Appendix E2

Technical Memorandum Rock Creek Road
Measures to Avoid and Minimize Impacts to Wetlands and Waters of the U.S.
June 24, 2013

Technical Memorandum
Rock Creek Road – Project CA FLAP 4S12(1)
Measures to Avoid and Minimize Impacts to Wetlands and Waters of the U.S.
June 24, 2013

This project consists of improvements to California Forest Highway (FH) 89, Rock Creek Road. The Federal Highway Administration, Central Federal Lands Highway Division (CFLHD), in cooperation with Mono County, Inyo County, and the Inyo National Forest (INF) proposes to rehabilitate, restore, and resurface (3R) approximately 9.1 miles of the roadway. The route is a two-lane paved roadway with paved widths varying from 22 to 24 feet and variable width unpaved shoulders. One goal of the project is to widen the pavement section to add a 4-foot wide bike lane, achieving a total paved width of 28 feet. The intent of the project is to keep cuts and fills within the existing bench as much as possible to avoid and minimize impacts to wetlands and other waters of the U.S. (WUS).

The proposed improvements would follow the existing road and would include widening the paved section to add a 4-foot wide bike lane. Many of the delineated wetlands and WUS are located within ditch sections immediately adjacent to the roadway. Due to the nature of the proposed improvements and the addition of a bike lane, the proposed limits of construction will in some locations encroach upon the wetlands and WUS. In most locations along the route the proposed widened roadway section will fit within the existing bench because there are wider gravel shoulders or flat areas adjacent to the pavement. However in some locations where the existing bench is narrower, the construction of cut slopes or fill slopes will be necessary to accommodate the wider roadway section. Where the wider bench width does exist, the proposed centerline alignment is often slightly shifted to make the proposed roadway width “best fit” the existing site conditions. This design strategy makes the best use of the existing bench, thus minimizing the need for earthwork operations while also minimizing impacts to environmental resources.

As the design has progressed, measures have been taken by the design team to avoid and/or minimize permanent and temporary impacts to wetlands and WUS. A synopsis of the design history and measures taken to minimize impacts are described as follows:

A detailed topographical survey of the project limits was conducted in July 2012. The design team used this data to determine a preliminary “best fit” proposed centerline alignment. A preliminary (30%) design was prepared in November 2012. In addition to the 28-foot paved width, the design typical roadway section includes standard roadside ditch and fill slope sections. At that time, the proposed typical section was consistently modeled along the entire project length without any modifications. In other words, measures such as retaining walls or use of steeper cut and fill slopes were not modeled at that time. The purpose of this initial design approach was to get a preliminary determination on what the impacts would be under this “worst case” scenario. Construction limits (top-of-cut or toe-of-fill) were overlaid on the delineated wetlands and WUS to determine permanent impacts. For temporary impacts, a 5-foot wide “buffer” adjacent to the permanent impacts was delineated along the construction limits, assuming that this width would be temporarily impacted by construction equipment. A summary of the impacts at the 30% design stage is below:

30% Design	Type of Impact			
	Temporary	Permanent	Temporary	Permanent
	Square Feet		Acres	
Wetlands	4,704	960	0.108	0.022
WUS	29,321	14,632	0.673	0.336
Total	34,025	15,592	0.781	0.358

A 30% design field review was conducted in November 2012 for the purpose of collecting additional data and to review design decisions. The proposed centerline as designed had been staked by a survey crew prior to the field review. The design team noted areas where the proposed alignment could be revised to better fit the existing bench and minimize impacts to wetlands and WUS.

The next iteration of the design (70%) used the same methodology described above (i.e. used the standard typical section throughout the roadway alignment), but made several adjustments to the location of the proposed centerline based on observations made during the 30% field review. By revising the proposed centerline, the impact areas were reduced considerably. A summary of the impacts at the initial 70% design stage is below:

Initial 70% Design	Type of Impact			
	Temporary	Permanent	Temporary	Permanent
	Square Feet		Acres	
Wetlands	2,143	957	0.049	0.022
WUS	15,282	10,304	0.351	0.237
Total	17,425	11,261	0.400	0.259

Although the reduction in permanent impacts to wetlands was minimal, the temporary wetland impacts and temporary and permanent impact reductions to WUS were more significant. After this iteration of the design it was determined that the design could be modified to further minimize the impacts. These modifications included:

- The use of mechanically stabilized earth (MSE) retaining walls
- Steepening cut and fill slopes to “catch” the existing ground sooner
- The use of a narrow (2-foot wide) “paved ditch” section. A standard roadside ditch is typically approximately 6 feet wide. This design change was particularly important in areas where there are vegetated swales or wetland seeps within the existing roadside ditch section.

Some specific locations where such measures were taken in the final 70% design include:

RPW-44

RWP-44 is the main channel of Rock Creek, which is tributary to the Owens River and is a delineated WUS. Rock Creek crosses the alignment of Rock Creek Road at five locations within the project area. There are other locations along the route where the creek channel runs parallel and immediately adjacent to Rock Creek Road. The preliminary design included several locations where the construction limits

were encroaching on the ordinary high water mark of Rock Creek. To mitigate this, an MSE wall is proposed on the east side of Rock Creek Road from approximate Stations 1071+80 to 1073+80 (*Note: during the 70% field review it was determined that the centerline could be shifted approximately 2.5 feet to the west between these stations to potentially eliminate the need for the MSE wall*). Other MSE walls are proposed on the east side of Rock Creek Road from approximate Stations 1076+60 to 1078+70 and on the north side of Rock Creek Road from approximate Stations 1124+60 to 1126+20. These walls were necessary to keep the construction limits within the Biological Survey Area (BSA), and also reduced the permanent impacts to RPW-44 by a total of approximately 2,900 square feet. Temporary impacts were reduced by approximately 4,720 square feet.

NRPW-17

NRPW-17 is a swale within the roadside ditch along the west side of Rock Creek Road from approximate Stations 1410+00 to 1415+00, and is a WUS. From Stations 1410+20 to 1414+40, a 2-foot wide paved ditch section is proposed on the west side of Rock Creek Road rather than a standard roadside ditch section, which is typically approximately six feet wide. Use of the paved ditch section eliminated approximately 219 square feet of permanent impacts to NRPW-17. Temporary impacts were reduced by approximately 126 square feet.

NRPW-3

NRPW-3 is a wetland vegetated swale within the roadside ditch along the west side of Rock Creek Road between approximate Stations 1434+00 and 1436+50. The proposed centerline was shifted approximately one foot to the east in this area, which avoided approximately 235 square feet of permanent wetland impacts. Temporary wetland impacts were reduced by 224 square feet.

NRPW-4

NRPW-4 is a seep wetland located within the roadside ditch along the west side of Rock Creek Road near Station 1329+00. The proposed centerline was shifted approximately one foot to the east, which avoided approximately 9 square feet of permanent wetland impacts. Temporary wetland impacts were reduced by 18 square feet.

In addition to the areas described above, there were also numerous other locations where the initial 70% design showed temporary impacts to various wetlands and WUS (in locations with no permanent impacts), due to the 5-foot buffer along the construction limits. The design measures to reduce the overall construction limits also had a significant reduction in temporary impacts, other than those listed above. After the design refinements were made, a summary of the impacts at the final 70% design stage is below:

Final 70% Design	Type of Impact			
	Temporary	Permanent	Temporary	Permanent
	Square Feet		Acres	
Wetlands	421	710	0.010	0.016
WUS	4,632	7,153	0.106	0.164
Total	5,053	7,863	0.116	0.181

By this stage, the total permanent impacts to wetlands and WUS had been reduced to approximately half of what they had been at the 30% design phase. Reductions in temporary impacts were even more

significant; the total temporary impacts to wetlands and WUS had been reduced to approximately 12% of what they had been at the 30% design phase.

A 70% field review was conducted in May 2013 to review the latest design. Again the proposed centerline as designed had been staked prior to the field review. The design team noted areas where the proposed alignment could be revised to further reduce impacts. For this review the main focus was on the remaining permanent wetlands impacts. Two specific areas of note included:

NRPW-5

NRPW-5 is a wetland vegetated swale that is adjacent to a parking area near the southern end of the project (approximate Station 1475+00). The parking lot accommodates approximately 20 vehicles for head-in parking. At the north end of the parking area, the length of the parking stalls becomes approximately six feet shorter for the last four stalls (see photo below). For the existing layout, the rear end of larger vehicles parked in these shorter stalls sometimes sticks out into the adjacent roadway travel lane, posing a safety hazard. Therefore the original proposed design included repaving and enlarging the parking lot to provide a consistent stall length for all of the parking spaces. By lengthening the last four stalls, there would be an encroachment into the adjacent wetlands. This would have permanently impacted approximately 40 square feet of the NRPW-5 wetland.

After further discussion, it was identified that there are an adequate number of longer parking spaces to accommodate larger vehicles within the existing extents of the parking lot. If necessary, “Compact Car Parking Only” signs may be placed at the shorter stalls to discourage larger vehicles from parking in these spaces. By repaving the parking lot only within its existing footprint, impacts to NRPW-5 will be avoided.

Figure 1: Wetland NRPW-5

Wetland 48

Wetland 48 is an emergent wetland within a swale along the east side of Rock Creek Road from approximate Stations 1289+00 to 1290+00 (see photos below).

Figure 2: Wetland 48

The existing paved width of the road at this location is approximately 22 feet. In order to achieve the proposed 28-foot road width, the proposed widening at the 70% design stage was approximately four feet to the east and two feet to the west. The proposed widening encroaches into Wetland 48 and would permanently impact approximately 668 square feet of wetlands. This represents approximately 94% of the total permanent wetlands impacts for the entire project. There would also be approximately 361 square feet of temporary wetland impacts.

Permanent impacts to Wetland 48 cannot be completely avoided while still achieving the required paved road width in this area. However, it was determined that the proposed roadway alignment could be shifted approximately one foot to the west, which reduced the permanent wetlands impacts to 69 square feet. Temporary wetlands impacts at this location remain the same (361 square feet) due to the assumed 5-foot wide buffer. However, various design changes have reduced the overall temporary impacts for the project. Impacts to Wetland 48 have been minimized to the largest extent possible. No further measures are feasible to minimize impacts to the Wetlands.

The 95% design is currently underway and will be completed in July 2013. The design measures described above further reduced the overall impacts for the project. A summary of the impacts at the initial 95% design stage is below:

95% Design	Type of Impact			
	Temporary	Permanent	Temporary	Permanent
	Square Feet		Acres	
Wetlands	389	69	0.009	0.002
WUS	4,491	4,040	0.103	0.093
Total	4,880	4,109	0.112	0.094

Appendix E3

Rock Creek 401 Letter from Jan Zimmerman, Lahontan Regional Water Quality Control Board Re: Wetlands Mitigation Concepts for Rock Creek Road, Dated: June 24, 2013

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380A
Lakewood, CO 80228-2583
Office: 720-963-3394
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Wendy.Longley@dot.gov

In Reply Refer To:
CA FLAP 4S12(1)

June 24, 2013

Ms. Jan Zimmerman
Lahontan Regional Water Quality Control Board
South Lahontan Region
1440 Civic Drive, Suite 200
Victorville, CA 92392

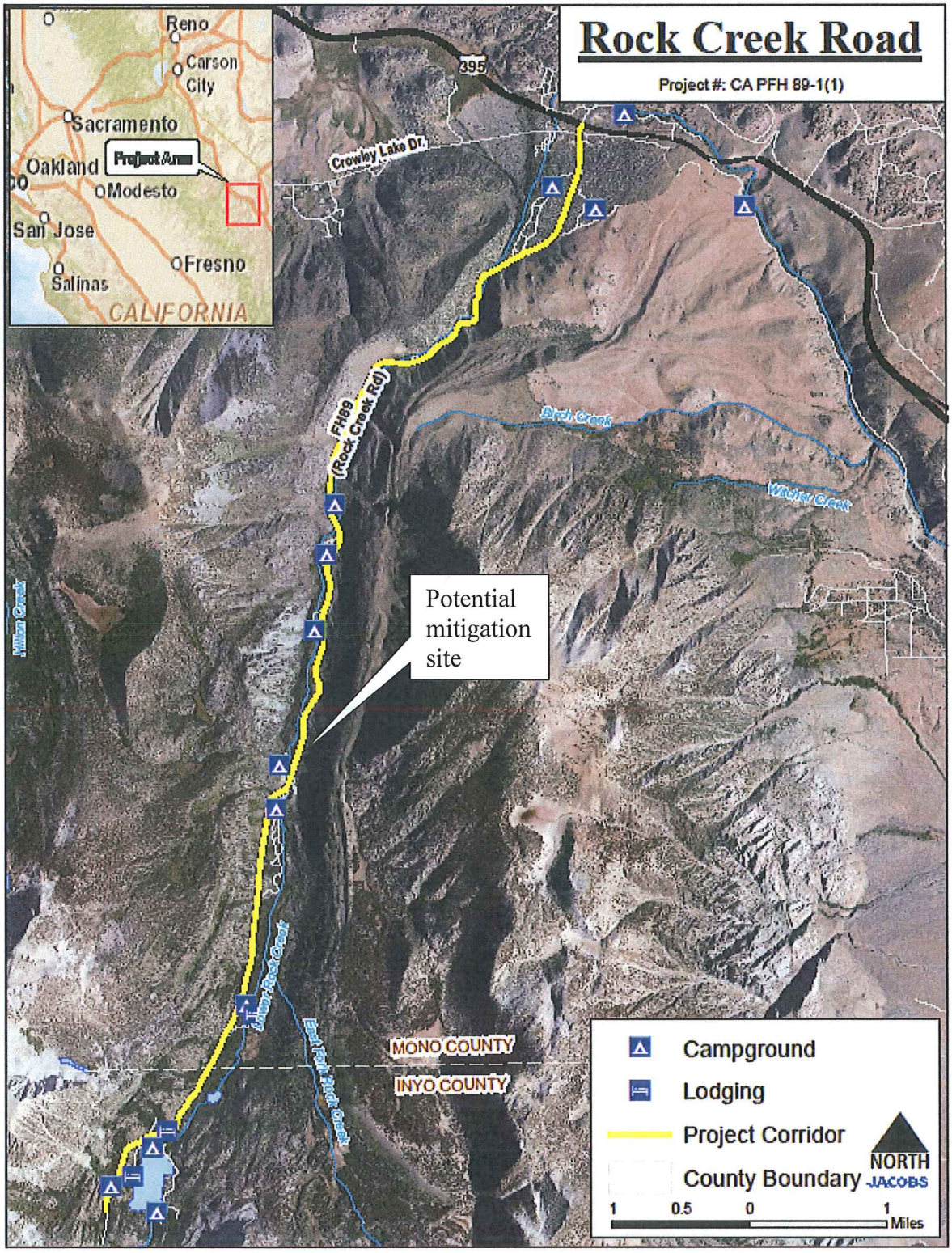
Re: Wetlands Mitigation Concept for Rock Creek Road

Dear Ms. Zimmerman:

As you may recall, Thomas Parker with Central Federal Lands Highway Division (CFLHD) discussed Forest Highway 89 (a.k.a. Rock Creek Road) wetland impacts and proposed mitigation plan with you on June 17, 2013. During that discussion, it was identified that you would need additional information (e.g., amounts and types of wetland impacts, proposed brief mitigation plan description, etc.) to assess whether our mitigation plan could be expanded upon for Section 401 Water Quality Certification. The purpose of this letter is to provide you with the requested information.

Project Description

The Central Federal Lands Highway Division (CFLHD) is proposing to resurface, restore, and rehabilitate (3R) approximately 9.1 miles of Forest Highway 89 (a.k.a. Rock Creek Road) within the Inyo National Forest (INF) in Mono and Inyo Counties. The route is a two-lane paved roadway with paved widths varying from 22 to 24 feet and variable width unpaved shoulders.



One goal of the project is to widen the pavement section to add a 4-foot wide bike lane, achieving a total paved width of 28 feet. The intent of the project is to keep cuts and fills within the existing

bench as much as possible to avoid and minimize impacts to wetlands and other waters of the U.S. (WUS).

Wetlands and WUS Impacts

As the design has progressed, measures have been taken by the design team to avoid and/or minimize permanent and temporary impacts to wetlands and WUS. The attached Technical Memorandum provides a more detailed explanation of these measures. The final design impacts are as follows:

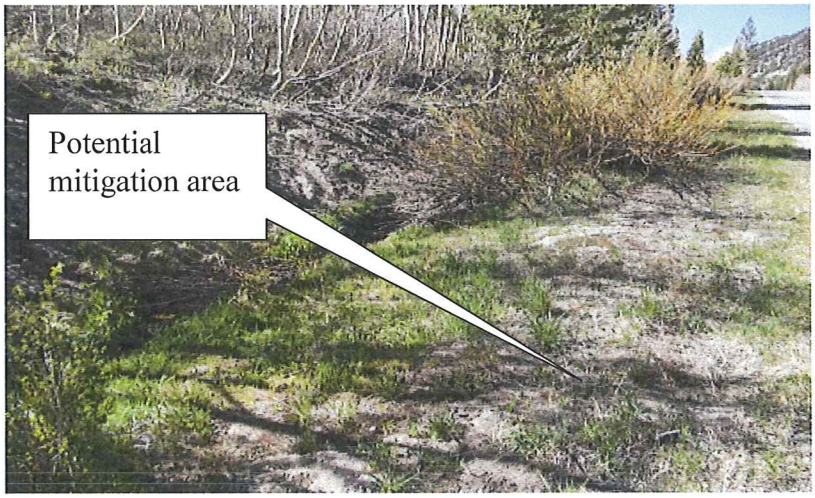
95% Design	Type of Impact			
	Temporary	Permanent	Temporary	Permanent
	Square Feet		Acres	
Wetlands	389	69	0.009	0.002
WUS	4,491	4,040	0.103	0.093
Total	**4,880**	**4,109**	**0.112**	**0.094**

It is important to note that temporary wetland impacts will be restored after road construction is complete. Permanent impacts to wetlands are located at a single location. Wetland 48 is located within a swale along the east side of Rock Creek Road from approximate Stations 1289+00 to 1290+00 (see photos below). This wetland is dominated by willows including include Sierra willow (*Salix orestera*) and diamond leaf willow (*Salix planifolia*). Understory species include horsetail (*Equisetum arvense*) and sedges (*Carex* spp.).

Wetland Mitigation

On the east side of Rock Creek Road, immediately downstream (north) of Wetland 48 is NRPW-49, an intermittent WUS that is tributary to Rock Creek. NRPW-49 is located within the same drainage swale as Wetland 48. The area adjacent to NRPW-49 between Stations 1286+00 and 1289+00 (see Project Location Map on Page 2) represents a viable location for wetland mitigation for the following reasons:

- The terrain along most of the road is very steep (in some cases steeper than a 10% grade). In this location, the grade is milder (approximately 4.5%).
- The mitigation site would be in close proximity to an existing swale.
- For this 300-foot stretch, three tributary drainages enter the swale from the east, providing the necessary hydrologic support for the mitigation area.



The proposed mitigation concept would involve creating willow shrubland that is similar in functions and values to Wetland 48. Mitigation will occur at a 2:1 ratio and will result in approximately 138 square feet in willow shrubland. It is anticipated that willow stakes will be collected from Wetland 48 and installed adjacent to NRPW 49. The understory will be broadcast seeded with native, local genotype species to increase vegetation diversity and wildlife habitat.

We would like your input on this proposed mitigation concept before we move forward with a more detailed mitigation plan design. If you have any questions or comments, please contact me at 720-963-3394.

Sincerely yours,

Wendy Longley
Project Manager

Enclosure:
Technical Memorandum, Measures to Avoid and Minimize Impacts to Wetlands and Waters of the U.S.

cc (via email):
Gerry Le Francois, Principal Planner, Mono Co. Community Development Department, glefrancois@mono.ca.gov