Table 1-1 of the Survey and Manage Amendment 2001 that are known to occur, suspected to occur, or have suitable habitat present on the Deschutes NF are the Great gray owl and Crater Lake tightcoil snail.

No Crater Lake tightcoil snails were found during US Forest Service surveys of 2001 and 2002. There is little down wood within the disturbance area. Great gray owls have been sighted in the area and the nearest nest is located approximately 1 mile away from the project site.

Because the area of disturbance is very limited and timing of disturbance is short, there would be no impact to survey and manage species from either alternative.

#### **c. Management Indicator Species and Migratory Birds**

Management Indicator Species (MIS) include peregrine falcon, northern bald eagle, northern spotted owl, northern goshawk, three-toed woodpecker, American marten, osprey, woodpeckers, elk and mule deer. Peregrine falcon, northern bald eagle, and the northern spotted owl are discussed under PETS species.

While there have been no recorded sightings of any MIS in or adjacent to the project area, it is expected to provide habitat for American marten, black-backed woodpeckers

throughout the lodgepole pine, and deer and elk throughout the area. Northern goshawks may utilize the area for foraging, and osprey may use the stream area for foraging.

There would be no habitat loss for any MIS species. The duration and extent of disturbance is very small in relation to the size of the Big Marsh Creek drainage. With the timing of work to be done on the project outside any sensitive young rearing period, there should be no disturbance to any MIS from Alternative 2.

Executive Order 13186 was signed by President Clinton in 2001. It directs federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitat. Implementation of Alternative 2 would cause no habitat loss for any migratory birds. The project work will be completed outside of any sensitive young rearing period and there should be no disturbance to any migratory birds.

## **2. Proposed, Endangered, Threatened, or Sensitive Plants; Survey & Manage Plants**

After review of records, habitat requirements, and existing habitat components, it was determined that tall agoseris (*Agoseris elata*) is the only sensitive plant species that has habitat in the project area. A survey was conducted at the project site, and no tall agoseris was found. There will be no impact to tall agoseris or any other Endangered, Threatened, or Sensitive plants from alternative 1 or 2.

No habitat exists for Survey and Manage fungi or lichen species. Habitat was present for one species of bryophyte (*Tetraphis geniculata*) and two species of vascular plants, (*Botrychium minganense*, and *montanum*). The project area was surveyed for these species, and none were located. There will be no effect from Alternative 1 or 2 on Survey and Manage plants.

## **3. Hydrology & Water Quality**

Big Marsh Creek drains an area of 51.5 square miles. The current crossing at mile post 1.6 on road 6020 is designed as a low-water-ford. The stream width above the culverts is approximately 28 feet. A pool directly above the culverts measuring 45 feet long by 33 feet wide suggests that the culverts are not big enough to pass high flows. During high flows water has tended to create an eddy upstream of the culvert and eventually created the pool.

Alternative 1 will continue the current condition of hydraulic inefficiency and continual overtopping of this section of road. Bank full widths will continue to be restricted, producing more stress on streambanks and continuing bank erosion and contribution of fine sediment.

The Proposed Action incorporates Best Management Practices (BMPs) and other design features to minimize the risk of turbidity and sedimentation during implementation. There is a potential for short-term increases in stream turbidity from Alternative 2. The BMPs will reduce this potential. Long-term effects include reduced stress on

streambanks creating amore stable system with less bank erosion and contribution of fine sediment.

The project was reviewed for consistency with the Aquatic Conservation Strategy Objectives of the Northwest Forest Plan. Implementation of Alternative 2 would not retard or prevent attainment of these objectives.

#### **4. Cultural Resources**

The project was evaluated by the District Archaeologist. Past surveys found no cultural resources eligible for the National Register of Historic Places in the project area. There will be no effect to cultural resources from Alternative 1 or 2.

#### **5. Wild and Scenic River**

The outstandingly remarkable values for which Big Marsh Creek is included in the Wild and Scenic Rivers System are scenery, vegetation, wildlife, and geology. These values will not be affected by either alternative. The Hydrology Report, Wildlife Report, and Biological Evaluation contain more detailed information and are located in the project file.

An analysis of the effects of the proposed project on the free-flow character of Big Marsh Creek was completed. It was determined that the outstandingly remarkable values and the free-flow character of the stream would not be adversely affected by the proposed action.

#### **6. Noxious Weeds**

A Noxious Weed Risk Assessment was completed for the project, which included a survey of the project site and a determination of the risk of spreading noxious weeds. Reed canarygrass was found at the project site.

Established populations of reed canarygrass occur upstream of the project site in Big Marsh and along Big Marsh Creek both upstream and downstream of the project site. The potential for spread of reed canarygrass from the few plants that are likely to be disturbed by the construction activities is insignificant. The risk is low that project activities will cause any increase in the spread and establishment of reed canarygrass beyond present levels.

### **Other Disclosures**

#### **1. Wetlands and Floodplains**

Executive Orders 11988 and 11990 direct Federal agencies to avoid, to the extent possible, both short-term and long-term adverse impacts associated with the modifications of floodplains and wetlands. The proposed action (Alternative 2) will

have no impact to the floodplain. There are no wetlands in the immediate vicinity of the stream crossing.

## **2. Civil Rights and Environmental Justice**

Civil Rights legislation and Executive Order 12898 (Environmental Justice) direct an analysis of the proposed alternatives as they relate to specific subsets of the American population. The subsets of the general population include ethnic minorities, people with disabilities, and low-income groups. The project is not located in a minority community and would not affect residents of low or moderate income.

The inconvenience of the 6020 road being closed during implementation of the project would affect people visiting the Forest to recreate, hunt, pick mushrooms, and other activities. Access would not be precluded to areas of interest, such as Windigo Pass, but all access points west of the closure would be reached from Road 60 and Crescent Lake Junction. This impact will not affect any specific subset of the American population at a disproportionately higher rate than others.

In addition, the effects of this project on the social context of these protected groups are within those described in the Deschutes National Forest Plan. The benefits and risks associated with implementation of the proposed action are provided to all members of the public. Therefore, the project would not pose disproportionately high or adverse effects to minority communities or to low income groups.

## **3. Prime Lands (Farm, Range, and Forest)**

There are no lands within the boundaries of the Deschutes National Forest that meet the definition of prime farmland, or are considered prime farmland as discussed in the Final Environmental Impact Statement, Deschutes National Forest Land and Resource Management Plan. National Forest Land is generally not considered "prime" forestland. This project, therefore, would not affect prime lands.

## Chapter 4 – Consultation with Others

### **A. Public Notification & Participation**

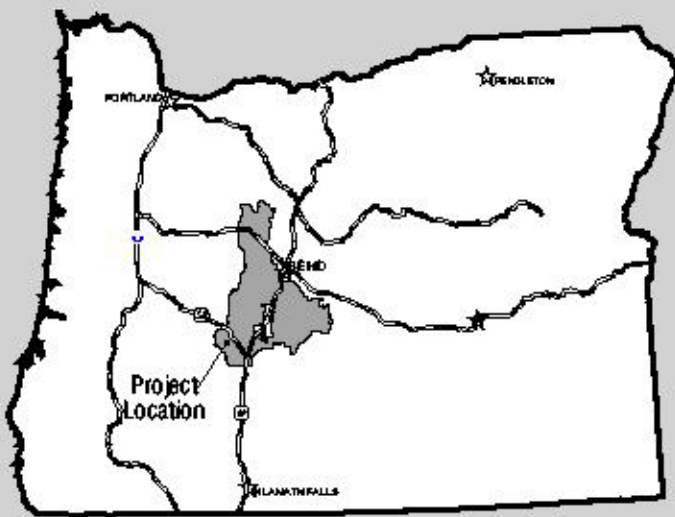
Over 200 citizens and groups on the Crescent Ranger District mailing list were notified of the proposed project in early December 2001 by letter.

The public was also notified in January 2002 when notice of the project was published in the *Schedule of Projects for the Ochoco and Deschutes National Forests*.

During the preliminary scoping period, one comment was received from the Oregon Department of Fish and Wildlife, which expressed support for the project.

### **B. List of preparers and specialists consulted:**

Ken Kittrell, Road Manager  
Rick Cope, Hydrologist  
Carolyn Close, Botanist  
Joan Kittrell, Wildlife Biologist  
Leslie Hickerson, Archaeologist  
Brad Houslet, Fish Biologist  
Beth Peer, Writer/Editor



Oregon Locator Map

## 6020 - Big Marsh Cr. Crossing

Crescent Ranger District  
Deschutes National Forest

Figure 1  
Project Vicinity

