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Furnace Creek Road

White Mountain Ranger District, Inyo National Forest,
Mono County, California
T4S, R36E, sections 37, 17, 21, 28, 33 & 32

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Chapter 1. Purpose of and Need for Action

Document Structure

The Forest Service and Bureau of Land Management have prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and state laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives.

The document is organized into four chapters:

- **Chapter 1. Purpose and Need for Action:** This chapter briefly describes the proposed action, the need for that action, and other purposes to be achieved by the proposal. This section also details how the Forest Service informed the public of the proposed action and how the public responded.
- **Chapter 2. Alternatives, including the Proposed Action:** This chapter provides a detailed description of the agency’s proposed action as well as alternative actions that were developed in response to comments raised by the public during scoping. The end of the chapter includes a summary table comparing the proposed action and alternatives with respect to their environmental impacts.
- **Chapter 3. Affected Environment and Environmental Consequences:** This chapter describes the environmental impacts of the proposed action and alternatives.
- **Chapter 4. Consultation and Coordination:** This chapter provides a list of preparers and agencies consulted during the development of the environmental impact statement.
- **Appendices:** The appendices provide more detailed information to support the analyses presented in the environmental impact statement.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at Inyo National Forest Supervisor’s Office in Bishop, CA.

Background

Project Area

The Furnace Creek Road originates on Bureau of Land Management (BLM) land in Nevada off of Highway 264 in Fish Lake Valley. Currently, the road is gated and closed to motorized use at the BLM approximate Wilderness Study Area (WSA) boundary 2.5 miles from Highway 264. The road is a cherry-stemmed route through the WSA. The Forest Service boundary is approximately 1.25 miles from the gate. Approximately 2.25 miles from the Forest Service/BLM boundary is the Forest Service’s Proposed Wilderness boundary (1988 Inyo National Forest Land and Resource Management Plan Prescription #2). The road continues for approximately 5.00 additional miles

until its terminus—as in the Forest Service’s 1991 OHV Inventory map—in Tres Plumas flat. The total road distance from the gate to the road’s terminus is approximately 8.5 miles.

For this project, no actions are proposed in any of the alternatives for the portion of the Furnace Creek Road within the Forest Service’s proposed wilderness (approximately 3.5 miles from the gate). Although no actions are proposed for the last 5.25 miles of road, this area is included in the analysis area for the project. Alternatives 4-6 propose to improve the lower portions of the road and allow vehicular traffic on the upper portions of the road (see Chapter 2 for a description of the six alternatives considered for this project).

History

Although the road’s exact history is not certain, it appears as though there is a history of use in the area dating back to the mid-late 1800s. Early uses of the road included support for mining activities. More recently, the road was used to support grazing activities in the upper portions of the canyon. It is believed that much of the early maintenance of the road was provided by ranchers utilizing the canyon for grazing. During this time, the road was passable at least part of the year with a four-wheel drive vehicle.

In the 1970s, the Roadless Area Review Evaluation surveys were conducted and the Furnace Creek Road was excluded from the surrounding roadless area.” Grazing activities were continuing in the upper portions of the Furnace Creek canyon and it is likely that the road helped to support these operations.

The Inyo National Forest completed its land and resource management plan in 1988 and the lower portion of the road (the first 2.25 miles west of the BLM/Forest Service boundary) was assigned Management Prescription #17, Semi-Primitive Recreation. This management prescription emphasizes semi-primitive dispersed recreation opportunities, both motorized and non-motorized. It also allows for the repair and realignment of designated routes to “protect resources or resolve conflicts.” Approximately 2.25 miles from the BLM/Forest Service boundary the road enters Management Prescription 2, Proposed Wilderness. This management prescription emphasizes the protection of wilderness attributes of planning areas pending Congressional action on wilderness designation. Traditional public uses are permitted so long as they do not jeopardize designation of the area as wilderness.

In the 1980s and 1990s, grazing activities in the canyon decreased and the road received little or no maintenance (the Tres Plumas grazing allotment was closed in 2000). In particular, portions of the road beyond the Forest Service/BLM boundary were lightly maintained. In the early 1980s, a washout occurred ¼ mile west of the BLM/Forest Service boundary and since then the road has been mostly impassable past that point to full-size vehicles. For at least the last five years, the forest has been receiving reports that vehicles have been leaving the road prism in the vicinity of the washout and driving along and in the Furnace Creek as they travel west. Subsequent monitoring and site visits by the Forest Service confirmed that users were traveling out of the road prism to avoid the washout.

In January 2001, a lawsuit filed against the Bureau of Land Management by the Center for Biological Diversity, Sierra Club, and Public Employees for Environmental Responsibility was

settled in the United States District Court, Northern District of California. The settlement agreement clause # 44 stipulated that “within 45 days of the signing of this agreement by the parties, the BLM will consult with the U.S. Forest Service to consider appropriate means to protect riparian and other resource values at Furnace Creek and Birch Creek. If the BLM cannot reach an agreement with the U.S. Forest Service on the appropriate course of action to protect riparian and other resource values in the area within 45 days, the BLM will close, via emergency closure, the final mile of Furnace Creek on BLM land and final half mile of Birch Creek on BLM land. These closures or other protective action agreed to with the Forest Service shall remain in effect until route designation is completed for this area.” In response to the settlement agreement, the Inyo National Forest began monitoring and patrolling the area and convened an interdisciplinary team to analyze the impacts of the Furnace Creek Road and assess the consistency of the current condition of the road and canyon with forest plan direction and relevant laws, policies, and rules. The result of this analysis was a report (Furnace Creek Road Consistency Analysis) issued in January 2003 that found a portion of the Furnace Creek Road was inconsistent with a number of forest and Sierra Nevada Forest Plan Amendment standards and guidelines.

In January 2003, in a letter to the BLM, the Forest Service, citing these inconsistencies between the current status of the road and forest plan standards and guidelines, recommended “that the process for closing the Furnace Creek Road on BLM lands begin as soon as possible and as required by the Settlement Agreement.” As described above, the Settlement Agreement did not require a closure of Furnace Creek; however, both agencies felt that a temporary closure was appropriate until an environmental analysis was completed. This recommendation for an interim closure was acted on in March 2003 when the BLM closed the Furnace Creek Road to motorized vehicle use. This closure is currently in place pending the outcome of the Environmental Assessment. It is important to point out that the Forest Service was not a party to the settlement agreement. While the Forest Service segment of road was temporarily closed in March 2003 via an emergency order, that closure expired in March 2004. The Forest Service segment of road is currently not closed to motorized use.

The current project is a joint Bureau of Land Management/Forest Service project. The Forest Service is the lead agency and is providing much of the specialist input and National Environmental Policy Act guidance. The Bureau of Land Management will provide the heritage and cultural resource specialist support and assist with the environmental documentation with the project.

While recreational use of the road has traditionally been low (and the use is not expected to increase regardless of the alternative selected), both agencies are analyzing whether to close the road permanently or make the necessary improvements and reopen the road. As provided in more detail in Chapter 3, the road has a long history of use and is considered by the residents of Fish Lake Valley, a valuable amenity in western Nevada/eastern California.

Purpose and Need for Action

The underlying need(s) for this proposal include:

- A need for action on the Furnace Creek Road as the road has fallen into noncompliance with both Forest Service and BLM policy and management direction. As discussed in more detail in the BLM’s Environmental Assessment for the Proposed Interim Closure of Furnace Creek Canyon Road (U.S Department of the Interior, 2003) and the Forest Service’s Furnace Creek Road Consistency Review (USDA Forest Service, 2006), the road, in its current condition is not consistent with relevant direction for managing the area and resources.

In meeting the aforementioned need, the action must also achieve the following purposes:

- Improve the riparian condition of the Furnace Creek area.
- Minimize conflicts between the road and the riparian resources in the area.
- Comply with the settlement agreement as described in the background section.
- Bring the BLM segment of the road into compliance with relevant agency direction including direction in the 2002 Northern and Eastern Mojave Desert Management Plan and the BLM National Policy for Conditions of Use for Off-Road Vehicles (43 CFR 8341). Appendix B of this Environmental Assessment contains the direction that the BLM must comply with in this project.
- Bring the road into compliance with the Forest Service management prescription (MP) assigned to the area (MP #17, Semi-Primitive Recreation). This MP directs the Inyo National Forest to “limit vehicular access to existing designated routes to protect and maintain recreation and/or wildlife values” (Inyo LRMP, p.147). MP #17 also directs that “existing designated route access will be maintained” and that “repair and realignments of these designated routes is permitted to protect resources or resolve conflicts” (Inyo NF LRMP, p. 147). The current alignment and condition of the Furnace Creek Road does not protect resource values and repair and/or realignment is needed to resolve resource conflicts.
- Bring the road into compliance with Forest Riparian Area Standards and Guidelines by “giv[ing] emphasis to riparian-dependent resources in the management of riparian areas” (Inyo LRMP, p.89).

Proposed Action

To meet the purpose and need, the Bureau of Land Management and Forest Service have identified a proposed action of closing the Furnace Creek Road. This closure begins approximately 2.5 miles from Highway 264 in Mono County, California. Included in the proposed action are decommissioning activities such as road decompaction that will help restore the Furnace Creek area to its natural state.

Decision Framework

Given the purpose and need, the deciding official will review the proposed action and the other alternatives in order to make the following decisions:

1. Whether or not to close the Furnace Creek Road, which will include decommissioning the existing road.
2. If the road is decommissioned, reconstructed and/or realigned, the mitigation and monitoring measures (if any) necessary to minimize the resource impacts of the road.
3. Whether the effects of the project are insignificant (and documented in a Finding of No Significant Impact) or significant (triggering the need for an environmental impact statement).

Related Documents that Influence the Scope of this EA

The Inyo National Forest Final Environmental Impact Statement (FEIS) and Land and Resource Management Plan (Forest Plan) of 1988 as amended by the Sierra Nevada Forest Plan Amendment Record of Decision (2004), and the California Desert Conservation Area Plan (1980), as amended by the Northern and Eastern Mojave Desert Management Plan (2002) contains direction for the Furnace Creek area as well as the management of riparian areas and roads. The BLM has recently completed (June 2004) the Route Designation in the Northern and Eastern Mojave Desert Plan. While this plan includes the designation of motorized vehicle access routes in the northeastern portion of the California Desert Conservation Area, the upper portion of Furnace Creek Road (approximately two miles from Highway 264) was intentionally not included in the plan. This analysis tiers to these documents as well as all applicable laws, regulations, and appropriate agency policies (see Appendix B for a more detailed discussion of these applicable laws, regulations, and policies).

Public Involvement

The proposal was first listed in the summer 2003 Schedule of Proposed Actions for the Forest Service and was provided to the public for comment during scoping which began July 7, 2003. As part of the public involvement process, the agencies conducted two meetings (November 6, 2003, in Bishop, California and December 10, 2003, in Dyer, Nevada) and a field trip (October 23, 2003) to solicit comment on the proposed action. Two additional meetings (June 24, 2004, in Bishop, California and June 26, 2004, in Fish Lake Valley, Nevada) and a field trip (June 26, 2004) were held to gather additional scoping comments.

This initial scoping phase generated nearly 500 comments. Attendance at the June public meetings was relatively high—over 115 people attended the June 24 meeting in Bishop, while nearly 50 people attended the June 26 meeting in Fish Lake Valley.

On July 23, 2004, a draft of the first two chapters (Purpose and Need and Alternatives) of the environmental document was distributed to the public for comment. The intent of the draft

distribution was to generate public comment on the range of alternatives displayed in the document. Two additional public meetings were held in Bishop (August 5, 2004) and Fish Lake Valley (August 4, 2004). Again, the public meetings were well attended and approximately 60 comments were received.

On January 16, 2005, the Furnace Creek EA was released for a 30-day legally noticed comment period. Two public meetings were held (February 2, 2005, in Bishop, CA and February 3, 2005). Over 4,000 comments (many of them form letters) were received during the comment period. This ((Nov.2006)) Environmental Assessment contains some clarification as well as additional analysis that was not included in the January 2005 Environmental Assessment.

Issues

Using the comments on the Proposed Action from the public, organizations, other agencies and (affected) tribes, the interdisciplinary team and line officer developed a list of issues. Issues are points of discussion, debate or dispute about environmental effects.

The Forest Service separates the issues into two categories: significant and non-significant. The Council on Environmental Quality regulations state:

“NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.” (40 CFR 1500.1(b))

40 CFR 1500.4(g) directs that the scoping process should be used to “not only to identify significant environmental issues deserving of study but also to deemphasize insignificant issues narrowing the scope of the EIS process accordingly.”

Significant issues directly influence the initiation, development, and technical design of the project; are disclosed in the analysis; and were used to develop alternatives to the proposed action. Issues are significant because of the extent of their geographic distribution, the duration of their effects, or the intensity of interest or resource conflict.

Non-significant issues are identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) unrelated to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, “...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)...” A list of the non-significant issues and reasons regarding their categorization as non-significant may be found in the project file.

The Furnace Creek Road Interdisciplinary Team carefully considered comments received from the public and other agencies and Forest Service and BLM Resource Specialists and determined the following issues are relevant to the decisions to be made.

Issue #1 – The Furnace Creek Road is adversely affecting riparian and non-riparian resources

Indicators:

- Distribution/density of weeds

- Effects on populations and habitat of proposed, endangered, threatened, sensitive, and locally rare plant species
- Effects on riparian vegetation (amount of riparian vegetation disturbed)
- Effects on Threatened, Endangered, or Management Indicator Species populations and habitat/habitat quality

Issue #2 – The Furnace Creek Road is adversely affecting water quality and hydrology

Indicators:

- Disturbance within channel/meadow
- Estimated acres of soil disturbed by vehicle use
- Off-site erosion (sedimentation)
- Level of turbidity
- Hydrologic Function

Issue #3 – Road reopening will adversely affect wilderness values in the BLM’s Wilderness Study Area and the Forest Service’s Proposed Wilderness Area

Indicators:

- Meets Wilderness Study Area (WSA) Non-Impairment Criteria, i.e., effects will be temporary, involve no new surface disturbance or permanent placement of structures, and can be easily terminated without requiring reclamation.
- Effects on Wilderness Character and Values, i.e., naturalness, untrammeledness, opportunities for solitude and for primitive and unconfined recreation.
- Effects on Important Supplemental Values e.g., ecological, geological, or other features of scientific, educational, scenic or historical value. (Forest Service segment)
- Degree to which the Alternative may threaten wilderness values or jeopardize future wilderness designation

Issue #4 – Road closure will change recreational opportunities in Furnace Creek

Indicators:

- Miles motorized, multiple use, and closed
- Recreation Opportunity Spectrum

Issue #5 – The Furnace Creek Road may adversely affect cultural/historical resources

Indicators:

- Impacts to cultural and heritage sites by the proposed project
- Provision of tribal access

Issue #6 – Closure of the Furnace Creek Road will adversely affect local economies

Indicator:

- Regional economic analysis of project area

Chapter 2. Alternatives, Including the Proposed Action

Introduction

This chapter describes and compares the alternatives considered for the Furnace Creek Road project. It includes a description for each proposed alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public.

The road was analyzed by a group of resource specialists and the major water crossings were numbered. Six of the crossings are on the BLM portion of the road; eight are on the Forest Service segment. The descriptions of the alternatives are quite detailed with a number of site-specific actions proposed at the 14 crossings.

Tables at the end of Chapter 2 provide a summary of the alternatives. Table 1 summarizes the descriptions and costs associated with each alternative. Table 2 summarizes the recreational access available under each alternative. Table 3 provides a summary of the environmental consequences associated with each alternative.

Appendix C contains the figures related to the project including Figure 1, a map of the project area with the locations of the crossings which are referenced in the description of the alternatives. Figure 2 displays the typical cross sections of the realignment and improvement work which is described for each alternative.

Process Used to Develop Alternatives

The Interdisciplinary Team (IDT) designed the action alternatives to meet the purpose and need of the project. These alternatives are also designed to respond to the issues identified by the public.

The Council on Environmental Quality regulations requires Alternative 1: No Action Alternative. It provides an essential part of the baseline needed for the comparison of the effects in Chapter 3. The IDT developed five other action alternatives in addition to the Proposed Action to address issues raised during the scoping period.

The road was divided into two segments; BLM and Forest Service. The BLM section is approximately 3.75 miles (from Highway 264 to the BLM/Forest Service Boundary). The Forest Service segment included in the alternatives is approximately 2.25 miles, extending from the BLM/Forest Service boundary to the Forest Service's proposed wilderness. None of the alternatives propose actions beyond the Forest Service proposed wilderness boundary (approximately 3.5 miles from the current gate). Alternatives address the BLM and Forest Service

segments of the road individually, recognizing the management differences between the two agencies.

Alternatives Considered in Detail

Based on the issues identified through public comment on the proposed action, the Forest Service developed four alternative proposals that achieve the purpose and need differently than the proposed action. In addition, the Forest Service is required to analyze a No Action alternative. The proposed action, alternatives and no action alternative are described in detail below.

Alternative 1

No Action

Although the road is currently gated, the No Action Alternative has been determined to be the pre-gate situation. While the BLM segment of the road is currently gated and closed, the Forest Service segment is technically open (the Forest Service temporary closure expired in March 2004). The BLM closure is temporary, pending the outcome of this environmental analysis. The No Action Alternative is generally interpreted to mean that there is no change from current management or the proposed project does not take place. If the current project does not take place, there is no indication that the current closure would be made permanent without environmental analysis. Setting the No Action Alternative as the pre-gate situation (or the situation that will result from continued management of the road in its current alignment) provides a point-of-reference for describing the effects of the proposed action (road closure) and the other alternatives.

The No Action Alternative is an analytical tool to compare the effects of the different alternatives. Since the March 2003 interim road closure, there has been some recovery in the areas where the road alignment conflicted with the riparian areas in the canyon. To better display the effects of the other alternatives, the No Action Alternative will assume that continued use of the road will result in the effects that were seen prior to the interim closure.

Under No Action, the Bureau of Land Management and Forest Service would neither improve or restrict access to the Furnace Creek Road (the current gate will be removed). The current situation (pre-gate) as described below would continue. The road currently is inconsistent with the management direction of both agencies and under this alternative the inconsistencies would continue.

Current access to the road is from Highway 264 near Dyer, Nevada. The road, as it continues west, crosses Furnace Creek in a number of places on both BLM and Forest Service managed land. No improvements would be made to the road. The road has deteriorated to a point in which it is impassable in some places. In the past, vehicles have left the road prism and traveled in the riparian zones in an attempt to avoid these impassable sections. Under the No Action, this type of activity would be expected to continue.

Current uses of the road are primarily recreational and include hunting, rockhounding, camping, and pleasure driving. This use is fairly light with an estimated annual usage of twenty

vehicles or less. It is believed that the majority of this light use comes from users in the Fish Lake Valley area. Under the No Action, these uses would continue, although it would be expected that some will avoid the area because of the deterioration of the road.

Current maintenance is minimal. The BLM manages the road as a rugged, four-wheel drive road and maintenance in the past has been limited. The Forest Service segment is a classified road managed as a four-wheel drive road and maintained at a Maintenance 2 level. Maintenance of the road in the past 20 years has been infrequent.

Alternative 2 – The Proposed Action – Road Closed to Mechanized/Motorized Vehicles

This alternative would close both the BLM and Forest Service sections of the Furnace Creek Road. Under this alternative, some decommissioning activities would also take place, with the intent of minimizing additional resource impacts and returning the area to a natural state.

This alternative includes the following components:

- Closure of the Furnace Creek Road to motorized and mechanized use at the current BLM gate (approximately 2.5 miles from Highway 264). This will close access to the road west of the gate.
- A “pass-thru” gate or some other device that allows equestrian/pedestrian access to the area
- Decommissioning of approximately 3.5 miles of the Furnace Creek Road including the following activities:
 - Decompact road surface and break berms to encourage revegetation.
 - Use of water structures (water bars, rock bars, check dams) to facilitate drainage.
 - Stabilize and treat head cuts.
 - Treat ruts in riparian areas.

Alternatives 3-6

Actions common to all improvement/realignment alternatives (Alternatives 3, 4, 5, and 6)

Improve/realign the BLM section of the Furnace Creek Road from the current BLM gate (2.5 miles from Highway 264) to approximately ½ mile from the Forest Service boundary. The realignment and improvements would stabilize the area and minimize the resource impacts that are occurring because of the current alignment and condition of the road. This includes the following work:

- Crossing #1 – stable crossing; no work needed.
- Crossing #2 – stable crossing, no work needed.
- Between crossings #2 and #3 – side draw crossing. Install rolling dip to keep water in crossing and prevent water from running down the road. Riprap on downhill side of crossing to prevent erosion.
- Crossing #3 – stable crossing, no work needed.

- Between crossings #3 and #4 – remove rock and slough, break holes in berm, and add additional water structures for drainage (i.e., rolling dip) to minimize ponding of water.
- Crossing #4 – Riprap 10' by 40' area with 6" to 12" rock. Filter cloth under rock is optional.
- Crossing #5 – Trim willows back to main trunk (or move willows back) and move a portion of the road in this crossing (approximately 50') as far left as possible to approximately 10 feet south of current alignment and adjacent to the cliff. Riprap fill slope and drainage channel. Build check dams in drainage channel to capture sediment. The purpose of this realignment is to separate the road from the stream channel. With realignment and treatments, the natural flow of the stream will be restored.
- Between crossings #5 and #6 – add additional water structures for drainage (i.e., rolling dip).
- Crossing #6 – Fill in, level, and riprap first 40' (10' by 40') area. Rock second 10' by 50' area, rock armor head cut.
- Between crossing #6 and #7 – Add water structures to minimize water on roadway, minor stabilization work on the south side of the road.

Alternative 3 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Closed to Mechanized/Motorized Use

This alternative would improve/realign portions of the Furnace Creek Road on BLM lands and close the road approximately ½ mile before the Forest Service boundary. This alternative includes the following components:

- Improvements/realignment as described in the actions common to all improvement/realignment alternatives.
- Designation of a turn-around between crossing #6 and Forest Service boundary. The turnaround would use the existing road prism and an already impacted site approximately 250 feet square on the northside of the road. This area will be identified by sign and delineated on the ground with wood posts or boulders. The turnaround will also avoid the heritage site approximately .20 miles above crossing #6.
- Close road beyond the turn-around with appropriate barriers to restrict further vehicle travel on road.
- Decommission road from the turn-around to the Forest Service's proposed wilderness boundary (approximately 2¾ miles). This decommissioning includes the following components:
 - Decompact road surface and break berms to encourage revegetation.
 - Use of water structures (water bars, rock bars, check dams) to facilitate drainage.
 - Stabilize and treat head cuts.
 - Treat ruts in riparian areas.

Alternative 4 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Multiple-Use Trail

This alternative would realign and improve portions of the Furnace Creek Road on BLM lands and convert the Forest Service section of the road to a multiple-use trail that permits the use of motorized vehicles of 50” in width and less.

This alternative includes the following components:

Actions common to all improvement/realignment alternatives

- Designation of a turn-around between crossing #6 and Forest Service boundary. The turnaround would use the existing road prism and an already impacted site approximately 250 feet square on the northside of the road. This area will be identified by sign and delineated on the ground with wood posts or boulders. The turnaround will also avoid the heritage site approximately .20 miles above crossing #6.
- Appropriate action utilizing standard practices (e.g., gate, barriers, signing) that will limit vehicles entering Forest Service land to 50” in width or less.
- Realignment and improvements of the Forest Service segment of the road. These actions will minimize the resource effects of the current road alignment and includes the following actions:
 - Between crossing #6 and #7 (approximately .20 miles west of FS/BLM boundary) – Use rock to fill in channel, install rolling dip (lower road by 3’ to 5’), armor downhill slope side.
 - Crossing #7 – Realign trail to the right (north of the current alignment) out of the riparian area. For an ATV trail, build a 2’ landscape tie retaining wall with filter cloth. Trail will be 5’ wide from the outside of the landscape ties to the natural cut slope.
 - Crossing #8 – Realign first 40’ past the crossing to the right (north of the current alignment) and build a 5’ ATV trail. Realign second 100’ to the right with a 2’ landscape tie wall and 5’ trail. Last 20’ will be a riprap crossing with filter cloth and a 6’ finished width.
 - Crossing #9 – Riprap a 20’ crossing with filter cloth and a 6’ finished width.
 - Between crossing #9 and #10 – Break up berm, install water bar.
 - Crossing #10 – Realign 90’ of road to the right (north of the current alignment) with a 2’ landscape tie retaining wall and a 5’ trail width.
 - Crossing #11 – Realign 80’ of road to the right and construct a 1’ high rock wall and 5’ trail.
 - Between crossing #11 and #12 – Install water bars.
 - Crossing #12 – Realign 120’ of the road to the right and construct a 2’ high landscape tie retaining wall with a 5’ trail width. Active treatment for ruts in the previous road alignment to stabilize area. Put checks in ruts, treat headcut.
 - Between crossing #12 and #13 – Install water bars.

- Crossing #13 – Realign 130' of the road to the right with a 2' high landscape tie retaining wall and 5' trail width. Second 50' is a riprapped crossing with filter cloth and 6' finished width. This starts a realignment of the trail to the south side of the canyon. This realignment is flagged and will be a cut and fill section with a 5' trail width. Treat ruts, add water bars, loosen soil when necessary to facilitate revegetation in the previous alignment.
- Crossing #14 – Riprap a 20' crossing with filter cloth and a 6' finished width.
- Between Crossing #14 and the Forest Service Proposed Wilderness boundary – Add water bars as needed to control erosion and water on roadway.

Alternative 5 – BLM and Forest Service, Multiple-Use Trail

This alternative would convert the Furnace Creek Road to a multiple-use trail and allow motorized use for vehicles 50'' and less.

This alternative includes the following components:

- Parking area approximately two miles from Highway 264, suitable for five to ten vehicles. The parking area would be on the north side of the existing road and would impact an area 50' by 40'.
- Standard practices to restrict vehicle use to 50'' width at BLM crossing approximately two miles from Highway 264 (or ½ mile east of the gate).

Improvement and realignment of Furnace Creek Road appropriate for a multiple-use trail including:

- Improvement/realignment as described in the Actions common to all improvement/realignment alternatives (modified, as appropriate, to allow use by vehicles 50' or less in width).
- Between crossing #6 and #7 (approximately .20 miles west of FS/BLM boundary) – Use rock to fill in channel, install rolling dip (lower road by 3' to 5'), armor downhill slope side.
- Crossing #7 – Realign trail to the right (north of the current alignment) out of the riparian area. For an ATV trail, build a 2' landscape tie retaining wall with filter cloth. Trail will be 5' wide from the outside of the landscape ties to the natural cut slope.
- Crossing #8 – Realign first 40' past the crossing to the right (north of the current alignment) and build a 5' ATV trail. Realign second 100' to the right with a 2' landscape tie wall and 5' trail. Last 20' will be a riprap crossing with filter cloth and a 6' finished width.
- Crossing #9 – Riprap a 20' crossing with filter cloth and a 6' finished width.
- Between crossing #9 and #10 – Break up berm, install water bar
- Crossing #10 – Realign 90' of road to the right (north of the current alignment) with a 2' landscape tie retaining wall and a 5' trail width.
- Crossing #11 – Realign 80' of road to the right and construct a 1' high rock wall and 5' trail.

- Between crossing #11 and #12 – Install water bars.
- Crossing #12 – Realign 120' of the road to the right and construct a 2' high landscape tie retaining wall with a 5' trail width. Active treatment for ruts in the previous road alignment to stabilize area. Put checks in ruts, treat headcut.
- Between crossing #12 and #13 – Install water bars.
- Crossing #13 – Realign 130' of the road to the right with a 2' high landscape tie retaining wall and 5' trail width. Second 50' is a riprapped crossing with filter cloth and 6' finished width. This starts a realignment of the trail to the south side of the canyon. This realignment is flagged and will be a cut and fill section with a 5' trail width. Treat ruts, add water bars, loosen soil when necessary to facilitate revegetation in the previous alignment.
- Crossing #14 – Riprap a 20' crossing with filter cloth and a 6' finished width.
- Between Crossing #14 and the Forest Service Proposed Wilderness boundary – Add water bars as needed to control erosion and water on roadway.

Alternative 6 – BLM and Forest Service, Full-size Vehicle Access

Improvement/realignment of the BLM and Forest Service sections of the Furnace Creek Road to accommodate full-size vehicles from the current BLM gate to the Forest Service's proposed wilderness boundary (approximately 2.25 miles from the BLM/FS boundary). This improvement/realignment includes the following work:

- Actions common to all improvement/realignment alternatives.
- Between crossing #6 and #7 (approximately .20 miles west of FS/BLM boundary) – Use rock to fill in channel, install rolling dip (lower road by 3' to 5'), armor downhill slope side.
- Crossing #7 – Realign road to the right (north of the current alignment) out of the riparian area. For a four-wheel road, build a 2' landscape tie retaining wall with filter cloth. Road will be 9' wide from the outside of the landscape ties to the natural cut slope.
- Crossing #8 – Realign first 40' past the crossing to the right (north of the current alignment) and build a 9' four-wheel drive road. Realign second 100' to the right with a 2' landscape tie wall and 9' road. Last 20' will be a riprap crossing with filter cloth and a 9' finished width.
- Crossing #9 – Riprap a 20' crossing with filter cloth and a 9' finished width.
- Between crossing #9 and #10 – Break up berm, install water bar.
- Crossing #10 – Realign 90' of road to the right (north of the current alignment) with a 2' landscape tie retaining wall and a 9' road width.
- Crossing #11 – Realign 80' of road to the right and construct a 1' high rock wall and 9' road.
- Between crossing #11 and #12 – Install water bars.

- Crossing #12 – Realign 120' of the road to the right and construct a 2' high landscape tie retaining wall with a 9' road width. Active treatment for ruts in the previous road alignment to stabilize area. Put checks in ruts, treat headcut.
- Between crossing #12 and #13 – Install water bars.
- Crossing #13 – Realign 130' of the road to the right with a 2' high landscape tie retaining wall and 9' road width. Second 50' is a riprapped crossing with filter cloth and 9' finished width. This starts a realignment of the road to the south side of the canyon. This realignment is flagged and will be a cut and fill section with a 9' road width. Treat ruts, add water bars, loosen soil when necessary to facilitate revegetation in the previous alignment.
- Crossing #14 – Riprap a 20' crossing with filter cloth and a 9' finished width.
- Between Crossing #14 and the Forest Service Proposed Wilderness boundary – Add water bars as needed to control erosion and water on roadway.

Design Criteria Common to All Action Alternatives

An integral part of the analysis process is mitigation of the potential effects resulting from implementation of the action alternatives. Therefore, to minimize resource impacts mitigation measures detailed below would be implemented for any action alternative selected. The potential effects of each alternative (provided in Chapter 3) were analyzed with the specific mitigation measures applied. Appropriate mitigation measures and Best Management Practices would occur previous to, or simultaneously with, approved ground disturbing activities. The Forest Service also developed the following design criteria to be used for all action alternatives:

Management Requirements and Mitigations Common to All Action Alternatives (Alternatives 2-6)

Best Management Practices: The improvement/realignment work will comply with the Best Management Practices in the Water Quality Management for Forest System Lands in California (the applicable BMPs are listed in Appendix B).

This improvement/realignment will also meet the monitoring requirements in Investigating Water Quality in Pacific Southwest Region. The applicable requirements are included in Appendix B (On-site Evaluation EI3 – In channel construction).

Appropriate signing: The Furnace Creek Road and area will be posted with signs that clearly show the public where they can legally drive motorized vehicles.

Cultural/Heritage Resources: Measures will be taken to mitigate impacts to cultural and heritage resources along the Furnace Creek Road corridor. See the heritage section in Chapter 3 for the suite of heritage-related mitigation measures available.

Noxious Weeds: The following mitigation measures will be implemented to help prevent the introduction and spread of noxious weeds:

- Ground disturbance will be kept to the minimum amount required to accomplish the proposed work (decommissioning, realignment, reconstruction).

- All equipment used in road decommissioning, realignments, and reconstruction will be cleaned free of soil and plant parts prior to arriving on site, and prior to leaving the site after completion of work.
- Areas where ground disturbance takes place, i.e. decommissioned areas, realignments, reconstruction, will be monitored for new invasive species for three years following completion of the work. New invasive species will be removed. Invasive species that were already present on site will be controlled to the extent possible in areas of new ground disturbance. It is not feasible, particularly in the case of cheatgrass, to anticipate complete control.
- Utilize opportunities to educate the OHV community on weed concerns and the value of cleaning vehicles before and after each trip.

Management Requirements and Mitigations Common to All Improvement/Realignment Alternatives (Alternatives 3, 4, 5, and 6)

Seasonal Closure: A seasonal closure will be placed on the Furnace Creek Road that prohibits motorized use of the Furnace Creek Road. This seasonal closure will provide controls of potential damage to the road surface and adjacent slopes and will mitigate the effects of vehicular traffic to wildlife. In addition to resource benefits, there is a public safety aspect to the seasonal closure. Similar to other seasonal closures in the White Mountains, the Furnace Creek Road will be closed when conditions warrant. Depending upon conditions, the seasonal closure will generally be from December to May. Conditions in the Furnace Creek Canyon will be monitored and the seasonal closure will be modified as needed.

End of the Road: There will be a clearly signed end to the road in the Tres Plumas flat area. This end of the road will be in an area that is most appropriate for halting motorized use of the road.

Monitoring Common to All Alternatives

Monitor the road and surrounding area at least twice annually (at least three times a year for Alternatives 4-6). The monitoring will specifically focus on the following:

- Monitor the BLM's Wilderness Study Area and the Forest Service's Proposed Wilderness to ensure that wilderness values are not compromised by the Furnace Creek Road. In particular, the Tres Plumas flat area will be monitored for route proliferation. In the event of route proliferation or vehicle use away from the road prism, corrective measures will be taken, including potential closure of the road east of the Tres Plumas flat area.
- Monitor erosion control measures such as check dams and water bars to determine their effectiveness.
- Monitor road realignments adjacent to the riparian areas in the canyon.

Comparison of Alternatives

Table 1. Description of Alternatives for the Furnace Creek Road

Number of Miles	Alternative	Description of Proposed Treatments	Status of the segment	Cost of Proposed Treatments
BLM Segment				
Length – 1.25 miles	Existing Conditions: steep side slope terrain; four relatively small, perennial stream crossings, one moderate perennial crossing (#6) and one major perennial crossing (#5).			
	1 (No Action)	There are no proposed actions/treatments in this alternative	Open to all vehicles	\$0
	2 (Proposed Action, Road Closure)	Close road at current gate; decommissioning activities to minimize resource damage and return the area to a natural state	Closed to all vehicles	\$8,000
	3 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed)	Improvements along entire segment to minimize/eliminate resource impacts and accommodate full-size vehicles; realignment of road at crossing #5	Seasonally open to all vehicles	\$18,000
	4 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail)	Improvements along entire segment to minimize/eliminate resource impacts and accommodate full-size vehicles; realignment of road at crossing #5	Seasonally open to all vehicles	\$18,000
	5 (BLM and Forest Service Segments, Multiple-Use Trail)	Improvements along entire segment to minimize/eliminate resource impacts and accommodate vehicles 50" in width and less; realignment of road at crossing #5	Seasonally open to vehicles less than 50" in width only	\$12,000
	6 (BLM and Forest Service Segments, Full-size Vehicle Access)	Improvements along entire segment to minimize/eliminate resource impacts and accommodate full-size vehicles; realignment of road at crossing #5	Seasonally open to all vehicles	\$18,000
Forest Service Segment				
Length – 2.25 miles	Existing Condition: steep side slope terrain and several sections of the road in the same channel as the riparian area; six major stream crossings and two relatively minor perennial stream crossings			
	1 (No Action)	There are no proposed actions/treatments in this alternative	Open to all vehicles	\$0

Number of Miles	Alternative	Description of Proposed Treatments	Status of the segment	Cost of Proposed Treatments
	2 (Proposed Action: Road Closed to Mechanized/Motorized Vehicles)	Close road at current gate; decommissioning activities to minimize resource damage and return the area to a natural state	Closed to all vehicles	\$12,000
	3 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed to Mechanized/Motorized Use)	Road is closed ¼ mile below BLM/Forest Service boundary; decommissioning activities to minimize resource damage and return the area to a natural state	Closed to all vehicles	\$12,000
	4 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail)	Improvements along entire segment to minimize/eliminate resource impacts and accommodate vehicles 50" in width and less; realignment of road at crossings 7-8, 10-13	Seasonally open to vehicles 50" in width and less only	\$46,000
	5 (BLM and Forest Service, Multiple-Use Trail)	Improvements along entire segment to minimize/eliminate resource impacts and accommodate vehicles 50" in width and less; realignment of road at crossings 7-8, 10-13	Seasonally open to vehicles 50" in width and less only	\$46,000
	6 (BLM and Forest Service, Full-size Vehicle Access)	Improvements along entire segment to minimize/eliminate resource impacts and accommodate full-size vehicles; realignment of road at crossings 7-8, 10-13	Seasonally open to all vehicles	\$90,000

Table 2. Recreational Access Permitted for Each Road Segment by Alternative

Alternative	BLM Segment	Forest Service Segment
1 (No Action)	Full size motorized vehicles, mountain bikes, horses, and foot-travel	Full size motorized vehicles, mountain bikes, horses, and foot-travel
2 (Proposed Action: Road Closed to Mechanized/Motorized Vehicles)	Foot-travel and horses	Foot-travel and horses
3 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed to Mechanized/Motorized)	Full size motorized vehicles, mountain bikes, horses, and foot-travel	Foot-travel and horses

Alternative Use)	BLM Segment	Forest Service Segment
4 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail)	Full size motorized vehicles, mountain bikes, horses, and foot-travel	Motorized vehicles 50" in width and less, mountain bikes, horses, and foot-travel
5 (BLM and Forest Service, Multiple-Use Trail)	Motorized vehicles 50" in width and less, mountain bikes, horses, and foot-travel	Motorized vehicles 50" in width and less, mountain bikes, horses, and foot-travel
6 (BLM and Forest Service, Full-size Vehicle Access)	Full size motorized vehicles, mountain bikes, horses, and foot-travel	Full size motorized vehicles, mountain bikes, horses, and foot-travel

Table 3. Comparison of Effects of Alternatives on Resource Issues

Resource	Alternative 1 No Action	Alternative 2 (Proposed Action: Road Closed to Mechanized/ Motorized Vehicles)	Alternative 3 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed to Mechanized/ Motorized Use)	Alternative 4 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail)	Alternative 5 (BLM and Forest Service, Multiple-Use Trail)	Alternative 6 (BLM and Forest Service, Full-size Vehicle Access)
Issue #1 The Furnace Creek Road is adversely affecting riparian and non-riparian resources						
Botany and Noxious Weeds	Approximately .35 acres of disturbed riparian vegetation; sensitive plant effects similar across all six alternatives This alt provides the less protection of riparian vegetation and has the greatest potential to contribute to an	Approximately 0 square feet of disturbed riparian vegetation This alt provides the highest level of protection of riparian vegetation and has the lowest potential to contribute to an increase in weeds.	Approximately .06 acres of disturbed riparian vegetation	Approximately .13 acres of disturbed riparian vegetation	Approximately .13 acres of disturbed riparian vegetation	Approximately .16 acres of disturbed riparian vegetation

Resource	Alternative 1 No Action	Alternative 2 (Proposed Action: Road Closed to Mechanized/Motorized Vehicles)	Alternative 3 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed to Mechanized/Motorized Use)	Alternative 4 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail)	Alternative 5 (BLM and Forest Service, Multiple-Use Trail)	Alternative 6 (BLM and Forest Service, Full-size Vehicle Access)
	increase in weeds.					
Wildlife	.35 acres of riparian habitat affected (out of 21 acres total); 7.02 acres of upland habitat affected (out of 53,760 acres total) (Alternative with the greatest effect on wildlife habitat)	No wildlife habitat affected; .35 acres riparian habitat and 7.02 acres upland habitat recovered (Alternative with the greatest improvement of wildlife habitat)	.06 acres of riparian habitat and 1.37 acres of upland habitat affected	.13 acres of riparian habitat and 3.60 acres of upland habitat affected	.12 acres of riparian habitat and 3.56 acres of upland habitat affected	.16 acres of riparian habitat and 8.09 acres of upland habitat affected
Issue #2 – The Furnace Creek Road is adversely affecting water quality and hydrology						
Soil/Water Quality	Inconsistent with Forest Service and BLM direction; greatest effect to hydrology and soil resources. Long-term, moderate water quality effects Long-term, low to moderate turbidity and sedimentation effects	Provides the highest level of protection for riparian and non-riparian resources Short-term increased levels of sedimentation Long-term full recovery of hydrologic function	BLM Segment - Short-term, minor effects to water quality, hydrologic function, and turbidity levels Forest Service Segment - Short-term increased levels of sedimentation Long-term full recovery of hydrologic	BLM Segment – Same effects as Alt 3 Forest Service Segment - Short-term, minor effects to water quality, hydrologic function, and turbidity levels	BLM Segment – Slightly less effects to water quality, hydrologic function, and turbidity as described in Alternatives 3 and 4. Forest Service Segment – Same effects as Alternative 4	BLM Segment – Same effects as Alternatives 3 and 4. Forest Service Segment - Slightly greater effects to water quality, hydrologic function, and turbidity than that described in Alternatives 4 and 5.

Resource	Alternative 1 No Action	Alternative 2 (Proposed Action: Road Closed to Mechanized/ Motorized Vehicles)	Alternative 3 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed to Mechanized/ Motorized Use)	Alternative 4 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail)	Alternative 5 (BLM and Forest Service, Multiple-Use Trail)	Alternative 6 (BLM and Forest Service, Full-size Vehicle Access)
			function			
Issue #3 – Road reopening will adversely affect wilderness values in the BLM’s Wilderness Study Area and the Forest Service’s Proposed Wilderness Area						
Wilderness	BLM – negligible effect on wilderness values, detrimental effects to supplemental ecological values FS – Effects similar as the BLM segment; risk of route proliferation in upper portion of road may affect wilderness values	BLM and FS – enhancement of wilderness characteristics; provides highest level of maintenance of the non-impairment standard and enhancing the area’s wilderness character and values	BLM – potential effects to non-impairment criteria – likely the overall effects will be the same as before closure; supplemental ecological values are enhanced from Alternative 1 FS – same as Alternative 2	BLM – same as Alternative 3 FS – potential of route proliferation; overall negligible effect on wilderness value	BLM – similar to Alternative 3; overall negligible effect on wilderness values FS – same as Alternative 4	BLM – same as Alternative 3 FS – effects similar to Alternative 4; in the event of route proliferation, magnitude of impacts will be greater in this alternative than in Alternative 3 and 4.
Issue #4 – Road closure will change recreational opportunities in Furnace Creek						
Recreation/Social (miles given are from the current BLM gate)	Approximately 8.5 miles of full-size motorized use (may be impassable in places); 8.5 miles equestrian and hiking	0 miles of motorized, mechanized use; 8.5 miles equestrian and hiking	Approximately 1.25 miles of full-size motorized use; 8.5 miles equestrian and hiking	Approximately 1.25 miles of full-size motorized use; 6.25 miles of multiple use trail (motorized vehicles <50” in width,, equestrian, and	Approximately 8.5 miles of multiple use trail (motorized vehicles <50” in width,, equestrian, and hiking)	Approximately 8.5 miles of full-size vehicle use, mechanized use, hiking, and equestrian use.

Resource	Alternative 1 No Action	Alternative 2 (Proposed Action: Road Closed to Mechanized/Motorized Vehicles)	Alternative 3 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed to Mechanized/Motorized Use)	Alternative 4 (BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail)	Alternative 5 (BLM and Forest Service, Multiple-Use Trail)	Alternative 6 (BLM and Forest Service, Full-size Vehicle Access)
				hiking)		
Issue #5 – The Furnace Creek Road may adversely affect cultural/historical resources						
Heritage Resources	Effects to 26 sites from the road, camping, and unchecked erosion Native American access via motorized and non-motorized use	Effects to 8 sites from the road decompaction and turnaround, camping, and unchecked erosion. Native American access via non-motorized use only	Effects to 10 sites from the road and road turnaround, camping, and unchecked erosion Native American access via motorized and non-motorized use	Effects to 28 sites from the road and road turnaround, camping, and unchecked erosion Native American access via motorized and non-motorized use	Effects to 28 sites from the road and road turnaround, camping, and unchecked erosion Native American access via motorized and non-motorized use	Effects to 28 sites from the road, camping, and unchecked erosion Native American access via motorized and non-motorized use
Issue #6 – Closure of the Furnace Creek Road will adversely affect local economies						
Economics	Minor short-term economic benefits to communities; benefits will decrease over time; overall, negligible economic impact to local communities	Negligible economic impact	Similar to Alternative 1, some short term economic benefits, negligible long-term impacts	Same as Alternative 3	Same as Alternative 3	Same as Alternative 3

Chapter 3. Affected Environment and Environmental Consequences

This chapter describes aspects of the environment likely to be affected by the proposed action and alternatives. Also described are the environmental effects (direct, indirect, and cumulative) that would result from undertaking the proposed action or alternative. Together, these descriptions form the scientific and analytical basis for the comparison of effects in Chapter 2.

Introduction

Location

The Furnace Creek Road begins in rural, western Nevada, quickly crosses in California and climbs into the White Mountains from the east. The Recreation/Social section will provide additional context but Furnace Creek is one of the few canyons that has roaded access that travels an appreciable distance into the White Mountains from the east. (In the project record, the *Management Review of Major Canyons on the East Side of the White Mountains* document provides a longer discussion of other roads on the east side of the White Mountains). The Furnace Creek Canyon is a narrow canyon that within seven miles climbs from 5500' in elevation to 10,000'. The drainage is quite steep until leveling out in Tres Plumas Flat. The Furnace Creek Road is the only road in the drainage. There is no history of timber harvest in the area. Although there was some limited mining in the area in the past (likely over a hundred years ago), there are no effects evident today related to this use. There has been light recreational use in the canyon for a number of years along with some grazing activity in the upper reaches in Tres Plumas Flat (the allotment was closed in 2000). The effects of recreational activity are mostly limited to the existing road while grazing effects are mostly found west of the road's terminus in Tres Plumas Meadow. The description below provides more detail on the road and surrounding area. Photos of the area described below are available in the project file.

The road begins off Highway 264, approximately five miles from the small community of Dyer in Fish Lake Valley, Nevada. Soon after leaving the paved highway, the road enters Mono County, California. For the first 2.5 miles, the dirt road travels on fairly level terrain and is generally in good shape (see photo #1 in the project file). This segment of the road is administered by the Bureau of Land Management. Approximately 2.5 miles from Highway 264, a temporary gate has been placed across the road. The gate is located at 5600' and beyond this point the road enters the canyon (see photo #2). For the next 1.25 miles the road slowly climbs in elevation and crosses a seasonal stream in several places. Photos #3 - 10 show this segment of road. The BLM administers this segment of road and it is generally in good shape. There are some areas where the road has captured the stream flow and has redirected the normal flow of the creek. There is also some loss of riparian vegetation. The stream crossings in this segment are

typically dry by late May. Riparian/road conflicts in this section are generally minimal and easily corrected (Photo #3 shows the road in between crossings). After crossing #6, the Furnace Creek Road climbs out of the canyon and quickly gains elevation (see photo #10).

The Furnace Creek Road enters Forest Service administered land 1.25 miles from the BLM gate at 6000' in elevation (see photo #11). The road quickly drops from a bench overlooking the canyon down into the canyon itself. For nearly the next mile, the Furnace Creek Road travels in and out of the riparian area (photos #12 and 13 shows the road out of the riparian area, photos #14-22 show the crossings that this project proposes to correct). For this mile of road, the road—when it was constructed many years ago— was aligned directly in the riparian area as it represented the path of least resistance. It is likely that one time the area was denuded of vegetation and more resembled a road. Over the last twenty years, however, use of the road has decreased along with maintenance and this mile of riparian area has slowly filled in and revegetated.

Beyond crossing #14, the Furnace Creek Road climbs 1,000' and at 7600' enters the Forest Service's Proposed Wilderness. The segment of road from crossing #14 to the Proposed Wilderness is approximately 3.75 miles from the BLM gate and is well established and out of the riparian areas, although in places it is quite rocky and steep. The Proposed Wilderness boundary was set at 7600' in the 1988 Inyo National Forest LRMP—there is no on-the-ground indication that one has crossed into Proposed Wilderness. Photos #23 and #24 show the section of road beyond crossing #14. Photo #24 shows the Proposed Wilderness area of the road.

The road west of the Proposed Wilderness is well above the riparian area and is rock and steep. From the Proposed Wilderness boundary, the road continues its steep climb and at approximately 8500' and five miles from the BLM gate, passes remnants of past grazing activity (sometimes referred to as the "corrals"). Photo #25 shows the corral area. Pass the corrals, the road climbs another 1000', and finally levels off and enters a fairly flat, open area known informally as "Wildhorse Flat" (approximately six miles from the BLM gate). Photo #26 shows the road entering Wildhorse Flat. Upon entering Wildhorse Flat, the road becomes faint and goes in two different directions. The route to the south quickly disappears while the route traveling west continues into Tres Plumas Flat (see photo #27). In Wildhorse Flat, the road travels through a dry flat dominated by sagebrush. The road goes through Wildhorse Flat, climbs a ridge and at 10,400' begins a descent into Tres Plumas Flat.

The terrain in Tres Plumas Flat is fairly level although quite rocky. The road crosses a patch of one dry meadow in Tres Plumas Flat. There is a two-wheel track that goes through the area in a westerly direction. Contrary to recent public comment, the area is not plagued with route proliferation. **During a fall 2004 site visit, there was no evidence of route proliferation from the Furnace Creek Road south into Cottonwood Basin. Indeed, the very steep terrain south of Tres Plumas Flat would seem to limit the ability of motorized users to drop into the Cottonwood Basin from the Furnace Creek Road.** Beyond its terminus (as indicated on the 1991 OHV Inventory Maps), the road continues for a short distance and shortly becomes non-existent. Some distance west of the terminus there is evidence of use continuing west and

connecting to use routes near the Eva Belle Mine. There is no evidence, however, of use connecting the Furnace Creek Road to the Eva Belle Mine Road. Photos #27 and 28 show the Tres Plumas Flat area. Overall, the Tres Plumas Flat area has no evidence of road proliferation from past use on the Furnace Creek Road. Moreover, the terrain would seem to limit motorized access into the Cottonwood Basin from Tres Plumas Flat. There is no evidence on the ground of motorized use traveling through Tres Plumas Flat connecting to the Eva Belle Mine Road and then dropping south into Cottonwood Basin.

For this project, then, the end of the road is approximately 8.5 miles (as indicated on the 1991 OHV Inventory Map) from the current BLM gate closure.

Current Road Status

The status of the Furnace Creek Road has been the subject of considerable public comment and speculation. Use of the road dates back to the early part of the twentieth century and likely supported the various mining and grazing activities in the area. The road was originally a mule trail for mining. There is a furnace (smelter) in the area that provided the name for the road. The mule trail was changed to a road by ranchers for access to cattle grazing. As grazing declined in the area, use of the road also declined. Up until the 1980s the road likely received infrequent maintenance and occasional recreational traffic. In the mid-1980s, a washout occurred on the road approximately 1.5 miles from the BLM gate on the Forest Service administered segment of the road. Since that time, recreational use of the road was mostly limited to ATVs and motorcycles. Before the 2003 closure, most four-wheel drive vehicles parked before the washout, while motorcycles and ATVs were able to continue up the road. It was possible that small jeep-sized vehicles were also able to travel beyond the washout point although they likely had to leave the road prism to do so. Prior to the 2003 closure, motorized recreation of the road was light and mostly consisted of hunting parties.

For the Forest Service segment of the road, the Furnace Creek road corridor was cherry-stemmed out of the Roadless Area Review and Evaluations conducted in the 1970s. Similarly, maps prepared for the 2000 Roadless Area Conservation Rule also show the Furnace Creek corridor as an area cherry-stemmed out of the surrounding inventoried roadless area. In the 1977 Interagency Motor Vehicle Use Map, the Furnace Creek area is shown as an “Open Use” area—motor vehicle travel allowed anywhere. In 1988, the Inyo National Forest adopted its first management plan and the Furnace Creek Road corridor was assigned Management Prescriptions (MP) #17 and #2. The first 2.25 miles of Furnace Creek Road is in Management Prescription #17 – Semi-Primitive Recreation. This management prescription emphasizes semi-primitive dispersed recreation opportunities, both motorized and non-motorized while the purpose is to:

limit vehicular access to existing designated routes to protect and maintain recreation and/or wildlife values. These routes will be identified in the update of the Motor Vehicle Use Plan, which will be done when the Inyo National Forest Land Management Plan is implemented. The public will be included in the analysis and identification process. Existing designated route access will be maintained. Repair and realignments of these

designated routes is permitted to protect resources or resolve conflicts. Current road mileage will neither increase nor decrease from the designated routes identified in the updated Motor Vehicle Use Plan (Inyo LRMP, p. 147).

The remaining five miles are in Management Prescription #2 – Proposed Wilderness. The purpose of this prescription is to “recognize and protect wilderness attributes of Further Planning Areas recommended for wilderness pending Congressional designation.” The emphasis is on “providing traditional public uses during the interim that do not jeopardize designation as wilderness” (Inyo LRMP, p. 113).

The entire corridor is assigned a Recreation Opportunity Spectrum designation of Semi-Primitive Motorized which manages recreation to provide users an experience of isolation, tranquility, and self reliance with motorized use of primitive road and trails.

Maps that accompany the LRMP show the Furnace Creek Road as an “infrequently maintained trail.” However, the LRMP did not adopt an official road system and it is likely the maps that accompany the Forest Plan (e.g., Facilities and Road Opportunity Spectrum, RARE II Study Areas etc.) used old forest maps as a base layer to show locations of landmarks and other identifying characteristics of the area. The maps were not intended to display the designated road network. It is not completely clear what is meant by the term “infrequently maintained trail” as the Inyo Forest Plan was amended in 1993 to add a definition of trail to include travel by mechanized vehicles. It is likely that in the 1970s and 1980s, the term “trail” was informally used to refer to “jeep trails.” What is clear is that the road showed up—in one form or another—on numerous maps from the 1970s to the 1990s and motorized use of the Furnace Creek Road continued throughout the 1980s and into the 1990s.

The 1988 Inyo LRMP did not adopt an official road network. The plan, though, did call for an update to the 1977 Motor Vehicle Use Plan. Although this update was never completed, a draft Interagency Motor Vehicle Use Strategy prepared in the early 1990s with public involvement included the Furnace Creek Road. In the late 1980s/early 1990s, an OHV inventory (referred to as the 1991 OHV Inventory) was completed for the Inyo National Forest. This inventory identified the Furnace Creek Road as extending from the BLM boundary to a terminus in Tres Plumas Flat. The map also identified a point on the road (approximately .25 miles from the BLM/Forest Service boundary) as “road closed any further” while an area just west of this point was indicated as a “washed out area.” Despite these notations on the 1991 OHV Inventory Map, motorized use of the road continued. There was never a formal process completed that closed the road until the interim closure in 2003. In 2001, the Furnace Creek Road along with the other roads identified in the 2001 OHV Inventory were formally assigned a “Classified”¹ status that

¹ A classified road is defined as a road “wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access, including State roads, county roads, privately owned roads, National Forest System roads, and other roads authorized by the Forest Service.” The term “classified road” is no longer used by the Forest Service—it has been replaced by the term “forest road.” In 36 CFR 212.1, a forest road is defined as “A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the

included the route as a National Forest System Road. A decision to keep the road open in this project will “designate” the road or trail (depending on the alternative selected).

Throughout the 1990s and into 2003, low use of the road continued. While legal use of the road included motorcycles and ATVs and stayed in the road prism, other four-wheel drive vehicles sought to bypass the washout and dropped into the riparian area to move up the road.

While the status of the road may seem to be unclear to some, the road has existed for nearly a hundred years. It has been included in every inventory since the 1970s. The road was cherry-stemmed out of the roadless inventories conducted in the 1970s, 1980s, and 1990s. The 1988 Inyo LRMP provided a management prescription for the corridor which allowed for motorized use along with a recreation opportunity spectrum designation that emphasizes motorized recreation.

Use

As discussed earlier, use of the Furnace Creek Road has historically been low and has decreased considerably since the Tres Plumas Grazing allotment was closed in 2000. Light recreation use had likely occurred before and after the grazing allotment closed, and likely continued up until the interim road closure in 2003. Exact usage numbers for the road in the years leading up to the 2003 closure are not known, but they are assumed to be low. **For the purposed of this project, it is assumed that prior to the closure 15-20 vehicles used the road on an annual basis.** This estimate is based on anecdotal information gathered from users of the road and impacts that could be seen from the vehicles that traveled through the Forest Service riparian areas. The majority of the use was on the BLM section of the road, with few vehicles continuing on to the Forest Service segment. (In his book *Inyo-Mono SUV Trails*, Roger Mitchell describes the road as “one of the least known and seldom visited canyons on the east side of the White Mountains.”) For the last twenty years, this use has been mostly limited to ATVs and motorcycles (with some minimal full-size vehicle use on the BLM section of road).

It is also assumed that any alternative that reopens to road will result in a temporary increase in use, but that use levels will quickly return to pre-closure levels. Improvements to the road will initially increase use (20-25% over pre-closure use), but this increase is expected to be minimal and will level out over time. Given the remoteness of the area, the ruggedness of the road, and the lack of services, any increase in use is expected to be short-term. It is not expected that the Furnace Creek Road will become a destination, but that the road will continue, over time, to be used primarily by locals.

These use assumptions are based on the past limited use of the road and its remote, rugged character. In the past, it is highly unlikely that the road attracted a significant number of out-of-area users. The road is quite remote. Although it is close to the community of Dyer, Nevada (with very limited services), it is 55 miles to the closest town with any significant services for recreationists (Big Pine, CA). The road is also not likely to become the type of attraction that will

protection, administration, and utilization of the National Forest System and the use and development of its resources.”

result in return out-of-area visitors. The Furnace Creek Road, even if it were to be completely reopened would only run 8.5 miles from the current gate to its terminus. Given the long travel time, it would not be expected that people would be willing to drive the long distance for a limited recreational opportunity.

Also, as discussed earlier, although there are limited options for people in Fish Lake Valley to access the east side of the White Mountains, there are a number of motorized routes to the south, west, and north of this range. There are a number of more attractive and longer routes that have traditionally absorbed the majority of motorized recreation in the area (including Wyman Canyon, Crooked Creek, Silver Canyon, and Trail Canyon). Despite the recent publicity that has put the Furnace Creek Road on the map, it is not likely that this route will ever experience any significant increase over historical use levels. Although ATV use increased considerably throughout the 1990s, use of the Furnace Creek did not appreciably change up to its interim closure in 2003.

Perhaps the most limiting factor for the use on the road is its ruggedness and technical nature. **As discussed in Chapter 2, reconstruction and improvement of the Furnace Creek Road is not permitted on the Forest Service segment of the road in Management Prescription #2 (Proposed Wilderness).** This section of road is already quite rocky and steep and will likely deteriorate further as time goes on. This segment of road (nearly 5 miles out of a total project road distance of 8.5 miles) is unlikely to appeal to many motorized recreationists.

It is generally accepted that past use of the Furnace Creek Road has been quite low and there are a number of reasons for this: the remoteness, ruggedness, and limited recreational opportunities associated with the road. There is no alternative in this project that is likely to change the fundamental fact that the road has historically appealed to local, Fish Lake Valley users and it is likely that this will continue to be the case regardless of the alternative selected.

Project Area/Analysis Area

A distinction needs to be made between what is the “project area” and what is the “analysis area.” For this project, the *project area* is the area from the BLM gate to the Forest Service Proposed Wilderness boundary (approximately 3.5 miles of road). The project area is the area where the action alternatives propose actions; for example realigning the road out of the riparian area or modifying stream crossings. Once the road crosses the Proposed Wilderness, however, reconstruction and improvements are prohibited.

For any alternative that proposes to reopen and improve the lower portion of the road, it must be assumed that there will be some vehicular traffic that continues through the project area and into the Proposed Wilderness to the end of the road in Tres Plumas Flat. The *analysis area*, then, includes the entire Furnace Creek drainage from the BLM gate to the road terminus in Tres Plumas Flat. Where appropriate, the analysis area will be extended to include the area west of the road terminus. For any alternative that proposes to reopen the road, there will be a discussion of the effects associated with the reopening both within the project area and further up the road in the analysis area (including the Proposed Wilderness and the Tres Plumas Flat area).

Current Condition and Environmental Consequences

The effects of the alternatives are analyzed for eight resource areas: botany, wildlife, soil and water quality, wilderness, recreation and social, economics, heritage resources, and engineering/monitoring costs. Where appropriate, the resource section will begin with an existing conditions discussion which will describe the current condition and set the stage for the environmental consequences discussion. The environmental consequences sections will include an analysis of the direct, indirect and cumulative effects associated with the alternatives.

For this project, each resource describes the current condition of the road and surrounding area. The road has been closed since March 2003 and much of the riparian vegetation has recovered and the ruts that were evident on the Forest Service segment of the road have mostly grown over. The road, however, is evident and remains in place over much of the area. Each resource will describe the existing condition as an area currently recovering from the past OHV use that utilized an improperly aligned and maintained road.

Establishing the No Action Alternative for this project is difficult as there is a temporary road closure in place and some vegetative recovery has occurred since the road closure (particularly along the mile or so of road in the Forest Service riparian area). This closure, though, is only temporary pending the outcome of this environmental analysis. According to NEPA direction, a No Action Alternative can be interpreted in two ways: (1) as no change from current management or (2) the proposed project does not take place. The current road closure is not permanent nor has it been ordered by a court. The gate was put in place in conjunction with the proposed project; it does not represent “current management.” The current management then can be interpreted to mean the management of the road prior to the road closure. To minimize confusion and to better disclose the environmental effects associated with the project, the current condition is disclosed, but is not set as the No Action.

For this project, the No Action is set as pre-gate management. It is important to remember that the No Action Alternative is an analysis tool to provide a point of comparison for other alternatives. The Proposed Action for this project is the permanent gating of the road. To also set the No Action as a permanent road closure, then, is duplicative and not in accordance with NEPA guidelines for the No Action. Furthermore, the gate cannot stay across the road indefinitely; the BLM would need to take additional administrative action to make this closure permanent (not take “no action”). In addition, the Forest Service segment of the road is currently not closed. The purpose of the No Action in this case is to compare the effects of the alternatives against the condition that the road and resources would be in were management of the road to continue in the same way that it has occurred in the past. Removal of the gate without corrective actions to the road would quickly result in a deteriorating riparian area, similar to what was seen prior to the 2003 closure. The No Action is set to provide this comparison.

The cumulative effects discussion will focus on the relevant past, present, and reasonably foreseeable actions. These relevant actions are based on the direction contained in the June 24, 2005, memo from the Council on Environmental Quality. In terms of past actions, historic grazing and mining activities, road construction and utilization, and foot traffic have occurred in

the drainage. The lower portion of the canyon is on the White Wolf grazing allotment. There has been no grazing in the canyon over the last two to three years, but the permittee could apply to graze here under their permit. **As discussed in more detail for each resource, effects associated with these past actions are limited, and in some cases, undetectable.** In terms of present and reasonably foreseeable actions, the recreation and economics section will discuss the relevant actions including Forest Service’s ongoing Route Designation Process, the Forest Service’s Proposed Rule for Travel Management, and the recently completed Bureau of Land Management’s Route Designation in the Northern and Eastern Mojave Desert. In addition, a bill was introduced to designate lands in California, including a portion of the Furnace Creek area, as wilderness. The Soil and Water Quality section considers the implementation of the proposed road improvements as a present action to be analyzed for cumulative effects. Cumulative effects are discussed in more detail under each resource area.

Botany and Noxious Weeds

Indicators

- Effects on riparian vegetation (amount of riparian vegetation disturbed)
- Distribution/density of weeds
- Effects on populations and habitat of proposed, endangered, threatened, sensitive, and locally rare plant species

Riparian Vegetation

Existing Conditions

Riparian areas, particularly in the very arid landscapes of the Great Basin, are important in many ways. Riparian vegetation serves a critically important role in the proper functioning of a stream system, including helping to stabilize soils, slow potentially damaging flows, and promoting nutrient cycling. In addition, riparian areas tend to be very productive, providing dense cover, nesting habitat, shade, and food for a myriad of wildlife species. While riparian areas are quite limited in the West, e.g. riparian vegetation represents less than two percent (approximately 40,000 acres) of the total land base on the Inyo National Forest (USDA Forest Service, 1988), they provide important habitat for a large majority of wildlife species. Riparian areas also draw human visitors to recreate, hunt, birdwatch, camp, and otherwise utilize these areas. Conflicts arise when human uses lead to the degradation of the riparian resource, and the Inyo National Forest and California Desert District of the Bureau of Land Management have adopted management direction to help resolve these conflicts (see Appendix B for existing management direction in Inyo National Forest and BLM management plans).

The Furnace Creek drainage supports a variety of riparian vegetation communities. From the lowest crossing up to the point where the road finally leaves the canyon bottom above crossing #14, there are approximately 21 acres of riparian vegetation. At the lower elevations, from the current BLM gate location past the third channel crossing, the riparian vegetation consists primarily of willow shrubs, with big sagebrush and a low cover of mostly upland forbs and graminoids in the understory and in between individual willow shrubs. The ephemeral flow here supports a sparse to moderately dense willow scrub community. It is particularly sparse in the lowest reaches. Riparian vegetation is lacking in the roadbed and immediately adjacent area. The current condition of the riparian community in this section is similar to what existed prior to installment of the BLM gate, as water is more limited, and hence, recovery time has not been sufficient to see an increase in vegetation cover.

Above crossing #3, up to crossing #6, the understory is more densely occupied by herbaceous riparian species, such as rushes, sedges, and other riparian graminoids. The willow shrubs are more numerous than downstream, providing more continuous cover and shading. This stretch is still mostly ephemeral, and while there may have been some increase in riparian herbaceous vegetation since the closure, it has not been significant. Crossing #5 is currently the most impacted, and at the greatest risk of further impacts to riparian vegetation. With continued use of

the road, and in the absence of watershed treatments, the existing headcut is likely to lead to further degradation of riparian vegetation, including a gradual shift to more upland species as the water table is lowered.

Above crossing #6, until the road leaves the canyon bottom above crossing #14, the riparian vegetation changes to a denser, sometimes multi-storied mix of plant communities. Willow scrub, water birch, wet meadows, and Fremont cottonwood and/or red willow woodlands are all represented. The understory is a more or less dense continuous cover of herbaceous hydrophytic vegetation, including *Scirpus macrocarpus*, *Mimulus guttatus*, *Carex* species, *Juncus* species, and numerous other riparian graminoids and forbs. The crossings above crossing #6 are wet for most or all of the year. Due to the abundant moisture and soil development and existing vegetation propagules, i.e. seeds and roots to provide for regeneration, these crossings have experienced significant recovery since the closure to motorized vehicles. Where muddy ruts devoid of vegetation existed prior to the closure, lush herbaceous riparian vegetation has now grown back in (see photos in the project record, crossing #8 pre and post gate photos), with the exception of two of the crossings, where treatment of the ruts and headcuts are needed to facilitate further recovery. With continued use of the road, and in the absence of watershed treatments, existing ruts and headcuts are likely to eventually lead to further degradation of riparian vegetation. Prior to the closure, it is likely that at least some vegetation recovery was occurring during the times vehicles were not using the road, as vehicle use had typically been light.

There is one additional stream crossing in the section above the proposed wilderness boundary, beyond crossing #14. This single creek crossing appears stable at this time, and while it impacts approximately 150 square feet of riparian vegetation, it is not anticipated that it will worsen from its present condition with continued use, due to the stable condition of the crossing.

The majority of the road in Tres Plumas Flat is in a sagebrush scrub community; however, a small segment of the road passes through herbaceous dry meadow vegetation. This dry meadow vegetation persists in the middle of the lightly used road.

Direct and Indirect Effects—Riparian Vegetation

Alternative 1 – No Action

Under the No Action alternative, the current gate is removed, and the road is open to vehicle traffic. No realignment or reconstruction would occur, and vehicle use would likely continue through the midst of the riparian habitats in the Furnace Creek drainage. Under this alternative, a total of 11,560 square feet (approximately ¼ acre) of riparian vegetation is directly affected, through the loss of vegetation due to vehicle travel on the current route. In addition, it is likely that additional riparian vegetation would be lost, as one route becomes impassable and a new route is pioneered. It is also likely that over time, in the absence of watershed treatments, the impacts to riparian vegetation would worsen as the hydrologic function of the stream system is impaired, and less water becomes available for the production and maintenance of healthy riparian communities, potentially resulting in changes in riparian species and/or community diversity and structure, or a shift to more upland species.

As stated in the Introduction section of the Affected Environment, this alternative is not likely to result in significant long term increased use of the route above the proposed wilderness boundary compared with the level of use prior to the closure. Prior to the road closure at the current BLM gate, vehicle travel was very light to Tres Plumas Meadow, most likely due, at least in part, to the technical nature of the road, and its remote location. Trespass off of the existing roadway is minimal or nonexistent at this time. Vegetation would continue to be impacted within the existing tire tracks, though would not likely deteriorate further, nor expand, if use levels remain low.

Overall, this alternative responds the least to the need of maintaining riparian vegetation.

Alternative 2 – Proposed Action: Road Closed to Mechanized/Motorized Vehicles

Under this alternative, both the BLM and Forest Service sections of the road are closed. The closed route within the project area (below the proposed wilderness boundary) is decommissioned to facilitate vegetation recovery, and watershed treatments applied to stabilize ruts and headcuts where needed. Recovery of riparian vegetation would continue throughout the drainage under this alternative, and eventually the entire riparian system would return to an unroaded condition, with a diverse mix of riparian communities fully occupying the drainage. Over time, 0- acres of riparian vegetation would be negatively impacted under this alternative, taking into account the expected recovery of a minimum of approximately ¼ acre of riparian vegetation.

Recovery of vegetation within the proposed wilderness boundary would occur more slowly, as active decommissioning would not occur. There would be no risk of further damage from vehicle trespass off of the existing route. This is the best alternative overall for maintaining riparian vegetation and its functions in the ecosystem, and complies best with management direction for riparian resources.

Alternative 3 – BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed to Mechanized/Motorized Use

Under this alternative, the BLM section of the road is open to full size vehicles, and the Forest Service section is closed. The effects of this alternative on the Forest Service section of the road are the same as those in Alternative 2. With its greater moisture supply, the riparian habitats on the Forest Service portion of Furnace Creek tend to have greater structural diversity than the habitats downstream on the more ephemeral reaches, so this alternative would restore the most productive section of riparian vegetation.

On the BLM section, the crossings are stabilized to help prevent further destabilization and downcutting, and in crossing #5, the route is realigned to minimize the riparian damage to the extent possible, though at least part of the roadway will still be within the riparian area. It is not possible to move the road entirely out of the riparian area, due to the steep slopes bordering the canyon. The roadbed would still result in the absence of riparian vegetation in the crossing areas, and some riparian vegetation would continue to be impacted along the route throughout crossing #5. Due to the new alignment, stabilization of crossings, and the eventual recovery of the previous route, this effect is less than under Alternative 1. Under this alternative, approximately 2,770 square feet (.06 acre) of riparian vegetation is directly negatively affected, through the loss

of vegetation due to vehicle travel on the proposed route. This figure assumes recovery of approximately 1/5 acre of riparian vegetation due to the stabilization and realignment of the BLM road, and closure of the Forest Service road. Additional riparian impacts would not be anticipated as in Alternative 1. Vehicles would not need to seek out new routes, as with the deteriorating nature of the existing route under the no action alternative, and with the watershed stabilization work proposed and the seasonal closure, further downcutting and loss of riparian function would not occur as it likely would in the no action alternative. Of Alternatives 3 through 6, this alternative has the least impact overall on riparian vegetation in the Furnace Creek drainage.

Alternative 4 – BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail

Under this alternative, the BLM section of the road is open to full size vehicles, and the Forest Service section is open to vehicles 50" wide or less. The impacts of this alternative on the BLM section of the road are the same as in Alternative 3. On the Forest Service sections, the route is realigned to minimize riparian damage to the extent possible, though at least part of the roadway would continue to be in the riparian area. It is not possible to move the road entirely out of the riparian area, due to the steep slopes bordering the canyon. The roadbed would still result in the absence of riparian vegetation in the crossing areas, and some riparian vegetation would continue to be impacted along the route. Due to the new alignment, stabilization of crossings, and the eventual recovery of the previous route, this impact is less than under Alternative 1. The decreased width of the route would create less impact to riparian vegetation on the Forest Service section than under Alternative 6, as the area where the road width is decreased would be expected to recover. Under Alternative 4, approximately 5,545 square feet (.13 acre) of riparian vegetation is directly affected negatively, through the loss of vegetation due to vehicle travel on the proposed route. Additional riparian impacts would not be anticipated as in the No Action Alternative. Vehicles would not need to seek out new routes, as with the deteriorating nature of the existing route, and with the stabilization work and seasonal closure proposed, further downcutting and loss of riparian function would not occur as it would in the No Action Alternative.

While this alternative does not propose any actions beyond the proposed wilderness boundary, it is possible that the reconstruction of the route through lower Furnace Creek may result in an increase in use, at least in the short term, of the upper portions of the Furnace Creek road, i.e. from the proposed wilderness boundary up to the end of the existing road at Tres Plumas Meadow. It is not anticipated that the single upper creek crossing above the proposed wilderness boundary will worsen from its present condition with the level of use anticipated under this alternative, due to the stable condition of the crossing. Increased use of the road in Tres Plumas Flat, where it passes through dry meadow vegetation, may result in a slight increase in impacts to riparian vegetation in the vicinity of Tres Plumas meadow, i.e. vegetation currently present in the existing road tracks may decrease. While little to no off-road trespass has been observed, the provisions for monitoring for trespass, and clear signing of the road end will help to further discourage off-road travel in this area.

Alternative 5 – BLM and Forest Service, Multiple-Use Trail

Under this alternative, both the BLM and Forest Service sections are reconstructed to allow vehicles 50' in width or less. The crossings through riparian areas are realigned, but a portion of the route would still be within the riparian area, as in the other alternatives. The effects of this alternative on the FS portion of the road are the same as in Alternative 4. The effects of this alternative on the BLM portion of the road are similar to those in Alternatives 3 and 4, but the width of the reconstructed, stabilized route would be less, and hence, the impacts to riparian vegetation would be less, with recovery of riparian vegetation where the road width is decreased. As in Alternatives 3 and 4, vehicles would not need to seek out new routes, and further downcutting and loss of riparian function would not occur as in the No Action Alternative. A total of approximately 4,205 square feet (.10 acre) of riparian vegetation is expected to be impacted negatively under this alternative. In terms of meeting goals for protecting riparian resources, this alternative is better than Alternatives 4 and 6, but worse than the other action alternatives.

Alternative 6 – BLM and Forest Service, Full-size Vehicle Access

Under this alternative, the route would be realigned and reconstructed to accommodate full size vehicles all the way through the Furnace Creek canyon area, until the existing route leaves the canyon bottom. The impacts on the BLM section would be the same as in Alternatives 3 and 4. The riparian impacts on the Forest Service section of the road would be similar to those in Alternatives 4 and 5, but of a greater magnitude due to the increased width of the road, and the increased access to larger vehicles to the upper portion of the road. Approximately 7,330 square feet (.17 acre) of riparian vegetation would be directly impacted negatively under this alternative. As in Alternatives 3, 4 and 5, vehicles would not need to seek out new routes, and further downcutting and loss of riparian function would not occur as it would in the no action alternative. Due to the length and width of the road, this alternative is the worst action alternative with respect to riparian resources.

Cumulative Effects—Riparian Vegetation**All Roaded Alternatives**

Looking at wetland/riparian status on a broad scale, riparian areas have significantly declined in the United States compared to historical levels, due primarily to various changes in land and water uses (Brinson 2002). Estimates of wetland loss between the 1780s and 1980s across the United States note a 52% reduction for Nevada and a 91% reduction for California. These losses are largely due to agricultural conversion, with the majority of California's wetland loss in the Central Valley, and much of Nevada's wetland loss in the Carson Valley/Reno area (Dahl 1990). Following the institution of various laws and other protection measures aimed at reversing this trend, losses have slowed significantly, e.g. between 1986 and 1997, the estimated wetland loss was 80% less than the previous decade (Dahl 2000).

Riparian areas on the Inyo National Forest and adjacent BLM lands are currently impacted to some degree by a variety of uses, including camping, livestock use, roads, trails, OHV travel, water diversions, hydroelectric power generation, and non-native species. In the White

Mountains, the primary human influences in riparian areas include livestock grazing, dispersed recreation use (hunting, camping, etc.), OHV travel, introduction of non-native species, and water diversions. Those activities occurring in the Furnace Creek drainage are discussed in greater detail below.

Livestock use, mining, and recreation use are past and/or present activities that have occurred in the Furnace Creek drainage and the Tres Plumas Flat area. Grazing was moderate to heavy during the early to mid century at the higher elevations, e.g., Tres Plumas Flat, Tres Plumas Meadow. Livestock use levels were much lower in more recent history. The allotment analysis for the Cottonwood and Tres Plumas allotments, conducted by the Forest Service in 1999, rated the wet meadow in Tres Plumas as “good” condition, and the uplands as “excellent.” The area has been rested since that time, and may have improved further. There is no evidence of a loss of riparian plant communities due to past livestock use. Livestock use in the lower part of the Furnace Creek drainage has been primarily trailing to and from the higher elevations, with impacts limited to temporary trampling effects. Overall, there are limited effects from livestock use in the Furnace Creek watershed.

Wild horse use has also occurred in the watershed, historically and presently, but no significant effects on riparian communities have been noted.

Non-native species present in the drainage may have been introduced via livestock, wildlife, and/or recreationists, motorized or otherwise. At this point in time, the density and distribution of non-native species is not significantly affecting riparian condition. The composition, structure, and function of the riparian communities remain in good condition at this time with regard to invasive species.

There is no evidence of historical mining activities in the Furnace Creek drainage affecting riparian communities.

The east side of the White Mountains is unique on the Inyo National Forest with regard to geology, hydrology, and associated vegetation. On the east side of the White Mountains, approximately 62% of the canyons that support riparian communities have roaded access, though Furnace Creek is the only road that continues to the crest of the range. In most of these drainages, the road parallels the riparian area, crossing it periodically, so riparian vegetation impacts are associated primarily with the loss of vegetation in the crossings, and possibly to a change in available water due to road-related erosion. Introduction of non-native species may also be associated with road access to these riparian communities. The road in Furnace Creek contributes to this cumulative impact on riparian communities on the east side of the White Mountains, though with only .25 acre of approximately 20 acres of riparian vegetation affected in Alternative 1, and less in the other alternatives, this contribution is not significant.

Alternative 2

This alternative does not contribute to any cumulative effects on riparian vegetation in the area. This alternative would help to lessen the cumulative effects on riparian habitats in the eastern White Mountains, providing an additional lower to middle elevation arid lands riparian area that is not affected by vehicle travel.

Non-native Invasive Species

Existing Conditions

Invasive non-native species are currently recognized as one of the most significant threats to wildlands in the West. Once established, weeds can spread quickly, displacing acres of productive native vegetation and wildlife habitat (USDA Forest Service, 1999). Estimates indicate invasive plants are spreading at about 4,600 acres per day on federal lands alone in the western United States (USDI BLM). Vehicles often serve as a dispersal mechanism for weed seeds, unwittingly transporting seeds from one area to another (University of California Berkeley, 2002). Other dispersal agents include hikers, livestock, wildlife, wind, and water.

Several non-native species have been noted in the Furnace Creek drainage: cheatgrass (*Bromus tectorum*), Russian thistle (*Salsola tragus*), bull thistle (*Cirsium vulgare*), dandelion (*Taraxacum officinale*), white sweetclover (*Melilotus alba*), rabbitfoot grass (*Polypogon monspeliensis*), common plantain (*Plantago major*), and yellow trefoil (*Medicago lupulina*). The more invasive of these species include cheatgrass, Russian thistle, and bull thistle. Other invasive species of concern at risk of being introduced to Furnace Creek include tamarisk (*Tamarix ramosissima*), Russian knapweed (*Acroptilon repens*), and perennial pepperweed (*Lepidium latifolium*). Tamarisk is currently known from canyons south of Furnace Creek on the east side of the White Mountains, and Russian knapweed has been located on Indian Creek, north of Furnace Creek.

Cheatgrass is currently the most widespread invasive species in the Furnace Creek drainage. It is present at the parking area, and continues well up into the drainage. It is found on the canyon slopes as well as adjacent to the road. It is primarily an upland species, as is Russian thistle. Russian thistle was noted at the current BLM gate location, but is not widespread beyond that area. The remainder of the species observed are generally found in riparian habitats. Bull thistle is present on Forest Service land, where it is scattered in the upper wet meadow areas. Dandelion was observed at one crossing. The remaining non-native species vary in abundance from a plant here and there (plantain, trefoil) to more widely distributed in the riparian area throughout the canyon (sweetclover). All riparian non-native species observed are currently at relatively low densities.

Direct and Indirect Effects— Non-native Invasive Species

Alternative 1 – No Action

Vehicle use would continue throughout the Furnace Creek drainage under this alternative. With the removal of the gate, and no realignment or reconstruction, it is probable that new routes will continue to be pioneered as the existing route becomes impassable in places. These new routes provide new avenues for the introduction or spread of invasive species, in addition to creating the disturbed soils often preferred by invasives. With continued traffic throughout the drainage, vehicles will continue to be a vector for invasive species. Existing species may eventually spread further up the drainage, and new species could potentially be introduced by vehicles coming from other locations.

Alternative 2 – Proposed Action: Road Closed to Mechanized/Motorized Vehicles

With the closure of the road under this alternative, vehicles would no longer transport weed seeds into and throughout the drainage, decreasing the potential for invasives to spread, and eliminating vehicles as a vector for new weed species. Existing weed populations will persist, and other vectors, e.g. wild horses, birds, etc. may continue to spread seeds. The road decommissioning could potentially increase the abundance of invasives, as equipment is brought in to do the work, and soils are decompacted; however, mitigation measures (equipment cleaning, weed monitoring and control) will help prevent the introduction of new invasives from the decommissioning work. Ground disturbance will be kept to the minimum amount necessary to decommission the route and allow for long term recovery. Eventually the road would be revegetated with primarily native species.

Alternative 3 – BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed to Mechanized/Motorized Use

On the Forest Service portion of the road, the effects would be the same as in Alternative 2. Vehicle use would continue on the BLM portion of the road, potentially introducing new invasive species and/or contributing to the spread of existing invasives in this lower section, particularly cheatgrass and Russian thistle. There would no risk of weed spread from vehicles pioneering new routes, as in the no action alternative; however, the reconstruction and realignment work on the BLM section could potentially increase the density or distribution of existing weeds, or introduce new invasives as equipment is brought in to do the work, and new soils are disturbed; however, the implementation of weed mitigation measures will help reduce this risk. The disturbance from realignment will be more controlled compared to random pioneering of new routes: monitoring and subsequent weed control will be conducted, and mitigation measures will help prevent the introduction of new invasives from road equipment.

Alternative 4 – BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail

Vehicle use would continue throughout the Furnace Creek drainage under this alternative. The effects of reconstruction and realignment on BLM and the Forest Service are the same as those discussed for the BLM section of road in Alternative 3. With continued traffic throughout the drainage, vehicles will continue to be a vector for invasive species. Existing species may eventually spread further up the drainage, and new species could potentially be introduced by vehicles coming from other locations.

Alternative 5 – BLM and Forest Service, Multiple-Use Trail

The effects of this alternative are similar to those under Alternative 4, with the exception that there will be slightly less disturbance over the long term under this alternative, and hence, slightly less potential for weed spread, due to the more narrow width of the road on the BLM section.

Alternative 6 – BLM and Forest Service, Full-size Vehicle Access

The effects of this alternative are similar to those under Alternative 4, with the exception that there will be slightly more disturbance over the long term under this alternative, and therefore

slightly more potential for weed spread, due to the greater width of the road on the Forest Service section.

Cumulative Effects—Non-native Invasive Species

Campers, hikers, wildlife, and livestock can all contribute to the spread of invasive species in the Furnace Creek drainage. It is possible that at least some, if not all, of the weed species currently present were introduced via vectors other than vehicle tires. Livestock have utilized this canyon for many years, and it is currently used by hikers, wild horses, and other wildlife. These same mechanisms are at work in many areas across the Forest. No data is available on which vector specifically introduced invasive species to Furnace Creek or other areas. Areas where soil disturbance is occurring, particularly at low to mid elevations, are most susceptible to weed establishment and spread, once a vector supplies the weed seeds. As noted above, invasive species are now considered a major threat to ecosystem integrity in the West, and millions of acres have already been compromised. Alternative 1 contributes slightly to this cumulative loss of native biodiversity. Due to closure of part of the route and/or implementation of weed prevention mitigation measures, the other alternatives have no cumulative effect with regard to non-natives.

Sensitive and Special Status Plant Species

Existing Conditions

The California Natural Diversity Database Rarefind database (California Department of Fish and Game 2005) was reviewed to determine the locations of known occurrences of Forest Service sensitive and BLM special status plants. The California Native Plant Society Inventory (CNPS 2001), the Rarefind database, the Jepson Manual (Hickman 1993), and available field guides were used to determine potential habitat for rare species prior to conducting surveys. No BLM special status species or Forest Service sensitive species were observed during surveys conducted by the Forest Botanist and Assistant Forest Botanist in Furnace Creek in 2001 and 2004. Though these surveys were conducted late in the year, sufficient evidence remained from the previous growing season to identify potential rare plant species. Existing and proposed routes were walked from the current gate location, up beyond the upper crossing within the Proposed Wilderness Area. All areas were surveyed where any work is proposed.

During surveys, it was determined that no potential habitat exists for any of these species in the riparian areas, nor in the path of the proposed realignments. There is no potential habitat for any Bureau of Land Management special status plants anywhere within the project area, based on the known habitat requirements and distribution of BLM special status plants, as listed in the Proposed Northern and Eastern Mojave Desert Management Plan (USDI BLM 2002). Potential habitat may exist for three Forest Service sensitive plant species at the upper end of the project area, above crossing #14: Bodie Hills rock cress (*Arabis bodiensis*), Masonic Mountain jewelflower (*Streptanthus oliganthus*), and White Mountains horkelia (*Horkelia hispidula*). Only minor road stabilization work is proposed for the section of road above the riparian corridor and up to the proposed wilderness boundary. No sensitive plant populations were observed in this

area. There is one known occurrence of the White Mountains horkelia in the vicinity of the road (within ¼ mile) in the Tres Plumas Meadow area. No work is proposed in this area, and the population is not immediately adjacent to the existing route.

Additional information on Forest Service sensitive plant species is available in the Biological Evaluation for this project.

Direct and Indirect Effects— Sensitive and Special Status Plant Species Consequences Common to No Action, and Alternatives 4-6

There is no potential habitat for any BLM special status plant species, so there is no effect on any of these species. None of the Forest Service sensitive plant species that could potentially occur in the project area are likely to be affected by any of the proposed alternatives that allow for continued use of the Forest Service portion of the road. The known population and potential habitat for these species occurs above the area where any realignment or reconstruction is proposed. In addition, surveys revealed no new populations, nor evidence of species that could be confused with the sensitive species in question.

With the reconstruction and reopening of the lower portion of the road proposed in Alternatives 4 through 6, it is anticipated that the portion of the road above the riparian corridor may receive more use than prior to the closure, at least initially, though this increase is not expected to be sustained over the long term. Continued use confined to the existing road prism will not have a significant negative effect on occurrences of or potential habitat for sensitive plant species. A well defined road end, combined with monitoring to detect off road trespass, and actions taken to prevent further trespass, will help to discourage off road travel in the Tres Plumas Flat area, minimizing impacts to sensitive plant habitat.

Alternatives 2 and 3

The decommissioning of the Forest Service portion of the road proposed in both of these alternatives could eventually lead to a slight increase in potential habitat for the Bodie Hills rock cress, the Masonic Mountain jewelflower, and the White Mountain horkelia as the upper road becomes revegetated. In relation to the known distribution of these species, and the availability of undisturbed potential habitat, this slight improvement will not be significant in terms of the long term viability of these species.

Cumulative Effects— Sensitive and Special Status Plant Species

Cumulative Effects Common to All Alternatives

Additional factors that could potentially affect one or more of the sensitive plant species discussed above across their known ranges include effects from trampling and grazing by livestock and/or wild horses, OHV use, dispersed recreation use, and weed invasion. The proposed alternatives for the Furnace Creek road will have no additional effect overall on these sensitive plant species (Bodie Hills rock cress, Masonic Mountain jewelflower, White Mountains horkelia).

Determination of Effects

A determination is given for sensitive plant species analyzed in this process through the Biological Evaluation. The determinations for these species are as follows:

Bodie Hills rockcress, Masonic Mountain jewelflower, White Mountains horkelia: Based on a combination of the existing information on known sensitive plant populations and habitat, the results of plant surveys conducted in the project area, the lack of potential habitat within the proposed area of new disturbance, and the amount of undisturbed potential habitat available, it is my determination that the Furnace Creek road project and all proposed alternatives will have no effect on any of the sensitive plant species evaluated.

Wildlife

Indicators

- Effects on Threatened, Endangered, or Management Indicator Species habitat/habitat quality
- Effects on riparian vegetation (amount of riparian vegetation disturbed)

Existing Conditions

The Furnace Creek analysis area is characterized by several habitat types, which will be divided into four groups for this analysis process. These groups are the lower portion of Furnace Creek, the upper portion of Furnace Creek, the Tres Plumas area and the riparian vegetation of Furnace Creek. The lower portion of the Furnace Creek canyon, which ranges between 6,000 and 7,000 feet, is typified by a Great Basin sagebrush (*Artemisia tridentata* ssp. *tridentata*) dominated shrub-land. Within the shrubland vegetation complex that is contiguous with this area, there is approximately 1,041 acres. This area would provide habitat for sage-dwelling birds, foraging sites for sage grouse during the brood-rearing season, and browse for mule deer. The upper portion of the canyon is dominated by pinyon pine (*Pinus monophylla*) with an understory of Great Basin sagebrush, with steep rocky slopes, from around 7,000 feet to the springs at 9,400 feet, of which this section is part of a habitat complex that totals about 49,954 acres. The pinyon dominated slopes of this area would most likely not provide optimum habitat for sage grouse, but may provide some shelter habitat for mule deer, and provide nesting opportunities for bird species that inhabit pinyon woodlands, such as the pinyon jay, rufous-sided towhees and the like. The analysis area continues up to the top of the Furnace Creek watershed and includes the Tres Plumas Flat area, a high-elevation plateau typified by Great Basin sagebrush and low sagebrush (*Artemisia arbuscula*), which is part of a sagebrush complex in this area of 2,765 acres. This is the primary vegetation type surrounding the road. A few springs dot the area, as well as some seasonal meadows (wet in spring, dry in the summer).

Furnace Creek itself is a rich and variable riparian area that flows through the upper and lower portion of the Furnace Creek area. The riparian area consists of a band of vegetation that totals approximately 21 acres from the bottom of the gate, to crossing #14. This riparian area supports an overstory of red willow (*Salix laevagata*), Fremont's cottonwood (*Populus fremontii* ssp. *Fremontii*), and water birch (*Betula occidentalis*). Understory components of the riparian area include varieties of carex, grasses, and a variety of forbes. Since the road was closed in March 2003, recovery within the riparian area, particularly the Forest Service portion of the road, is quite evident, with robust populations of carex, willow, and water-birch covering the ruts that traversed through the riparian areas. It is likely that this area serves as an important migration stop-over for many bird species and may even provide nesting habitat during the spring months.

Currently, the existing road traverses near the middle of the canyon, mostly on the sides of the canyon, but also crosses the creek in 14 places within the Furnace Creek canyon. These crossings occur through the shrubland dominated lower portion of the canyon, impacting a total of approximately 0.35 acres out of a total 21 riparian acres within the analysis area. This affects

approximately 1.24% of the available riparian area within the canyon. Looking at this impact linearly, the road intersects or travels up approximately 1/3 of a mile of the riparian area, out of an available 3.0 linear miles (approximately) of riparian vegetation (including BLM). The remaining 8.52 miles of the road traverses through sagebrush at the lower portion of the road (accounting for 2.6 miles), pinyon pine in the upper portion of the road (accounting for 2.35 miles), and the Tres Plumas sagebrush habitat portion (accounting for 3.6 miles). The acreage amounts following takes into account the total land mass of vegetation removed with the placement of the road. Within the lower, shrubland dominated portion, approximately 1.36 acres of vegetation has been removed, the upper pinyon pine dominated portion accounts for approximately 2.26 acres of vegetation removed, and the Tres Plumas area has had approximately 3.4 acres of vegetation removed due to the placement of the road. All these figures account for a roadbed that is 8 feet wide, and the road length was taken from the 1988 road inventory GIS layer. The amount of riparian area affected was taken by using the measurements given in the Alternative descriptions.

Adjacent watersheds to Furnace Creek do provide riparian habitat. There is a fork to Furnace Creek that travels in a south-western orientation, and provides riparian habitat for more than 1 mile from the junction of Furnace Creek. This section of riparian habitat ranges from 6,000 feet to about 7,000 feet, with intermittent riparian habitat from that point up to the 7,600 foot level. Wildhorse Creek to the north of Furnace Creek provides extensive, but fragmented, habitat totaling almost 2.5 miles, ranging from 6,400 feet to 8,600 feet. There are also some isolated riparian sections in the fork that travels south from the Wildhorse Creek, totaling about ¾ mile, ranging in elevation from 6,800 to 7,800 feet. The riparian areas in this fork are not as developed as in Wildhorse, Furnace of the SW Fork of Furnace Creeks. All these water sources have not been impacted by road or trails, and range anywhere from 0 to 3 miles from Furnace Creek proper. See the botany report for additional riparian areas along the eastern side of the White Mountains for a better understanding of the resources available at that landscape.

Species Considered for this Analysis

As directed by the Forest Plan and identified in the Management Indicator Species (MIS) report, mule deer, yellow warbler, and golden eagle are considered as Management Indicator Species for this analysis area. The greater sage grouse, willow flycatcher, Panamint alligator lizard and three bat species are Sensitive Species that have potential habitat within this analysis area and are analyzed in this process, as directed by FSM 2670. Threatened species evaluated include the Paiute cutthroat trout. These discussions are tiered from the Biological Evaluation and MIS Analysis for the Furnace Creek Road Project. As discussed in the Biological Evaluation, if a Threatened or Endangered species (such as Least Bells vireo and Southwestern willow flycatcher), is discovered within the Analysis Area after a decision is made, consultation will be initiated with the US Fish and Wildlife Service with direction given at that time by that Agency.

Forest Service

Threatened, Endangered or Proposed Species

The following threatened or endangered animal species may occur or have habitat on the Inyo National Forest, but would not be affected by this project because there is no suitable habitat or they do not occur within the zone of influence of the proposed activity:

1. Sierra Nevada bighorn sheep (*Ovis canadensis californiana*)
2. Bald Eagle (*Haliaeetus leucocephalus*)
3. Owens tui chub (*Gila bicolor snyderi*)
4. Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*)
5. Least Bell's Vireo (*Vireo bellii pusillus*)
6. Southwestern Willow Flycatcher (*Empidonax trillii extimus*)

These species are discussed in greater detail in the Biological Evaluation for the Furnace Creek Road Analysis (Biological Evaluation).

Sensitive Species

Files within the Inyo NF Supervisors Office were searched for occurrences of Sensitive species that may inhabit the project area. Not all species on the Sensitive list occur within the project area. The project area was visited several times to determine if there is a potential for suitable habitat for any of these species. Of the species listed, there is habitat for the greater sage grouse, and three bat species (foraging habitat). Marginal habitat exists for the Willow flycatcher and Panamint alligator lizard. The remaining Forest Sensitive Species are not analyzed below as the vegetation type, riparian structure, and general geology within the project areas indicates that there is not any potential habitat for these species. Appendix A of the Biological Evaluation gives the rationale for which species were or were not considered in this analysis.

Region 5 sensitive animal species that are analyzed in this document include:

1. Pallid bat (*Antrozous pallidus*)
2. Western red bat (*Lasiurus blossevillii*)
3. Townsend's big-eared bat (*Corynorhinus townsendii*)
4. Greater sage grouse (*Centrocercus urophasianus*)
5. Willow flycatcher (*Empidonax trailii* ssp. *adastus*)
6. Panamint alligator lizard (*Elgaria panamintina*)

Species Accounts

The species identified as having habitat within the Forest Service portion of the Furnace Creek Analysis Area, are treated below, as well as the Southwestern willow flycatcher and the Paiute cutthroat trout. These two species are discussed because concerns about these species were brought up during the scoping process. However, because there is no suitable habitat for these species in the analysis area, they will not be considered further.

Paiute Cutthroat trout: Paiute cutthroat trout inhabit the headwater section of the North Fork of Cottonwood Creek. The most recent Recovery Plan for the Paiute Cutthroat Trout identifies the

stream segment above the confluence of Tres Plumas Creek as habitat for this species, and there are currently no plans to extend the habitat for this species below the confluence of Tres Plumas Creek. The road from Furnace Creek to Tres Plumas flat terminates in an area above Tres Plumas creek, which is in a sub-watershed unconnected to the upper portion of the North Fork Cottonwood Creek. Even though this road is in close proximity to North Fork Cottonwood Creek, it is not hydrologically connected, and any impacts that may occur in the Tres Plumas watershed will not impact the fish or their habitat upstream of the Tres Plumas confluence. None of the alternatives considered include authorized use into, or past, the Tres Plumas road into the Cottonwood Creek watershed and no vehicle use into the Cottonwood Basin is authorized, so it will not be considered as an activity authorized by the Forest Service. Also, there is no road access to the North Fork Cottonwood Creek area from the Tres Plumas Flat area, as the area in question is extremely rocky with vertical drop-offs. Actions to deal with unauthorized, illegal trespass into the North Fork of Cottonwood Creek are discussed in the Paiute Cutthroat Trout Recovery Plan. This is the legally binding document that ensures the Forest Service will not allow vehicle use into this area, and will take immediate corrective steps if there is any trespass identified. Specifically, the direction states: “3.2.2 Continue to enforce road closure barriers at existing and potential access points. Off-highway vehicles pose a threat to Paiute cutthroat trout by directly degrading habitat when crossing streams and creating new sources of erosion, and providing anglers with easier access to Paiute cutthroat trout streams. Existing road closures should be strictly enforced and new barriers constructed if they are needed to restrict access. If pioneer roads are created within the basin area that would allow access to Cottonwood basin, establish barriers to eliminate unauthorized use” (Paiute Cutthroat Trout Recovery Plan, revised 2004).

During discussions with Chad Mellison of the USFWS Reno field office on April 11, 2005, regarding this issue, it was determined that if trespass did occur into the Cottonwood Basin, corrective actions would be taken by the Inyo NF as directed in the Recovery Plan (quoted above), and the USFWS would be informed at which time the appropriate action would be discussed.

Panamint Alligator Lizard: The Panamint alligator lizard (*Elgaria panamintina*) is also a California BLM sensitive species and a California Department of Fish and Game species of special concern. This species has been found near permanent water features associated with vine-like vegetation thickets, covering rocky, talus slopes where the vegetation can hold in the humidity from the water source. In the areas surveyed in Furnace Creek where the road interacts in the riparian areas, the primary vegetative characteristics of the riparian areas were characterized by dense, aquatic sedge species (*Carex*) standing in water, transitioning to Baltic rush (*Juncus balticus*) or dense grasses, and then to dry soil, either bare or with upland vegetation species (sagebrush, pinyon, small forbs). Water birch also occurs throughout the interface of the riparian and upland vegetative zone, but did not change the structure of the vegetation as described above. Inyo National Forest biologists surveyed portions of the White Mountains for occurrences of the Panamint Alligator Lizard from 2001 – 2003. The species was found in five

westside canyons, but none were found on the eastside of the Whites. Wyman Canyon, on the eastern side of the White Mountains, was surveyed extensively during these surveys, with negative results. Wyman Canyon is located approximately 14 miles north of the most northerly recorded location for this species, Tollhouse Spring. However, some specimens have been found in habitat other than what is considered preferred habitat, as described above, so there may be a possibility that this lizard occurs within the project area. According to Kevin Emmerich, Biological Consultant (Personal Comm., 2005) “We do not believe that they are limited to talus, wild grape or riparian. We have found them in dry pinyon juniper habitat and others have even found them in creosote scrub.”

On the BLM portion, the upper half mile of the road prior to entering onto the USFS boundary is the likeliest area to have this species. This species is a “sky island” species whose populations are geographically isolated, and dispersal between populations is extremely limited or non-existent. Threats to the continued existence of the species throughout its range include its small local population sizes, off-highway vehicle use, and invasive plants (Cunningham and Emmerich 2001). It should be pointed out a southern alligator lizard (*Elgaria multicarinatus*) was found at Scotty’s Castle, approximately 75 air-miles to the south, in Death Valley National Park by Cunningham and Emmerich (2004).

This species is considered quite secretive, and would not be found in obvious view within their habitat. Pitfall trapping would be necessary to determine conclusively their presence. Similar habitat to Furnace Creek occurs within the adjacent southern forks to the mainstem, and in the Wildhorse Creek area directly north of Furnace Creek.

Willow Flycatcher (*Empidonax traillii* ssp. *adastus*): The Furnace Creek area is within the undefined boundary between two sub-species of Willow Flycatcher – *Empidonax traillii* ssp. *adastus* and ssp. *extimus*, as indicated by Paxton (2000). The Southwestern Willow Flycatcher (ssp. *extimus*) is a Federally listed species and is discussed above. The sub-species *adastus* is listed as a Sensitive Species for the Pacific Southwestern Region of the Forest Service. The Furnace Creek area is within the broad range of this sub-species. The willow flycatcher breeds and nests in wet meadows with dominant willow component. McCreedy and Heath (2004) noted that birds in the Rush Creek area (approx. 60 miles from Furnace Creek) on and adjacent to the Inyo National Forest, nested primarily in rose shrubs, even though seemingly adequate willow shrubs were available, possibly indicating that a willow component may not be the limiting factor for nest selection. Green (2002) found that majority of nests found (95%) occurred within wet meadow areas greater than 10 acres in size (Green 2003). Although there are no meadows of that size within the Furnace Creek area, other components of the nesting habitat do occur, such as full, shrubby willows, standing or moving water, and saturated wet meadows (Green 2003). Similar and adjacent habitat occurs in the southern fork off Furnace Creek, and in the Wildhorse Creek area, three miles to the north. Both these areas have been un-impacted by road or trail construction. There is also extensive similar, unroaded habitat in the Cottonwood Creek watershed, just south over the ridge in the adjacent watershed, approximately two-to-four air-miles south of Furnace Creek. Although the habitat is marginal for nesting willow flycatchers in

Furnace Creek (because it does not contain meadows 10 acres in size), it cannot be ruled out as a potential nesting area. Nesting seasons, at the elevation of suitable habitat within the Furnace Creek area, would occur from June until August. (Ibid.) Impacts to this species would occur from habitat modification, or removal of willow or other shrubby vegetation, within the riparian and wet meadow area. Passing vehicles, hikers and equestrians could also temporarily displace birds from nests during the nesting season, depending on the proximity of the nests to the road. There is the potential for nest abandonment if disturbance is more frequent with a longer duration; however, this is not expected with the amount of traffic that has previously been reported in the Furnace Creek area. This species will be treated below in the effects analysis because the potential for habitat cannot be ruled out.

Greater Sage Grouse: The greater sage grouse (*Centrocercus urophasianus*) occurs in sagebrush habitats across eleven western states. It is found in northern and central eastern California sagebrush habitats along the east side of the Cascade Range, Sierra Nevada Mountains, and White Mountains to northern Inyo County. Historically it was found as far south as the Coyote Plateau, north of the town of Big Pine in Inyo County along the east slope of the Sierra. One account suggests it may have occurred as far south as the town of Independence. By the 1940s, however, numbers had been greatly reduced and populations fragmented. Because the greater sage grouse has experienced significant range and population reductions in many areas of the state, it is designated as a California Species of Special Concern in its nesting and lek (breeding) grounds. In January 2002 a petition was filed with FWS requesting that the greater sage grouse occurring in the Mono Basin area of Mono County, California, and Lyon County, Nevada, be emergency listed as an endangered distinct population segment (DPS) under the Act. On December 26, 2002, FWS published a 90-day finding regarding this petition and concluded that listing was not warranted.

Sage grouse are generally associated with Great Basin shrub-steppe vegetation. Summer habitat consists of sagebrush mixed with areas of wet meadows, riparian or irrigated agricultural fields. As the summer season progresses and sagebrush habitat begins to dry up, sage grouse move to moist and wet meadows and the sagebrush perimeter where succulent grasses and insects are still available in close proximity to sagebrush cover. Sage grouse form flocks as brood groups break up in early fall. As fall progresses, grouse move toward their winter ranges. Exact timing of this movement varies depending on the grouse population, geographic area, overall weather conditions and snow depth. Sagebrush is essential for survival during the fall, winter and early spring months.

Open areas within sagebrush communities are needed for courtship displays (leks). Fairly open stands of sagebrush are needed for nesting. Generally, the sage grouse breeds from mid-February to late August, with the peak strutting period in March and April and the nesting and brooding period from May through July. Breeding season in the White Mountains most likely occurs from mid/late March to late May (2004, Bi-State Plan). Nesting habitat consists of big sagebrush communities that have 15-38% canopy cover and a grass and forb understory.

Residual cover of grasses is likely important for its contribution to vertical and horizontal cover that serves to hide the nest.

Sage grouse adults feed primarily on various species of sagebrush. Chick diets include forbs and invertebrates. Insects, especially ants and beetles, are an important component of early brood-rearing habitat. Forbs increase in the diet after the first week and remain the major food item for juveniles throughout the summer.

In June of 2004, a Greater Sage-grouse Conservation Plan for the Bi-State Plan Area of Nevada and Eastern California (Bi-State Plan) was released. The purpose of this plan is to identify the current knowledge of sage-grouse and to address conservation efforts and threats to sage grouse within various population management units (PMU's). Currently, there is no official agreement between the Agencies involved to implement the strategy as it currently exists, but rather the Bi-State Plan serves as a guide toward management decisions. The following information is paraphrased from the Bi-State Plan.

The Furnace Creek area lies within the boundaries of the White Mountain PMU, as described in the Bi-State Plan, and specifically the White Mountain sub-group. Within this sub-group, the best continuous sagebrush habitats are found in the southern and south central White Mountains in Mono County, in the upper Crooked Creek watershed, and Chiatovich Flats where sage grouse are routinely observed. The Bi-State plan also notes, "The higher elevation stream bottoms, slopes and flats in the White Mountains such as Sage Hen Flat, Kennedy Flat, Pellisier Flat, Tres Plumas and Chiatovich Flat are mosaics of mountain big sagebrush, big sagebrush, and low sagebrush in association with rabbit-brush, ehpredra, antelope bitterbrush and snowberry, depending on soil type, and aspect." This description also matches the habitat type within Furnace Creek in areas where pinyon pine has not dominated.

As noted in the Bi-State Plan, concerning sage grouse populations, "In 1966, the Inyo National Forest evaluated the status of sage grouse in the White Mountains in the 'Sage-grouse Habitat Management Plan.'" The Plan noted four grouse population artificial subdivisions in the Whites with subjective statements of abundance as follows: Sage Hen Flat in Esmeralda County (light population density), Pellisier and Chiatovich Flats in Mono and Esmeralda Counties (medium density), Perry Aiken Flat in Mono County (light density) and Tres Plumas and Crooked Creek (medium density). Historical reports from 1865 to 1900 stated that grouse were extremely abundant throughout eastern California and the distribution at that time extended south from Inyo County to Independence, probably along the Sierra Nevada foothills. The Plan provided no other information about grouse in the White Mountains."

Populations within the Tres Plumas Flat area forty years ago were considered "medium density." Currently, there is no definitive population data for the Tres Plumas or surrounding area, but according to the Bi-State Plan, "The consensus of agency biologists working in the White Mountains is that a "good" population of birds exists in these areas [Crooked Creek, Bucks Peak and Sage Hen Flat]." Crooked Creek is within 3 to 5 miles south of the Furnace Creek and Tres Plumas Flat areas.

The Bi-State Plan lists threats to sage grouse populations and habitats, along with a risk factor rating as low, medium or high. Under section 6.4.13, the threat of “Human Disturbance” is rated as low, and states, “The major type of disturbance in the area is recreational use, such as fishing, off-road vehicles, and camping.” The Conservation Action is identified as: Minimize Human Disturbance (Recreation, Roads, Fences). The Bi-State Plan gives guidance to 1) “Evaluate areas for seasonal closures to known sage-grouse use areas during strutting and nesting seasons between February and May” and 2) Where land and wildlife management agencies have discretionary authority and determine it to be prudent and necessary, areas of critical sage-grouse habitat will be seasonally closed to recreational use.” This is applicable to the Furnace Creek area where sage-grouse and sage-grouse sign has been observed, although no areas have been determined “critical.”

During a field visit on August 30, 2004, a group of hens and juveniles were observed foraging in the roadbed, and moved upslope in response to human presence. Droppings were evident throughout different portions of the road, indicating a definite use of the roadbed. This area could be an important brood-rearing location for sage grouse. There is no suitable lek (mating) habitat for this species in the Furnace Creek canyon due to the steep canyon walls. It is believed that there is suitable habitat for leks in the flats above the canyon, in the Tres Plumas Flat and Meadow area. Although strutting by the males has never been observed in the Tres Plumas Flat area, due to difficult access during the mating season, strutting has been observed in other high-plateau, sagebrush habitat in surrounding areas (Buck Peak). Strutting in these leks would most likely occur in the months of April and May, depending on the seasonal conditions in the area. During this time access by vehicle is not possible due to snow-drifts, deep snow and very wet meadow conditions. The lack of vehicle access during the mating season is primarily the reason no sage grouse have been observed in the Tres Plumas Flat area.

Sage grouse behavior towards vehicles has been observed in the White Mountains. Hens and their broods frequent areas where roads currently exist, and where traffic use is relatively high, such as the Wyman Canyon and Crooked Creek areas. Sage grouse have been observed moving out of the way of traveling vehicles and seeking cover in adjacent sagebrush vegetation (Personal Comm., Sarah Alofsin, sage grouse researcher).

The Furnace Creek road is a pre-existing road that has already impacted 7.24 miles of upland habitat, for a total of 7.02 acres of upland habitat. Upland habitat has not been further delineated into quality or type of habitat, as the road travels through sagebrush, bare slopes and pinyon-dominated habitat, all which have varying levels of quality regarding sage-grouse habitat. Until the gate was constructed in 2003 on BLM administered land, infrequent use of the road occurred by ATV and motorcycle traffic. Since the closure, hikers and other special-interest group advocates have used the road as a hiking trail throughout the year.

Bats: (Townsend’s big-eared bat, Pallid bat, and Western red bat): These bat species dwell in caves or other crevices throughout their range and could be present in habitat adjacent to the analysis area. According to Joseph Szewczak, a bat specialist, these bats forage primarily within areas where water is present, and especially with the Western Red Bat, in areas where

cottonwoods are present. Cottonwoods do occur within the Furnace Creek area, and up the southern fork. Aquatic insect species may be important forage for bats, which require year round water sources to reproduce and mature. Because roosting habitat for these species (such as caves, cliffs and crevices, attics of buildings, or abandoned structures), does not occur in the canyon nor would any actions modify the habitat if it did exist, roosting and hibernacula habitat is not addressed in this analysis.

Management Indicator Species

Mule Deer: The Furnace Creek Analysis area falls within the range of the Inyo and White Mountains Deer Herd. The Inyo-White Mountains Deer Herd Management Plan (1985) identifies the lower portion of Furnace Canyon as a “Known Winter Concentration Area,” and the area above the end of the road is identified as a “Known Summer Concentration Area.” The area between the two designations is most likely a migration route. Deer are likely drawn to the riparian area for water, more thermal consistency, cover, and forage. Several deer rubs in the willow shrubs along the creek were observed during an August visit. Population surveys have not been completed on this herd, but a plan is being by the California Department of Fish and Game. The purpose of the study is to determine population numbers and trends; reproduction success; to delineate migration routes, seasonal routes, winter and spring holding areas; and to look at dietary information and condition (Personal comm., A. Ellsworth, DFG). This species readily adapts to human disturbance as long as abundant forage, hiding cover, fawning habitat, and other needs are met.

Yellow Warbler: Although there are no recorded sightings of this bird within the Furnace Creek Analysis Area, marginal habitat exists throughout the riparian area. This includes willow shrubs and cottonwood trees within the wetted portion of the canyon. Through information contained in a Point Reyes Bird Observatory (PRBO) report (Heath et al., 2004), in areas surveyed for bird species, the yellow warbler has rarely been detected in narrow, steep and incised canyons, except for Birch Canyon, which is located in the Owens Valley alluvial fan of the eastern Sierra Nevada, and shares common habitat characteristics such as is found in the Furnace Creek area (comment letter #13). As indicated in the comment letter by PRBO employee Sacha Heath, “The one “narrow, steep incised canyon” where we did observe breeding Yellow warblers in the Owen’s Valley alluvial fan (Birch Creek) is most representative of Furnace Creek. In particular, Birch Creek and Furnace Creek share the unique characteristic of pooling water, a high herbaceous/grass/sedge cover and the presence of multiple vegetative layers including herbs, shrubs and large cottonwood trees. Birch Creek riparian vegetation ranges up to 30m in width (I observed widths at Furnace Creek up to 70m).” This species will be used as a management indicator species (MIS) of birds that utilize riparian habits for nesting.

It has been suggested that this species is sensitive to large, rapid shifts in habitat structure (Wiedenfeld, 2002). Habitat shifts of this nature would include the removal of trees and shrubs, the damming of streams and rivers, or the removal of large sections of riparian area. Other research in Southwestern riparian edge habitats has indicated that breeding bird density correlates

with vegetation volume regardless of plant species composition (Mills et. al., 1991). Further, foliage volume accounts for a significant portion of the variation in bird density or species richness. Essentially, a reduction in habitat volume would reduce the bird density or species richness.

Golden Eagle: Golden Eagles are a common resident throughout the eastern White Mountains, and one individual was observed perching in the cottonwood trees during the August 30th field trip. Prey would be readily available along the interface of the riparian area and the sagebrush habitat, as well as the sagebrush habitat, providing a rich hunting ground for this species. It is not known what the population status of this bird is for this area. Golden eagles are common throughout the White Mountain range. They nest in trees throughout shrub-land type habitats and have a territory of approximately 35 square miles. The implementation of any of the alternatives do not affect nesting habitat for this species, so no direct effects will be analyzed. Indirect effects to this species include effects to hunting opportunities within the analysis area. However, because the golden eagle has such a large range, the effects from any of these alternatives are negligible. For that reason, this species is not considered further.

Nelson's Mountain Sheep: The Furnace Creek area is outside the boundary of the White Mountain Nelson's bighorn sheep identified habitat areas (Wehausen, 1983). Sightings at Tres Plumas flat were made as late as the 1950s, but no evidence of sheep was found during investigations in the 1980s. Major threats to bighorn sheep include the reduction of meadow habitat, concentrated recreational use, and close interaction with domestic sheep because of the transfer of disease from contact. Another effect to bighorn sheep has been the use of hang gliders near the animals; they have been observed fleeing from the aerial intruders. However, because this area has not been identified as habitat for this species, Nelson's Mountain Sheep are not treated in this analysis.

Additional BLM Special Status Species

Cooper's Hawk: The Cooper's hawk (*Accipiter cooperii*) has declined as a breeding species in California largely because of destruction of riparian woodland (Grindrod 2001). Cooper's hawks usually nest in deciduous trees in canyon bottoms and on river flood plains (Grinnel and Miller 1941). Riparian woodlands provide foraging and prime nesting habitat for Cooper's hawks (Parrish et al 1989). This species is likely present in Furnace Creek and could nest there, though no nests were observed in the summer of 2004. The most likely habitat is the upper 300 meters of creek bottom adjacent to the USFS boundary. Cooper's hawks prey on birds and small mammals. They often hide in dense foliage to ambush their prey. Outside of the breeding season, Cooper's hawks disperse widely from southern Canada to northern Mexico.

Sharp-shinned Hawk: The Sharp-shinned Hawk (*Accipiter striatus*) is a common winter resident and migrant throughout most of California. It breeds in northern California and farther south along the mountain ranges. Summer range includes the Sierra Nevada, White and Inyo Mountains, as well as the mountains of southern California (Grinnel and Miller 1941). It occurs in most habitat types, but prefers riparian vegetation and woodlands for perching and foraging.

This species is likely to occur in Furnace Creek in the upper 300 meters of the BLM portion, adjacent to the USFS.

Swainson's Hawk: The Swainson's hawk is listed as a California threatened species. Most Swainson's hawks migrate long distances to winter in South America, primarily in Argentina. This hawk returns to its breeding grounds in early March to April. In the Central Valley of California, fledging occurs between 1 July and mid-August (Estep 1989). This species is unique among buteos for being highly gregarious and mainly insectivorous. Swainson's hawks prefer to forage in relatively open stands of grass-dominated vegetation and relatively sparse shrublands. This hawk prefers areas of moderate agricultural development since these areas have an abundance of insects for foraging. Swainson's hawks nest almost exclusively in trees. Nest trees are typically located on the edges between woodland and either grass or shrubland habitats (England 2001). McFarland (2005) observed on a few occasions, Swainson's hawks perching on fence posts in Fishlake valley to the east of Furnace Creek. Although not documented in Furnace Creek, it is possible that this species could use habitat here. Breeding Swainson's hawks have 3 general habitat requirements: (1) suitable foraging habitat with adequate prey; (2) nest sites; and (3) isolation from disturbances that may disrupt breeding activities (England 2001).

Other Species for Consideration

Wild Horses: Furnace Creek lies within the range of the Fish Lake Valley Horse Herd. Furnace Creek offers an easy location for horses to obtain water and forage within the riparian area. Horse use is evident along the length of the road, and most probably horses use the road due to ease of travel. Horses have been observed using the historic or established path that traverses on the north side of the gate, for about 600 feet, and connects with the road on the opposite side of the gate (Personal Comm., Stan Overholt, Forest Service OHV Patrolman). Wild horses are not considered a special species of concern. It is not expected that any of the alternatives, including closure, will affect the wild horse population in the Furnace Creek area due to their adaptability and previous use of the trail around the gate. Wild horses are not considered further in this analysis.

Aquatic species: No intensive studies have been completed within the Furnace Creek drainage area concerning aquatic species. The area where the road is located adjacent to the creek was reviewed for potential habitat for spring snails (*Pyrgulopsis* species), salamanders, and fish species by the Forest Fisheries Biologist and accompanied by Dawne Becker, California Department of Fish and Game aquatic biologist. No areas were identified as potential habitat. However, the stream does provide habitat for other aquatic species, such as macro-invertebrates, copepods, and other species. The remoteness of the stream and proximal location to other water sources would make this area an important resource for the larval stage of many types of flying insects that provide necessary forage for birds, bats, and other species that prey on insects. Most macro-invertebrates depend on year-round water to fulfill their life-cycle requirements. Areas in this canyon that only have seasonal water influence, such as the area within the BLM portion of the analysis area, is not suitable habitat for macro-invertebrates. The range of environmental

variables required for different species of macro-invertebrates is extensive. However, streams with high sediment loads do show a substantial reduction in species diversity and population numbers. Areas of Furnace Creek where the road intersects the stream displays a high level of sediment that has been created by disturbance through those zones. Macro-invertebrates occupying downstream habitats are susceptible to the sediments that are stirred up from vehicle disturbance at those crossings. Although effects to macro-invertebrates are far more extensive and complicated than mentioned above, this measure will be used when assessing the effects from the six alternatives in this EA.

Direct and Indirect Effects—Wildlife

This analysis makes several assumptions that are used consistently for each alternative in order to compare the relative impacts of each alternative analyzed. These assumptions are as follows:

- The current placement of the road is 8 feet wide
- The width of the road in alternatives for full-sized vehicles will be 9 feet
- The width of the road in the alternatives for multiple-use trail will be 50 inches, or 4.1 feet.
- These widths are used to calculate the total amount of acres impacted for use of comparison between the alternatives.

Each Alternative description identifies the total amount of upland or riparian habitat affected by that alternative, and a table at the end of the effects analysis summarizes the total acreage impacted for each alternative. This is the total amount of vegetation in that habitat type that would be absent with the presence of the road. All Alternatives, excluding the No Action Alternative (Alternative 1), indicate an acreage amount of recovery within the overall riparian resources in the area analyzed, due to the re-alignment of the road out of the riparian area. Consequently, with the re-alignment, an increase in the impact to upland vegetation due to the placement of the road to the upland area will occur. No actions are proposed for the Tres Plumas Flat portion of the road, above crossing #14, and the location of the road will remain as it is currently. Impacts to the species evaluated would be indirect impacts from expected vehicle traffic and other recreational use.

Direct effects are those effects to wildlife that occur with the placement and building of the road. Primarily, these effects include the removal or recovery of vegetation within a habitat type (either upland or riparian). This affects wildlife by the removal or recovery of forage species and cover (for nesting, fawning, hiding, brood-rearing, thermal regulation, etc.). Indirect effects are those caused by the use of the road, and include noise and disturbance from vehicular, pedestrian and equestrian traffic.

The following definitions apply to effect descriptions for the species analyzed:

Duration:

- Short-term: effect lasting a few hours or less
- Intermediate: lasting from a few hours to a few days
- Long-term: lasting from a few days to permanently

Intensity:

Effects are rated at the following levels if they appear to meet one or more of the criteria in the threshold description for that level:

- **Negligible:** no measurable effects to wildlife species, their habitat, or the natural processes sustaining them.
- **Minor:** effects are detectable, but not expected to be outside the natural range of variability for wildlife species, their habitats, or the natural processes sustaining them. Population numbers and structure may undergo small changes, but remain stable and viable. Occasional responses to disturbance by some individuals are expected, but without measurable interference with survival, reproduction, or other factors affecting population levels. Sufficient habitat remains to maintain viability of all species. Effects are outside of critical reproduction periods.
- **Moderate:** Effects on species, their habitats, or the natural processes sustaining them are detectable, and expected to be outside the natural range of variability for short periods of time. Population numbers and structure may undergo measurable changes, but remain stable and viable. Frequent responses to disturbance by some individuals are expected, with some local effects to survival, reproduction, or other factors affecting population levels. Sufficient habitat remains to maintain viability of all species. Some effects may occur during critical periods of reproduction or in key habitat for sensitive native species.
- **Major:** effects on species, their habitats, or the natural processes sustaining them are easily detectable and well outside the natural range of variability. Population numbers are depressed and population structure is altered. Frequent response to disturbance by individuals or groups, with effects on survival, reproduction, or other factors resulting in depressed population levels. Large-scale relocation of species may occur. Habitat changes may affect the viability of some species.

Direct and Indirect Effects—Wildlife**Alternative 1 – No Action**

Direct effects for all species considered: With the current placement of the road, this alternative continues to affect 0.35 acres of riparian area out of the approximately 21 acres of available riparian habitat. The amount of upland vegetation affected is 7.02 acres out of the 53,760 acres of associated habitat (as identified by the Potential Natural Vegetation layer in the GIS files on the Inyo N.F.). This acreage amount includes the shrubland vegetation type of lower Furnace Creek, the pinyon pine vegetation of upper Furnace Creek, and the Tres Plumas sagebrush vegetation complex. For this alternative, no additional vegetation is removed and the riparian/hydrologic function of the stream is not improved. There are no additional effects or recovery of riparian or upland habitats with the implementation of this alternative.

Out of all the alternatives presented, this alternative has the greatest effect on wildlife resources. The No-Action alternative allows continued use through the riparian area for approximately 1/3 mile, and continues to use the existing roadbed that traverses up the narrow canyon for approximately 3.2 miles along the canyon bottom (until it moves out of the riparian

area onto the side slope). Riparian function within these areas will not improve, and will continue to function at the state prior to the placement of the gate. It is expected that riparian function will continue to deteriorate with continued vehicle use.

Specific effects to species

Sage grouse and Mule deer: Direct effects include the continued effect from the existing road, which would neither increase nor decrease foraging opportunities, cover, or brood-rearing capabilities. This is a long-term, negligible effect. Indirect effects of the road occur from noise and visual effects from traffic using the road. Traffic effects come from vehicles, pedestrians, or equestrians. Most likely, there will be short-term disturbances associated with the road from which deer and sage grouse will avoid by moving away from the disturbance. With this alternative, the disturbance is year-round, but infrequent, and will affect some individuals during fawning (deer) and brood-rearing (sage grouse) stages. This is a short-term, minor effect. For the Tres Plumas Flat area, vehicle access would still be limited to the early summer season due to the lack of accessibility on the road, so strutting activities of the birds would not be interrupted. However, this alternative would allow vehicle traffic in this area during the brood-rearing time of the year and possibly cause some disturbance to hens and their chicks. The effect from infrequent vehicular, pedestrian and equestrian traffic is short-term and negligible.

Bats: This alternative continues to provide the same level of opportunity for foraging bats prior to the placement of the gate. However, if riparian effects continue to degrade riparian resources, there may be a reduction in the production of aquatic insects, the extent of which is unknown and may be not be measurable. This is a long-term, minor effect.

Willow Flycatcher: Potential impacts to willow flycatcher would occur within the riparian habitat within the lower, upper portion of Furnace Creek, and in the Tres Plumas Flat area. Direct effects would be the continued impact from the existing road, which would neither increase nor decrease foraging opportunities, cover or nesting capabilities. This would be a long-term, negligible effect. Indirect impacts of the road would occur from noise and visual impacts from traffic using the road. Traffic impacts would come from vehicles, pedestrians or equestrians. Most likely, this would be short-term disturbance from which birds may temporarily abandon nests until the disturbance has passed. However, with this alternative, the disturbance would be year-round, which could impact some individuals during courtship and nesting stages. This would be a short-term, moderate effect.

Yellow warbler: Potential impacts to willow flycatcher would occur within the riparian habitat within the lower, upper portion of Furnace Creek, and in the Tres Plumas Flat area. Direct effects include the continued effect from the existing road, which would neither increase nor decrease foraging opportunities, cover or nesting capabilities. This is a long-term, negligible effect. Indirect effects of the road include noise and visual effects from traffic using the road. Traffic effects come from vehicles, pedestrians, or equestrians. Most likely, this is a short-term disturbance from which birds may temporarily abandon nests until the disturbance has passed. However, with this alternative, the disturbance is year-round, which affects some individuals during courtship and nesting stages. This is a short-term, moderate effect.

Cooper's Hawk and Sharp-shinned Hawk: Direct activities such as the noise from vehicles, could disturb these species during nesting and foraging and may negatively effect them. The level of disturbance would be similar to that before the closure under this alternative. The most likely area of disturbance is the 300 meters just below the BLM/USFS boundary. In Furnace Creek nesting activities may occur in April continuing into June. There would be a negligible indirect impact from impacts to riparian habitat.

Swainson's hawk: Potential direct impacts would be similar to those for the Cooper's and sharp-shinned hawks. The Swainson's hawks are apparently less tolerant of noise and human disturbance so there would be a greater chance that a nesting bird would be affected. Full-sized vehicles would tend to bring in more potential impacts to a nesting bird. Negligible indirect impacts to habitat from this alternative would result.

Panamint Alligator Lizard: Those individuals in the vicinity of water and shaded areas may be adversely affected by vehicles driving in or next to the riparian area. This alternative presents the highest potential for the lizard being crushed by a vehicle, although in terms of the population as a whole the impacts would be minor. Full-sized vehicles are less likely to avoid a lizard in the road than a smaller vehicle. Full-sized vehicles are also more likely to bring other disrupting activities to the lizard, such as camping or picnicking which could lead to the increased chance for collecting. There would be the negligible loss of riparian habitat, indirectly affecting the lizard.

Aquatic species: Direct effects include the continued effect of the riparian area for 0.35 acres, a long-term, negligible effect. Long-term, indirect effects include the continued degradation of the riparian area and hydrologic function. A loss or reduction of riparian habitat occurs with this use, reducing the productivity of the riparian resources, such as vegetation and macro-invertebrate species. Sediment continues to be displaced into the stream channel, causing a higher sediment load throughout the year. Water quality continues to be degraded in the sections where the road intersects the stream, and also in the areas downstream of this disturbance. Of all the alternatives, this alternative has the greatest effect on macro-invertebrate species, an effect with a long-term and moderate effect.

Alternative 2 – Proposed Action: Road Closed to Mechanized/Motorized Vehicles

Direct effects for all species considered: This alternative allows for the complete recovery of the riparian area where the road currently intersects the stream, accounting for approximately 0.35 acres. Sagebrush and other upland species will grow in the current road path and account for an addition of 3.62 acres of upland habitat in the lower and upper Furnace Creek canyon portion for deer, sage grouse, and eagles. For the Tres Plumas Flat area, an additional 3.4 acres of sagebrush habitat would recover. This alternative has the most beneficial effects for the species considered with the least amount of effects.

Specific effects to species

Sage grouse and Mule deer: The recovery of the riparian and upland habitat will slightly increase the available foraging, cover or brood-rearing habitat (as identified above). Indirect effects include the absence of disturbance from vehicular traffic as described in Alternative 1,

slightly reducing effects to these species. However, this alternative will still allow for year-round, but infrequent, disturbance from pedestrian and equestrian traffic, and the effects are the same as described under Alternative 1. These effects are short-term and negligible.

Bats: The elimination of vehicle use through the riparian area may increase riparian resources enough to improve the availability of aquatic insects for foraging bats. The extent of this availability, however, is unknown and may not be measurable. There are no negative direct or indirect effects.

Willow Flycatcher and Yellow Warbler: This alternative would eliminate disturbance from vehicle traffic within the Furnace Creek area. However, this alternative would still allow for year-round, but infrequent, disturbance from pedestrian and equestrian traffic, and would be the same as described under Alt. 1. This would cause a short-term, negligible effect.

Cooper's Hawk and Sharp-shinned Hawk: Impacts would be similar to those of the yellow warbler, basically short term and negligible.

Swainson's hawk: Human and equestrian traffic could still affect nesting birds, although these would be short-term and negligible as for the other hawks. Typical foot and equestrian activities such as bird-watching, hiking, or riding tend not to affect nesting birds.

Panamint Alligator Lizard: Indirect effects from the elimination of vehicle use through the riparian area will improve habitat quality by removing additional disturbance from noise and presence of vehicle traffic. There will be no negative direct or indirect effects.

Aquatic species: Of the wildlife resources discussed, aquatic resources improve the most with this alternative, allowing the hydrologic function of the stream to improve to its fullest potential. A reduction in sediment, recovery of riparian vegetation, and improved conditions for the macro-invertebrate community will occur. There are no negative direct or indirect effects with this alternative.

Alternative 3 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Closed to Mechanized/Motorized Use

Direct effects for all species considered: This alternative continues to affect 0.06 acres of riparian habitat on the BLM portion, and 1.30 acres of upland habitat. An additional 259 square feet of upland habitat is removed due to the implementation of the 10' x 25' turn-around between crossings # 6 and #7 to total 1.37 acres. However, the Forest Service portion of the road will show recovery of 0.29 acres of riparian habitat and 7.02 total acres of upland habitat. Full recovery of the riparian habitat is expected to occur within the Forest Service portion of the analysis area. This alternative will have more impacts to wildlife habitat than Alternative 2, and less impacts than Alternatives 4, 5, 6 and 1 (in that order).

Sage grouse and Mule deer: BLM Segment: Direct effects include the continued effect from the existing road, which will neither increase nor decrease foraging opportunities, cover, or brood-rearing capabilities for the 1.25 miles on the BLM portion. There is however some decreased foraging and cover opportunities in the area of the proposed turn-around. Indirect effects of the road include noise and visual effects from vehicle traffic, excluding the time during the seasonal closure, which reduces vehicle disturbance during fawning and brood-rearing stages.

Pedestrian and equestrian traffic will occur year-round, although infrequently, and the effects are the same as described under Alternative 1. This is a short-term, negligible effect.

Forest Service Segment: The effects of this alternative are the same as with Alternative 2.

Bats: BLM Segment: The improved hydrologic function with the implementation of this alternative may provide some improved opportunities for aquatic insect production, but this improvement is most likely negligible due to the year-round lack of water in this portion of road.

Forest Service Segment: The effects of this alternative are the same as with Alternative 2.

Willow Flycatcher: Forest Service Segment: The effects of this alternative would be the same as Alternative 2.

Yellow warbler: BLM Segment: Direct effects are the same on the BLM portion as Alternative 1. Indirect effects are the same as Alternative 1, except that vehicle traffic is eliminated during the winter and early spring months, eliminating disturbance from vehicles described in Alternative 1. This is a short-term, minor effect.

Forest Service Segment: The effects of this alternative are the same as with Alternative 2.

Cooper's hawk and Sharp-shinned hawk: Impacts on nesting would be negligible due to the seasonal restrictions. The turn-around area would have a more concentrated level of activity especially if it becomes a parking area. This could impact any nesting birds along this stretch of creek.

Swainson's hawk: Impacts would be negligible because of the seasonal restrictions. With up to full-sized vehicles driving parallel to the riparian corridor, potentially disturbing Human and equestrian traffic could still affect nesting birds. The impacts from the turn-around/parking area are similar to the other hawks.

Panamint alligator lizard: The effects of this alternative would be similar to those for Alternative 1, for the BLM segment. The indirect impacts to 0.063 acres of riparian habitat would continue to affect the species habitat. This would be minor overall. The seasonal closure would benefit this species slightly as it may be more active in the spring.

Forest Service Segment: The effects of this alternative would be the same as Alternative 2.

Aquatic species: The effects of this alternative are the same as with Alternative 2.

Alternative 4 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Multiple-Use Trail

Direct effects for all species considered: With the realignment of the road out of the riparian areas, this alternative continues to effect 0.13 acres of riparian habitat (from current 0.35 acres), but allows for the recovery of 0.22 acres of riparian habitat. An additional 0.14 acres of upland habitat will be impacted by moving the road out of the riparian area, and the 50 inch roadbed will impact 3.46 acres of upland habitat, to total 3.60 acres. Moving the road bed out of the middle of the riparian area and shifting it to the outside edge of the riparian area will allow the stream to recover the hydrologic function of the channel. This alternative realigns the existing road to the outside margin of the riparian area at crossings 1-14, and at several points ripraps a stream crossing to the opposite side of the canyon. Riparian values are better preserved than the No Action Alternative 1 as the road is taken out of the middle of the channel, except for several

crossings. However, these crossings are designed to accommodate flows within the channel and allow for riparian function to continue within the stream channel.

Sage grouse and Mule deer: Direct effects include the recovery of 0.22 acres of forage and cover habitat within the riparian area, and recovery of a net of 3.42 acres of upland habitat. This effect is long-term and negligible. Indirect effects of the road are the same as described in Alternative 1, but the seasonal closure eliminates disturbance during fawning and early brood-rearing times. The effect from infrequent vehicular, pedestrian and equestrian traffic is short-term and negligible.

Bats: The improved hydrologic function with the implementation of this alternative may provide increased opportunities for aquatic insect production with the improvement and reduced effects to the riparian area. The extent of these increased opportunities is unknown, and may be not be measurable. The benefits of this alternative are similar to Alternative 2.

Willow Flycatcher and Yellow Warbler (Forest Service Segment): Direct effects would be the continued impact from the existing road, but would include an increase in riparian vegetation. This would be a benefit to riparian nesting birds by providing a slight increase in nesting habitat. The overall direct effect of this alternative would be long-term and negligible. Indirect impacts of the road would occur from noise and visual impacts from traffic using the road, but would be eliminated during the early breeding season, but not during nesting season for the Willow flycatcher. Depending on the severity of the disturbance, (i.e., duration, frequency and intensity of presence of vehicles) impacts could range from temporary fleeing to nest abandonment, but not throughout the entire area of potential available habitat. The effects of this alternative would be short-term and minor.

Cooper's hawk and Sharp-shinned hawk: Impacts would be similar to Alternative 3 for the BLM segment. There could be fewer vehicles at the turn-around/parking area since the smaller ones could proceed up the canyon onto the USFS portion.

Swainson's hawk: Direct and indirect impacts are similar to Alternative 3, for the BLM segment. The turn-around area does provide a potential concentration of activity area especially if it becomes a parking area. Impacts to birds using the riparian corridor in the vicinity of this area would be minor.

Panamint Alligator Lizard: The effects of this alternative would be similar to those for Alternative 3, for the BLM segment.

Forest Service Segment: Direct effects would be as noted above. This would be long-term, negligible effect. Indirect impacts would be noise and disturbance from occasional vehicle use, pedestrians and equestrians. Most likely lizards would respond to the disturbance by fleeing and hiding from the disturbance until it has passed. This would be a short-term, negligible effect.

Aquatic species: Aquatic resources improve with this alternative, allowing the hydrologic function of the stream to improve, but still affecting an area of 0.13 acres. A reduction in sediment, recovery of riparian vegetation, and improved conditions for the macro-invertebrate community will occur with the re-alignment. The effects of this alternative are long-term and negligible.

Alternative 5 – BLM and Forest Service, Multiple-Use Trail

Direct effects for all species considered: This alternative is the same as Alternative 4, except there will be slight vegetative recovery along the 1.5 mile BLM portion of the road. This would account for maybe 0.04 acres of habitat, majority of it upland habitat. The effects from the amount of difference between Alternative 4 and 5 are immeasurable in terms of indirect and direct effects. The impacts from this alternative are essentially the same as those described in Alternative 4.

Alternative 6 – BLM and Forest Service, Full-size Vehicle Access

Direct effects for all species considered: This alternative affects a total of 0.16 acres of riparian habitat and a total of 8.09 acres of upland habitat, by widening the road to 9 feet. Recovery of 0.19 acres of riparian habitat and an additional removal of 2.37 acres of upland habitat will occur with the implementation of this alternative (by moving the road out of the riparian area into the upland habitat areas, and widening the road).

This alternative removes more riparian vegetation than any other alternative; however, the hydrologic function of the stream channel will improve due to the re-alignment of the road out of the middle of the channel. Crossings are designed to allow for hydrologic function to improve from the current condition.

Sage grouse and Mule deer: Direct effects include the continued effect of the existing road on foraging opportunities, cover or brood-rearing capabilities by the removal of an additional 2.37 acres of upland habitat. Recovery of 0.19 acres of riparian habitat occurs with this alternative. Effects are long-term and minor. Because of the potential for increased use of the road, indirect effects are greater with this alternative than any of the alternatives analyzed. However, effects are limited to the time outside of the seasonal closure, and will not affect deer or sage grouse during the early brood-rearing or fawning season. This alternative still allows for year-round, but infrequent, disturbance from pedestrian and equestrian traffic on the Forest Service portion of the road, similar to Alternative 2. The indirect effects are short-term and minor.

Bats: Effects would be the same as alternative 4.

Willow Flycatcher and Yellow Warbler: Forest Service Segment: Direct effects would be the continued impact from the existing road, but with the improvement of some riparian habitat because of re-routing the road out of the middle of the riparian area, there would be a very slight increase in nesting opportunities (by 0.097 acres). The effects of the placement of the road would be long-term and minor. Indirect impacts of the road would increase over any other alternative due to the opportunity for larger vehicles that would access the area. Traffic impacts would occur from noise and visual impacts from traffic using the road, but would be eliminated during the early breeding season, but not during nesting season for the Willow flycatcher. Depending on the severity of the disturbance, (ie., duration, frequency and intensity of presence of vehicles) impacts could range from temporary fleeing to nest abandonment, but not throughout the entire area of potential available habitat. The effects of this alternative would be short-term and minor.

Cooper’s hawk and Sharp-shinned hawk: Impacts would be similar to Alternative 1 and 3, for the BLM segment. Impacts would be negligible while the seasonal closure is in place. There would be no turn-around/parking area to concentrate activity at this site.

Swainson’s hawk: Direct and indirect impacts are similar to Alternative 1 and 3, for the BLM segment. The seasonal closure would reduce impacts to nesting birds but could disturb fledglings still on nests in June. There would be no turn-around area to concentrate activity, but impacts would be spread out over the rest of the creek upstream.

Panamint Alligator Lizard: Forest Service Segment: Direct effects would be as noted above, which includes an increase in habitat lost, and potentially an increase in the amount of vehicle traffic. This would be long-term, negligible effect. Indirect impacts would be noise and disturbance from increased vehicle use, pedestrians and equestrians. Most likely lizards would respond to the disturbance by fleeing and hiding from the disturbance until it has passed. This would be a short-term, minor effect.

Aquatic species: The effects of this alternative are the same as Alternative 4, except that the available riparian habitat is reduced by 0.097 acres. The effect of this alternative is long-term and negligible.

Table 1: The amount of acres of habitat impacted from the placement of the road for each alternative.

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Upland habitat (total = 53,760 acres)	7.02 acres	0.0 acres	1.37 acres	3.60 acres	3.56 acres	8.09 acres
Riparian habitat (total = 21 acres)	0.35 acres	0.0 acres	0.06 acres	0.13 acres	0.12 acres	0.16 acres

Cumulative Effects—Wildlife

All Alternatives

Cumulative effects include planned activities within the analysis area from the past, or that are occurring simultaneously at the time of the proposed activity (Alternatives), and actions that may occur within the reasonably foreseeable future. Impacts to adjacent areas with similar habitat are also considered for this assessment. Within the Furnace Creek area, there have been no active mine sites, timber harvest, water impoundments (such as damming, irrigation infrastructure, etc.), campgrounds or other construction-oriented activities. The main activity occurring in this canyon consists of the construction of the road in question. Past activities include some minor prospecting, past wildfires for which there are no records, activities associated with people using the canyon for hunting, rock hounding, driving, nature viewing, etc., and cattle grazing.

The Furnace Creek and Tres Plumas Flat watersheds are included in the boundaries of the Forest Service administered Tres Plumas grazing allotment, which was closed in 2000. The Furnace Creek area was not an important forage producing area of the allotment, and most likely cattle were trailed through there to access Tres Plumas Flat. From there cattle were dispersed throughout the rest of the allotment. In reviewing the doq aerial-photo quads from 1998, there are cattle trails evident throughout the Tres Plumas Flat portion of the allotment. There may be slight

changes in vegetation that occurred from the cattle use on the allotment through Furnace Creek, and may include vegetation community changes in abundance and diversity, as well as browsing impacts on shrubs. These impacts are expected to recover with long-term non-use of this allotment. Elimination of grazing in the Tres Plumas Flat area will allow vegetation condition to improve within the sagebrush habitat in this area. This would improve nesting, foraging and brood-rearing opportunities for sage grouse. Hiding cover would improve because grass species would be able to grow between sagebrush plants, and be taller than if it were grazed. The absence of grazing would also improve riparian conditions for riparian nesting birds and other species, such as deer, by providing a more robust structural condition. Each subsequent year of the absence of grazing would reduce the impacts that grazing has on vegetation, which reduces the cumulative impacts that grazing and this road would have on the species that use this area, primarily sage grouse. The lower portion of the canyon is included in the BLM administered White Wolf grazing allotment. There has been no grazing in this allotment over the last 2-3 years, but the permittee could apply to graze here under their permit. Cumulative impacts from other activities, as mentioned above, within the analysis area are slight to none for all the species analyzed within this document.

Determination of Effects

A Determination is given for each of the Sensitive species analyzed in this process through the Biological Evaluation. The determinations for these species are as follows:

Sage grouse: Alternatives 1, 4, 5, and 6: A determination of “may impact individuals, but not likely to cause a trend toward listing or a loss of viability” is given for the sage grouse due to indirect impacts from passing vehicles, which would be short-term and negligible, except for Alternative 6, which would have minor impacts.

Alternatives 2 and 3: A determination of “beneficial impacts” is given for sage grouse due to the restoration of sagebrush habitat and the elimination of any vehicular disturbance with the closing of the road.

Townsend’s big-eared, Pallid and Western red bats: For all Alternatives, a No Effect determination is made due to the negligible impacts of the aquatic species that depend on the riparian area from the pre-gate condition of the road. However, for Alternatives 2 through 6, the closing and/or re-alignment of the road will improve habitat for aquatic insects, and may cause a minor improvement in foraging opportunities for the bat species, causing a “beneficial effect” for these alternatives.

Willow Flycatcher: For Alternatives 1, 4, 5 and 6: A determination of “may impact individuals, but not likely to cause a trend toward listing or a loss of viability” is given for the Willow Flycatcher due to indirect impacts from the road. For Alternative 4 and 5, this would be short-term and minor, whereas Alternatives 1 and 6 would be short-term and moderate. If vehicle use is much higher than expected, survey and monitoring should be completed within the Furnace Creek area to determine possible impacts to nesting Willow Flycatchers.

Alternatives 2 and 3: A determination of “beneficial impacts” is given for the Willow Flycatcher due to the restoration of any potential habitat and the elimination of any vehicular disturbance with the closing of the road.

Panamint Alligator Lizard: For Alternatives 1, 4, 5 and 6: A determination of “may impact individuals, but not likely to cause a trend toward listing or a loss of viability” is given for the Panamint alligator lizard due to indirect impacts from passing vehicles, which would be short-term and negligible, except for Alternative 6, which would have minor impacts.

Alternatives 2 and 3: A determination of “beneficial impacts” is given for the Panamint alligator lizard due to the restoration of any potential habitat and the elimination of any vehicular disturbance with the closing of the road.

Soil and Water Quality

Indicators

- Disturbance within channel/meadow
- Estimated acres of soil disturbed by vehicle use
- Off-site erosion (sedimentation)
- Turbidity
- Hydrologic Function

Existing Conditions

Hydrologic Setting

The Furnace Creek drainage originates in the upper elevations of the eastern White Mountains in California and terminates in the southern end of Fish Lake Valley, Nevada. The Furnace Creek analysis watershed is 9,701 acres. The upper portion of the Furnace Creek road crosses the Fish Lake Valley/Wildhorse Creek analysis watershed (25,531 acres) and the Cottonwood Creek analysis watershed (34,874). Elevations in the watershed range from 10,500 feet in the upper drainage to 5000 feet at the outwash alluvial fans in Fish Lake Valley. The White Mountains are considered a Great Basin mountain range. The climate is generally arid in character. The majority of precipitation is in the form of snowfall from cyclonic storms during the winter/spring wet season with additional amounts of rain from summer convective thunderstorms. Average annual snowfall amounts along the crest of the White Mountains at White Mountain Research Station (12,470 feet) above the upper extent of the Furnace Creek watershed is 164 inches annually. Snowfall rates decrease significantly along the lower elevations towards Fish Lake Valley at Dyer, Nevada to 12 inches annually. Snow to water ratio in the upper White Mountains is typically 10 inches to 1 inch.

Summer convective thunderstorms that can occur within the watershed have the potential to be very intense, localized, and of short-duration. These infrequent events are capable of creating flash flooding and debris flows that can cause significant channel scour along the main stem and tributaries of Furnace Creek. Large sediment and debris deposition can occur within lower gradient reaches and onto alluvial fans. Steep tributary drainages can concentrate runoff during intense storms that can induce flash flooding. More typically, however, summer convective storms are random, of moderate intensity, and less likely to cause major debris flows and floods.

The steep upper watershed is more stable, as the soils are rocky and less erosive. Widespread stands of Pinion Pine, Juniper, and various upland shrubs provide groundcover to slow runoff from intense rain events. The lower end of the drainage is more erosive and alluvial. Less groundcover exists, consisting of mostly desert scrub and loose soil. These lower drainages are subject to local flash flooding and debris flows. Decomposing rock outcrop formations and non-cohesive soils stored in drainages are easily mobilized by floods and introduce high sediment yields to lower Furnace Creek.

The hydrology of Furnace Creek is comprised of small springs and seeps found in the steep upper drainages and along the low gradient reaches near the lower end of the drainage. Snowmelt and rainfall in the upper watershed basins recharge aquifers that sustain springs and seeps in the drainage. In the upper reaches there are intermittent sections of perennial stream flow with established riparian vegetation. The middle reaches are mainly an intermittent stream, although seasonal snowmelt and rainfall runoff can temporarily cause continuous surface flows. These reaches do not have abundant riparian vegetation. Depending on the amount of seasonal runoff, Furnace Creek can maintain surface flow along the entire drainage until flows typically infiltrate into alluvial materials at the mouth of the canyon. Only in years of well above average precipitation or from severe floods will surface flows in Furnace Creek reach the Fish Lake Valley basin.

In the lower drainages slow, perennial surface flow originates from several springs and seeps associated with a shallow, ground water table creates a wetland environment. Sections of the reaches support riparian vegetation without surface water due to shallow groundwater tables and moist soil year-round. The lowest section of the creek is strongly ephemeral in nature, not supporting riparian vegetation. Perennial surface flow in lower Furnace Creek is not contained by a defined channel for the majority of the reach. Base flows are low, approximately < 0.20 cubic feet per second or lower. In these reaches, the channel usually functions as a wetland and floodplain, with slow moving water and wet, fragile organic soils and dense riparian vegetation. The seep and wetland portions of the lower creek are locally limited and ecologically important. High seasonal and storm runoff flows are attenuated by dense riparian vegetation along the wetland reaches. This vegetation resists channel scour, protects highly erosive soils, filter surface water of sediment and waste and assists in groundwater recharge and storage. This condition combined with active organic material cycling creates a productive riparian environment.

Beneficial Uses of Water

This project is located within the jurisdiction of the State of California Lahontan Regional Water Quality Control Board (LRWQCB). The Lahontan Basin Plan (1995) establishes beneficial uses for Furnace Creek. The protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning. Below are the identified beneficial uses:

- (MUN) Municipal and Domestic Supply
- (AGR) Agricultural Supply
- (GWR) Groundwater Recharge
- (REC-1) Water Contact Recreation
- (REC-2) Non-contact Water Recreation
- (WARM) Warm Freshwater Habitat
- (WILD) Wildlife Habitat

Water Quality Objectives

In order to protect the most vulnerable beneficial uses of a water body, the Board establishes water quality objectives (LRWQCB, 1995). General objectives for all surface water bodies can

found on page 3-3 of the Basin Plan (LRWQCB, 1995). Objectives from page 3-3 which could be directly affected by this project include non-degradation of aquatic communities and populations, oils and grease, sediment, temperature, and turbidity. The threshold for these objectives can be found on pages 3-3 thru 3-7 of the Basin Plan. The basin plan lists specific beneficial uses as standards to maintain or meet.

The Clean Water Act and the Environmental Protection Agency (EPA) classify water pollution from roads as nonpoint source pollution (NSP). Management of NSP is through a series of management practices called best management practices (BMPs). According to the EPA, “The restoration or protection of designated water uses is the goal of BMP systems.” Management practices can minimize the delivery and transport of pollutants to surface and ground waters. According to the EPA, management practices control the delivery of NPS to receiving water resources by:

- minimizing pollutants available;
- retarding the transport and/or delivery of pollutants; and/or,
- remediating or intercepting the pollutant before or after it is delivered to the water resource.

Soils Table/Existing Condition of Soil Quality

Soils affected by this project are located both in the meadow/channel bottom and to a limited extent in the uplands. Soils in the meadow/channel bottom are subject to rutting and displacement if the protective sod is removed. Soils in the meadow/channel bottom are inclusions in the map units listed below. Table 2 summarizes the Soil Map units located on upland sections surrounding Furnace Creek on National Forest System lands:

Table 2 Soil Map Units

Map Unit	Hydrologic Soil Group	Drainage Class	Max. erosion hazard
124 Hartig-Dunul families-Rock Outcrop, Granitic Association, 50 to 70 percent slopes	A to B	Well Drained	High to Very High
137 – Merlin-Wetzel families, Rock Outcrop, volcanic Association, 5 to 60 percent slopes	C to D	Well Drained	Moderate to High

Source: (USDA FS, 1994)

Based on field observations, soils on BLM Administered lands are similar to Hartig-Dunul Families. The Dunul family consists of deep, well drained soils formed in colluvium from granitic rock. The Hartig family consists of moderately deep and deep, well drained soils forming in colluvium from granitic rock. The Merlin family consists of shallow, well drained

soils forming in residuum from basalt. Finally, the Wenzel family consists of moderately deep, well drained soils forming from colluvium from siltstones and shale (USDA FS 1994).

The hydrologic soil group is used to estimate runoff potential from precipitation. Map unit 137 has a moderately high to high runoff potential. Maximum Erosion Hazard Rating (EHR) ranges from moderate to very high. EHR is designed to measure relative risk of sheet and rill erosion. Project design, including Best Management Practices (BMP's) (USDA FS, 2000) incorporates these soil characteristics to ensure excessive soil erosion and stream sedimentation do not occur.

Region 5 Soil Quality Standards (USDA FS, 1995) Long-term Soil Productivity

A desired condition for soils within Riparian Conservation Areas (RCA's) as stated in the Sierra Nevada Forest Plan Amendment (SNFPA) (2004) includes “soils with favorable infiltration characteristics and diverse vegetative cover to absorb and filter precipitation and sustain favorable conditions of stream flow.”

Soil Quality Standards for the Inyo National Forest are covered under the Regional Soil Quality Standards (USDA FS, 1995). Soil Quality analysis standards provide threshold values that indicate when changes in soil properties and conditions (soil cover, porosity and organic matter) would result in significant change or impairment of the productivity potential, hydrologic function or buffering capacity of the soil. Detrimental soil disturbance is the resulting condition when threshold values are exceeded.

Direction for protection of soil quality on BLM administered lands is found in the Northern and Eastern Mojave Desert Management Plan (2002) which amends the 1980 California Desert Conservation Area Plan, and BLM National Policy – Conditions of Use for Off-Road Vehicles (43 CFR 8341). (See Appendix B for further information and direction found in these documents).

To maintain long-term soil productivity within the project area, the effects of past activities that have degraded soil condition must be treated to accelerate the recovery process. Additionally, the incremental impact of all the action alternatives must be addressed. Soil Quality Standards and BMPs address these issues. The effects of the project on soil function will be addressed by hydrologic function, off-site erosion, and sedimentation.

Pre-Gate Watershed Condition

The BLM installed a gate approximately 2.5 miles from the intersection of Highway 264 and the Furnace Creek road in March 2003. The current road alignment is parallel to and within the channel in multiple locations, essentially going through wet meadow and easily impacted wetland environment and crossing the stream in several locations. Currently, watershed and channel conditions are primarily the result of land use history, which includes vehicular traffic utilizing the current road alignment, livestock grazing, and mining among other uses. Field surveys of the lower reaches of Furnace Creek Road completed in October, 2001 by a Forest Service interdisciplinary team showed a deteriorated condition in the riparian/stream channel.

The team observed ruts channeling water and exposing subsoil along with damaged riparian vegetation in multiple channel crossing locations and in areas where the road is within and parallel to the wetland environment. Also observed in 2001, were impacts from an unknown number of vehicles (estimated to be 10-12) that had left the main road to bypass a washed out section of road near the Forest boundary. These vehicles traveled 300 feet directly up the wetland area of the creek, up a steep embankment to return to the main road, leaving deep ruts and damaged riparian vegetation in the wetland area. Reports and photos are on file at the Inyo National Forest Supervisor's Office.

A consistency analysis completed in 2002 by the Inyo National Forest concluded that the road in its current condition was not consistent with several Inyo National Forest Plan Standards and Guidelines as well as several guidelines in the Sierra Nevada Forest Plan Amendment. In March 2003, via an emergency order, the Inyo National Forest closed its portion of the Furnace Creek Road. (This order expired in March 2003).

The BLM office in Ridgecrest, CA completed field surveys during November 2002 and February 2003 and concluded that Furnace Creek was not meeting current BLM standards for stream condition. This survey was completed on BLM public lands only. The BLM completed an Environmental Assessment on the Furnace Creek and placed an interim closure on the road in March 2003. Data and photos are on file at BLM field office in Ridgecrest, CA.

Post-Gate Watershed Condition

Numerous surveys and field trips completed in 2004 evaluated the road with emphasis given to channel crossing and riparian areas. Crossings 1-6 on BLM lands were similar to pre-gate condition. Crossings 7-13 on Forest Service administered lands appeared to improve since the road was closed. Ruts were still visible and channeling water but were quickly becoming vegetated and recovering. Some small head cuts were noted in the ruts. They were generally stable and not impacting hydrologic function of Furnace Creek. The hydrologic function of the crossings and creek in general is improving. Crossing #8 was notable in vegetative recovery. (The project record contains photographs of the pre and post gate condition of Crossing #8).

In numerous areas between crossings, the surveys noted road sloughing and road bed erosion, especially between crossings 3 and 4. Some head cutting and gullies were noted where ephemeral drainages cross over the road. It was noted from field observations that some of the affected Furnace Creek riparian areas showed rapid recovery from the impacts noted in 2001. This is in part because the riparian areas have not been affected by vehicle traffic for a year or more. In addition to this finding, it was noted that Furnace Creek riparian areas have the natural ability to rapidly recover from vehicle impacts under most circumstances after vehicle use ceases. Due to the sustained water table and productive, vigorous riparian vegetation, organic cycling and high sediment inputs, moderate to severe impacts can recover quickly, often within a few years.

In certain circumstances (as seen during 2004 surveys) at road crossings of the creek on BLM lands (Crossing 5 and 6), where riparian vegetation is severely impacted and soil cover is missing, the probability for continued degradation is likely. Once substantial amounts of vegetative cover on the stream bed is fragmented or removed, highly erosive, fine grained soil is

exposed and severe channel degradation and soil loss can occur during very high or flood flows, resulting in a localized loss of hydrologic function. This condition is more likely to occur where the channel has a higher gradient and is narrow as in the example of Crossing 5. Reports and photos of the current condition of Furnace Creek are on file at the Forest Service Supervisor's Office in Bishop and the BLM office in Ridgecrest. The numerous surveys and field trips led to the development of the improvement/realignment alternatives.

Direct and Indirect Effects—Soil and Water Quality

General Discussion

In-stream vehicular travel in wet areas removes soil and vegetation from the channel, often creating ruts. These ruts are lower than the surrounding wetland/stream channel and will fill with water from the surrounding wetlands. This slightly lowers the surrounding water level. The current hydrologic impact of such ruts in Furnace Creek is minor. In addition, segments of the road that parallel the creek and are near the creek's elevation can alter the creek's surface flow path. During moderate to high flows, surface water can begin flowing down the road, incising it slightly. Once a portion of road has been incised to a level as low as the creek, the road can capture the flow and the creek will follow the road's path rather than its natural channel, and is at high risk of diverting the creek's flow and altering its hydrology.

The vehicle use of Furnace Creek OHV road is removing vegetation and the surface layer of organic rich soil in the moist riparian areas and at stream crossings. This loss of vegetation and soil directly removes aquatic-dependent species habitat, and may be removing vegetation important as food or shelter for riparian-dependent species.

Seasonal Closure

A seasonal closure is proposed for all action alternatives. A seasonal closure would ensure that vehicular traffic is limited during times when the stream crossings are flooded and more vulnerable to disturbance. A flooded crossing could encourage off-road/trail use. It also could lead to a degraded crossing requiring additional maintenance.

Best Management Practices (BMP's)

(BMP's) are site-specific design features applied to protect water quality. Chapter 2 discusses in detail specific actions to take place per Alternative. BMP's are integrated into each action Alternative. Appendix B describes specific BMP's for this project along with the mechanism to implement and monitor each BMP. BMP's were designed in the field by an Interdisciplinary Team including watershed specialists, engineers and trail specialists. Monitoring of BMP's would occur through the Best Management Practices Evaluation Program (BMPEP) and through Forest personnel checking effectiveness of erosion control measures on a periodic basis, as described in Chapter 2. Discussion of effects per Alternative assumes full implementation and effectiveness of BMP's as described per Alternative.

Alternative 1 – No Action

Of all the alternatives, Alternative 1 will result in the highest level of effects to soil/water quality and hydrologic function. With the implementation of Alternative 1, it is likely that severely

effected watershed conditions that existed before the road was closed (pre-gate condition) would return along the riparian sections in the lower canyon. This condition could potentially worsen, particularly if the Furnace Creek Road experiences an increase in OHV use. The existing road alignment within the analysis area would directly impact 11,410 square feet or 0.261 acres of riparian vegetation and wetland.

Recent site visits in 2004 revealed soil and riparian vegetation recovery has been rapid since closure of the road. In some sections the channel has converted or returned to original wetland conditions. Intermittent sections with remnant tire ruts and small head cuts are beginning to recover and stabilize. Since road closure, riparian vegetation growth has increased to the point where the road is no longer discernable in several segments within the wet channel where the road is located. With the re-introduction of full size and ATV vehicle use without any road improvements, there would be the direct effect of immediately losing the recovery that has been occurring in riparian areas damaged by previous OHV use and impacts to soil and water quality would likely occur.

In the areas where the road traverses or crosses the wetlands, recovery is evident. The channel bottom, however, has become softer and more susceptible to effects. Sections where vegetative growth has obscured the road, passage is difficult for OHVs without clearing vegetation. This may lead to illegal removal of vegetation and add to resource deterioration. Illegal bypass routes into riparian areas off the designated road will result in and lead to immediate adverse effects to wetlands and soil. Soft soil and wet conditions in the channel bottom can immobilize vehicles and result in additional riparian impacts when vehicles are extracted or attempt to become free. Vehicles having contact periods with surface water increases the possibility of petroleum contamination.

Vehicle use adds to existing unstable conditions. In areas where serious degradation to Furnace Creek channel has occurred from past use and recovery is slow, such as Crossing 5 and Crossing 6 on BLM, a direct effect of increased soil loss and channel incision will result. Additionally, existing sediment sources from poor road drainage and unstable ephemeral stream crossings in upland sections will continue.

The existing stream crossings in the riparian areas will continue to receive soil and vegetation damage as vehicles ford the unprotected channel bottom. Temporary episodes of minor turbidity and in-stream sedimentation would also occur as vehicles ford the wet crossings. With the low amount of use on the road and the ability of the riparian vegetation to filter sediment, turbidity and sedimentation effects will be low to moderate in severity. Water quality would have short term negative direct effects as a result. Continued channel disturbance would cause fine sediments to increase at crossings and create higher amounts of turbidity as vehicles cross and will cause moderate adverse effects to water quality on a temporary basis.

Tres Plumas Flat - Upper Furnace Creek Watershed above Crossing 14

With this alternative, there is potential of OHVs traveling to the upper extent of the Furnace Creek Road at Tres Plumas Flat (elevation 10,200'). This does introduce the possibility of OHVs illegally gaining access to the North Fork of Cottonwood Creek via remnants of the road into Tres

Plumas Meadow. With the increasingly deteriorated condition of the road this is not expected to be a regular occurrence. Small seasonal springs and associated fragile riparian conditions exist in Tres Plumas Meadow along the trail and may be impacted with random OHV trespass. Tres Plumas Flat has small, seasonally wet meadows that may experience minor impacts with illegal OHV incursions for a short period, approximately 2 months. The late summer season and early fall the area is typically dry and dry meadow conditions exist, meadow soils are resistant to vehicle damage during these periods and impacts would be lessened. With the very rough and poorly defined road conditions leading up to and at Tres Plumas Flat, use in this area is likely to be infrequent. Direct impacts to watershed resources would be minimal. Field observations in October, 2004 showed no recent or longer term (approximately up to 3 years) indications of OHV use or off-trail excursions and associated impacts in Tres Plumas Flat or Tres Plumas Meadow. In the event frequent OHV trespass occurs beyond Tres Plumas Flat into Tres Plumas Meadow, soil and vegetation impacts could occur due to the relatively moist conditions and sensitive riparian vegetation that exists at Tres Plumas Meadow.

The watershed area above Crossing 14 shows little effect as a result of vehicle use. The Furnace road is the only road through the watershed with the exceptions of one short spur trail at the 8800' elevation. The upper reaches of the road are found along steep, rocky slopes in shrub and pine vegetation. Soil is resilient to erosion due to the rocky surface conditions and upland vegetation. These conditions reduce the potential for off road excursions. This section of the road is not maintained and shows a minor amount of rilling on steep sections, this has little effect to water quality as there is very little surface water along this section of the road and the surrounding area is able to buffer the minor amount of soil that transports off the road from runoff. One perennial stream crossing on the road above Crossing 14 at 7200' elevation is stable and does not exhibit adverse effects from past OHV use. The above described conditions are likely not to change with implementation of Alternative 1.

Summary for Alternative 1

Alternative 1 continues to deviate further from desired conditions for riparian resources and watershed as described in the LMRP and RCOs. The No Action Alternative directly maintains inconsistency with RCOs and Standard and Guidelines for Watershed/Riparian Resources. Implementation of Alternative 1 keeps Furnace Creek Road inconsistent with BLM standard and guidelines for Riparian/Wetland and Stream Function Standard and Guides for the BLM portion of the road.

Alternative 2 – Proposed Action: Road Closed to Mechanized/Motorized Vehicles

Of all the analyzed alternatives, implementation of Alternative 2 affords the greatest protection and improvement in channel condition, off-site erosion, and hydrologic function. This alternative complies most fully with the 1988 Forest Plan and 2004 Sierra Nevada Forest Plan Amendment Standard and Guidelines and desired conditions as well as all BLM and other plan guidelines compared to the other Action Alternatives 3-6 (see Appendix B for Relevant Directives, Plans, and Standards and Guidelines). De-compacting the road surface and use of water control

structures along with treating known head cuts and ruts in the riparian area will further improve soil stability, channel function, and water quality.

There are short-term impacts from implementing the actions of decommissioning. It is likely that there will be direct effects of sediment into the wetland channel from the decommissioning and restoration work. This is not expected to significantly affect beneficial uses. Increased ground disturbance could lead to short-term (1-2 years) increased levels of sedimentation and reduced aerial extent and density of riparian vegetation. Where the road is naturally recovering, no additional actions will be taken. The riparian vegetation would re-colonize rapidly, especially in areas with restored hydrologic function. On restored upland sites full vegetative re-colonization could take considerably longer due to the drier conditions. It is anticipated that equestrians and pedestrians will access the area creating a visible footpath and minor and localized disturbance to channel conditions and hydrologic function.

Upper Furnace Creek- Tres Plumas Flat

The upper Furnace Creek road section and Tres Plumas Flat would slowly return to a more natural condition as vehicle impacts cease as a result of Alternative 2. The road tread will likely remain particularly in the upland reaches for many decades as natural healing occurs. There is a possibility of illegal trespass by OHV's the bypass the closure point into the Furnace Creek area and into Tres Plumas Flat via the existing road that could cause additional resource damage.

With Alternative 2, the conditions of most of the previously impacted riparian wetland sites and upland road sections (with the exceptions of stream Crossing 5 and 6 and eroded upland sections of road) will continue to rapidly improve. Other than from decommissioning and restoration work, there are no direct or indirect effects to water quality, hydrologic function or loss of riparian vegetation, and wetland.

In riparian areas such as Crossing 5 and Crossing 6 and sites where small head cuts exist, severe impacts caused from past use will be slower in recovery without intervention. Implementation of watershed restoration measures as described in Alternative 2 and implementation of Best Management Practices (BMPs) as described in Chapter 2 Alternatives 2-6 and Appendix B, will stabilize site conditions and increase recovery. The eroded sections of road in upland areas will also benefit from stabilization measures and increase recovery.

Summary for Alternative 2

Alternative 2 will ultimately bring riparian resources and watershed conditions into LMRP/RCO desired condition more effectively as compared to all of the other alternatives. This alternative will also effectively bring the BLM segment of the road into compliance with relevant agency direction and policy.

Alternative 3 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Closed to Mechanized/Motorized Use

With the implementation of Alternative 3, there is no change to direct and indirect effects as analyzed and described for Alternative 2 (Proposed Action) for the full section of Forest Service Road and the 0.50 mile section of BLM road below the Forest Boundary. There is a high likelihood of direct inputs of sediment into Furnace Creek and the associated wetland from the

actions proposed in Alternative 3, particularly during implementation. Project specific BMP's will reduce this impact. The short term impact will not affect beneficial uses. With Alternative 3, there is a temporary reduction in riparian vegetation and wetland (2,770 square feet, 0.063 acre or 0.3 percent of the total 21.0 acres of riparian within the project analysis area this compares to Alternative 1, 11,410 square feet of wetland impact .26 acres or 1.2% of the total 21.0 acres) that would cause a minor reduction in hydrologic function. The proposed realignment and improvements along with the seasonal closure improves hydrologic function, reduces sedimentation and turbidity, and provides for stabilization where the road crosses riparian/wetland areas in the long term as compared to Alternative 1 - No Action.

Analysis for direct and indirect effects that pertain to the section of road on BLM lands below the road closure point as described in Alternative 3 follows. Cumulative effects are addressed later in this document.

Upland sections of road between crossings 2 and 3, 3 and 4, 5 and 6, 6 and 7

Watershed conditions should improve with stabilizing road treatments along the upland sections of the road below the Forest Service boundary closure point. Reduction of sediment delivery to Furnace Creek and less road erosion as compared to the existing condition (No-Action Alternative) will result. Full size vehicle and ATV use on the upland sections of road with stabilization treatments should result in minor direct effects to water quality or hydrologic function. Potentially, the road itself can cause some concentrations of surface runoff from intense storms that can cause road erosion and deliver in-stream sediment. However, this effect is mitigated with the implementation of road treatments and other appropriate BMP's (see Appendix B for appropriate BMP's and see Project Specific BMP's described above). The stabilization treatments will lower the probability of vehicles leaving the designated road as treatments will reduce road erosion and wash out potential.

As a potential indirect effect of the road, the upland sections of road at ephemeral stream crossings are subject to severe wash-outs or sediment deposition from locally intense, infrequent summer convection storms. Such storms could create wash-outs and impassable conditions and may cause vehicles to leave the designated road, leading to severe resource damage and increased erosion and may deliver additional sediment to Furnace Creek. Additionally, during storm events side slopes along the upland road sections can deliver overland runoff that deposits sediment onto the road, increasing the road bed angle that could cause impassable, unsafe conditions. This may also lead vehicles to leave the road. Maintenance is necessary to correct road problems as they occur to reduce additional erosion and the potential of vehicles leaving the road to bypass problem areas.

Riparian Stream Crossings 1, 2, 3, 4, 5 and 6:

Existing hydrologic conditions at Crossings 1, 2, and 3 are stable. These crossings have fewer riparian characteristics, lack wetland and sensitive soil conditions, road surfaces are cohesive and are resistant to vehicle impacts. They experience short-term seasonal surface flows and tend to become dry at the onset of the summer season. No severe, existing or potential erosion and water

quality impacts were identified with these sites; therefore, minor direct and indirect effects to water quality and hydrologic function would result with the implementation of Alternative 3.

The rip rap treatment of crossing 4 as defined in Alternative 3 will have beneficial effects to water quality and will increase channel stability as compared to Alternative 1. With Alternative 3, easily impacted wetland soil is protected and channel incision from vehicle use is reduced or eliminated leading to long-term crossing stability. Turbidity levels and impacts to water quality from vehicle use are reduced in the long term as the crossing will also better withstand high flow scour conditions.

Crossing 4 will experience a small, short-term (1-2yrs.) loss of wetland function and riparian vegetation as a result of placing rip rap within the wetted area. This placement of rock on the wetland will have a minor direct impact to hydrologic function at the crossing area and the adjacent stream reach due to the very small amount of area affected compared to the much larger amount of functioning wetland area in lower Furnace Creek. The amount of disturbance is minimal and over time the treated crossings will become more stable as riparian vegetation re-establishes around the crossing structure.

Further, rocks are placed on grade to facilitate uninterrupted stream flow. This also causes a small, temporary loss of channel stability with the loss of vegetation. Riparian vegetation will recolonize quickly as fine sediments deposit within the rock armoring. The armored crossing will expose surface water to additional solar radiation and may result in a localized minor increase in water temperature during the summer months. Surface water flow at this crossing typically occurs seasonally. Moderate amounts of fine sediments will tend to deposit on the rock covering at the crossing over time due to the low gradient and low velocity stream flow of the stream reach in this area. However, normal and seasonal increases in stream flow from runoff events will scour and distribute a majority of stored fines downstream. With the dense riparian vegetation that exists, this sediment should be easily buffered and should not cause severe effects to water quality or hydrologic function. In the event of an infrequent, wide-spread severe storm event that causes debris flows the crossing could become immediately overburdened and impassable, maintenance of the crossing in this case is important to ensure vehicles do not attempt illegal bypass off-road. Without maintenance, the rock crossings over the very long term will become overburdened with sediments and disappear from the surface as this response reach of lower Furnace Creek naturally aggrades quickly. This analysis applies to all of the crossings under Alternative 3.

When full size vehicles and ATV's travel through wet crossings, the stored sediment will be disturbed and suspended in the water, causing short term and localized turbidity episodes. Additionally, vehicles carry small amounts of soil on tire treads that are released when making contact with the surface water when crossing. With the ability of the downstream wetland environment to filter such episodes, due to the prolific riparian vegetation, impacts to water quality are short lived and minor, turbidity is quickly diluted and turbidity effects are mainly confined to the immediate section (approximately 100 feet) below the crossing. With the expected infrequent use of the crossing, turbidity events should be minimal. These impacts are specific to the crossing sites and should not have a major effect to Furnace Creek hydrology or water quality.

A small spring located on the southern bank of Crossing # 4 is protected with a slight deviation of the road tread to reduce direct impacts to the spring environment.

Crossing 5 is in an existing state of severe degradation and a small section of wetland environment and soil was previously lost to severe head cutting and channel incision. The water table has also lowered with a reduction in riparian vegetation. Road realignment out of the main channel is necessary to reduce impacts that caused the unstable conditions. Restoration of the stream channel and head cut will essentially off-set impacts to riparian vegetation and the wetland environment, based on the proposed road alignment. The new road alignment will improve hydrologic function and water quality with degraded conditions stabilizing as a result of restoration treatments and due to the road tread being removed from the mid-channel thus reducing direct impacts and will allow the channel to stabilize. Without restoration treatments, the conditions are likely to remain unstable into the long term.

At Crossing 6, the existing road crossing has exposed mineral soil and riparian vegetation that was previously lost from past road use. The crossing will be treated with rock armoring over most of the previously disturbed section of wetland. Fine sediments will accumulate in the rock armoring and sod forming grasses will occupy a portion of the area. Rock armoring will result in the protection of wetland soil from scour and rutting from vehicle use improving water quality and reducing in-stream sedimentation. Minor turbidity events will occur when vehicles travel through the crossing as deposited fine sediments will be disturbed and suspended in the water. Surface water flow at this crossing usually is seasonal in duration. The headcut upstream of the crossing is treated locally restoring hydrologic function and riparian vegetation.

Upper Furnace Creek- Tres Plumas Flat

The same effect is expected as described for Alternative 2. The upper Furnace Creek road section and Tres Plumas Flat will slowly return to a more natural condition as vehicle impacts cease as a result of Alternative 3. The road tread will likely remain in the upland reaches for many decades as natural healing occurs. There is a possibility of illegal trespass by OHV's that bypass the Forest Service closure point into the lower Furnace Creek area and into Tres Plumas Flat via the existing road that could cause additional resource damage.

Turnaround section above Crossing 6

250 feet of upland vegetation and soil is disturbed with the development of the road turnaround. Other than loss of soil cover vegetation that helps to protect soil from raindrop impact and erosion, no significant direct or indirect effects to water quality or soil should result with implementation of the turnaround with appropriate implementation of BMPs.

Alternative 3 Summary

Due to their larger weight and wider wheel base, full size vehicles have a greater direct effect on native soil road surface and stream water crossings (in terms of wear) as compared to ATV use (as described in the effects section under Alternative 5). The impacts to water control structures and channel crossing treatments are more severe and without maintenance additional road erosion

would result. Full sized vehicles are more likely to create increased turbidity and water quality impacts at stream crossings compared to ATV's.

For the BLM section of road, Alternative 3 will move the existing condition to compliance with BLM Standard and Guides. The action will help to correct several riparian and water quality impacts and move the existing condition to compliance as compared to the No Action Alternative (Alt. 1). For the Forest Service section of road, the description for Alternative 2 applies.

Alternative 4 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Multiple-Use Trail

The effects analysis given for Alternative 3 that pertains to the BLM road section open to full-size vehicle use applies to the Alternative 4. For the Forest Service section of road from the BLM turnaround to the Forest Service proposed wilderness boundary, the following effects analysis applies:

There is a high likelihood of direct inputs of sediment into Furnace Creek from the actions proposed in Alternative 4, particularly during implementation. The short term impact will not affect beneficial uses. With implementation of Alternative 4, realigned sections and armored stream crossings of the Furnace Creek Road/trail on National Forest and BLM land will cause a reduction and disturbance of riparian vegetation and wetland/floodplain that will cause a slight reduction in hydrologic function of Furnace Creek wetlands. A reduction of wetland and riparian vegetation for all the affected area including the BLM section under Alternative 4 is 5,395 square feet or .123 acre, compared to the estimated existing area of riparian acres of 21 acres within the project analysis area from Crossing 1 to Crossing 14. This converts to approximately a 0.6 percent reduction of existing riparian vegetation and wetland as a result of implementing Alternative 4, as compared to 1.2 percent loss with Alternative 1, No Action (overall a 50% increase in riparian vegetation from Alternative 1 to Alternative 4).

Realigned sections of trail, crossings 7, 8, 10, 11, 12, and 13

The re-aligned sections of trail (other than actual stream crossings at these sections) are designed to remain out of the surface water areas of the wetlands. The re-aligned sections of the trail are designed to be located laterally to the wetted channel, reducing the direct impacts to sensitive wetland areas. The re-aligned trail sections are to be placed into the toe of the canyon slopes and should not intercept normal stream flows while protecting the soil and vegetation from vehicle impacts. The trail will be armored along the streamside flank to resist scour from normal seasonal flows. These sections will not have a direct effect on water quality or on increasing levels of in-stream turbidity with vehicle use. With applicable BMP's implemented to protect water quality for the re-aligned trail sections, sediment delivery from the trail to the channel will be minimized.

There will be a period of short term and minor disturbance associated with the re-alignment implementation, such as when crews, tools, motorized equipment, etc. are working on the re-alignments and near the perimeter of the re-aligned sections.. However, these impacts are temporary and should recover rapidly (1-2 years). Small amounts of riparian vegetation will be permanently lost, as described above, when the re-aligned sections are installed. It is likely that some of the vegetation removed to install the trail will recover and strengthen the sides of the trail

that will help resist scour from high flows. Additionally, riparian vegetation develops quickly in these reaches and in the longer term could overgrow the trail and cause difficulty for OHV's to pass. Without maintenance (trimming) OHV's may deviate from the trail to bypass overgrowth into the stream channel and cause resource damage.

In the event of an infrequent and major debris flow flood that removes sections of the realigned sections of trail, some additional sediment will be added to the channel as the trail bed materials are washed downstream. This scenario would create exposed sections of bare soil susceptible to erosion. Also, with this occurrence, if maintenance to the damaged sections is not completed, further scouring of the road could result in additional sedimentation and trail failure that could cause OHV's to trespass into riparian areas causing resource damage.

The re-aligned sections of the trail in the riparian areas are also subject to scour or deposition from side channels (mostly ephemeral in nature) that have the potential to flood from infrequent, short duration heavy downpours from summer convective storms. The steep side channels where they cross the trail in lower Furnace Creek during these events could wash-out the trail or could possibly overburden the trail with sediment at the crossings. This effect could occur at varying levels of severity depending on the extent and duration of the storm event. Lower Furnace Creek is susceptible to this effect. The side channels are highly erosive and capable of delivering large volumes sediment and water. The side slopes adjacent to the trail are also capable of depositing sediment onto the trail during storms. If the trail is not maintained after these occurrences, OHV's may deviate from the trail into the riparian areas and cause resource damage.

Riparian Stream Crossings 8, 9, 13 and 14

Placement of rock on the wetland has a minor direct impact to hydrologic function and water quality at the crossing areas. This rock placement will moderately displace flow for a period of time until fine sediments are deposited and sod forming vegetation re-colonizes. There is a temporary fragmentation of wetland vegetation thus temporarily reducing the natural process of filtering of sediment.

The armored wet crossings will expose surface water to additional solar radiation and may result in a localized and slight increase in water temperature, particularly during the summer months. With the slow, sheet flow conditions, moderate sediment amounts will likely be stored on the rock armor at the crossings. When vehicles travel through the crossings, the stored sediment will be disturbed and suspended in the water, causing short term localized turbidity episodes. Additionally, vehicles carry small amounts of soil on tire treads that will be released when making contact with the surface water when crossing. With the ability of the downstream wetland environment and dense riparian vegetation to filter such episodes, impacts to water quality are short lived and minor, mainly affecting the immediate reach below the crossing. Considering the infrequent use of the crossings, turbidity events are minimal. High seasonal flows will likely scour stored sediment from the crossing and redistribute downstream. These impacts are specific to the crossing sites and should not affect Furnace Creek hydrology.

In the event of a severe storm event that causes debris flows, the crossings could become immediately overburdened and impassable, maintenance of the crossing in this case is important

to ensure vehicles do not attempt illegal bypass off-trail. Additionally, without maintenance, the rocked crossings over the very long term will become overburdened with sediments and disappear from under the surface as this response reach of lower Furnace Creek naturally aggrades quickly.

The rip rap of the trail stream crossings as defined in Alternative 4 will have beneficial effects to water quality and channel stability as compared to Alternative 1. With the implementation of Alternative 4, when vehicles cross the stream bed, easily impacted wetland soil is protected and the rock will prevent channel incision and channel impacts providing long-term stability from rutting and an increased ability to withstand erosion caused by high flow events. Turbidity levels and impacts to water quality are reduced from vehicle use in the long term.

Upland sections of trail between crossings 6, 7, 8, 9, 10, 11, 12, 13 and 14

Watershed conditions should improve with stabilizing road treatments along the upland sections of the trail that would reduce sediment delivery to Furnace Creek and slow trail erosion as compared to the existing condition. Vehicle use on the upland sections of trail with the implementation of stabilization treatments should have minor to no direct effects to water quality or hydrologic function. Potentially, the trail itself can cause some concentrations of surface runoff from storms that can deliver in-stream sediment and cause trail erosion. However, this effect will be mitigated with the implementation of road water control features and other appropriate BMPs (see Appendix B for the relevant BMPs).

As a potential indirect effect of the trail, the upland sections of trail at ephemeral stream crossings are subject to severe wash-outs or sediment deposition from locally intense, infrequent summer convective storms that could create impassable conditions and may cause vehicles to leave the designated trail, causing significant resource damage and increased erosion that could adversely affect water quality. Side slopes along the trail in this area of analysis can deliver overland runoff that transports and deposits sediment onto the trail, increasing the road bed angle that could cause impassable, unsafe conditions and may lead vehicles to leave the road. Road treatments will help reduce impacts over the existing condition, but in the event of a relatively infrequent and intense, short duration storm that can occur in this watershed, these conditions are possible and may result in direct impacts to watershed in terms of additional sediment delivery to Furnace Creek. The stabilization treatments lower the probability of vehicles leaving the trail.

Trail re-alignment in Crossing 13 Area onto Upland Terrace

The section of trail proposed to be realigned out of the creek bed from the existing route onto a section of upland vegetation is drier and soils are more resilient. There is a loss of soil cover by the removal of vegetation for this section of trail (4074 square feet, 0.093 acre) that would have a slight effect on soil moisture retention and reduce soil protection from raindrop impact and erosion; however, with application of BMP prescriptions and water control structures, these effects should be reduced.

Loss of Upland Vegetation from all Re-aligned Sections of Trail

There is a loss of upland vegetation adjacent to riparian areas with implementation of Alternative 4 (5,899 square feet or 0.135 acre). Almost all of the upland areas affected will become trail bed with a smaller percentage of the area disturbed becoming cut slopes, short in height and area. In the short term (1-2yrs.) cut slope areas will not have fully stabilized or re-vegetated to reduce erosion effects and will be subject to low to moderate erosion from rainfall events. Slope stabilization measures taken for exposed cut slopes post-project with local organic materials such as branches, duff, etc. used for soil mulching or with the application of open celled degradable jute matting will reduce erosion and sedimentation to the Furnace Creek channel until native vegetation recovers over the short term.

Tres Plumas Flat - Upper Furnace Creek Watershed above Crossing 14

With this alternative, there is potential of OHVs traveling to the upper extent of the Furnace Creek Road at Tres Plumas Flat (elevation 10,200'). This does introduce the possibility of OHVs illegally gaining access to the North Fork of Cottonwood Creek via remnants of the road into Tres Plumas Meadow. The improvements that would occur with the implementation of Alternative 4 would likely in the short-term increase vehicle use into the area and the potential is greater of OHV trespass and road proliferation in the Tres Plumas Flat and into Cottonwood Creek. However, this increase is expected to be minimal. Small seasonal springs and associated fragile riparian conditions exist in Tres Plumas Meadow along the trail and may be impacted with random OHV trespass. Tres Plumas Flat has small, seasonally wet meadows that may experience minor impacts with illegal OHV incursions for a short period, approximately 2 months. In the late summer season and early fall when the area is typically dry and dry meadow conditions exist, meadow soils are resistant to vehicle damage during these periods and impacts would be lessened. Direct impacts to watershed resources would be minimal. Field observations in October, 2004 showed no recent or longer term (approximately up to 3 years) indications of OHV use or off-trail excursions and associated impacts in Tres Plumas Flat or Tres Plumas Meadow. In the event frequent OHV trespass occurs beyond Tres Plumas Flat into Tres Plumas Meadow, soil and vegetation impacts could occur due to the relatively moist conditions and sensitive riparian vegetation that exists at Tres Plumas Meadow.

The watershed area above Crossing 14 shows little effect as a result of vehicle use. The Furnace road is the only road through the watershed with the exceptions of one short spur trail at the 8800' elevation. The upper reaches of the road are found along steep, rocky slopes in shrub and pine vegetation. Soil is resilient to erosion due to the rocky surface conditions and upland vegetation. These conditions reduce the potential for off road excursions. This section of the road is not maintained and shows a minor amount of rilling on steep sections, however, this has little effect to water quality as there is very little surface water along this section of the road and the surrounding area is able to buffer the minor amount of soil that transports off the road from runoff. One perennial stream crossing on the road above Crossing 14 at 7200' elevation is stable and does not exhibit adverse effects from past OHV use. The above described conditions are likely not to change with implementation of Alternative 4.

Summary of Alternative 4

With Alternative 4 implementation as compared to Alternative 1, the Forest Service section of road will be in compliance with LMRP standards and guides and Framework RCOs. The development of the alternative considered all practical and most feasible remedies to improve riparian resource and water quality impacts with implementation and, therefore, brings the existing (pre-gate) condition to consistency. BMP implementation will also strengthen this action. This direction moves the action to LMRP consistency for riparian resources over the long term as compared to Alternative 1.

For the BLM section of road, Alternative 4 will move the existing condition to compliance with BLM Standard and Guides. The action will help to correct several riparian and water quality impacts and move the existing condition to compliance as compared to the No Action Alternative (Alt. 1).

Alternative 5 – BLM and Forest Service, Multiple-Use Trail

The effects analysis given for the Forest Service road section as described for Alternative 4 would apply to Alternative 5. The effects for the BLM section of road are discussed below.

BLM Section of Road

There is a high likelihood of direct inputs of sediment into Furnace Creek from the actions proposed in Alternative 5, particularly during implementation. The short term impact would not affect beneficial uses. With implementation of Alternative 5, effects from the BLM section of road are reduced in scope. With a 50” trail width as compared to a full size truck width of 108”, there is a reduction in total area of riparian vegetation and floodplain loss, as compared to Alternative 3 and 4. This reflects a net reduction of riparian vegetation and wetland loss from 5,395 square feet or .123 acre, to 4,055 square feet or 0.093 acre. This effect does not substantially reduce the amount of impact to hydrologic function as compared to Alternative 3 or 4, but there is some small reduction in effect. By only allowing smaller vehicles on the full length of the trail, Alternative 5 has less soil and water quality effects compared to Alternatives 1, 4 and 6. As a result, trail erosion is lessened, thus reducing the potential for sediment from the trail to be delivered to the stream channel. There is also less potential for the trail to become destabilized and adversely affect the water control/erosion structures that are implemented with Alternative 5. This alternative would require less trail maintenance to a minor degree over the long term due to the non-use of large vehicles.

Due to the change to lighter and smaller vehicles, upland sections of the trail will show a reduction of impacts. The pre-existing road area would likely narrow to less of a surface area, reducing erosion potential and wear on the trail surface and water control structures. Foot travel will have very slight additional effects to the road and watershed, with the exception of the potential for slight, very short term soil and vegetation impacts when pedestrians leave the road in the riparian areas. There is a potential for a small increase of disturbance to road side areas with ATV use as dispersed camping off the road is a possible activity due to the improvements done to the trail.

Parking area two miles from Highway 264 at start of Multiple Use Trail

With Alternative 5, a parking area established at the multiple use trail head will result in a direct loss of 2000 square feet (0.045 acre) of desert vegetation and result in soil compaction from use with an adverse affect on soil productivity. As a result, there is a loss of soil cover and protection from rain drop impacts, likely resulting in erosion and an increase of runoff from compacted soil. This condition will cause some minor on-site and off-site erosion when intense rain fall events occur but will not have a significant adverse effect to local hydrology or water quality, as there is no surface water or perennial streams near the site. With the implementation of prescribed BMPs, on-site erosion should be reduced. The parking site is located on alluvial materials and there is no loss of riparian area as a result of implementation.

Summary of Alterative 5

For the BLM segment, there is improvement over Alternatives 3-4 with an increased level of protection of riparian resources. Compared to Alternative 1, Alternative 5 would bring the BLM section of road to consistency in terms of meeting BLM standards and guides.

Alternative 6 – BLM and Forest Service, Full-size Vehicle Access

The effects analysis given for the BLM section of road for Alternative 3 and 4 apply to Alternative 6. The additional effects are analyzed for the Forest Service section and are discussed, with some reference to the BLM section for scope, focusing on the addition of allowing and accommodating full size vehicle use.

Off all of the Action Alternatives (2-6), Alternative 6 has the greatest effect on watershed and hydrologic function as a result of implementation. Of the estimated 21 acres of existing riparian vegetation and wetlands within the project area, Alternative 6 causes a reduction of 7,180 square feet, (0.164 acre) of riparian vegetation and wetland. Another 8,946 square feet (0.205 acre) of upland vegetation loss will occur, moderately increasing impacts to hydrologic function and wetlands. There is a high likelihood of direct inputs of sediment into Furnace Creek from the actions proposed in Alternative 6, particularly during implementation. The short term effect will not affect beneficial uses.

Due to their larger weight and wider wheel base, full-size vehicles have an increased direct effect on native soil road surface and water crossings in terms of wear as compared to All-Terrain Vehicles (ATV's with 50 inch widths) or motorcycles, such as described in the effects section under Alternative 5.

In the event of vehicles leaving the designated road, riparian and other resource effects will increase in severity due to the heavy weight and wider berth of full-sized vehicles. This alternative results in the most direct impact on the surrounding watershed during actual implementation with more in-stream sedimentation and meadow disturbance due to the need to build a road to a wider width in the riparian areas, requiring more equipment, materials, fill, crews, etc. This alternative also requires a higher level of maintenance to protect watershed resources. Realigning the road for this alternative essentially doubles the amount of impacts as compared to Alternative 5.

Full size vehicles impact water control structures and channel crossing treatments more severely and without timely maintenance lead to additional road erosion and sedimentation to Furnace Creek. These vehicles also tend to create more turbidity and water quality impacts at stream crossings compared to ATV's and motorcycles. Foot travel will have very slight additional effects to the road and watershed, with the exception of the potential for slight, very short term soil and vegetation impacts when pedestrians leave the road in the riparian areas. There is a potential for a small increase of disturbance to road side areas with full-size vehicle use as dispersed camping off the road is a possible activity with the improvements done to the road.

Tres Plumas Flat - Upper Furnace Creek Watershed above Crossing 14

With this alternative, there is potential of OHVs traveling to the upper extent of the Furnace Creek Road at Tres Plumas Flat (elevation 10,200'). This does introduce the possibility of OHVs illegally gaining access to the North Fork of Cottonwood Creek via remnants of the road into Tres Plumas Meadow. With the increasingly deteriorated condition of the road this is not expected to be a regular occurrence. Full size vehicle use in the upper sections of the road would cause additional impacts to soil on the road bed as described above for the uplands section of the lower drainage. If illegal off road excursions occur in Tres Plumas Flat or beyond into the Tres Plumas Meadow, resource damage would be increased over ATV use only, especially in meadow sites. The same environmental conditions/effects that are described for Alternative 1 and 4 for the upper watershed apply for the upper watershed above Crossing 14 for this alternative, with the exception being full size vehicles can cause increased resource damage if off-road excursions occur.

Summary of Alternative 6

This alternative would bring the Furnace Creek Road to consistency with LMRP Standards and Guides and RCOs and with BLM standards and guides as compared to Alternative 1. Alternatives 3, 4, 5, and 6 were developed considering the most practical and feasible methods to protect the riparian resources. Of these four alternatives, Alternative 6, while consistent with applicable policy and law, provides the lowest level of protection of riparian and non-riparian resources in the Furnace Creek area.

Cumulative Effects—Soil and Water Quality

All Alternatives

This section discusses the cumulative watershed effects and cumulative effects to soil quality of this action, when combined with all other past, present, and reasonably foreseeable actions. The Equivalent Roaded Acres/Threshold of Concern (ERA's/TOC) methodology for calculating Cumulative Watershed Effects (CWE) was not utilized for this analysis. The analysis of effects per alternative thoroughly describes the condition of each riparian stream crossing. Comparison of ERA's to a TOC does not offer insight to watershed processes and possible effects from this project on water quality variables. Factors considered include relative road density per Alternative, and existing and projected condition of the road crossings. In addition, this analysis utilizes observations and data collected in the field, physical characteristics of the watershed and

Furnace Creek, including existing watershed condition, climatic factors, Alternative design, and mitigations. Water quality variables include in stream sedimentation, turbidity and stream stability.

Past actions include construction and utilization of the Furnace Creek Road, utilization by wild horses and mules, an active livestock allotment and mining. The greatest impact to watershed processes come from the construction and utilization of the road. The Soil and Water quality section of the EA describes the condition of crossing 1 through 14 on Furnace Creek. In addition to these crossings the Furnace Creek road and a spur road cross multiple ephemeral drainages. Currently, the ephemeral stream crossings are stable. There is a risk of sediment deposition on the road and crossing failure, from summer thunderstorms as noted in the analysis of Alternatives, on 8 ephemeral crossings in the middle of the watershed. Where Furnace Creek and the spur road cross the ephemerals near the top of the watershed the condition is stable. The Tres Plumas Range allotment, in which Furnace Creek road is located is currently not used and has not been utilized for 10 years. An undetermined amount of recovery to meadow, stream banks and riparian areas has occurred in the 10 year period. In a rested allotment adjacent to Furnace Creek, trend data displays an increase in soil cover and a decrease in compaction (data on file at the White Mountain Ranger District). See the Botany and Noxious weed section of the EA for more specific information on condition of riparian vegetation related to grazing. There is no evidence that past mining is affecting watershed processes or riparian vegetation. Potential water quality variables which may be cumulatively or incrementally affected by the above land use activities include in stream sedimentation, turbidity, and stream stability.

Table 3 displays the miles of road per alternative in Furnace Creek, Fish Lake Valley and Cottonwood Creek analysis watersheds. The Furnace Creek road and stream crossings are stable in both Fish Lake Valley and Cottonwood Creek Watersheds. Implementation of any alternative would not degrade watershed processes or hydrologic function. Alternatives 2 and 3 would incrementally improve watershed process and hydrologic function by decommissioning the road.

Present actions include implementation of Alternative 1 which would likely lead to degradation of riparian and watershed resources due to vehicle traffic. Beneficial uses of Furnace Creek would likely be adversely affected. In addition, Furnace Creek would be vulnerable to a high runoff event compared to the other Alternatives, as vehicle traffic would rut the wet meadow/riparian areas concentrating water. Past construction and vehicle use combined with this action would lead to the degraded condition. The past effects outline above are overshadowed by this action.

Implementation of Alternative 2 would produce beneficial long-term effects to watershed condition by decompacting the existing road bed and by stabilizing known erosion sources.

Implementation of Alternatives 3-6, would add another level of disturbance to the Furnace Creek Watershed. Alternative 3 would close the Forest Service piece of the road with short-term disturbance and long-term watershed stabilization lessening the potential for adverse cumulative watershed effect. Alternatives 4, 5 and 6 add a level of disturbance to the watershed though to a lesser extent than Alternative 1, No Action. In addition, traffic on the road up to the Tres Plumas

area is likely to increase with implementation of these alternatives. As stated above the upper stream crossing is stable and the ephemeral stream crossing on the lightly used spur road is stable. It is not anticipated that this condition would change with increased use. Past disturbance where the road was in the creek bed would recover, improving hydrologic function of Furnace Creek and soil quality of wet meadow/riparian soils. Alternatives 4-6 are designed to alleviate known degraded watershed conditions and ensure the sustainability of the trail/road and watershed condition, through the implementation of the Alternatives design criteria and Best Management Practices. Alternatives 4 and 5 are less impacting than Alternative 6 (see discussion of effects per Alternative) due to the differences in road widths. The crossings and other road improvements were designed to provide stability to both the road and watershed during high runoff events. The actions and mitigations described in these Alternatives were developed to ensure identified beneficial uses of Furnace Creek are maintained and would not experience adverse cumulative watershed effects.

There are no other actions proposed for this watershed. Wild Horse and mule utilization would continue. The Forest will revisit grazing of the Tres Plumas allotment sometime in the future. An additional environmental document would be prepared at that time.

In conclusion, downstream cumulative off-site watershed effects as defined in FSH 2509.22 Chapter 20 are not likely to occur by implementing Alternatives 2-6. Alternative 1, no action could result in an adverse cumulative watershed effect by negatively affecting beneficial uses of water and water quality variables used in this analysis. This effect would be focused within the Furnace Creek drainage as live water and riparian vegetation disappear on the alluvial fan on Bureau of Land Management Lands.

Soil quality would be improved or remain in existing condition, except for Alternative 1 where rutting would occur in the road bed as it goes up the channel bottom. Alternative 1 would likely degrade long-term soil quality both in the road bed and adjacent areas.

Table 3. Miles of road per Analysis Watershed. Fish Lake Valley and Cottonwood Creek Watersheds only include the Furnace Creek Road. Furnace Creek Watershed includes all roads.

Analysis Watershed	Alt.1	Alt.2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Furnace Creek (Total)	9.2	0	3.7	6.6	4.8	9.2
Furnace Creek-FS lands (only)	5.4	0	0	2.8	2.8	5.4
Fish Lake Valley	1.6	0	0	.8	.8	1.6
Cottonwood Creek	1.4	0	0	.7	.7	1.4

Wilderness

Indicators

Bureau of Land Management segment

- Meets Wilderness Study Area (WSA) Non-Impairment Criteria, i.e., effects will be temporary, involve no new surface disturbance or permanent placement of structures, and can be easily terminated without requiring reclamation.
- Effects on Wilderness Character and Values, i.e., naturalness, untrammeledness, opportunities for solitude and for primitive and unconfined recreation.
- Effects on Important Supplemental Values e.g., ecological, geological, or other features of scientific, educational, scenic or historical value.

Forest Service segment

- Degree to which the Alternative may threaten wilderness values or jeopardize future wilderness designation

Existing Conditions

The BLM 11,200 acre White Mountain Wilderness Study Area was established by Congress in 1994 in Title 1, Section 105 of the California Desert Protection Act. In general, the WSA boundary runs along the east side of the White Mountains from the 5600 foot contour to the USFS boundary. On the Congressional maps, there are several corridors containing vehicle routes that were excluded from the WSA. Furnace Creek is the most prominent among them. The “cherry-stem” starts at the 5600 foot contour near the present location of the vehicle barrier and gate and continues to the USFS boundary. The White Mountain Wilderness Study Area is included in current, new wilderness proposals for the area.

For the Forest Service, the area 2.5 miles west of the Forest Service/BLM boundary is in Management Prescription 2, Proposed Wilderness. As shown by the project map in Appendix C, this Management Prescription is also north and south of the current road alignment. Similar to the BLM segment, the Furnace Creek Road was cherry-stemmed out of the Proposed Wilderness area. This Management Prescription was applied to the area in the 1988 Inyo National Forest Land and Resource Management Plan.

Direct and Indirect Effects—Wilderness

Alternative 1 - No Action

BLM Segment

Under the No Action Alternative BLM and the Forest Service will neither improve nor restrict access to the Furnace Creek Road. The current vehicle barrier and gate will be removed. A small number of vehicles (15-20) per year, mostly quads and motorcycles, will continue to use the road in its present condition. This alternative meets non-impairment criteria in that the proposed action involves no new surface disturbance or permanent placement of structures within the WSA. The effect of occasional vehicle use of the non-WSA corridor on the surrounding WSA’s overall sense of naturalness and untrammeledness, and opportunities for solitude and primitive

and unconfined recreation would remain negligible. These characteristics and values would remain strong and may be enhanced if deteriorating road conditions limit the number of vehicle users in the canyon.

Detrimental direct and indirect effects of use of the road in its current condition on the surrounding WSA's supplemental ecological values, however, would continue and would worsen over time. Comingling of vehicles and stream at the six stream crossings would affect water quality within the WSA downstream from the crossings. Diversion of water from the main stream channel by wheel ruts could desiccate riparian areas within the WSA. Unchecked erosion at headcuts such as at crossing #5 could lead to a general lowering of the water table and a shift from riparian to more upland species in the area. Loss of riparian vegetation in and adjacent to the roadbed would diminish the proper functioning of the stream system and the ability of the general riparian area to withstand and recover from flood events. All would diminish the value of the area as habitat for wildlife. In this sense, permitting use of the road in its current unmitigated condition would constitute a violation of the non-impairment standard for WSAs.

Where the road has deteriorated to the point of being impassible, vehicles will leave the road prism to travel in the riparian zones. As this would occur on USFS land, it would have no direct effect on the BLM WSA. However, such events could indirectly affect downstream areas by compromising the overall strength and resiliency of the riparian system.

Forest Service Segment

Direct and indirect effects are similar to those described above for the BLM Segment. The primary threat to wilderness values will be vehicles venturing into the proposed wilderness area to bypass impassable sections of the road. There is also a risk to wilderness values in the upper portion of the road, particularly where the road is in the Tres Plumas flat area. Without proper signage, some motorized users may purposely or inadvertently drive out of the road prism and create new routes as they travel in the Tres Plumas flat area.

Alternative 2 - Proposed Action: Road Closed to Mechanized/Motorized Vehicles

BLM Segment

Under this alternative, both the BLM and Forest Service sections of the road are closed at the approximate BLM WSA boundary. The closed route is decommissioned to facilitate vegetation recovery, and watershed treatments are applied to stabilize ruts and headcuts where needed. This alternative meets non-impairment criteria in that the proposed action involves no new surface disturbance or permanent placement of structures within the WSA. Ground disturbance will be kept to the minimum required to decommission the route, i.e., to the existing roadbed itself. All equipment used in decommissioning the route will be cleaned thoroughly to avoid contamination of the area by invasive plant species. Decommissioned areas will be monitored for new invasive species for 3 years. New invasive plant species will be removed.

Recovery of riparian vegetation and proper stream functioning condition would occur throughout the drainage. The naturalness and untrammelledness of the WSA would be enhanced under this alternative where all effects of vehicle use would be outside (downstream) of the WSA.

Vehicle use would no longer compromise riparian vegetation, wildlife habitat, or the proper functioning condition of the stream in the canyon. Opportunities for solitude and for primitive and unconfined recreation would be enhanced for hikers and equestrians who would no longer be required to share the same route with vehicles. This is the best alternative for the WSA with respect to maintaining the non-impairment standard and enhancing the area's wilderness character and values.

Forest Service Segment

Direct and indirect effects are the same as described above for the BLM Segment.

Alternative 3 - BLM Segment, Full-size Vehicle Use, Forest Service Segment, Closed to Mechanized/Motorized Use

Under this alternative, the BLM section of the road is open to full-size vehicle use, and the Forest Service section is closed. This would concentrate effects of full-size vehicle use on and along the portion of the road that cuts across the BLM WSA. Adverse effects would be mitigated by stabilizing stream crossings with riprap and installing rolling dips in the roadbed between crossings as needed to separate stream and road and to keep water in the natural stream course. These actions would all occur outside of the WSA and thus would meet non-impairment criteria, while mitigating adverse effects of vehicle use of the road on the WSA's supplemental natural values.

At crossing #5, the proposed action involves realigning 50 feet of road as far left as possible (approximately 10 feet south of the current alignment) to keep it out of the stream channel. Realignment of the Furnace Creek Road would need to avoid entering the Wilderness Study Area as the creation of new surface disturbances within a WSA is inconsistent with the non-impairment standard. However, if a small realignment of the road enters the WSA (affecting, for example, 500 square feet or less of the WSA) and can significantly improve drainage, stop erosion, and keep creek and road from comingling, the work may be justified as the minimum tool necessary to protect the WSA's supplemental resource values. The proposals for crossing #5 also include proposals to construct check dams in the stream channel below the roadbed to capture sediments. To avoid conflict with non-impairment guidelines, these check dams need to be constructed so as not to be permanent, i.e., easily removable without requiring reclamation. It may not be necessary to construct check dams if serious problems at crossing #5 become the trigger for seasonal road closures.

This alternative also contains a provision for designating a small turnaround above crossing #6 near the BLM/USFS boundary. This area will be located outside of any heritage sites, at a previously disturbed location. This will meet non-impairment criteria. The location will be well-marked and delineated on the ground.

Additional effects to the WSA may occur as a result of increased use of parking and camping sites within the BLM WSA in addition to use of already impacted sites in the area, due to the closure of the area to vehicles at the USFS boundary. As historic use of this area has been very light, these effects may not occur and may not constitute a problem. Visitors should be encouraged to park vehicles, particularly horse trailers and vehicles off-loading quads and bikes,

at the large, already impacted site below the 5600 foot contour and outside of the WSA boundary approximately 2.0 miles from the highway.

The entire Furnace Creek area will need to be monitored, especially during the hunting season of concentrated use, and corrective action (closure and restoration of new and expanded areas of disturbance within the WSA) taken if necessary.

Wilderness values of naturalness, untrammeledness, solitude, and primitive and unconfined recreation would probably remain unchanged under this alternative from what they had been before the interim vehicle closure went into effect. This could change if road improvements encouraged more vehicle use of the area or additional acres within the WSA were disturbed because of concentrated vehicle use of the BLM portion of the road.

Forest Service Segment

Wilderness values on the USFS side of the boundary would be enhanced under this alternative (compared to the No Action) and would be the same as those described in Alternative 2.

Alternative 4 - BLM Segment, Full-size Vehicle Use, Forest Service Segment, Multiple-Use Trail

Under this alternative, the BLM section of the road is open to full-size vehicles, and the Forest Service section is open to vehicles 50" wide or less. The effects of this alternative on the BLM WSA are the same as described in alternative 3. To avoid unnecessary (and illegal) impacts to the WSA at the turnaround site above crossing #6, the staging of horse trailers and vehicles carrying quads and dirt bikes will need to be monitored and may need to be restricted to the large parking area outside of the WSA below the 5600 foot contour.

Forest Service Segment

The Forest Service's Proposed Wilderness area begins approximately 2.25 miles from the Forest Service/BLM boundary. The main focus of Management Prescription 2, Proposed Wilderness is "to recognize and protect wilderness attributes of further planning areas recommended for wilderness pending Congressional designation. The emphasis is on providing traditional public uses during the interim that do not jeopardize designation as wilderness." This management prescription allows no road construction or reconstruction, but does allow traditional recreation uses, including motorized access, to continue unless wilderness values are seriously threatened.

Allowing motorized vehicles on the road, then, is not a violation of the Forest Plan direction for the area. By reopening the road to motorized use, though, there is the potential that wilderness values in the area could become comprised through excessive use and route proliferation. As stated earlier, however, use of the Furnace Creek Road has been extremely low and there is little rationale for expecting this trend to change in the future. The potential for route proliferation can be offset by appropriate signage and monitoring to ensure compliance with rules and regulations. It is not believed, therefore, that this alternative will have any direct or indirect effects on the wilderness values of the area nor will it jeopardize the area's designation as wilderness.

In Alternatives 4-6, motorized use on the Furnace Creek Road (or trail) within the Proposed Wilderness would be permitted. If route proliferation were to occur from this use, adverse effects

to wilderness character may result. Route proliferation and pioneering, however, has not occurred in the past in this section of road (at least there are no discernible signs on the ground that this has occurred) and there is little reason to believe it would occur in the future if the road was permanently reopened.

Alternative 5 - BLM and Forest Service, Multiple-Use Trail

BLM Segment

Under this alternative, both BLM and Forest Service sections are improved and/or realigned to allow vehicles of 50” in width or less. The smaller road width required for 50” vehicles will make it easier to keep all such improvements within the existing roadbed through the BLM portion of the route. The proposed realignment of 50 feet of vehicle route that may potentially extend outside of the existing road bed at crossing #5 could perhaps be avoided altogether. Adverse effects to supplemental resource values (soils, water, riparian vegetation, stream dynamics, and wildlife habitat) would be mitigated by riprapping stream crossings and installing rolling dips in the roadbed between crossings. This would meet non-impairment criteria of creating no new surface disturbance or permanent placement of structures within the WSA, while protecting supplemental resource values. This alternative has the additional value of not requiring a designated turnaround area at the BLM-USFS boundary. Vehicle use and its associated effects would not be concentrated exclusively on and along the BLM portion of the route through the WSA.

The construction of an engineered multiple-use trail through BLM and USFS land may attract additional vehicle users to the area. This would diminish opportunities for solitude and for primitive and unconfined recreation within sight and sound distance in the adjacent BLM WSA. The physical effects to the surrounding environment of vehicle use, however, would be dispersed throughout the vehicle corridor, rather than concentrated on BLM lands. The lower reaches of the canyon through the BLM WSA would be less likely to be affected by the use of new parking, staging, and camping areas by offroad vehicle users. The bulk of any additional effects would occur at parking and camping areas outside of any proposed wilderness areas near the terminus of the trail on USFS land.

Forest Service Segment

Indirect and direct effects are the same as those described for Alternative 4.

Alternative 6 - BLM and Forest Service, Full-size Vehicle Access

BLM Segment

Under this alternative the route would be improved and realigned in some places to accommodate full-size vehicle use to the USFS proposed boundary. Effects to the BLM WSA would be the same as Alternatives 3 and 4, except that like Alternative 5, vehicle use and any additional effects or physical disturbances it might require or cause, would not be concentrated on BLM lands but would be dispersed throughout the drainage to the USFS proposed wilderness boundary. Vehicle camping effects would be more likely to increase with full-size vehicle access. Fewer people would choose to camp or stage from the general parking area east of the BLM WSA boundary, if

they could bring all their gear substantially further up the canyon. It is likely that most of these people would try to camp as close to the terminus of the road at the USFS proposed wilderness boundary as possible. As there is quite a bit more buffer room on USFS land with respect to proposed wilderness, it is possible that an expansion of such use could be more easily accommodated on the USFS segment of the road than on BLM lands. In any case, this alternative eliminates the specific need for a turnaround area along the portion of the road that runs thru the BLM WSA. It is likely that thru traffic along this corridor by even full-size vehicles with proposed road mitigations successfully in-place and working, would have less of an overall detrimental effect on the BLM WSA's wilderness suitability, character and values, than would vehicle use under alternatives that stop or restrict such use short of the BLM/USFS boundary.

The construction of a more highly engineered road through BLM and USFS lands may attract additional vehicle users to the area. This would diminish opportunities for solitude and for primitive and unconfined recreation overall and in the immediately adjacent BLM WSA lands in particular. However, historical use of this area has been very light. Vehicle use would have to grow substantially beyond what it has been to seriously compromise use or designation of these adjacent WSA lands as wilderness.

Forest Service Segment

The direct and indirect effects would be similar as that described in Alternatives 4 and 5. Full size vehicles, however, have the potential to cause more damage in the event of route proliferation in the Tres Plumas flat area. The mitigation and monitoring measures describe in Chapter 2 will lessen the likelihood of route proliferation and threats to wilderness values in the area.

Cumulative Effects – Wilderness

BLM and Forest Service segments

This section considers the effects of the proposed alternatives in conjunction with all activities past, present, or in the reasonably foreseeable future, that might impair the Forest Service Proposed Wilderness (PW) and BLM Wilderness Study Area's suitability for inclusion by Congress in the National Wilderness Preservation System. In the past, the area has been affected by wild horses, equestrian, grazing and off-highway vehicle use, particularly during hunting season. These effects are still present today. Although the grazing allotment on USFS land has been terminated, there is still an active allotment in the BLM portion of the canyon. Over the last five years, this allotment has seen minimal or no use during the permitted fall season.

Alternative 1

Under this alternative, degradation of the PW and WSA's streamside environment by unmitigated vehicle use of the road would continue. This would lead to further degradation of the area's supplemental resource values. Although wilderness character and values are not expected to change under this alternative in the short-term, substantial losses of resource values and ecological function over time could impair the area's naturalness and untrammeledness, thus impairing the PW and WSA's suitability for wilderness.

Alternative 2

Vehicle closure and recovery of the streamside environment would protect the WSA and PW's supplemental values. Decommissioning the road would increase the naturalness and untrammeledness of the general area, including that of the WSA and PW. This alternative would enhance and expand opportunities for solitude and for primitive and unconfined recreation throughout the canyon.

Alternative 3 and 4

Alternatives 3 and 4 would protect the WSA and PW's supplemental values by mitigating effects of the road/trail on the streamside environment. Any intrusion of the realignment into undisturbed areas of the WSA is inconsistent with the non-impairment standard. This work would be justified as the minimal tool necessary to protect the natural resources of the canyon. Approximately .01 acres out of a total 11,200 acres of WSA would be affected by this proposal. Additional acres within the WSA could be impaired by confining and concentrating vehicle use in the BLM portion of the canyon. New parking and camping areas may develop (and would have to be reclaimed) in addition to the already-impacted turnaround site at the BLM/USFS boundary. Road/trail improvements could attract more vehicle users to the area. This would diminish opportunities for solitude and for primitive and unconfined recreation within sight and sound distance of the road or trail.

Alternative 5 and 6

Mitigating effects of a thru-route through BLM WSA and USFS land to the USFS proposed wilderness boundary, would protect the streamside environment and supplemental resources of the BLM WSA from further degradation. A relatively small sliver (500 square feet or .01 acres) of the 11,200 acre BLM WSA would be impaired by the realignment of 50' of road/trail inside of the WSA at crossing #5. Proposed mitigations for a trail (Alternative 5) may have less of an effect on the WSA than those for a road (Alternative #6). This is because work on a 50" trail may not need to exceed the existing roadbed or area of previous disturbance. Alternatives 5 and 6 preclude the necessity of creating a vehicle turn-around area at the BLM/USFS boundary. Effects from use of new areas to park and camp would occur mostly on USFS land (outside the BLM WSA). As in Alternatives 3 & 4, road/trail improvements could bring more vehicle users into the area. Opportunities for solitude and for primitive and unconfined recreation would be diminished under all alternatives bringing more vehicle users into close proximity of the WSA and PW.

Recreation and Social

Indicators

- Miles motorized, multiple use, and closed
- Recreation Opportunity Spectrum

Existing Conditions

Furnace Creek is located in a remote, rural area of the Inyo National Forest on the eastside of the White Mountain Range. Furnace Creek is accessed through Fish Lake Valley in Nevada with 99% of the watershed located in the state of California.

The Furnace Creek Canyon is one of a handful of motorized canyons on the east side of the White Mountains. What makes this canyon unique is the distance that the road travels and the management prescription assigned to the canyon. Much of the east side of the White Mountains was identified as an Inventoried Roadless Area in the 1970s and was subsequently assigned Management Prescription #2, Proposed Wilderness in the 1988 Inyo Land and Resource Management Plan. Management Prescription #2 prohibits road construction and reconstruction. Furnace Creek was specifically cherry-stemmed out of the surrounding roadless area in these inventories. It is one of the few cherry-stems in the area that penetrates deep into the White Mountains.

There is another cherry-stem approximately 20 miles north of Furnace Creek for a road that goes up Leidy Creek. This road reaches an elevation of 7200' (compared to Furnace Creek that goes to 10,000 feet). Other canyons to the north and south of Furnace Creek show motorized access in the 1991 OHV Inventory, however, the future of motorized use in these canyons is uncertain. While the 1991 Inventory shows motorized access in Indian Garden Canyon to the south of Furnace Creek and Iron, Toler, and McAfee Canyons to the north, these routes are quite short and are within the Roadless Area Review and Evaluation II Study Area. Furthermore, the route in Indian Garden Canyon is within Forest Service Management Prescription #2 which prohibits road construction or reconstruction. Any reconstruction activities within the inventoried roadless area, while not prohibited by Forest Service management prescription, would be extremely controversial. Use data for these motorized routes is not available; however, it can be assumed that use is very low. It is also likely that at least some of these routes are impassable at the Forest Service boundary.

A more popular OHV route is 15-20 miles south of Furnace Creek up Wyman Canyon. Wyman Canyon is a more likely destination than Furnace Creek for out-of-area visitors to the White Mountains. As described elsewhere in this document, it is unlikely that the Furnace Creek will ever be more than an area that is used primarily by Fish Lake Valley residents. The road's importance to these users, however, became very clear during the public meetings held in conjunction with the preparation of this EA. The recreational value of this road becomes even more profound when roadless inventories and Forest Service management prescriptions are considered: there are limited motorized opportunities into the White Mountains from the east and with the current management strategy these opportunities are likely to decrease over time.

Very limited hiking and equestrian use occurs in the Furnace Creek drainage, as well as some motorized use. The equestrian use is from residents living in the Fish Lake Valley and an occasional grazing allotment permittee checking for cattle. When the grazing allotment in Tres Plumas flat was active, the equestrian use would have been daily with the permittee using the corrals in the upper part of the drainage as a campsite for one or two months. Both the Forest Service and BLM allotments have been inactive for several years and it is unknown if this type of use will occur in the future. The hiking use is an occasional person or small group. Discussions with local residences and members of the environmental community indicate that trips through the drainage may occur by two to three groups a year with no more than four individuals in the group. There are a couple members of the local community who walk the lower part of the canyon for exercise on a weekly basis but they travel no more than five miles up the canyon at a time.

The high use season is during the fall hunting season when there is use of a hunter's camp near where the road prism was closed approximately 7 miles up the drainage. The hunter's camp is most likely used two or three weekends a year. During this time is when the majority of the motorized use occurs, with full size vehicles accessing the area to the road failure and then ATVs, quad-runners (quads), and motorcycles traveling beyond this point. The motorized use is estimated at between 15 and 20 vehicles per year.

The one measure for recreation will be the change between miles of motorized road, multiple use trail, and closed road. This measure reflects the opportunities available for the recreationist. The second measure will be any changes in the Recreation Opportunity Spectrum (ROS) class. The ROS classes were set during the Forest Service's 1988 Land and Resource Management Plan (LRMP) and were reviewed in a public process. ROS provides a framework for stratifying and defining classes of outdoor recreation environment, activities, and experience opportunities. The settings, activities, and opportunities have been arranged along a spectrum divided into six settings: Primitive, Semi-Primitive Non-Motorized, Semi-Primitive Motorized, Roaded Natural, Rural, and Urban. The opportunities along the spectrum range from Primitive in which there would be a very high probability of solitude, self reliance, challenge, and risk to Urban where these qualities are relatively unimportant and subordinated to the social experience (USDA FS 1986).

The lower part of the watershed outside of the immediate road prism is a legislatively designated BLM Wilderness Study Area (WSA) (Section 105, California Desert Protection Act of 1994). See previous Section 3.5 Wilderness for BLM management direction of WSAs.

The upper part of the watershed is designated under the Inyo LRMP as Management Prescription #2 Proposed Wilderness (see project map, Appendix C). This prescription has the following management direction:

Facilities

- Allow no road construction or reconstruction
- Maintain, reconstruct, or construct trails on the current inventory according to establish Forest-wide priorities

Recreation

- Allow traditional recreational uses, including motorized access, to continue unless wilderness values are seriously threatened. Allow OHV use on designated routes
- Manage for Primitive or Semi-Primitive Non-Motorized ROS classes

The BLM section of the road is a non-WSA “cherry stem” through the White Mountains Wilderness Study Area. The road portion in the “cherry stem” is managed similar to the management prescription stated below.

The area in which the action alternative occurs is under Management Prescription #17, Semi-Primitive Recreation (see project map, Appendix C). The purpose of this prescription is to limit vehicular access to existing designated routes to protect and maintain recreation and/or wildlife values. Also, under this prescription is the following management direction:

Facilities

- Maintain existing roads at their current maintenance levels after designation

Recreation

- Allow dispersed recreation activities appropriate in Primitive, Semi-Primitive Non-Motorized and Semi-Primitive Motorized ROS classes
- Manage recreational and scenic opportunities to maintain or enhance their values
- Provide for trail access consistent with management objectives for the area and ROS class
- Allow newly developed recreational facilities consistent with ROS class

The Furnace Creek Road was designated under the LRMP prescription #17 as an open Level II road. The ROS class for this area is Semi-Primitive Motorized.

Direct and Indirect Effects—Recreation and Social

Alternative 1 – No Action

In the short term, the use opportunities provided by the road will not change under this alternative. The road is usable to the Forest Service boundary for high clearance vehicles, ATV's, quads, and motorcycles. The BLM currently maintains this management direction and, as a result, there will be no change for this section of the road (approximately 1.25 miles). Hunting and other activities will still occur with or without motorized vehicles.

On the Forest Service segment, the road is currently not meeting the intent of Management Prescription #17, Semi-Primitive Recreation and its current ROS class of Semi-Primitive Motorized. The prescription states that the road must be maintained to its assigned level. Since the road is impassable except for motorcycles, and has not been maintained for many years in the National Forest section it is in noncompliance with the management prescription. The road will continue to deteriorate and motorized use will either become nonexistent over the long run on the Forest Service section or users will seek out new routes and further effect resources in the canyon. If vehicles avoid the area, a long term decrease in motorized vehicle dependant hunting activities in this area is expected along with a negative effect on any social or economic benefits that this activity brings to the small town of Dyer, NV. Hunting season is the highest use time of the year in the White Mountain Range of the Inyo National Forest (USDA Forest Service, 2002a).

Most hunting is done with both full sized and OHV vehicles. This is evident by the current hunter's camp in the drainage which was built where the road was no longer passable (approximately 1.5 miles from the gate). The old hunter's camp had been located by the corrals (approximately 5 miles up canyon) when the road was drivable.

The ability for persons with disabilities to access this area will move from motorized access to equestrian dependent access. Some disabled persons have access to motorized equipment including off road wheelchairs and will continue to have access to the canyon. When the condition of the road deteriorates and the only equestrian use is available for travel, disabled access to the area will require stock that is trained to work with disabled persons as well as additional facilities for the loading and unloading of persons from the stock. This could be a small business endeavor for a person with this type of stock. It will also require more logistical support and planning ahead for trips. At that time it may be prudent for management to issue permits to Outfitter and Guides that can support this type of an operation for disabled recreationists.

This alternative will have little effect on the equestrians, mountain bikers, and hikers accessing the canyon. With the lack of road maintenance over the long term the recreation opportunity for equestrians and hikers may increase in the foreseeable future. The long term effect of this alternative will be to move the area to a Semi-Primitive Non-Motorized or Primitive ROS class in the future.

This alternative does not preclude the proposed wilderness designation on the National Forest lands or affect the Wilderness Study area designation on the BLM lands.

Alternative 2 – Proposed Action: Road Closed to Mechanized/Motorized Vehicles

The use of the road is changed under this alternative, as approximately 8.5 miles of road are closed to all motorized use. This changes the management prescriptions for both the BLM and Forest Service LRMP as well as alters the ROS class to Semi-Primitive Non-Motorized in the short term. Eventually the ROS class would become Primitive.

This alternative precludes motorized recreation including the majority of hunters, for a longer stretch of the road (approximately 8.5 miles) than Alternative 1. Motorized recreationists will move to other areas on the Forest and possibly out of the Fish Lake Valley. Some users may utilize other roads to access the eastern White Mountains. Historic use of the Furnace Creek Road is low and overwhelmingly local, so any displacement of use is expected to have a negligible effect on the local economy (see the Economics section for a more detailed discussion of this topic).

The present hunter's camp will have to be abandoned and rehabilitated. The lower part of the canyon does not lend itself to a hunter's camp so this type of use may move into Dyer for camping or other areas of the Forest where there is existing campsites. This may create some competition for sites especially during the heaviest use hunting times, usually the first two weeks of the season. It could result in additional hunter's camps being developed in other dispersed areas of the White Mountains.

As discussed in Alternative 1, the access for disabled persons changes from motorized to non-motorized under this alternative. Presently the closest equestrian outfitter to service disabled persons is Freedom in Motion in Bishop, California. Currently, they do not provide services to the disabled public on the Inyo National Forest or Ridgecrest BLM. So unless the agencies request the services of a group to facilitate access by disabled persons, it is likely they will be precluded from accessing the Furnace Creek drainage.

While mountain biking is not be permitted in this alternative, hiking and equestrian use of the area will still occur. Without a maintained road, the recreation opportunity in the drainage will exhibit trail-like characteristics as the road deteriorates over the long term. A large storm event could destroy the road prism and make equestrian use difficult without some maintenance.

This alternative shifts the assessment area closer to a wilderness setting. This will not preclude any wilderness designation activities. The cherry stem road will need to be removed from the BLM and Forest Service LRMP maps to ensure consistent management is applied for both agencies. Expanding the proposed wilderness boundary on the Inyo National Forest and wilderness study area boundary for the Ridgecrest BLM lands may be recommended future action during LRMP revision.

Alternative 3 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Closed to Mechanized/Motorized Use

The use of this road would only change on the Forest Service section of the road. The road is open for the whole BLM section to full size vehicles for 1.25 miles while the Forest Service portion would remain closed for 7.25 miles. This changes the management prescription for the area for the Forest Service LRMP as well as alters the ROS class to Semi-Primitive Non-Motorized in the short term. Eventually the ROS class would become Primitive.

The motorized recreationists will have the same access as found in Alternative 1 for the BLM section of the road. Reconstructing the road to standard will increase the use in this area, at least in the short term for all motorized dependent activities. The increase in use will not be significant as the current use is very light compared to other areas of the Forest. This is not expected to change.

The current hunter's camp immediately east of the start of the cherry stem through the BLM WSA will remain. Hunters will most likely move the camp to the designated turnaround at an already impacted site under this alternative (east of the BLM/Forest Service boundary). This has been a common occurrence on BLM lands. This would be allowable under current BLM management direction as long as the size of the previously disturbed area remains essentially the same. The small turnaround and campsite area east of the BLM/USFS boundary is not an appropriate site for large numbers of horse trailers or other vehicles to off-load stock, quads, and dirt bikes, due to these WSA concerns. These vehicles will be encouraged to use the more general parking and staging area near the present gate approximately 2.0 miles west of highway 264 and east of the WSA boundary. Use of the turnaround area for staging and offloading of horses and vehicles may be restricted if monitoring of use shows unacceptable impacts to the WSA.

The closure on the Forest will result in the impacts stated in Alternative 2.

Alternative 4 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Multiple-Use Trail

This alternative will not change the current management prescriptions for either BLM or Forest Service LRMPs. The ROS classes will remain the same. The BLM open road mileage is the same as Alternative 3. The Forest Service section will change to multiple use trail mileage of approximately 8.5 miles.

There is a potential effect at the small turnaround and camping area at the end of the BLM section because recreationists may want to trailer their OHVs or horses to the end of road. Under BLM's Interim Management Guidelines for WSAs, these effects cannot be allowed to cause any new surface disturbance beyond what is currently present. Use here will need to be monitored. Visitors will be encouraged and may be restricted to stage from the general parking area east of the WSA boundary. Again, adequate signage will be used to inform users of where the most appropriate location for parking is.

Disabled persons are able to access the area through motorized means including motorized trail wheelchairs, quads, and horses. A loading ramp will be needed at the general parking area to accommodate such persons.

Other impacts for the BLM section are the same as found in Alternative 3. The beginning of the Forest Service Multiple-Use trail will be engineered to restrict use to motorcycles, quads, horses and hikers. The trail will be well signed and the area where the trail ends will have an obviously signed terminus point. As with all alternatives that facilitate use to the end of the road, the Tres Plumas flat area will be monitored for illegal use. If use is detected away from the road prism, corrective measures will be immediately taken.

The existence of a Multiple-Use Trail will increase use in this area. There is an expected 25% increase in use based on historical changes in trail management especially with upgrades (Julie Molzahn, Forest Service Recreation Specialist, Personal Experience). This increase is usually short-term for 3-5 years then use will level off in the long-term. The expectation for all recreation on the road and trail is a 10% increase over the long term unless the residences of Fish Lake Valley work with the agencies to promote the project improvements. If this occurs the 25% increase in use will be sustainable in the long term. Given the remoteness of the area, lack of services, and ruggedness of the road, it is expected that any increase in use will be minimal and short-term. With improvements, the long-term use of the road is expected to remain overwhelmingly local.

Alternative 5 – BLM and Forest Service, Multiple-Use Trail

This alternative does not change the current management prescriptions for either BLM or Forest Service LRMPs. The ROS classes remain the same. There is no full-size road mileage except in the very lower end of the BLM lands (approximately 2.0 miles). The multiple-use trail mileage for both agencies is approximately 8.5 miles.

There is an effect at the turnaround east of the BLM WSA boundary (approximately 2.0 miles from Highway 264) as most recreationists will want to trailer their OHVs or horses here. As this

area is outside of the WSA and is not subject to WSA restrictions, this area could be expanded as needed to accommodate trailers as well as regular parking. Some kind of full-size vehicle barrier may be needed beyond this parking area to keep full-size vehicles from using the multiple-use trail.

The remainder of the impacts is the same as stated in Alternative 5 for the trail.

Alternative 6 – BLM and Forest Service, Full-size Vehicle Access

This alternative will result in bringing the road back to the standard stated in both agency LRMPs and reopen approximately 8.5 miles of road. The management prescriptions and ROS classes do not change under this alternative.

This allows motorized recreation full use of the drainage as existed before 1984. There is an expected increase in use of all motorized activities of at least 25% in the short term and 10% in the long term. During hunting season use could increase up to 50% for the short term as hunters try out a “new” area that has not been open for many years. However, as stated above, the use here is very light relative to the rest of the Forest and BLM areas so impacts will be minimal. Any socioeconomic impact to the Fish Lake Valley is influenced by the level of promotion although this impact will still be minimal in terms of use increases being experienced elsewhere on the lands managed by both agencies.

There could be an increase in hunter developed campsites. This activity will be monitored in conjunction with the heritage resource concerns in the drainage. The old hunter’s camp at the corral will be used. To offset impacts, signage will be used to identify where recreationists can camp.

This alternative allows full access by persons with disabilities to the project area.

This alternative has a minimal impact on equestrian and mountain bike users. These recreationists already share roads and trails in other areas managed by both agencies. Hiking a trail or old road prism is a more highly desired experience than sharing a road with vehicles. This will give those who hike easier access to the proposed wilderness area on the Inyo National Forest but will not enhance the experience on the BLM study area. There will be a decrease in hikers using the area for the short term. Hiking use will shift to other areas without roads for the long term.

Cumulative Effects—Recreation and Social

All Alternatives

This section discusses the cumulative recreation effects of this action, when combined with all other past, present, and reasonably foreseeable actions. Past, present, and reasonably foreseeable actions that may cumulatively affect recreational opportunities in the Furnace Creek area include the BLM’s Route Designation in the Northern and Eastern Mojave Desert Plan and the Forest Service’s Route Designation Process. While the BLM Plan was completed in June 2004, the Forest Service designation project is only in the beginning stages. In terms of cumulative effects, a decision by these efforts to close roads on the eastern side of the White Mountains could push more use into the Furnace Creek area, if a decision is made to reopen the road. The increased

level of use in Furnace Creek is impossible to quantify and purely speculative as at this point the Forest Service Route Designation process is just underway.

Likewise, Congressional action on the wilderness proposal on the east side of the White Mountains may change the availability and distribution of recreation in the area. Again, without knowing the outcome of this wilderness proposal, the effects of a Congressional wilderness designation are speculative and difficult to determine.

Visual Quality Objectives

All Alternatives

The 1988 Inyo LRMP identifies the Furnace Creek Road corridor as having a “Partial Retention” Visual Quality Objective (VQO). The LRMP directs management of this VQO as “Human Activity may be evident but must remain subordinate to the characteristic landscape” (Inyo LRMP Final EIS, p.544).

Under the No Action, there is potential for the conditions in the Furnace Creek area to deteriorate to a condition that is inconsistent with this VQO. Particularly problematic would be the expected continued route proliferation away from the road prism under this alternative.

The remaining alternatives are consistent with the VQO for this area. The road improvements and realignments will help ameliorate the road’s impact to the area’s riparian and non-riparian resources and keep motorized users on the road prism. It is expected that while human activity will be evident in the Furnace Creek drainage, this activity will be subordinate to the landscape.

Heritage Resources

Measures

- Effects to cultural/heritage resources
- Tribal access to subsistence resources

Regulatory Framework

The Bureau of Land Management (BLM) and the USDA Forest Service (Forest Service) propose to identify, evaluate, treat, protect, manage, and consult about historic properties, as stated in the: Antiquities Act of 1906 (34 Stat. 225; 16 U.S.C. §§431 433), Historic Sites Act of 1935 (49 Stat. 666; 16 U.S.C. §§461 467), National Historic Preservation Act of 1966 (NHPA), as amended (80 Stat. 915 et seq.; 16 U.S.C. §470 et seq.), National Environmental Policy Act of 1969 (NEPA), as amended (83 Stat. 852 et seq.; 42 U.S.C. §§4321 4347), Archaeological and Historical Data Preservation Act of 1974 (88 Stat. 174; 16 U.S.C. §469), American Indian Religious Freedom Act of 1978 (92 Stat. 469; 42 U.S.C. §1996), the Archaeological Resources Protection Act of 1979, as amended (ARPA) (93 Stat. 721 et seq.; 16 U.S.C. §470 et seq.); and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (104 Stat. 3048 3058; 25 U.S.C. §§3001 3013); and as mandated under Executive Order 11593, entitled Protection and Enhancement of Cultural Environment, Executive Order 13007, entitled Indian Sacred Sites, Executive Order 13175, entitled Consultation and Coordination with Indian Tribal Governments; and Executive Order 13287, entitled Preserve America.

Existing Condition

Furnace Creek Road Programmatic Agreement

Compliance with the aforementioned laws and regulations will be accomplished pursuant to procedures outlined in the *Programmatic Agreement among the USDA Forest Service, Pacific Southwest Region, The Bureau of Land Management (California), the Bureau of Land Management (Nevada), the California State Historic Preservation Officer, and the Nevada State Historic Preservation Officer Regarding the Furnace Creek Road Project* (USDA FS 2005). The effective date for this document—written specifically for the Furnace Creek Road Project—was January 26, 2006.

The Furnace Creek Road Programmatic Agreement (PA) outlines the timelines and procedures the Agencies will employ to meet their responsibilities under Section 106 of the NHPA and related authorities. A PA is preferred because the undertaking involves lands managed by two federal agencies and the project is interstate in scope with sections of Furnace Creek Road located in both California and Nevada. The Agencies propose to meet those requirements by implementing a phased identification and evaluation approach pursuant to 36 CFR §800.4(b)(2) of the NHPA.

Area of Potential Effect

Section 106 of the National Historic Preservation Act defines an area of potential effect (APE) as “...the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking” (36 CFR §800.16(d)). It does not limit consideration of potential effects to resources within the project’s defined limits nor does it limit analysis to lands under the agencies’ jurisdiction.

In consultation with the California State Historic Preservation Officer (SHPO), the Nevada SHPO, the Forest Service Region 5 Heritage Program Manager, and BLM State Archaeologist, the APE for the Furnace Creek Road Project was determined to include the extant length of the Furnace Creek Road from State Highway 264 to the western edge of Tres Plumas Meadow. Within those parameters, the APE is defined as a 200 foot (60 meters) wide linear corridor centered on the existing Furnace Creek Road. The agencies have proposed to reroute the road around several riparian zones near the bottom of the corridor to minimize environmental impacts. In these areas, the APE was expanded to include the locations of the proposed reroute. The APE was sometimes expanded in the field based on the professional judgment of the cultural resources specialist. This was common when topography was characterized by relatively flat terraces and benches. Conversely, there were locations where local topography and/or vegetation dictated that the APE be reduced to less than 200 feet. When site boundaries extended beyond the 200 foot corridor, the site was surveyed, recorded, and mapped in its entirety.

Heritage Resources Inventory

BLM and Forest Service archaeologists conducted systematic survey of the Furnace Creek Road APE in August and September of 2004. A second follow-up investigation was completed on Forest Service lands by a Forest Service archaeologist in September and October of 2005. The objective of both investigations was to identify archaeological and historical properties and to assess potential adverse effects to those resources based on parameters outlined in each of the six proposed alternatives. The data collected will also be used to evaluate each site’s eligibility to the National Register of Historic Places (NRHP). The field inventory consisted of pedestrian transects spaced approximately 30 feet apart. Where terrain permitted, two parallel transects were walked on each side of the road, thereby covering an area roughly 100 feet each side of the center line.

The archaeological investigations resulted in the identification of 34 sites. Three of the 34 sites are located entirely outside the APE. Of the 31 properties within the APE, 11 sites represent historic activities that postdate Euro-American contact with Native populations. Twenty sites are limited to precontact (prehistoric) components. Two sites are multicomponent properties that produced evidence of both prehistoric and historic materials. The chronological relationship of the remaining site can not be established with certainty. Eleven sites are located on lands administered by the BLM; the remaining 23 sites were identified on lands administered by the

Forest Service. In addition to 34 sites, more than 70 isolated artifacts were identified outside the perimeters of defined site boundaries.

A total inventory of 38 sites was reported in the January 2005 Environmental Assessment and a preliminary project report (Hilton and Baskerville 2005). The number has been reduced based on more extensive investigations conducted during the second field survey. The discrepancy is a product of the following adjustments: five sites were determined to be less than 50 years of age (and therefore of no archaeological significance), two prehistoric sites were combined into a single site, and two previously unrecorded historic sites were added to the inventory.

Historic sites are dominated by short-term hunting or recreation camps and camps associated with livestock grazing. Other historic site types include the deteriorating remains of a small wooden bridge and materials associated with irrigation activities. Historic camps are generally characterized by discarded tin cans and expediently constructed fire rings. Sites associated with prehistoric activities include lithic scatters, subsistence-related artifacts and features, and evidence of architectural features. Multicomponent sites contain evidence of both prehistoric and historic human behavioral activities.

Native American Consultation

In accordance with Sections 101(d)(6)(B) and 110(a)(2) of NHPA, the American Indian Religious Freedom Act (as amended), the Native American Graves Protection and Repatriation Act, Executive Order 13007, Executive Order 13175, and 36 CFR §800.2(c) the BLM and Forest Service have consulted with the Paiute-Shoshone Indians of the Lone Pine Community, Ft. Independence Community of Paiute Indians, Big Pine Paiute Tribe of Owens Valley, Bishop Paiute Indian Tribal Council, Timbisha Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe (Benton, CA), and Walker River Paiute Tribe. Additional consultation with Tribal governments will be conducted in compliance with the aforementioned laws and statutes and according to the specific criteria outlined in the PA.

Additional Consultation

In accordance with Section 110(a)(2) of the NHPA and 36 CFR §800.14(b)(2), the BLM and Forest Service have consulted with the California SHPO, the Nevada SHPO, and the Advisory Council on Historic Preservation (ACHP), and have routinely provided notice of consultation meetings to the interested public. After being invited to participate in the drafting of the PA (pursuant to 36 CFR §800.6(a)(1)), the ACHP declined to participate in the Furnace Creek Project (ACHP 2005). The Inyo National Forest, as lead agency, placed a legal notice in the Inyo Register on February 11, 2006. The same notice was placed on the Inyo National Forest Furnace Creek website on February 10. Both notices stated the intent of the PA and the signatories to the agreement. The notice included a Forest Service contact name and number so interested parties could obtain a copy of the document.

Direct and Indirect Effects—Heritage Resources

Three of the 34 sites identified in the Furnace Creek corridor are located outside of the project APE and are therefore not threatened by any of the six alternatives. In this section we discuss

possible direct and indirect effects individual alternatives may have on the remaining 31 properties. Under Section 106 of the NHPA, only historic properties that are eligible for or are listed on the NRHP are analyzed for potential effects. The criteria that are used to determine a property's historic significance are listed in 36 CFR §60.4. At the time of this writing, determinations of eligibility have not yet been completed for the Furnace Creek heritage resources inventory. Once that process has been completed, those sites determined not eligible will be dropped from further management considerations. Consequently, the number of properties that will be analyzed for potential effects will most likely diminish in number.

Definitions

No Historic Properties Affected (No Effect): 36 CFR §800.4(d)(1) states that no historic properties will be affected “If the agency official finds that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them”

Adverse Effect: 36 CFR §800.5(a)(1) states that “An adverse effect is found when a undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.”

No Adverse Effect: 36 CFR §800.5(b) states that “The agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines, to avoid adverse effects.”

Potential Effects to Heritage Resources

All potential effects to heritage resources are summarized in this section. Different alternatives will necessitate different combinations of the effects enumerated, but the nature of the potential effects is summarized here for the convenience of the reader and to minimize redundancy.

Specific mechanisms—and the degree to which those mechanisms may affect heritage resources—are discussed in the individual Alternatives sections below.

The mechanisms with the potential to directly affect heritage resources may include:

- Initial maintenance activities that would be required to bring the existing road into serviceable form. These activities may include grading of the existing road surface, rock removal or relocation, and temporary parking accommodations for maintenance vehicles.
- Proposed road realignments near the bottom of the corridor.
- Proposed construction of a turnaround on BLM administered lands between crossing #6 and the Forest Service boundary.

- Installation of water-control devices.
- Road rehabilitation and/or restoration activities to defined segments of the existing road. Where rehabilitation and/or restoration include ground disturbance, the potential exists to affect heritage resources.

The mechanisms with the potential to indirectly affect heritage resources may include:

- General mechanized and/or motorized vehicular use of the road corridor.
- User-created route proliferation.
- Increase in dispersed camping.
- Soil compaction due to road use and, in some locations, prolonged camping activities.
- Ground-disturbing activities associated with periodic road maintenance.
- Translocation of cultural materials by fluvial processes due to alterations in local topography associated with construction of the existing road grade.

Although the preceding list identifies potential adverse effects, the NHPA clearly states that:

“...A finding of adverse effect on a historic property does not necessarily require an EIS under NEPA. (36 CFR §800.8(a)(1))”

Section 800.8(c)(4) also clearly demonstrates that an EA can be used despite the potential for adverse effects to historic properties:

“If the agency official has found, during the preparation of an EA or EIS that the effects of an undertaking on historic properties are adverse, the agency official shall develop measures in the EA, DEIS, or EIS to avoid, minimize, or mitigate such effects in accordance with paragraph (c)(1)(v) of this section....”

Mitigation measures have been developed to avoid, minimize, or mitigate adverse effects at Furnace Creek through the means of a PA pursuant to 36 CFR §800.6(a)(1)(C). Mitigation measures for each of the potential effects above are reviewed in the following section.

Potential Mitigation Measures

The intent of this section is to evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties pursuant to 36 CFR §800.6. In this section we evaluate potential effects to heritage resources defined in the previous section and suggest corresponding mitigation measures. Different alternatives will necessitate different combinations of mitigation measures, but all potential mitigation measures are summarized here for the convenience of the reader and to minimize redundancy. Specific mechanisms and the degree to which heritage resources may be affected by each mechanism are discussed in the appropriate alternative sections below. These mitigation measures were developed and discussed in greater detail in the PA. In the discussion below, the potential effect, listed first in italics, is paired with the corresponding mitigation measure(s).

- *Initial maintenance activities required to bring the existing road into serviceable form.* If down-grading of the road bed is necessary to prepare the existing road for vehicle traffic, certain measures will have to be implemented to preserve the integrity of undisturbed subsurface cultural deposits. Mitigation of potential adverse effects would be site specific. In most locations no down-grading would be necessary. In many other

locations there are little or no soils and sediments and, as a consequence, no subsurface cultural deposits. Where ground disturbance is required within the boundaries of an archaeological site, grading activities would be limited to the existing road footprint unless otherwise proposed in the EA. Data recovery would be employed within the road corridor when no other mitigation alternatives exist. Rock removal and relocation would be monitored to make certain that no cultural materials are impacted. Temporary parking areas associated with short-term road maintenance would be selected outside the boundaries of archaeological sites.

- *Road realignments near the bottom of the corridor.* Only one archaeological site is located in close proximity to any of the proposed road realignments. As currently designed, however, the realignment does not intersect the site boundary. If the route of the actual realignment needs to be altered based on unforeseen circumstances, the engineers will consult with archaeologists to design a route that avoids the site. If that becomes impractical, data recovery methods will be used to mitigate any potential adverse effects.
- *Construction of a turnaround on BLM lands between crossing #6 and the Forest Service boundary.* One small archaeological site has the potential to be impacted by the construction of the turnaround (as currently proposed). This potential effect can easily be eliminated by shifting the location of the turnaround a short distance to avoid the small site.
- *The installation of water-control devices.* The proposed locations of nearly all water control devices are clearly delineated in Section 2.6 of this document and the locations identified intersect no archaeological sites. The single exception is the geographic area between crossing #14 and the proposed wilderness boundary on Forest Service lands. Water bars would be installed “as needed” along this segment of road. The hydrologist(s) will consult with an archaeologist to ensure that this action will not adversely affect archaeological sites.
- *Road rehabilitation and/or restoration activities.* Where road rehabilitation and/or restoration activities are proposed, the effect on heritage resources must be considered in advance. Where possible, ground-disturbing decompaction activities will be discontinued within the boundaries of historic properties. If restoration activities are considered essential within the bounds of a site, subsurface testing will be conducted in advance to determine the depth of soils and sediments and the extent of subsurface cultural deposits. Where the contents of a site are limited to surface deposits—and it has been determined that no surface materials will be affected—decompaction of the road surface would pose no threat to the resource. As a final option, data recovery measures could be employed to mitigate any potential adverse effects. An archaeologist will be consulted prior to initiation of rehabilitation activities to discuss the techniques to be employed.
- *General use of the road corridor.* The Furnace Creek PA, in a section addressing the issue of existing roads, states that continued or reuse of the road and associated trails is

understood to not have an adverse effect on historic values (a) when a maintained physical barrier along the route prevents further damage to heritage resources and (b) where the roadway was cut through a property through which it passes (USDA FS 2005:17). Therefore, general use of the existing roadway in and of itself is not considered an adverse effect. To comply with the stipulations, it will be necessary in some locations to erect physical barriers that will keep mechanized vehicles from exiting the established road corridor and adversely effecting heritage resources. Physical barriers may take the form of strategically arranged boulders, logs, gravel berms, constructed barriers, or other means. Signage stating that off-road vehicle use is prohibited due to sensitive resource concerns may also be placed in strategic locations.

- *User-created route proliferation.* This potential problem is more likely to be encountered in the extreme lower and upper elevations of the Furnace Creek corridor due to topological constraints in the middle elevations where steep slopes dominate. Potential adverse effects could be minimized by the installation of educational signage, particularly at the proposed turnaround or other permanent parking accommodations. Monitoring by law enforcement officials and responsible members of the public will also help to discourage route proliferation. If particular locations become problematic, physical barriers could be constructed to eliminate unauthorized traffic near heritage resources.
- *Increases in dispersed camping activities.* Dispersed camping activities pose a threat to heritage resources as choice camping locations today often mirror locations favored in the past. Contemporary camping-related activities can adversely affect the resource through the excavation of hearths and human waste pits, the collection of surface artifacts, the fragmentation of artifacts by means of trampling, and subsurface physical alteration by means of soil compaction. These potential adverse effects could be mitigated through the use of signage stating that the area is closed to camping due to the presence of sensitive resources. Monitoring by law enforcement officials and responsible members of the public will also help to discourage camping in sensitive locations. If particular problems persist, another mitigation option may include buffering through the addition of a natural padding across portions of some sites, effectively isolating the cultural materials below.
- *Soil compaction due to road use and camping.* Soil compaction is more likely to be a potential problem in the extreme lower elevations of the Furnace Creek corridor where sediments have collected—sometimes in significant accumulations. Fluvial processes transport sediments downhill and the entrained sediments settle out as slope angles diminish. Throughout the majority of the road corridor this issue poses little or no threat as soil and sediment accumulations are negligible. Rock pavements dominate the majority of the road surface. In Tres Plumas Flat soils and sediments remain surprisingly shallow. Subsurface testing will have to be conducted at some locations to determine the depth of soils and sediments and the extent of subsurface cultural deposits. If the contents of a site are limited to surface deposits, compaction of the subsurface soils would pose no threat to the resource. At locations where intact subsurface cultural

deposits are identified, two mitigation options are available. The first is data recovery and the second may include buffering through the addition of a natural padding across portions of some sites, effectively isolating the cultural materials below.

- *Ground-disturbing activities associated with periodic road maintenance.* Mitigation measures will have to be established to preserve the integrity of undisturbed subsurface cultural deposits. Where soils have accumulated to measurable depths beneath the road surface, archaeologists will first have to conduct subsurface testing to determine the depth of soils and sediments and the extent and nature of subsurface cultural deposits. If significant quantities of intact cultural deposits are identified beneath the road surface, no further downcutting of the road bed will be permitted until data recovery mitigation measures have been completed. Any future alterations in road alignment or other activities that require ground-disturbing activities outside of the current road footprint would require advance consultation with an archaeologist.
- *Translocation of cultural materials by fluvial processes.* Surface runoff is a naturally occurring process that can substantially alter spatial patterning of cultural materials. Although water is a natural transport mechanism, human alteration of local topography associated with construction or maintenance of the road corridor can alter the magnitude and direction of artifact movement. During the field inventories, archaeologists noted that artifacts being transported downhill naturally by fluvial regimes tended to settle out on the road surface due to the decrease in slope angle. This process can result in increased quantities of cultural materials being exposed to potential adverse effects in the form of fragmentation by vehicle use. Mitigation measures may be needed at some locations to divert water around the perimeter of the site to reduce artifact transport. These measures will be conducted in consultation with a hydrologist.

Alternative 1 – No Action

Alternative 1 would have the potential to affect, in some degree or manner, a maximum of 26 historic properties. While the alternative would result in no threat to some sites, other properties could be affected by multiple mechanisms. Although 26 properties may be affected under Alternative 1, that number will most likely be reduced in the final analysis. For purposes of this document, all properties identified within the Furnace Creek APE are assumed to be eligible for the National Register of Historic Places. Once formal determinations of eligibility have been completed, a significant number of sites is expected to be “not eligible” for the National Register. Those sites determined not eligible will be released from further management considerations, thereby reducing the number of sites that may be affected.

Under Alternative 1, 18 sites could be affected by initial road repairs, one site by the installation of water-control devices, 18 sites by general road use, eight sites by route proliferation, 16 sites by dispersed camping activities, six sites by soil compaction associated with road use by mechanized vehicles, 18 sites by periodic road maintenance, and four sites by fluvial processes associated with alterations in local topography. A combination of the

prescriptions described above in the “Potential Mitigation Measures” section would be employed to mitigate any potential adverse effects should Alternative 1 be selected.

Should Alternative 1 be selected, mitigation measures would be employed for a maximum of seven historic properties on BLM administered lands and 19 properties on Forest Service administered lands.

Tribal Access to Subsistence Resources

Under Alternative 1 Native Americans would have mechanized and/or motorized access to subsistence resources along the entire length of the Furnace Creek Road corridor.

Alternative 2 – Proposed Action: Road Closed to Mechanized/Motorized Vehicles

Alternative 2 would have the potential to affect, in some degree or manner, a maximum of eight historic properties. While the alternative would result in no threat to some sites, other properties could be affected by multiple mechanisms. Although eight properties may be affected under Alternative 2, that number will most likely be reduced in the final analysis. For purposes of this document, all properties identified within the Furnace Creek APE are assumed to be eligible for the National Register of Historic Places. Once formal determinations of eligibility have been completed, a significant number of sites is expected to be “not eligible” for the National Register. Those sites determined not eligible will be released from further management considerations, thereby reducing the number of sites that may be affected.

Under Alternative 2, five sites could be affected by initial road repairs, two sites by road rehabilitation activities, five sites by general road use, one site by route proliferation, five sites by soil compaction associated with road use by mechanized vehicles, and five sites by periodic road maintenance. A combination of the prescriptions described above in the “Potential Mitigation Measures” section would be employed to mitigate any potential adverse effects should Alternative 2 be selected.

Should Alternative 2 be selected, mitigation measures would be employed for a maximum of seven historic properties on BLM administered lands and one property on Forest Service administered lands.

Tribal Access to Subsistence Resources

Alternative 2 would prohibit Native American access to subsistence resources by mechanized and/or motorized means above the existing gate located on BLM lands. Those individuals able to access the corridor by foot or horse could do so, but persons physically unable to utilize those forms of transportation would have no access.

Alternative 3 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Closed to Mechanized/Motorized Use

Alternative 3 would have the potential to affect, in some degree or manner, a maximum of 10 historic properties. While the alternative would result in no threat to some sites, other properties could be affected by multiple mechanisms. Although 10 properties may be affected under Alternative 3, that number will most likely be reduced in the final analysis. For purposes of this document, all properties identified within the Furnace Creek APE are assumed to be eligible for the National Register of Historic Places. Once formal determinations of eligibility have been

completed, a significant number of sites is expected to be “not eligible” for the National Register. Those sites determined not eligible will be released from further management considerations, thereby reducing the number of sites that may be affected.

Under Alternative 3, six sites could be affected by initial road repairs, two sites by proposed road realignments, one site by proposed construction of a vehicle turnaround, one site by road rehabilitation activities, six sites by general road use, one site by route proliferation, six sites by soil compaction associated with road use by mechanized vehicles, and six sites by periodic road maintenance. A combination of the prescriptions described above in the “Potential Mitigation Measures” section would be employed to mitigate any potential adverse effects should Alternative 3 be selected.

Should Alternative 3 be selected, mitigation measures would be employed for a maximum of nine historic properties on BLM administered lands and one property on Forest Service administered lands.

Tribal Access to Subsistence Resources

Alternative 3 permits mechanized vehicle access to natural resources in the lower 3.5 miles of Furnace Creek Road. Decommissioning of the road near the Forest Service boundary, however, would prohibit Native American access by mechanized and/or motorized means to subsistence resources located in the upper reaches of the road corridor. Of particular relevance, Alternative 3 would prohibit vehicle traffic to pinyon pine stands that begin to proliferate at roughly the same elevation as the Forest Service boundary. Those individuals able to access the upper reaches of the corridor by foot or horse could do so, but persons physically unable to utilize that mode of transportation would have no access beyond the BLM boundary. The proposed seasonal closure of the road would be conducted primarily in—but not limited to—the winter months of December through May. Closure of the road during September or October would prohibit access to pinyon pine stands during the most favorable pine-nut harvesting months.

Alternative 4 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Multiple-Use Trail

Alternative 4 would have the potential to affect, in some degree or manner, a maximum of 28 historic properties. While the alternative would result in no threat to some sites, other properties could be affected by multiple mechanisms. Although 28 properties may be affected under Alternative 4, that number will most likely be reduced in the final analysis. For purposes of this document, all properties identified within the Furnace Creek APE are assumed to be eligible for the National Register of Historic Places. Once formal determinations of eligibility have been completed, a significant number of sites is expected to be “not eligible” for the National Register. Those sites determined not eligible will be released from further management considerations, thereby reducing the number of sites that may be affected.

Under Alternative 4, 18 sites could be affected by initial road repairs, two sites by proposed road realignments, one site by proposed construction of a vehicle turnaround, one site by the installation of water-control devices, 18 sites by general road use, nine sites by route proliferation, 16 sites by dispersed camping activities, six sites by soil compaction associated

with road use by mechanized vehicles, 18 sites by periodic road maintenance, and five sites by fluvial processes associated with alterations in local topography. A combination of the prescriptions described above in the “Potential Mitigation Measures” section would be employed to mitigate any potential adverse effects should Alternative 4 be selected.

Should Alternative 4 be selected, mitigation measures would be employed for a maximum of nine historic properties on BLM administered lands and 19 properties on Forest Service administered lands.

Tribal Access to Subsistence Resources

Under Alternative 4 Native Americans would have mechanized and/or motorized access to subsistence resources along the entire length of the Furnace Creek Road corridor. The proposed seasonal closure of the road would be conducted primarily in—but not limited to—the winter months of December through May. Closure of the road during September or October would prohibit access to pinyon pine stands during the most favorable pine-nut harvesting months.

Alternative 5 – BLM and Forest Service, Multiple-Use Trail

Alternative 5 would have the potential to affect, in some degree or manner, a maximum of 28 historic properties. While the alternative would result in no threat to some sites, other properties could be affected by multiple mechanisms. Although 28 properties may be affected under Alternative 5, that number will most likely be reduced in the final analysis. For purposes of this document, all properties identified within the Furnace Creek APE are assumed to be eligible for the National Register of Historic Places. Once formal determinations of eligibility have been completed, a significant number of sites is expected to be “not eligible” for the National Register. Those sites determined not eligible will be released from further management considerations, thereby reducing the number of sites that may be affected.

Under Alternative 5, 18 sites could be affected by initial road repairs, two sites by proposed road realignments, one site by the installation of water-control devices, 18 sites by general road use, nine sites by route proliferation, 16 sites by dispersed camping activities, six sites by soil compaction associated with road use by mechanized vehicles, 18 sites by periodic road maintenance, and five sites by fluvial processes associated with alterations in local topography. A combination of the prescriptions described above in the “Potential Mitigation Measures” section would be employed to mitigate any potential adverse effects should Alternative 5 be selected.

Should Alternative 5 be selected, mitigation measures would be employed for a maximum of nine historic properties on BLM administered lands and 19 properties on Forest Service administered lands.

Tribal Access to Subsistence Resources

Under Alternative 5 Native Americans would have mechanized and/or motorized access to subsistence resources along the entire length of the Furnace Creek Road corridor. The proposed seasonal closure of the road would be conducted primarily in—but not limited to—the winter months of December through May. Closure of the road during September or October would prohibit access to pinyon pine stands during the most favorable pine-nut harvesting months.

Alternative 6 – BLM and Forest Service, Full-size Vehicle Access

Alternative 6 would have the potential to affect, in some degree or manner, a maximum of 28 historic properties. While the alternative would result in no threat to some sites, other properties could be affected by multiple mechanisms. Although 28 properties may be affected under Alternative 6, that number will most likely be reduced in the final analysis. For purposes of this document, all properties identified within the Furnace Creek APE are assumed to be eligible for the National Register of Historic Places. Once formal determinations of eligibility have been completed, a significant number of sites is expected to be “not eligible” for the National Register. Those sites determined not eligible will be released from further management considerations, thereby reducing the number of sites that may be affected.

Under Alternative 6, 18 sites could be affected by initial road repairs, two sites by proposed road realignments, one site by the installation of water-control devices, 18 sites by general road use, nine sites by route proliferation, 16 sites by dispersed camping activities, six sites by soil compaction associated with road use by mechanized vehicles, 18 sites by periodic road maintenance, and five sites by fluvial processes associated with alterations in local topography. A combination of the prescriptions described above in the “Potential Mitigation Measures” section would be employed to mitigate any potential adverse effects should Alternative 6 be selected.

Should Alternative 6 be selected, mitigation measures would be employed for a maximum of nine historic properties on BLM administered lands and 19 properties on Forest Service administered lands.

Tribal Access to Subsistence Resources

Under Alternative 6 Native Americans would have mechanized and/or motorized access to subsistence resources along the entire length of the Furnace Creek Road corridor. The proposed seasonal closure of the road would be conducted primarily in—but not limited to—the winter months of December through May. Closure of the road during September or October would prohibit access to pinyon pine stands during the most favorable pine-nut harvesting months.

Cumulative Effects—Heritage Resources

All Alternatives

Past actions that have affected heritage resources in the Furnace Creek corridor include the initial construction and irregular subsequent maintenance of the road, dispersed camping, the development of livestock related structures, livestock grazing and associated ground disturbance, an unknown history of wildfires, and fluvial transport of cultural materials. These activities for the most part have been undocumented and cannot be accurately quantified for analysis. With the exception of the direct and indirect effects of the present project, there are no known contemporary undertakings that will affect heritage resources. Actions in the reasonably foreseeable future that may affect heritage resources include the resumption of the grazing allotments on BLM or Forest Service lands.

Cost Analysis—Heritage Resources

Table 4 provides an estimate of the budget that would be required to comply with federal mandates associated with the protection of Heritage Resources. The budget includes costs associated with the following: initial field survey, preparation and finalization of the Programmatic Agreement, preparation of the Environmental Assessment, completion of individual site records, site evaluations to determine eligibility for the National Register of Historic Places, implementation of the management plan, completion of a final project report, and post-project monitoring to determine the plan's effectiveness.

Table 4. Furnace Creek Heritage Resources Cost Analysis

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Totals	\$48,350	\$43,870	\$44,410	\$48,150	\$48,150	\$48,150

Economics

Measures

- Impacts to local economy

Existing Conditions

Recreation-based tourism is an important source of economic activity for communities adjacent to public lands. Decisions that are made for these public lands can have ripple effects throughout the local economy. The communities of the Sierra Nevada are particularly reliant upon recreation and the revenue it brings for a measurable portion of its employment. Stewart (1998) found that the recreation and tourism industries are the largest employers in the area. The Sierra Business Council reported in its 1999-2000 Sierra Nevada Wealth Index that tourism related to the natural amenities of the area accounted for 15% of the region's total payroll. In some communities, this percentage was much higher, to the extent that tourism is the single most important economic activity in the area. For the Furnace Creek Project, the project area consists of three counties: Inyo, Mono, and Esmeralda. These three counties have the potential to be impacted by a Furnace Creek Road closure. Esmeralda County, Nevada contains a portion of the road and the closest community to the road (Dyer, Nevada). Mono County, California contains the majority of the road and Inyo County has the closest and highest concentration of visitor services.

In terms of employment, Mono and Inyo Counties are particularly dependent upon recreation-based tourism. According to the 2000 census, 21.3% of Inyo County's jobs were in the Arts, Entertainment, Recreation, Accommodations, and Food Service (AERAF) sector. For Mono County, the AERAF sector was responsible for 30% of all jobs. Jobs in this sector are most often those that are supported by a robust tourist economy. Esmeralda County, by contrast, does not rely upon the AERAF sector for a large percentage of its jobs. The 2000 census identified 9.9% of the jobs in Esmeralda County in the AERAF sector. This was the fourth most important employment sector in the county (the Agriculture, Forestry, Fishing and Hunting, and Mining sector is number one in the county with 22.6% of the jobs).

While the Furnace Creek Road was open, it is unlikely that it contributed much to the local economies of the three counties in the project area. As stated earlier, anecdotal and monitoring information reveal that past use of the road was very low. The use that did occur undoubtedly was from local residents, particularly residents of Fish Lake Valley. Services to support recreation are limited in Fish Lake Valley and a non-local user of the road would most likely travel to Bishop, California (65 miles) or perhaps Goldfield, Nevada (75 miles) to find overnight accommodations. The closest Mono County community to the Furnace Creek area is Mammoth Lakes (100 miles away)—an unlikely destination for Furnace Creek Road users seeking overnight accommodations and additional services. Due to its remoteness and limited non-local use, it is unlikely that the Furnace Creek Road contributed much to the economies of Inyo or Mono Counties. For Esmeralda County, the limited services in Fish Lake Valley also make it unlikely that the road would generate much in the way of economic activity for the local community. While there are two general stores and two bar/restaurants in the Fish Lake Valley area, there are no overnight

accommodations for visitors. Given the limited and primarily local use of the road, it is unlikely that the Furnace Creek Road, prior to its interim closure in March 2003 generated measurable economic benefits for businesses in Inyo, Mono, or Esmeralda Counties.

Typically a regional economic analysis for a public land project uses the IMPLAN Model, an economic model that estimates the effects on a specific economy from changes in spending. Given the low and local use of the road, no attempt is made to quantify the economic impact of the road on the economies of the three-county project area. Rather, the expected regional economic effect is discussed below in a general fashion.

Direct and Indirect Effects—Economics

Alternative 1 – No Action

While this alternative allows full-size vehicle use of the Furnace Creek Road, it is expected that this use is mostly limited to local residents and any economic benefits to the local communities are modest. Economic activities associated with the temporary increased use of the road are limited to individuals making purchases at one of the businesses in Fish Lake Valley. While there may be a short-term increased use of the road (as a result of the recent publicity and controversy surrounding the road), it is likely that this increase will level off and return to pre-closure use levels in a relatively short period of time. Because of its remoteness and ruggedness, it is not expected that the road will become a destination for non-local users. The condition of the road would further limit use and would not result in many return visits for out-of-the-area users.

Alternative 2 – Proposed Action: Road Closed to Mechanized/Motorized Vehicles

It is unlikely that the Furnace Creek Road closure alone will have an economic impact on the three counties in the project area. As stated before, use of the road is low and primarily local. This alternative does not provide the short-term, limited economic benefits that the open road alternatives would provide. To some extent, however, this may be off-set by non-motorized users recreating in the area. Similar to the motorized benefits in Alternative 1, any increase in non-motorized recreation in the Furnace Creek is expected to be short-term and fairly limited.

Alternative 3 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Closed to Mechanized/Motorized Use

The economic effects of this alternative are similar to those in Alternative 1. There may be some short-term economic effects associated with this alternative. Use of the road will continue to be primarily local but a short-term increase in use is likely from non-local users curious about the road and the improvements. It is not likely that this level of use will maintain and it is expected that the economic impacts associated with the road will return to pre-closure levels. The improvements made to the road under this alternative may further facilitate local use of the road. For non-local users, however, the remoteness and limited opportunities of the road will continue to be limiting factors and make the area an unlikely destination.

Alternative 4 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Multiple-Use Trail

The economic effects of this alternative are similar to that in Alternative 3.

Alternative 5 – BLM and Forest Service, Multiple-Use Trail

The economic effects of this alternative are similar to that in Alternative 3.

Alternative 6 – BLM and Forest Service, Full-size Vehicle Access

The economic effects of this alternative are similar to that in Alternative 3.

Cumulative Effects—Economics**All Alternatives**

Past, current, and foreseeable actions with potential for cumulative economic effects include the Forest Service's ongoing Route Designation Process, the Forest Service's Proposed Rule for Travel Management, and the recently completed Bureau of Land Management's Route Designation in the Northern and Eastern Mojave Desert. In addition, a bill was introduced to designate lands in California, including a portion of the Furnace Creek area, as wilderness. The bill has been in committee since 2002 and its future is unknown.

It is not expected that individual road closures such as Furnace Creek Road will cause measurable economic impact to local communities. Cumulatively, however, a number of road closures in the same area that severely limits or eliminates certain recreational activities may cause economic ripples that are felt in the economy of an area. In some cases, the closure of a road might be offset by an increase in another use, for example, hiking or nature viewing. Overall, however, it is clear that if a number of roads are closed and if an area depends on motorized recreation for local revenue and employment, these closures will have a cumulative impact on the local economy. Within the context of the Furnace Creek Road project, the exact impact of the before mentioned projects and activities on the local economies are not known. Given the historically limited non-local use of the Furnace Creek Road, however, it is not expected that a permanent closure or opening of the Furnace Creek Road will have a measurable economic affect when cumulative considerations are factored in.

Engineering and Monitoring Costs

Measure

- Cost of proposed improvements
- Monitoring Costs

Alternative 1 – No Action

Under the No Action Alternative, no improvements or realignment are proposed.

- Estimated Cost: \$0

Alternative 2 – Proposed Action: Road Closed to Mechanized/Motorized Vehicles

Under this alternative the BLM section is decommissioned using heavy equipment to remove berms, place water bars, fill in ruts, and outslope the road surface to facilitate drainage. Some of the existing road surface is decompacted to facilitate water infiltration and revegetation of the road. Care is taken made to avoid disturbing road surfaces and fill slopes that have already revegetated.

The Forest Service section of the road is decommissioned by hand to avoid any further disturbance of the road. Work includes removing berms, placing water bars, filling in ruts, hand decompaction, filling in ruts, and outsloping to facilitate water infiltration, drainage, and revegetation.

- Estimated Cost: \$20,000 (BLM \$8,000; Forest Service \$12,000)

Actions common to all improvement/realignment alternatives (Alternatives 3, 4, 5, and 6)

This work includes stabilizing crossings and improving drainage from 2.5 miles from Highway 264 to approximately 2.25 miles west of the BLM/Forest Service boundary. Work on the BLM segment generally utilizes heavy equipment. For work on the Forest Service segment, light-duty equipment and handwork are utilized (except where noted in the alternative). In all alternatives, appropriate measures are taken to minimize the impact to resources in the canyon of equipment and work necessary for the road improvement/realignment.

Alternative 3 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Closed to Mechanized/Motorized Use

The engineering approach for the BLM segment is the same as described above under Actions Common to All Improvements/Realignment and the Forest Service segment is the same as described under Alternative 2.

- Estimated Cost: \$30,000 (BLM \$18,000; Forest Service \$12,000)

Alternative 4 – BLM Segment, Full-size Vehicle Use; Forest Service Segment, Multiple-Use Trail

The engineering approach for the BLM segment is the same as described above under Actions Common to All Improvements/Realignment. Construction on the Forest Service section is accomplished using a mini bulldozer, ATVs with trailers, and hand labor. The ATVs with trailers are used to haul in retaining wall materials and to transport rock. The mini bulldozer is used for

the earthwork on the realignments, to excavate for the retaining structures, to fill in behind the retaining structures, and to improve drainage along the trail.

- Estimated Cost: \$64,000 (BLM \$18,000; Forest Service \$46,000)

Alternative 5 – BLM and Forest Service, Multiple-Use Trail

The engineering approach for the BLM segment is the same as described above under Actions Common to All Improvements/Realignment, with the exception of the use of a mini bulldozer to reduce the road width to a trail width. The work is the same as for a full sized vehicle road except that the work will be tailored to be appropriate for a multiple use trail.

Under this alternative, the engineering approach for the Forest Service segment is the same as described above in Alternative 4.

- Estimated Cost: \$58,000 (BLM \$12,000; Forest Service \$46,000)

Alternative 6 – BLM and Forest Service, Full-size Vehicle Access

Under this alternative the BLM segment is the same as Alternatives 3 and 4. The work on the Forest Service section is accomplished with heavy equipment.

On the realigned Forest Service areas, a full sized vehicle road includes twice the disturbed area, extends further into the edge of the riparian area, and involves moving three times more earth than a multiple-use trail. Several of the realignments involve moving the road/trail out of the wet riparian area where the existing road parallels the drainage to the very edge of the drainage area where the ground is drier. Construction in many of these areas involves constructing retaining walls at the edge of the drainage area and then filling in the area behind the retaining wall with the soil from the steep sloughed in banks adjacent to the retaining wall. Most of the road/trail is constructed in the sloughed in area along the edge of the drainage and the drier area along the edge of the drainage. In these areas, the road extends further into the flatter drainage area and involves higher retaining walls and more earthwork than a multiple use trail. In addition, a full sized road requires more work to maintain in the future.

- Estimated Cost: \$108,000 (BLM \$18,000; Forest Service \$90,000)

Maintenance Costs

No attempt is made to quantify maintenance costs here, but it is expected that in the long-term, Alternative 2 will require the least maintenance and Alternative 6 will require the most maintenance. Of the other three improvement alternatives, a multiple use trail will generally require lower overall maintenance over time. Vehicles 50” in width and less will impact the road improvements and alignment less than full-size vehicles.

Monitoring Costs

As detailed in Chapter 2 and discussed in the effects analyses in Chapter 3, monitoring will be an important part of any alternative selected in this project. For Alternatives 1-3, there will be monitoring costs associated with checking to make sure the gate is in place and ensuring that the road stays closed. In Alternatives 4-6, there will be monitoring of the road, particularly the Forest Service section of road realigned out of the riparian area and the section of the road in Tres Plumas Flat.

- Estimated monitoring costs Alternative 1-3: \$320 (two full days [sixteen hours] of monitoring annually x \$20 an hour).
- Estimated monitoring costs Alternative 4-6: \$480 (three full days [twenty-four hours] of monitoring annually x \$20 an hour).

Chapter 4. Consultation and Coordination

Preparers and Contributors

The Forest Service consulted the following individuals, Federal, state and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

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California Department of Fish and Game, Bishop Office

Office of Congressman Howard “Buck” McKeon, House of Representatives, 25th Congressional District

Office of Senator John Ensign, Nevada US Senator

Inyo County Board of Supervisors

Mono County Board of Supervisors

Esmeralda County Board of Commissioners

Tribes

Benton Paiute Tribe

Big Pine Paiute-Shoshone Tribe

Bishop Paiute Tribal Indian Council

Lone Pine Paiute-Shoshone Tribe

Independence Paiute Tribe

Timbisha Shoshone Tribe

Walker River Paiute Tribe

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Appendix B. Overall Consistency with Agency Plans and Directives

Consistency with Forest Service Plans and Directives (page numbers cited below refer to the Inyo Forest Plan)

The Furnace Creek Road is in Management Prescription 17, Semi primitive recreation. Emphasis is on providing semi-primitive dispersed recreation opportunities, both motorized and non-motorized. (p.147)

At approximately 2.25 miles from the BLM/FS boundary, the road enters Management Prescription 2, Proposed Wilderness. This prescription is intended “to recognize and protect wilderness attributes of further planning areas recommended for wilderness pending Congressional designation. The emphasis is on providing traditional public uses during the interim that do not jeopardize designation as wilderness.” Further, the Proposed Wilderness Management Prescription allows no road construction or reconstruction, but does allow traditional recreation uses, including motorized access, to continue unless wilderness values are seriously threatened. (p.113)

Furnace Creek Road is considered a “Maintenance Level 2” Road. Maintenance Level 2 roads are generally rugged, four-wheel drive, high clearance roads that receive minimal maintenance. These roads are not maintained for visitor comfort.

Ch. III, the “Summary Analysis of the Management Situation”:

- Riparian vegetation represents less than two percent of the total land base on the Forest. (p. 50)
- Resources dependent on riparian areas receive priority over other resources where they are in conflict. (p. 51)

Chapter IV, Management Direction for Riparian Areas, Forest goals:

- Riparian areas are managed to protect or improve riparian area-dependent resources while allowing for management of other compatible uses. (p. 68)

Chapter IV, Forest-wide Standards and Guidelines:

Riparian Areas (pp. 89-90)

- Give emphasis to riparian-dependent resources in the management of riparian areas. (p 89)
- Protect streams, streambanks, shorelines, lakes, wetlands and the plants and animals dependent on these areas. (p 89)
- Relocate existing roads, trails, and campsites outside riparian areas where necessary to eliminate or reduce unacceptable deterioration of riparian-dependent resources. (p. 89)
- Maintain the integrity of desert springs in the White and Inyo Mountains and the South Sierra Eastern Escarpment to conserve plant and wildlife habitat. (p.91)

- Recognize the important and distinctive values of riparian areas when implementing management activities. Give preferential consideration to riparian-dependent resources when conflicts among land use activities occur. (p.91)

Watershed (pp. 94-97)

- Avoid the use of soil-disturbing equipment, OHVs, and trampling by livestock on wet or poorly-drained soils whenever possible. (p. 95)
- Locate roads and trails on natural benches or ridges well away from stream courses and other water bodies where possible. Avoid constructing roads and trails that parallel or cross tributaries to a main stream (p. 96).
- Use the steepest permissible pitches and grades to avoid paralleling the stream at stream crossings. Design to maintain the existing width:depth ratio of the stream (p. 96).

Best Management Practices (BMPs) to Protect Water Quality (from Water Quality Management for Forest Service System Lands in California – Best Management Practices.)

The following BMPs listed for the Furnace Creek Road EA apply to Action Alternatives and are general in description. Modifications of BMPs to meet site specific and project needs to protect water quality are likely. Decommissioning and other road work will take place when there is proper soil moisture, so erosion control features will be stable, and may be done in several stages. Also, in-stream work to repair head cuts and other erosion problems will be completed to fix the head cuts when the creek is at low flow or in a dry state to minimize sedimentation.

The following BMPs apply to alternatives as shown:

Timing of Construction Activities (PRACTICE: 2-3)

(All Action Alternatives)

- a. Objective: To minimize erosion by conducting operations during minimal runoff periods.
- b. Explanation: The amount of erosion and sedimentation from road construction are affected by the magnitude of water runoff. An essential element of effective erosion control is to schedule operations during the dry season or when rain and runoff are unlikely. Purchasers will be required to schedule and conduct operations during the dry season or when rain and runoff are unlikely. Purchasers will be required to schedule and conduct operations to minimize erosion and sedimentation. Equipment will not be allowed to operate when ground conditions are such that excessive rutting and soil compaction could result. Such conditions will be identified by the COR or ER with the assistance of an earth scientist or other specialists as needed.

Erosion control work will be kept as current as practicable on active road construction projects. Construction of drainage facilities and performance of other contract work to control erosion and sedimentation will be required in conjunction with earthwork projects. The operator should limit the amount of area being graded at a site at any one time, and should minimize the time that an area is laid bare. Erosion control work must be kept current when road construction occurs outside of the normal operating season.

- c. Implementation: Detailed mitigations developed by design engineers and an IDT will be included in the environmental analysis and in subsequent project plans and contracts.

Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and as specified in the project plan. Contracted projects are implemented by the contractor, or operator. Compliance with plans, specifications, and the operating plan will be achieved by the COR or ER through inspection.

PRACTICE: 2-7 Control of Road Drainage

(All Action Alternatives)

a. Objective: To minimize the erosive effects of water concentrated by road drainage features; to disperse runoff from disturbances within the road clearing limits; to lessen the sediment yield from roaded areas; to minimize erosion of the road prism by runoff from road surfaces and from uphill areas.

b. Explanation: This is a preventive practice. A number of treatments can be used, alone or in combination, to control unacceptable effects of road drainage. Methods used to reduce erosion include by are not limited to such controls as construction of properly spaced cross drains, water bars or rolling dips; installing energy dissipaters, apron, downspouts, gabions, flumes, overside drains and debris racks; armoring of ditches, drain inlets and outlets and removing or adding berms to control runoff. Accomplish dispersal of runoff on the road surface by such means as rolling the grade, outsloping or crowning. Installing water spreading ditches or contour trenching can disperse road water after the water leaves the road surface.

Dispersal of runoff reduces downstream peak flows and associated scouring of the channels and sediment transport.

Reduce sediment loads from road surfaces by adding aggregate or paving surfaces or by installing such controls as; sediment filters, settling ponds, and contour trenches. Soil stabilization can reduce sedimentation by lessening erosion on borrow and waste areas, on cut and fill slopes, and on road shoulders.

c. Implementation: Project location, design criteria and detailed mitigation are determined and documented during the environmental analysis process. These are then incorporated into the project plan.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications, and project criteria. Contracted projects are implemented by the contractor or operator. Compliance with plans, specifications, and operating plans is ensured by the COR, ER, or FSR.

This practice is required in contracts when the need is identified in the project planning process.

Servicing and Refueling of Equipment (PRACTICE: 2-12)

(All Action Alternatives)

a. Objective: To prevent pollutants such as fuels, lubricants, bitumens and other harmful materials from being discharged into or near rivers, streams and impoundments, or into natural or man-made channels.

b. Explanation: During servicing and refueling of logging and road construction equipment, and spilled pollutants can be transported by runoff to surface waters. If the volume of fuel exceeds

660 gallons in a single container, or if total storage at a site exceeds 1,320 gallons, project Spill Prevention, Containment, and Counter Measures (SPCC) plans are required. Contaminated upland soils can be a long-term threat to surface and ground water quality. This threat must be managed by disposing of waste material properly, selecting serving and refueling areas well away from wet areas and surface water; by using berms around such sites and by utilizing impermeable liners or other techniques to contain spills according to the Forest SPCC plan.

c. Implementation: The COR, ER, CI, or TSA are authorized to designate the location, size and allowable uses of service and refueling areas. Operators are required to remove service residues, waste oil and other materials from National Forest land. They must also be prepared to take responsible actions in case of a hazardous substance spill, according to the Forest SPCC plan.

Maintenance of Roads (PRACTICE: 2-22)

(All Action Alternatives)

a) Objective: To maintain roads in a manner which provides for water quality protection by minimizing rutting, failures, sidecasting, and blockage of drainage facilities all of which can cause erosion and sedimentation, and deteriorating watershed conditions.

b) Explanation: Roads normally deteriorate because of use and weather. This deterioration can be corrected by adequate maintenance and/or restriction of use. Occasionally new groundwater springs and seeps appear after a wildfire or unusually wet periods and saturate road surfaces. All roads are maintained to at least the following level:

1) Provide the basic maintenance required to protect the road investment and to ensure that damage to adjacent land and resources is prevented. This level of maintenance often requires an annual inspection to determine what work, if any is needed to keep ditches, culverts and other drainage facilities functional and the road stable. This level is the normal prescription for roads closed to traffic.

2) As a minimum measure, maintenance must protect drainage facilities and runoff patterns. Higher levels of maintenance will be chosen to respond to greater use or resource administrative needs.

3) Additional maintenance measures include surfacing and resurfacing, outsloping, clearing debris from dips and cross drains, armoring of ditches, spot rocking, culvert replacement and installing new drainage features.

c) Implementation: Work is managed by the Forest Engineer who develops a road condition survey and maintenance plan. Maintenance levels are designated for each road in a timber sale area, as part of the TSPP, with road maintenance levels documented in the sale plan. Maintenance is a timber purchaser or user responsibility and compliance is administered by the ER and SA.

Surface Erosion Control at Facility Sites (PRACTICE: 2-28)

(Alternative 5 only)

a. Objective: Reduce the amount of surface erosion taking place on developed sites and the amount of soil entering streams.

b. Explanation: On lands developed for administrative sites, ski areas, campgrounds, parking areas, or waste disposal sites, substantial acreage may be cleared of vegetation. Erosion control

methods must be implemented to keep the soil in place, and to minimize suspended sediment delivery to streams. Some examples of erosion control methods that could be applied at a site for keeping the soil in place would be applying grass seed, erosion blankets, tackifiers, hydromulch, paving, or rocking of the roads, water bars, cross drains, or retaining walls.

To control the amount of soil entering streams, the natural drainage pattern of the area should not be changed; sediment basins and sediment filters will be established to filter surface runoff; and diversion ditches, and berms will be built to divert surface runoff around bare areas. Construction activities will be scheduled to avoid periods of the year when heavy runoff is likely to occur.

c. Implementation: This management practice is used as a preventative and remedial measure for any site development project that will remove the existing vegetation and ground cover and leave exposed soil. This practice is applied during the planning phase for NFS projects, or by special use permit requirements for private development on public land.

Mitigation measures will be developed by the IDT and incorporated in the project by the design engineer. Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and project criteria.

Contracted projects are implemented by the contractor or operator. Compliance with plans, specifications, and operating plans is ensured by the COR, ER, and FSR.

Protection of Water Quality Within Developed and Dispersed Recreation Areas (PRACTICE: 4-9)

(All Action Alternatives)

a. Objective: To protect water quality by regulating the discharge and disposal of potential pollutants.

b. Explanation: This practice prohibits placing in, or near a stream, lake, or other water body, substances which may degrade water quality. This includes, but is not limited to, human and animal waste, petroleum products, other hazardous substances and sediment eroded from the site. Areas will be closed in order to restrict use or until the problem is mitigated.

c. Implementation: Encourage the public through the use of signs, pamphlets, and public contact to conduct their activities in a manner that will not degrade water quality. Forest officers may accept and act on violations observed and reported by private citizens. Forest Officers may issue citations to violators.

Protection of Wetlands (Practice: 7-3)

(All Action Alternatives)

a. Objective: To avoid adverse water quality impacts associated with destruction, disturbance, or modification of wetlands.

b. Explanation: The Forest Service will not permit the implementation of activities and new construction in wetlands whenever there is a practical alternative. Factors relevant to the effect of the proposal on the survival and quality of the wetlands will be considered when evaluating proposed actions in wetlands. Factors to be evaluated include, but are not limited to water supply,

water quality, recharge areas, functioning of the wetland during flood and storm events, flora and fauna, habitat diversity and stability, and hydrologic function of riparian areas.

c. Implementation: The Regional Forester will be responsible for ensuring that wetland values are considered and documented as an integral part of all planning processes.

The Forest Supervisor, through the use of earth scientists, will determine whether proposed actions will be located in wetlands and, if so, whether there is a viable alternative. Replacement in kind of lost wetlands should be evaluated to apply a ‘no net loss’ perspective to wetland preservation. During project planning, the Forest Supervisor will establish communications with other agencies legislatively responsible for the protection of wetlands, Corps of Engineers and EPA at the minimum, to ensure that local requirements are identified and incorporated into the project plan.

The Forest Supervisor must ensure that all mitigating measures are incorporated into project plans and designs and that the actions maintain the hydrologic and biologic function of the wetlands. All potentially impacted wetlands will be identified on maps as part of project development.

Identification and mapping of wetlands will be a part of the LRMP data inventory process.

R-5 BMPEP On-Site Evaluation E13 In-Channel Construction Practices (Reference BMP 2.14, 2.15, 2.17) (From: Investigating Water Quality in Pacific Southwest Region, Best Management Practices, Evaluation Programs)

Site Evaluations/Project Status: In designated spaces, provide the name of the reviewer, the reviewer’s job title, the date, and photo reference numbers for each of the two reviews (Active Project and Post Project). It is not necessary that the same individual(s) conduct all three evaluations.

Project Stream: Indicate if the stream evaluated is a perennial stream (flows year round), an intermittent stream (flows seasonally most years) or is ephemeral (flows only in response to precipitation events).

Developing the Sample Pool and Selecting the Evaluation Sites: ALL in-channel construction occurring in flowing or dry streams must be evaluated; up to the point where 5 evaluations have been completed. Evaluations beyond 5 are optional.

Timing of the Evaluation: The E13 BMP Evaluation is complex and requires a high degree of coordination and two trips to the sample site. The observer or observers schedule an evaluation during the project (while the In-Channel construction is taking place), and post-project phase (at least one winter season following the activity). The implementation rating is conducted during the active project phase.

Conducting the Implementation Rating: Implementation of E13 is rated for several factors and involves a combination of field survey and review of environmental documents and contracts. Review the timber sale environmental assessment, special use permits, operating plans, timber sale contract, Transportation Engineering Handbook (FSH 7709.11), Forest Service Specifications for Construction of Roads and Bridges, Contract Daily Diary (FS6300-20),

Specified Road Construction Agreement and/or notice (FS 7700-42), Work Order (FS 6300-12), and any other supporting documents to determine:

- If there were requirements identified for diversion of stream flow around or through the construction site (conduct this evaluation during the pre-activity or active stages).
- Use field review to determine:
- If excavated and/or stockpiled materials generated by the in-channel construction were removed to areas above the apparent high water line (conduct this evaluation during the active project stage).
- If the requirements for flow diversion identified above were implemented (conduct this evaluation during the active project stage).
- If the channel areas disturbed by the construction activity were returned to the natural or designed grade, alignment and stability (conduct this evaluation during the post-activity stage).

Conducting the Effectiveness Evaluation

Locating the Sample Site

For Sedimentation of Channel Riffle Substrate:

Locate two stations, the first ten active channel-widths upstream of the channel activity, and the second ten active channel-widths downstream of the activity. Active channel width is the width of channel inundated by the annual peak flow. As channel width varies, an estimate of the width in a riffle portion is adequate. Riffles are shallow, high velocity sections of the stream, usually characterized by gravel or cobble substrate (boulders may dominate in larger streams or in rivers). As an example, if the stream where the practice was to be evaluated averaged five feet in width, then observations for sedimentation would be made at the first riffle encountered fifty feet upstream of the activity, and at the first riffle encountered fifty feet downstream of the activity.

For Turbidity:

Observation of turbidity is made at a distance of twenty-channel widths downstream of the downstream edge of the construction activity. If turbidity is evident at this location, the observer should also check for turbidity in the stream above the activity, to ensure turbidity is due to the construction versus another upstream activity. Turbidity related to the in-channel construction will be very apparent, and should be easily discernible from upstream “background” conditions.

For Disturbance to Channel, Fill In-Channel and Fill on Floodplain:

Observe the project area within the clearing limits to determine the amount of channel disturbed above and below the structure and removal of construction material from the channel and the floodplain.

Sampling Protocols

For Flowing Streams: These estimates are made during the active project stage of the evaluation.

For Sedimentation of Channel Riffle Substrate: This criteria asks the observer to look at the amount of fine sediment deposited on the gravel, rock or boulder substrate of the selected riffles, and determine whether or not there is more siltation in the channel below the construction than in the channel above the construction. Sediment deposition should be evaluated by placing a shallow

pie-size pan or similar catchment above and below the construction site and visually analyzing the difference in collected material.

For Turbidity: This is an observation of water clarity below the activity site. If sediment is picked up by water at the construction site, it will tend to move downstream in a wave or plume, which is thickest, darkest and most highly concentrated at the point of disturbance. The plume will tend to lengthen and narrow, and become less distinct, as one moves downstream. The observer is asked to determine whether or not the plume is still distinguishable at the sample site twenty active channel-widths below the downstream edge of the activity.

A sediment plume will be in the center of the channel. It is likely that turbid water will be evident in side pools and standing water at the channels edge downstream of the point where a sediment plume is evident. Document this observation with a photo as well, framed such that a channel length of approximately five active channel widths is in view.

For All Streams (Flowing or Dry): These estimates are made during the post-project stage of the evaluation.

Disturbance to Channels: Within the clearing limits, determine the active channel width. Measure the length of channel disturbance from the ends of the structure to the clearing limits. Compare active channel width with length of channel disturbed. To minimize channel disturbance, clearing limits and channel disturbance should be within three active channel widths.

Fill in channel: Observe the channel within the clearing limits above and below the crossing to determine the amount of material (such as excavated or construction material) left in the channel.

Fill on floodplain: Observe the five-year floodplain area for material (such as excavated or construction) remaining after the stream crossing construction activity. The floodplain is the depositional area above bankful flow or normal high water.

Sierra Nevada Forest Plan Amendment Record of Decision Forest-Wide Standards and Guidelines (2004) (page numbers cited below refer to the 2004 Record of Decision)

Wheeled Vehicles (Appendix A, p. 59)

69. Prohibit wheeled vehicle traffic off designated routes, trails, and limited off highway vehicle (OHV) areas.

Road Construction, Reconstruction, and Relocation (Appendix A, p.59)

70. To protect watershed resources, meet the following standards for road construction, road reconstruction, and road relocation: (1) design new stream crossings and replacement stream crossings for at least the 100-year flood, including bedload and debris; (2) design stream crossings to minimize the diversion of streamflow out of the channel and down the road in the event of a crossing failure; (3) design stream crossings to minimize disruption of natural hydrologic flow paths, including minimizing diversion of stream and interception of surface and subsurface water; (4) avoid wetlands or minimize effects to natural flow patterns in wetlands; and (5) avoid road construction in meadows.

Riparian Conservation Objectives (RCOs) (Appendix A, pp. 33-34; pp.42-44; pp.62-66)

Riparian Conservation Areas (RCAs): Activity-Related Standards and Guidelines (Appendix A, pp.42-44; pp.62-66)

Riparian conservation area (RCA) widths are described below. RCA widths shown below may be adjusted at the project level if a landscape analysis has been completed and a site-specific RCO analysis demonstrates a need for different widths. (Appendix A, p.42)

Areas included in RCAs are: (Appendix A, p.42)

300 feet on each side of perennial streams

150 feet on each side of intermittent and ephemeral streams

300 feet from lakes, meadow, bogs, fens, wetlands, vernal pools and springs

91. Designate riparian conservation area (RCA) widths as described in part B of this appendix [p.42]. The RCA widths displayed in Part B may be adjusted at the project level if a landscape analysis has been completed and a site-specific RCO analysis demonstrates a need for different widths. (Appendix A, p.62)

92. Evaluate new proposed management activities within CARs and RCAs during environmental analysis to determine consistency with the riparian conservation objectives at the project level and the AMS goals for the landscape. Ensure that appropriate mitigation measures are enacted to (1) minimize the risk of activity-related sediment entering aquatic systems and (2) minimize impacts to habitat for aquatic- or riparian-dependent plant and animal species. (Appendix A, p.62)

Riparian Conservation Objective #1: Ensure that identified beneficial uses for the water body are adequately protected. Identify the specific beneficial uses for the project area, water quality goals from the Regional Basin Plan, and the manner in which the standards and guidelines will protect the beneficial uses. (Appendix A, p. 33)

96. Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages. (Appendix A, p.63)

Riparian Conservation Objective #2: Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species. (Appendix A, p.33)

100. Maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by identifying roads and trails that intercept, divert or disrupt natural surface and subsurface water flow paths. Implement corrective actions where necessary to restore connectivity. (Appendix A, p.63)

101. Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water-drafting sites to avoid adverse effects to in stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features. (Appendix A, p.63)

102. Prior to activities that could affect streams, determine if relevant geomorphic characteristics, including bank angle, channel bank stability, bank full width-to-depth ratio, embeddedness, channel-floodplain connectivity, residual pool depth, or channel substrate, are within the range of natural variability for the reference stream type as described in the Pacific Southwest Region Stream Condition Inventory protocol. If properties are outside the range of natural variability, implement restoration actions that will result in an upward trend. (Appendix A, p.63)

103. Prevent disturbance to streambanks and natural lake and pond shorelines caused by resource activities (for example, livestock, off-highway vehicles, and dispersed recreation) from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling and other means of exposing bare soil or cutting plant roots. This standard does not apply to developed recreation sites and designated off-highway vehicle routes. (Appendix A, p.63)

104. In stream reaches occupied by, or identified, as “essential habitat” in the conservation assessment for, the Lahontan and Paiute cutthroat and the Little Kern golden trout, limit streambank disturbance from livestock to 10 percent of the occupied or essential habitat stream reach. Cooperate with State and Federal agencies to develop streambank disturbance standards for threatened, endangered and sensitive species. Use the regional streambank assessment protocol, implement corrective action where disturbance limits have been exceeded. (Appendix A, p.63)

105. Determine if the age class, structural diversity, composition, and cover of riparian vegetation are within the range of natural variability of the vegetative community. If outside the range of natural variability, implement restoration actions that will result in an upward trend. Actions could include restoration of aspen or other riparian vegetation where conifer encroachment is identified as a problem. (Appendix A, p.63)

Riparian Conservation Objective #4: Ensure that management activities... within RCAs and CARs enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species. (Appendix A, p.33)

Riparian Conservation Objective #5: Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas. (Appendix A, pp.33-4)

118. Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but are not limited to, presence of: (1) sphagnum moss (*Sphagnum* spp.), (2) mosses belonging to the genus *Meessia*, and (3) sundew (*Drosera* spp.). (Appendix A, p.65)

Riparian Conservation Objective #6: Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species. (Appendix A, p.34)

122. Recommend and establish priorities for restoration practices in: 1) areas with compaction in excess of soil quality standards, 2) areas with lowered water tables, or 3) areas that are either actively down cutting or that have historic gullies. Identify other management practices, for example, road building, recreational use, grazing and timber harvests, that may be contributing to the observed degradation. (Appendix A, p.66)

Consistency with Bureau of Land Management Plans and Directives

The BLM portion of the road is under the jurisdiction of the Ridgecrest Field Office and managed under the California Desert Conservation Area Plan (1980), as amended by the Northern and Eastern Mojave Desert Management Plan (2002).

California Desert Conservation Area (CDCA) Plan (1980)

Classifies riparian areas as “Unusual Plant Assemblages” (UPA) and states that all actions will be avoided that cause adverse impacts to riparian areas, and that positive programs will be initiated to rehabilitate those areas that are in a deteriorated condition. Riparian areas are classified as highly sensitive and the CDCA Plan states that highly sensitive UPA’s “will be treated in a manner which preserves the habitat and ensures the continued existence of the plant assemblages.”

The Furnace Creek area is considered a “Multiple-Use Class L” area. According to the CDCA Plan, “Multiple-Use Class L (Limited Use) protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.”

The route through Furnace Creek is an open vehicle corridor surrounded by the White Mountains Wilderness Study Area as designated by the California Desert Protection Act of 1994. The width of the corridor has been interpreted by the BLM to be 60 feet (30 feet on either side of the centerline of the existing dirt road).

Northern and Eastern Mojave Desert Management Plan (2002) (amends the 1980 CDCA Plan)

Standards of Public Land Health in the NEMO Planning Area are found on pages 2.5-2.7 and include standards for soils, native species, and riparian/wetland and stream function.

The Northern and Eastern Mojave Desert Management Plan (2002) states that “routes and trails would be located to minimize damage to soil, watershed, vegetation, or other resources of the public land, and to minimize harassment of wildlife or disruption of wildlife habitat” (pp.4-9).

Route Designation in the Northern and Eastern Mojave Desert Plan (2004)

This plan updates the 1980 California Desert Conservation Area (CDCA) Plan by incorporating into that plan a network of motorized vehicles access routes in the northeastern portion of the CDCA. This route designation plan does not include the BLM’s upper portion of Furnace Creek Road.

BLM National Policy – Conditions of Use for Off-Road Vehicles (43 CFR 8341)

Bureau of Land Management’s regulatory policy concerning the use of off-road vehicles on public lands is found in 43 CFR 8341. Whenever the authorized officer determines that OHV use will cause or is causing considerable adverse effects on resources (soil, vegetation, wildlife habitat, cultural, historic, scenic, recreation, or other resources), the area must be immediately closed to the type of use causing the adverse effects. The closure must remain in force only until the adverse effects are eliminated and measures to prevent their recurrence are implemented (whichever comes first). A considerable adverse effect resulting from the use of off-road vehicles is defined in 43 CFR 8341 as any environmental impact that causes:

- (a) significant damage to cultural or natural resources, including but not limited to historic, archaeological, soil, water, air, vegetation, scenic values; or
- (b) significant harassment of wildlife and/or significant disruption of wildlife habitats; ... and is irreparable due to the impossibility or impracticability of performing corrective or remedial action.

Bureau of Land Management Manual Section 6740—Wetland-Riparian Area Protection Management

BLM Manual Section 6740 “established policy and procedures for the identification, protection, maintenance, enhancement, and management of fresh, brackish, and saline water wetland areas.” Further, the purpose of the section states that “riparian areas which presently or potentially support broad-leaf vegetation in arid and semi-arid ecosystems are of special management concern.”

Other Laws and Regulations**California State Water Quality Law and Regulations**

Lahontan Basin Plan states in Section 4.11 that: “The U.S. Forest Service and the Bureau of Land Management designate ORV routes on public land and prohibit operation away from these routes. ORV use may be further restricted during extremely dry conditions in order to prevent fires, and during wet conditions when excessive soil disturbance is likely. However, illegal use does and can occur. Compliance should be encouraged via well planned and targeted public education efforts, as well as strict enforcement of regulations. Regional Board staff should continue to review and comment on proposed changes in ORV management plans of public agencies. The agencies should be encouraged to monitor the water quality impacts of legal ORV use, and to modify or close routes where water quality problems are occurring.”

The Lahontan Region requires a permit for small construction waste discharge when a 401 Water Quality Certification (for non-federal waters) is not applicable. The permit number is R6T-2003-004.

California State Fish and Game Regulations

Section 1600 of the California Department of Fish and Game Regulations concerns management of streambeds and makes it a violation for anyone to alter streambeds without an authorization obtained from the agency. To ensure compliance with Section 1600, the Forest Service and

Bureau of Land Management will consult with California Department of Fish and Game as necessary.

Wetlands (Executive Order 11990)

This Executive Order requires Federal agencies to avoid, to the extent possible, short-and long-term effects resulting from the modification or destruction of wetlands. Standards and guidelines are provided for soil, water, wetlands, and riparian areas to minimize effects to wetlands. They incorporate the Best Management Practices (BMPs) as outlined in the Soil and Water Conservation Handbook and FSM 2504 and 2530.4. These standards and guidelines apply to all wetlands where less restrictive management might otherwise occur.

