**U.S. Department of Transportation**
**Federal Highway Administration**

**Western Federal Lands Highway Division**
**Vancouver, Washington**

# Petty Creek Road Improvement Project
# MT PFH 71-1(1)
# Amended Environmental Assessment

Amended May 2010

# Petty Creek Road Improvement Project
# Missoula County, Montana
# Amended Environmental Assessment

MT PFH 71-1(1)

Submitted
Pursuant to Public Law 91-190
National Environmental Policy Act

U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division

Cooperating Agencies
U.S. Department of Agriculture, Forest Service
Missoula County
Montana Department of Transportation

5/3/10
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# Executive Summary

The Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA), in cooperation with the U.S. Department of Agriculture Forest Service (USFS), and Missoula County (County), Montana, proposes to upgrade an 11.8-mile (mi) segment of the Petty Creek Road near Alberton, Montana.

The proposed upgrade is within the Lolo National Forest (LNF) in Missoula County, Montana. It begins approximately 1 mile southeast of the community of Alberton and extends south roughly paralleling Petty Creek leading into the Ninemile Ranger District of the LNF. The WFLHD proposes to improve 11.8 mi, beginning at the south side of the Montana Rail Links railroad tracks and ending near the intersection with South Fork Petty Creek Road.

The Petty Creek Road serves residential, commercial, and recreational traffic within this segment of LNF and connects with other Forest Development roads accessing adjacent LNF lands. The route provides the principal access for the protection, administration, and utilization of this portion of the Ninemile Ranger District of the LNF. The road also provides access for approximately 190 private property parcels, 115 of which are developed. It provides access for mail delivery, emergency vehicles, and school buses to these parcels. The road also provides access to LNF recreational facilities including dispersed camping sites, trailheads, fishing and hunting access, and scenic vistas.

The purpose of the proposed project is to improve operational safety of Petty Creek Road while also reducing excessive maintenance efforts and the road's contribution of sediment to Petty Creek. The existing road has a substandard driving surface that has potholes, wash-boards, loose gravel, and cracked pavement all of which compromise driver safety. Residents in the area who are regular users of the road have requested improvements to the road, particularly paving, for several years. Requests are a result of the condition of the road and subsequent safety issues. Airborne dust is also a safety issue limiting sight distance of drivers. Deficient road signage is also a safety problem. Several of the stream crossing structures along Petty Creek Road are undersized which impedes fish passage to varying degrees and does not provide for adequate water flow during larger storm events, compromising road stability and safety. Erosion of the roadway and side slopes necessitates additional maintenance to keep the roadway stable. Drivers of Petty Creek Road are often not adequately informed of travel speeds or potential roadway hazards to properly anticipate road conditions, contributing to safety compromises. The existing road supplies large amounts of sediment to Petty Creek which in turn contributes to the creek's degraded water quality.

These deficiencies require frequent maintenance efforts by the County. The loose gravel, potholes, and washboarding require frequent grading of the substandard gravel surface portion, and severe cracking requires patching of the paved portion to provide a smooth travel surface. These repairs are temporary and must be repeated regularly to maintain a smooth surface. Erosion of the roadbed around the undersized stream crossing structures requires maintenance to keep the road and structures stable and properly functioning.

Missoula County's available funding, staff, and equipment is severely limited, which further exacerbates the deficiencies.

Three alternatives are evaluated in this Amended Environmental Assessment (EA): the No Action Alternative, the Preferred Alternative, and the Gravel Alternative. The Preferred and Gravel alternatives were developed to address project purpose and need.

The No Action Alternative would leave the road in its current state. Under the No Action Alternative, no improvements would be made to the Petty Creek Road. The County would continue routine maintenance but the cost effectiveness of these actions would decrease as road conditions deteriorate. Missoula County would have to increase the frequency of its maintenance to keep the road operational.

The Preferred Alternative addresses issues raised during the public scoping phase of the project as well as issues raised as a result of publication of an EA in March 2008. The Preferred Alternative generally would involve improving the road on its existing alignment. The Preferred Alternative proposes improving the 11.8-mi segment of roadway by creating a uniform roadway width of approximately 24 feet wide with one travel lane in each direction and adjacent shoulders. The road would be paved to milepost (MP) 10 with the remaining 1.8 mi receiving an improved gravel surface.

The Preferred Alternative would include minor shifts away from Petty Creek, softening of some sharp curves, and providing a uniform roadway width. Proposed improvements include the placement of aggregate base and asphalt concrete pavement, culvert and bridge replacement, drainage improvements, clearing and grubbing, addition of guardrails, signs, and striping, stream and floodplain enhancement, riparian and cut-slope vegetation improvements, and soil stabilization and sediment delivery reduction measures.

The Gravel Alternative also addressed issues raised during the public scoping phase of the project as well as issues raised as a result of publication of an EA in March 2008. The Gravel Alternative would include similar design features proposed for the Preferred Alternative as described above; however, instead of a paved surface, an improved gravel surface would be constructed along the entire 11.8-mile segment.

Potential effects from either alternative are summarized in Table ES-1 and fully described in Chapter 4. Any adverse impacts would be minimized as much as practicable and are not expected to increase substantially above those that would occur under the No Action Alternative. Mitigation measures would be implemented to further reduce any potential effects.

In addition, with both the Preferred and Gravel Alternatives WFLHD is proposing to facilitate acquisition of up to 1,000 acres of MLP land in the project area for permanent conservation by the USFS. The final acreage to be acquired would be based on the price of the land in combination with priority acquisition that is agreeable to both the USFS and the MLP for conservation. Permanent conservation would contribute to preservation

of local movement abilities and help preserve a wildlife movement corridor within the larger linkage zone between the NCDE and the Sellway-Bitterroot Ecosystem that would be free from future development.

**Table ES-1. Summary of Impacts by Alternative for the Proposed Petty Creek Road Project**

| Resource Area | No Action | Preferred Alternative | Gravel Alternative |
|---|---|---|---|
| Land Use | No Change in growth rate and no ROW acquisition | Estimated slight increase in growth rate over No Action alternative;<br>Acquisition of approximately 50 parcels of ROW | Estimated slight increase in growth rate over No Action but less than Preferred Alternative;<br>Acquisition of approximately 50 parcels of ROW |
| Water Resources | Estimated 433 tons/year<br>(No reduction in estimated sediment load) | Reduce sediment load by an estimated 406 tons per year | Reduce sediment load by an estimated 217 tons per year |
| Transportation and Safety | No change in access<br>Operational safety deficiencies still exist | No change in access<br>Greatest improvement to operational safety deficiencies | No change in access<br>Improvement to operational safety deficiencies over No Action but slightly less than Preferred Alternative |
| Wildlife | No new impacts | Minor adverse impacts,<br>May affect not likely to adversely affect gray wolf and Canada lynx | Negligible to minor adverse impacts,<br>May affect not likely to adversely affect gray wolf and Canada lynx |
| Fisheries | No improvements to fish habitat | May affect likely to adversely affect bull trout in the short-term<br>Greatest improvements to fish habitat | May affect likely to adversely affect bull trout in the short-term<br>Improvements to fish habitat greater than the No Action but less than the Preferred Alternative |
| Soils and Geology | No New Impacts | Moderate short-term impacts<br>Minor long-term impacts | Moderate short-term impacts<br>Minor long-term impacts |
| Wetlands | No wetland encroachments<br>No reduction in sediment to wetlands | Approximately .04 acre encroachment into wetlands<br>Short term minor adverse impacts<br>Long term - beneficial | Approximately .04 acre encroachment into wetlands<br>Short term minor adverse impacts<br>Long term - beneficial |

**Table ES-1. Summary of Impacts by Alternative for the Proposed Petty Creek Road Project**

| Resource Area | No Action | Preferred Alternative | Gravel Alternative |
|---|---|---|---|
| Vegetation | Minor sidecasting would continue | Removal of 63 acres of vegetation temporarily and 6 acres permanently<br>Minor sidecasting the last 1.8 miles | Removal of 63 acres of vegetation temporarily and 6 acres permanently; Minor sidecasting along the 11.8 miles |
| Cultural | No Impact | No Impact | No Impact |
| 4(f) Resources | No Impact | *de minimis* impacts | *de minimis* impacts |
| Noise | No Impact | Temporary increase in noise levels during construction;<br>Less noise likely on paved road section | Temporary increase in noise levels during construction |
| Air Quality | No change in air quality | Minor short term impacts during construction<br>Long term improvements to air quality along paved roadway section | Minor short term impacts during construction<br>Improvements to air quality greater than No Action but less than the Preferred Alternative |
| Visual | No Change | Minor Impacts | Minor impacts greater than No Action but less than the Preferred Alternative |
| Floodplains | No Impact to 100-year Floodplain | No Impact to 100-year Floodplain | No Impact to 100-year Floodplain |
| Public Services and Utilities | No Impact to Utilities<br>No improvements to maintenance expense and efforts | No Impact to Utilities<br>Greatest improvements to maintenance expenses and efforts | No Impact to Utilities<br>Improvements to maintenance expenses and efforts greater than the No Action but less than the Preferred Alternative |
| Socioeconomics | No Effect | Beneficial Impacts to employment opportunities and from improved access | Beneficial Impacts to employment opportunities and from improved access |
| Prime Farmland, Rangeland and Forestland | Not present so no impact | Not present so no impact | Not present so no impact |

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## List of Abbreviations and Acronyms

°C – degrees Celsius
°F – degrees Fahrenheit
AASHTO – American Association of Transportation Officials
ac – acre(s)
ADT – average daily traffic
BMP – best management practices
BP – before present
cfs – cubic feet per second
cm – centimeter(s)
cms – cubic meters per second
CMT – culturally modified tree
cps – centimeters per second
EA – Environmental Assessment
EPA – U.S. Environmental Protection Agency
ESA – Endangered Species Act
FHWA – Federal Highway Administration
fps – feet per second
FR – Federal Register
ft – feet
GHG – greenhouse gases
GIS – geographic information system
IGBC – Interagency Grizzly Bear Committee
ha – hectare(s)
in – inch(es)
km – kilometer(s)
$km^2$ – square kilometer(s)
KP – kilometer post
kph – kilometer per hour
LNF – Lolo National Forest
m – meter(s)
MBTSG – Montana Bull Trout Scientific Group
MDEQ – Montana Department of Environmental Quality
MDT – Montana Department of Transportation
MFWP – Montana Department of Fish, Wildlife, and Parks
mi – mile(s)
$mi^2$ – square mile(s)
MLP – Montana Legacy Project
MNHP – Montana National Heritage Program
MP – milepost
mph – miles per hour
MT – Montana
NCDE – Northern Continental Divide Ecosystem
NEPA – National Environmental Policy Act
NF – National Forest
NRHP – National Register of Historic Places
PCE – primary constituent element
RCA – Resource Conservation Areas
SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SEE – Social, Economic, and Environmental Team
SHPO – State Historic Preservation Office
TMDL – Total Maximum Daily Load
TNC – The Nature Conservancy
USDOT – U.S. Department of Transportation
USFS – U.S. Forest Service
USFWS – U.S. Fish and Wildlife Service
WFLHD – Western Federal Lands Highway Division

# 1 Project Description

## 1.1 Introduction

The Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA), in cooperation with the Lolo National Forest (LNF) of the United States Department of Agriculture Forest Service (USFS) and Missoula County (County), proposes to upgrade an 11.8-mile (mi) segment of the Petty Creek Road. The proposed upgrade is located in Missoula County, Montana (MT), and it leads into the eastern portion of the Ninemile Ranger District of the LNF. It begins approximately 1 mile southeast of the community of Alberton, MT and extends south roughly paralleling Petty Creek. Petty Creek Road begins at the junction of Interstate 90 and connects to Graves Creek Road at approximately milepost (MP) 13. Graves Creek Road then continues approximately 5 miles to US Highway 12 (US 12) for a total distance between Interstate 90 and US 12 of approximately 18 miles. WFLHD proposes to improve 11.8 mi of Petty Creek Road, beginning at the south side of the Montana Rail Links railroad tracks and ending near the intersection with South Fork Petty Creek Road (Figures 1, 2, and 3).

Proposed improvements to the Petty Creek Road have been under study for many years. During this time, project coordination has involved communication with federal, state, and local agencies including the USFS, U.S. Fish and Wildlife Service (USFWS), Montana Department of Transportation (MDT), State Historic Preservation Office (SHPO), Montana Fish Wildlife and Parks (MFWP), and Missoula County. Additional coordination also occurred with local residents, the general public, and other interested parties. A Social, Economic, and Environmental (SEE) Team was established in the early stages of the project to assist in the development of project alternatives, identify environmental issues, and coordinate public participation. The SEE Team is composed of representatives from the USFS, Missoula County, MDT, and WFLHD.

In March 2008, WFLHD published the *Petty Creek Road Improvement Project, MT PFH 71-1(1), Environmental Assessment* for public review and comment. Following release of this public Environmental Assessment (EA), the proposed project was delayed by a variety of factors including:

- additional research needs to address various comments to the EA
- concerns about the preferred full pavement alternative
- potential issues with wildlife linkages

Since March of 2008, many changes to the proposed project and within the project vicinity have occurred. First, a major change was made to the proposed project to address several comments made in response to the March 2008 EA that requested analysis of a full Gravel Alternative. This alternative has been added to the Amended EA and is analyzed along with the No Action and Preferred Alternatives.

Second, the Preferred Alternative has been modified from a full pavement alternative. The new Preferred Alternative consists of ending pavement at MP 10 with a gravel roadway continuing to the end of the project at MP 11.8. This new Preferred Alternative was developed through extensive coordination by the SEE Team in an effort to meet the project purpose and need while addressing project concerns regarding the need for pavement past MP 10.

The last issue that required revisions to the 2008 EA was the development of the Montana Legacy Project (MLP) in the project vicinity. The goal of the MLP is to conserve important forestland owned by Plum Creek Timber Company in northwestern Montana. To meet this goal, the MLP has established objectives to conserve wildlife and fisheries habitat, provide opportunities for sustainable forest management, and maintain traditional public recreational access. Since the publication of the public EA in 2008, the MLP has purchased and is managing land in the vicinity of the proposed project. This has resulted in a change in the existing land use and would likely result in a change in the future land use within the project vicinity.

For the forgoing reasons, WFLHD has decided to amend the March 2008 public EA to analyze the Gravel Alternative, include these changes to the Preferred Alternative, and study the change in land use in the project vicinity. This Amended EA also includes changes made in response to comments submitted by the public on the March 2008 public EA. Comments along with detailed responses are located in Section 10.

## 1.2 Vicinity of the Proposed Project

The first 1.3 mi of the Petty Creek Road are flanked by private land up to the LNF boundary. Beyond that point the road lies within the boundaries of the LNF; property in this area is represented by a “checkerboard” of USFS-owned land and private ownership. The road provides access to several residences, land acquired and managed by the MLP, and portions of the LNF. The Petty Creek Valley is a narrow riverine valley oriented north-south and bounded by forested slopes. Between approximately MP 6 and MP 11, the valley broadens and supports irrigated agricultural lands on the historic Petty Creek floodplain. Unimproved pullouts leading to trails or access to Petty Creek characterize recreation areas along Petty Creek.

## 1.3 Scope and Nature of the Proposed Action

The proposed upgrade to Petty Creek Road would include some minor shifting of the road away from Petty Creek, softening of some sharp curves, and construction of a uniform roadway width. Proposed improvements also include culvert and bridge replacement, drainage improvements, clearing and grubbing, addition of guardrails, signs, and striping, stream and floodplain enhancement, riparian and cut-slope vegetation improvements, surface improvements, and soil stabilization and sediment delivery reduction measures. More specific information on the project alternatives is presented in Chapter 3 of this Amended EA.

## 1.4 Jurisdiction

The Petty Creek Road is the primary access to the portion of the LNF just south of interstate 90. In 2001, the proposed project was programmed in the Forest Highway Program by the Tri-Agency, which consists of the WFLHD, the USFS, and MDT. The WFLHD, who administers the Forest Highway Program in cooperation with these agencies in Montana and for this project is designated as the lead agency and is responsible for project development and construction. Missoula County owns the right-of-way or has easements for the existing road corridor and will continue to be responsible for maintenance and jurisdiction of the route.

## 1.5 Social, Economic, and Environmental Team

A SEE Team was set up in the early stages of project development to coordinate public participation, confirm engineering design criteria, identify environmental issues, and develop project alternatives. The SEE Team, composed of representatives of the USFS, Missoula County, MDT, and WFLHD, acts as a steering committee for project development activities during the conceptual and design phases of the proposed project. The SEE Team has worked together on a regular basis to reach consensus on proposed project design elements. This has included coordination to revise the Preferred Alternative.

## 1.6 Funding

The proposed project is funded through the Forest Highway category of the Federal Lands Highway Program, which is part of the Federal Highway Trust Fund. Funding from this program aids public agencies such as county and state transportation departments in providing safe, efficient public roads that serve National Forest (NF)-related traffic. To qualify for this program, a road must be located within or adjacent to a NF and be essential for the protection, administration, and utilization of the forest and its resources.

As administrator of the Forest Highway Program, the WFLHD is responsible for the development of the proposed project and is the lead agency for compliance with requirements of the National Environmental Policy Act (NEPA). The USFS, MDT, and the County are cooperating agencies. The proposed project was nominated jointly by Missoula County and the USFS. The County would coordinate and finance all necessary right-of-way acquisitions.

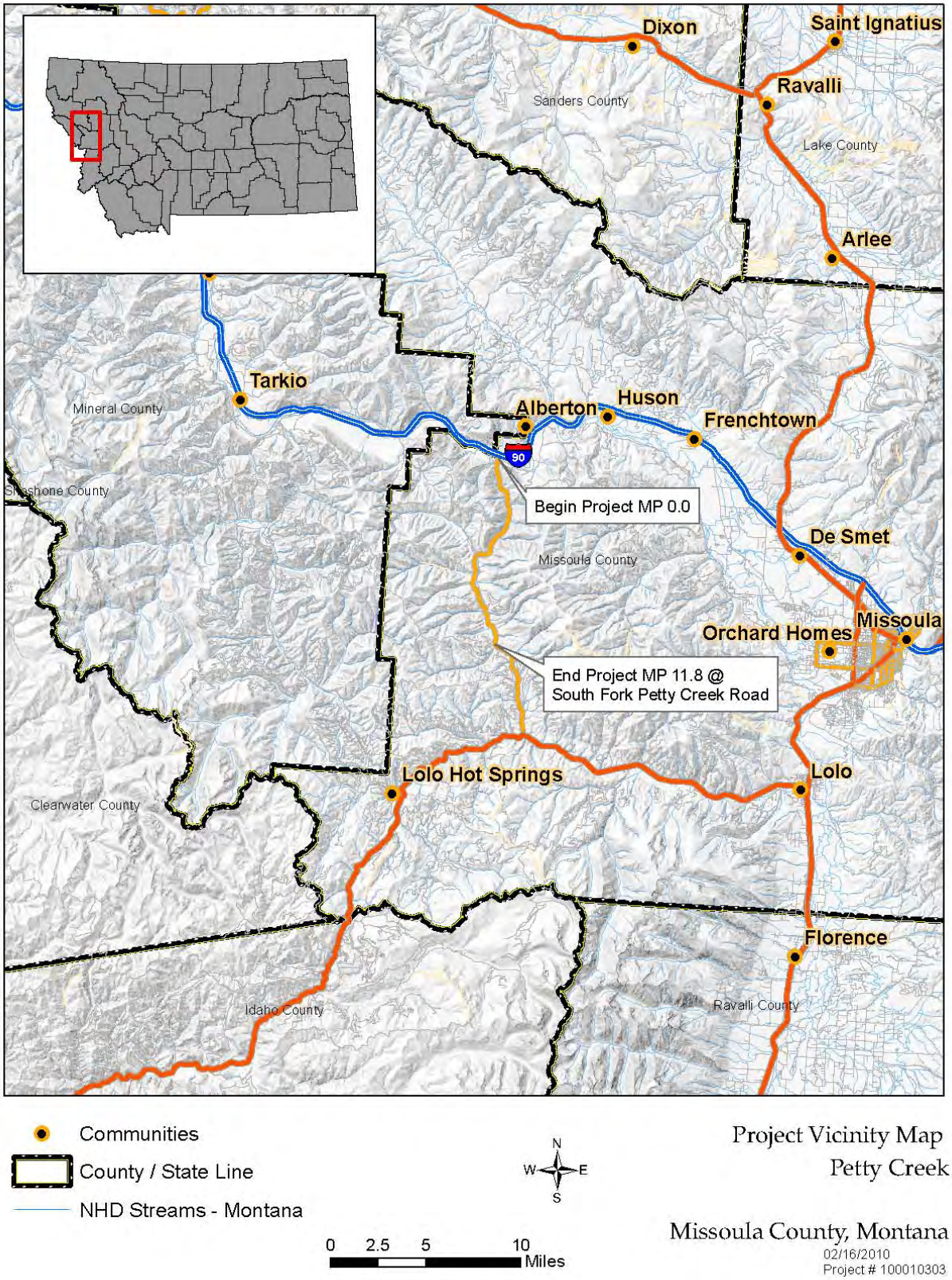


**Figure 1. Project Vicinity Map**

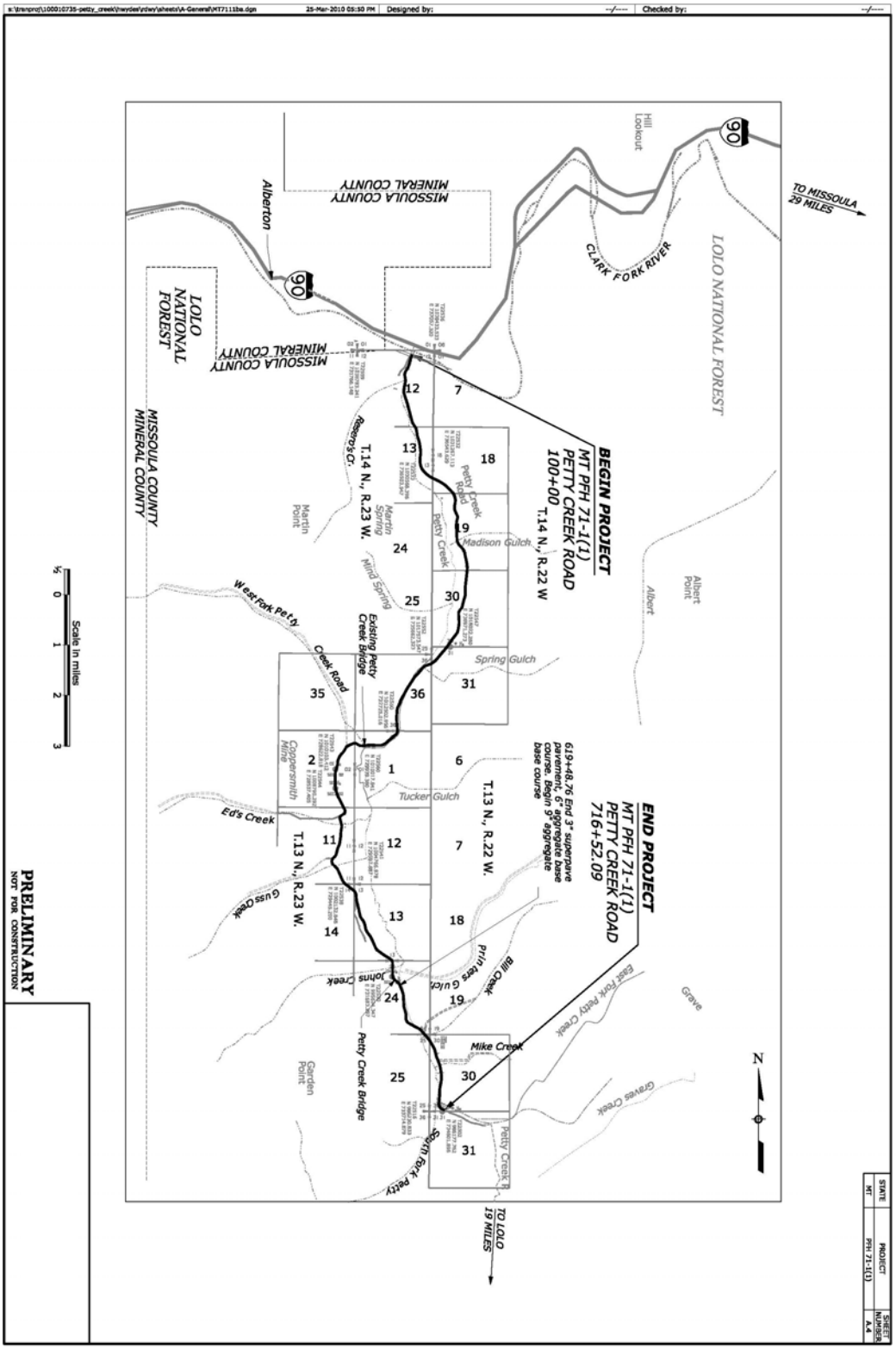


**Figure 2. Location Map**

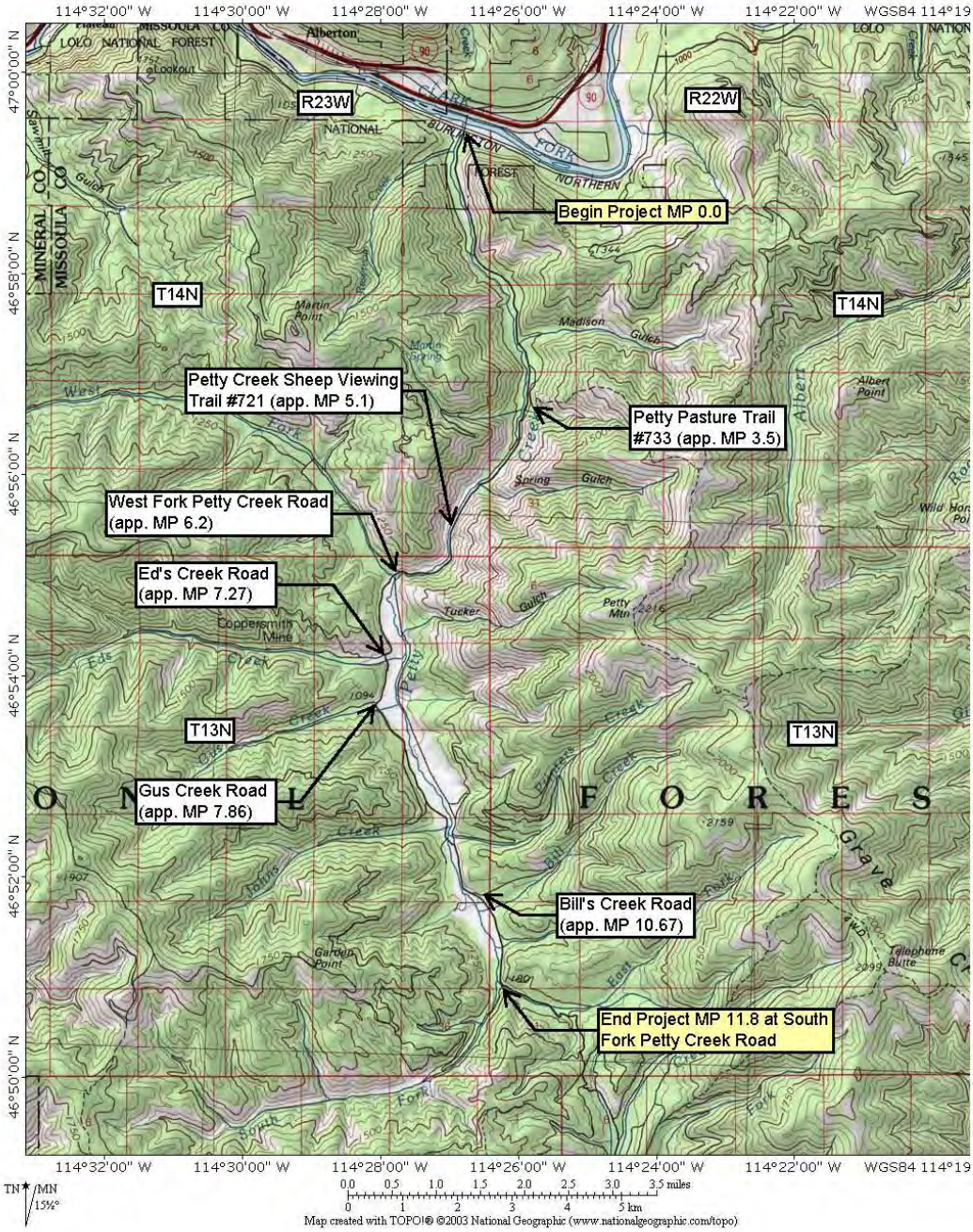


**Figure 3. Topographic Map**

# 2 Purpose of and Need for Project

The purpose of the proposed Petty Creek Road Project is to improve Petty Creek Road's operational safety, reduce its excessive maintenance efforts, and reduce its contribution of sediment to Petty Creek. To meet this purpose, several conditions of Petty Creek Road require relief. These conditions, described in more detail in this section, include the following:

- Varying and inconsistent roadway widths
- Curves too sharp for the design and traveling speed of the road
- Lack of shoulders
- Lack of a sufficient area for errant vehicles to recover
- Excessive airborne dust
- Substandard driving surface that has potholes, washboarding, and cracked pavement
- Undersized culverts and bridges
- Lack of or inadequate road warning signage
- Lack of or inadequate drainage ditches
- Inadequate parking for users of Petty Pasture Trail (#733) and Petty Creek Sheep Viewing Trail (#721)
- Proximity of the road to Petty Creek

## 2.1 Project Termini

The proposed project terminates at MP 11.8 because:

A. Traffic is very light south of the project terminus, and the grade becomes steeper as the road ascends the divide between Petty Creek and Graves Creek. The lighter traffic requires less maintenance requirements beyond this point
B. School bus service and mail delivery terminate at Bill's Creek Road, and South Fork Petty Creek Road is the southernmost road providing access to private residences from Petty Creek Road, reducing traffic needs past this point.
C. Traffic volumes beyond this portion of the road are projected to remain low into the foreseeable future, reducing the potential need for future improvements. Neither the County nor the USFS have current plans to improve Petty Creek Road south of South Fork Petty Creek Road nor do they anticipate the need to improve that segment of the road within the foreseeable future.

## 2.2 Existing Road Conditions and Deficiencies

From MP 0.0 to MP 1.3, Petty Creek Road is in fair condition. The surface consists of a bituminous surface treatment[1] with an existing roadway width varying between 21.0 feet

[1] In appearance, a bituminous surface treatment looks much like an asphalt concrete pavement used on state highways. The bituminous surface treatment provides a hard riding surface like an asphalt surface; however, the surface texture is rougher because the aggregates are exposed through the asphalt application. In addition, a bituminous surface treatment has a shorter

(ft) and 25.0 ft. Moderate cracking is prevalent throughout this portion of the roadway. This cracking contributes to an uneven surface, potentially compromising traveler safety by contributing to loss of vehicle control. Leftover road millings from construction on I-90 were placed over the asphalt as a temporary improvement in the past but cracking continues.

The USFS reconstructed the remainder of the route south of MP 1.3 in 1972. It currently consists of a substandard gravel surface roadbed with a width varying from 20.0 ft to 24.0 ft. This portion of the road tends to undergo rapid changes resulting from seasonal conditions, vehicular use, and maintenance operations that create an uneven road surface characterized by potholing and wash boarding. The uneven road surface compromises a driver's ability to maintain vehicle control contributing to unsafe conditions. Numerous users of the road, particularly residents, have complained repeatedly regarding potholes, wash boarding and subsequent safety issues. As a temporary remedy, County maintenance crews smooth the road surface with a grader, however maintaining an even surface requires frequent grading which the County cannot reasonably accommodate because of insufficient road maintenance funds, staffing, and equipment. If maintenance is not sustained, the condition worsens, making travel more hazardous and cumbersome. Also, as the substandard gravel surface has been graded, side-casting of road material has tended to inconsistently widen the road, contributing to sedimentation by pushing gravel closer to Petty Creek and clogging drainage ditches.

Maintaining control of a vehicle can be difficult on the uneven and deficiently maintained surface of Petty Creek Road, particularly when turning and stopping. A loss of vehicle control can lead to collisions or cause vehicles to leave the road thereby compromising the public safety.

At numerous curves, the road does not meet the minimum safety standards of the American Association of State Highway and Transportation Officials (AASHTO) for the 35 miles per hour (mph) current and proposed design speed of the road. This design speed calls for a curve's radius to be no less than 410 ft (AASHTO 2004). Additionally, there is a lack of or inadequate signage to help compensate for the deficiencies. These conditions compromise driver safety if drivers do not drive at a proper speed for successful maneuvering through the curves.

Numerous users of Petty Creek Road have indicated during public meetings or through written comments that dust generated from the road has contributed to respiratory problems. Problems with airborne dust along the graveled portion of the road are the principal complaints of valley residents. Dust is more problematic in summer, however, it can be observed even with patchy ice on the frozen gravel road surface. The dust severely limits a driver's ability to see on-coming traffic, wildlife, or other objects on the road, which contributes to the road's unsafe operational conditions. Additionally, the U.S. Environmental Protection Agency (EPA) lists that dust from unpaved roads can be a

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service life, is more flexible, and is less expensive than standard asphalt concrete pavement. Bituminous surface treatment is constructed with two or three repeated applications of a layer of liquid asphalt covered with aggregate for a total thickness of 1± inches.

major source of particulate matter (airborne particles less than 10 microns in diameter), which at high levels, has been shown to be harmful to lung tissue and aggravate asthma symptoms (EPA 2006).

Both the paved and unpaved portions of Petty Creek Road have inconsistent widths and inadequate shoulders. The inconsistent widths tend to give drivers an inaccurate sense of travel space, and the inadequate shoulders do not allow sufficient room for errant vehicles to recover when departing from travel lanes, all of which contribute to unsafe driving conditions. Additionally, the clear zone[2] contains numerous obstacles such as mail boxes, trees, and fences, adding to unsafe conditions should an errant vehicle leave the roadway.

Deficient road signage is also a safety problem along the road. Drivers of Petty Creek Road are often not adequately informed of travel speeds or potential roadway hazards to properly anticipate road conditions, contributing to safety compromises.

A variety of wildlife species use the areas adjacent to the roadway, and it is not uncommon for them to cross the roadway. This is especially true of bighorn sheep (*Ovis canadensis*) that reportedly enter the roadway at two general locations: MP 1.2 to MP 3.6, MP 4.9 to MP 5.9 (MTFWP 2005; Hererra 2004c). Many unsuspecting drivers are not aware of the potential conflicts because there are no posted warning signs. This conflict between wildlife and drivers can lead to collisions and vehicle accidents.

The Petty Pasture Trail (#733) and the Petty Creek Sheep Viewing Trail (#721) are accessed from Petty Creek Road (Figure 3). There are no formally designated parking areas located near the trails, further compromising safe travel on the road. Trail-users park on the side of the road and walk along the road to reach the trailheads. During this time, they are at an increased risk of being hit by a vehicle, and drivers are forced to use the opposite side of the road to avoid a collision, which in turn increases the risk of collision with oncoming traffic.

Petty Creek Road contributes sediment to Petty Creek and its tributaries because of its proximity to these waterways as well as to the fact that the road is composed primarily of unconsolidated gravel. Grinding of the gravel surface by vehicles creates sediment that is transported to the waterways by storm water and wind. Sediment from highway, road, and bridge construction has been cited by the Montana Department of Environmental Quality (MDEQ) as one probable source contributing to the impaired water quality designation of Petty Creek (MDEQ 2008). The road parallels and is very close to the creek in several locations, making sediment delivery to the creek very rapid. Additionally, in several locations the widening of the road from its use has resulted in encroachment towards the creek. This contributes to sedimentation and is likely to continue under current conditions. (Refer to Section 4.2 for further information regarding current and projected sedimentation issues).

[2] The clear zone is the area paralleling the edge of the travel lane that should be free of any hazards that cannot be safely impacted by an out of control vehicle that leaves the roadway.

Several of the stream crossing structures along Petty Creek Road are too small to provide adequate water movement during high-flow storm events. During high flows, the small crossing structures cause storm water to back upstream, causing flooding, which compromises the road's stability and safety. There is an increased risk of structure failure because of excessive local erosion from these events; this also requires additional maintenance efforts. Storm water velocity is increased as it is forced through the inadequately sized structures, resulting in increased stream bank erosion and subsequent sedimentation. Additionally, many of the structures lack adequate length for the existing road width, contributing to erosion. The inadequately sized structures within the proposed project area are at:

- Madison Gulch (MP 2.76),
- Spring Gulch (MP 4.63),
- West Fork Petty Creek (MP 6.28),
- Ed's Creek (MP 7.36),
- Gus Creek (MP 7.95),
- John's Creek (MP 9.62),
- Upper Petty Creek (MP 9.71),
- Bill's Creek (MP 10.70),
- Mike's Creek (MP 11.13), and
- East Fork Petty Creek (MP 11.63).

Much of Petty Creek Road does not have sufficient drainage measures for storm water runoff control. Runoff drains directly from the slopes and roadway onto the surrounding ground surface or into streams. This promotes erosion, and suspended sediments often are not allowed to settle out of the runoff before entering nearby streams, contributing to sedimentation. Additionally, erosion of the roadway and side slopes necessitates additional maintenance to keep the roadway stable.

Many of the deficiencies described above require frequent maintenance efforts by the County. The loose gravel, potholes, and washboarding require frequent grading of the graveled portion, and alligator cracking requires patching of the paved portion to provide a smooth travel surface. These fixes are temporary and must be addressed regularly to maintain a smooth surface. Erosion of the roadbed around the undersized stream crossing structures requires maintenance to keep the road and structures stable and properly functioning. The County's available funding, staff, and equipment is severely limited, which further exacerbates the deficiencies.

## 2.3 Road Uses

The Petty Creek Road serves residential, commercial, forest, and recreational traffic and connects with several Forest Development roads accessing NF lands. The route provides the principal access for the protection, administration, and utilization of this portion of the Ninemile Ranger District of the LNF. It is not normally open during the winter months beyond the South Fork Petty Creek Road (Figures 1 and 3).

The road is used most heavily by local residents who comprise approximately 75 percent of the total traffic. It provides the only access to approximately 190 private lots in the area of which 115 lots contain residences. It is also used for mail delivery, emergency vehicles, and school buses to these parcels. The school bus turnaround on Petty Creek Road is at Bill's Creek Road (Figures 1 and 3). The road also provides access to NF recreational facilities including dispersed camping sites, trailheads, fishing and hunting access, and scenic vistas.

The road corridor is reported to receive some use as a link between US 12 and Interstate 90. The amount of such use is currently unknown and has not been differentiated from other uses. However, given the steep and curvy alignment of the southern portion of the road, it is likely that this use is, and will remain, minimal.

## 2.4 Traffic Volumes

Average daily traffic (ADT), the average number of vehicles that travel in both directions over the route each day, was calculated from data provided by the County. Traffic counts were taken in August/September of 2004 to evaluate vehicle counts and patterns of travel. Traffic counts for a one week period were summarized in terms of daily traffic, average speed, daily average for the week, and daily average for multi-axle (5 axle or greater) vehicles (Table 1). Among the observations it is evident that traffic is highest near the beginning of the project at MP 0.0 (412 ADT), drops to approximately one half (204 ADT) at MP 6.3 near West Fork Petty Creek Road, and drops to approximately one quarter (104 ADT) at MP 10.7 near Bills Creek Road. This substantial decrease of about 75 percent in traffic rates towards the southern end of the project where fewer people live indicates that the majority of traffic is residential. This count is a snapshot and is not necessarily representative of travel throughout the year.

Design of new highways or improvements to existing highways should not be based on current traffic volumes alone but should consider future traffic volumes expected to occur within the design life of the facility. Twenty years is the widely accepted design life of roadways such as Petty Creek Road. Future traffic volumes were computed by applying an annual growth factor to the current traffic volumes through the year 2030 (the conceptual construction year of 2010 plus the 20 year design life) at different locations along the road (Table 2). For this project, an annual growth rate of three percent was applied to estimate future traffic growth. This three percent growth rate is based on the recommendation of the designer, and it is an industry standard which is commonly used and would be used for design of the proposed project.

## 2.1 Accident History

Seventeen accidents were documented within the 7 years between 1998 and 2004. Two of the accidents resulted in injuries while all the others were non-injury or property damage only accidents. All the crashes happened during daylight hours and the road was dry. Many crashes involved speeding or inattentive/careless driving. A summary of accident data is presented in Appendix 1.

**Table 1. Traffic Counts August 31 –September 6, 2004**

| Location/ Direction | Average (Avg) Speed (mph) | Mon | Tue | Wed | Thu | Fri | 5 day Avg | Sat | Sun | 7-day Avg | Multiple Axle 7 Day Avg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MP 0.0 / North** | 35 | 210 | 222 | 229 | 216 | 220 | **219** | 164 | 183 | **206** | **4.1** |
| **MP 0.0 / South** | 34 | 206 | 212 | 220 | 222 | 226 | **217** | 170 | 183 | **206** | **3.0** |
| **Total ADT at MP 0.0** | | 416 | 434 | 449 | 438 | 446 | **436** | 334 | 366 | **412** | |
| **South of West Fork Road (MP 6.3) /North** | 35 | 115 | 108 | 103 | 109 | 104 | **107** | 88 | 93 | **103** | **4.1** |
| **South of West Fork Road (MP 6.3) /South** | 37 | 105 | 108 | 99 | 107 | 107 | **105** | 98 | 84 | **101** | **1.9** |
| **Total ADT at MP 6.3** | | 220 | 216 | 202 | 216 | 211 | **212** | 186 | 177 | **204** | |
| **Bills Creek Road (MP 10.7) /North** | 34 | 82 | 36 | 36 | 32 | 50 | **47** | 52 | 85 | **53** | **3.9** |
| **Bills Creek Road (MP 10.7) /South** | 31 | 70 | 41 | 31 | 34 | 52 | **46** | 61 | 71 | **51** | **0.7** |
| **Total ADT at MP 10.7** | | 152 | 77 | 67 | 66 | 102 | **93** | 113 | 156 | **104** | |

**Table 2. Projected Traffic Volumes**

| Location | 2004 ADT | Projected ADT in 2030 |
|---|---|---|
| **MP 0.0** | 412 | 888 |
| **MP 6.3** | 204 | 440 |
| **MP 10.7** | 104 | 224 |

# 3 Alternatives Considered

This section describes the No Action Alternative and the two build alternatives. The build alternatives include the modified Preferred Alternative and the full Gravel Alternative.

## 3.1 No Action Alternative

Under the No Action Alternative, no improvements would be made to the Petty Creek Road between MP 0.0 and 11.8. The County would continue routine maintenance, but its cost effectiveness would decrease as road conditions would continue to deteriorate through time. The County would have to increase maintenance frequency to prevent further deterioration and potentially to keep it operational. Maintenance efforts associated with Petty Creek Road would not be reduced. Future road reconstruction could be financed by the County, however, the County Board of Commissioners would make this decision, and its priority would be weighed against the reconstruction needs of other County roads. There would be no guarantee that Petty Creek would receive more than the minimum funds required to provide a basic level of service as described below.

Safety of Petty Creek Road would not be improved through the No Action Alternative because the road would:

- remain inconsistent in width
- lack shoulders
- have insufficient vehicle recovery area
- have substantial potholes, wash boarding, and pavement cracking that would continue to create an uneven driving surface and potentially contribute to loss of vehicle control
- still have curves too sharp for the design speed
- lack warning signs
- lack safe parking for users of Petty Pasture Trail and Petty Creek Sheep Viewing Trail
- continue to generate road dust that would limit drivers' sight distance (unless otherwise treated by the County)
- lack appropriately-sized crossing structures that in large storm events, would continue to flood areas and compromise the stability of the road

The County would continue to maintain the roadway with routine but limited activities. Currently the County spends about $60,000 a year in 2008 dollars toward maintenance of the Petty Creek Road. This amounts to approximately $5,000 per mile. Assuming this figure is applied to the approximate 12-mile project area, and applying a three percent inflation rate over time for a 20-year period, this would total about $225,000 per mile. In order to maintain the existing road to minimize potholing and wash boarding and also to prevent considerable dust and sedimentation, this figure would be much higher. Furthermore, this figure does not include the extensive maintenance effort that is required to maintain proper drainage and culverts in the project area (Elsea 2010). Due to the

road's deficiencies, the County only spends what is needed to keep the road operational. Further investment in the road would only be wasted and a loss of valuable maintenance dollars until substantial improvements to the road could occur.

Sediments entering Petty Creek from the existing road would not be reduced. According to the Sediment Assessment (PBS&J, 2009)), the existing road contributes about 433 tons of sediment per year to Petty Creek. Use of the existing road would continue to create sediment that would subsequently be transported to the creek by runoff and wind. The road would remain close to Petty Creek in several areas. Roadside sediment management measures would not be employed, and material would be easily transported to the creek. Also, undersized crossing structures would continue to result in stream bank erosion and subsequent sedimentation.

Ultimately, the No Action Alternative would not meet the purpose and need of the proposed project because it would not improve the operational safety of Petty Creek Road, reduce its maintenance efforts, or reduce its contribution of sediment to Petty Creek.

## 3.2 Preferred Alternative

The Preferred Alternative was developed by the SEE Team to address project purpose and need and issues raised by the public and other government agencies. Issues raised during the public scoping phase of the project are discussed in Section 10.2. Since publication of the EA in March 2008, additional issues raised by various individuals and groups and a more comprehensive look at the project need have resulted in modification of the Preferred Alternative from the full pavement alternative as analyzed in the March 2008 EA. The modified Preferred Alternative is similar to the original Preferred Alternative with a change from paving the entire 11.8-mi segment to ending pavement at MP 10 as described below. According to AASHTO, for traffic volumes of 250 vehicles per day or more, crash rates are generally higher for unpaved roads than paved roads (AASHTO 2001). The ADT for all portions of the road, with the exception of the southern portion beyond MP 10, either already are or are projected to be, over 250 vehicles per day (Table 2). Because the modified Preferred Alternative has now become the new Preferred Alternative, it will be referred to as the Preferred Alternative in this Amended EA. The full pavement alternative has been dropped from further consideration.

The Preferred Alternative would result in improved operational safety of 11.8 miles of Petty Creek Road. With the Preferred Alternative the 11.8-mi segment of roadway would create a uniform roadway width of approximately 24 ft with one travel lane in each direction and adjacent shoulders (Figure 4). The road would be paved to MP 10 with the remaining 1.8 mi receiving a gravel surface. These improvements would address the inconsistent road width, lack of shoulders, the substandard driving surface, and excessive airborne dust.

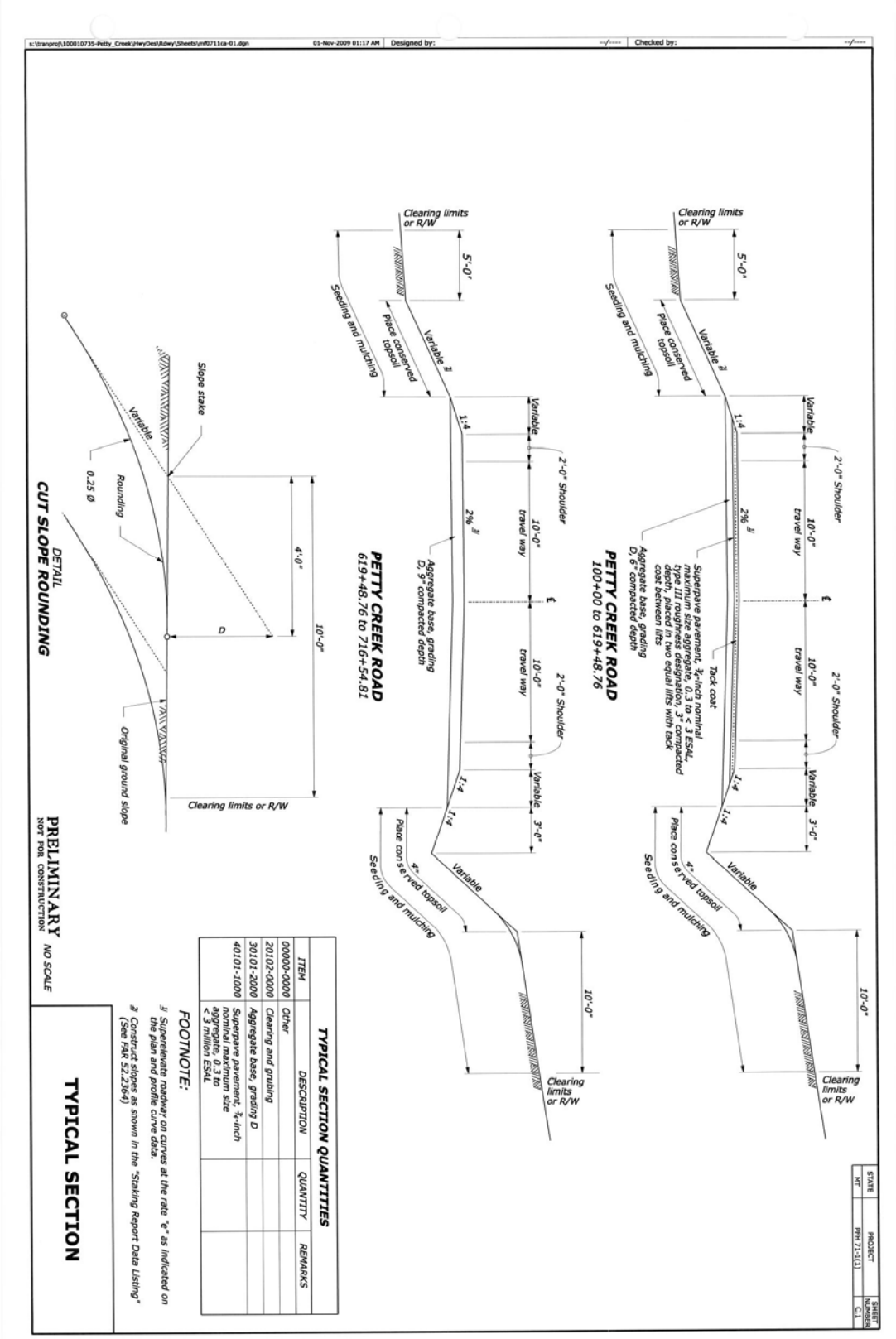


**Figure 4. Typical Section**

Unsafe curvature would be addressed with the Preferred Alternative since the roadway would meet minimum AASHTO standards with the exception of three curves at:

- MP 6.06 to 6.2 – West Fork Petty Creek
- MP 7.12 to 7.33 – Ed Creek Road
- MP 7.78 to 7.97 – Gus Creek Road

Full AASHTO-compliant reconstruction would require bypassing the existing alignment in these three areas and would result in substantially more impacts to natural resources and right-of-way acquisition. However, to minimize impacts to wetlands, vegetation, wildlife, and soils, the Preferred Alternative would maintain the curvature in each of these segments, and the road would be posted with warning signs as a safety measure.

The 11.8-mi section of road would receive needed road signs, pavement markings along the first 10 miles, and obstacles in the clear zone would be removed. These measures would help to improve the road's operational safety by providing needed road signs, guidance, and an area for errant vehicles to recover.

Given the lack of safe parking near the Petty Pasture Trail and the Petty Creek Sheep Viewing Trail, formally designated parking would be provided to improve safety. The parking areas would be constructed alongside the road and sized to accommodate about five vehicles per parking area. Details would be coordinated with the USFS, and where feasible, the informal parking areas currently used by trail users would be incorporated into the final design. Short segments of additional trail would be constructed from the new parking areas to the existing trailheads.

The undersized stream crossing structures would be replaced with structures designed to accommodate 100-year flood events. This would avoid excessive ponding at the inlets and minimize unnaturally fast water velocities and resultant excessive erosion at the outlets. The new stream crossings would be able to pass higher flows during large storm events, thereby protecting the stability of the road. They also would help to minimize sedimentation that results from currently under-sized structures and would require less maintenance especially after large storm events. The new stream crossing structures would be designed to provide a natural bank-full stream configuration and substrate within the crossing, providing passage during all life stages of fish species.

To accommodate new culvert and bridge installations, temporary detours and diversion channels would likely be constructed. The details of these detours are not currently specified, however, a typical detour and diversion channel consists of pipe culverts placed in the water body with fill placed over the culverts for traffic to pass. The channel diversions would be constructed parallel to the existing channel and lined with plastic or riprap. The old structure would be removed and once construction of the new structure is complete, the diversion channel would be removed and revegetated.

The Preferred Alternative would result in a substantial decrease in sediment entering Petty Creek due to many improvements of the road. It is anticipated that improvements to

the road would reduce the amount of available sediment for transport to the waterways in the long term from the modeled 433 tons per year to 27 tons per year based on the Sediment Assessment in Appendix 6. As with the reduced sediment, the Preferred Alternative would also substantially reduce airborne dust along the roadway, which would alleviate the airborne dust that impedes drivers' sight distance.

Other features of the Preferred Alternative would help reduce sedimentation. The reconstruction would largely follow the existing alignment with small alignment adjustments primarily where Petty Creek Road is close to the creek. Where feasible, the road would be adjusted away from Petty Creek, and the area between the road and creek would be planted with native vegetation suitable to the riparian area. Where the road cannot be adjusted away from the creek, riparian planting would be performed to enhance sediment buffering and nearby habitat. The appropriate types of vegetation and plant spacing would be coordinated with USFS staff. Drainage ditches and sediment control features also would be improved.

Roadway maintenance efforts would decrease substantially both in the short and long-term, and the maintenance costs would be a reasonable investment into the improved infrastructure. One purpose of the proposed Petty Creek project is to reduce the amount of maintenance work required on this road. Several features of this alternative would achieve this purpose. A paved surface over the first 10 miles and the gravel surface in the last 1.8 mi would require less frequent maintenance because the new surfaces would be more durable than the existing substandard gravel surface; it would be less prone to potholes; and the paved surface would eliminate the problem of wash boarding. Installing appropriately sized stream crossing structures and shifting the road away from the creek where feasible would better protect the stability of the road, reducing the need for future costly maintenance. Consistent road width and designated travel lanes would concentrate the vehicle load (tire tracks) farther from the road edges, protecting the road edges and reducing the need for surface and shoulder maintenance.

Maintenance would be required on a regular basis for the Preferred Alternative. Routine maintenance includes patching potholes, striping as required, and grading the 1.8 mi of gravel surface. Based on information from FHWA engineers and County maintenance officials, maintenance would be minimal (pothole repair) for the most part. As needed, a new chip seal surface over the first 10 miles and some gravel replenishment over the last 1.8 miles would be required. Maintenance costs were estimated for the Preferred Alternative applying a three percent inflation rate over a 20-year period, and this resulted in an estimated total of $592,000 per mile.

The estimated initial cost to construct the Preferred Alternative is $12.5 million.

This EA includes mitigation measures that would be performed if the project were implemented. Mitigation measures are various measures put into effect during project design and construction to avoid, minimize, or rectify adverse affects to the natural and social environment. These measures are included under the impacts section for each resource area in Chapter 4 and are summarized in Chapter 7.

## 3.3 Gravel Alternative

The Gravel Alternative would consist of similar improvements to the road as stated under the Preferred Alternative above. However, the surface would be gravel and not pavement for the full 11.8-mile length. Many of the road conditions requiring relief listed in the purpose and need would be met as described under the Preferred Alternative but not to the same degree in regards to maintenance efforts, sedimentation, and airborne dust.

With the Gravel Alternative, sediment loads to Petty Creek would be reduced compared to the No Action but the reduction would not be as great as the Preferred Alternative. The Sediment Analysis indicates that sediment load to Petty Creek would be reduced by about half under the Gravel Alternative. Therefore this alternative is expected to reduce the sediment inputs to Petty Creek by about 216 tons per year. The Gravel Alternative would also reduce airborne dust along the roadway, which would alleviate the airborne dust that impedes drivers' sight distance but likely not to the same degree as the Preferred Alternative.

Roadway maintenance efforts would decrease substantially both in the short and long-term, but it is unlikely that the County would be able to fund the maintenance cost estimates associated with the Gravel Alternative (Elsea 2010). One purpose of the proposed Petty Creek project is to reduce the amount of maintenance work required on this road. Several features of this alternative would achieve this purpose. The improved surface would be more durable than the existing substandard gravel surface and it would be less prone to potholes. Installing appropriately sized stream crossing structures and shifting the road away from the creek where feasible would better protect the stability of the road, reducing the need for future costly maintenance. Consistent road width would concentrate the vehicle load (tire tracks) farther from the road edges, protecting the road edges and reducing the need for surface and shoulder maintenance.

Maintenance would be required on a regular basis for the Gravel Alternative to reduce potholing, wash boarding, and dust. Maintenance of the gravel surface required to meet acceptable standards includes annual grading and rolling with application of a dust abatement product every other year and replenishment of gravel as needed. Based on information from FHWA engineers and County maintenance officials, maintenance costs were estimated for the Gravel Alternative applying a three percent inflation rate over a 20-year period, and this resulted in estimated total of $951,000 per mile.

The estimated initial cost to construct the Preferred Alternative is $10.5 million.

Mitigation measures would be implemented under the Gravel Alternative and would be similar to those implemented under the Preferred Alternative.

## 3.4 Ancillary Sites Common to Both Action Alternatives

Construction of the proposed project would require space in which to stage construction equipment, obtain necessary fill and surfacing material, dispose of excess waste soil excavated during construction. The following sites would be utilized for either the Preferred or Gravel alternatives.

A proposed staging site for construction equipment would be located along Petty Creek Road on Forest Service land at approximately MP 1.53. It would be approximately 600 ft long and 49 ft wide and used to store construction equipment and materials and refuel vehicles. A proposed material waste site would be located along Petty Creek Road on Forest Service land at approximately MP 1.04. It would be approximately 197 ft long and 66 ft wide and would be used to dispose of excess excavated material generated during construction. Upon completion of construction, these sites would be reclaimed and revegetated.

There may be some construction activities that would take place outside the construction limits that would require ground disturbance, occupation, clearing, or could result in some environmental impacts. Such activities could include material extraction, soil waste disposal, water retrieval, staging, etc. These activities would take place at either commercial or non-commercial sources. Commercial sources are established, have provided material to public and private entities on a regular basis over the last 2 years, have appropriate state and local permits, and do not require expansion outside their currently established and permitted area. Non-commercial sources would include established quarries and disposal locations previously used for similar activities.

Should a non-commercial source be used, use of the area: (a) would not affect properties on or eligible for listing to the National Register of Historic Places (NRHP); (b) would have no more than a *may affect, not likely to adversely affect* level of impact to species or habitat listed as threatened or endangered under the Endangered Species Act (ESA); and (c) would not encroach into waters of the U.S. or wetlands protected under Executive Order 11990.

# 4 Affected Environment and Environmental Consequences

This chapter describes the existing environment for each resource potentially affected by the No Action, Preferred, and Gravel Alternatives. The No Action information is used as a baseline against which the environmental consequences of the Preferred and Gravel Alternatives may be compared. Each resource heading includes a description of the affected environment followed by a discussion of the effects on the resource. Also included are mitigation measures proposed to avoid, minimize, and/or compensate for adverse impacts to resources caused by the proposed project.

## 4.1 Land Use

### 4.1.1 Affected Environment

#### 4.1.1.1 Land Ownership

Land ownership in the Petty Creek area is summarized in Table 3. Land use in the Petty Creek area consists of publicly-owned forest land or privately-owned land that exists as forested land, agricultural land, or residential property (Figure 5). Publicly-owned lands include lands managed by the Forest Service and small parcels managed by the State of Montana as forest lands. Private lands consist of private landholdings as well as lands owned by The Nature Conservancy (TNC)/MLP. Private landholdings contain residential homes interspersed with some agricultural uses.

**Table 3. Land Ownership in the Petty Creek Watershed**

| Owner | Acreage | Parcels | Percent of Watershed |
|---|---|---|---|
| **Federal** | 325,032 | 95 | 65 |
| **State of Montana** | 1,345 | 3 | 2 |
| **TNC - MLP** | 12,315 | 42 | 23 |
| **Private** | 5,240 | 249 | 10 |
| Source: State of Montana 2009 | | | |

Forest Service land in the Petty Creek watershed is managed by the LNF according to the 1986 Lolo National Forest Land Management Plan as Amended (USFS 1986, 1993). This plan provides guidance for management of natural resources on the LNF. Approximately thirty one percent of the land (16,849 of the 53,985 acres) in the Petty Creek watershed is managed as Inventoried Roadless, and therefore access is for recreation rather than timber harvest.

As shown in Table 3, approximately 23 percent of land in the Petty Creek Watershed is owned by TNC through the MLP. The TNC lands were recently acquired from the Plum Creek Timber Company through the MLP and currently have no occupied structures. The goal of the MLP is to conserve important forestland owned by Plum Creek Timber Company in northwestern Montana. To meet this goal, the MLP has established objectives to conserve wildlife and fisheries habitat, provide opportunities for sustainable

forest management, and maintain traditional public recreational access. The MLP plans to sell these lands to remain solvent. The disposition of the majority of MLP land in the project area has not been determined, and it is available for purchase by any state agency, federal agency, local agency, or private entity (TNC 2009b) with the intent of conveying the lands with a conservation easement to maintain the goals of the MLP. This may be achieved in a variety of ways including conveyance into a public or private ownership. In order to accomplish these goals, the purchaser would have to outline their intentions for the land. The most logical and desirable outcome would be conveyance of these lands into public ownership such as the USFS. A second outcome could be conveyance of some of the land into private ownership but with a conservation easement. In terms of building a structure on the land, each purchase would be reviewed on a case by case basis to determine if the long-term plan would complement the MLP objectives. The last resort and the least desirable outcome is conveyance of these parcels into private ownership without development restrictions. This third possibility would be accepted only if all other options have been fully pursued (Rasmussen 2010). Since the development of the proposed project and the publication of the EA in March 2008, the MLP has acquired approximately 12,000 acres of Plum Creek Timber Land in the project area. About 31,249 acres of MLP lands south of the Petty Creek project area were transferred to the USFS in March 2010.

Public access on MLP lands is limited by restrictions imposed by TNC; these restrictions are similar to, if not exactly the same as USFS regulations for public use of lands (TNC 2009a) and are designed to protect the natural resources while expanding public access on acquired lands. The future purchase and management agreements set forth by TNC have the potential to increase non-residential land status in the Petty Creek watershed up to approximately 90 percent.

#### 4.1.1.2 Factors Affecting Growth and Development

In the last 30 years, low density rural residential development in the Petty Creek watershed has caused a conversion from larger land holdings and ranches to smaller parcels and subdivisions. Exurban development in the Rocky Mountains is influenced by agricultural suitability, transportation and services, natural amenities, past development patterns, and economic and recreational characteristics of nearby towns (Gude 2005). The proximity to the Missoula urban area and Petty Creek's rural and natural setting is an attraction for residential development.

Management and development of private land is guided by the County's Comprehensive Land Use Plan and 2005 Growth Policy which recommends occupancy levels in terms of dwelling units per acre. Most of the Petty Creek watershed is designated as Open and Resource land where the Comprehensive Plan recommends a maximum of one dwelling unit per 40 acres (ac). A small portion of the Petty Creek watershed, approximately 3,000 ft at the end of the northern corridor, is designated as Suburban Residential, where the recommended maximum density is two dwelling units per acre. According to the County's Office of Planning and Grants, comprehensive plans and growth policies are

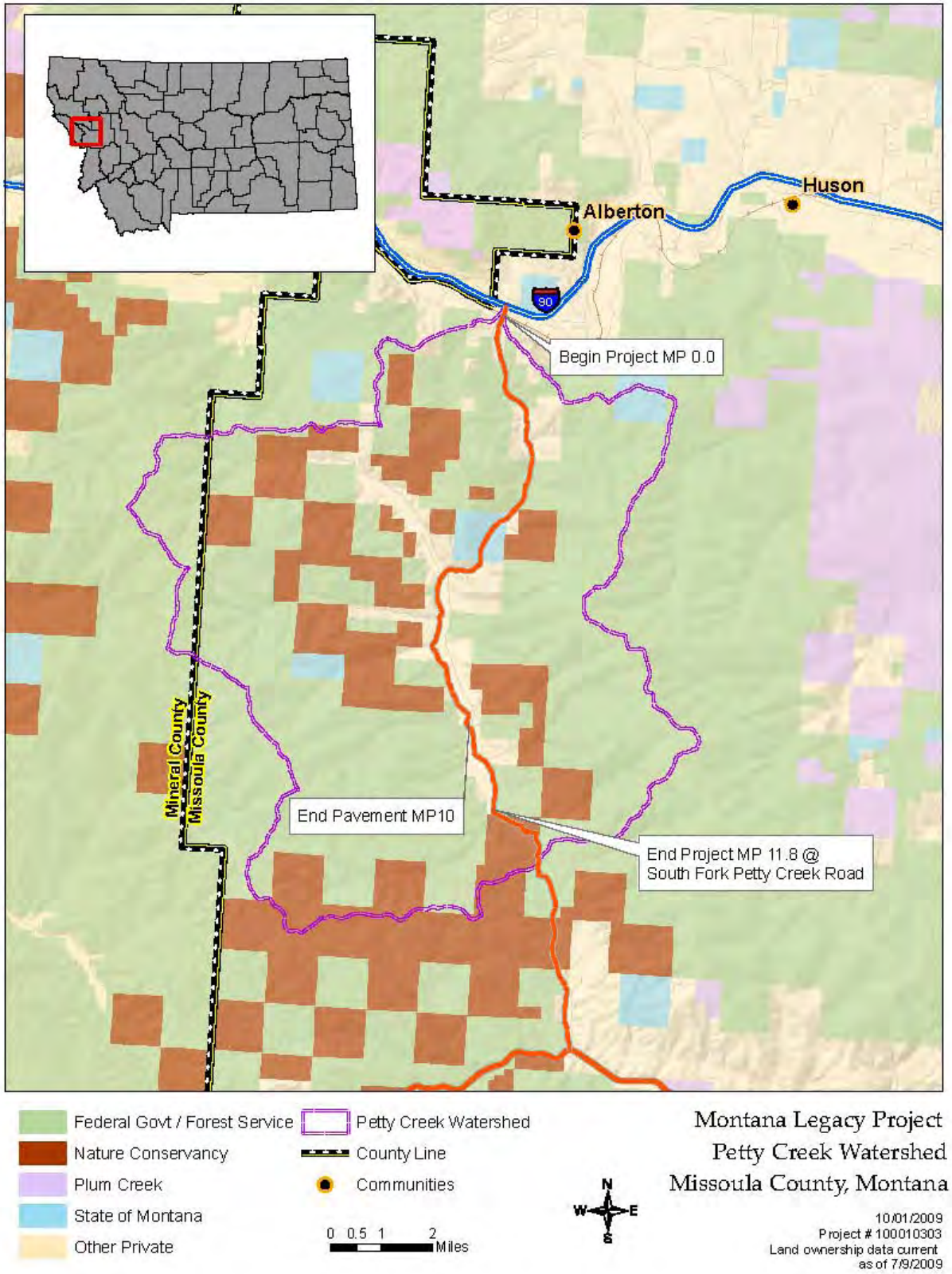


**Figure 5. Designated Land Ownership within the Petty Creek Watershed**

not regulatory and cannot be enforced as if they were zoning ordinances. There are no zoning designations within the Petty Creek watershed that have the ability to regulate density.

Subdivision guidelines, physical constraints, and market forces are considerations on whether existing lots would be built and subdivided. County subdivision guidelines would limit the creation of additional lots if suitable building sites are subject to flooding, are on slopes greater than 25 percent, or are limited by septic requirements. The subdivision guidelines are also designed to protect riparian habitat along streams and valley bottoms.

There are 5,240 ac of land in private ownership, and approximately 45 percent (2,358 ac) of this remains vacant or undeveloped. Geographic Information System (GIS) data for the watershed was analyzed to estimate the land that could be developed based on the above subdivision guidelines. This analysis indicates that about 316 ac of the 5,240 ac area meet all three subdivision guidelines to be considered developable (Figure 6). This equates to about eight new homes based on the one dwelling per 40 ac as advised in the County's Comprehensive Land Use Plan and 2005 Growth Policy. If the three subdivision guidelines were lifted and the remaining 2,358 acres were developed, 59 new residences could be established based on one dwelling per 40 ac.

#### 4.1.1.3 Growth and Development Indicators

There are several indicators of growth and residential development in the Petty Creek area. These are based on population growth trends, well permits, and septic data.

In general, the County's population is growing. From 2000-2008 the total population for the County increased by 10 percent or 9,842 people (US Census Bureau 2010a). In the same time period, the City of Missoula's population increased by 13 percent or 7,597 individuals. The growth of rural areas is generally consistent with the current data available for domestic well permits (Figure 7). There has been an overall downward trend in submission of domestic well permits in Missoula County. Although well permits are not the only predictors of future land use or development, they are one indicator of trends in development in the Petty Creek area.

Development specific to the Petty Creek area is somewhat difficult to quantify. The Petty Creek area is an incorporated community of Alberton. Data specific to the town of Alberton (Missoula County, MT) was used to compare to the development rate of the Petty Creek area. Alberton's population was projected to grow by 43 individuals from 2000 (population of 377) to 2008 (population of 420). The average household size for Missoula County in 2008 was 2.47 individuals per household. It may be assumed an increase of 43 individuals equates to approximately 17 to 18 new households from 2000 – 2008 or 2.2 new households per year. Available septic data for the Petty Creek area

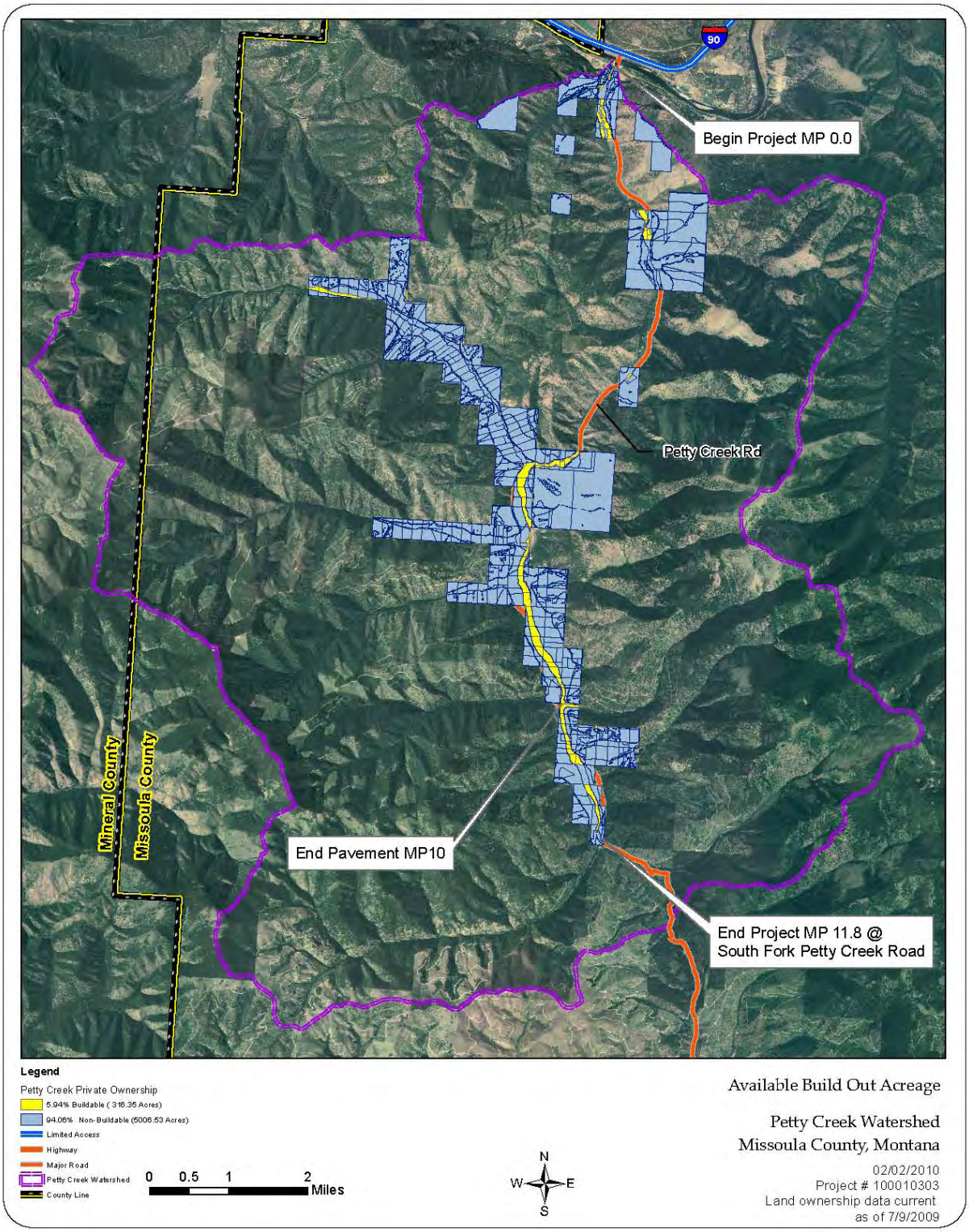


**Figure 6. Potentially Developable Areas within the Petty Creek Watershed based on County Subdivision Guidelines for Slope, Parcel Size, Floodplain, and Septic Requirements**

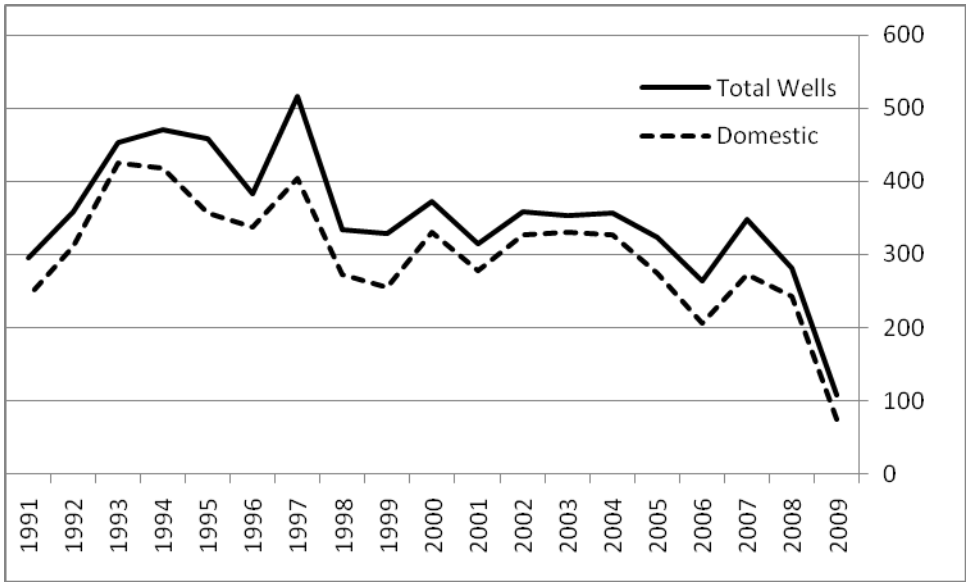


**Figure 7. Trend of Well Permits for Missoula County (GWIC 2010)**

shows a minimum of 26 new septic tanks were installed from 2000. Assuming one septic tank is needed per household, the Petty Creek area experienced an increase of 2.9 new households per year, which is slightly higher than the estimated growth rate for Alberton.

### 4.1.2 Project Impacts

There are numerous factors that may affect land development in a particular area including availability and quality of water, cost of power and utilities, availability and quality of schools and public services, land prices, zoning ordinances, and demand.

**No Action Alternative**. The No Action Alternative would result in no changes to land ownership in the area. Given the pattern of people moving to the Petty Creek area, it is expected the No Action Alternative would not change this trend. Land use would be expected to continue to change with some exurban development from forested and agricultural to more residential. It is expected that development would be limited by the available private land and physical restrictions of flood prone zones in the valley bottoms, surrounding mountain slopes greater than 25 percent, minimum parcel size, and sanitation restrictions (Figure 6). Based on the septic data, the Petty Creek area would continue to develop at about 2.9 homes per year.

**Preferred Alternative**. The Missoula County Growth Policy Update (2005) specifically identifies the future paving of Petty Creek Road and states paving would increase accessibility and could increase residential development. In addition, a potential for an increase in development was indicated in a recent evaluation of development trends

associated with road paving for eight case studies in western Montana.[3] Attributing land development resulting from road paving, however, is difficult to assess because many factors determine whether to build or subdivide lands in rural mountain valleys.

Currently, the Petty Creek area mirrors the growth rate of Missoula County and would be considered average. This growth is limited to private property mostly along Petty Creek, West Fork of Petty Creek, and Eds Creek roads. The private land development is reaching the maximum capacity as directed by the Missoula County Comprehensive Land Use Plan of one dwelling per 40 acres (outside the 3,000-foot northern corridor, which is designated as Suburban Residential).

While implementation of the Preferred Alternative might result in increased development in the Petty Creek area, it is anticipated that it would be limited. Only 5,240–ac of land are in private ownership in the project corridor. The remaining land in the Petty Creek area is either publicly-owned or owned and protected by the TNC. Furthermore, assuming the County subdivision guidelines are implemented, the amount of land that is available for development is further reduced to 316 ac. The County's Comprehensive Land Use Plan and 2005 Growth Policy (one dwelling per 40 ac) would further restrict the amount of growth that could result following implementation of the Preferred Alternative. These considerations would help offset increased development that might result from the implementation of the Preferred Alternative.

It is expected that the rate of development also has the potential to increase; however, based on the Headwaters Study the increase is expected to be minimal. Although the conclusions in the study are limited as there were many variables, the study indicated that the average increased rate of development in the 10-year period following paving compared with the 10-year period before paving was one home per square mile (Headwaters 2008). Applying the increased rate of development to the developable land in the Petty Creek area, the increased rate of development over 2,358 acres would result in 3.7 new homes in 10 years (0.37 new homes per year).[4] The increased rate of development would result in a build-out at a slightly increased pace (approximately 10 percent increase), but the total number of residential dwellings would still be limited by the area that is available for development.

In light of the limited area available for residential development, the County's guidelines for parcel size, and the relatively small increased development rate anticipated with paving a road in an area such as Petty Creek, the Preferred Alternative would have little

[3] These cases studies are described in *Land Use Effects of Paving Rural Roads in Western Montana* (Headwaters 2008). This technical report compared changes in land development rates the 10 years prior to and after road paving within the project influence along with development trends throughout western Montana. Six of the eight case studies indicated increased development occurred after paving while two case studies showed a slowing of residential development after paving.

[4] Assuming that the County's guidelines for parcel size would be followed and homes would be clustered on developable areas, the total number of homes that could be built at 1 dwelling per 40 ac is 59 homes within this acreage (2,358/40). The rate of 3.7 new homes in 10 years is calculated by applying the one new home per square mile (640 ac) to the 2,358 ac available for development (2,358/640).

impact to the character and use of the land. The Preferred Alternative would result in negligible to minor impacts to land use.

**Gravel Alternative**. Improving the existing road may make the area more attractive to potential homebuilders. Given the limited available information on this type of improvement and associated development rates and the comments received from the 2008 EA, it is assumed the Gravel Alternative would result in an increase in development rates higher than the No Action alternative but less than the Preferred Alternative. Like the Preferred Alternative, residential development is expected to be limited to privately owned lands. Implementation of the County and subdivision guidelines likely would further restrict development. Based on these considerations, the Gravel Alternative would have little impact to the character and use of the land. The Gravel Alternative would result in negligible to minor impacts to land use.

**Right-of-Way Acquisition.** There would be no right-of-way acquisition with the No Action Alternative.

Approximately 50 parcels of right-of-way would be acquired as part of the Preferred and Gravel alternatives. The details of these parcels would still need to be determined, but they are all small slivers where new right-of-way would be required to allow for roadway improvements. Therefore, land ownership would only change slightly with these alternatives. These narrow slivers of land, whether publically- or privately-owned, would become under the jurisdiction of Missoula County for road management purposes.

### 4.1.3 Cumulative Impacts

The area of analysis for consideration of cumulative impacts resulting from land use is the Petty Creek watershed. Past activities include construction, use, and maintenance of the existing Petty Creek road, construction and uses of residential property, timber sales and related road building, agricultural activities, recreational trail construction and use, and acquisition of Plum Creek lands. Present and future activities include ongoing construction, maintenance, and uses of residential property and roads, ongoing use and maintenance of Petty Creek Road, agricultural activities, logging activities, use of recreational trails, implementation of a Total Maximum Daily Load (TMDL) (see Section 4.2.1), and the acquisition of MLP lands.

**No Action.** Combined with the past, present, and reasonably foreseeable future actions, the No Action Alternative would result in no change in the land use trend in the Petty Creek watershed. Therefore, the incremental impacts from the No Action Alternative when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse affects to land use.

**Preferred Alternative.** Combined with the past, present, and reasonably foreseeable future actions, the Preferred Alternative would result in a slightly higher potential for change to land use in the Petty Creek watershed than the No Action alternative. Therefore, the incremental impacts from the Preferred Alternative when added to other

past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse affects to land use.

**Gravel Alternative.** Combined with the past, present, and reasonably foreseeable future actions, the Gravel Alternative would result in a slightly higher potential for change to land use than the No Action alternative but to a lesser degree than the Preferred Alternative. Therefore, the incremental impacts from the Gravel Alternative when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse affects to land use.

## 4.2 Water Resources

### 4.2.1 Affected Environment

The project area contains one main stream (Petty Creek), fourteen named minor streams (Resero's Creek, Madison Gulch, Mind Spring, Spring Gulch, West Fork Petty Creek, Tucker Gulch, Ed's Creek, Gus Creek, Johns Creek, Printers Creek, Bill Creek, Mike Creek, East Fork Petty Creek, and South Fork Petty Creek), and several unnamed minor streams. The road roughly parallels Petty Creek, crossing from the east side to the west side of the creek at the Lower Petty Creek bridge and again back to the east at the Upper Petty Creek bridge, approximately 5.5 and 9.5 mi, respectively, south of Petty Creek's confluence with the Clark Fork River.

The Petty Creek watershed descends from approximately 3,800 feet above mean sea level at the junction of South Fork Petty Creek and East Fork Petty Creek to approximately 3,000 feet at its confluence with the Clark Fork River. The runoff average is approximately 42 inches (in.) per year. At its mouth, Petty Creek has a drainage basin of approximately 73 square miles ($mi^2$) with a 50-year peak runoff of 1,580 cubic feet per second (cfs) (Sugnet 2000). The annual average peak discharge rate is 400 cfs. Monthly ambient air temperatures range from an average low of 16 degrees Fahrenheit (ºF) in January to an average high of 84º F in July. Recorded extreme temperatures range from -33º F in January to 105º F in June and July.

Section 303(d) of the Clean Water Act establishes that states are to list [the 303(d) list] waters which are not meeting applicable water quality standards. The 303(d) list includes priority rankings set by the state for the listed waters. Once the impaired waters are identified, Section 303(d) requires that the states establish total maximum daily loads (TMDLs) that will meet water quality standards for each listed waterbody. The TMDL must consider seasonal variations and a margin of safety that accounts for uncertainty. Petty Creek has been inventoried by the Montana Department of Environmental Quality (MDEQ) as having impaired water quality and is listed on the 303(d) list (MDEQ 2008). Probable causes of its impaired water quality are algal growth/chlorophyll a, flow alteration, siltation, thermal modifications, and other habitat alterations. The probable sources of these impairments are grazing related agricultural sources and highway, road, and bridge construction (MDEQ 2008). A TMDL for the stream has not yet been set, but once established it would set quantified goals for water

quality conditions in the creek that may then determine what actions are needed to restore or protect the health of Petty Creek.

A sediment assessment was performed on the Petty Creek Road in October of 2009 (Appendix 6). The purpose of the study was to assess the current and predicted future sediment load from the Petty Creek Road. Using standard hydrological modeling techniques, the study determined that the existing Petty Creek Road contributes approximately 433 tons per year of sediment to Petty Creek.

### 4.2.2 Project Impacts

**No Action Alternative**. With the No Action Alternative the water quality of Petty Creek would continue to be impaired by sediment transported from the substandard surface, existing poor drainage elements, erosion associated with inadequate stream crossing structures, and from areas of the road that are adjacent to Petty Creek. Petty Creek would continue to receive approximately 433 tons per year of sediment based on the Sediment Assessment (Appendix 6). In addition, Petty Creek would be impacted by dust abatement chemicals which are currently applied on an annual basis. Sand is also applied to the surface for winter maintenance. Both of these surface treatments result in chemical and sediment being released into the creek as it runs off of the roadway surface.

**Preferred Alternative**. The short-term effect of the Preferred Alternative would be a temporary increase in suspended sediment in Petty Creek. This would be focused in the area where the creek is immediately adjacent to the proposed project route and downstream from culvert and bridge replacement sites. With implementation of appropriate erosion and sediment control best management practices (BMPs), impacts would be temporary and limited to the time when soil-disturbing activities would take place and until permanent vegetation establishes. Madison Gulch, Spring Gulch, West Fork Petty Creek, Ed's Creek, Gus Creek, Johns Creek, Bill Creek, and East Fork Petty Creek would also experience a temporary increase in suspended sediment during culvert or bridge replacement. With BMPs and sediment capture devices in-place, downstream movement of sediment would be minimized. New cut slopes would expose soils to increased erosive forces which would increase sediment transport, but BMPs such as mulching, planting native vegetation, and staking straw wattles where appropriate would help control erosion.

Providing for 10 miles of pavement (8.7 miles of additional pavement) would lend to increased pollutant transport to surrounding waterways.

In the long term, paving of the road would increase slightly the amount of impervious surface that is currently in the project corridor by approximately 300,000 square ft (6.8 ac). This would lead to increased storm water runoff to the surrounding waterways. However, because the project proposes paving the existing 10-mile roadway section, which already generates relatively high storm water runoff compared with the surrounding vegetated land, paving the additional 8.7 miles is expected to increase runoff only slightly more than the runoff from the existing surface. Another consideration is that

the County uses unsalted sand on their rural roads during winter maintenance, which would be considered a source of sediment to Petty Creek. According to the County, less sand would be required on the paved surface section of the Preferred Alternative since a paved road can be plowed to the surface (Elsea 2010). With construction of drainage ditches and runoff directed into vegetated areas, these effects would be minimized. Surface runoff at the replaced stream crossing structures would be captured and carried to the ends of these structures to run down the embankment back to the stream. Currently, the runoff at these crossings dumps directly into the stream, not allowing sediment to settle out before entering the water.

It is anticipated that improvements to the road would reduce the amount of available sediment for transport to the waterways in the long term from the modeled 433 tons per year to 27 tons per year based on the Sediment Assessment in Appendix 6. Where feasible, the road would be shifted further away from Petty Creek, and the area between the road and creek would be planted with appropriate shrub seedlings and cuttings, seeded, and mulched. Some of the areas next to the creek currently consist of riprap. To reduce sedimentation, the riprap would be left in place, and seedlings would be planted between the riprap, thereby reducing disturbance while providing a vegetative buffer and stream shade. A restoration specialist from the USFS would determine the appropriate types of seedlings and their locations and spacing. Improved drainage ditches would also allow sediment to be filtered from storm water runoff. Replacement of the undersized stream crossing structures with appropriately sized structures would reduce the velocity of water passing through the structures and the potential for flooding, thereby lessening erosion of the stream banks and the roadbed. These actions are anticipated to have overall long-term beneficial effects on the water quality of the Petty Creek drainage

Increased impervious surface, sand used in winter maintenance, and new cut slopes would result in minor increases in sedimentation to Petty Creek. These new inputs would be offset by reducing the available sediments generated, improved drainage and stream crossing structures, improvements to sediment capture structures, and adjusting the alignment slightly away from Petty Creek. The overall impact from the Preferred Alternative would be beneficial. The stormwater BMPs would also assist in filtering out increases in hydrocarbons and metals which can be a concern when a road is paved. These stormwater features would also assist in filtering out the dust abatement chemicals that would be used for the maintenance of the last 1.8 miles of gravel section.

**Gravel Alternative**. Under the Gravel Alternative, the road would follow the exact alignment as the Preferred Alternative. Short-term temporary impacts would be expected and similar to the Preferred Alternative as stated above.

As with the Preferred Alternative, the road would be shifted further away from Petty Creek, and the area between the road and creek would be planted with appropriate shrub seedlings and cuttings, seeded, and mulched. Some of the areas next to the creek currently consist of riprap. To reduce sedimentation, the riprap would be left in place, and seedlings would be planted between the riprap, thereby reducing disturbance while providing a vegetative buffer and stream shade. A restoration specialist from the USFS

would determine the appropriate types of seedlings and their locations and spacing. Improved drainage ditches would also allow sediment to be filtered from storm water runoff. Replacement of the undersized stream crossing structures with appropriately sized structures would reduce the velocity of water passing through the structures and the potential for flooding, thereby lessening erosion of the stream banks and the roadbed. These actions are anticipated to have overall long-term beneficial effects on the water quality of the Petty Creek drainage.

Sand would be used for winter maintenance. According to County maintenance personnel, because gravel roads cannot be plowed to the actual roadway surface, they generally require more sand for winter maintenance than do paved roads (Elsea 2010). With construction of drainage ditches and runoff directed into vegetated areas, these effects would be minimized. Surface runoff at the replaced stream crossing structures would be captured and carried to the ends of these structures to run down the embankment back to the stream. Currently, the runoff at these crossings dumps directly into the stream, not allowing sediment to settle out before entering the water. Dust abatement chemicals would likely be used for routine maintenance. The BMP stormwater features would assist in filtering out the dust abatement chemicals that would be used.

For the Sediment Assessment, the sediment reduction factor was adjusted mid-way at 0.5 between the Preferred Alternative and existing road conditions (PBS&J 2009). The Sediment Analysis indicates that sediment load to Petty Creek would be approximately 216 tons per year. Therefore this alternative is expected to reduce the sediment inputs to Petty Creek by 217 tons per year.

Increased road surface, sand used in winter maintenance, and new cut slopes would result in minor increases in sedimentation to Petty Creek. These new inputs would be offset by reducing the available sediments generated, improved drainage and stream crossing structures, improvements to sediment capture structures, and adjusting the alignment slightly away from Petty Creek. The overall impact from the Gravel Alternative would be beneficial. The stormwater BMPs would also assist in filtering out the dust abatement chemicals that would be used for the maintenance of the last 1.8 miles of gravel section.

### 4.2.3 Cumulative Impacts

The analysis area for cumulative impacts on water resources for this project is the Petty Creek watershed. Past activities include construction, use, and maintenance of the existing Petty Creek road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include ongoing construction, maintenance, and uses of residential property and roads, ongoing use and maintenance of Petty Creek Road, agricultural activities, logging activities, use of recreational trails, implementation of a TMDL, and the acquisition and plans for conservation of MLP lands.

Most of these activities have or would potentially contribute to water quality degradation by altering flow regimes and adding sediment to water bodies. Road use and agricultural

activities contribute pollutants such as petroleum products, insecticides, animal waste, and fertilizers. Many of these activities also remove vegetation that helps control erosion, filter pollutants, and keep water temperatures low.

Recent acquisition of the Plum Creek Timber Company lands by the MLP has resulted in changes in land ownership within the watershed. In the past these areas were subject to intensive timber management activities, which resulted in changes in the flow regime and water quality within Petty Creek and its tributaries. In the future, timber harvesting of these lands is expected to be less intensive.

Petty Creek is on the 303(d) list for impaired water quality and probable sources are grazing related agricultural sources and highway, road, and bridge construction (MDEQ 2008). A TMDL has not yet been prepared for Petty Creek, however, once established it would set quantified goals for water quality conditions in the creek that may then determine what actions are needed to restore or protect the health of Petty Creek.

**No Action.** Combined with the past, present, and reasonably foreseeable future actions, the No Action Alternative would result in the most unfavorable impacts to water quality in the Petty Creek watershed. However, once the TMDL is prepared and implemented, water quality would be expected to be improved but at a slower rate than either of the action alternatives. In consideration of the above, the incremental impacts from the No Action Alternative when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse affects to the water resources or affect the ability of the resource to sustain itself.

**Preferred Alternative.** Combined with the past, present, and reasonably foreseeable future actions, the Preferred Alternative would result in the most favorable impacts to water quality in the Petty Creek watershed compared to the other alternatives. Once the TMDL is prepared and implemented, water quality would be expected to be improved at the fastest rate of any of the alternatives. In consideration of the above, the incremental impacts from the Preferred Alternative when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse affects to the water resources or affect the ability of the resource to sustain itself.

**Gravel Alternative.** Combined with the past, present, and reasonably foreseeable future actions, the Gravel Alternative would result in the second most favorable impacts to water quality in the Petty Creek watershed compared to the other alternatives. Once the TMDL is prepared and implemented, water quality would be expected to be improved at the second fastest rate of any of the alternatives. In consideration of the above, the incremental impacts from the Gravel Alternative when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse affects to the water resources or affect the ability of the resource to sustain itself.

### 4.2.4 Mitigation

The following measures are proposed to reduce the levels of impact to water resources and would apply to either the Preferred or Gravel Alternatives:

- Appropriate sediment and erosion control BMPs would be installed before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.
- A dewatering and diversion plan would be established and would include at a minimum, the following procedures:
    - Where culvert/bridge replacement is performed in flowing streams, actions to reduce sediment would be conducted.
    - Actions, such as stream diversion, would be visually assessed to assure that sediment controls work properly.
    - Where feasible, sediment capture devices would be placed to deter downstream movement of sediment.
    - Pump discharge would be released in an area where sediment would be unlikely to be delivered to the stream.
- Appropriate riparian vegetation would be planted and/or transplanted and woody debris from site clearing would be scattered over disturbed surfaces where appropriate.
- Where the road cannot be adjusted away from the creek, riparian planting would be performed to enhance sediment buffering and nearby habitat. T
- Fueling or storage of petroleum products would comply with permit requirements.
- Prior to construction, a Hazardous Materials Spill Plan would be prepared to identify actions to take in the event of a spill. This plan would incorporate preventative measures such as the placement of refueling facilities and the storage and handling of hazardous materials.
- All disturbed sites along the project route would be revegetated promptly using species appropriate to the site. Seeded and planted sites would be protected from erosion with a soil protection method until vegetation becomes established.
- Erosion controls would be left in place until vegetation becomes established.
- Drainage facilities that allow ground infiltration and provide sediment filtration from storm water runoff would be provided.
- Fill material placed in waterbodies and floodplains would be minimized.
- Where feasible, the road would be shifted away from Petty Creek, leaving existing fill/riprap in place, and providing a vegetative buffer between the road and the creek.

- Where appropriate, seedlings would be planted between the riprap and at other locations where the road and stream are in close proximity.

## 4.3 Transportation and Safety

### 4.3.1 Affected Environment

The existing Petty Creek Road serves residential, commercial, forest and recreational traffic within the LNF and the Ninemile Ranger District (Section 2.3). The road provides access to numerous homes along the Petty Creek Road and the West Fork Petty Creek Road. The current road consists of narrow and inconsistent roadway widths both in the paved and unpaved portions of the road which leads to unsafe driving conditions.

Both the paved and unpaved portions of Petty Creek Road have inconsistent widths and inadequate shoulders. The inconsistent widths tend to give drivers an inaccurate sense of travel space, and the inadequate shoulders do not allow sufficient room for errant vehicles to recover when departing from travel lanes, all of which contribute to unsafe driving conditions. Additionally, the clear zone contains numerous obstacles such as mail boxes, trees, and fences, adding to unsafe conditions should an errant vehicle leave the roadway.

The degraded surface of the existing road is often uneven, which can compromise a driver's ability to maintain vehicular control which can contribute to unsafe driving conditions. The dust, especially in the summer months, limits a driver's ability to see oncoming traffic, wildlife, or other objects on the road which contributes to the road's unsafe operation conditions.

At numerous curves the road does not meet the minimum AASHTO safety standards for the 35 mph of the current and proposed design speed of the road. These conditions compromise driver safety if drivers do not drive at a proper speed for successful maneuvering through the curves. Deficient road signage is also a safety problem along the road. Drivers of Petty Creek Road are often not adequately informed of travel speeds or potential roadway hazards to properly anticipate road conditions, contributing to safety compromises.

Several stream crossing structures along Petty Creek Road are too small to provide adequate water movement during high-flow storm events. During high flows, the small crossing structures cause storm water to back upstream, causing flooding, which compromises the road's stability and safety. There is an increased risk of structure failure because of excessive local erosion from these events.

There are no formally designated parking areas located near the Petty Creek Pasture and Sheep Viewing Trails, further compromising safe travel on the road. Trail-users park on the side of the road and walk along the road to reach the trailheads. During this time, they are at an increased risk of being hit by a vehicle, and drivers are forced to use the opposite side of the road to avoid a collision, which in turn increases the risk of collision with oncoming traffic.

Three main elements are known to dictate speed on roads – surface type, curvature, and clear zone. Traffic speed data was gathered on Petty Creek Road in 2004 along the paved and unpaved portion of the road. According to this data, there was very little difference in traffic speeds between the two road types (Table 4) although the conclusions of the study are quite limited. For example, the location of where the data was collected is unknown (on a curve or a straight tangent) or the direction of the travel, and this could affect the data results. Another consideration is that the paved portion is the first 1.3 miles at the junction with Interstate 90. Motorists might be driving slower as they approach the interstate, or they might drive faster if they are coming onto Petty Creek Road. Also, the time of year or weather conditions could affect the results. For example, if there were recent rains, there would be less dust on the road, and therefore motorists might drive faster on the gravel section and conversely slower on the paved portion. With these considerations in mind, about 2 percent more of the traffic traveled at 35-39 mph on the paved portion versus the graveled portion, 1 percent less at 40-49 mph, and percentages were the same at 50-70+ mph.

**Table 4. Percentages of Traffic Traveling at Various Speeds along Paved and Graveled Portions of Petty Creek Road**

| | **<35 mph** | **35-39 mph** | **40-49 mph** | **50-70+ mph** |
|---|---|---|---|---|
| **Paved** | 52% | 27% | 19% | 2% |
| **Graveled** | 54% | 25% | 20% | 2% |

Selection of surfacing is dependent upon a variety of factors including existing location and design, existing and projected types of traffic and speeds, structure stability, safety, climate, environmental issues, dust abatement, maintenance efforts, and ADT. According to AASHTO, for traffic volumes of 250 vehicles per day or more, crash rates are generally higher for unpaved roads than paved roads (AASHTO 2001). The ADT for all portions of the road, with the exception of the southern portion, either already are, or are projected to be, over 250 vehicles per day (Table 2).

### 4.3.2 Project Impacts

**No Action**. The No Action Alternative would continue to serve residential, commercial, forest, and recreational traffic within the LNF and the Ninemile Ranger District. However, the safety deficiencies pertaining to inconsistent width, the degraded surface, dust, insufficient curvature, insufficient signage, inadequate drainage features, and lack of formal parking areas would continue. Over time, the degraded surface would likely deteriorate faster than could be addressed by reasonable maintenance efforts.

Drivers would continue to travel the roadway at the current traveled speeds or as adjusted for the conditions of the road.

**Preferred Alternative.** The Preferred Alternative would continue to serve residential, commercial, forest, and recreational traffic within the LNF and the Ninemile Ranger District. Several features of the Preferred Alternative would improve the operational

safety of Petty Creek Road. The 10-mile paved portion of roadway would provide an even surface free from wash boarding and loose gravel and would be more resistant to potholes, affording greater vehicle control. A paved surface would also substantially reduce airborne dust, improving sight distance. The improved 1.8-mile gravel section would improve the uneven surface and reduce airborne dust but not to the degree of the paved. The last 1.8 miles of roadway would provide an improved gravel surface. Although this section of roadway might be subject to some potholing and washboarding between maintenance efforts, this is not expected to be substantial given the lower traffic volumes along this section of roadway.

Consistent road width and shoulders would provide consistent lane space to give a buffer between opposing streams of traffic, allow drivers more room to avoid obstacles on the roadway, and for errant vehicles to recover from lane departures. A clear zone free of obstacles would improve safety for vehicles that depart from the roadway. Improved road signage would help drivers anticipate road conditions by informing them of appropriate travel speeds and potential travel hazards. Appropriately sized stream crossing structures would reduce the potential for flooding and compromised road stability. Improving substandard curves to meet AASHTO's minimum radius standard where feasible would improve safety by making the curves less sharp for the design speed of the road, potentially reducing road departures. Formal parking areas would be provided at the Petty Creek Pasture and Sheep Viewing Trails.

The Preferred Alternative would also provide clearly designated lane markings on the paved surface. Clearly designated lane markings would provide drivers with an improved sense of travel space and reduce the tendency for drivers to travel near the edge or the center of the roadway, which is particularly important when maneuvering through curves with limited sight distance.

The road would be designed and posted for 35 mph. While the curvature of the roadway would essentially follow the existing alignment which may minimize increased speeds, improvements to the clear zone and the surface (particularly paving the first 10 miles), may result in an increase in speeds and/or the number of people speeding over the No Action.

**Gravel Alternative**. Several features of the Gravel Alternative would improve the operational safety of Petty Creek Road. The new gravel surfacing would provide an improved surface even though it would still be subject to some wash boarding and potholes between maintenance efforts depending on level of use. The new surface would also reduce airborne dust, improving sight distance but to a lesser degree than the Preferred Alternative.

Consistent road width and shoulders would provide consistent lane space to give a buffer between opposing streams of traffic, allow drivers more room to avoid obstacles on the roadway, and for errant vehicles to recover from lane departures. A clear zone free of obstacles would improve safety for vehicles that depart from the roadway. Improved road signage would help drivers anticipate road conditions by informing them of appropriate

travel speeds and potential travel hazards. Appropriately sized stream crossing structures would reduce the potential for flooding and compromised road stability. Improving substandard curves to meet AASHTO's minimum radius standard where feasible would improve safety by making the curves less sharp for the design speed of the road, potentially reducing road departures. Formal parking areas would be provided at the Petty Creek Pasture and Sheep Viewing Trails.

The road would be designed and posted for 35 mph. While the curvature of the roadway would essentially follow the existing alignment which may minimize increased speeds, with improvements to the clear zone and the surface, this might result in an increase in speeds and/or the number of people speeding over the No Action but less than the Preferred Alternative.

Selection of surfacing is dependent upon a variety of factors including existing location and design, existing and projected types of traffic and speeds, structure stability, safety, climate, environmental issues, dust abatement, maintenance efforts, and ADT. According to AASHTO, for traffic volumes of 250 vehicles per day or more, crash rates are generally higher for unpaved roads than paved roads (AASHTO 2001). The ADT for all portions of the road, with the exception of the southern portion, either already are, or are projected to be, over 250 vehicles per day (Table 2). Gravel roads with lower ADT generally last much longer while those with higher ADT deteriorate more rapidly. Therefore gravel roads eventually results in variable surfaces in the form of wash boarding and the development of potholes. To address these conditions, the County responds by grading the gravel road to provide a smoother surface, and as traffic increases, this maintenance would need to be conducted more frequently than for roads with a lower ADT or for the southern section of road.

## 4.4 Fish and Wildlife Species

A variety of fish and wildlife species occur in the Petty Creek watershed. These species can be divided into two major categories and are discussed as non-special status species (Section 4.4.1), special status species (Section 4.4.2), and Forest Service sensitive species (Section 4.4.3) within this section. Additional wildlife information was obtained from field reviews and correspondence with the Montana Chapter of The Wildlife Society, LNF, MFWP, MDEQ, USFWS, and EPA.

Because project-related impacts are similar across species, cumulative analysis is discussed for all wildlife resources in Section 4.4.10.

### 4.4.1 Non-Special Status Fish and Wildlife

**Affected Environment**. The project area is within elk, mule deer, and white-tailed deer summer and winter range. White-tailed deer crossings are numerous throughout the corridor, particularly between MP 6 and MP 11.3. Bighorn sheep habitat is present along both sides of the corridor, and the sheep frequent the corridor while crossing. A few moose are also present in the area. Black bear, mountain lion, and ruffed and blue grouse

are plentiful in the project area. These species are legally open to harvest during established hunting seasons.

Two critical times of the year for bighorn sheep are winter (December 1 – April 30) and lambing (May 1 – June 30). Within the project area, bighorn sheep winter and lambing habitat includes both sides of the road beginning at MP 0.0 south to approximately MP 7.25 at Ed's Creek Road (MFWP 2010). MFWP (2005) reports well-defined bighorn sheep crossings at MP 1.2 to MP 3.6 and MP 4.9 to MP 5.9. Also, the USFS maintains a sheep observation site and trailhead at approximately MP 5.1. It has been reported that locals have placed salt blocks in this area to attract the sheep. The salt blocks have been removed; however, leached salt in the soils continues to attract sheep. It is also possible that this area is a natural salt lick.

In a larger context, the Petty Creek area is between two large blocks of public land known as the Northern Continental Divide Ecosystem (NCDE) to the north and the Sellway-Bitterroot Ecosystem to the west and south. Servheen et al. (2003 and 2007) identified and assessed a wildlife linkage zone that connects these two areas (the NCDE to Bitterroots), which provides seasonal habitat containing food, shelter, and security for wildlife moving between two areas. The linkage between the NCDE and the Sellway-Bitterroot Ecosystem is important to those species that cover large amounts of territory during normal movements. Maintaining the effectiveness of this linkage zone is important for the long-term health of wildlife in the area. Its effectiveness is reduced as human development fragments wildlife habitat (Servheen et al. 2003). The proposed project is within this linkage zone. Other highways near the project area that exist within the linkage zone are Interstate 90 and U.S. Highway 12. The linkage zone is important not only to species discussed here but for all species having wide-ranging territories and habitats such as gray wolves, bears, and Canada lynx. However, this linkage is already somewhat fragmented by several roads including Petty Creek Road, Interstate 90, and US 12. Other types of activities that have fragmented habitat within this linkage include residential development, timber harvest, and forest roads.

In a report completed in 2010, the conservation group American Wildlands gave the Petty Creek wildlife movement corridor area a high priority rating because it provides connections within the Bitterroot Mountains for the Petty Creek and Ninemile watersheds and the Lolo Pass linkage area (American Wildlands 2010). This identified wildlife movement corridor is west of Petty Creek road and runs in a north-south direction parallel to the existing road. As noted in Figure 8, this has been designated as the "wildlife movement corridor". The American Wildlands study is a more local discussion of wildlife movement than that discussed for the NCDE and Sellway-Bitterroot Ecosystem connection. The American Wildlands corridor serves similar functions as the NCDC/Sellway-Bitterroot Ecosystem connection, but at a more local scale for animals that make smaller seasonal or dispersal movements. The Petty Creek wildlife movement corridor is fragmented by U.S. Highway 12, a substantial network of forest roads, previous timber harvest activities, and residential development.

As was discussed in Section 4.1.1.1, approximately 67 percent of the Petty Creek Watershed is publically owned and an additional 23 percent is owned by the MLP with the goals of managing it to protect natural resources and public access. This leaves approximately 10 percent (5,240 acres) of the watershed in private ownership. The majority of the parcels within this acreage have already been developed minimizing the potential future development (See Sections 4.1.1.2 and 4.1.1.3 for a detailed discussion of the growth potential of the Petty Creek Watershed). The fact that 90 percent of the watershed is in public ownership or otherwise protected from development helps insure the cohesiveness of the existing wildlife movement corridors.

Besides non special status species and special status species (discussed below in Section 4.4.2), Petty Creek provides habitat for a number of fish species, including rainbow trout, eastern brook trout, mountain whitefish, and sculpins (USFS 2003). It also provides spawning and rearing habitat for other species of fish from the Clark Fork River.

**Project Impacts**

**No Action Alternative - Wildlife**.
The projected increase in traffic coupled with existing and unchanged deficiencies of the current road (the lack of wildlife warning signs, under-sized stream crossing structures, and compromised vehicle control on an unimproved surface) would continue and may result in some wildlife/vehicle collisions as have previously occurred according to the accident data.

Research has indicated that highways can negatively affect all wildlife in particular area. Specifically, Ruediger (1996) identifies five factors in which highways negatively affect carnivores. They are:

1) ***Direct mortality***: auto collisions with individual carnivores
2) ***Displacement and avoidance:*** carnivores tend to avoid highways, thereby potentially avoiding suitable habitat that may be adjacent to those highways
3) ***Habitat fragmentation:*** highways often act as boundaries that may cut off segments of traditional or potential habitat, and populations may become isolated from each other, thereby reducing genetic diversity
4) ***Direct habitat loss:*** highways may physically occupy space that was once carnivore habitat
5) ***Associated human development:*** which potentially exacerbates the four previous factors

Ruediger, Claar, and Gore (1999) state in their USFS report:

> *It is known that some highways are not barriers or significant mortality factors for carnivores. These highways generally have low traffic volume and long pauses between traffic pulses. They are also two lane roads, often with minimal clearing distances. At*

> *approximately 2,000-3,000 vehicles per day, highways usually have adverse impacts on wildlife due to habitat fragmentation and mortality* (Dr. Tony Clevenger and Dr. Paul Paquet).

The rate of development in the Petty Creek Valley is expected to remain the same into the foreseeable future. The No Action Alternative would result in no changes to land ownership in the area. Given the pattern of people moving to the Petty Creek area, it is expected the No Action Alternative would not change this trend. Land use would be expected to continue to change with some exurban development from forested and agricultural to more residential. It is expected that development would be limited by the available private land and physical restrictions of flood prone zones in the valley bottoms, surrounding mountain slopes greater than 25 percent, minimum parcel size, and sanitation restrictions. Refer to section 4.1 for further discussions regarding land use in the project area.

Review of the No Action Alternative and the factors that negatively affect carnivores (direct mortality, displacement and avoidance, habitat fragmentation, and direct habitat loss; Reudiger 1996) indicates that this alternative would not result in a substantial change in existing conditions. It is expected that without changes to the existing roadway, direct mortality would remain essentially the same, existing displacement and avoidance behaviors would continue, habitat fragmentation would be constant, and there would be no direct habitat loss.

Based on the Ruediger USFS report (Ruediger 1999), given that 1) the current and projected average daily traffic is relatively low, 2) the design speed is low (35 mph), 3) the current road is two lanes, and 4) the No Action Alternative would not change the existing alignment, the No Action alternative would not be a substantial barrier or result in increased mortality to carnivores compared to existing conditions. There would continue to be some wildlife/vehicle collisions as have previously occurred through the project area. Overall, the types of impacts to non-special status wildlife currently occurring in the project area would remain essentially unchanged under the No Action Alternative.

**No Action Alternative – Fisheries.** Sedimentation of the surrounding waterways would likely continue to occur and reduce aquatic habitat quality. The unimproved crossings would mean that certain reaches of these waterways would remain unavailable to various life stages of fish species.

**Preferred Alternative – Wildlife.** The proposed road improvements would be along the existing road alignment. The following discussion addresses potential affects at the ecosystem, local, and direct level.

*Direct Affects.* Changes in direct mortality would not be expected to substantially change from existing conditions. Although the posted and design speed of the road would remain 35 mph, some drivers would likely exceed this limit as they do under current conditions (Section 4.3). While the curvature of the roadway would essentially follow the existing

alignment which may control increased speeds, improvements to the clear zone and the surface (particularly paving the first 10 miles), may result in an increase in speeds and/or the number of people speeding over the No Action Alternative. Therefore, the Preferred Alternative may result in an increase in wildlife/vehicle collisions, although this is not quantifiable based on existing accident data. Although there could be increased speeds along the paved section of roadway, the improved surface of the Preferred Alternative would provide better vehicle control (i.e. shorter stopping distances and better handling during sudden changes in vehicle course).

To further assist in controlling wildlife/vehicle collisions, warning signs would be placed along the road in areas of typically high wildlife use. The goal is to heighten the public's awareness of potential crossings of wildlife as they travel through these areas. An acceptable design of the signs and their placement would be decided in cooperation with MFWP and USFS. Also, the increased size of stream crossing structures would allow for easier passage of wildlife under the roadway rather than over it, further minimizing the likelihood of wildlife/vehicle collisions.

Construction of the Preferred Alternative would require the use of heavy equipment. This has the potential to disturb wildlife and cause them to avoid the project area. As described above, the time period from December 1 to June 30 is critical to the bighorn sheep herd. Construction activities would likely discourage use of the area and disrupt herd activities during this period. The WFLHD would coordinate with MFWP to develop avoidance, minimization and mitigation measures to minimize temporary construction impacts to bighorn sheep in their winter and lambing habitat (MP 0 and MP 7.25).

*Ecosystem Linkage.* The Preferred Alternative would be constructed along the existing alignment within the Petty Creek watershed. This action would occur within the NCDE Sellway-Bitterroot ecosystem linkage. However, the magnitude of change would not be expected to result in substantial deviation in existing wildlife movement on the scale of this linkage. The wide-ranging species that use these linkages would be more affected by existing features on the landscape such as Interstate 90 that present a substantial barrier to movement when compared to two lanes of a newly paved road with a relatively low daily traffic load. Other activities that could fragment habitat within this linkage include timber harvest, other road projects, and residential development.

*Petty Creek Wildlife Movement Corridor.* The Preferred Alternative would extend about 2.5 miles into the boundary of the designated wildlife movement corridor. However, only 0.7 miles of this would be paved and the rest of the project area (from MP 10 to 11.8) within the movement corridor would have a gravel surface (Figure 8). This is not a substantial change from existing conditions and would not fragment the corridor itself.

Wildlife also move outside of the designated wildlife movement corridor. Improving the road would permanently remove about 6 acres of low quality roadside vegetation. This would; (a) not substantially increase the distance between habitats on either side of the road (i.e., widen the roadway); (b) not result in appreciable loss of habitat near the road; or (c) result in a substantial incremental increase in the existing fragmented wildlife

movement corridor because the main identified wildlife movement corridor runs parallel to the Petty Creek road and all improvements would occur along the same alignment. With the exception of guardrail at stream crossings, no permanent structures would be installed that would hinder wildlife from crossing the road. Therefore, the physical footprint of the Preferred Alternative would not further fragment habitat or the designated wildlife movement corridor. In addition, the direct habitat loss would be limited to vegetation immediately adjacent to the existing road. This would not fragment existing habitat or require additional road crossings to reach newly isolated habitat.

Human development indirectly associated with a road project can have negative impacts on wildlife, similar to the impacts discussed in Section 4.4.1. As discussed in Section 4.1, the Preferred Alternative would likely promote some development along the Petty Creek road corridor. Although improvements to the road would likely make it more attractive to potential developers, this potential for development is limited as described in Section 4.1. Complete buildout under the Preferred Alternative would be the same development level as under the No Action Alternative. The main difference is the rate at which buildout is achieved. As has been discussed in the Land Use (Section 4.1), the Preferred Alternative could result in a slight increase in the rate at which development occurs within the Petty Creek watershed. Increased human development within the Petty Creek Watershed could result in fragmentation of local habitats used by wildlife. The end result at buildout is the same under the Preferred and No Action alternatives. Within the NCDE Sellway-Bitterroot linkage the Petty Creek watershed occupies a relatively small amount of the overall area. A small amount of private property within the Petty Creek wildlife movement corridor could be developed sooner under the Preferred Alternative compared to the No Action Alternative. Animals moving through the NCDE Sellway-Bitterroot ecosystem linkage or the Petty Creek wildlife movement corridor could encounter developed land in the Petty Creek watershed sooner under the Preferred Alternative compared to the No Action Alternative. This would be considered a minor adverse affect to wildlife.

*Conclusion.* Review of the Preferred Alternative and the factors that adversely affect wildlife (direct mortality, displacement and avoidance, habitat fragmentation, direct habitat loss, and associated development) indicates that the Preferred Alternative would not result in a substantial adverse change from existing conditions. It is expected that because of increased control, sightlines, and signage direct mortality would remain essentially the same as currently exists. Existing displacement and avoidance behaviors would continue and there would be a minor direct loss of habitat. Existing habitat would not be substantially fragmented by the Preferred Alternative; however, an increased rate of development on private lands could result from this alternative which could gradually alter localized wildlife movement patterns. Overall, because the Preferred Alternative retains the existing alignment, keeps a relatively small barrier-free width, and minimizes impacts to habitat, existing movement patterns would not be substantially altered by the road itself. Wildlife may be exposed to increased rates of development which would increase the rate at which localized movement patterns would shift, but levels of buildout are the same under the Preferred Alternative as the No Action Alternative. Because of this, wildlife would be subject to habitat fragmented by increased development sooner

under the Preferred Alternative than under the No Action Alternative. This would be considered a minor adverse affect of the Preferred Alternative. Both the NCDE Sellway-Bitterroot Ecosystem linkage and the Petty Creek wildlife movement Corridor would be altered more rapidly under the Preferred Alternative, however, the end result would be the same level of development as the No Action Alternative.

**Preferred Alternative – Fisheries.** Aquatic organisms may be impacted by increased sediment from construction activities and increased runoff from the paved surface of the road. However, these impacts are expected to be short-term and minimized by implementation of BMPs during construction. Also, the improved features would have long-term beneficial effects on fish and amphibians by reducing sedimentation by approximately 406 tons/year (See Water resources Section 4.2) and providing for passage of all life stages of fish species. With the use of BMPs during construction, efforts to minimize sedimentation, and improvements to stream crossing structures, the Preferred Alternative would result in temporary minor adverse impacts but long term beneficial impacts to aquatic species.

**Gravel Alternative - Wildlife**. The proposed road improvements would be along the existing road alignment. The Gravel Alternative would reach into the wildlife movement corridor for about 2.5 miles (Figure 8).

*Direct Affects.* Although the posted speed of the road would remain 35 mph, some drivers would likely exceed this limit as they do under current conditions. While the curvature of the roadway would essentially follow the existing alignment which may minimize increased speeds, improvements to the clear zone and the surface may result in an increase in speeds and/or the number of people speeding over the No Action but less than the Preferred Alternative. The Gravel Alternative may result in an increase in wildlife/ vehicle collisions over the No Action Alternative, although this is not quantifiable based on existing accident data.

Although not to the same extent as the Preferred Alternative, the improved surface of the Gravel Alternative would provide improved vehicle control (i.e., shorter stopping distances and better handling during sudden changes in vehicle course). The improved vehicle handling is expected to reduce wildlife/vehicle collisions.

To further assist in controlling wildlife/vehicle collisions, warning signs would be placed along the road in areas of typically high wildlife use. The goal is to heighten the public's awareness of potential crossings of wildlife as they travel through these areas. An acceptable design of the signs and their placement would be decided in cooperation with MFWP and USFS. Also, the increased size of stream crossing structures would allow for easier passage of wildlife under the roadway rather than over it, further minimizing the likelihood of wildlife/vehicle collisions.

The time period from December 1 to June 30 is critical to the sheep herd. Construction activities would likely discourage use of the area and disrupt herd activities during this period. The WFLHD would coordinate with MFWP to develop avoidance, minimization

and mitigation measures to minimize temporary construction impacts to bighorn sheep in their winter and lambing habitat (MP 0 and MP 7.25).

*Ecosystem Linkage.* The Gravel Alternative and the factors that negatively affect carnivores (direct mortality, displacement and avoidance, habitat fragmentation, and direct habitat loss, and human development) indicate that this alternative would not result in a substantial change in existing conditions. It is expected that without changes to the existing roadway, direct mortality would remain essentially the same, existing displacement and avoidance behaviors would continue, habitat fragmentation would be constant, and there would be no direct habitat loss. Habitat lost to human development has been discussed in the Land Use section and is not expected to substantially change should the Gravel Alternative be implemented.

*Petty Creek Movement Corridor*. Wildlife movement also occurs outside of the designated wildlife movement corridor. Improving the road would permanently remove about 6 acres of low quality roadside vegetation. This would; (a) not substantially increase the distance between habitats on either side of the road (i.e., widen the roadway); (b) not result in appreciable loss of habitat near the road; or (c) result in a substantial incremental increase in the existing fragmented wildlife migration corridor since the main identified wildlife movement corridor runs parallel to the Petty Creek road and all improvements would occur along the same alignment. With the exception of guardrail at stream crossings, no permanent structures would be installed that would hinder wildlife from crossing the road. Therefore, the physical footprint of the Gravel Alternative would not further fragment habitat or the designated wildlife movement corridor.

Human development indirectly associated with a road project can have negative impacts on wildlife, similar to the impacts discussed in Section 4.4.1. As discussed in Section 4.1., the Gravel Alternative may result in an increase in development rates higher than the No Action Alternative but less than the Preferred Alternative.

*Conclusion.* Although, improved sightlines and signage may somewhat help minimize collisions, wildlife mortality under the Gravel Alternative would be essentially the same as the No Action Alternative. Habitat loss would be limited to a small area the same as for the Preferred Alternative; this is not a substantial adverse affect. With the proposed mitigation described and the elements of the Gravel Alternative that would improve vehicle control, the Gravel Alternative would result in negligible to minor adverse impacts to non-status terrestrial species. Review of the Gravel Alternative and the factors that negatively wildlife (direct mortality, displacement and avoidance, habitat fragmentation, direct habitat loss, and associated development) indicates that the Gravel Alternative would not result in more than a minor adverse change from existing conditions. The discussion in the Land Use Section (4.1) indicates that paving may somewhat increase the rate of development. Under the Gravel Alternative, development rates are expected to be essentially the same as they are under the No Action Alternative. Animals that use the NCDE Sellway-Bitterroot ecosystem linkage and the Petty Creek

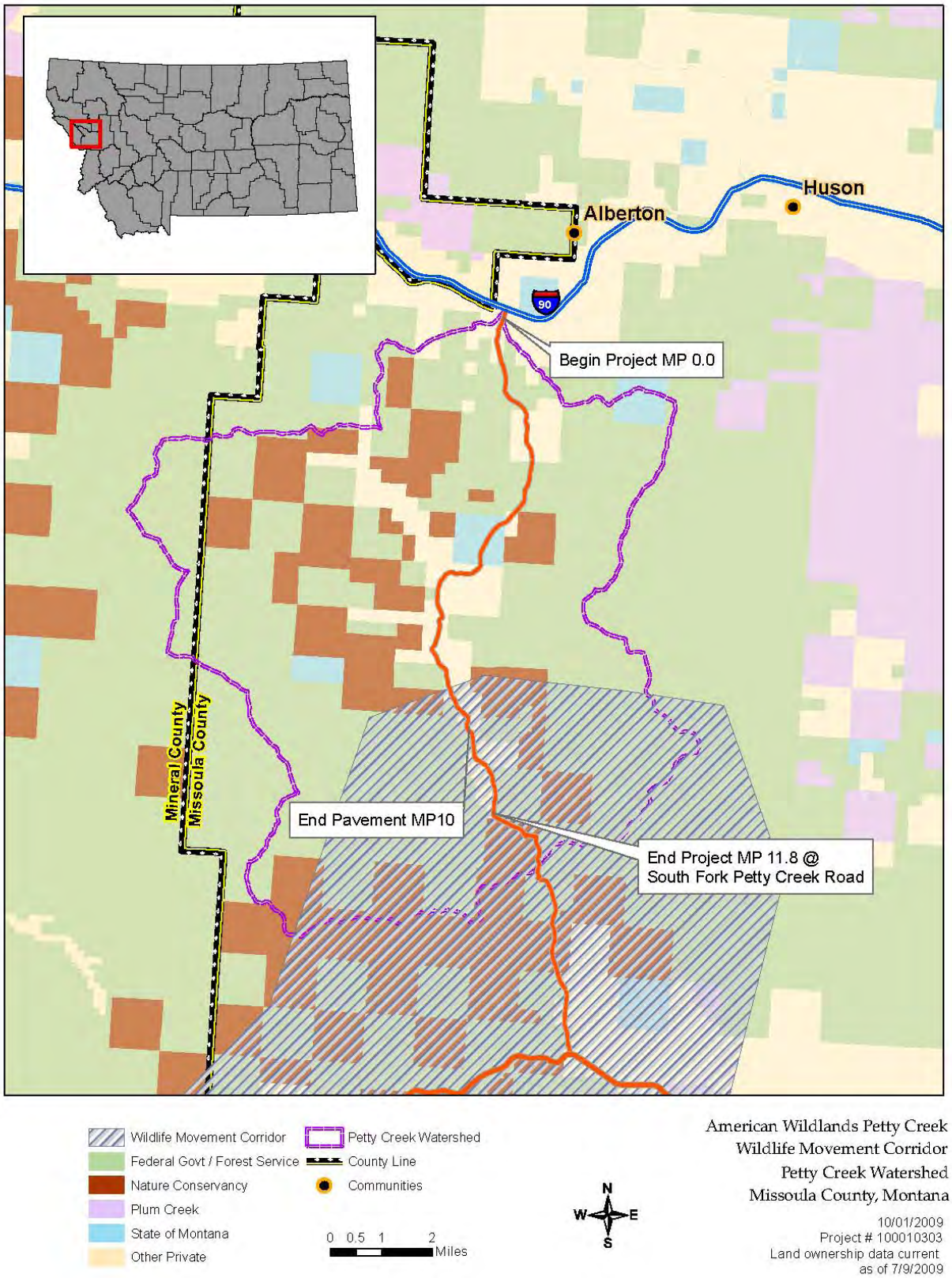


**Figure 8. Petty Creek Wildlife Movement Corridor**

wildlife movement corridor would be exposed to the same fragmentation affects of development as under the No Action Alternative.

**Gravel Alternative – Fisheries.** Aquatic organisms may be impacted by increased sediment from construction activities and increased runoff from the improved surface of the road. However, these impacts are expected to be short-term and minimized by implementation of BMPs during construction. Also, the improved features would have long-term beneficial effects on fish and amphibians by reducing sedimentation by approximately 217 tons/year (See Water resources Section 4.2) and providing for passage of all life stages of fish species. With the use of BMPs during construction, efforts to minimize sedimentation, and improvements to stream crossing structures, the Gravel Alternative would result in temporary minor adverse impacts but long term beneficial impacts to aquatic species. The extent of the long-term beneficial impacts to aquatic species would not be as great as the Preferred Alternative due to less sediment reduction.

### 4.4.2 Special Status Fish and Wildlife Species

Five species listed as threatened or endangered under the Endangered Species Act (ESA) have the potential to occur in the project area (Table 5) (Herrera 2004b). This list was updated in 2010 in coordination with the USFWS. A discussion of WFLHD's effect determinations for each threatened/endangered species is provided below. The USFWS concurred with WFLHD's effects determinations in a Biological Opinion dated September 14, 2006 (Appendix 3).

#### 4.4.2.1 Bald Eagle

**Affected Environment**

Until recently, the bald eagle (*Haleaeetus leucocoephalus*) was listed as a threatened species under the ESA. The bald eagle was de-listed from the threatened and endangered species list on August 8, 2007. Bald eagles are protected under the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711) and the Bald and Golden Eagle Protection Acts (16 U.S.C. 668-668d). Executive Order 13186 requires that all federal agencies promote the conservation goals of these bird management laws. The current nesting population in the lower 48 states represents more than a tenfold increase from the known population level in 1963. During the past 30 years, the bald eagle population has essentially doubled every 7 to 8 years.

Bald eagles may achieve adult plumage and nest as early as age four, although most data indicate that they first breed at 6 or 7 years. Long-term pairs may build and repair nests during any season, although in Montana, this typically occurs in autumn, late winter, and early spring. The sensitive nesting period for bald eagles generally extends from February 1 to August 15, and wintering activities typically occur between October 31 and March 31. Wintering habitat includes perching and roosting sites located near open water or in areas with ample carrion. Nest sites in Montana are most often found around the edge of lakes or reservoirs larger than 80 ac or along forested corridors of large rivers.

The Montana Bald Eagle Management Plan recommends restrictions on human activity within 0.25 mi (400 m) of bald eagle nesting, roosting, and primary foraging areas during specific stages of the nesting cycle (Montana Bald Eagle Working Group 1994). There are no bald eagle nest sites within the project corridor or the adjacent habitats (Kennedy 2010). Although the habitat types in the corridor are dominated by trees that are not preferred nest trees for bald eagles, they do contain tree species such as ponderosa pine (*Pinus ponderosa*) and cottonwood (*Populus deltoids*) that bald eagles have been observed nesting in near the project area.

**Table 5. Threatened, Endangered, and Candidate Wildlife Species within Petty Creek Road Project Area**

| Common Name | Scientific Name | Federal Status | Critical Habitat Present | Effects Determination |
|---|---|---|---|---|
| Bald eagle | *Haliaeetus leucocoephalus* | De-listed | No | May affect, not likely to adversely affect |
| Bull trout | *Salvelinus confluentus* | Threatened | Yes | May affect, likely to adversely affect |
| Canada lynx | *Lynx canadensis* | Threatened | No | May affect, not likely to adversely affect |
| Gray wolf | *Canis lupus* | De-listed | No | May affect, not likely to adversely affect |
| Yellow-billed cuckoo | *Coccyzus americanus* | Candidate | | No effect |

Wintering bald eagles tend to concentrate on the Clark Fork River located immediately north of the project corridor. The Clark Fork River provides year-round open water and proximity to carrion from wildlife killed by vehicles on Interstate 90. Eagles occasionally forage along Petty Creek, but this activity is limited to periods of high flows in the spring (Kennedy 2010).

**Project Impacts**.

**No Action Alternative**. Because there are no known bald eagle nests in the project corridor and use of the corridor by bald eagles is expected to be incidental and limited to periods of high flows in Petty Creek during the spring, the No Action Alternative would have no effect on the bald eagle.

**Preferred Alternative.** Construction activities associated with the Preferred Alternative may disrupt bald eagle foraging along Petty Creek during high-flow events in the spring. However, use of habitat within the project area by bald eagles is concentrated on the Clark Fork River because of its abundant food sources, and entry into the Petty Creek drainage is limited. Use of the project corridor by bald eagles is expected to be incidental and limited to periods of high flows in Petty Creek during the spring. Therefore, the level of impact to the bald eagle from the Preferred Alternative would be minimal.

Although the bald eagle is no longer on the threatened and endangered species list, at the time USFWS issued their biological opinion for the project, the bald eagle was listed as threatened. In that biological opinion, the USFWS concurred with the determination that the Preferred Alternative *may affect, but is not likely to adversely affect* the bald eagle based on the limited use of the corridor by the species.

Additionally, the USFWS has proposed a permit structure under the Bald & Golden Eagle Protection Act. In the interim, in accordance with USFWS recommendations, this project would comply with the National Bald Eagle Management Guidelines.

**Gravel Alternative**. Impacts to bald eagles from the Gravel Alternative would be the same as impacts from the Preferred Alternative as described above.

#### 4.4.2.2 Gray Wolf

**Affected Environment**. Although historically present throughout much of the west, gray wolves (*Canis lupus*) were all but eliminated from the area in the early 1900s. As a result of natural recovery and introduced packs, wolves have been recovering in the west since the 1980s. Estimated minimum numbers in 2004 in the northern Rocky Mountains was 835 wolves, with 153 of those wolves in Montana (MFWP 2006).

An “endangered” species is one that is in danger of extinction throughout all or a significant portion of its range, and a “threatened” species is one that is likely to become endangered in the foreseeable future (USFWS 2008). In 2003, the USFWS reclassified the gray wolf from endangered to threatened in all areas inhabited by the western distinct population segment of gray wolves (68 FR 15804). However, in 2005, a federal court judge remanded the down-listing rule, and therefore wolves were reclassified as endangered within the distinct population segment outside of experimental population areas. On March 28, 2008, the wolf was delisted from the threatened and endangered species list (USFWS 2008). Critical habitat for the gray wolf has not been proposed or designated.

Wolves are primarily predators of medium and large animals. Wild prey species in the northern Rocky Mountains include white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionu*s), moose (*Alces alces*), elk (*Cervus elaphus*), bighorn sheep, caribou (*Rangifer tarandus*), mountain goats (*Oreamnos americanus*), beaver (*Castor canadensis*), and snowshoe hares (*Lepus americanus*). Smaller mammals, birds, and large invertebrates are sometimes taken (Mech 1970). Wolves are social animals, living in packs of 2 to 12 wolves. Packs occupy a territory of 20 to 214 $mi^2$ , but their territories tend to be larger in the northern Rocky Mountains, averaging 200 to 400 $mi^2$ (USFWS 1987). They tend to avoid areas with heavy human use; however, some packs may be tolerant of human activity.

The average wolf pack in Montana has four to seven animals, and their average territory is 200 $mi^2$ (MFWP 2006). Wolf pack activity in the vicinity of the study corridor includes the Ninemile pack, which ranges throughout the Ninemile Valley located north of

Interstate 90. This pack ranges in the area but doesn't cross the interstate so is not considered within the project area (Kennedy 2010). The Fish Creek pack ranges into the Petty Creek area (especially as a winter range area) and has had continuous tenure in the area since 2001 (MFWP 2008). The Blue Mountain pack and the Bitterroot Range pack might use the area as well (MFWP 2008).

**Project Impacts**.

**No Action Alternative**. The No Action Alternative would likely have no effect on the gray wolf. Wolf packs would continue to use the area as they do currently.

**Preferred Alternative**. A detailed discussion of the Preferred Alternative's potential affects to wildlife has been presented above. Overall, the potential affects to wolves would be the same as has already been discussed. The factors that adversely affect wildlife (direct mortality, displacement and avoidance, habitat fragmentation, direct habitat loss, and associated development) indicates that the Preferred Alternative would not result in a substantial adverse change from existing conditions. Given that 1) the projected average daily traffic is relatively low, 2) the design speed is low (35 mph), 3) the proposed road is two lanes, and 4) the Preferred Alternative would remain on essentially the existing alignment with only minor widening in limited areas to obtain a consistent width, it is not anticipated that the proposed project would result in adverse effects to the gray wolf. Speed limit signs and wildlife warning signs would be posted and are expected to help minimize vehicle wildlife interactions. Existing displacement and avoidance behaviors would continue, habitat fragmentation would be constant, and there would be only minor direct loss of habitat. Overall, because the Preferred Alternative retains the existing alignment, keeps a relatively small barrier-free width, and minimizes impacts to habitat, existing movement patterns within the NCDE Sellway-Bitterroot Ecosystem linkage, the Petty Creek movement Corridor, or other localized movement would not be permanently affected. The change in the rate of development that is possible under the Preferred Alternative would have similar affects to gray wolf as those discussed above for non-special status animals. Essentially, the increased rate of development resulting from implementation of the Preferred Alternative could expose local wolves to development and resultant habitat fragmentation sooner than under the No Action Alternative, but the total amount of development would be the same under either alternative.

Although the gray wolf is no longer on the threatened and endangered species list, at the time the USFWS issued their biological opinion for the project, the gray wolf was listed as endangered. In that biological opinion, the USFWS concurred with the determination that the Preferred Alternative *may affect, but is not likely to adversely affect* the gray wolf.

**Gravel Alternative**. Impacts to the gray wolf from the Gravel Alternative would be similar to impacts from the Preferred Alternative. Although a gravel surface would be the only difference, the design speed of the gravel road would be maintained at 35 mph which is the same for the Preferred Alternative. Complete buildout of the Petty Creek

area, and resulting habitat fragmentation, under the Gravel Alternative would proceed at the same rate as the No Action Alternative.

#### 4.4.2.3 Canada Lynx

**Affected Environment**. The historical and current range of the Canada lynx (*Lynx canadensis*) in the contiguous United States includes the Cascade Range of Washington and Oregon; the Rocky Mountain Range in Montana, Wyoming, Idaho, northern Utah, and Colorado; the western Great Lakes region; and the northeastern United States region from Maine southwest to New York. It is believed that the northern Rockies/Cascades region supports the most viable resident lynx populations (65 FR 16052). In 1998, the lynx was proposed for listing as a threatened species under the ESA (63 FR, July 8, 1998). The lynx was listed as threatened in the contiguous states, effective April 23, 2000 (65 FR 16052). A proposed rule to designate critical habitat for the Canada lynx was published in November 2005 (70 FR 68293), and a final rule was issued November 2006 (71 FR 66007). Revised critical habitat for lynx was proposed on February 28, 2008. Portions of Missoula County are designated as Canada lynx critical habitat; however, these areas do not include the Petty Creek project area.

According to Squires et al. (2006), lynx preferentially forage during winter in spruce-fir forests having high horizontal cover, numerous snowshoe hares, deep snow, and large-diameter trees. They also tend to avoid sparse, open forests and forest stands dominated by small-diameter trees. They generally use the same home range and many of the same forests during the summer as they do during the winter; however, they also expand to younger forest stands with an abundance of shrub cover. Shrubby areas are important because the shady stands provide cool rest areas during warmer temperatures (Squires et. al. 2006).

Lynx usually select den sites under naturally occurring structures such as downed logs, root wads, or rock piles in mature, mesic forests with higher horizontal cover and downed woody debris than elsewhere in their home range (Squires et. al. 2006).

Lynx feed almost exclusively on snowshoe hares, however, they occasionally feed on red squirrels and other animals such as northern flying squirrels, blue grouse, spruce grouse, least weasel, and white-tailed deer, as well as carrion (Squires et. al. 2006).

Kolbe and Squires (2007) concluded that lynx activity patterns appeared to vary by sex, season, and reproductive status, and were not found to be primarily nocturnal. During winter, lynx of both sexes were most active during the afternoon and early evening. During summer, male lynx were most active preceding dawn and dusk while females with kittens were active throughout the day (Kolbe and Squires 2007).

The LNF conducted an assessment of suitable habitat for lynx in the forest using geographic information system (GIS) data layers including habitat type, aspect, and topography. Based on this analysis, habitat areas in the forest below an elevation of 4,800 ft are considered unsuitable for lynx. The proposed project exists below an elevation of

4,800 ft. In addition, suitable habitat for lynx was not observed during field reconnaissance. The MFWP furbearer database contains records of trapped lynx and lynx tracks from the East Fork of Petty Creek west through Howard Creek, Fish Creek, Granite Creek, and Lolo Creek. Although incidental occurrence of dispersing lynx may occur within the project corridor as they travel between territories, no occupied habitat for lynx is known within the project corridor.

**Project Impacts**.

**No Action Alternative**. Canada lynx are not known to occur in the project area except for incidental occurrence of dispersal. Additionally, there is no suitable lynx habitat in the project area. Therefore, it is unlikely the No Action Alternative would have any impacts on Canada lynx.

**Preferred Alternative**. Roadways can impact Canada lynx by direct mortality, displacement and avoidance, habitat fragmentation, direct habitat loss, and associated human development (Ruediger 1996). However, the project corridor does not support occupied or suitable habitat for the species and except for incidental occurrence of dispersing Canada lynx, they are not expected within the project corridor. Lynx moving through the NCDE Sellway-Bitterroot ecosystem linkage or the Petty Creek wildlife movement corridor would be exposed to habitat fragmentation resulting at a somewhat increased rate under the Preferred Alternative compared to the No Action Alternative. The fragmentation of these two movement corridors would be the same under either alternative once buildout was reached.

The risk of increased vehicle collisions with any dispersing Canada lynx is expected to be minor because the project is located in a low elevation area outside of lynx habitat, design speed of the roadway would remain low (35 mph), future traffic volumes are expected to be relatively low, and the species primarily moves at night when traffic volumes are even lower. Therefore, it is determined and USFWS concurs that the proposed action *may affect, but is not likely to adversely affect* Canada lynx. Speed limit signs and wildlife warning signs would be posted and are expected to help minimize vehicle wildlife interactions.

**Gravel Alternative**. Impacts to lynx under the Gravel Alternative would be the same as for the Preferred Alternative. Complete buildout of the Petty Creek area, and resulting habitat fragmentation, under the Gravel Alternative would proceed at the same rate as the No Action Alternative. Overall, the FHWA has determined that the gravel alternative *may affect, but is not likely to adversely affect* Canada lynx.

#### 4.4.2.4 Yellow-billed Cuckoo

**Affected Environment**. There is limited data on the occurrence of the yellow-billed cuckoo (*Coccyzus americanus*) and its habitat in the area west of the Continental Divide in Montana. There are no records that provide direct evidence of breeding in Montana, although observations of their behavior suggest that breeding may occur (Montana

National Heritage Program (MNHP) and MFWP 2004). Records indicate that the yellow-billed cuckoo is a migratory or transient and/or non-breeding summer bird resident of Montana (MNHP et al. 2004).

Suitable habitat for the yellow-billed cuckoo is available in riparian habitats along Petty Creek within the project area; however, no yellow-billed cuckoos have been documented within the project corridor (MNHP et al. 2004; Kennedy 2010).

The yellow-billed cuckoo has not yet been federally listed as threatened or endangered but is considered a candidate species. Because it is not listed, no critical habitat has been designated or proposed for this species.

**Project Impacts**. The yellow-billed cuckoo has not been documented within the project area or the surrounding habitats and is not known to breed in Montana, therefore it is determined that the No Action Alternative, the Preferred Alternative, and the Gravel Alternative would have no effect on the yellow-billed cuckoo.

#### 4.4.2.5 Grizzly Bear

**Affected Environment**. Although the grizzly bear (*Ursus arctos horriblis)* is listed as threatened by the USFWS, the USFWS does not recognize the project area as occupied grizzly bear habitat. While the Petty Creek area is not within occupied grizzly bear habitat, grizzly bear movement has been documented in the region from the Ninemile/Mission Mountain corridor as well as the Cabinet/Thompson River corridor (MFWP 2008). In fact, a grizzly activity was reported in 2002 near Alberton, MT, which is approximately 1 mile northwest of the beginning of the project and was eventually killed approximately 15 miles from the project (Kennedy 2010). A more recent fatality occurred in 2007 when a male bear from the Selkirks was shot accidentally in the Kelly Creek drainage approximately 30 miles southwest of the project (Kennedy 2010).

The grizzly bear was listed as a threatened species on July 28, 1975. Grizzly bears are habitat generalists whose key habitat requirements are the availability of food and isolation from humans. Grizzly bears are solitary wanderers, except when they are caring for young. Although they typically maintain a minimum distance from one another, their home ranges often overlap (USFWS 1993). Bears mate in late May through mid-July. During winter months, grizzly bears hibernate at high elevations where snow accumulations are deep. The bears usually move up and downhill to take advantage of seasonal changes in food supply. They emerge from hibernation in spring and move to the lowlands to forage on winter-kill carcasses and newly emerging vegetation. Grizzly bears are opportunistic feeders, foraging on carrion, squirrels, vegetation, nuts, berries, and insects. In the late summer and early fall, the bears move back up to higher elevations to forage on berries in the avalanche slides. Den digging begins in early September through November. Grizzly bears typically remain in their dens for about 5 months (USFWS 1993).

The *Grizzly Bear Recovery Plan* (USFWS 1993) and Interagency Grizzly Bear Committee (IGBC) focus on populations in six recovery ecosystems with suitable habitat for self-sustaining populations of bears. They are the Yellowstone National Park, the Northern Continental Divide, the North Cascades, the Selkirk, the Cabinet-Yakk, and the Bitterroot. All but the Bitterroot ecosystem are currently inhabited by grizzly bears. The Yellowstone grizzly bear population is the strongest and most viable, and this population was de-listed from the threatened and endangered list in the spring of 2007. On September 22, 2009, a U.S. District Court order vacated this de-listing decision returning this population to the threatened species list (*Greater Yellowstone Coalition, Inc.,* vs. *USFWS et al* Case 9:07-00134-DWM). The grizzly bear population in the Northern Continental Divide ecosystem is the next most viable; this area supports greater than 400 bears (USFWS 2010). The project corridor is located approximately 25 mi southwest of the Northern Continental Divide ecosystem.

Grizzly bears inhabit large tracts of relatively undisturbed land. The most suitable habitats consist of a wide range of vegetation communities that produces a varied food supply. Diversity in habitat characteristics also provides required resting, denning, social areas, and space. Cover is a key habitat component for grizzly bears.

Critical habitat for the grizzly bear has not been proposed or designated. Rather, grizzly bear recovery focuses on the establishment of populations in six areas with suitable habitat for self-sustaining populations, as described above.

**Project Impacts**. Although the grizzly bear is listed as threatened by the USFWS, the USFWS does not recognize the project area as occupied grizzly bear habitat. Grizzly bears are occasionally observed in the region.

**No Action Alternative**
The No Action Alternative would not result in changes to direct mortality, displacement and avoidance, habitat fragmentation, direct habitat loss, and associated human development that could affect grizzly bears. Because of this, the No Action Alternative would have no effect on this species.

**Preferred Alternative**
*Ecosystem Linkage.* As evidenced by occasional grizzly bear sightings in the region, the project area could be used incidentally by grizzly bear for movement between territories. As with the gray wolf and lynx, roadways can impact grizzly bears by direct mortality, displacement and avoidance, habitat fragmentation, direct habitat loss, and associated human development (Ruediger 1996). Given that 1) the projected average daily traffic is relatively low, 2) the design speed is low (35 mph), 3) the proposed road is two lanes, 4) there are no known grizzly bears occupying the project area, 5) the use of the area by grizzly bears is incidental, and 6) the Preferred Alternative follows the same alignment as the existing road, the Preferred Alternative would not result in increased fragmentation of the NCDE Sellway-Bitterroot Ecosystem linkage. Other actions within this linkage that could result in habitat fragmentation and affect bears include timber harvest, wildfire, and residential development in other locations.

As has been discussed in the non-special status wildlife discussion, the Preferred Alternative may result in a slight increase in the rate of development within the Petty Creek watershed when compared to the No Action Alternative. However, the end result of buildout would be the same under the Preferred Alternative as the No Action Alternative, the only difference would be that any bears moving through the area would be subject to habitat fragmentation slightly sooner under the Preferred Alternative. Given the scale of the NCDE Sellway-Bitterroot ecosystem linkage and the apparent intermittent use of the project area by bears, the affect of this increased rate of development would be considered a minor affect to the species.

*Petty Creek Wildlife Movement Corridor.* The Petty Creek wildlife movement corridor is focused on more localized movements than those typically made by grizzly bears moving between habitats. Regardless, the Preferred Alternative would result in negligible changes to the existing road within the Petty Creek wildlife movement corridor. There is a small amount of private land within the Petty Creek wildlife movement corridor that could be developed at some point in the future (Figure 8). Because the paving would extend only a small distance into the designated corridor, there would be no measurable increase in fragmentation of this corridor from the Preferred Alternative. The change in the rate of development attributable to the Preferred Alternative has been discussed previously and those conclusions would apply to the Petty Creek wildlife movement corridor.

*Conclusion.* Because bears only occur incidentally in the project area and the factors that influence movement, survival, and habitat use (direct mortality, displacement and avoidance, habitat fragmentation, and direct habitat loss, and human development) it is anticipated that the Preferred Alternative would have minimal impact on the species or on the area that may function as a linkage between the recovery ecosystems of grizzly bear populations. Although the Preferred Alternative may increase the rate at which private land in the area is developed, the same amount of land would be developed overall as under the No Action Alternative. Because the area is only used intermittently at most by grizzly bears, this is considered a minor adverse affect. The Preferred Alternative would not interfere with the recovery of this species.

**Gravel Alternative**

The Gravel Alternative would require the same construction efforts and follow the same alignment as the Preferred Alternative. Because of this, the Gravel Alternative would have the same direct affects on habitat and habitat fragmentation as the Preferred Alternative. The gravel surface would not be expected to result in an increase in development rate like the Preferred Alternative. Because of this, the Gravel Alternative would not result in increased rate of fragmentation within the NCDE Sellway-Bitterroot ecosystem linkage or the Petty Creek wildlife movement corridor when compared to the No Action Alternative. Overall, the same amount of land would be developed under either the No Action or Gravel alternatives and buildout would occur at the same rate. Therefore, because the area is used intermittently at most by grizzly bears, small amounts of habitat would be lost, and development rates and resulting fragmentation of habitat

would be the same, the Gravel Alternative is considered to have a minor adverse affect on this species. The Gravel Alternative would not interfere with the recovery of this species.

#### 4.4.2.6 Bull Trout

**Affected Environment**

The USFWS listed the Columbia River and Klamath River distinct population segments of bull trout (*Salvelinus confluentus)* as threatened on June 10, 1998 (63 Federal Register [FR] 31647). Bull trout are native to the Pacific Northwest and Canada and were historically abundant and widespread throughout Pacific Northwest drainages. Even though their numbers and distribution have been reduced, bull trout still occur throughout much of the Columbia River basin, in the Klamath River in Oregon, in the headwaters of the Saskatchewan River in Alberta, and the MacKenzie River system in Alberta and British Columbia, Canada.

Bull trout exhibit both migratory and resident life-history strategies throughout much of their range. The two forms may coexist, and one particular life-history form may dominate under stable conditions, while the other may be favored under changing environmental conditions (Rieman and McIntyre 1993). Juveniles spend 1 to 4 years in the tributaries before migrating to a lake (this is the adfluvial life history), to a river (the fluvial life history), or to saltwater (anadromous life history) to mature (Rieman and McIntyre 1993). Resident fish often remain in tributary streams or smaller watersheds throughout their life cycle (Rieman and McIntyre 1993).

Five habitat characteristics are reported to be important for bull trout persistence: cover, substrate, composition, channel stability, temperature and migratory corridors (Rieman and McIntyre 1993). Bull trout are adapted to cold water, and temperatures above 59° F are believed to limit bull trout distribution (Rieman and McIntyre 1993). Spawning begins in the fall when daily maximum temperatures drop to levels of 48° F to 50° F (63 FR 31647). Spawning adults use stable, low-gradient areas with gravel/cobble substrate and water depths from 4 to 24 in. and velocities from 0.3 to 2.0 feet per second (fps). Proximity to cover for adult fish before and during spawning is an important habitat component. Five to 25 percent of Petty Creek does not have tree cover, a factor that contributes to increased water temperatures.

The subpopulation of bull trout in Petty Creek is low compared with historic levels, however its numbers are not alarmingly low nor are they in a rapid state of decline. The two life-history forms of bull trout, migratory and resident, may coexist, however, Petty Creek provides habitat for mostly resident populations of bull trout. Migratory bull trout from the main stem of the Clark Fork River spawn in Petty Creek (MBTSG 1996; Spaulding 2004). However, the number of fish entering Petty Creek is low because bull trout are rare in the main stem Clark Fork River (MBTSG 1996). Fish enter Petty Creek in June during low flows to base flows (below the ground surface) (Spalding 2004). Fluvial fish travel upstream and stay in the upper reaches and tributaries to spawn in the fall (Spaulding 2004).

Most tributaries to Petty Creek are accessible to fish, and bull trout may be present in these systems as well. Low levels of presence in South Fork, East Fork, and West Fork Petty Creek are presumed because bull trout, although rare, are found in the main stem of Petty Creek.

Bull trout densities at about MP 3 to 4 in 1981 were estimated by the USFS to be at 0.8 fish per 330 $ft^2$ (USFS 2003). Electro-fishing surveys conducted in 1987, 1992, and 1994 identified bull trout but resulted in no estimate of population density (USFS 2003).

The crossing structures along Petty Creek and its tributaries allow fish passage during some conditions, however, some structures do not allow passage for all life stages of fish, restricting available habitat for fish at some life stages. These structures include the crossings at Madison and Spring Gulches, West Fork Petty, Ed's, Guss, Johns, Mikes, and East Fork Petty Creeks.

The Lower Petty Creek watershed includes road densities greater than 1.7 mi per square mile, and greater than 30 percent of the stream length in the watershed is within 300 ft of the road. The Upper Petty Creek watershed includes road densities between 0.7 and 1.7 mi per square mile, and between 15 and 30 percent of the stream length in the watershed is within 300 ft of the road. These conditions have contributed to undesirable levels of sediment in the creek and toward an impaired water quality designation by the MDEQ (2008).

**Project Impacts**.

**No Action Alternative**. The No Action Alternative would continue to deliver about 433 tons of sediment into Petty Creek thereby negatively impacting bull trout. Suspended and deposited sediment in streams can affect adult trout by causing changes in their behavior, reducing available habitat, increasing stress, and reducing food supply. Fish forage less efficiently in sediment laden water, their habitat is degraded as pools fill with material, and fine sediments can smother eggs and ruin spawning habitat (Waters 1995). In addition, sediment loading in streams results in embedded gravel and reduced production of the benthic macroinvertebrates upon which bull trout and other fish forage (Waters 1995). The road's proximity to Petty Creek, its insufficient vegetative buffer in various areas, its undersized stream crossings, and its dusty surface would continue to transport sediment to Petty Creek and its tributaries. Additionally, maintenance activities such as grading the road surface would persist in encroaching nearer to Petty Creek and further contribute to sedimentation.

While there are no absolute barriers to fish passage along the Petty Creek corridor, several of the existing crossing structures inadequately provide passage for all life stages of bull trout. These conditions would not be improved with the No Action Alternative, and the structures would continue to restrict available habitat for bull trout at some life stages.

**Preferred Alternative**. To aid in determining the potential affects the proposed alternative would have on bull trout in the Petty Creek drainage, the USFWS Matrix of Diagnostics/Pathways and Indicators (matrix) was employed (Appendix 4). The matrix evaluates biological and habitat conditions through 24 indicators grouped under eight diagnostics/pathways.

Removal of vegetation, exposed soils, embankment reconstruction, and the temporary impacts of replacing stream-crossing structures during construction would result in temporary increases in sediment delivery and turbidity in streams. Suspended and deposited sediment in streams can affect adult trout by causing changes in their behavior, reducing available habitat, increasing stress, and reducing food supply. High levels of suspended sediment can result in the loss of visual capability, leading to reduced feeding and a depressed growth rate (Waters 1995). Large amounts of deposited sediment can deplete benthic invertebrate populations, reducing the food supply for fish. Sediment can fill pools and blanket the structural cover for fish, reducing the available habitat for adult salmonids (Waters 1995). It can also affect habitat for juvenile salmonids by filling pools and inter-gravel spaces. Fine sediments in stream gravels affect incubating eggs and developing alevins (recently hatched embryos that still have a yolk sac) by inhibiting dissipation of metabolic wastes. Fine sediments in stream gravels may also abrade or dislodge developing embryos and emerging fry, delay the rate of egg hatching, and reduce survival during incubation (Herrera 2004a). Additionally, increased turbidity and sediment movement in streams could displace adult fish to other unaffected portions of the stream.

With the Preferred Alternative, these increases in sedimentation would be temporary, occurring during construction and until vegetation is re-established, which is expected to be approximately 3-5 years. To lessen the impacts of construction related sediment, appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is re-established. All instream work would occur at the times determined by the USFWS, MFWP, and USFS biologists.

The existing compacted road surface already has a relatively high surface runoff coefficient compared with the surrounding natural vegetation. The runoff coefficient from the paved surface section would be somewhat higher, potentially increasing road bank erosion and sedimentation. Overall, the Preferred Alternative would reduce sedimentation by about 406 tons per year. Where feasible and where the two are in close proximity, the road would be realigned slightly away from the creek and a vegetated buffer planted. Existing riprap would be left undisturbed to avoid unnecessary sedimentation, and native saplings would be planted within the riprap. In the long term, these elements are expected to reduce overall sedimentation in the Petty Creek drainage.

As mentioned above, cool water temperature is an important characteristic for bull trout, and tree cover is an important habitat component that helps to keep temperatures low. Although 5 to 25 percent of Petty Creek is not tree covered, the proposed road would

generally remain within the existing road alignment and would therefore not alter the vegetation coverage associated with the creek nor associated water temperatures.

Accidental spills or leaks of materials used during construction may result in impacts on fish and stream habitat. Materials that could accidentally enter a stream or wetland during construction include petroleum fuels, lubricants, or concrete leachate and other substances used for roadway paving. The entry of these substances into a stream or wetland could result in temporary displacement of fish or fish mortality if a lethal concentration of the substance reaches the stream or wetland. The BMPs and spill control plans that would be developed and implemented as part of the Section 404 of the Clean Water Act and Montana Pollution Discharge Elimination System permitting processes would help prevent this from occurring.

As described above, several of the existing crossing structures inadequately provide passage for all life stages of fish. To improve habitat, all new structures would be designed for passage of all life stages. All crossings would include a natural bank-full stream configuration, and substrate would be placed within the crossing to simulate the natural streambed. No additional stream crossing structures would be constructed.

Detours and diversion channels could result in temporary displacement of fish, loss of habitat, and possible creation of a migration barrier during construction. The duration of these events would be made as brief as possible. These effects would be temporary and should result in only short-term effects on fish.

The current adverse impacts are expected to lessen in the long-term from the Preferred Alternative because all crossing structures in fish-bearing streams would be designed to allow passage during all life stages of fish, drainage facilities would be improved, and where feasible, the roadway would be moved away from Petty Creek and a vegetative buffer planted. In the long-term these design elements would have positive effects on bull trout in Petty Creek and its tributaries.

Because construction activities associated with the proposed road improvements would require in-water work resulting in temporary sedimentation to Petty Creek and its tributaries and although implementation of BMPs and timing restrictions would reduce the effects of sedimentation on bull trout, construction activities are still likely to adversely affect bull trout in the short term during construction and until vegetation would be re-established. Therefore, the WFLHD's effects determination was *may affect, likely to adversely affect* bull trout because of construction activities associated with the proposed project. However, WFLHD further concluded, despite the project's short-term negative impacts, that those impacts would not substantially reduce the potential for persistence or recovery of this population of bull trout. The USFWS concurred with these conclusions in their 2006 Biological Opinion (Appendix 3).

**Gravel Alternative**. To aid in determining the potential affects the proposed alternative would have on bull trout in the Petty Creek drainage, the USFWS Matrix of Diagnostics/Pathways and Indicators (matrix) was employed (Appendix 4). The matrix

evaluates biological and habitat conditions through 24 indicators grouped under eight diagnostics/pathways.

Removal of vegetation, exposed soils, embankment reconstruction, and the temporary impacts of replacing stream-crossing structures during construction would result in temporary increases in sediment delivery and turbidity in streams. Suspended and deposited sediment in streams can affect adult trout by causing changes in their behavior, reducing available habitat, increasing stress, and reducing food supply. High levels of suspended sediment can result in the loss of visual capability, leading to reduced feeding and a depressed growth rate (Waters 1995). Large amounts of deposited sediment can deplete benthic invertebrate populations, reducing the food supply for fish. Sediment can fill pools and blanket the structural cover for fish, reducing the available habitat for adult salmonids (Waters 1995). It can also affect habitat for juvenile salmonids by filling pools and inter-gravel spaces. Fine sediments in stream gravels affect incubating eggs and developing alevins (recently hatched embryos that still have a yolk sac) by inhibiting dissipation of metabolic wastes. Fine sediments in stream gravels may also abrade or dislodge developing embryos and emerging fry, delay the rate of egg hatching, and reduce survival during incubation (Herrera 2004a). Additionally, increased turbidity and sediment movement in streams could displace adult fish to other unaffected portions of the stream.

With the Gravel Alternative, these increases in sedimentation would be temporary, occurring during construction and until vegetation is re-established, which is expected to be approximately 3-5 years. To lessen the impacts of construction related sediment, appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is re-established.

Overall, the Gravel Alternative would reduce sedimentation by about 217 tons per year. Where feasible and where the two are in close proximity, the road would be realigned slightly away from the creek and a vegetated buffer planted. Existing riprap would be left undisturbed to avoid unnecessary sedimentation, and native saplings would be planted within the riprap. In the long term, these elements are expected to reduce overall sedimentation in the Petty Creek drainage.

As mentioned above, cool water temperature is an important characteristic for bull trout, and tree cover is an important habitat component that helps to keep temperatures low. Although 5 to 25 percent of Petty Creek is not tree covered, the proposed road would generally remain within the existing road alignment and would therefore not alter the vegetation coverage associated with the creek nor associated water temperatures.

Accidental spills or leaks of materials used during construction may result in impacts on fish and stream habitat. Materials that could accidentally enter a stream or wetland during construction include petroleum fuels, lubricants, or concrete leachate and other substances used for roadway paving. The entry of these substances into a stream or wetland could result in temporary displacement of fish or fish mortality if a lethal

concentration of the substance reaches the stream or wetland. The BMPs and spill control plans that would be developed and implemented as part of the Section 404 of the Clean Water Act and Montana Pollution Discharge Elimination System permitting processes would help prevent this from occurring.

As described above, several of the existing crossing structures inadequately provide passage for all life stages of fish. To improve habitat, all new structures would be designed for passage of all life stages. All crossings would include a natural bank-full stream configuration, and substrate would be placed within the crossing to simulate the natural streambed. No additional stream crossing structures would be constructed.

Detours and diversion channels could result in temporary displacement of fish, loss of habitat, and possible creation of a migration barrier during construction. The duration of these events would be made as brief as possible. These effects would be temporary and should result in only short-term effects on fish.

The current adverse impacts are expected to lessen in the long-term from the Gravel Alternative because all crossing structures in fish-bearing streams would be designed to allow passage during all life stages of fish, drainage facilities would be improved, and where feasible, the roadway would be moved away from Petty Creek and a vegetative buffer planted. In the long-term these design elements would have positive effects on bull trout in Petty Creek and its tributaries.

Because construction activities associated with the proposed road improvements would require in-water work resulting in temporary sedimentation to Petty Creek and its tributaries and although implementation of BMPs and timing restrictions would reduce the effects of sedimentation on bull trout, construction activities are still likely to adversely affect bull trout in the short term during construction and until vegetation would be re-established. Therefore, the WFLHD determines the Gravel Alternative *may affect but is not likely to adversely affect* bull trout because of construction activities associated with the proposed project. However, WFLHD further concluded, despite the project's short-term negative impacts, that those impacts would not substantially reduce the potential for persistence or recovery of this population of bull trout.

#### 4.4.2.7 Bull Trout Critical Habitat

**Affected Environment**. In September 2005, the USFWS issued a final ruling designating critical habitat for the Klamath River, Columbia River, Jarbidge River, Coastal-Puget Sound, and Saint Mary-Belly River populations of bull trout pursuant to the ESA (70 FR 56212). Within the project corridor, Petty Creek from its confluence with the Clark Fork River upstream 11.6 mi [18.7 km] provides spawning and rearing habitat for the Petty Creek local population of bull trout (MBTSG 1996) and was included in the September 2005 critical habitat designation for bull trout. The final rule of designation of critical habitat was effective October 26, 2005. On July 1st, 2009, the court granted a remand of the 2005 rule. A new proposed rule was issued January 14th, 2010 and directed that the existing critical habitat rule shall remain in effect until completion of the remand

decision. Petty Creek as described above is still within the new proposed rule. (75 FR 2270).

Critical habitat consists of physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection. These physical and biological features include but are not limited to, space for individual and population growth and for normal behavior; food, water, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing of offspring; and habitats that are protected from disturbance or are representative of the historical geographic and ecological distributions of species. All areas designated as critical habitat for bull trout are within the historical geographic range of the species and contain one or more of these physical or biological features essential to the conservation of the species (75 FR 2270). Primary constituent elements (PCEs) for bull trout were determined from studies of their habitat requirements, life-history characteristics, and population biology. The PCEs may include but are not limited to features such as spawning sites, feeding sites, and water quality or quantity. An area need not include all of the PCEs to qualify for designation as critical habitat.

Action agencies authorizing activities within lands occupied by bull trout are mandated by the ESA to consider effects on bull trout that would likely occur as a result of management actions. Agency biologists use the Matrix of Diagnostics/Pathways and Indicators (matrix) for bull trout to evaluate and document baseline conditions and to determine the likelihood of “take” of bull trout. Analysis of the matrix habitat indicators provides a very thorough analysis of the existing baseline condition and potential impacts on bull trout habitat (Appendix 4). While assessing potential effects on bull trout as a species, agency biologists concurrently provide an analysis of effects on the PCEs for bull trout critical habitat and related habitat indicators.

The crosswalk provides information supporting the rationale that the PCEs for bull trout critical habitat are thoroughly addressed in the current matrix (Appendix 4) analysis and that environmental baseline and determination for effects on the species consists of biological and habitat components addressing in total the PCEs listed in the final rule designating critical habitat (75 FR 2270).

**Project Impacts**

**No Action**. Based on the site-specific environmental baseline conditions of bull trout habitat for Petty Creek and linkage to the PCEs (Appendix 4) considering those habitat indicators and other factors as necessary, all PCEs for Petty Creek throughout the study corridor are functioning but are in less than optimal condition.

**Preferred Alternative**. The analysis for the Preferred Alternative indicates that the activities associated with this alternative would have short-term adverse affects on the habitat indicators for sediment and substrate embeddedness during construction as stream crossing structures are replaced, slopes are exposed, and road fill is placed, all of which would likely increase sediment to surrounding waters (Appendix 4). Application of

BMPs would help to reduce these impacts, and long-term improvements of these indicators and to spawning habitat quality and water supply (PCEs 3 and 8) is expected with reduced sediment, improvement of drainage facilities, and where feasible, moving the roadway away from Petty Creek and planting a vegetative buffer.

While the Preferred Alternative would result in short-term negative impacts during construction, these impacts would not change the functioning status of the PCEs in Petty Creek. *No destruction or adverse modification* of bull trout critical habitat would occur as a result of the Preferred Alternative. Therefore, the USFWS concurred that the project is not likely to destroy or adversely modify designated bull trout critical habitat.

**Gravel Alternative**. Construction of the Gravel Alternative would have similar impacts to bull trout critical habitat as the Preferred Alternative. However, the long-term impacts would not be as optimal as the Preferred Alternative as this alternative would result in more sediment delivery over the long term according to the Sediment Analysis

### 4.4.3 Forest Service Sensitive Fish and Wildlife Species

**Affected Environment**. The inventory conducted by Herrera (2004b) also examined USFS sensitive species. The list of species considered to be "sensitive" was revised in 2010 by the USFS. WFLHD consulted with the USFS personnel on the revised list and the new information is presented in this section. There are 14 USFS fish and wildlife sensitive species known or suspected in the LNF (Table 6). There are five species which according to the USFS district biologists do not have habitat in the project area and are not expected to occur. These species; the Coeur d'Alene salamander, common loon, fisher, wolverine, and northern bog lemming are not discussed further in this section. Only those Forest Service sensitive species which occur in the project area are discussed below. Refer to Section 4.7 "Vegetation" for Forest Service sensitive plant species. Although the bald eagle and gray wolf are delisted and therefore considered Forest Service sensitive species, they are discussed under the Special Status Species since WFLHD previously consulted on them with USFWS.

*American Peregrine Falcon.* Peregrine falcons (*Falco peregrinus anatum)* are considered locally rare in portions of its range; and in Montana due to its rarity and vulnerability to extinction, breeding habitat is considered imperiled or critically imperiled (MNHP 2006). Breeding and wintering habitat is scattered widely throughout western Montana and in a few locations in north and south central Montana (Hart et al. 1998). Peregrine falcons occur in low densities across the LNF as breeding individuals and seasonal migrants. Results of active nests monitored on the LNF indicate the species is reproducing successfully in the LNF and across western Montana as a whole (Sumner 2004-2005).

The peregrine is a summer resident in western Montana, and it nests high on cliff ledges located within one mile of water (Maj and Torquemada 1995). In the Greater Yellowstone Ecosystem river gorges near mountain cliffs are typically used by the species (Hart et al. 2001). Peregrines often return to the same cliff to nest but will use

alternate nests from one year to the next. Although there appears to be suitable habitat for peregrine falcons on rock cliffs at high elevations above the project area, historical and current peregrine falcon activity is concentrated at Petty Rock (Kennedy 2010). Petty Rock is the large monolith located on the Clark Fork River southwest of the mouth of Petty Creek. The pair of peregrine falcons at this site has been monitored as part of the management plan implemented after the species was removed from the federal list of threatened and endangered species.

*Black-backed Woodpecker*. The black-backed woodpecker (*Picoides arcticusi)* in Montana is associated with early successional burned forests of mixed conifers, lodgepole pines, Douglas-firs, and subalpine spruce (MNHP and MFWP 2004). They are more numerous in lower elevation Douglas-fir and pine forest habitats than in higher elevation sub-alpine spruce or mixed conifer forest habitats (MNHP and MFWP 2004).

**Table 6. U.S. Forest Service Sensitive Fish and Wildlife Species within the Lolo National Forest**

| Common Name | Scientific Name | Forest Status[1] |
|---|---|---|
| **Wildlife** | | |
| American peregrine falcon | *Falco peregrinus anatum* | Known |
| Black-backed woodpecker | *Picoides arcticusi* | Known |
| Coeur d'Alene salamander | *Plethodon idahoensis* | Known |
| Common loon | *Gavia immer* | Known |
| Fisher | *Martes pnnanti* | Known |
| Flammulated owl | *Otus flammeolus* | Known |
| Harlequin duck | *Histrionicus histrionicus* | Known |
| North American wolverine | *Gulo gulo luscus* | Known |
| Northern bog lemming | *Synaptomys borealis* | Known |
| Northern goshawk | *Accipiter gentiles* | Known |
| Northern leopard frog | *Rana pipiens* | Suspected |
| Townsend's big-eared bat | *Corynorhinus townsendii* | Known |
| Western toad | *Bufo boreas* | Known |
| | | |
| **Fish** | | |
| Westslope cutthroat | *Oncorhynchus clarkii lewisi* | Known |

[1]Known or Suspected refers to the occurrence of a particular species within the LNF, not necessarily the project area.

Black-backed woodpeckers have been reported in the LNF. Several areas of burned stands occur in the habitats surrounding the project area and may be used by this species. These habitats are located on the slopes above the project corridor at MP 5.1 and MP 12 in the Douglas-fir/mallow ninebark habitat (Kennedy 2010).

*Flammulated Owl*. Previously, habitat for flammulated owls (*Otus flammeolus*) in Montana was assumed on the basis of one project in the Bitterroot Valley. According to this study, flammulated owls are associated with mature and old growth drier ponderosa pine/Douglas-fir forests and in landscapes with higher proportions of suitable forest and forest with low to moderate canopy closure (MNHP and MFWP 2004). They are generally absent from warm and humid pine and ponderosa pine/Douglas-fir forests (MNHP and MFWP 2004).

Flammulated owls have been reported in the LNF and may occur in all of the forest habitats identified within the project area but at older stages of growth than those present within the project area. The habitat types in the project area are likely to be too young to provide suitable habitat (Kennedy 2010).

*Harlequin Duck*. In Montana, most harlequin ducks (*Histrionicus histrionicus*) inhabit fast-moving, low gradient, clear, mountain streams (MNHP and MFWP 2004). Riparian vegetation does not appear to affect their selection of habitat; however, there is a positive correlation between their choice of habitat and the presence of overhanging vegetation (MNHP and MFWP 2004). Suitable habitat is available for this species along Petty Creek, but breeding has not been reported (Kennedy 2010).

*Northern Goshawk*. The northern goshawk (*Accipiter gentiles)* occurs in a variety of forested areas throughout North America (Squires and Reynolds 1997). Some remain in a breeding area year-round, while others begin migration from breeding grounds in late September and continue through November (Ibid.). In winter, limited information indicates goshawks use a greater variety of habitats than in summer (Squires and Kennedy 2006).

Few studies of goshawks have been conducted in Montana. Nesting habitat in Montana tends to include predominantly mature large tract conifer forests with a high canopy cover (69 percent), relatively steep slopes (21 percent), and little to sparse undergrowth (MNHP and MFWP 2004). Goshawks are most likely to occupy the following forest habitat types within the project area: Douglas-fir/snowberry and Douglas-fir/pinegrass (Kennedy 2010).

*Northern Leopard Frog*. The northern leopard frog (*Rana pipiens)* has been reported in low-elevation and valley-bottom ponds, spillway ponds, beaver ponds, livestock reservoirs, lakes, creeks, pools in intermittent streams, warm water springs, potholes, and marshes (MNHP and MFWP 2004). Northern leopard frogs have been reported in the LNF. Petty Creek and associated riverine wetlands within the project area would be considered suitable habitat for this species (Kennedy 2010).

*Townsend's Big-eared Bat*. Although habitat used by the Townsend's big-eared bat (*Corynorhinus townsendii)* has not been studied in Montana, they are reportedly similar to habitats identified in studies in other states, which included caves and abandoned mines used for maternity roosts and winter residences (MNHP and MFWP 2004). Forest habitats near roosts include Douglas-fir, lodge-pole pine and ponderosa pine forests, and black cottonwood riparian areas. The use of habitats in Montana by the Townsend's big-eared bat may be restricted as most caves and mines appear to be too cool in summer for use as maternity roosts. Townsend's big-eared bats have been reported in the LNF, and suitable foraging habitat is available within the project area and includes all black cottonwood riparian habitats and Douglas-fir forest habitats. Roosting and maternity sites are not present within the project area (Kennedy 2010).

*Western Toad*. The western toad (*Bufo boreas*) occupies a wide range of habitats including low-elevation beaver ponds, reservoirs, streams, marshes, lake shores, potholes, wet meadows, and marshes; and high elevation ponds, fens, and tarns at or near the tree line (MNHP and MFWP 2004). In Montana, toads have been documented in open canopy ponderosa pine woodlands and closed canopy dry conifer forest in Sanders County, willow wetland thickets and aspen stands bordering Engelmann spruce stands in Beaverhead County, and mixed ponderosa pine/cottonwood/willow sites or Douglas-fir/ponderosa pine forests in Ravalli and Missoula counties (MNHP and MFWP 2004). Western toads have been reported in the LNF. Petty Creek and associated riverine wetlands within the project area would be considered suitable habitat for this species (Kennedy 2010).

*Westslope Cutthroat Trout*. Westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) seek out gravel substrate in riffles and pool crests for spawning habitat. Their most suitable spawning and rearing streams tend to be cold and nutrient poor. Resident populations of westslope cutthroat trout are present in Petty Creek and the following tributaries: East Fork Petty, South Fork Petty, West Fork Petty, Bruce, Johns, Printers, Garden, Bill, and Mike Creeks (MNHP 2010). Westslope cutthroat trout are also expected to be present in the stream reaches within the study corridor.

**Project Impacts**.

**No Action Alternative**. The No Action Alternative is not expected to have impacts on the Coeur d'Alene salamander, common loon, fisher, northern bog lemming, or North American wolverine because these species are not known to occur in or near the project area.

Impacts to black-backed woodpecker, flammulated owl, harlequin duck, northern goshawk, American peregrine falcon, and Townsend's big-eared bat from this alternative would remain unchanged from existing conditions and minor in nature with the No Action Alternative.

Under the No Action Alternative, sediment resulting from the roadway would not be reduced, and the crossing structures would not be improved to address fish species passage. Sedimentation of the surrounding waterways would likely continue, and certain reaches of these waterways would remain unavailable to various life stages of fish species. This would continue to adversely affect local populations of westslope cutthroat trout, northern leopard frog, and western toads.

**Preferred Alternative**. The Preferred Alternative is not expected to have impacts on the Coeur d'Alene salamander, common loon, fisher, northern bog lemming, or North American wolverine because these species are not known to occur in or near the project area.

Temporary impacts from increased construction noise may affect black-backed woodpecker, flammulated owl, harlequin duck, northern goshawk, American peregrine

falcon, and Townsend's big-eared bat. These impacts would be temporary and minor in nature. No long-term impacts to these species are expected as a result of the project.

Construction impacts in the form of increased sediment to adjacent waterways and wetlands may affect the northern leopard frog, western toad, and westslope cutthroat trout. These impacts would be temporary, and the severity of the impacts would be reduced through implementation of BMPs to control sediment transport. However, implementation of this alternative would have long-term beneficial impacts to these species by reducing sedimentation and providing for passage at all life stages of fish species.

**Gravel Alternative**. The short- and long-term impacts from the Gravel Alternative are comparable to those anticipated from the Preferred Alternative. However, the long term benefits would not be as great to the water dependent species as the Preferred Alternative since this alternative would only realize about half of the sediment reduction to the Preferred Alternative as modeled.

### 4.4.4 Cumulative Impacts

*Context.* The analysis area for cumulative impacts on fish and wildlife for this project is the 343,932-ac Petty Creek watershed. This area was selected because it is a reasonable area at which it is still feasible to assess cumulative effects and is also a level at which many biological resources function. Many wildlife species cross watersheds during routine movements, but a detailed home-range based analysis was beyond the scope of this EA.

*Residual Effects.* The only elements of the proposed project brought forward into the cumulative analysis are the residual effects. These are the affects of the proposed project after implementation of avoidance, minimization, and mitigation measures. For the proposed project residual effects are limited to direct wildlife mortality, an increased rate of development associated with the Preferred Alternative, minor loss of vegetation, habitat fragmentation, improvements to fish passage, and sediment input into Petty Creek.

Past activities include construction, use, and maintenance of the existing Petty Creek road, construction and uses of residential property, timber sales and related road building, agricultural activities, wildfire, and recreational trail construction and use. Present and reasonably foreseeable future activities include ongoing construction, maintenance, and uses of residential property and roads, ongoing use and maintenance of Petty Creek Road, agricultural activities, logging activities, use of recreational trails, wildfire, implementation of a TMDL, and the acquisition and plans for conservation of MLP lands.

*Overview.* These past, present, and reasonably foreseeable future activities would impact terrestrial species through habitat fragmentation and loss, associated human development, direct mortality, and displacement and avoidance. These impacts would come in the form

of direct mortality from causes such as hunting pressure and auto collisions; displacement from and avoidance of suitable habitat that is in proximity to human activities; and direct habitat loss and habitat fragmentation associated with human development. Some activities on MLP lands, such as sustainable timber harvest and hunting, could occur and might have adverse impacts to wildlife species. However one of the main purposes of the MLP lands is to conserve wildlife and fisheries habitat. Wildfire is a reasonably foreseeable landscape-scale event that has a multitude of effects on both terrestrial and aquatic ecosystems.

Although pressures associated with these activities have and would affect wildlife species, management of the area would help to alleviate some of these impacts. Currently large portions of the land within the Petty Creek watershed (approximately 90 percent) are relatively protected from residential development. In addition to federal and state lands, this includes 10,000 ac of MLP-acquired Plum Creek Timber Land in the watershed. Refer to Section 4.1 for additional information pertaining to land use in the vicinity of the project.

**No Action**

Combined with the past, present, and reasonably foreseeable future actions, the No Action Alternative would have the least impacts to terrestrial wildlife species. No habitat would be lost, habitat fragmentation from development would occur at the existing rate, and direct mortality would remain unchanged. In combination with the past, present, and reasonably foreseeable future actions the No Action Alternative would result in the most unfavorable impacts to aquatic species in the Petty Creek watershed. In consideration of the above, the incremental impacts from the No Action Alternative when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse effects to fish and wildlife species or affect the ability of these resources to sustain themselves.

**Preferred Alternative**

The residual effects that could contribute to cumulative impacts on fish and wildlife species from the Preferred Alternative include loss of habitat, direct impacts from vehicle mortality, fragmentation caused by the project itself, and an increased rate of development which could fragment habitat.

*Direct Effects*. The residual effects of habitat loss would be limited to a few acres converted from forest land to road or road cuts along the length of the Preferred Alternative. Because the habitat lost is only 6 ac in a 343,000-ac watershed, this loss of habitat is not a considerable contribution to overall habitat changes when taken in context with other similar habitat modifying activities such as timber harvest which would affect hundreds of acres at a time.

Direct mortality resulting from vehicle-strike would continue to occur on the road regardless of signage and speed limits. The magnitude of this affect on the populations of local species is impossible to predict because local populations sizes and detailed mortality rate data is unknown. Because mortality rates are not expected to be

substantially different than under existing conditions, the cumulative contribution of the Preferred Alternative is not considerable.

*Petty Creek Wildlife Movement Corridor*. Combined with the past, present, and reasonably foreseeable future actions, the Preferred Alternative would pave and otherwise improve the road that enters into the movement corridor. The area that would be paved extends about 1 mile into the movement corridor; the rest of the project within the corridor would be a gravel surface. Given the overall size of the corridor the Preferred Alternative would improve only a very small segment of the existing road. The Preferred Alternative would result in an increased rate of development within the Petty Creek watershed. There is some private land immediately adjacent to Petty Creek Road within the movement corridor that could be developed sooner under this alternative than if the road were not improved. However, the only residual effect of the Preferred Alternative would be an increase at the rate at which these parcels would be developed, not if they would be developed. Other past, present, and reasonably foreseeable activities that would also contribute to fragmentation of this corridor include an extensive network of private and National Forest roads, timber harvest, and wildfire.

*Conclusion.* When taken together with past, present, and reasonably foreseeable activities, the residual effects of the Preferred Alternative would not have a considerable contribution to cumulative impacts to wildlife, wildlife habitat, or wildlife movement corridors.

*Aquatic Resources.* Except for the acquisition of the MLP lands and implementation of a TMDL, most of these activities have or would potentially contribute to fish and wildlife impacts. For aquatic species, these activities would alter flow regimes and add sediment to water bodies. Road use and agricultural activities contribute pollutants such as petroleum products, insecticides, animal waste, and fertilizers. Many of these activities also remove vegetation that helps control erosion, filter pollutants, and keep water temperatures low. These elements could negatively affect aquatic species. One of the larger residual effects of the Preferred Alternative would be a substantial reduction in sediment input into Petty Creek. While this would be considered a beneficial effect, in the context of the Petty Creek watershed and other sediment producing activities (existing forest roads, timber harvest, wildfire, agriculture, etc) the contribution of the Preferred Alternative is beneficial, but no considerable in the cumulative context.

In combination with the past, present, and reasonably foreseeable future actions, the Preferred Alternative would result in the most favorable affects to aquatic species in the Petty Creek watershed. In consideration of the above, the incremental impacts from the Preferred Alternative when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse effects to fish or other aquatic resources or affect the ability of these resources to sustain themselves.

**Gravel Alternative**

The residual effects that could contribute to cumulative impacts on fish and wildlife species from the Gravel Alternative include loss of habitat, direct impacts from vehicle

mortality, fragmentation caused by the project itself, an increased rate of development which could fragment habitat, improved passage for aquatic organisms, and sedimentation of Petty Creek.

*Direct Effects.* The direct cumulative effects of the Gravel Alternative would be the same as those discussed above for the Preferred Alternative. The Gravel Alternative follows the same alignment and would have the same cumulative contribution to habitat loss and vehicle-strike mortality.

*Petty Creek Wildlife Movement Corridor.* This alternative would improve the existing road including the area within the movement corridor. However, there would be no residual change from existing conditions because the surface would remain gravel. Also, this alternative would not result in an increased rate of development. Those private parcels within the movement corridor would develop over time at a rate comparable to the No Action Alternative. Other past, present, and reasonably foreseeable activities that would also contribute to fragmentation of this corridor include an extensive network of private and National Forest roads, timber harvest, and wildfire. Combined with these actions, the Gravel Alternative would not have a considerable contribution to the cumulative effects on the Petty Creek wildlife movement corridor.

*Conclusion.* In consideration of the above, the residual effects of the Gravel Alternative when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse effects to wildlife, wildlife habitat, wildlife movement corridors, or affect the ability of these resources to sustain themselves.

*Aquatic Resources.* Except for the acquisition of the MLP lands and implementation of a TMDL, most of the past, present, and reasonably foreseeable actions have or would potentially contribute to degradation of aquatic habitat. For aquatic species, these activities would alter flow regimes and add sediment to water bodies. Road use and agricultural activities contribute pollutants such as petroleum products, insecticides, animal waste, and fertilizers. Many of these activities also remove vegetation that helps control erosion, filter pollutants, and keep water temperatures low. These activities could negatively affect aquatic species. Implementation of the Gravel Alternative would result in improved passage conditions for fish moving through the road crossings. It would also result in a reduction in sediment loading over existing conditions (but not as large a reduction as the Preferred Alternative). While this would be considered a beneficial effect, in the context of the Petty Creek watershed and other sediment producing activities (existing forest roads, timber harvest, wildfire, agriculture, etc) the contribution of the Preferred Alternative is beneficial, but no considerable in the cumulative context.

In combination with the past, present, and reasonably foreseeable future actions the Gravel Alternative would result in the favorable affects to aquatic species in the Petty Creek watershed. In consideration of the above, the incremental impacts from the Gravel Alternative when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative adverse effects to fish or other aquatic resources or affect the ability of these resources to sustain themselves.

### 4.4.5 Mitigation

The following measures are proposed to reduce the levels of impact to wildlife resources and would apply to either the Preferred or Gravel Alternatives:

- Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.
- Work in streams within the project corridor would comply with work windows that are protective of species as determined by the USFWS, MFWP, and USFS biologists.
- When feasible, the in-stream construction activities would occur “in the dry.”
- On USFS lands, no vehicle fueling or refueling operations or storage of hazardous materials that could accidentally enter a stream, would be permitted within Resource Conservation Areas (RCAs), defined as 300 ft of the top of the bank of any intermittent or perennial stream channel (Diem 2005).
- Prior to construction, a Hazardous Materials Spill Plan would be prepared to identify actions to take in the event of a spill. This plan would incorporate preventative measures such as the placement of refueling facilities and the storage and handling of hazardous materials.
- Culvert replacements in fish-bearing streams would be designed to allow passage of fish at all life stages by constructing a natural bank-full stream configuration and substrate within the crossing.
- Where culvert/bridge replacement is performed in flowing streams, sediment capture devices would be placed to deter downstream movement of sediment.
- During stream culvert replacement, natural streambed material would be replaced within the crossing structure. If applicable, large substrates would be conserved and scattered to provide “shadow rocks” (habitat and resting areas) within the crossing. The stream channel would be replaced to a natural and appropriate bank-full and floodplain configuration for the site and entering stream type.
- Drainage facilities that allow ground infiltration and provide sediment filtration from storm water runoff would be provided.
- The amount of fill material placed in water bodies and floodplains would be minimized by moving the road away from Petty Creek in areas and by providing wider stream crossing structures with a natural bank-full stream configuration.
- The project would be designed to avoid the need to relocate, realign, or recreate the Petty Creek stream channel where it flows close to the roadway corridor.

- Where feasible, the road would be shifted away from Petty Creek, leaving existing fill/riprap in place, and providing a vegetative buffer between the road and the creek.
- Electrical facilities that need to be relocated because of construction activities would be raptor-proofed to avoid electrocution of birds.
- Culverts/bridges would allow small mammal passage underneath the roadway.
- In cooperation with MFWP and USFS, warning signs would be posted along the road in areas of typically high bighorn sheep use. Also, ground disturbing construction activities would be limited in these areas between December 1 and June 30.
- In cooperation with USFWS, construction contract provisions would require contractors to keep food, garbage, petroleum products and other attractants unavailable to animals such as bears during construction.

Because the proposed project would have some minor adverse affects to localized wildlife movement, the WFLHD is proposing to facilitate acquisition of up to 1,000 acres of MLP land in the project area for permanent conservation by the USFS. The final acreage to be acquired would be based on the price of the land in combination with priority acquisition that is agreeable to both the USFS and the MLP for conservation. Permanent conservation would contribute to preservation of local movement abilities and help preserve a wildlife movement corridor within the larger linkage zone between the NCDE and the Sellway-Bitterroot Ecosystem that would be free from future development.

## 4.5 Soils and Geology

### 4.5.1 Affected Environment

Soils in the Petty Creek Valley are composed of fine wind-deposited materials influenced by volcanic ash, with alluvium and colluvium derived from moderately weathered meta-sedimentary rocks. The lower 4 miles of the canyon are relatively narrow. The stream channel dominates this area, interspersed with occasional intersecting small valleys. The valley above the West Fork Petty Creek Branch is very broad, with deep alluvial deposits.

Lower canyon slopes are steep and complex, dominated by the exposed and underlying bedrock. Accordingly the slope gradients are typically over 60 percent. Soils have a moderately fine to medium texture and are well drained. Sub-soils contain 35 to 50 percent rock fragments, whose durability can be low in highly weathered bedrock.

The terrain along the route varies from steep and rough for the first 5 miles, hemmed in between steep slopes and the adjacent Petty Creek. Beyond approximately MP 6.0 at the confluence with West Fork Petty Creek, the creek opens to a broad, open valley at approximately MP 11.0. Total elevation gain is approximately 815 ft, for an average gain of 69 ft per mile.

### 4.5.2 Project Impacts

**No Action Alternative**. Because the No Action Alternative would not expose new soils or rock cuts, it would not result in new impacts to the soils and geology of the area. The existing cuts would remain.

**Preferred Alternative**. Because of the proximity of the existing road to Petty Creek, plans to widen the roadway, move it away from Petty Creek, or soften some curves would require limited cutting into some of the hillsides. The cuts generally range between 40 and 50 feet with the highest cut near Station 644+00 of 90 feet. Exposed cut slopes would be subject to wind and water erosion over the short term until vegetation is reestablished, which is expected to be approximately 3 to 5 years. Because of steep slopes and harsh growing conditions, vegetation would not establish on all of the cut slope areas; however, the objective is to maximize re-vegetation of the cut slopes by using BMPs such as but not limited to conservation of topsoil, staked wattle rolls, scattering wood debris, mulching, seeding, fertilizing, and planting native shrub and tree species where appropriate and feasible. Native species would improve the rate of re-vegetation over the long term because they are more adapted to the growing characteristics of the area. Cut slopes would be designed to emulate the naturally occurring slopes as much as possible, and vegetation pockets would be incorporated into them to lessen erosion. With BMPs in place, short-term erosion at the construction site would be minimized. Overall, the Preferred Alternative would have short-term moderate impacts and minor long-term impacts (once vegetation has established) to the soils and geology of the area.

**Gravel Alternative**. Under the Gravel Alternative, exposure of cut slopes would be similar to the Preferred Alternative therefore impacts in terms of erosion and revegetation would be the same as the Preferred Alternative.

### 4.5.3 Cumulative Impacts for the Action Alternatives

The analysis area for cumulative impacts on soils and geology for this project is the Petty Creek watershed. In addition to the identified impacts associated with the Preferred and Gravel alternatives, other past, present, and future impacts to the soils and geology have been identified and are discussed below.

Past activities include construction, use, and maintenance of the existing Petty Creek Road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include ongoing construction, maintenance, and uses of residential property and roads, maintenance of Petty Creek Road itself, agricultural activities, logging activities, and use of recreational trails. These activities have and would continue to contribute to erosion.

Along with the action alternatives, all of these activities have and would likely continue to contribute to erosion as vegetated areas are exposed or disturbed for various lengths of

time. Some of these activities increase the amount of impervious surfaces in the area, resulting in more storm water runoff with potentially higher velocities, further contributing to erosion. With permit requirements, BMPs, and improved drainage elements employed with many of these activities, this erosion would be diminished. The incremental impacts from the proposed project, when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative impacts to the soils and geologic features or affect the ability of these resources to be sustained.

### 4.5.4 Mitigation

The following measures are proposed to reduce the levels of impact to soils and geologic resources from either the Preferred Alternative or Gravel Alternative:

- Cut slopes would be designed not to exceed the angle of repose (maximum angle of slope at which soils and loose materials can remain stable without sliding).
- Topsoil would be conserved and stockpiled for later use to enhance revegetation success.
- Woody debris, obtained on site or from clearing operations, would be scattered in appropriate densities to foster shade and micro-habitat zones on cut slopes and disturbed sites where appropriate and feasible.
- Following construction, cut slopes and disturbed sites would be seeded or planted with native seed, shrubs, and/or trees at appropriate distributions and spacing.
- If appropriate, mulch, tackifier, or other erosion control method would be used to protect seeded areas. A native fast-germinating annual plant may be added to the seed mix to provide quick ground cover.
- Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.
- The staging area and waste area would be reclaimed and revegetated.

## 4.6 Wetlands

### 4.6.1 Affected Environment

A wetland inventory of the project area was conducted in June, 2004 (Herrera 2004a). The survey area encompassed a minimum of 100 ft on either side of the Petty Creek Road centerline. During the surveys, field biologists identified 24 jurisdictional wetlands encompassing 4.28 acres (ac) within the study corridor (Appendix 2). No non-jurisdictional wetlands were identified. The 24 wetlands were grouped into three hydrogeomorphic classes: riverine, depressional, and slope wetlands. Nineteen of the wetlands are riverine systems associated with Petty Creek or East Fork Petty Creek, three are depressional wetlands, and two are slope wetlands (Herrera 2004a).

Additionally, the wetlands were grouped into four classes under the USFWS wetland classification system. Seven of the wetlands are palustrine scrub-shrub, four are palustrine forested, ten are palustrine emergent, one is palustrine forested/palustrine emergent, one is palustrine scrub-shrub/palustrine emergent, and one is palustrine open-water/palustrine emergent. Generally, all of the wetlands in the project corridor provide important functions such as wildlife habitat, flood storage capacity, and sediment and pollutant filtration. However, the palustrine forested and palustrine scrub-shrub wetlands have greater structural diversity and higher value wildlife habitat (Herrera 2004a).

### 4.6.2 Project Impacts

**No Action Alternative**. Under the No Action Alternative, wetlands would not be impacted by placement of road fill. However, sediment would continue to be transported to wetlands from the existing surface, erosion and existing poor drainage, which would continue to reduce the functionality of the wetlands.

**Preferred Alternative**. A total of four wetlands (Wetlands A, Q, T, and X) would be impacted by the Preferred Alternative through the placement of road fill into the wetlands. The largest impact would be to Wetland X with about 0.03 ac of disturbance. A total of slightly less than 0.04 ac of wetlands would be encroached upon by road fill.

The impact to less than 0.04-acre encroachment is less than one percent of the total wetland acreage identified in the project area and approximately two percent of the lower functioning palustrine emergent wetland acreage identified. None of the higher functioning palustrine scrub-shrub wetlands would be encroached upon by road fill.

In the long term, paving the first 10 miles of road would increase slightly the amount of impervious surface that is currently in the project corridor. This would lead to increased storm water runoff and the potential for increased pollutant transport to the nearby wetlands. However, given that the existing compacted graveled roadway already has a relatively high storm water runoff coefficient compared with the surrounding vegetated land, paving is expected to increase runoff only slightly more than the existing graveled surface. New cut slopes may increase sediment transport to wetlands until they are sufficiently revegetated.

Temporary impacts would include delivery of sediment from exposed ground surface, potential spread of noxious and invasive weeds, and accidental spills and chemical contamination to Petty Creek and associated wetlands. With implementation of appropriate erosion and sediment control BMPs, revegetation of exposed surfaces where feasible, appropriate BMPs to control the spread of noxious weeds, and an emergency spill plan and spill containment kit, these temporary impacts would be minimized.

Improvement of drainage ditches, runoff directed into vegetated areas, and re-vegetating the newly exposed surfaces would minimize transport of sediment to wetlands. Implementation of these elements would also address the concern of increased hydrocarbons and metals from the paved surface and the dust abatement chemicals that

would be used during maintenance for the 1.8 miles of gravel section. As determined by the Sediment Analysis, it is anticipated that improving the road would reduce the amount of available sediment for transport to wetlands and waterways in the long term from 433 tons per year to 27 tons per year; although not all of this sediment ends up in wetlands. Overall, this alternative would have long-term beneficial effects on the quality of wetlands in the Petty Creek drainage.

**Gravel Alternative**. The direct impacts to wetlands under the Gravel Alternative would be the same as impacts under the Preferred Alternative because design elements would be the same. The Gravel Alternative would require fill in slightly less than 0.04 acre of wetlands. Like the Preferred Alternative, drainage conditions would be improved as well. The temporary impacts to wetlands with implementation of the Gravel Alternative would also be similar to the preferred alternative.

Improvement of drainage ditches, runoff directed into vegetated areas, and re-vegetating the newly exposed surfaces would minimize transport of sediment to wetlands. Implementation of these elements would also address the concern the dust abatement chemicals that would be used during maintenance for this 11.8-mile gravel alternative. As determined by the Sediment Analysis, it is anticipated that improving the road would reduce the amount of available sediment for transport to wetlands and waterways in the long term from 433 tons per year to 217 tons per year; although not all of this sediment ends up in wetlands. Overall, this alternative would have long-term beneficial effects on the quality of wetlands in the Petty Creek drainage.

***Wetlands Finding***

In accordance with Executive Order 11990, Protection of Wetlands, WFLHD closely evaluated the action alternatives and its wetland impacts. An estimate of slightly less than 0.04 ac [less than 0.01 ha] of jurisdictional wetlands (Wetlands A, Q, T, and X) would be impacted as a result of the rehabilitation. Wetland impacts have been consciously reduced through avoidance and minimization during the design phase of the proposed project. Compensation, if any, for impacts to wetlands would be determined through partnering with the U.S. Army Corps of Engineers. Any required mitigation would be conducted in the project corridor or through a wetland mitigation bank in coordination with the Corps of Engineers.

Based on the above considerations, WFLHD has determined that there is no practical alternative to the proposed construction in wetlands, and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

### 4.6.3 Cumulative Impacts

The analysis area for cumulative impacts to wetlands for this project is the Petty Creek watershed. Past activities include construction, use, and maintenance of the existing Petty Creek road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include ongoing construction, maintenance, and uses of residential

property and roads, agricultural activities, logging activities, use of recreational trails, implementation of a TMDL, and the acquisition and plans for conservation of MLP lands. These activities have had and possibly would have impacts by filling wetlands, altering their hydrologic functions, contributing to sediment loading, and/or altering their vegetation.

Most wetlands on public and private lands are managed under the national Clean Water Act. Most of these actions having a wetland impact would also likely require some form of mitigation to offset for these losses. However silvicultural activities, including associated road building and re-planting, are exempt from wetland assessment and permitting. Yet the FS has not allowed the filling of wetlands from silvicultural activities, except some that might occur from incidental road building since the 1960s (Colyer 2010).

The publically owned land in the watershed is largely managed by the USFS. The Lolo NF manages actions on its lands to have a minimal impact on aquatic ecosystems (USFS 1986). The Lolo National Forest Plan (1986) requires the application of BMPs to assure that water quality is maintained at a level that is adequate for protection and use of the national forest and that meets or exceeds federal and state standards. It is expected that water quality protection would also extend to the protection of wetlands.

**No Action.** Combined with the past, present, and reasonably foreseeable future actions, the No Action Alternative would result in the highest levels of sedimentation to wetlands of all the alternatives. Given the amount of land in the watershed that is managed by the USFS, legal requirements for private actions to minimize impacts and fully mitigate for those impacts, and with no encroachments with the No Action Alternative, the incremental impacts from this alternative, when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative impacts to wetlands or affect the ability of the resource to sustain itself.

**Preferred Alternative.** Combined with the past, present, and reasonably foreseeable future actions, the Preferred Alternative would result in the lowest levels of sedimentation to wetlands of all the alternatives. Given the amount of land in the watershed that is managed by the USFS, legal requirements for private actions to minimize impacts and fully mitigate for those impacts, and with the small encroachments with the Preferred Alternative, the incremental impacts from this alternative, when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative impacts to wetlands or affect the ability of the resource to sustain itself.

**Gravel Alternative.** Combined with the past, present, and reasonably foreseeable future actions, the Gravel Alternative would result in the second lowest level of sedimentation to wetlands of all the alternatives. Given the amount of land in the watershed that is managed by the USFS, legal requirements for private actions to minimize impacts and fully mitigate for those impacts, and with the small encroachments with the Gravel Alternative, the incremental impacts from this alternative, when added to other past,

present, and reasonably foreseeable future actions, would not result in substantial cumulative impacts to wetlands or affect the ability of the resource to sustain itself.

### 4.6.4 Mitigation

The following measures are proposed to reduce the levels of impact to wetlands and would apply to either alternative:

- Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.
- Fueling or storage of petroleum products would comply with permit requirements.
- To help prevent petroleum products and other chemicals from entering wetlands during construction, an emergency spill plan would be prepared and a spill containment kit would be kept onsite at all times.
- All disturbed sites along the project route would be revegetated promptly, using species appropriate to the site.
- Where appropriate, seeded and planted sites would be protected from erosion with a tackifier or other soil protection method until vegetation becomes established.
- Drainage facilities that allow ground infiltration and provide sediment filtration from storm water runoff would be provided.
- The amount of fill material placed in waterbodies and floodplains would be minimized.
- Where feasible, the road would be shifted away from Petty Creek, leaving existing fill/riprap in place, and providing a vegetative buffer between the road and wetlands.

## 4.7 Vegetation

### 4.7.1 Affected Environment

Vegetation includes riparian communities, disturbed roadside vegetation communities, cultivated and grazed valley grasslands, and upland communities. Most of the conifer growth in the road corridor is second growth. A few remnant old growth trees are scattered along the steeper slopes.

A riparian analysis was conducted as part of the wetland survey conducted by Herrera (2004a). Project biologists identified six riparian communities or habitat types within the study corridor: black cottonwood/western snowberry, black cottonwood/red-osier dogwood, Douglas-fir/red-osier dogwood, quaking aspen/red-osier dogwood, common chokeberry, and Drummund willow. In addition, two unclassified riparian habitats were identified.

The USFS undertook a biological evaluation for Forest Service sensitive plant species in September 2004 (Capovani 2004). It identified 13 habitat types existing within the

project area (Table 7). Existing information on sensitive plant species in the project area was reviewed, including aerial photographs, preliminary habitat information, and the Montana Natural Heritage Program database. From this review, five sensitive plant species (Table 8) were identified as having the potential to occur within the project area. No sensitive plants were found during the course of the survey. The project area did not appear to support the listed sensitive species because of a lack of suitable habitat, soils, the proximity to the road, and habitat alteration resulting from weed infestations.

In the spring of 2003, Missoula County Weed District staff met with the Missoula County Road Department, members of the Missoula County Weed Board, Citizens for a Weed Free Future, and others to discuss the development and implementation of a vegetation management plan for Missoula County maintained roads. It was determined that the first step towards developing a vegetation management plan should be a detailed inventory of noxious weeds along Missoula County maintained roads. The inventory included Petty Creek Road and documented the type and approximate amount of noxious weeds along this route (Missoula County 2004).

Both the County inventory and the USFS biological evaluation noted noxious weeds along the route. Species noted included spotted knapweed (*Centaurea maculosa*), Canada thistle (*Cirsium arvense*), oxeye daisy (*Chrysanthemum leucanthemum*), sulphur cinquefoil (*Potentilla recta*), hound's tongue (*Cynoglossum officinale*), St. John's wort/goatweed (*Hyupericum perforatum*), cheatgrass *(Bromus tectorum*), tall buttercup (*Ranunculus acris*), and common tansy (*Tanacetum vulgare*).

The USFS identified no sensitive plants or sensitive plant habitats in the project area during their survey in 2004 (Capovani 2004). Therefore, no impacts to sensitive plants are anticipated.

### 4.7.2 Project Impacts

**No Action Alternative**. Under the No Action Alternative, it is anticipated that some inadvertent side casting of road material would continue to encroach on low to marginal roadside vegetation as the County continues to grade the existing road. No other impacts to vegetation are anticipated with the No Action Alternative.

**Preferred Alternative**. It is estimated that approximately 63 acres of low to marginal quality roadside vegetation would potentially be removed by the Preferred Alternative through cutting back of slopes and placement of fill. Approximately 6 acres of this would be permanently removed. The rest of it would be temporarily impacted during construction until the exposed areas can be re-vegetated. To enhance re-vegetation success, a number of techniques would be employed. As appropriate for each site, native vegetation, which is expected to have a greater survival rate because of its natural adaptation to the environment, would be used. Topsoil would be conserved and stockpiled for later use on disturbed sites. A mulch or tackifier would cover seeded areas to prevent erosion prior to reestablishment of vegetation. A fast-germinating native annual plant may be added to the seed mix to provide quick ground cover. Grass seed

would be planted using hydroseeding or drilling. Where appropriate, straw wattles would be installed to minimize surface erosion. Also, appropriate sediment and erosion control BMPs would be employed prior to construction and maintained in working order throughout the construction period and until vegetation is established.

**Table 7. Habitat Types along Petty Creek Road**

| Scientific Name | Common Name |
|---|---|
| *Pseudotsuga menziesii/Symphoricarpos albus/Calamagrostis rubescens* | Douglas-fir/common snowberry/pinegrass |
| *P. menziesii/Vaccinium globulare* | Douglas-fir/globe huckleberry |
| *P. menziesii/Vaccinium caespitosum* | Douglas-fir/dwarf huckleberry |
| *P. menziesii/Linnaea borealis/S. albus* | Douglas-fir/twinflower/common snowberry |
| *P. menziesii/Physocarpus malvaceus/P. malvaceus* | Douglas-fir/ninebark/ninebark |
| *P. menziesii/ P. malvaceus/C. rubescens* | Douglas-fir/ninebark/pinegrass |
| *P. menziesii/P. malvaceus/Agropyron spicatum* | Douglas-fir/common snowberry/bluebunch wheatgrass |
| *Abies lasiocarpa/Clintonia uniflora/V. caespitosum* | Subalpine fir/queen's cup beadily/dwarf huckleberry |
| *A. lasiocarpa/C. uniflora* | Subalpine fir/queen's cup beadily |
| *A. lasiocarpa/C. uniflora/C. uniflora* | Subalpine fir/queen's cup beadily/queen's cup beadily |
| *A. lasiocarpa/Galium triflorum* | Subalpine/sweetscented bedstraw |
| *A. lasiocarpa/C. uniflora/V. caespitosum* | Subalpine/queen's cup beadily/dwarf huckleberry |
| *Talus* | Talus |
| Source: Based on Pfister 1997 | |

**Table 8. Special Status Plant Species Potentially Occurring Along Petty Creek Road**

| Scientific Name | Common Name | Status[1,2] (USFWS/State/USFS) |
|---|---|---|
| *Eupatorium occidentale* | Western boneset | None/SC/S |
| *Waldsteinia idahoensis* | Idaho barren strawberry | None/SC/S |
| *Clarkia rhomboidea* | Common clarkia | None/SC/S |
| *Adoxa moschatellina* | Musk-root | None/SC/S |
| *Cypripedium fasciculatum* | Clustered Lady's Slipper | None/SC/S |

Notes:
1. Status based on that reported in the Montana Field Guide (http://fieldguide.mt.gov/default.aspx) accessed 10/1/09
2. None= no status, SC=Species of Concern, S= USFS Sensitive

Soil disturbance and removal of vegetation resulting from road construction could increase the risk of noxious weed invasion and the spread of weeds already existing in the project area. Construction machinery could serve as a carrier for the dispersal of weed seed from outside the project area and between sites within the project route. There is

also the possibility that weed seed may be imported from infested rock and aggregate sources. However, mitigation techniques described below would be utilized to prevent and control the spread of noxious weeds as a result of the project. These techniques would be included in the re-vegetation plan.

Over the long-term it is anticipated that some inadvertent side casting of road material would occur and encroach on low to marginal roadside vegetation as the County grades the last 1.8 miles of road.

Because: (a) vegetation slated for removal is of low to marginal quality; (b) exposed soils would be re-vegetated following construction; and (c) BMPs would be employed, impacts to the vegetation of the Petty Creek drainage would be minimal.

**Gravel Alternative**. Construction impacts to vegetation under the Gravel Alternative would be the same as impacts under the Preferred Alternative because the roadway footprint would be the same. BMPs, revegetation measures, and erosion control techniques would be employed as described under the Preferred Alternative.

Over the long-term it is anticipated that some inadvertent side casting of road material would occur and encroach on low to marginal roadside vegetation as the County grades the 11.8-mi section of road.

### 4.7.2 Cumulative Impacts for the Action Alternatives

The analysis area for cumulative impacts to vegetation for this project is the Petty Creek watershed. In addition to the identified impacts associated with the Preferred and Gravel alternatives, other past, present, and future impacts to vegetation have been identified and are discussed below.

Past activities include construction, use, and maintenance of the existing Petty Creek road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include ongoing construction, maintenance, and uses of residential property and roads, agricultural activities, logging activities, use of recreational trails, implementation of a TMDL, and the acquisition and plans for conservation of MLP lands. These activities have contributed to and could contribute to removal of vegetation and spread of noxious weeds, however, they have not substantially degraded the vegetation of the area.

The majority of public land in the Petty Creek drainage and the acquisition of lands through the MLP (refer to Section 4.1) along with County subdivision guidelines protecting riparian resource and flood-prone zones have helped and will help limit residential development and its associated vegetation impacts. Land management, revegetation efforts, and efforts to control the spread of noxious weeds by local, state, and federal agencies would aid in minimizing impacts to vegetation. Therefore, the incremental impacts from either the Preferred or Gravel Alternative, when added to other

past, present, and reasonably foreseeable future actions, would not result in substantial cumulative impacts to the vegetation or affect the ability of the resource to sustain itself.

### 4.7.3 Mitigation

The following measures are proposed for either the Preferred or Gravel Alternatives to reduce the levels of impact to vegetation resources and would apply to either resource:

- Topsoil would be conserved and stockpiled for later use on disturbed sites to enhance revegetation success.
- Cut slopes and disturbed sites would be seeded or planted with native vegetation appropriate for the site as soon as possible following construction.
- If appropriate, mulch, tackifier, or other erosion control method would be used to protect seeded areas. A fast-germinating native annual plant may be added to the seed mix to provide quick ground cover.
- Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.
- All seed and hay or straw used on the construction site would be certified free of noxious weeds.
- All construction equipment and vehicles would be cleaned to remove noxious weed propagules before moving into or out of the construction area.
- Lolo National Forest seeding and weed treatment guidelines would be followed
- Material sources would be verified as weed free prior to use.

## 4.8 Archaeological and Historic Resources

### 4.8.1 Affected Environment

Prehistory of western Montana is represented by isolated projectile points from the Folsom and Windust traditions of the Paleo Indian period [10,000 – 7,500 before present (BP)], large corner and side notched projectile points of the Middle period (7,500 – 2,000 BP), and small side notched points representative of the advent of the bow and arrow in the Late Prehistoric period (2,000 – 1,720 BP). The Proto historic period (1,700 – 1,805 BP) is represented by the introduction of the horse, increased mobility, and more trade goods including European trade goods such as beads and metal objects.

Following exploration of the surrounding area by Lewis and Clark in 1805, David Thompson in 1811, and Lt. John Mullan in 1853, represents prospecting and mining historic activities in the Petty Creek drainage. Subsequent activities included logging, saw milling, and more recently the increased establishment of residences and recreational activities.

A cultural resources survey was conducted during October 2003. The survey consisted of extensive background research and a pedestrian survey consistent with the standards set forth in the Montana SHPO approved *Site Identification Strategy for the Bitterroot, Flathead, and Lolo National Forests* (McLeod et al. 2004). One site, 24MO0313, a culturally modified tree (CMT), was identified during the records search. It is located outside of the Area of Potential Effects for the project and was determined not eligible for the NRHP in 1989. Another CMT (24MO0910) was located and recorded in the Area of Potential Effects during the pedestrian survey at the junction of Bill's Creek and Petty Creek Road. Consultation with SHPO was initiated in Spring 2003 and a site visit was conducted in Summer 2004 with several Tribal representatives. The site was recommended not eligible for inclusion on the NRHP, and the SHPO concurred with this determination in a letter dated February 6, 2004 (Appendix 5).

### 4.8.2 Project Impacts

**No Action Alternative**. Because no known sites listed or eligible for listing on the NRHP are located in or near the project area, the No Action Alternative would have no impacts to archaeological or historic resources.

**Preferred Alternative**. Because no known sites listed or eligible for listing on the NRHP are located in or near the project area, the Preferred Alternative was determined to have no historic properties affected. The SHPO concurred with this determination in their February 6, 2004 letter (Appendix 5).

**Gravel Alternative**. Because no known sites listed or eligible for listing on the NRHP are located in or near the project area, the Gravel Alternative would have no impacts to archaeological or historic resources.

### 4.8.3 Cumulative Impacts for All Alternatives

The Petty Creek watershed is the analysis area for cumulative impacts on archaeological and historic resources for this project. Past, present, and future activities may have impacted or may impact archaeological and historic resources. Past activities include construction, use, and maintenance of the existing Petty Creek Road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include ongoing construction, maintenance, and uses of residential property and roads, agricultural activities, logging activities, use of recreational trails, and the acquisition and plans for conservation of MLP lands.

Operation of construction equipment and excavation of soils as part of construction of roads, buildings, and trails or during logging has the potential to disturb intact cultural resources in the Petty Creek drainage. Resources may also be disturbed by increases in erosion due to potential removal of vegetation and increases in storm water runoff.

While it is evident that the Petty Creek drainage was used both prehistorically and historically, the sparseness of cultural resources identified during the cultural survey for this project suggests the drainage was not intensively used in the past. Therefore, the incremental impacts from the No Action, Preferred and Gravel Alternatives, when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative impacts to the resource or affect the ability of the resource to sustain itself.

## 4.9 Section 4(f)

### 4.9.1 Affected Environment

The U.S. Department of Transportation (USDOT) Act of 1966 includes a special provision, Section 4(f), which stipulates that the FHWA and other USDOT agencies cannot approve the use of land from publicly-owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless:

- There is no feasible and prudent avoidance alternative to the use of the property.
- The action includes all possible planning to minimize harm to the property resulting from the use.
- The FHWA determines that use of the property, including any measures to minimize harm, will have a *de minimis* impact on the property.

Section 4(f) was codified under Title 49 United States Code (U.S.C.) Section 1653(f) (Section 4(f) of the USDOT Act of 1966). In 2005, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users Act (SAFTEA-LU) made the first substantive revision to Section 4(f) since 1966. SAFETEA-LU Amended existing Section 4(f) legislation to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f). If the project is determined to have a *de minimis* impact on a property, an analysis of avoidance alternatives is not required, and the Section 4(f) evaluation process is considered complete. A project's impacts to a Section 4(f) resource is considered *de minimis* if:

1) The transportation use of the Section 4(f) resource, together with any impact avoidance, minimization, and mitigation or enhancement measures incorporated into the project, does not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f).
2) The official(s) with jurisdiction over the property are informed of FHWA's intent to make the *de minimis* impact finding based on their written concurrence that the project would not adversely affect the activities, features, and attributes that qualify the property for protection under Section 4(f).
3) The public has been afforded an opportunity to review and comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) resource.

Two Section 4(f) resources are located along Petty Creek Road. They are the Petty Pasture Trail located at approximately MP 3.5 and the Petty Creek Sheep Viewing Trail located at approximately MP 5.1. Both of these trails are publicly owned (administered and maintained by the USFS), open to the public, have recreation as their major purpose, and are significant as recreational facilities in this region of the LNF. The Petty Pasture Trail (Trail #733) is 3.5 mi long and is open to hikers and motorcycles. The Petty Creek Sheep Viewing Trail (#721) is 0.5 mi long and is used primarily to view bighorn sheep activities in the area. There are no formally designated parking areas accessing these trails. Currently, recreational users either park on the side of the road, which is inconvenient and unsafe, or in the case of the Petty Pasture Trail, cross private property to access an informal parking area near the trailhead.

### 4.9.2 Project Impacts

**No Action Alternative**. The No Action Alternative would have no known impacts to any Section 4(f) resources.

**Preferred Alternative**. Through coordination with the USFS, the Preferred Alternative would include formalized parking areas to enhance access to each trail and provide a safer recreational experience. During construction, access to these trails would be limited or temporarily closed. They would be re-opened once construction was completed.

Given the minor effects to these Section 4(f) resources by the project and the enhancement of the trails by the addition of parking areas, the WFLHD has determined that impacts to Petty Pasture Trail and the Petty Creek Sheep Viewing Trail qualify as *de minimis*. Public review of this Amended EA would serve as the public's opportunity to review and comment on the effects of this project on these two Section 4(f) resources. The official with jurisdiction (USFS) would be notified of this intent, and their written concurrence is expected.

**Gravel Alternative**. Impacts to 4(f) resources from the Gravel Alternative are similar to impacts described above under the Preferred Alternative.

## 4.10 Noise

### 4.10.1 Affected Environment and Project Impacts

Noise has not been identified as a major concern in the Petty Creek area. With relatively low traffic volumes on Petty Creek Road, traffic noise has not been substantial. Traffic is expected to increase with the No Action, Preferred, and Gravel alternatives, but because projected traffic volumes are expected to remain relatively low for all the alternatives, considerable noise increases are not expected. Additionally, it is likely that the smoother paved surface of the 10 miles of the Preferred Alternative would result in marginally lower-levels of traffic noise than the noise produced by traffic on the current substandard surface or that of the Gravel Alternative.

A temporary increase in noise levels in the project vicinity would occur during construction of the Preferred and Gravel alternatives. The areas not located along Petty Creek Road would have lower ambient noise levels than areas immediately adjacent to the road. To minimize the temporarily higher noise levels, all equipment would be required to comply with FHWA's standard noise mitigation measures. With this, no substantial noise problems are expected to occur.

### 4.10.2 Cumulative Impacts for the Action Alternatives

The Petty Creek watershed is the analysis area for analysis of cumulative impacts pertaining to noise. Past, present, and future actions potentially affecting noise levels in the Petty Creek drainage are use of the Petty Creek Road, residential construction and uses, agricultural activities, and logging activities. All of these noise effects are minimal and of short duration. Therefore, the incremental impacts from either action alternative, when added to other past, present, and reasonably foreseeable future actions would not result in substantial cumulative impacts to noise.

### 4.10.3 Mitigation

The following measures would be implemented to reduce the levels of impact from noise generation from either the Preferred or Gravel Alternatives:

- All equipment would be equipped with properly functioning mufflers.
- All equipment would comply with pertinent noise standards of the EPA.
- No construction would be performed within 100 ft [30 m] of any occupied residence on Sundays, legal holidays, or between the hours of 10:00 pm and 6:00 am on other days.
- Should a specific noise impact complaint occur during construction, one or more of the following measures would be required:
    - Shutting off idling equipment
    - Rescheduling construction operations to avoid periods of noise annoyance identified in complaint
    - Notifying nearby residents when extremely noisy work would be occurring
    - Installing temporary or portable acoustic barriers around stationary construction noise sources.

## 4.11 Air Quality

### 4.11.1 Affected Environment

The federal government has established National Ambient Air Quality Standards to protect the public from air pollution. Designated "attainment" areas are areas that have

not violated these air quality standards. Geographic areas where concentrations of a pollutant exceed the ambient air quality standards are classified as “nonattainment” areas. Areas previously designated as nonattainment that are now in compliance with air quality standards are classified as “maintenance” areas.

Air quality within the Petty Creek corridor is generally considered good to excellent for most of the year. The project corridor is situated within an EPA air quality “attainment”[5] area for all regulated pollutants. Local adverse effects result from the dust from unpaved roads, occasional wildfires, and wood burning stoves in the area. The most common complaint from local residents is the amount of airborne dust produced with use of the Petty Creek Road. The dust has been cited by residents as a cause or exacerbation of health problems.

### 4.11.2 Project Impacts

**No Action Alternative**. The No Action Alternative would do nothing to improve the dust problem along the road, and air quality would remain unchanged.

**Preferred Alternative**. The Preferred Alternative likely would eliminate dust proportional to the reduction of sediment, and based on the Sediment Assessment, this alternative would result in the greatest reduction of sediment. Airborne dust would likely increase during construction, however this would be a short-term affect, and dust control procedures would be implemented to keep the dust at a minimum. Although minor burning of slash may occur as part of the project, impacts from this activity would be minor and short-term. No long-term or regional adverse impacts to air quality are anticipated. Overall, it is anticipated that air quality along the Petty Creek Road corridor would improve with completion of the Preferred Alternative.

**Gravel Alternative**. The Gravel Alternative likely would eliminate dust proportional to the reduction of sediment, and based on the Sediment Assessment, this alternative would result in the reduction of sediment of about half of the No Action Alternative. Airborne dust would likely increase during construction, however this would be a short-term affect, and dust control procedures would be implemented to keep the dust at a minimum. Although minor burning of slash may occur as part of the project, impacts from this activity would be minor and short-term. No long-term or regional adverse impacts to air quality are anticipated. Overall, it is anticipated that air quality along the Petty Creek Road corridor would improve with completion of the Gravel Alternative compared to the No Action but be less than those resulting from the Preferred Alternative.

### 4.11.3 Cumulative Impacts for All Alternatives

The area of consideration for cumulative impacts resulting from air quality is the Petty Creek watershed. Emissions and airborne dust from vehicles and equipment associated

[5] An attainment area is an area considered to have air quality as good as or better than the national ambient air quality standards as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a non-attainment area for others.

with residential construction, agricultural activities, logging, and road use have and would affect air quality. Use of wood-burning stoves in the project area is also an ongoing activity that could also affect air quality. However, given the relatively low occurrence of these activities or the sparse population using wood-burning stoves, the associated effects on air quality would be minimal. Based on these considerations, the incremental impacts from any of the alternatives when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative impacts to the air quality or affect the ability of the resource to sustain itself.

### 4.11.4 Mitigation

Dust control measures (e.g. water application) would be implemented during construction to reduce the levels of impact to air quality from the proposed project.

## 4.12 Visual Quality

### 4.12.1 Affected Environment

Much of the Petty Creek Road has a scenic natural setting. However, the area has not been designated as a federal, state, or forest scenic byway, nor otherwise distinguished for its scenic attributes.

### 4.12.2 Project Impacts

**No Action Alternative**. The visual elements of Petty Creek Road would remain unchanged with the No Action Alternative.

**Preferred Alternative**. An improved road would result in some slight changes to the visual setting of the area. A paved road surface for 10 miles with lane markings would be more visible than the current substandard gravel surface. Shifts in the roadway would be minor. New cut slopes would range between 40 to 50 feet with the highest at 90 feet, but they would be similar in character to existing cut slopes in the corridor. Design elements to minimize these changes would include revegetating disturbed areas and providing vegetation along some portions of the stream and road bank that do not currently support vegetation. Therefore, the Preferred Alternative would not appreciably change the overall look and feel of the corridor and would result in only minor impacts to its scenic attributes.

**Gravel Alternative**. Visual effects would be similar to those under the Preferred Alternative given minor alignment changes and impacts to cut slopes. However, a gravel road surface would not have as pronounced of a changed condition as the 10 miles of paved roadway and lane markings of the Preferred Alternative.

### 4.12.3 Cumulative Impacts of the Preferred and Gravel Alternatives

The Petty Creek watershed is the area of analysis for cumulative impacts resulting from visual impacts. Past, present, and future actions resulting in changes to the visual quality

of the Petty Creek drainage include the construction of roads and buildings, removal of vegetation associated with logging and agriculture, and introduction of non-native plant species. These actions have not nor are they expected to substantially alter the overall natural feeling of the Petty Creek drainage either separately or cumulatively. This interpretation is supported by the fact that much of the land in the drainage is relatively protected because it is USFS, state, or MLP-owned land and because most of the private land is designated Open and Resource land by Missoula County. Incremental impacts from either build alternative, when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative impacts to visual resources.

## 4.13 Floodplains

### 4.13.1 Affected Environment

Petty Creek Road parallels much of Petty Creek, and portions of the road were constructed in close proximity to the floodplain. The floodplains in the vicinity of the roadway are categorized as Zone D[6]. None of these floodplains are designated by the Federal Emergency Management Agency as 100-year Special Flood Hazard Areas.

### 4.13.2 Project Impacts

**No Action Alternative**. The No Action Alternative would have no known additional impacts to the floodplains along Petty Creek Road. With continued maintenance grading of the gravel road, it is expected that side casting of material would continue to encroach nearer to the floodplains as the road widens.

**Preferred Alternative**. Review of floodplain mapping by a FHWA senior hydraulics engineer indicates the Preferred Alternative would not impact the 100-year floodplain.

**Gravel Alternative**. Review of floodplain mapping by a FHWA senior hydraulics engineer indicates the Gravel Alternative would not impact the 100-year floodplain.

## 4.14 Public Services and Utilities

### 4.14.1 Affected Environment

Public services within the project corridor include fire and police protection, school bus service, maintenance of public facilities (including roads), health services, solid waste disposal, and mail delivery. The road is also used as a primary access route for wildland fire suppression by the Forest Service. Utilities in the corridor include overhead and buried electricity cables owned by Missoula Electric Co-op, buried fiber optic cable

[6] According to FEMA, a Zone D floodplain is defined as an “area with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of flood risk”.

owned by Blackfoot Communications, and buried irrigation lines owned by private residents.

### 4.14.2 Project Impacts

**No Action**. The No Action Alternative would not result in change to public services or utilities. The County would continue to maintain the roadway as described in Section 2.2 and spend about $60,000 a year in 2008 dollars toward maintenance of the Petty Creek Road. This amounts to approximately $5,000 per mile. Assuming this figure is applied to the approximate 12-mile project area, and applying a three percent inflation rate over time for a 20-year period, this would total about $225,000 per mile. In order to maintain the existing gravel road to minimize potholing and wash boarding and also to prevent considerable dust issues, this figure would be much higher. Furthermore, this figure does not include the extensive maintenance effort that is required to maintain proper drainage and culverts in the project area since the County only spends what is needed to keep the road operational. Further investment in the road would only be wasted and a loss of valuable maintenance dollars until substantial improvements to the road could occur (Gifford 2010).

**Preferred Alternative**. The Preferred Alternative would have very minor impacts to utilities. Access for the services would be maintained throughout the construction period with the Preferred Alternative. Coordination would take place with Missoula Electric Coop, Blackfoot Communications, and private residents for any needed relocation of portions of these facilities. Any relocation work would be done as necessary with minimal disruption in service if any.

Roadway maintenance costs and efforts would decrease substantially both in the short and long-term. One purpose of the proposed Petty Creek project is to reduce the amount of maintenance work required on this road. Several features of this Alternative would achieve this purpose. A paved surface over the first 10 miles and the gravel surface in the last 1.8 miles would require less frequent maintenance because the new surfaces would be more durable tan the existing substandard gravel surface; it would be less prone to potholes; and the paved surface would eliminate the problem of wash boarding. Installing appropriately sized stream crossing structures and shifting the road away from the creek where feasible would better protect the stability of the road, reducing the need for future costly maintenance. Consistent road width and designated travel lanes would concentrate the load (tire tracks) farther from the road edges, protecting the road edges and reducing the need for surface and shoulder maintenance.

Maintenance would be required on a regular basis for the Preferred Alternative. Routine maintenance includes patching potholes, striping as required, and grading the 1.8 mi of gravel surface. Based on information from FHWA engineers and County maintenance officials, maintenance would be minimal (pothole repair) for the most part. As needed, a new chip seal surface over the first 10 miles and some gravel replenishment over the last 1.8 miles would be required. Maintenance costs were estimated for the Preferred

Alternative applying a three percent inflation rate over a 20-year period, and this resulted in an estimated total of $592,000 per mile.

**Gravel Alternative**. The Gravel Alternative would have very minor impacts to utilities as described above resulting from required re-location of these services. Roadway maintenance efforts would decrease substantially both in the short and long-term but not nearly to the same degree as the Preferred Alternative. One purpose of the proposed Petty Creek project is to reduce the amount of maintenance work required on this road. Several features of this alternative would achieve this purpose. The improved surface would be more durable than the existing substandard gravel surface and it would be less prone to potholes. Installing appropriately sized stream crossing structures and moving the road away from the creek where feasible would also better protect the stability of the road.

Maintenance would be required on a regular basis for the Gravel Alternative to reduce potholing, wash boarding, and dust. Maintenance of the gravel surface required to meet acceptable standards includes annual grading and rolling with application of a dust abatement product every other year and replenishment of gravel as needed. Based on information from FHWA engineers and County maintenance officials maintenance costs were estimated for the Gravel Alternative applying a three percent inflation rate over a 20-year period, and this resulted in estimated total of $951,000 per mile.

## 4.15 Population and Demographics

Missoula County has a population of 105,600, and the City of Missoula has a population of 64,650. Between 2000 and 2008, the County population increased by 10 percent (from 95,802 to 105,644). In that same period of time the population of the City of Missoula increased by 13 percent (57,053 to 64,560) (US Census Bureau 2010a).

The racial composition of the County and Montana as a whole is appreciably underrepresented compared to national statistics. The white population comprised 93 percent of the County residents in 2006 compared to 90 percent statewide and 74 percent nationally. All other populations are less than national percentages with the exception of American Indian and Alaskan Native which totals 2 percent in the County versus 0.8 percent nationally (US Census Bureau 2010b).

### 4.15.1 Employment

According to the 2006-2008 Census, the Missoula County civilian labor force totaled 58,162, with an average unemployment rate of 6.1 percent (Bureau of Labor Statistics 2010). This is less than the unemployment rate for the state of Montana, which averaged 6.8 percent in 2009. The poverty rate for families in the County stands at 16.3 percent, compared to 14.1 percent for the state as a whole.

### 4.15.2 Environmental Justice

On February 11, 1994, President Clinton issued the Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898). In accordance with this order, the proposed project has been reviewed to determine if it would result in "disproportionately high and adverse human health and environmental effects on minorities and low-income populations."

### 4.15.3 Project Impacts

**No Action**. No minority or low-income populations were identified in or near the proposed project area. No residents or businesses would be displaced or impacted. The No Action Alternative would not result in "disproportionately high and adverse effects on minorities and low-income populations."

**Preferred and Gravel Alternatives**. No minority or low-income populations were identified in or near the proposed project area. Also, because of the relatively narrow width of the proposed project, no residents or businesses would be displaced or relocated. The short-term (construction related) and long-term impacts and benefits would affect all Petty Creek Road users on an equal basis. Opportunities for employment during project construction and the long-term road safety improvements would extend to minorities and people with low incomes in nearby communities and thus could benefit these groups. In conclusion, these alternatives would not result in "disproportionately high and adverse effects on minorities and low-income populations."

## 4.16 Prime Farmland, Rangeland, and Forestland

No prime or unique farmland, rangeland, or forestland is present within the project area. Therefore, either alternative would have no effect on these resources.

# 5 Hazardous Materials

No hazardous waste sites are known to be present in the project area, and the likelihood of undiscovered hazardous waste sites in the project area is very low. If hazardous materials are discovered during construction, the appropriate federal, state, and local agencies would be notified.

During construction, there would be a potential for hazardous material spills to occur. If this situation would arise, the responses detailed in the Hazardous Material Spill Plan developed prior to construction would be implemented to minimize the effects of the spill.

# 6 Irreversible or Irretrievable Commitment of Resources

Irreversible commitments are those that cannot be regained, such as the extinction of a species or the removal and use of fossil fuels. Irretrievable commitments are those that are lost for a period of time such as the loss of production, harvest, or use of renewable resources. Fossil fuels, labor, and construction materials, such as aggregate, would be irreversibly expended in road construction. Labor and fossil fuels would be consumed during operation of construction equipment for grading, material movement, and construction activities. In addition, labor and natural resources would be used in the fabrication and preparation of construction materials. Construction would also require an expenditure of funds that could not be used by any other project.

# 7 Summary of Mitigation Measures

The following is a summary of the mitigation measures that would be implemented with the Preferred Alternative and Gravel Alternative (Table 9). Many of the mitigation measures are duplicative and apply to more than one resource.

**Table 9. Summary of Mitigation Measures**

| Resource | Mitigation Measures |
|---|---|
| Water Resources | • Appropriate sediment and erosion control BMPs would be installed before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.<br>• A dewatering and diversion plan would be established and would include at a minimum, the following procedures:<br>o Where culvert/bridge replacement is performed in flowing streams, actions to reduce sediment would be conducted.<br>o Actions, such as stream diversion, would be visually assessed to assure that sediment controls work properly.<br>o Where feasible, sediment capture devices would be placed to deter downstream movement of sediment.<br>o Pump discharge would be released in an area where sediment would be unlikely to be delivered to the stream.<br>• Appropriate riparian vegetation would be planted and/or transplanted and woody debris from site clearing would be scattered over disturbed surfaces where appropriate.<br>• Where the road cannot be adjusted away from the creek, riparian planting would be performed to enhance sediment buffering and nearby habitat.<br>• Fueling or storage of petroleum products would comply with permit requirements.<br>• Prior to construction, a Hazardous Materials Spill Plan would be prepared to identify actions to take in the event of a spill. This plan would incorporate preventative measures such as the placement of refueling facilities and the storage and handling of hazardous materials.<br>• All disturbed sites along the project route would be revegetated promptly using species appropriate to the site. Seeded and planted sites would be protected from erosion with a soil protection method until vegetation becomes established.<br>• Erosion controls would be left in place until vegetation becomes established.<br>• Drainage facilities that allow ground infiltration and provide sediment filtration from storm water runoff would be provided.<br>• Fill material placed in waterbodies and floodplains would be minimized.<br>• Where feasible, the road would be shifted away from Petty Creek, leaving existing fill/riprap in place, and providing a vegetative buffer between the road and the creek.<br>• Where appropriate, seedlings would be planted between the riprap and at other locations where the road and stream are in close proximity. |
| Fish and Wildlife | • Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.<br>• Work in streams within the project corridor would comply with work windows that are protective of species as determined by the USFWS, MFWP, and USFS biologists. |

**Table 9. Summary of Mitigation Measures**

| Resource | Mitigation Measures |
|---|---|
| | • When feasible, the in-stream construction activities would occur "in the dry."<br>• On Forest Service lands, no vehicle fueling or refueling operations, or storage of hazardous materials that could accidentally enter a stream, would be permitted within Resource Conservation Areas (RCAs), defined as 300 ft of the top of the bank of any intermittent or perennial stream channel (Diem 2005).<br>• Prior to construction, a Hazardous Materials Spill Plan would be prepared to identify actions to take in the event of a spill. This plan would incorporate preventative measures such as the placement of refueling facilities and the storage and handling of hazardous materials.<br>• Culvert replacements in fish-bearing streams would be designed to allow passage of fish at all life stages by constructing a natural bank-full stream configuration and substrate within the crossing.<br>• Where culvert/bridge replacement is performed in flowing streams, sediment capture devices would be placed to deter downstream movement of sediment.<br>• During stream culvert replacement, natural streambed material would be replaced within the crossing structure. If applicable, large substrates would be conserved and scattered to provide "shadow rocks" (habitat and resting areas) within the crossing. The stream channel would be replaced to a natural and appropriate bank-full and floodplain configuration for the site and entering stream type.<br>• Drainage facilities that allow ground infiltration and provide sediment filtration from storm water runoff would be provided.<br>• The amount of fill material placed in water bodies and floodplains would be minimized by moving the road away from Petty Creek in areas and by providing wider stream crossing structures with a natural bank-full stream configuration.<br>• The project would be designed to avoid the need to relocate, realign, or recreate the Petty Creek stream channel where it flows close to the roadway corridor.<br>• Where feasible, the road would be shifted away from Petty Creek, leaving existing fill/riprap in place, and providing a vegetative buffer between the road and the creek.<br>• Electrical facilities that need to be relocated because of construction activities would be raptor-proofed to avoid electrocution of birds.<br>• Culverts/bridges would allow small mammal passage underneath the roadway.<br>• In cooperation with MTFWP and USFS, warning signs would be posted along the road in areas of typically high bighorn sheep use. Also, construction activities may be limited in these areas between December 1 and June 30.<br>• In cooperation with USFWS, construction contract provisions will be included that would require contractors to keep food, garbage, petroleum products and other attractants unavailable to animals such as bears during construction. |
| Soils and Geology | • Cut slopes would be designed not to exceed the angle of repose (maximum angle of slope at which soils and loose materials can remain stable without sliding).<br>• Topsoil would be conserved and stockpiled for later use to enhance revegetation success. |

**Table 9. Summary of Mitigation Measures**

| Resource | Mitigation Measures |
|---|---|
| | • Woody debris, obtained on site or from clearing operations, would be scattered in appropriate densities to foster shade and micro-habitat zones on cut slopes and disturbed sites where appropriate and feasible.<br>• Following construction, cut slopes and disturbed sites would be seeded or planted with native seed, shrubs, and/or trees at appropriate distributions and spacing.<br>• If appropriate, mulch, tackifier, or other erosion control method would be used to protect seeded areas. A native fast-germinating annual plant may be added to the seed mix to provide quick ground cover.<br>• Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established. |
| Wetlands | • Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.<br>• Fueling or storage of petroleum products would comply with permit requirements.<br>• To help prevent petroleum products and other chemicals from entering wetlands during construction, an emergency spill plan would be prepared and a spill containment kit would be kept onsite at all times.<br>• All disturbed sites along the project route would be revegetated promptly, using species appropriate to the site.<br>• Where appropriate, seeded and planted sites would be protected from erosion with a tackifier or other soil protection method until vegetation becomes established.<br>• Drainage facilities that allow ground infiltration and provide sediment filtration from storm water runoff would be provided.<br>• The amount of fill material placed in waterbodies and floodplains would be minimized.<br>• Where feasible, the road would be shifted away from Petty Creek, leaving existing fill/riprap in place, and providing a vegetative buffer between the road and wetlands. |
| Vegetation | • Topsoil would be conserved and stockpiled for later use on disturbed sites to enhance revegetation success.<br>• Cut slopes and disturbed sites would be seeded or planted with native vegetation appropriate for the site as soon as possible following construction.<br>• If appropriate, mulch, tackifier, or other erosion control method would be used to protect seeded areas. A fast-germinating native annual plant may be added to the seed mix to provide quick ground cover.<br>• Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.<br>• All seed and hay or straw used on the construction site would be certified free of noxious weeds.<br>• All construction equipment and vehicles would be cleaned to remove noxious weed propagules before moving into or out of the construction area.<br>• Lolo National Forest seeding and weed treatment guidelines would be followed<br>• Material sources would be verified as weed free prior to use. |

**Table 9. Summary of Mitigation Measures**

| Resource | Mitigation Measures |
|---|---|
| Noise | • All equipment would be equipped with properly functioning mufflers.<br>• All equipment would comply with pertinent noise standards of the EPA.<br>• No construction would be performed within 100 ft of any occupied residence on Sundays, legal holidays, or between the hours of 10:00 pm and 6:00 am on other days.<br>• Should a specific noise impact complaint occur during construction, one or more of the following measures may be required:<br>o Shutting off idling equipment<br>o Rescheduling construction operations to avoid periods of noise annoyance identified in complaint<br>o Notifying nearby residents when extremely noisy work would be occurring<br>• Temporary or portable acoustic barriers would be installed around stationary construction noise sources |
| Air Quality | • Dust control measures (e.g., water application) would be implemented during construction. |
| Hazardous Materials | • A Hazardous Materials Spill Plan would be prepared prior to construction to identify actions to take in the event of a spill. Incorporate preventative measures such as the placement of refueling facilities and the storage and handling of hazardous materials into this plan. |

# 8 Permits and Approvals

Required permits and approvals would be obtained prior to construction. The following permits and approvals are expected to be required for implementation of the Preferred or Gravel Alternative:

- Clean Water Act Section 404 Authorization – U.S. Army Corps of Engineers
- Clean Water Act Section 401 Water Quality Certification – U.S. Army Corps of Engineers and MDEQ
- Montana Pollution Discharge Elimination System Permit – MDEQ
- Stream Protection Act 124 – MFWP
- Short-term Water Quality Standard for Turbidity (318 Authorization) – MDEQ
- Section 4(f) *de minimis* concurrence – USFS
- Burn approval – USFS
- Water source approval

# 9 Coordination and Consultation

## 9.1 Social, Economic, and Environmental Team

A SEE Team was established during the scoping phase of the project to identify and assess the environmental effects of the proposal and recommend alternatives for evaluation. The SEE Team acts as a steering committee for project development activities during the conceptual and design phases. The team is also charged with the formulation and implementation of a comprehensive public involvement process. This team is composed of representatives from the principal land and road management agencies and WFLHD. Team members call on available disciplines within their agencies for technical assistance as needed.

Team members include:

Tim Elsea – Missoula County
Wayne Noem – Montana Department of Transportation
Sue Colyer – Lolo National Forest
Greg Gifford – Western Federal Lands Highway Division
Terry Schumann – Western Federal Lands Highway Division

## 9.2 Other Coordination and Consultation

During the planning for the proposed project, meetings occurred between the Tri-Agency and resource and conservation groups. Proposed project information was also distributed to the public and interest groups through updated project newsletters and through the project website. Several public open houses were held to solicit comment from interested individuals. All comments received during the public comment period on the March 2008 EA have been addressed in this Amended EA (Chapter 10).

Additional coordination on the project has occurred since publication of the March 2008 EA. In addition to meetings with the SEE Team and the Tri-Agency, FHWA has also coordinated with American Wildlands most recently during a conference call (12/22/09 with Katie Meiklejohn) to discuss the revised Preferred Alternative (partial paved vs. fully paved), wildlife movement and linkages (Meiklejohn 2009).

The FHWA has also recently coordinated with MFWP via phone (1/4/10, Paul Callahan, PBS&J with Vicki Edwards, MFWP) to acquire updated information pertaining to wildlife migration pattern data and wildlife-vehicle collisions on Petty Creek Road. Ms. Edwards referred to anecdotal information which was included in a comment letter from MFWP in 2005 along with two thesis studies for bighorn sheep. As for wildlife-vehicle collisions, Ms. Edwards stated that because Petty Creek is a county road, this data is not available and she does not know of any studies that could be extrapolated for the area (Edwards 2010).

## 9.3 List of Preparers

This EA was prepared by:

- Federal Highway Administration, Western Federal Lands Highway Division
  - Terry Schumann, Environmental Protection Specialist, lead author and manager of environmental compliance activities
  - Jody Marshall, Environmental Senior Technical Specialist, reviewer, editor and supporting author
  - Gregory Gifford, Project Manager, engineering technical assistance
  - Jack Doucey, Road Designer, engineering technical assistance
  - Greg Kwock, Road Designer, engineering technical assistance
  - Michael Boynton, Archaeologist/Environmental Specialist, archaeological technical assistance, writer/editor
  - Makayah Royal, Environmental Protection Specialist, writer/editor
  - PBS&J, Amended EA and responses to comments

Technical reports were prepared by:

- Herrera Environmental Consultants
- USDA Forest Service
  - Anne Capovani, Biological Technician
  - C. Milo McLeod, Forest Archaeologist
  - J. Rodger Free, Archaeologist
  - Sydney Wimbrow, Archaeologist
- Missoula County Weed District Staff

# 10 Public Comments and Correspondence

The following discussion presents first a summary of comments that were received on the 2008 public EA and a response to those comments (Section 10.1), Numbered and bracketed comment letters immediately follow the conclusion of responses to comments. This is followed by a summary of comments received during public scoping phase of the proposed project (Section 10.2) prior to publication of the EA.

## 10.1 Response to Comments on 2008 Public EA

At the end of the circulation and public comment period in May, 2008, a total of 12 written comment letters and emails commenting on the EA had been received. All written comments have been assigned a letter number and a comment number which corresponds to the specific issue indentified in the letters. For example, Comment 2-3 refers to the third comment presented in letter two as identified in the list of commenters.

Multiple comments were received with respect to most key issues. In order to provide comprehensive responses, responses have been prepared addressing all comments relating to each substantive issue within each resource area. Each of these responses provides some background regarding the specific issue, how the issue was addressed in this Amended EA, and additional clarification and explanation as appropriate in response to the concerns raised in the comments. At the beginning of each response section, comment numbers are included to indicate which comments are being addressed.

Comments were received from:

1. American Wildlands, Kim Davitt, Missoula Field Office, April 20, 2008.
2. Great Burn Study Group, Dale Harris, Executive Director and Beverly Dupree, Policy and Field Studies Director, May 1, 2008.
3. Montana Fish, Wildlife & Parks, Mack Long, Regional Supervisor,
4. National Wildlife Federation, Northern Rockies National Resource Center, Thomas France, Director and Sterling Miller, Senior Wildlife Biologist, May 1, 2008.
5. Ninemile Wildlife Movement Areas Workgroup, Eleanor Danesh, Chair and Wildlife Passages Coordinator, May 1, 2008.
6. United States Department of the Interior, Fish and Wildlife Services, Montana Field Office, R. Mark Wilson, Field Supervisor, May 30, 2008.
7. Wildwest Institute, Cameron Naficy, May 2, 2008.
8. Linda Gardner, Alberton, MT, June 19, 2008 (via email)
9. Dwayne Heike – May, 2008
10. John and Linda Harris, July 14, 2008 (via email)

11. Larry Stahl, Missoula, MT, May 7, 2008 (via email)
12. Gary Fee, Alberton, MT, April, 9, 2008 (via email)

As a result of these comments and since the release of the 2008 EA, WFLHD made some changes to the environmental analysis, the Preferred Alternative, and proposed mitigation. As stated in this Amended EA, the Preferred Alternative has been modified from a full pavement alternative as analyzed in the 2008 EA and now consists of paving the first 10 miles with the last 1.8 miles receiving an improved gravel surface. This Amended EA also addresses an additional alternative, the Gravel Alternative, and its associated impacts. Furthermore, recent changes to the Petty Creek area altered the environmental analysis due to the acquisition of Plum Creek lands by the MLP. In addition, with both the Preferred and Gravel Alternatives WFLHD is proposing to facilitate acquisition of up to 1,000 acres of MLP land in the project area for permanent conservation by the USFS. The final acreage to be acquired would be based on the price of the land in combination with priority acquisition that is agreeable to both the USFS and the MLP for conservation. Permanent conservation would contribute to preservation of local movement abilities and help preserve a wildlife movement corridor within the larger linkage zone between the NCDE and the Sellway-Bitterroot Ecosystem that would be free from future development.

The following is a summary of general, substantive comments and the response to those comments

### 10.1.1 Wildlife Connectivity/Impacts

Response to comments: 1-1, 1-3, 3-5, 3-9, 3-10, 3-11, 4-1, 5-1, 5-5, 6-6, 7-1, 11-1

Several comments were made regarding the impact of the former Preferred Alternative to Petty Creek Road on wildlife habitat, corridors, and linkages in the project vicinity. The Petty Creek area has been identified as an important wildlife movement corridor for several species including grizzly bears, Canada lynx, and gray wolf. The Amended EA acknowledges the Petty Creek area as an important wildlife linkage zone. As discussed in Section 4.4, the Petty Creek road exists in an already partially fragmented wildlife movement corridor. The proposed road improvements would occur within the existing road alignment not further fragmenting habitat. The proposed project extends approximately 2.5 miles into the linkage area (Figure 8). The Preferred Alternative would extend pavement into the designated movement corridor for only about a 0.7 mile (Figure 8). The remaining road surface within the project area would remain gravel. Improving the road would permanently remove about 6 acres of vegetation. This would; (a) not substantially increase the distance between habitats on either side of the road (i.e., widen the roadway); (b) not result in appreciable loss of habitat near the road; or (c) result in a substantial incremental increase in the existing fragmented wildlife movement corridor. With the exception of guardrail at stream crossings, no permanent structures would be installed that would hinder wildlife from crossing the road. Therefore, the physical footprint of the Preferred Alternative would not further fragment habitat or the designated wildlife movement corridor.

Although the posted and design speed of the road would remain 35 mph, some drivers would likely exceed this limit as they do under current conditions (Section 4.3). While the curvature of the roadway would essentially follow the existing alignment which may control increased speeds, improvements to the clear zone and the surface (particularly paving the first 10 miles), may result in an increase in speeds and/or the number of people speeding over the No Action Alternative. Therefore, the Preferred Alternative may result in an increase in wildlife/vehicle collisions, although this is not quantifiable based on existing accident data.

Although there could be increased speeds along the paved section of roadway, the improved surface of the Preferred Alternative would provide better vehicle control (i.e. shorter stopping distances and better handling during sudden changes in vehicle course).

To further assist in controlling wildlife/vehicle collisions, warning signs would be placed along the road in areas of typically high wildlife use. The goal is to heighten the public's awareness of potential crossings of wildlife as they travel through these areas. An acceptable design of the signs and their placement would be decided in cooperation with MFWP and USFS. Also, the increased size of stream crossing structures would allow for easier passage of wildlife under the roadway rather than over it, further minimizing the likelihood of wildlife/vehicle collisions.

Human development indirectly associated with a road project can have negative impacts on wildlife, similar to the impacts discussed in Section 4.4.1. Although improvements to the road would likely make it more attractive to potential developers, this potential for development is limited as described in Section 4.1. However, based on results of the Headwaters Study, the Preferred Alternative would likely promote some development along the Petty Creek road corridor; but this would be a minor increase in the rate of development, not the total amount of development that could eventually occur.

The above also holds true for the Gravel Alternative. Given retention of a curvilinear roadway design, efforts to improve vehicle control, addition of warning signs, and limited opportunities for development, impacts of the Gravel Alternative and the Preferred Alternative to the NCDE to Bitterroot linkage zone would be small. Additionally, the use of construction timing restrictions, BMPs during construction, efforts to reduce sedimentation, and improvements to stream crossing structures, impacts from both alternatives to general wildlife would not be substantial.

Furthermore, since the public EA was published in March 2008, the MLP has acquired lands in the project area. The land purchased as part of the MLP consists of a series of Plum Creek Timber Company in-holdings that were interspersed within the National Forest. The goals of the MLP are to conserve vital fish and wildlife habitat and water resources, to preserve public access to the land for hunting, fishing, hiking and other recreational pursuits is preserved, and to continue sustainable timber harvest for the benefit of local communities. Information pertaining to the MLP has been added to the land use and wildlife sections. In addition, the WFLHD would facilitate the USFS in acquiring up to 1,000 acres of MLP land for permanent conservation which would limit

development and help preserve the wildlife movement corridor within the larger linkage zone between the NCDE and the Sellway-Bitterroot Ecosystem further minimizing impacts to the wildlife movement corridor.

### 10.1.2 Zoning/Growth Inducement

Response to comments: 1-2, 1-3, 1-8, 2-3, 3-1, 3-3, 3-6, 3-7, 4-1, 4-2, 5-5, 6-5, 7-6, 11-1

Several comments were made in response to county zoning restrictions that were referenced in the public EA. WFLHD realizes that these statements were made erroneously. Missoula County does not have zoning restrictions in place but does have land use and occupancy designations which they use to recommend appropriate land management activities. The Land Use section of this Amended EA (Section 4.1), which also considers cumulative impacts, has been updated accordingly to remove these references to zoning.

In line with the lack of zoning, many comments were made stating that this lack of zoning would lead to increased development facilitated by proposed improvements to Petty Creek Road. Of specific concern was the Plum Creek Timber Land in the vicinity of the project. Subsequent to the public release of the 2008 Petty Creek EA, the MLP has acquired 10,000 acres of Plum Creek Timber Land in the project area. In addition, about 31,249 acres of MLP lands south of the Petty Creek project area was transferred to the USFS in March 2010.

Approximately 67 percent of the lands in the Petty Creek area consist of publicly-owned forest land managed by the Forest Service as well as small parcels managed by the State of Montana as forest lands. Private lands consist of private landholdings as well as lands owned by the TNC/MLP. Currently, MLP lands total approximately 23 percent of the land mass in the area. The goals of the MLP include sustainable timber harvest, recreation, and fish and wildlife conservation. Public access on MLP lands is limited by restrictions imposed by TNC; these restrictions are similar to, if not exactly the same as, USFS regulations for public use of lands (TNC 2009a) and are designed to protect the natural resources while expanding public access on acquired lands. There are numerous factors that may affect land development in a particular area including availability and quality of water, cost of power and utilities, availability and quality of schools and public services, land prices, zoning ordinances, and demand. Regardless of the specific factors that might lead to development in the project area, the large number of protected acres would allow the wildlife movement corridor through the project area to remain functional. As discussed in Section 4.1, the Preferred and Gravel alternatives may make the corridor more attractive to potential homebuilders compared to the No Action alternative. However, given the high percentage of public lands and the newly acquired MLP lands along with development limitations such as physical constraints and subdivision and septic tank guidelines, growth in the wildland/urban interface would be limited to some extent. The future purchase and management agreements set forth by TNC has the potential to increase non-residential land status in the Petty Creek watershed up to approximately 90 percent. (Please refer to Section 4.1 for additional information pertaining to land use and MLP lands in the vicinity of the project).

### 10.1.3 Sedimentation

Response to comments: 1-4, 5-8

One purpose of the project is the reduction of sediment loading in Petty Creek. The comments received indicated concern that the public EA did not include adequate information to accurately assess the benefits of the proposed project on reducing sediment input to Petty Creek. Since the 2008 public EA, a Sediment Assessment was conducted which included both a field review and sediment modeling to measure sediment delivery from the road to Petty Creek. This study indicated that in its current state, Petty Creek Road is contributing approximately 433 tons per year of sediment to the creek. According to the analysis, the Preferred Alternative would reduce sediment input to Petty Creek by 406 tons per year (433 tons per year to 27 tons per year). The Gravel Alternative would reduce sediment to a load of 216 tons per year. This information has been included and discussed further in revisions to the Water Quality section, and a copy of the Road Sediment Assessment can be found in the Appendix 6.

### 10.1.4 Maintenance

Response to comments: 1-5, 4-3, 5-7

One purpose of the proposed Petty Creek project is to reduce the amount of maintenance work required on this road. Many comments were made regarding the lack of information provided that pertained to the existing excessive efforts, resultant costs to maintain the road, and how these efforts compare to maintenance on a paved roadway surface. A section has been added to the EA which discusses maintenance costs for the current road, the Preferred Alternative and the Gravel Alternative. Please refer to Chapter 3 and Section 4.14 for additional information pertaining to maintenance costs.

### 10.1.5 Traffic and Accidents

Response to comments: 1-6, 2-1, 2-2, 3-5, 5-6, 6-1

Several comments were made regarding traffic on Petty Creek road. Of special concern was the potential for an increase in accidents in the event the road is paved. The concern in the comments was that placement of pavement would allow for increased travel speeds which would lead to more accidents. As previously stated in this Amended EA, the posted speed would remain the same 35 mph as it is now. Also, although the 10 miles of the road would be paved with the Preferred Alternative and the obstructions would be removed from the clear zone, the curvilinear alignment would be maintained, discouraging increases above current driving speeds (Section 4.3.2). Additionally, the increased vehicle control associated with an improved surface would help prevent collisions otherwise potentially caused by the loose gravel and washboarding of the substandard gravel road. It should be noted that human error and poor decision-making would likely continue to be factors in collisions regardless of the type of road surface provided.

In addition to accident concerns, comments were also made regarding traffic volumes on the road and whether these volumes warrant paving the entire road. As shown in the EA, traffic volumes are higher at the north end of the project (412 ADT) and decrease as the project corridor proceeds south. In light of this fact, extensive coordination has occurred with the SEE Team and the USFWS in the last several months, and the decision was made to alter the Preferred Alternative to end the new pavement at MP 10 and provide a gravel surface for the last 1.8 mi. The Preferred Alternative has been updated to reflect this new change in the EA.

Section 4.3 contains information pertaining to transportation and safety for the No Action, Preferred and Gravel Alternatives.

### 10.1.6 Wildlife Collisions

Response to comments: 1-7, 3-5

Similar to the vehicle accident concerns, several comments were received regarding a potential increase in vehicle-wildlife collisions following road paving. There are established populations of large species in the project area including elk, deer, black bears, bighorn sheep, and mountain lions. Vehicle strikes on any of these can cause major damage to vehicles, people, and the wildlife. However, vehicle strike is a function of vehicle speed, sight-lines, traffic volumes, and wildlife movement patterns. Currently, the Petty Creek road is relatively curvy roughly following the natural terrain. Although the posted and design speed of the road would remain 35 mph, some drivers would likely exceed this limit as they do under current conditions (Section 4.3). While the curvature of the roadway would essentially follow the existing alignment which may control increased speeds, improvements to the clear zone and the surface (particularly paving the first 10 miles), may result in an increase in speeds and/or the number of people speeding over the No Action Alternative. Therefore, the Preferred Alternative may result in an increase in wildlife/vehicle collisions, although this is not quantifiable based on existing accident data.

Although there could be increased speeds along the paved section of roadway, the improved surface of the Preferred Alternative would provide better vehicle control (i.e. shorter stopping distances and better handling during sudden changes in vehicle course). To further assist in controlling wildlife/vehicle collisions, warning signs would be placed along the road in areas of typically high wildlife use. The goal is to heighten the public's awareness of potential crossings of wildlife as they travel through these areas. An acceptable design of the signs and their placement would be decided in cooperation with MFWP and USFS. Also, the increased size of stream crossing structures would allow for easier passage of wildlife under the roadway rather than over it, further minimizing the likelihood of wildlife/vehicle collisions. Additionally, the proposed project does not include the placement of fencing along the right-of-way or other elements that might alter wildlife movement patterns. For these reasons, vehicle-wildlife collisions are not expected to increase substantially as a result of paving the road. Please refer to Section 4.4 for additional information pertaining to wildlife-vehicle collisions.

### 10.1.7 Road Standard Pavement versus Gravel Road

Response to comments: 3-2, 3-4, 6-1

Several comments were received that suggested upgrading the road to a full gravel-road standard instead of a fully paved road. As a result, the Gravel Alternative has been added and is analyzed in this Amended EA. In addition, since the EA was published in March 2008, the Preferred Alternative has also been altered slightly. After much coordination with the SEE Team and USFWS, a decision was made to alter the Preferred Alternative to end the pavement at MP 10 [KP 16.1] and provide improvements along with a gravel surface for the last 1.8 mi [2.9 km]. This alternative has become the new Preferred Alternative and is analyzed in detail within the revised EA.

### 10.1.8 Mitigation

Response to comments: 1-9, 2-4, 4-1, 6-6

Three comments were made regarding mitigation for impacts to forest carnivores, with two commenters suggesting acquisition of conservation easements to reduce such impacts. As mentioned previously, Petty Creek road exists in an already partially fragmented wildlife movement corridor, and the Preferred and Gravel Alternatives would likely not result in a substantial change in the existing corridor. With the inception of the MLP since the EA was published in March 2008, several parcels have been purchased in the project area primarily for conservation purposes, which would serve to help preserve land and therefore wildlife habitat in the vicinity of the proposed project. This consists of 10,000 ac of the former Plum Creek Timber lands. Additional information regarding the MLP is located in the Land Use section (Section 4.1). In addition, with both the Preferred and Gravel Alternatives WFLHD is proposing to facilitate acquisition of up to 1,000 acres of MLP land in the project area for permanent conservation by the USFS. The final acreage to be acquired would be based on the price of the land in combination with priority acquisition that is agreeable to both the USFS and the MLP for conservation. Permanent conservation would contribute to preservation of local movement abilities and help preserve a wildlife movement corridor within the larger linkage zone between the NCDE and the Sellway-Bitterroot Ecosystem that would be free from future development.

Another comment was made suggesting WFLHD launch and fund a community based task force to assess and mitigate threats to wildlife movement in Petty Creek. In light of the best available information, the large amount of land acquired by the MLP, and measures incorporated into the proposed project to minimize wildlife connectivity impacts, WFLHD has determined that such a task force and study is not warranted at this time. However, there may be other impacts or threats to wildlife connectivity in the broader region that are outside the scope of this project, and WFLHD encourages assessment and mitigation of these impacts. In the broader scope, WFLHD is currently participating in and providing funding for the *Wildlife Linkage and Highway Safety Assessment: A Prioritization and Planning Tool for Western Montana* (Williams et al 2009) which is a study conducted by the Safe Passages Program of the American Wildlands organization to help address and improve wildlife connectivity in Montana.

### 10.1.9 Other Comments

The following is a summary of additional comments and the responses to those comments.

Wolf pack – comment 3-10, 5-3, 6-2

- These comments pertain to wolf packs in the vicinity of the project. The public EA states that the project area does not support a wolf pack and then proceeds to state that two packs range within the study corridor, which commenters find contradictory. As summarized in the Amended EA under project impacts for the Preferred Alternative, although wolves may use the corridor as they move between territories, they are not known to reside in the vicinity of the proposed project. The Amended EA correctly represents the use of the area by wolves in Section 4.4.2, and no changes are required beyond minor text edits to improve readability.

Lynx – comment 3-9, 5-4, 6-3

- These comments are in response to the section regarding the Canada lynx and impacts to the lynx from the proposed project. The 2008 EA states that the project does not lie within suitable lynx habitat because of its elevation, but commenters disagree with this statement and provide evidence of lynx activity in the project vicinity. As with wolves, although suitable lynx habitat does not occur in the project area, lynx may use the area as a movement corridor which would explain evidence of lynx activity. The Amended EA has been updated to reflect this information in Section 4.4.2.

Grizzly bear – comment 3-11, 4-1, 5-2

- These comments pertain to the presence of grizzly bears in the project area. Commenters disagreed with the statement in the 2008 EA that no grizzly bears have been reported in the project area. Although grizzly bears have been seen within a mile of the project, no sightings have occurred along this section of roadway. Occasional grizzly bear sightings do occur in the region; however, it is likely that the area may be used by grizzly bears as a migration corridor between territories. The Amended EA has been updated to reflect this information.

Bighorn sheep – comment 1-7, 7-2, 12-1

- Comments were made regarding bighorn sheep crossing the road in many areas and information was requested regarding animal-vehicle collisions. Little information exists regarding collisions in the project vicinity between bighorn sheep and vehicles. Please refer to Section 10.1.6.

Montana Fish Wildlife and Parks (MFWP) bearing increased costs – comment 3-8

- One comment was made regarding MFWP bearing increased costs as a result of responding to increased wildlife conflicts in turn resulting from increased development in the project area. As in 10.1.2 above, the rate of development

within the project area may change whether the road is paved or unpaved but it is difficult to quantify. However, with the inception of the MLP and acquisition of 10,000 acres of Plum Creek Timber land coupled with the purchase of up to 1000 additional acres through the project for wildlife mitigation, potential growth in the area will be reduced. Therefore, it is not expected that implementation of the Preferred Alternative would substantially increase MFWP's costs associated with responding to wildlife conflicts.

BMPs – comment 3-13

- One comment was made that BMPS be incorporated into the project. These measures would be incorporated both through permitting as well as through project plans and specifications with implementation of either the Preferred or Gravel Alternatives.

Mid-size culvert animal passage – comment 1-7

- One comment was made regarding increasing culvert size to allow for mid-sized carnivore and mammal passage. Unfortunately, increasing culvert size to accommodate large animals would require a substantial change in preliminary project design including raising the grade of the road substantially to accommodate these structures. This would result in increased costs, increased acquisition of right of way, complications providing access from private driveways and other access roads, and additional environmental impacts including but not limited to fill of wetlands, encroachment on Petty Creek or other aquatic habitats, and installation of potential barriers (i.e., guardrails and a much higher elevation roadway to navigate) to wildlife movement occurring outside the drainages. Additionally, for large animal crossing structures to function effectively, fencing or some other way to funnel animals to the structures would have to be installed, resulting in additional costs and impacts. Furthermore, the relatively low traffic volume of the road would not rise to the level to warrant structures designed for large animal passage and the associated added expense, complications, and impacts.

Road encroachment – comment 3-14

- A comment was made to include riparian buffers of no less than 50 ft along the road. Because of the steep terrain or other barriers in the project area, providing a 50-ft riparian buffer is not feasible in most locations. Shifting the road 50 ft away from the creek would require the acquisition of new right-of-way, increase the impacts to terrestrial species and marginal vegetation, and require substantial amounts of earthmoving construction. As the Preferred and Gravel Alternatives are described in this Amended EA, the road would be shifted away from the creek as appropriate, and vegetation would be established or improved between the road and Petty Creek, but for the most part the improvements would follow the existing alignment as much as possible. Moving the road a minimum of 50 ft away from Petty Creek would result in greater costs and environmental and landowner impacts than retaining the existing alignment with drainage and vegetation improvements.

Long-term impacts evaluated further – Comment 3-15

- This comment indicates that larger scale, long-term impacts on the natural integrity of the watershed must be evaluated and included under the cumulative impacts section of the document. Many of the cumulative impact sections in the Amended EA have been updated to reflect the existing and future conditions. Because approximately 90 percent of the lands within the watershed are protected from residential development, impacts to the natural integrity of the watershed are expected to be minimal with implementation of either build alternative.

Forest Service management – comment 3-12

- This comment states that the USFS would now be required to manage its lands in a manner that reduces fuels for fire prevention thereby expanding the wildland/urban interface. Given the high percentage of protected lands, including the newly acquired MLP lands, growth in the wildlife/urban interface is likely to be minimal. The road project would not substantially change the nature of the area or the ability of the USFS to manage lands in the project vicinity.

Road designation – comment 5-9

- One comment questioned the designation for the road stating that Forest Highway funds are used to fund improvements for roads serving national forest-related traffic but that the Petty Creek road is primary for residential usage. Although the road does serve residential users, it also serves as access to the LNF. This can often be the case where a forest road serves more than one user as is the case on this project.

Contract provisions – comment 6-4

- This comment pertains to contract provisions requiring contractors to reduce the availability of project-related wildlife attractants within the project corridor. This is a standard BMP that would be incorporated into the project plans and specifications package should one of the build alternatives be implemented.

Global warming – comment 7-4

- This comment states that EAs must assess project impacts to global warming. Because traffic volumes are not expected to increase substantially as a result of the proposed project, impacts to greenhouse gas (GHG) emissions and therefore global climate change would be negligible. From a policy standpoint, FHWA's current approach on the issue of global warming is as follows:

  To date, no national standards have been established regarding greenhouse gases (GHG), nor has USEPA established criteria or thresholds for greenhouse gas emissions. On April 2, 2007, the Supreme Court issued a decision in *Massachusetts et al v. Environmental Protection Agency et al* that the EPA does have authority under the Clean Air Act to establish motor vehicle emissions standards for carbon-dioxide emissions. The EPA is currently determining the implications to national policies and programs as a result of the Supreme Court

decision, including a joint rulemaking with U.S. Department of Transportation regulating fuel economy and GHG emissions from motor vehicles. However, the Court's decision did not have any direct implications on requirements for developing transportation projects.

The climate impacts of carbon-dioxide emissions are global in nature. Analyzing how alternatives evaluated in this environmental document might vary in their relatively small contribution to a global problem. Further, because of interactions between elements of the transportation system as a whole, emissions analyses would be less informative than ones conducted at regional, state, or national levels. Because of these concerns, FHWA concludes that it cannot usefully evaluate carbon-dioxide emissions in this Amended EA.

The FHWA is actively engaged in many other activities with the U.S. Department of Transportation Center for Climate Change to develop strategies to reduce transportation's contribution to GHGs, particularly carbon-dioxide emissions, and to assess the risks to transportation systems and services from climate change. FHWA will continue to pursue these efforts as productive steps to address this important issue. FHWA will review and update its approach to climate change at both the project and policy level as more information emerges and as policies and legal requirements evolve.

Range of alternatives – comment 7-3

- This comment states that too few alternatives were analyzed and presented to the public. Since publication of the EA in March 2008, a Gravel Alternative has been added. Another alternative that could have been considered was a complete upgrade of the road to a standard which would include curve straightening and other improvements. This alternative was eliminated very early in the process because of the environmental sensitivity of the area and in an effort to meet the project purpose and need but limit impacts to the environment.

Further study and potential significant impacts – comments 1-2, 3-1, 7-1, and 7-7

- Three commenters suggested that the EA was insufficient to assess impacts from the Petty Creek project and that further study is required. This statement was partially predicated on the fact that incorrect zoning regulations were erroneously referenced in the public EA and that without these regulations, increased development is inevitable. As stated in Section 10.1.2 above, the Amended EA has been updated accordingly regarding zoning designations. The Gravel Alternative has also been added as part of the analysis. Furthermore, the area available for residential development would be limited now that the MLP has acquired 10,000 ac of Plum Creek Timber land in the project area. In addition, as per 40 CFR 1501, the purpose of an EA is to determine whether or not a federal undertaking would significantly affect the human environment. If it is determined that the impacts are not significant, then WFLHD would issue a Finding of No Significant Impact on one of the alternatives under study. If it is determined that

impacts are significant, preparation of an Environmental Impact Statement would be required.

Increased human-animal conflict – 3-7, 5-7

- These comments expressed concern over increased human-animal conflict as a result of the project because of potential increased development. Please refer to Section 4.1 (Land Use) and 4.4 (Fish and Wildlife) for information pertaining to such impacts from the Preferred and Gravel Alternatives.

Lack of public input – comment 7-7

- One comment was made that public input was insufficient on the project. The Tri-Agency and WFLHD have made an effort to include and inform the public regarding the status of the project. This has included four project newsletters/post cards in 2004, 2006, 2007 and 2008 and three public open houses in 2004 and 2005. A website has also been established for the project which provides information on the status of the project and is a medium for public comment at any time.

Walker/Bicycle use – Comment 8-1

- This commenter requested for provisions for bicycle and pedestrian users of the area. Because of the relatively low volume of traffic on Petty Creek Road and the fact that bicycle use in the area is minimal, a bicycle lane is not justified when weighed against the additional costs and environmental impacts. Regardless, improvements to the road including the paved roadway and shoulder should allow safer use of the roadway for bicyclists and pedestrians.

Pave on present route – Comment 9-1, 10-1

- These commenters requested the road be paved on the present route to maintain the 35 mph speed limit appropriate for the rural setting and also so as not to impact road grade or gate for private residence. As stated in the EA, this is the Preferred Alternative for the project. The grade of the road would not be raised or lowered with the exception of accommodating culverts and the gate would not be impacted by curve straightening.

LETTER 1

# American Wildlands

"Science-based conservation for the Northern Rockies."

Terry Schumann, Environmental Protection Specialist
Western Federal Lands Highway Division
Federal Highway Administration
610 East Fifth Street
Vancouver, Washington 98661-3801

April 20, 2008

Dear Terry:

Although I called several times to get myself on the mailing list for the Petty Creek project, I never received a copy of the EA. I received notice of its availability from other sources. American Wildlands continues to have concerns about the Petty Creek Road Improvement Project, which proposes to pave 11.8 miles of road and replace bridges and culverts, and make additional improvements in a high priority wildlife linkage area.

Wildlife Connectivity

American Wildlands is completing a wildlife linkage study called the Priority Linkage Assessment for the Cabinet-Purcell Conservation Area. The assessment is based on expert opinion from local and regional biologists and identifies and ranks forty-three wildlife linkage areas. The Petty Creek linkage area received a high priority rating and was the fifth highest priority linkage out of the forth-three. It is very important for linkage from the Ninemile and Reservation Divides into the Bitterroot Mountains. It provides one of the best regional movement corridors for wide-ranging ungulates and carnivores moving into the Salmon-Selway ecosystem from ecosystems in the north.

We are concerned about the Petty Creek Road project because we don't see it as an incremental impact to wildlife resources. We believe that it is a major catalyst for significant fragmentation in this important wildlife movement area.

The EA acknowledges the Petty Creek area as a linkage zone, "which provides seasonal habitat containing food, shelter, and security for wildlife moving between two large blocks or public land known as the NCDE and the Selway-Bitterroot Ecosystem." The EA continues, "Maintaining the effectiveness of this linkage is important for the long-term health of wildlife in the area. Its effectiveness is reduced as human development fragments wildlife habitat." Human development is the main threat to wildlife movement in the Petty Creek area. 1-1

The EA erroneously states that development impacts are not expected to be substantial due to "county zoning restrictions and the large amount of publicly owned land in the area" (EA, p. 48). It also states that "improvements to the road would likely make it 1-2

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LETTER 1

more attractive to potential developers. Nevertheless, development in the Petty Creek valley is controlled through county zoning" (EA, p.49). There is no zoning in Petty Creek. There is a county growth plan, which suggests levels of development, but it is not enforceable or regulated. Therefore, the assumption that development will be curtailed by zoning is false. We believe this issue is critical enough to warrant further study. 1-2

Impacts are assumed to be minimal for lynx and grizzly bear because "the project is located in a low elevation area outside of lynx [or occupied grizzly bear] habitat, design speed of the roadway would remain low (35 mph), future traffic volumes are expected to be relatively low, and the species primarily moves at night when traffic volumes are even lower" (EA, p.41). We believe that the impact assessment for these species must include specifics about projected impacts, including those from the development associated with road paving. The analysis should include details about how animals may move through the linkage area, how project activities and associated development may affect that movement, and how it may be mitigated. 1-3

Purpose and Need

The purpose of the project is to "improve Petty Creek Road's operational safety, reduce its excessive maintenance efforts, and reduce its contribution of sediment to Petty Creek (EA, p.8). Although the reduction of sediment is the main environmental factor given for the need of this project, there is very little information about the current level of sedimentation from the road or how the projected levels of sediment delivery with the proposed action. We believe that the culverts need to be replaced regardless of the paving project and that these undersized culverts demand immediate attention from the responsible agency. We are very interested in seeing how paving the road would affect projected sediment rates and would like to see an analysis to determine the effects from the no action and proposed action alternatives (minus the culvert replacement). 1-4

Similarly, another purpose of the project is to reduce "excessive maintenance efforts." The analysis should indicate how much time and money is currently spent by the county on road maintenance and how much is projected with the road improvements. 1-5

We are also concerned that the paving project will be completed for driver safety reasons and yet it may potentially decrease safety because of the higher speeds that drivers use. The accident history for the road indicates that many of the accidents were due to inattentive/careless driving, excessive speed, animals, alcohol, and only one due to ruts/holes/bumps in the road. It seems likely that paving may increase the accidents due to excessive speed (already 50% of the accidents). Have there been before and after studies of accident rates before and after paving projects? The EA states that speed data suggests that drivers on the Petty Creek Road tend to drive the graveled and paved portions at similar speeds and "[b]ecause the preferred alternative would essentially maintain the existing curvilinear alignment of Petty Creek Road, a paved surface would not substantially change traffic speeds on the road" (EA, p.48). How do these speeds reflect adjustments to curvilinear alignment rather than paved/unpaved conditions? It seems as if there are a lot of speculations about the safety factor and that these speculations are not based on research and data. 1-6

LETTER 1

Other Wildlife Concerns

Bighorn sheep cross the road in several locations on the Petty Creek Road. Have there been any animal-vehicle collisions between drivers and bighorn sheep on the road?

The project includes culvert replacement with culverts that will allow for small mammal passage. Can the size of these culverts be increased to allow for mid-sized carnivore and mammal passage? 1-7

Mitigation and Additional Research

The EA states, "[I]t is difficult to predict the amount and rate of development that would occur in the Petty Creek valley, and even more difficult to determine how much might be attributable to improvements to the road" (p. 49). Many wildlife experts have observed dramatic increased in development after a road is paved. An outstanding question for this project is: to what extent will paving facilitate development? If these predictions haven't been made and can only be guessed at, then research is necessary to assess changes and be able to predict them for this and future projects. Ideally, this research would inform decision-makers on the Petty Creek Road project. If the Petty Creek project is approved, then this research should be considered part of its mitigation. Other Forest Highway projects are scheduled for key wildlife habitats in the area, and this information is needed to make informed decisions about them. 1-8

Additional mitigation is needed to assess and mitigate threats to wildlife movement. We would like the Forest Highways Program to launch and fund a community-based task force to address wildlife movement concerns in Petty Creek. The Ninemile Wildlife Workgroup, just north of Petty Creek, offers a model of the types of projects and partnerships that could be created with such as task force.

Because the greatest threat from the proposed project is the associated human development, additional mitigation needs to be included for the purchase of conservation easement in the Petty Creek drainage. These easements are necessary to offset the dramatic, indirect effects of paving the Petty Creek Road. 1-9

Thank you for considering these comments. Please call us with any questions and keep us informed as the project progresses.

Sincerely,

Kim Davitt
Director, Missoula Field Office

LETTER 2

GREAT BURN
STUDY GROUP
SINCE 1971

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May 1, 2008

Terry Schumann, Environmental Protection Specialist
Western Federal Lands Highway Division
Federal Highway Administration
610 East Fifth Street
Vancouver, Washington 98661-3801

Dear M. Schumann:

Please accept the following comments on behalf of the Great Burn Study Group concerning the Environmental Assessment for the Petty Creek Road Improvement Project MT PFH 71-1(1). The Great Burn Study Group (GBSG) is a local grassroots conservation organization based in Missoula. GBSG has concerns about this project, which proposes to pave 11.8 miles of road in the Petty Creek drainage, which is a well-known wildlife linkage zone. This letter highlights our issues with and support of particular components of the project.

We wholeheartedly support your proposal to increase signage in the area, especially wildlife warning signs for bighorn sheep crossings. In addition, we support any culvert replacement that assists in fish and mammal migration and believe that this needs to occur regardless of the paving project. On page 36, the EA states that "several of the existing crossing structures inadequately provide passage for all life stages of fish. To improve habitat, all new structures would be designed for passage of all life stages."

The EA contains quite a few contradictory statements. On page 12, the EA states that "the road corridor is reported to receive some use as a direct link between US 12 and Interstate 90. The amount of such use is currently unknown and cannot be differentiated from recreational and residential uses." This contradicts Section 2.1 C under Project Termini which reads "Traffic volumes beyond this portion of the road are projected to remain low into the foreseeable future, reducing the potential need for future improvements." 2-1

The purpose and need of the project is to "improve Petty Creek Road's operational safety…" Of particular interest is the EA's subsequent statement regarding the main cause of accidents on Petty Creek Road. The EA states that the majority of accidents are not due to the condition of the road but "50% excessive speeds, 39% inattentive careless driving." We believe that paving will only increase driving speed and therefore increase the number of accidents and possibly wildlife fatalities. 2-2

LETTER 2

On page 48, the EA states that development impacts are not going to be substantial in this area but then continues to state that improvements to the road would likely make it more attractive to potential developers. We agree that improvements will likely increase development and we think that an analysis can not adequately look at impacts to wildlife from road paving without also assessing the cumulative effects of development resulting from road paving. 2-3

Finally, if this project is approved, we urge that additional mitigation measures be taken for the purchase of conservation easements in the Petty Creek drainage. 2-4

Thank you for the opportunity to comment. We would like to stay informed on the progression of this project.

Sincerely,

Dale Harris
Executive Director
Great Burn Study Group

Beverly Dupree
Policy and Field Studies Director
Great Burn Study Group

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GREAT BURN STUDY GROUP

Montana Fish, Wildlife & Parks

LETTER 3

Region 2 Office
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May 2, 2008

Western Federal Lands Highway Division
610 E 5th St.
Vancouver, WA 98661

Reference: Petty Creek Road Improvement Project, MT PFH 711(1)--Environmental Assessment

Dear Project Leader:

We have reviewed the (draft?) Environmental Assessment (EA) for this proposal to improve Petty Creek Road, and our comments follow.

Adequacy of the EA

FWP finds this EA to be seriously flawed, misleading and inadequate under NEPA, and states that it must be redone.

The whole analysis is invalid because it is predicated on the assumption that development and subdivision (for the Petty Creek project area) is regulated by zoning--which is not in fact in existence but is guided by a comprehensive land use plan, which is only guidance. The analysis is flawed by inadequate knowledge of factors influencing development and the regulatory framework in which development occurs in Missoula County. The effects of a paved thoroughfare on an increasing rate of development and attendant impacts on fish and wildlife resources cannot be analyzed or predicted with this lack of knowledge. This flawed assumption forms the basis for analysis of several cumulative impacts sections in this EA. This document must be redone. 3-1

Further, due to the expected significant impact of this paved road on opening up the area for development, we state that an Environmental Impact Statement is the appropriate level of environmental analysis needed for this proposed action.

We would also expect an in-depth analysis of a paved thoroughfare on development potential for the Petty Creek area to include the "improved gravel road" as a fully developed alternative. 3-2

LETTER 3

Supporting Detail

Section 4.4.3 (Cumulative Impacts on Vegetation, pg. 30) states, "The large amount of public land in the Petty Creek drainage and county zoning requirements have helped restrict residential development . . ." Other references to zoning are in General Wildlife (Sec. 4.5.9; pg. 4, para. 1; pg. 49, para. 4 & 5), Land Use (Sec. 4.13; pg. 58, para. 4; pg. 59, para. 1 & 2), and the Summary of Public and Agency Comments (Attach. 6; pg. 77, para. 1). All these references to zoning are incorrect; there is no zoning in the Petty Creek project area. The "Land Use" section (4.13) discusses the current land use designations for this area, and states, "However, development is limited . . . by the large amount of Open and Resource land which restricts heavy development" (4.13.1, para. 1).

This land-use designation of open and resource (1 dwelling per 40-acres minimum) is in Missoula County's 1975 Comprehensive Land Use Plan, which is a recommendation (guideline) for this area; it does not equate to zoning and it does not provide the Missoula Board of County Commissioners with regulatory authority to deny subdivision solely on the Plan. For example, since 2001 FWP has reviewed 5 proposed subdivisions in the open/resource designated area along and near Petty Creek: 2 of the subdivisions proposed a total of 4 lots, each larger than 40 acres, for an average lot size of 99 acres each; but the other 3 subdivisions proposed a total of 11 lots ranging in size from 3.3 to 13.0 acres (with one lot 46.0 acres), for an average size of 10 acres each--four times the "recommended" density. The Land Use section (4.13, para. 1) indicates, "Approximately 50% of the land in the Petty Creek area is publicly-owned forest land"--which in effect could leave half of the land in the Petty Creek valley open to development. 3-3

The EA states several times in Cumulative Impacts sections something similar to, "The large amount ["50%"] of public land in the Petty Creek drainage and . . . have helped restrict residential development . . ." (Section 4.4.3, Cumulative Impacts on Vegetation, pg. 30). The EA fails to indicate that the private land includes in excess of 6,500 acres of Plum Creek Timber Land. Simple math tells the story of the effect of a paved road on enabling development at, for example--1 dwelling per 10 acres--as FWP has seen in recent years reviewing subdivisions in this area. The EA also fails to analyze the current development pattern--average size of the non-Plum Creek parcels, how and when they were created, etc.

Issues to Be Addressed in an EIS (or a Rewritten EA )

We provide the following information for your inclusion in the rewrite of this EA, or expansion to an Environmental Impact Statement:

*Wildlife*

For wildlife resources in the Petty Creek drainage, we recommend the Gravel Alternative be fully explored in a newly written EA or EIS. Although this is an alternative that was "considered but not advanced," it is the best alternative to address our concerns listed below. If this alternative is not forwarded as a viable alternative, then we recommend the No-Action 3-4

LETTER 3

Alternative relative to significant wildlife concerns. By paving the road, the Petty Creek Road Improvement Project could potentially compromise wildlife and wildlife habitat in several ways, including:

1. The paving project would result in higher traffic volumes and speeds, leading to a higher frequency of vehicle/wildlife collisions. We disagree that paving the road would not lead to increased speed (pg. 48, para. 5), and we point to Table 2 (Sec. 3.3.1, Gravel Alternative), which indicates that regardless of paving presence/absence, current speeds are essentially the same on both categories of road in Petty Creek--currently close to half the drivers are exceeding 35 miles-per-hour in speed, with about one-fifth going 40 mph or faster. The EA also states that half of the 18 accidents in a 4-year period were caused by excessive speed (1998-2002; pg. 13, para. 2). As your Project Newsletter (Volume 3: March 2008) photo depicts, bighorn sheep extensively use the area, and therefore would be particularly vulnerable to this source of mortality. 3-5

2. The Petty Creek area is occupied by a variety of other wildlife species, including white-tailed deer, elk, black bear, and mountain lion. In addition, there are a host of forest carnivores that utilize the Petty Creek area, including but not limited to bobcat, marten, fisher, wolverine, Canada lynx, gray wolf, and black bear. We expect that this project will stimulate public demand for improving the adjoining Grave Creek Road to the south, resulting in residential development and increased traffic volumes in that drainage. Ultimately, what is currently a large block of forested habitat will be fragmented north-to-south by a heavily traveled, higher-speed road between US Highway 12 and Interstate Highway 90, and bordered by residential developments. 3-6

3. We expect that this project will facilitate increased residential development in the Petty Creek area, and would result in ever increasing numbers of nuisance wildlife complaints and habitat alterations. Increased conflicts between wildlife (particularly with bears, lions and deer) and human residents will occur and often lead to direct mortality for wildlife. 3-7

4. We raised the issue of FWP bearing increased costs responding to increased wildlife conflicts due to subdivision, in one of our previous letters (18 Apr 2005, attached; Specific Wildlife Comments #9), but nowhere in the EA is this increased demand for time and expenditure by FWP mentioned or addressed. 3-8

5. Furthermore, habitat modifications by more homeowners would occur at a greater pace, reducing overall habitat effectiveness and connectivity for many species. The north-south fragmentation of a large block of forested habitat from Petty Creek through Grave Creek to Lolo Creek would make the recovery of Canada lynx and grizzly bear populations even more difficult than what already exists. Although the Assessments states that Canada lynx will not be impacted because the project exists below an elevation of 4,800 feet, and there was not suitable habitat for lynx, we have documentation within our furbearer database of trapped lynx and lynx tracks from the East Fork of Petty Creek, west through Howard, Fish, Granite, and Lolo creeks. Human development affects lynx populations by altering or removing habitat and fragmenting the landscape. These factors decrease connectivity among habitat patches, displace the species, and potentially isolate populations, while decreasing genetic diversity and overall fitness of the species. 3-9

LETTER 3

6. The EA states (pg. 39, para. 1), "The project area does not support a wolf pack; however there may be movement between packs and territories." The Fish Creek pack ranges into the Petty Creek area (especially as a winter range area), and has had continuous tenure in the area since 2001. Our regional wolf specialist (Liz Bradley, 406-542-5523; LBradley@mt.gov) found wolf tracks in Petty Creek in 2007 that might be the Blue Mountain pack, which she believes may be using the Petty Creek area. Finally, the Bitterroot Range (an Idaho pack) could be using the area. Status of individual wolf pack(s) in the area is variable, but wolves are using the Petty Creek area. 3-10

7. In addition, grizzly bear movement has been documented in the Petty Creek area from the Ninemile/Mission Mountain corridor, as well as the Cabinet/Thompson River Corridor. Although the Petty Creek area is not within proposed or designated grizzly bear habitat (as stated in the EA for this project), connectivity to and from these areas to the Bitterroot Ecosystem is important, especially since last year wildlife biologists verified that a grizzly bear was killed in the Kelly Creek area of Idaho. Habitat connectivity across the landscape is extremely important for the recovery of a viable grizzly bear population in the Bitterroot Ecosystem. 3-11

8. Lastly, with increased development in the area, the Forest Service will be required to manage its lands in a manner that reduces fuels for fire prevention, thus expanding the wildland/urban interface. Extensive habitat modifications of previously undisturbed areas would be expected to negatively impact a variety of wildlife species. 3-12

*Fisheries*

FWP fisheries staff has been involved in the planning of this project sporadically for the past five years. During this time, four major issues/concerns with regard to the project have been consistently communicated at site visits and in writing:

1. The need for upgraded road crossings that provide stream simulation conditions, including adequate upstream fish passage. These aspects appear to be included in the current Preferred Alternative. The Western Federal Lands Highway Division (WFLHD) has done a good job of including local US Forest Service (USFS) resource staff in developing appropriate sizing and designs. All road crossings will be reviewed closely during Montana Stream Protection Act ("SPA 124") and Montana Department of Environmental Quality (DEQ) Short-term Water Quality Standard for Turbidity ("DEQ 318") permitting through FWP, but this should not be a major issue if the suggested design criteria based on "stream simulation" concepts are carried forward.

2. Incorporation of appropriate road Best Management Practices (BMPs) into the project, particularly aspects that deal with road drainage, sediment delivery to the stream and maintenance standards. The Preferred Alternative indicates that these concepts have been incorporated. Site-specific measures would be evaluated at the time of permitting, prior to project implementation. 3-13

3. The need to reduce road encroachment on Petty Creek at numerous locations, for the improved gravel and paved alternatives. This is due to both the as-built location of the 3-14

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current road and the long-term road widening that typically occurs as gravel roads are maintained but not improved. Impacts of road encroachment include short-term elevated road runoff and sediment inputs into the stream (both occur annually) and the long-term effect of limiting the floodplain and ability of the Petty Creek channel to naturally meander and adjust (channel is constricted). In past site visits, specific locations were identified (generally where the road shoulder comes within 50-100 feet of the stream bank). The EA indicates that the road would be moved away from the stream in certain locations "where feasible" (Sec. 3.2, para. 4). In early 2007, FWP formally asked for a map specifying where road encroachment issues were being addressed, but has not received that information. Through SPA 124 permitting and DEQ 318 authorizations, we will be expecting riparian buffers of no less than 50 feet along the road, unless some rare, physical site limitations preclude this possibility. (This buffer is good for either paved or unpaved roads.) *Right-of-way needs should definitely incorporate and prioritize for this provision.* 3-14

4. The larger scale, long-term impacts of the project on the natural integrity of the watershed. Paving of the Petty Creek Road will undoubtedly facilitate development and subdivision in a rural area that is critical for fish and wildlife populations, including several Federally listed species. It will also contribute to increased private property values, particularly for corporate timberlands in the Petty Creek drainage that are being pursued for protection through public acquisition and/or conservation easements. Like most rural areas in the western United States, local regulations and standards are not adequate to protect the natural integrity of coldwater systems from the associated impacts of rapid human population growth and development. These are *significant* issues in the watershed and the overall effect of the road project is clearly to the detriment of other state and federal fish/wildlife and land management agencies and their resource actions, as well as private resource conservation efforts. These significant, cumulative impacts have been completely ignored in the environmental analysis. These impacts should be clearly included under the cumulative impacts sections for sensitive species, economic analyses, wildlife, vegetation, public and agency comments, etc. 3-15

Thank you for providing the opportunity for FWP to comment on this proposal. We look forward to reviewing a rewritten EA or an EIS for this project.

Sincerely,

Mack Long
Regional Supervisor

ML/sr

C: Missoula County Commissioners
Missoula County Rural Initiatives
Lolo National Forest

LETTER 4

NATIONAL WILDLIFE FEDERATION®

Northern Rockies Natural Resource Center

240 N Higgins, #2 • Missoula, MT 59802 • Tel: 406-541 6730 • Fax: 406-721-6714 • www.nwf.org

May 1, 2008

Western Federal Lands Highway Division
Federal Highway Administration
610 East Fifth Street
Vancouver, Washington 98661

Via email: *pettycreek@mail.wfl.fhwa.dot.gov*

RE: Petty Creek Road Improvement Project, Environmental Assessment Comments

Dear Sirs:

The National Wildlife Federation (NWF) was founded in 1936 as the national voice of state and local conservation groups, and has since emerged as the nation's foremost grassroots conservation organization, leading an integrated network of members and supporters and 47 affiliated organizations throughout the United States and its territories.

Our first comment is that we believe it is totally unacceptable for the Western Federal Lands Highway Division (WFLHD) to provide such a short (30 day) comment period for a project of this significance to critically importance resources in the northern Rockies. We note that the same short comment period is also proposed for the Little Joe Road project. Both of these projects are of high interest to affected publics, locally and nationally, and clearly merit much longer comment periods. We request an extension of the comment period for this, and the Little Joe project, for an additional 120 days.

NWF is opposed to the Petty Creek Road Improvement Project MT PFH 71_1(1). We see no benefits to the project that would justify it and significant adverse impacts that would result from the project's construction. These adverse impacts are acknowledged in the Fish and Wildlife Service's (FWS) Biological Opinion dated September 14, 2006 (page 32): *The Petty Creek watershed is located within a key wildlife linkage area between large blocks of public lands. As human development continues in this drainage, including roadway improvements, this important habitat will likely become fragmented and lose its effectiveness.*

4-1

Although the FWS recognizes the importance of this area as a linkage area and the problems associated with roadway "improvements", we believe they erred in failing to

LETTER 4

recommend an adequate solution to these problems associated with the proposed construction. A part of the solution, doubtless, is in the adoption of appropriate zoning regulations by Missoula County but, certainly, also a part of the solution is avoiding unneeded road improvements that will affect the effectiveness of the area as a linkage zone. We observe that this Petty Creek project does not exist in isolation and that the WFLHD is also proposing a similar project for the Little Joe Road. Every road improvement project that is implemented in this linkage zone will have a cumulative effect in reducing the permeability of the zone to many species of wildlife including grizzly bears, lynx, wolverine, elk, deer, moose, mountain lion, black bear, and bighorn sheep.

Grizzly bears are not known to occur in the Petty Creek area but a grizzly bear was shot last fall in the Kelley Creek drainage just over the divide in Idaho from this project. This bear was a 4 year old male that came from the Selkirk area via an unknown path but this incident illustrates the importance of area (including Petty Creek) as a corridor and grizzly bear habitat. The area is in an identified recovery zone for grizzly bears area it is inappropriate for the EA not to have addressed the project's impacts on grizzly bears and for the FWS not to have insisted on an evaluation of the project's impacts on the utility of the area as a grizzly bear corridor. The statement in the EA (page 43) that grizzly bear use of the area is "incidental" is true at present but ignores the extremely high value of the area as grizzly bear habitat in the future. The area is in an identified linkage zone for bear movements by the Fish and Wildlife Service. These same concerns also hold for the EA's dismissive statement regarding wolverine (page 46).

4-1

The importance of this and other linkage zones will become increasingly critical as global warming causes changes in the distribution of wildlife habitats (mostly shifts to the north and to higher elevations) to which wildlife populations will have to adjust through movements though these linkage zones. No mention of any mitigation for the project's impacts on the linkage zone is made except on page 63 where mention is made of designing culverts for "small mammal passage" and posting of warning signs in areas where motorists may encounter bighorn sheep. These measures fail to address the impacts the project will have on movements of the large mammals mentioned above. Neither is there any detail provided in the plan on the design, frequency, or placement of the measures mention on page 63 for small mammals so it is impossible to judge their adequacy for these species.

The EA only addresses these linkage zone concerns for large mammals by mention of signage to increase driver awareness of wildlife and thereby reduce collisions. Although, mortality through collisions is a legitimate concern as a cause of wildlife mortality and human injury, from the perspective of wildlife the project's main impact will likely be on wildlife avoidance of the roadway and adjacent habitats. This avoidance is what causes fragmentation of habitats and loss of connectivity and these affects are likely to be more severe than direct mortalities to wildlife caused by collisions. These impacts are not addressed in the EA and no mitigative measures for them are contained in the EA. Although it is hard to mitigate for these impacts, some benefits could be obtained through purchase of easements in important wildlife areas or reduction in inholdings.

LETTER 4

Within the borders of the Lolo National Forest there are numerous parcels of private land to which this project would provide improved access and would result in increased traffic. The project would increase the likelihood of development of these private inholdings and increase costs to the public for providing services to them including protection from forest fires. These risks were acknowledged in the April 10, 2008 letter to Senator Tester from the Missoula County Commissioners with respect to the problems associated with use of Forest Service easements being converted into easements for access by persons purchasing parcels from Plum Creek Real Estate Investment Trust. Senator Tester's response dated April 11 also acknowledged these problems "The conversion of this land will lead to increased housing density in the wildland urban interface, leaving local and county governments with higher firefighting costs, fragmented habitat and increased road maintenance and infrastructure costs." We observe that the proposed Petty Creek project provides improved access to Plum Creek parcels as well as to private inholdings by others. The proposed project amounts to a subsidy to these private landowners at the cost of loss of habitat connectivity and increased public expense. None of these issues are addressed in the EA. 4-2

We believe that the failure of the EA to address the issue of impacts of the project on development is a serious flaw that requires correction though analysis of the impacts of similar projects elsewhere on development. Similarly, the current EA provides no numerical data supporting its assertion that the project would reduce "excessive maintenance efforts". Although the project may, in fact, reduce such expenses it is inappropriate for such statements to be made without justification, support or indication of the magnitude of projected savings so that the merits of this possible benefit can be evaluated against its environmental costs. 4-3

We acknowledge that the proposed project would likely have some modest benefits from reduced dust and sedimentation of streams as well as from improvements associated with improved passage for fish. However, these benefits could be obtained without paving the road and the EA is completely deficient in acknowledging or examining alternative approaches to obtain these benefits.

Thank you for your consideration of these comments,

Tom France

Thomas France, Esq., Director

Sterling Miller

Sterling Miller Ph.D.
Senior Wildlife Biologist

LETTER 5

NINEMILE WILDLIFE MOVEMENT AREAS WORKGROUP

P.O. BOX 435 ➤ HUSON, MONTANA, 59846 ➤ (406) 626-5675

May 1, 2008

Terry Schumann, Environmental Protection Specialist
Western Federal Lands Highway Division
Federal Highway Administration
610 East Fifth Street
Vancouver, WA 98661-3801

**RE PETTY CREEK ROAD IMPROVEMENT PROJECT EA, March 10, 2008**

One look at the Lolo National Forest (West Half) map showing drainages and land ownership tells you why the Ninemile Wildlife Workgroup (NWW), presently representing 62 households, is alarmed by this project. We have been working hard for three years toward maintaining the regionally critical "Ninemile linkage zone" (IGBC Public Lands Wildlife Linkage Taskforce, *Identifying and Managing Wildlife Linkage Approach Areas on Public Lands*, June 2004), mapping and field monitoring the movement of wide-ranging species, building community awareness of the Ninemile Wildlife Corridor in our midst, promoting living-with-wildlife skills, and cooperating with federal, state and local land management agencies, local government and private landowners to identify and retain key movement areas. The Petty Mountain Roadless Area, also part of the "Ninemile linkage zone" (*Ibid.*) is a southern extension of the Ninemile Wildlife Corridor as it approaches the Bitterroot Ecosystem: thus, the Petty Creek drainage is of paramount importance to both regional and local wildlife movement.

We will address here two aspects of the WFLHD Environmental Assessment of March 2008 (EA): (1) the presence of wide-ranging large mammals; (2) the purpose and need for the project.

**PRESENCE OF WIDE-RANGING LARGE MAMMALS**

In the past ten years, species documented by NWW, Montana Fish, Wildlife & Parks (MFWP), and the Montana Department of Transportation (Animal Incident Reporting System) using the Ninemile linkage zone as it crosses the Interstate and the Clark Fork River include elk, bighorn, moose, mule deer, whitetail deer, black bear, grizzly bear, mountain lion, gray wolf and coyote. With the possible exception of mountain lion and coyote, these species think nothing of swimming the Clark Fork with its many large and continuously shifting midstream islands. Indeed NWW has photographed this.

Reviewing the present EA, we were surprised to find scarce mention of Mack Long's (MFWP Region 2 Supervisor) April 18, 2005 review of the draft project checklist and alternatives, a six-page letter to WFLHD's Michael Boynton (Environmental Specialist)

and Ted Wood (Design Operations Engineer), summarizing two on-site field meetings between MFWP biologists and WFLHD project coordinators. Because it relates a scenario in direct opposition to that painted in the EA and because, as Long points out, MFWP are the managers of wildlife in Montana, we attach this document to our letter as Appendix A, and quote from it here:

> The Petty Creek area is important habitat for grizzly bears, wolves, lynx, other forest carnivores and other wildlife. The Bitterroot Mountain range from Missoula west to Lookout Pass is a fairly intact wildlife linkage zone that needs to be protected and nurtured in the future. It is important that agencies work together to ensure that the ability for wildlife to move freely through this area continues. This area is one of the most important wildlife linkage zones in Montana—especially for grizzly bears. It is a direct link between northwest Montana, the Bob Marshall Wilderness Complex and the Bitterroot ecosystem. It needs to be protected and not further fractured with forest road paving projects that would only encourage sprawl and heavier use by the public. (p. 2) 5-1

**Regarding grizzly bears**, Long states:

> Grizzly bear movement has been documented in this area from the Ninemile/Mission Mountain corridor and the Cabinet/Thompson River Corridor. In the past ten years, MFWP has received increased but unverified reports of grizzly bear activity on the northern end of Bitterroot Ecosystem—especially in the Petty Creek and Fish Creek drainages. The sighting reports are documented and available in the MFWP Region 2 database. In addition, one radio-collared grizzly bear was located in lower Petty Creek on several occasions and likely also occupied the upper portions of the drainage. (p. 2)

The EA states that the grizzly bear is not included in the U.S. Fish & Wildlife Service's (USFWS) list of threatened or endangered species for the project area (?), and that no grizzly bears have been reported within the project area (p. 42). "However, a grizzly was reportedly killed in 2002 near Alberton, MT, which is approximately 1 mile northwest of the beginning of the project area." (p.41) 5-2

The "reportedly killed" grizzly was the radio-collared bear mentioned above, and it was destroyed by MFWP for showing up at residences *on both sides of the Clark Fork*. For a species that can travel from the Ninemile drainage across Reservation Divide to the town of Ravalli along Highway 93N, destroy a chicken coop, and return to the Ninemile the next day, as this animal did, "1 mile northwest of the project area" *is* in the project area! Yet, the EA concludes: " . . . there are no known grizzly bears occupying the project area, and . . . use of the area by grizzly bears is incidental, *[therefore]* it is anticipated that the . . . preferred alternative would have minimal impact on the species." (p. 43)

**Regarding wolves,** the EA quotes USFWS and USFS wildlife biologists: "Wolf pack activity in the vicinity of the study corridor includes the Ninemile pack, which ranges throughout the Ninemile valley located north of Interstate 90 and the Lupine pack, which ranges between Idaho and Montana. Both of these packs range within the study corridor" (p. 39), but then concludes " . . . current use of the area by wolves is anticipated only as movement between packs or territories, *[therefore]* it is not anticipated that the proposed project would result in adverse effects to the gray wolf." (p. 40) 5-3

**Regarding Canada lynx**, Long (2005) writes: "The Checklist incorrectly states that the area in and near Petty Creek is not 'occupied' lynx habitat. However, the MFWP furbearer database contains records of trapped lynx and lynx tracks from the East Fork of Petty Creek west through Howard Creek, Fish Creek, Granite Creek and Lolo Creek." (p. 4) This information does not appear in the EA, which concludes: "Canada lynx are not known to occur in the project area except for incidental occurrence of dispersing lynx. . . . Therefore, it is determined that the proposed Federal *[i.e., WFLHD]* action . . . is not likely to adversely affect Canada lynx." (p. 41) 5-4

The EA's analyses of the presence of these two listed, and one recently delisted, ESA species in the Petty Creek area need clarification of their contradictory and at times erroneous assumptions.

In two short paragraphs under "**General Wildlife**," the EA acknowledges the widespread presence of elk, mule deer, whitetail deer, bighorns, moose, black bear and mountain lion in the project area, and their numerous crossings throughout the Petty Creek Road corridor (p. 47). On the same page it goes on to state:

> Servheen et al. (2003) have identified and assessed the Northern Continental Divide Ecosystem (NCDE) to Bitterroots wildlife linkage zone, which provides seasonal habitat containing food, shelter, and security for wildlife moving between two large blocks of public land known as the NCDE and the Selway-Bitterroot Ecosystem. Maintaining the effectiveness of this linkage is important for the long-term health of wildlife in the area. Its effectiveness is reduced as human development fragments wildlife habitat (Servheen et al, 2003). The Petty Creek Road project lies within this linkage zone.

5-5

But the EA does not anticipate any adverse effects to these species from the paving project because (1) maintaining the curves in the road will minimize speeds over the posted 35 mph; (2) wildlife crossing signs will be installed; (3) the paved surface and marked lanes will make it easier for drivers to control their vehicles; and (4) although improvements to the road would likely make it more attractive to potential developers, impacts to wildlife from increased development in the project area will not be substantial due to county designation as Open and Resource Lands and the large amount of publicly owned land.

To say that there is an urgent need for field monitoring before the effects on wildlife species of the paving project alone can be adequately analyzed would be understating the situation. Everyone agrees that this is a critical regional wildlife linkage zone and that, in itself, justifies the time and expense needed to do the job properly. However, WFLHD's assertion that paving Petty Creek Road will not trigger an avalanche of development is truly disingenuous given that the largest private landholder along that route is Plum Creek Real Estate Co., Inc. And that opens up another whole can of worms as regards the project's effects on wildlife. 5-5

**THE PURPOSE AND NEED FOR THE PROJECT**

"The purpose of the proposed Petty Creek Road Project is to improve Petty Creek Road's operational safety, reduce its excessive maintenance efforts, and reduce its contribution of sediment to Petty Creek." (EA, p. 8)

**Improving Petty Creek Road's operational safety.** The EA states, and its Appendix 1, "Accident Report Summary" confirms, that there were 18 accidents between 1998 and 2002 (apparently, the only data available), and that "Causes of *[these]* accidents were: excessive speed for 9 accidents (50%), inattentive/careless driving for 7 accidents (39%), animals for 2 accidents (11%), ruts/holes/bumps in road for 1 accident (6%), alcohol for 1 accident (6%), and no cause was given for 2 accidents." (p. 13)

This leads us to ask, "Is the problem the physical condition of the road, or driver behavior?" And to speculate on *how* that driver behavior will change with the paving of this road? For insight on the latter question, may we offer the history of the recently paved West Ninemile Road, also curvilinear with a 35 mph posted speed limit, and invite WFLHD, USFS and Missoula County officials to visit with residents along the West Ninemile Road! At the same time, they might compare vehicle speeds on this four-mile stretch of paved road with vehicle speeds on its 15-mile-plus extension, the Upper Ninemile Road, a gravel road. They might find a marked contrast with the EA's assertion " . . . if a relatively curvy alignment of the Petty Creek Road is maintained, a graveled surface would likely not result in substantially lower traffic speeds when compared with a paved surface." (p.18) 5-6

**Reducing Petty Creek Road's excessive maintenance efforts.** Missoula County owns the right-of-way or has easements for the existing Petty Creek Road corridor. This translates into County staff, equipment and budget concerns. However, the County is acting in bad faith when it gives the costs of maintaining the gravel road as one of its primary purposes for promoting the paving project. In fact, it is doubly ironic in view of the County's position in its ongoing adversarial dialogue with Agriculture Undersecretary Mark Rey regarding Plum Creek and Forest roads. The County claims, rightly, that it would be financially overwhelmed by the costs of providing services to far flung Wildland-Urban-Interface (WUI) communities springing up overnight, so to speak. And taxpayers would be forced to shoulder this enormous burden. 5-4

We believe the proposed Petty Creek Road Improvement Project may well be Missoula County's opportunity to set rational precedent in this national legal debate.

Similarly, the Lolo National Forest, Missoula County's partner in nominating this project (EA, p. 7), is already incapable of funding badly needed enforcement of Forest abuses and essential forest fire prevention activities. How will it handle a doubling of WUI residences with concomitant increased human activities on public lands?

**Reducing Petty Creek Road's contribution of sediment to Petty Creek.** "In the long term, paving of the road would increase slightly the amount of impervious surface that is currently in the project corridor. This would lead to increased storm water runoff and potential for increased sediment/pollutant transport to the surrounding waterways. However, given that the project proposes paving the existing graveled roadway, which already has a relatively high storm water runoff coefficient compared with the surrounding vegetated land, paving is expected to increase runoff only slightly more than the runoff from a graveled surface." (EA, p. 23) 5-4

Interesting . . . paving the road would, in fact, increase the contribution of sediment to Petty Creek! Now, the remedy: "However, with construction of drainage ditches and runoff directed into vegetated areas, these effects would be minimized. Also, the surface runoff at the replaced stream crossing structures would be captured and carried to the ends of these structures to run down the embankment back to the stream. Currently, the runoff at these crossings dumps directly into the stream, not allowing sediment to settle out before entering the water." (EA, p. 23) *

Long (2005) offers essentially the same remedies, but within a different project proposal: "In our opinion, certain improvements for natural resource benefit could be a valuable justification for this project. These include moving the road prism where it is currently encroaching on the stream, incorporating road drainage features to route runoff away from the stream, providing stream-side buffers where the road must be near a stream, and upgrading road crossings for fish and wildlife passage. All of these improvements could be made in conjunction with minor road improvements to create a functional and environmentally responsible transportation system—without paving. *We encourage the Federal Highway Administration to develop a new alternative that incorporates these important features without paving.*" (pp. 5&6)*[The emphasis is Long's.]*

One last issue needs consideration. The proposed project is funded through the Forest Highway category of the Federal Lands Highway Program, which is part of the Federal Highway Trust Fund. According to the EA, p. 7, "Funding from this program aids public agencies such as county and state transportation departments in providing safe, efficient public roads *that serve national forest-related traffic." [emphasis added]* However, p. 11 of the EA states: "The road is primarily for residential use in providing access between homes and Interstate 90." And indeed, Table 1. Traffic Counts August 31-September 6, 2004 (EA, p. 12) verifies this. 5-5

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If paving the Petty Creek Road does, in fact, lead to escalated development of private lands bordering the road, forest-related traffic, i.e., Forest recreationists and hunters, might find that they have once again lost access to their public lands, and to formerly diverse and healthy local wildlife populations.

Thank you for your consideration of these comments.

Eleanor Danesh

Eleanor Danesh, M. S., Chair and
Wildlife Passages Coordinator
NINEMILE WILDLIFE WORKGROUP

Attachment: Appendix A as above.

Appendix A

Montana Fish, Wildlife & Parks

LETTER 5
Attachment A

Region 2 Office
3201 Spurgin Road
Missoula, MT 59804-3101
406-542-5500
Fax 406-542-5529
April 18, 2005

Michael Boynton, Environmental Specialist
Ted Wood, Design Operations Engineer
Western Federal Lands Highway Division
Federal Highway Administration
610 E. Fifth St.
Vancouver, WA 98661-3893

Dear Mr. Boynton and Mr. Wood:

Reference: Petty Creek Road Project, MT PFH 71-1(1)--Review of the draft project checklist and alternatives

In 2003, we became aware of a Western Federal Lands Highway (WFLHD) proposal to pave the lower 11.8 miles of Petty Creek Road, west of Missoula, Montana. Since that time, Montana Fish, Wildlife & Parks (MFWP) biologists have attended two on-site field meetings with project coordinators from your agency to discuss this project. The following summarizes our preliminary comments at these meetings and our comments on the Internal Draft Project Checklist.

**General Comments**

We have learned that the Petty Creek road improvement project was first proposed and discussed more than a decade ago (early 1990s) by the US Forest Service (USFS), WFLHD and Missoula County. We believe that was the juncture where MFWP, the US Fish & Wildlife Service (USFWS), and other local resource professionals should have been involved in the project. That did not occur in this case or with other projects in the area. Without early input, it is difficult for serious resource issues to be meaningfully integrated into your planning and project selection process.

One major concern is that paving this road stretch would likely significantly increase the area's attractiveness to development, as well as the value of the substantial corporate timber and other private land holdings in the Petty Creek drainage. The result would be expedited development and human use in an area that has high fish and wildlife values. We believe that the fact that transportation system improvements would be expected to significantly increase the rate of both residential development (subdivision into small private tracts) and natural resource degradation is difficult to dispute and should be *seriously* considered prior to this project potentially moving forward. Efforts to slow this conversion and protect natural resources in the project area are ongoing.

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The Project Checklist handles this issue by suggesting it is a matter for local zoning ordinances. This issue deserves thorough examination.

Petty Creek Road heads south off Interstate Highway 90 and up Petty Creek to the Clark Fork/Bitterroot Rivers divide, where it continues south down the Grave Creek Road to US Highway 12. Although we understand that connecting the proposed Petty Creek Road paving project with US Highway 12 is not planned at this time, it would likely be inevitable if the proposed project were to be completed. This compounds our concern over expedited development and impacts of increased road traffic on wildlife populations.

The primary justifications for this project (dust abatement, sediment reduction and road safety) have not been well documented. Any localized safety and dust abatement issues should be weighed against the cost-effectiveness of the project and the cumulative impacts to the resource. Has this been completed? On our initial site visit, the project manager stated that the primary justification for this project is sediment reduction and dust abatement to improve stream habitat quality for bull trout. This is questionable given that more than ninety percent of this road is not adjacent to the stream, and there is no evidence that the stream has excessive levels of sediment.

**Recreational Considerations**

The project proposal could include improved opportunities for the public to access public lands. Have these opportunities been considered?

**Wildlife Considerations**

The Project Checklist provides an incomplete, cursory and inadequate review of the potential impacts this project may have on wildlife. By paving the Petty Creek Road, this project could potentially compromise wildlife and wildlife habitats in several ways.

1. The Petty Creek area is important habitat for grizzly bears, wolves, lynx, other forest carnivores and other wildlife. The Bitterroot Mountain range from Missoula west to Lookout Pass is a fairly intact wildlife linkage zone that needs to be protected and nurtured in the future. It is important that agencies work together to ensure that the ability for wildlife to move freely through this area continues. This area is one of the most important wildlife linkage zones in Montana--especially for grizzly bears. It is a direct link between northwest Montana, the Bob Marshall Wilderness Complex and the Bitterroot ecosystem. It needs to be protected and not further fractured with forest road paving projects that would only encourage sprawl and heavier use by the public.

2. Grizzly bear movement has been documented in this area from the Ninemile/Mission Mountain corridor and the Cabinet/Thompson River Corridor. In the past ten years, MFWP has received increased but unverified reports of grizzly bear activity on the northern end of Bitterroot Ecosystem--especially in the Petty Creek and Fish Creek drainages. The sighting reports are documented and available in the MFWP Region 2 database. In addition, one radio-collared grizzly bear was located in lower Petty Creek on several occasions and likely also occupied the upper portions of the drainage. In addition, we have two verified sightings in the Great Burn Area and one in the Martin Creek drainage (both areas are in the northwest

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Attachment A

portion of the Bitterroot Ecosystem). This and other information is available from USFWS Grizzly Bear Coordinator Chris Servheen.

3. As stated above, paving and improving this road would make housing and subdivision projects more attractive to private landowners in the Petty Creek drainage. Plum Creek Timber is the major private landowner and may be willing to sell developable land. We can expect all the problems for wildlife habitat and wildlife populations that go with developments--loss of habitat and increased wildlife/human conflicts.

4. Paving would lead to increased vehicular traffic volumes and speeds. We would expect this to lead to higher frequencies of wildlife/vehicular collisions. This consequence is most likely for the Petty Creek bighorn sheep herd, which currently crosses the roadway and occasionally gets hit in two locations. Because it would be paved, winter maintenance would likely include salting of the roadway. Salting attracts bighorns and other ungulates to highways, compounding the road kill problem. Bighorns of course would not be the only species affected, but ultimately the number of sportsmen allowed to hunt this species would be limited in part by these additional road kills.

5. More housing developments, more traffic, higher speeds, more road kills, and more lost habitat along this corridor cumulatively would fragment habitats and eventually isolate wildlife populations east of the corridor from those to the west. This is an issue for all species, but is a particularly important one for low-density carnivores such as Canada lynx, black bear, grizzly bear, cougar and gray wolves.

6. Three of the wildlife species listed are ESA listed species: gray wolves, Canada lynx, and grizzly bears. These species are barely discussed in the Checklist. Habitat fragmentation and its impacts on each of those species and their chances of recovery need full analysis for all three species. We feel it is inappropriate that more space is devoted to discussion of the yellow-billed cuckoo (a candidate for listing) than the combined space allotted to wolves, grizzly bears and lynx, which are listed.

7. Since big game animals, such as deer, elk, moose, bighorn sheep, mountain lion and black bear, and the smaller forest carnivores such as wolverine, fisher and marten, are hunted/trapped, the negative consequences of this project on those populations would ultimately translate into less hunting and trapping opportunities. Yet, there is no discussion of these consequences in the Project Checklist.

*Specific Wildlife Comments*

1. There are two well-defined sheep crossings on Petty Creek Road, but no reference is made to the crossing in the lower portion of the road. Using the map definitions, this is an area of slightly more than 2 miles and extends from 1+200 to 3+600. The second crossing is mentioned, is about 1 mile long and extends from about 4+900 to 5+900.

2. Construction activities, particularly those in the above two stretches have the potential for displacing sheep during two critical times of the year--winter (December 1--April 30) and lambing (May 1-June 30). In other words bighorns are continuously in those areas from December 1 to June 30, and those time periods are critical seasons for the Petty Creek herd.

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If this project were to be adopted, construction activities should be limited to other stretches of the road during that time frame.

3. Deer and elk cross the Petty Creek Road with great regularity between the West Fork of Petty Creek and Bills Creek.

4. Sheep, deer, and elk are large, highly visible wildlife species. Consequently, identifying important crossings is relatively easy. Most other wildlife species are smaller, in lower densities or largely nocturnal. Important species such as Canada lynx, wolverine, fisher, pine marten, black bear, mountain lion, and wolf undoubtedly need to move east and west along the Petty Creek and Graves Creek divide. Our understanding of important crossings for them in the project area is limited and needs to be addressed.

5. The Project Checklist should reference its sources regarding the status and distribution of wildlife species in the area. For example, what are the sources that document that there is no occupied or suitable lynx habitat in or near the road corridor or the "fact" that wolves are shy and therefore unlikely to get into trouble with homeowners and developments?

6. The Checklist incorrectly states that the area in and near Petty Creek is not "occupied" lynx habitat. However, the MFWP furbearer database contains records of trapped lynx and lynx tracks from the East Fork of Petty Creek west through Howard Creek, Fish Creek, Granite Creek and Lolo Creek.

7. Recent Forest Service mapping of "suitable" lynx habitat was based on a model of topography, elevation and vegetation, and that map indicates that suitable habitat is on all sides of Petty Creek and in some places lies within 1 mile of the Petty Creek Road corridor. How is it possible that the Checklist indicates that suitable habitat is not "near" the Petty Creek Road? The above-mentioned FS map needs to be incorporated into the analysis.

8. Given that FWP records indicate historic presence of lynx in and near the project area, and that a separate modeling effort by the Forest Service also resulted in mapping of suitable lynx habitat in the Petty Creek area, the lynx analysis and discussion needs to be revised. Just as importantly, WFLHD needs to address the issue of habitat fragmentation with regards to this project's potential impacts on lynx recovery.

9. Increased residential development that is a consequence of this road project would generate more frequent wildlife/human conflict to which this agency would have to respond. MFWP would have to bear the costs of responding to these conflicts without any compensation from other sources. This issue should be addressed in the Checklist.

LETTER 5
Attachment A

**Fisheries Considerations**

*Project Checklist*

1. The list of required permits should include the Montana Stream Protection Act (SPA 124) permits required for any work involving the bed or banks of streams. These permits are administered by MFWP. The authors may have mistakenly referred to these permits as USFS Stream Channel Alteration permits on the document.

2. The projected traffic volumes seem low given current levels and rates of human population growth in the vicinity.

3. MFWP has recent fisheries data that describes species composition, distribution and relative abundance in the drainage if more detail is desired. The general descriptions on the Project Checklist are accurate.

*Alternatives*

If the highway project were to move forward as proposed in the preliminary alternatives listed, the project plan should include the following features (some of which are included in the description of Alternatives B and C):

1. All stream crossings should incorporate a natural stream bottom, match the natural slope of the stream channel, and provide adequate capacity for full fish and wildlife passage and a 100-year flood event. Federal Highways should seek input from Lolo National Forest resource staff and MFWP fisheries management staff early in the process as specifications are developed.

2. Moving the road away from the stream wherever the road shoulder lays within 50 feet of the stream channel should be a goal and a high priority. A minimum 50-foot buffer of herbaceous and woody vegetation should be developed where possible. Currently the road has been over-widened, and sidecast into the stream is common at many locations. The actual right-of-way boundaries should be identified and acquisition of adjacent properties should be pursued to allow for the aforementioned stream buffer where at all possible.

3. Road drainage features should be provided at each location where the stream is adjacent to the road to prevent road surface runoff from directly entering the stream. These features should be identified on project plans.

4. If the project were to move forward, some major mitigation measures should be included as part of the package. One possibility is connecting abandoned channel meanders that were cut off from Petty Creek when the road was originally constructed.

**Project Alternatives**

In our opinion, certain improvements for natural resource benefit could be a valuable justification for this project. These include moving the road prism where it is currently encroaching on the stream, incorporating road drainage features to route runoff away from the stream, providing stream-side

LETTER 5
Attachment A

buffers where the road must be near a stream, and upgrading road crossings for fish and wildlife passage. All of these improvements could be made in conjunction with minor road improvements to create a functional and environmentally responsible transportation system--without paving. *We encourage the Federal Highway Administration to develop a new alternative that incorporates these important features without paving.*

**Summary**

We believe that project managers should take a hard look at the justifications for this project and weigh them against direct and indirect natural resource impacts. This would require a much more thorough examination of fish and wildlife issues. The assessment of cumulative impacts and the impacts to wildlife populations is cursory and, in some cases, erroneous.

**Contacts**

*Petty Creek Project*

I would like to reinforce and formally request that you place MFWP on your contact list for *all* further written materials, proposals, plans, meetings, EISs, etc. related to this project. Sharon Rose will be our agency contact for this project (542-5540; shrose@mt.gov).

*Possible Future Projects*

Montana Fish, Wildlife and Parks is the manager of wildlife and fisheries in Montana, and MFWP's Region 2 office includes most or all of Granite, Mineral, Missoula, Powell, and Ravalli Counties, as well as Lewis & Clark County west of the Divide and a portion of both Deer Lodge and Silver Bow Counties. With this letter, I am formally requesting that you include us in all future contacts that relate to any of your possible projects in the Region 2 FWP area, so that this agency can adequately address impacts of these kinds of developments. I request that we be contacted at the earliest possible stage of any project.

Thank you.

Sincerely,

Mack Long
Regional Supervisor

ML/sr

Cc: Scott Jackson, USFWS
Deborah Austin, Lolo National Forest
Kate Walker, USFS

LETTER 6

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
MONTANA FIELD OFFICE
585 SHEPARD WAY
HELENA, MONTANA 59601
PHONE (406) 449-5225, FAX (406) 449-5339

M.17 FHWA Petty Creek Road May 30, 2008

Terry Schumann
Federal Highway Administration
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, Washington 98661-3801

Dear Mr. Schumann:

The Montana Field Office of the US Fish and Wildlife Service (Service) has reviewed the March 2008 Environmental Assessment (EA) for the Federal Highway Administration's (Administration) proposed Petty Creek Road Improvement Project (MT PFH 71-1(1)), which would occur on Montana Forest Highway 71 within the Lolo National Forest in Missoula County, Montana. The proposed project's preferred alternative would entail paving 11.8 miles of the Petty Creek Road to a uniform 24-foot width, beginning at the south side of the railroad tracks near the road's junction with Interstate 90 to the intersection with South Fork Petty Creek Road. Besides paving, roadway upgrades would also include minor alignment changes, culvert and bridge replacements, and the addition of guardrails, signs and striping. The Service has reviewed the EA and offers the following comments which have been prepared under the authority of, and in accordance with, the provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.).

We apologize for submitting this letter after the closing of the public comment period. The Service had not received a copy of the EA or a request for review and comment. We did not realize the EA was available for comment until we belatedly noticed mention of it in the project newsletter. For future reviews, we suggest that it may be more productive to provide copies of such documents (either paper copies or on a CD) to agency staffs, along with a request for their review and comment.

The EA states on page 12 that traffic volumes are highest at the north end of the project (adjacent to Interstate 90) and drop off significantly as the project corridor proceeds to the south. The accident data provided in Attachment 1 of the EA indicates a similar trend; the majority of the vehicle accidents reported occurred in the northern portion of the corridor, while few occurred near the south end of the corridor. However, the standard to which the road is proposed to be constructed remains the same throughout the corridor, using design standards for the highest traffic volumes that occur only at the northern-most end of the corridor. In light of the fact that 6-1

southern portions of the corridor receive far less traffic than the northern end, and that wildlife values are generally higher in the southern end of the corridor, the Service recommends that the Administration consider designing portions of the road to a different standard (e.g., graveled surface; narrower lanes and/or shoulders) that reflects this significant traffic volume difference and that could help reduce impacts to fish and wildlife resources through a potentially smaller project footprint and/or lower vehicle speeds in the upper corridor. 6-1

Table 5 on page 32 should be updated to reflect the fact that gray wolves were delisted effective March 28, 2008. 6-2

Critical habitat for Canada lynx is discussed in the first full paragraph on page 40 and should be updated to indicate that revised critical habitat for lynx was proposed on February 28, 2008. However, we don't expect that your assessment would change because even though portions of Missoula County are proposed as revised lynx critical habitat, none of those areas are within the Petty Creek Road project area. 6-3

For projects proposed to occur in areas containing habitat for large predators and scavengers, the Service routinely recommends that construction contract provisions be included that would require contractors to keep food, garbage, petroleum products, and other attractants unavailable to animals such as bears during construction as a means of minimizing impacts to these species. We recommend the Petty Creek Road project include contract provisions that would reduce the availability of project-related wildlife attractants within the project corridor. 6-4

The are several instances within Section 4.5 where the EA identifies factors through which roads negatively affect terrestrial wildlife. One of the road-related impact factors mentioned that is of serious concern to the Service is associated human development. Increased development can be facilitated by road improvements that access private lands. Consequences of such development include reductions in wildlife habitat effectiveness and connectivity. This is of particular concern in areas that have high wildlife values and where residential development is likely. The EA acknowledges that the Petty Creek project area lies within an identified wildlife linkage zone between the Northern Continental Divide Ecosystem and the Selway - Bitterroot Ecosystem. The EA describes the importance of maintaining the effectiveness of this linkage for the long-term health of wildlife in this area. The EA also states that road improvements would likely make the Petty Creek valley more attractive to developers and that the area's effectiveness for wildlife is reduced as human development fragments wildlife habitat within this key linkage zone. 6-5

In the several instances where the EA briefly discusses human development associated with road improvements, such impacts are not deemed significant based on the rationale that county zoning regulations and the large amounts of public land in the Petty Creek area would limit human development in the area. We consider this to be an wholly inadequate discussion of this important project-related effect. It is our understanding that Missoula County does not have zoning in place that regulates development in the Petty Creek area, but offers merely guidance recommendations in their county land use plan. Also, land-ownership maps of the project area clearly display that along with large amounts of publicly-owned lands in the Petty Creek area, there are also many thousands of acres of private land in the valley. Past experience has shown

that road improvements in areas like Petty Creek do lead to increases in human use and development, with significant and detrimental consequences for a wide variety of wildlife species and valuable habitat in those areas. So, although development on private lands has been occurring in the Petty Creek area, we believe a paved Forest Highway will increase both the rate and scale of future residential development. Resultant impacts to wildlife will most likely be substantial and should be addressed in this EA as an indirect effect associated with this proposed project. As currently written, the EA does not adequately disclose and discuss all of the project-related effects of this proposed action or the Administration's response to them. Given the importance of this area for wildlife, the EA should more fully discuss the indirect effects of this Forest Highway project using the best information available, describing wildlife and habitat impacts that can reasonably be expected to occur and stating how the Administration plans to avoid, minimize or mitigate for those impacts. 6-5

The Service strongly recommends that the Administration address these anticipated impacts by modifying the project design. Along those lines, we urge that more consideration be given in the EA to an improved gravel-surfaced roadway alternative. A gravel alternative should receive much more consideration, especially for the southern portion of the corridor where traffic volumes and accidents rates are dramatically lower than those in the northern portion of the route. With fewer residences, less traffic, and high wildlife habitat values, the southern portions of the Petty Creek Road corridor may not warrant a roadway designed to the same standard as the more heavily traveled portions of the corridor to the north. We believe that an improved gravel roadway may adequately serve the purpose and need of this project, while providing an alternative that is sensitive to sustaining the inherent appeal of the area and conserving important values for wildlife.

The project's design features and mitigation measures described in the EA are much more comprehensive relative to reducing impacts to aquatic species than to terrestrial species. Almost all of the mitigation measures listed in Section 4.5.11 are focused on aquatic resources and seem to have addressed many of the project-related concerns relative to fisheries. The Service recommends that the Administration develop more complete and effective measures by which you can reduce, or mitigate for, direct and indirect impacts to terrestrial wildlife that resource professionals have stated are anticipated to occur in the project area. We believe this is especially important relative to forest carnivore species. * 6-1

In general, we do not believe the EA fully discloses relevant effects associated with Forest Highway projects. A full disclosure is essential to weighing the stated purpose and need for the project against the potential negative impacts to various resources, including fish and wildlife. We are concerned that projects that substantially upgrade Forest Service roads in areas of our National Forests with high fish and wildlife values conflict with contemporary Forest Service objectives and management direction for natural resources in those areas. Many of these projects lack any early coordination between those proposing the project and other stakeholders, which includes the public and local, State and Federal government resource agencies. Moreover, the initial process by which public roads are considered and designated as Forest Highways is not an open or inclusive process as there is no coordination at that early planning stage that includes natural resource professionals. Improving public infrastructure, such as paving roads, facilitates

human development and use in these areas and expands the wildland/urban interface. Degradation and loss of wildlife habitat effectiveness has occurred incrementally as our rural western valleys become urbanized through individual actions of often seemingly small scale. Furthermore, within and surrounding the expanding wildland-urban interface, more challenging and costly management is often required, such as reducing forest fuels to reduce risks of wildfire, intensive forest fire suppression efforts, and response to complaints regarding wildlife conflicts or damage. While these public costs and induced-growth effects are not solely a result of paving an existing roadway, the Administration should more fully describe these very real indirect effects to both private and public lands in the vicinity of proposed Forest Highway projects.

On a larger scale, the Service is increasingly concerned about implementation of the Forest Highway program in western Montana. We have expressed our concerns to the Administration in meetings, letters, and phone discussions over the past five years. Specifically, our concerns focus on the processes by which Forest Highways are initially designated and its projects are nominated, planned and designed. The designation of roads that access public lands as Forest Highways, and the subsequent nomination and approval process for individual projects, lacks adequate opportunities for early input by resource professionals. To reiterate our earlier comments, we officially request to be involved much earlier in the planning of the Forest Highway program in Montana. We believe earlier involvement is necessary for the Service to provide meaningful input related to our trust resources and have our most basic concerns addressed. This would also facilitate a more efficient and cost effective process. We believe the most beneficial time for the Service to interact with transportation and forest planners would be when individual roads are being considered for designation as Forest Highways.

Thank you for the opportunity to review this draft EA. We look forward to reviewing a revised EA or an Environmental Impact Statement for this corridor. If you have questions about this letter, please contact Scott Jackson at extension 201, or me at extension 205.

Sincerely,

R. Mark Wilson

R. Mark Wilson
Field Supervisor

Copies to: Mack Long, MFWP - Missoula, MT
Deborah Austin, Lolo National Forest, Missoula, MT
Kristi Swisher, USFS, Region One, Missoula, MT
Steve Potts, EPA, Helena, MT
Chris Servheen, FWS, Missoula, MT

LETTER 7


# WildWest Institute

P.O. Box 7998
Missoula, MT 59807
(406) 542-7343
info@wildwestinstitute.org


May 2nd, 2008

Terry Schumann
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, WA 98661-3801

***Transmitted via email--please acknowledge receipt!***

To whom it may concern:

The following are comments on the Petty Creek Road Improvement Project Environmental Assessment (EA) submitted by the WildWest Institute.

The Petty Creek area is an important recreational area for locals of Missoula, Alberton and other nearby towns. It is also of prime importance to wildlife due to its location between the greater Salmon-Selway Ecosystem (SSE) and the Northern Continental Divide Ecosystem (NCDE). A major migratory corridor exists from the NDCE via the Ninemile Valley through the Petty Creek area to the nearby wildlands of the Burdette and Great Burn which lead directly into the SSE. Paving the Petty Creek road will have major ramifications to the wildlife of the area, to recreational, local homeowner, and other societal values associated with the area. An EA is not sufficient to analyze the impacts of this project which is likely to substantially affect traffic patterns, subdivision development, recreational use, hunting pressures, sedimentation, fire suppression efforts, and social values associated with the implementation of this proposal. An EIS should be prepared in place of an EA. The impacts to water quality, threatened and endangered species such as grizzly bear, bull trout, wolf, and lynx, to recreational usage patterns, to private land development, to fire suppression, and other social values are cursorily reviewed at best and conclusions that the proposed action will have no impacts are arbitrary and capricious since little data is provided to substantiate them. 7-1

Bighorn sheep winter in the Petty Creek area and are negatively affected by increased traffic. The EA presents insufficient analysis of the impacts to this herd of bighorn sheep. Likewise, grizzly bear have been found in the area which is known to include suitable habitat. Roads and increased traffic are a primary threat to grizzly bear habitat security. Whether or not a grizzly bear population exists in the area, the Petty Creek drainage is a likely place for the growing NCDE population to expand into and therefore an EIS should be prepared to analyze impacts to grizzly bear in the area. 7-2

Too few alternatives are reviewed, analyzed, and presented to the public. Only one alternative other than no action was reviewed, analyzed and presented to the public. This 7-3

does not satisfy the basic mandate of the National Environmental Policy Act which requires that a reasonable range of alternatives be analyzed and presented to the public. The decision not to include other alternatives, such as the gravel alternative or a shorter length of paved road, in the full analysis is arbitrary and capricious. Both a gravel alternative and paving a shorter portion of the road are viable alternatives that may meet the purpose and need of the project and must be analyzed. 7-3

Courts have recently found that EAs must assess project impacts to global warming. This EA does not do so. 7-4

The nearby St. Regis Creek has been substantially degraded by its proximity to the highway and the maintenance impacts associated with this road. How will the increased maintenance needs (i.e. plowing, deicing, etc.) required to support the safe usage by increased traffic of the Petty Creek Road which are likely to occur if this proposal is approved effect water quality, fisheries, and terrestrial wildlife? The EA assumes that BMPs will be effective in mitigating these impacts. However, there is no data provided that support this conclusion. BMPs have been shown in many cases to be insufficient in mitigating impacts such as those expected here by this proposal. The case of the St. Regis watershed is a case and point. 7-5

Land subdivision has a multitude of impacts, yet the EA does not consider these impacts associated with increased subdivision. It justifies this by saying that predicting effects of road paving on property values and subdivision pressure is complex and therefore the EA assumes that such analysis is unnecessary. This is woefully inadequate. Because there is a significant likelihood that paving the Petty Creek Road will increase subdivision pressures, an EIS which assesses the impacts to wildfire risk and suppression costs, wildlife, water quality, recreational uses and visual resources should be carried out to conduct thorough analysis of these factors. 7-6

Little effort has been made to involve a significant portion of the public. Although the area is widely used by people from Missoula and Alberton, the overwhelming majority of this demographic has not been made aware of this proposal. Based on this fact and the abundant shortcomings of the analysis included in the EA, we believe that an EIS should be prepared and public meetings held in Missoula, Alberton and other locales that give the public more of an opportunity to participate in forming this important project proposal. 7-7

Please contact us with any questions you have. We look forward to hearing your response.

Sincerely,

Cameron Naficy

## Ebert, Demian A

**From:** Linda Romano Gardner [lindajg@hotmail.com]
**Sent:** Thursday, June 19, 2008 10:49 AM
**To:** pettycreek@mail.wfl.fhwa.dot.gov
**Subject:** upgrade to Petty Creek Road

**Follow Up Flag:** Follow up
**Flag Status:** Flagged

Having reviewed the Petty Creek Road Improvement Project
And residing and recreating in this area, I would like to have the following considered:

Please make provisions for walkers and bicycle riders along this route.
There are many adults and children that will be using this road that could benefit from a wide shoulder or specific bike lane along this route. 8-1

Thank you for considering my input.

Sincerely,
Linda Gardner
28965 Southside Road
Alberton, MT 59820

(406) 722-4975

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LETTER 9

MR. GREG GIFFORD:

THIS LETTER IS IN REGARD TO THE PETTY CREEK ROAD PAVING PROJECT 2008 TO 2010.
MY OPINION & CONCERN AS A 50 YEAR VETERAN BUSINESS MAN FARMER FRUIT PROCESSOR IN US AND WORLD SALES, IS THE COMON SENSE APPROCH TO THE ROAD PROJECT. WHEN MONEY IS TIGHT FOR THIS PROJECT AND ECONOMIC HARD TIMES, DOESN'T IT JUST MAKE SENCE TO DO THE PROJECT EFFINIENT AND LESS EXPENSIVE.
ALSO THE 1996 FLOOD WOOD WIPE OUT THE ROAD PROPOSAL OF CUTTING CORNERS AND LOWERING THE ROAD FROM ITS PRESENT ELEVATION. ALSO TOO CUT OUT CORNERS WOOD MAKE DRIVERS DRIVE FASTER AND POSSIBLE KILLING OF PEOPLE AND GAME ON THE ROAD.
FISH AND GAME ARE NOT GOING TO GO ALONG WITH
9-1 CONSTRUCTION THAT HARMS EXISTING PETTY CREEK FOR CONTAMATION AND HARMFUL TO THE FISH POPULATION.
MY PIECE OF PROPERTY JUST ½ BLOCK UP PETTY CREEK ROAD FROM WEST FORK JUNTION, WHERE WEST FORK CREEK RUNS UNDER THE ROAD ACROSS MY PROPERTY AND SPILLS INTO PETTY CREEK. I HAVE PUT IN A NEW LOG ENTRANCE A SOLOR GATE AT A HIGH EXPENSE, AND WILL NOT GO ALONG WITH IT TAKE OUT TO TAKE OUT A CURVE THAT IS ALREADY WIDE ENOUGH GOING OVER WEST FORK AGAIN A FISH PROBLEM THE ROAD WOOD BE LOWER AND MAKES NO HORSE SENSE, ALL OF PETTY CREEK PEOPLE THAT I KNOW SAY THE SAME THING LEAVE THE EXISTING ROAD
THANK YOU GREG GIFFORD AND YOUR PEOPLE FOR YOUR COOPERATION. SEEMS TODAY TO MANY BUREUCRATIC WRONG DECISIONS ARE MADE, BELIEVE YOU FOLKS WILL DO IT RIGHT

Duwayne Herbe 563-357-9798

## Ebert, Demian A

**From:** lindianharris [lindian@blackfoot.net]
**Sent:** Monday, July 14, 2008 8:26 PM
**To:** pettycreek@mail.wfl.fhwa.dot.gov
**Subject:** speed limit

**Follow Up Flag:** Follow up
**Flag Status:** Flagged

As landowners we would request that the road would be paved on its present route so that the present 35 m.p.h, speed limit, appropriate to the rural setting, would be maintained. Thank You, John and Linda Harris 10-1

**Ebert, Demian A**

**From:** Larry Stahl [larry@thestahls.org]
**Sent:** Wednesday, May 07, 2008 1:59 PM
**To:** pettycreek@mail.wfl.fhwa.dot.gov
**Subject:** Petty Creek Road Improvement Project

**Follow Up Flag:** Follow up
**Flag Status:** Flagged

My comment is that the National Forest Road that currently exists should not be paved! I believe that would have a deleterious effect on habitat and provide a taxpayer subsidy to any nearby developers. 11-1

I DO NOT WANT MY TAX MONEY USED TO SUPPORT DEVELOPEMENT ON NATIONAL FOREST LAND furthermore I do not want Forest roads paved.

Larry Stahl
1401 Cedar St. #21
Missoula, MT 59802
(406) 493-6190

## Ebert, Demian A

**From:** Gary Fee [gjfee@blackfoot.net]
**Sent:** Wednesday, April 09, 2008 11:34 PM
**To:** Schumann, Terry N.
**Subject:** Re: comment on Petty Creek Project

Hello Terry -

Thank you for reading my note and for considering my opinion.

I suppose that warning lights that only flashed when sheep are present would be less intrusive than lights that constantly flashed. Obviously, animal behavior is not always predictable or repeatable. The logistical and technical application of the sensor devices and their consistent accuracy could be a challenge. The more complex the technology, the more maintenance they will require and maintenance equates to system unreliability. Unreliability means dead sheep.

I guess in theory the sensor and lights system could be the best solution, with several significant "ifs". If the system doesn't give false positives and cause people to lose faith in the warning lights, if it is largely maintenance free, if it is consistently accurate in predicting sheep presence and if people actually take their foot off the accelerator and place it on the brake. This could be a significant challenge in that at various times I've seen the sheep herd cover 5 miles of Petty Creek Rd.

The speed bump system I suggested would no doubt get lots of criticism from daily travelers, so I can understand your reluctance to choose that option. However, the speed bumps are certainly cheaper to install, require no maintenance, have no technical accuracy or repeatability issues and certainly force drivers to slow down.

Thank you for seriously considering these problems and their solutions, and for asking my opinion.

Gary Fee
1101 Terrace View Dr.
Alberton, MT 59820
406-722-0009

PS - I am retired but my background for 30 years was designing, building and maintaining heavy industrial processing facilities, so I understand the complications, pros and cons of selecting instrumentation and sensing systems.

----- Original Message -----

**From:** Schumann, Terry N.
**To:** Gary Fee
**Cc:** Gifford, Greg K.
**Sent:** Wednesday, April 09, 2008 4:43 PM
**Subject:** RE: comment on Petty Creek Project

Gary, thank you for your comments regarding the Petty Creek Road Project. We will be working with the Montana Fish, Wildlife, and Parks, the Forest Service, and other interested parties to determine an appropriate solution to reduce vehicle impacts to the big horn sheep as well as other species that cross the road. A number of possibilities are available, including speed bumps and various types of warning signs. I understand your concern about flashing lights, however, there may be ways to install flashing warning signs that only come on when the sheep are near the road. In your mind, would this be less intrusive to the visual elements of the corridor?

At this point we have not ruled out any option and we will be discussing the possibilities as we progress through the design of the project. Thanks again for your interest.

Terry

**From:** Gary Fee [mailto:gjfee@blackfoot.net]
**Sent:** Tuesday, April 08, 2008 11:15 AM
**To:** pettycreek@mail.wfl.fhwa.dot.gov
**Subject:** comment on Petty Creek Project

Dear Mr. Schumann,

I am writing to record my comments regarding the Petty Creek paving project.

It appears that all the usual concerns about road systems in national forest areas have been adequately addressed so that previous problems like inadequate culvert design blocking fish passage and improper management of construction resulting in heavy siltation run off into the stream will not be a problem here.

However, I am concerned about the safety of the Petty Mountain big horn sheep herd. A paved road is going to mean much higher traffic speeds and people already travel at excessive speeds on this road. The herd is frequently on this road. I have counted 45 of these magnificent animals standing in the road and blocking traffic. I feel that event was a marvelous blessing bestowed upon me, but I can easily see a speeding truck killing dozens of them. 12-1

I want to know what you will do to insure the safety of this sheep herd. Rumble strips and signs with flashing lights are obnoxious intrusions into the natural beauty of this area. I'd recommend speed bumps every 50 to 100 feet. If properly designed and placed they would slow traffic with out being an eyesore or source of sound pollution.

Thank you for considering my request and recommendation.

Gary Fee
1101 Terrace View Dr.
Alberton, MT 59820
406-722-0009

## 10.2 Comments from Public Scoping

This section is as presented in the 2008 EA. **Because of changes in the Preferred Alternative, some of the information presented in this section (10.2) is no longer accurate and does not reflect the new Preferred Alternative.** This information is presented as part of the Administrative Record.

The following is a summary of comments received during the public scoping phase prior to publication of the 2008 EA. WFLHD received various comments from the general public, environmental groups, and governmental agencies during the public scoping phase prior to publication of the 2008 EA.

Several comments were made regarding whether to pave the road or leave it gravel. WFLHD received 17 comments requesting to have the road paved and 7 wanting the road to remain gravel. Those wanting to pave the road cited road dust, compromised safety, health concerns, and automobile maintenance as reasons in favor of paving. Those against paving cited increased wildlife deaths, reduced wildlife habitat, habitat fragmentation, and increased development as reasons to leave the road graveled.

As described in the EA, paving the road would largely eliminate the dust problem currently caused by the gravel road. This would greatly improve sight distance, reduce dust resulting from the road as a contributor to respiratory and other ailments, and lessen dust impacts on vehicle operation/maintenance. Paving the road would also improve vehicle operational safety by eliminating potholes, ruts, washboarding, and loose gravel, allowing greater vehicle control when stopping and maneuvering sudden turns. Travel lanes and shoulders would be designated, separating opposing traffic, which is a particularly important safety feature when maneuvering curves. Also, vehicle damage resulting from an uneven road surface and loose gravel would be reduced.

Impacts to wildlife are a concern, and the Preferred Alternative has several components built into it to help alleviate some of these impacts. The Preferred Alternative would be designed with a 35 mph speed limit. Currently, the road is relatively curvy, roughly following the natural terrain. This helps to discourage increased traffic speeds, and the Preferred Alternative would retain this curvilinear design. Presently, the road is lacking in speed limit and other traffic signs. The Preferred Alternative would provide appropriate traffic signage to warn drivers of speed limits, curves, and other potential dangers on the road. This would include warnings for areas where wildlife are likely to cross the roadway. Paving the road would give drivers greater vehicle control when stopping or maneuvering suddenly to avoid potential wildlife/vehicle collisions. The paving, improving drainage, moving the road slightly away from Petty Creek in areas, providing an improved vegetative buffer, and providing appropriately sized stream crossing structures would reduce the amount of sediment entering the surrounding waterways generated from the current conditions of the gravel road. The larger design size of many of the stream crossing structures would provide better opportunities for wildlife to cross beneath the road rather than over it, helping to reduce opportunities for wildlife/vehicle collisions. These structures would also allow passage of fish species at all life stages.

While the construction of roads can reduce the amount of and fragment wildlife habitat, the intent of the proposed project is not to construct a new road on new alignment. It is to essentially utilize the existing road alignment, thereby minimizing the amount of habitat loss. The current road width varies from 22-25 ft [6.7-7.6 m], and the Preferred Alternative would be designed to an approximate 24-ft [7.3-m] width, which further illustrates a minimal loss of habitat. The fact that the road currently exists indicates that it currently acts to fragment wildlife habitat and this would not change with the Preferred Alternative since it would utilize essentially the same alignment.

All evidence indicates that people have and would continue to move to the Petty Creek area, increasing traffic and development, and leading to increased wildlife conflicts. This is likely a function of factors that are unrelated to the condition of Petty Creek Road. People have been moving to the area for many years despite the road's poor condition. WFLHD has received five comments suggesting that paving the road would cause increased development in the area while eight comments have suggested that development has occurred even without road improvements and that leaving the road graveled would not change that trend. Whether the road is paved or not, approximately 50 percent of the land in the Petty Creek area is publicly-owned that is unlikely to undergo development, and the vast majority of the privately-owned land is designated by Missoula County as Open and Resource land, which limits development to a rather conservative one residence per 40 ac [16.2 ha]. Therefore, development is expected to be limited whether the road is paved or left gravel. [Note: This summary was written before the purchase of the Plum Creek Timber land by the MLP. As of 2010 the correct percentage of publically owned land in the Petty Creek watershed is 90 percent.]

One comment suggested decommissioning the road, which would reduce impacts to wildlife. However, this is not feasible because access to current privately-owned land would have to be provided which would likely result in greater environmental impacts and require additional funding. Another comment suggested that impacts resulting from paving the road could only be mitigated by purchasing all of the Plum Creek land in the Petty Creek area and restricting development on that land. This mitigation is well beyond the level of impacts resulting from the Preferred Alternative and would not be pursued.

Eleven comments requested WFLHD to keep the basic alignment of the current road citing minimized need for additional right of way, the current curvy alignment would help control speeds and protect humans and wildlife, and less vegetation would need to be removed. All of these reasons were factored into the selection of the Preferred Alternative. Four comments suggested straightening the road and making it AASHTO compliant citing safety compromises with the curves and narrow roadway. However, to minimize impacts on the environment, discourage increased traffic speeds, and minimize right of way needs, the Preferred Alternative has been developed to optimize safety and minimize impacts.

Eleven comments requested design elements to discourage increased traffic speeds. Retaining the curvilinear alignment, installing additional speed limit signs, installing

wildlife crossing and other warning signs, and providing painted lane designations would help to achieve this. There were no comments requesting an increase in design speed.

One commenter said that the stream crossing structures do not need to be replaced. However, given that many of the structures along Petty Creek Road are under-sized for certain storm events and do not provide adequate passage for all life stages of fish species, alleviating these conditions have been included as part of the Preferred Alternative.

We also received one request for a bike lane to be incorporated along the roadway and two requests for the shoulders to remain gravel for riding horses. Due to the relatively light traffic on Petty Creek Road and the fact that the road does not have heavy bicycle use, a bicycle lane is not justified when weighed against the additional costs. However, bicyclists may still use the road and paved shoulder with a relative degree of safety given the low traffic volume. Also, providing a gravel shoulder for horse riding is not preferable due to maintenance difficulties, compromised safety, and additional right of way needs to provide adequate space. A trail separated from the roadway was considered but dismissed due to additional costs, environmental impacts, and potential right of way needs.

One comment mentioned the need for dust control during construction. The construction contract would require the contractor to use dust control measures.

One comment indicated that wetlands should be preserved or replaced. The design for the Preferred Alternative would avoid and/or minimize impacts to wetlands. Depending on the total wetland impacts, coordination with the U.S. Army Corps of Engineers would determine if wetlands would require replacement. Given the reduction in sedimentation and improved vegetative buffer built into the Preferred Alternative, it is expected that this would benefit wetlands from current conditions.

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