

APPENDIX D

State of California
Department of Parks and Recreation
Supplement 02 to Final Mitigated Negative Declaration

**Supplement 02 to
Final Mitigated Negative Declaration**

**BIG RIVER WATERSHED RESTORATION
PROPOSITION 40 –
RIVER PARKWAYS GRANT PROJECT**

Lead Agency



**State of California
DEPARTMENT OF PARKS AND RECREATION**

**Mendocino District
12301 North Highway 1 - Box 1
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SUPPLEMENT TO A MITIGATED NEGATIVE DECLARATION

PROJECT: Big River Watershed Restoration, Proposition 40 – River Parkways Grant Project [Original State Clearinghouse # 2006072012 (October 2006)]

LEAD AGENCY: California Department of Parks & Recreation (California State Parks)

INTRODUCTION AND REGULATORY INFORMATION

This Supplement to the Final Mitigated Declaration (MND) for the Big River Watershed Restoration, Proposition 40 – River Parkways Grant Project (the Project), to be implemented at the Big River unit of Mendocino Headlands State Park, has been prepared by California State Parks (CSP).

This Supplement discloses a newly proposed project area that is within the scope of the MND's final project description and may collectively require preparation of a subsequent MND (California Code of Regulations (CCR) §15162). However, under CCR §15163(a)(1 & 2), the existing MND can be revised and rendered adequate for the altered project, provided minor changes and additions are specified, and none are deemed significant in their potential impacts to the environment. This supplement provides the details of the proposed project changes and an assessment of potential environmental impacts only for new project areas, in order to render the existing Final MND for the Project adequate (CCR §15163(b)).

This document has been prepared to comply with provisions of the California Environmental Quality Act (CEQA), the California Public Resources Code sections §21000 *et seq.*, and the CEQA Guidelines (CCR §15000 *et seq.*). This Supplement to the Final MND will be subject to the same public notice and review requirements as a draft MND (CCR §15087 *et seq.*), with filing subsequent to public review and comment period with the State Office of Planning and Research, State Clearinghouse.

LEAD AGENCY

Under CEQA Guidelines §15051(b)(1), “the lead agency will normally be an agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose.” The lead agency assumes responsibility for and primary approval authority for a proposed project. For this project, the lead agency is California State Parks.

SUMMARY OF FINDINGS

Based on the revisions to the proposed project and the resulting changes and additions to its scope, including project requirements, as addressed in this

document, findings have been made for each significant effect included in the previously certified MND as revised in this document. Findings are noted following the descriptions of each revision, where applicable.

AVAILABILITY OF DOCUMENTS

This Supplement to the Mitigated Negative Declaration for the Big River Watershed Restoration, Proposition 40 – River Parkways Grant Project will be available throughout the 30-day public review period at the following locations:

- Mendocino County Library, Fort Bragg Branch
499 East Laurel
Fort Bragg, CA 95437
(707) 964-2020
- California State Parks
Northern Service Center
One Capital Mall - Suite 410
Sacramento, California 95814
- California State Parks
Mendocino District
12301 North Highway One – Box 1
Mendocino, CA 95460
(707) 937-5804
- California State Parks website (http://www.parks.ca.gov/?page_id=980)

The Notice of Determination (NOD) for the originally certified MND on this project was filed on October 31, 2006 (SCH#2006072012). This Supplement will be appended to the originally certified Final MND following the filing of the NOD and will be available by request, along with all supporting materials, at CSPs Northern Service Center and the Mendocino District Headquarters office.

PROJECT DESCRIPTION:

This section includes the original summary project description, with annotations following for project scope elements that have been altered since the certification of the original MND.

California State Parks (CSP) proposes to correct erosion and sedimentation problems, improve stream crossings along roads, remove logging roads that contribute sediment to Big River and tributaries, convert roads to trails, restore pre-disturbance hydrologic processes, delineate parking areas, construct a restroom building, and improve public information within the Big River unit of Mendocino Headlands State Park. Goals of this project include road de-commissioning and conversion into recreational trails, stabilizing or removing

skid trails and landings to restore riverine functions, improving fish passage and opening up new habitat for spawning and rearing, resurfacing and delineating parking locations, and constructing public toilets. Work related to these efforts will include:

- Excavation and removal of road fill from stream channels to re-establish historical width, depth, alignment, and gradient;
- Removal of sidecast fill material along roadsides;
- Decompaction of road surfaces to facilitate revegetation by native plants;
- Retrieval and removal of debris (culverts, cable, concrete foundations, etc.) that negatively affect hydrologic processes and natural habitats;
- Restoration of the natural topography and hydrology of the land (ridges, stream valleys, and swales) along roadway corridors;
- Removal of non-native invasive plant species;
- Mulching and implementation of other stabilization techniques in disturbed sites using woody debris recovered from excavations;
- Monitoring and maintenance of disturbed areas to improve conditions for either human-assisted or natural revegetation with native species;
- Delineation of beach parking areas with boulders, logs, or other natural material;
- Resurfacing of the beach parking areas and primary road with compacted road base;
- Installation of a vault restroom facility outside the 100-year floodplain;
- Installing regulatory, informational, and interpretive signs pertaining to restoration efforts.

Specific watershed restoration activities identified in the original MND focused on eleven sites scattered throughout the Big River unit, with the parking area and restroom work comprising a twelfth site.

CORRECTIONS AND ADDITIONS

This Supplement to the Big River Watershed Restoration, Proposition 40 – River Parkways Grant Project includes changes of scope in the Project that could result in substantial changes in Project circumstances, including newly identified significant effects or an increase in the environmental impacts of previously identified significant Project effects, as identified in CCR §15162, et seq., thereby requiring the preparation of a subsequent MND. However, in accordance with CCR §15163(a)(1 & 2), the lead agency may prepare a supplement to the original MND if only minor additions or changes would be necessary to make the previous environmental compliance document adequately applicable to the changes in project circumstances. Therefore, this Supplement to the original MND is sufficient to identify the changed circumstances and subsequent revisions in the scope of the Project and pertinent Project requirements, and the preparation of a subsequent MND is not required.

The following corrections, additions, and deletions supplement, supersede, or

otherwise inform applicable sections of the previously certified Final MND for the Project. Additions and corrections are underlined; a strike-through line indicates a deletion. In some cases, in areas where there were many individual changes, an entire paragraph or section was deleted and re-written, even if portions of the narrative remained the same in both versions. This was done for ease of presentation and public review. Minor punctuation, spelling, and grammatical corrections that contribute to ease of understanding, but have no significant impact on the content, have not been included in this document. Throughout this document, references to the lead agency may be either California State Parks (CSP) or California Department of Parks and Recreation (DPR).

Project Description, p. 3 of Final MND

Modify the text on p.3 of Final MND as stated below:

Specific watershed restoration activities will focus on fourteen project ~~eleven~~ sites scattered throughout the Big River unit including ~~with the parking area and restroom work comprising a twelfth site.~~

Summary of change and impact on significance

This insertion clarifies the total number of project sites from the original Final MND, to include both Supplement 01 and Supplement 02.

Findings

Not applicable.

Questions or comments regarding this Supplement to the Final Mitigated Negative Declaration may be addressed to:

California State Parks
Mendocino District
12301 North Hwy. 1 – Box 1
Mendocino, CA 95460

Pursuant to Section 21082.1 of the California Environmental Quality Act, California State Parks (CSP) has independently reviewed and analyzed the Initial Study and Negative Declaration for the proposed project and finds that these documents reflect the independent judgment of CSP. CSP, as lead agency, also confirms that the project requirements detailed in these documents are feasible and will be implemented as stated in the Negative Declaration.

ORIGINAL SIGNATURE ON FILE

Date 5-30-14

Liz Burko District Superintendent



ORIGINAL SIGNATURE ON FILE

Date 5/30/14

Renée Pasquinelli, District Environmental Coordinator



**CHAPTER 2
PROJECT DESCRIPTION**

2.2 PROJECT LOCATION

Table 1B summarizes the site number designations and locations for an additional seven proposed watercourse crossing and road drainage upgrades incorporated into the scope of the Project and is the subject of this Supplement to the mitigated negative declaration. Watercourse restoration is detailed at specific mileage locations with road work occurring at a range of locations along the M2 road (0.0-1.62).

Table 1B: Additional Site Number Designations and Locations for Big River Watershed Restoration Project (Revised May 2014)			
Road Number (Area)	Mileage from Road Origin	Site Designation	Township, Range, Section, Quarter-Section
M2	0.36	M2-0.36	T17N, R17W, Sec. 28, SW 1/4
M2	0.41	M2-0.41	T17N, R17W, Sec. 28, SW 1/4
M2	0.48	M2-0.48	T17N, R17W, Sec. 28, SW 1/4
M2	0.88	M2-0.88	T17N, R17W, Sec. 29, SE 1/4
M2	1.06	M2-1.06	T17N, R17W, Sec. 29, SE 1/4
M2	1.34	M2-1.36	T17N, R17W, Sec. 29, SW 1/4
M2	1.46	M2-1.46	T17N, R17W, Sec. 29, SW 1/4
M2	0.0 – 1.62	M2-0	T17N, R17W, Sec. 28, SW 1/4, T17N, R17W, Sec. 29, SE & SW 1/4s

2.3 BACKGROUND AND NEED FOR PROJECT

2.3.13 Site M2-0-1.62, Haul Road: Existing Conditions and Need for Project

In its current state, the M2 logging road is experiencing erosion, delivering low-quality detrimental sediment to Big River. Initial reconnaissance found one large landslide; seven watercourse crossings, seven ditch-relief culverts and a few areas with road outboard fill stress. Three watercourse crossings on seasonal streams are undergoing progressive failure, thus potentially delivering large quantities of sediment to Big River. Remediation includes pulling the cross-drain culverts and outsloping the road. Please refer to Appendix B: Project Plan Sheets, "Department of Conservation, California Geological Survey: Big River

State Park – Watershed Restoration- Road M2,” for further details on existing conditions and the remedial needs and plans for this proposed Project site.

2.3.14 SITES M2-0.36, M2-0.41, M2-0.48, M2-0.88, M2-1.06, M2-1.34, AND M2-1.46.

This section addresses seven project locations, corresponding to seven stream crossings of the M2 road, none of which are on fish-bearing streams. The crossings occur at miles 0.36, 0.41, 0.48, 0.88, 1.06, 1.34 and 1.46 as shown in Table 2A: Additional Stream Crossing Remediation Site Information.

Table 2A: Additional Stream Crossing Remediation Site Information				
Site #	Stream Class	Culvert Diam. (in.)	CDFW Jurisdictional	Prescription
M2-0.36	II	24	yes	Remove fill and culvert, re-establish stream channel
M2-0.41	III	18	yes	Remove fill and culvert, re-establish stream channel
M2-0.48	II	18	yes	Remove fill and culvert, re-establish stream channel
M2-0.88	II	24	yes	Remove fill and culvert, re-establish stream channel
M2-1.06	II	36	yes	Remove fill and culvert, re-establish stream channel
M2-1.34	II	18	yes	Remove fill and culvert, re-establish stream channel
M2-1.46	II	18	yes	Remove fill and culvert, re-establish stream channel

The culverts at each of these locations drain streams from watersheds of significant relief; the topography and pitch of each stream contributes to rapid flow increases during rain events. In addition, upslope skid trails and drainage channels contribute additional surface flows to some of these streams, exacerbating rapid rises in stream volume and sediment and debris transport during storms. Existing culverts are either in disrepair or clogged, contributing to partial blockage of streamflow resulting in accumulations of upslope sediment and woody debris. Some of these culverts are also not placed at the prevailing stream grade, contributing to piping (water flow around culverts instead of through them), upstream sediment accumulations, and downstream erosion.

Remediation will include removal of existing culverts, road fill, and any upslope excess sediment within the stream channel. Historical channel width, depth, alignment, and gradient will be restored. As needed, rock will be placed with the newly aligned channels to prevent erosion. Please refer to Appendix B: Project Plan Sheets, "Department of Conservation, California Geological Survey: Big River State Park – Watershed Restoration- Road M2," for further details on existing conditions and the remedial needs and plans for this proposed Project site.

- ***Summary of changes and impacts on significance***

The geographical scope (extent) of the Project is amended to include associated road activities along the M2, with proposed culvert removals at: M2-0.36, M2-0.41, M2-0.48, M2-0.88, M2-1.06, M2-1.34, M2-1.46.

- ***Findings***

The addition of the M2 road and watercourse work will not individually or in total result in a change in the nature of the remedial actions proposed for the Big River Watershed Restoration Project, nor will they accrue to pose cumulative impacts not specified within the original MND. All prior mitigation measures, best management practices, permitting requirements, monitoring, and maintenance activities, as specified in the original MND continue to apply for the entirety of the Project, including the additional sites described in this Supplement.

2.4 PROJECT OBJECTIVES

2.4.13 Site M2-0-1.62: Overall Road Objectives

Project objectives for Road M2 from miles 0.0 through 1.7 include the following:

Wherever feasible, based upon existing local topography, surface conditions, and drainage regimes,

- Removal of outside (downslope-side) berms along the road;
- Deposition of removed berm and other fill material against upslope road edges to create low-angle, outsloped road surfaces that will disperse surface runoff across roads;
- Elimination of inboard ditches (through deposition of fill and re-contouring of the road surface) and attendant ditch-relief culverts that service corresponding sections of inboard ditches;
- Removal of ditch-relief culverts where appropriate;
- Treatment with appropriate erosion control materials and methods;
- Site monitoring and maintenance of erosion controls and invasive plant species;

- Revegetation, as necessary, with native plants.
- **Summary of changes and impacts on significance**
The geographical scope (extent) of the Project is extended to include Road M2 from miles 0.0 to 1.62. The scope of potential Project activities in this extended area will be the same as that for the originally designated area.
- **Findings**
Not applicable. The articulation of Project objectives alone does not constitute an environmental impact.

2.4.14 SITES M2-0.36, M2-0.41, M2-0.48, M2-0.88, M2-1.06, M2-1.34, AND M2-1.46: CULVERT SITE SPECIFIC OBJECTIVES

The California Geological Survey, in coordination with Project stakeholders, has formulated the following objectives for this Project site:

- Reduction in the amount of residual fill;
- Reduction in chronic sediment discharge;
- Minimization of maintenance requirements;
- Restore stream channels to re-establish historical width, depth, alignment, and gradient;
- Minimization of remediation and maintenance costs.

Please refer to Appendix B: Project Plan Sheets, “Department of Conservation, California Geological Survey: Big River State Park – Watershed Restoration-Road M2,” for further details on existing conditions and the remedial needs and plans for this proposed Project site

- **Summary of changes and impacts on significance**
The objectives articulated for these Project sites are consistent with those articulated in the original mitigated negative declaration for the remediation of culverted stream crossings, and are consistent with the broader management goals for the Big River unit.
- **Findings**
Not applicable. The articulation of Project objectives alone does not constitute an environmental impact.

2.5 PROJECT DESCRIPTION

This section provides a site-by-site summary of the proposed activities. Detailed project designs are provided in the Appendices. For the purposes of the Supplement, detailed project design information is provided in Appendix B “Department of Conservation, California Geological Survey: Big River State Park – Watershed Restoration- Road M2,” for further details on existing conditions and the remedial needs and plans for this proposed Project site. In general, these

measures are intended to rehabilitate stream corridors, reduce erosive potential of roadbed-stream crossings through the replacement of existing culverts with those of improved design or with bridges, partially restore the historical topographical contours to existing roadbeds, convert existing roads to trails, restore native vegetation to rehabilitated stream corridors and fill-slope failures, partially restore the historical topography to the Big River Rock Quarry pit, improve parking and define vehicular access in the entry area, and provide a restroom facility for the Big River unit of Mendocino Headlands State Park. Site-specific project activity details for project sites M1-0.64, M1-0.7, M1-1.85, M1-2.06, M1-2.08, M1-4.05, M1-4.78, M1-5.63, M1-6.49, M1-6.73, M1-6.84, M1-7.31, M1-7.38, M1-7.78, M2-0-0.1.62, M2-0.36, M2-0.41, M2-0.48, M2-0.88, M2-1.06, M2-1.34, M2-1.46, M9, M14, and S22 have been based upon technical assessments, rehabilitative measures, and construction designs provided by the California Department of Conservation, California Geological Survey (CGS). The CGS information has been augmented by the California Department of Parks and Recreation in order to provide details for Site Q and Site P, as well as to articulate and address site-specific design features, such as bridge construction specifications, and environmental concerns, such as reduction of impacts to a less-than-significant level or elimination of impacts on sensitive wildlife and plant habitats and existing visitor use patterns. DPR has also added information on required or recommended remediation practices, restoration techniques, and monitoring and maintenance protocols.

- ***Summary of changes and impacts on significance***

The project design information articulated for this Project is consistent with the description provided in the original mitigated negative declaration for the remediation of culverted stream crossings, and is consistent with the broader management goals for the Big River unit. Mitigation measures specified in Chapter 5 of the original mitigated negative declaration, where applicable to additional Project areas described here, shall be implemented as Project requirements.

- ***Findings***

The description of the Project has not been altered to add new activities that were not addressed in the original mitigated negative declaration. Mitigation measures and Project requirements applicable under the original description, as summarized in Chapter 5 of the original mitigated negative declaration, shall apply to all Project activities implemented in these additional areas and will reduce potentially significant impacts to a “less than significant” level.

2.5.13 Site M2-0-1.62: Supplement Project Description

State Parks proposes to facilitate improved drainage conditions along Road M2, from mile 0.0 to mile 1.62 and in so doing reduce the potential for sediment

delivery to Big River and reduce the need for ongoing road maintenance and frequent repairs, State Parks will remove ditch-relief culverts, reduce or eliminate road surface segments where there is evidence of fill failure, drain road segments, and remove watercourse crossings. The soil and rock generated from these deposited materials will be re-located along the inboard (upslope) road edges, and graded to create a low-angle outside-draining plane perpendicular to the longitudinal road surface. These activities will, in effect, eliminate the need for, and existence of, inboard ditches that currently carry road surface and upslope surface water and sediment along the inboard road edges. Where possible, elimination of all inboard surface runoff within contained geographical flow basins will eliminate cross-road ditch-relief culverts that require frequent clearing to prevent blockage. In some cases, inboard relief culverts are no longer located in optimal drainage locations, and local drainage shifts have led to bulk flow across road surfaces, pooling water and contributing to road-surface and fill-slope failures. Where possible, some ditch-relief culverts can be replaced with gradual reductions in road surface elevation (rolling dips) or armored stream-crossing fords, or both. In other sites, facilitation of sheet flow across roads may completely eliminate the need for channeling surface runoff across roads.

The reduction or elimination of fill-slopes and filled road surfaces will also reduce the potential for failure of soil surfaces. Soil generated from fill deposits will be placed in a stable location and used to outslope the road, or on and along the M2 road. If fill amounts exceed the capacity of onsite disposal, then excess material shall be transported to the Big River Rock Quarry.

Re-distributed fill materials used to create road outslipping will be compacted and graded to reduce the potential for surface erosion. If necessary, all exposed road surfaces and adjacent slopes will be mulched or brushed to reduce potential erosion.

- ***Summary of changes and impacts on significance***

The design information articulated for this Project site is consistent with the description provided in the original mitigated negative declaration, other than its application to an additional Project site area, as described in Table 1A and Section 2.3.13.

- ***Findings***

Addition of Project activities along 1.62 miles of Road M2 could result in potentially significant impacts to one or more environmental conditions. All prior mitigation measures, best management practices, permitting requirements, monitoring, and maintenance activities, as specified in the original mitigated negative declaration, continue to apply for the entirety of the Project, including the additional sites described in the Supplement. Therefore, with the inclusion of the mitigations summarized in Chapter 5 of the original mitigated negative declaration, the M2 road work is considered

“less than significant with mitigation”.

2.5.14 Sites M2-0.36, M2-0.41, M2-0.48, M2-0.88, M2-1.06, M2-1.34, AND M2-1.46: Project Description

State Parks proposes removing seven existing culverts and road associated fill material; thereby, restoring watercourse channels to historical width, depth, and alignment. Fill material will be placed on or along the M2 road in a stable location. During the design of the remedial work at this location, the following design parameters have been and will be taken into consideration:

- Watershed geometry, vegetation cover, surficial soils, and bedrock;
- Precipitation records (long-term patterns);
- Existing channel dimensions (geomorphology).

Please refer to Appendix B: Project Plan Sheets, “Department of Conservation, California Geological Survey: Big River State Park – Watershed Restoration-Road M2,” for further details on existing conditions and the remedial needs and plans for this proposed Project site

- ***Summary of changes and impacts on significance***
The design information articulated for this Project site is consistent to the description provided in the original mitigated negative declaration, other than its application to an additional Project site area, as described in Table 1A and Section 2.3.14
- ***Findings***
The addition of Project activities at M2-0.36, M2-0.41, M2-0.48, M2-0.88, M2-1.06, M2-1.34, AND M2-1.46 could result in potentially significant impacts to one or more environmental conditions. All prior mitigation measures, best management practices, permitting requirements, monitoring, and maintenance activities, as specified in the original mitigated negative declaration, continue to apply for the entirety of the Project, including the additional sites described in the Supplement. The inclusion of the mitigations summarized in Chapter 5 in the original mitigated negative, in conjunction with stipulations included within a streambed alteration agreement by the Department of Fish and Wildlife for these Project activities, will reduce potentially significant impacts to a “less than significant” level.

2.6 PROJECT IMPLEMENTATION

In general, project implementation will include all the activities performed within

the Big River unit that are directly related to the site-specific road, riparian corridor, and public entry areas work described above. Implementation includes on-site preparatory measures, such as delineations of active work zones, staging areas, and travel corridors, the posting of safety or educational information and signs, construction and ground-disturbing activities, erosion-control and restoration, monitoring, and maintenance necessary to accomplish project objectives.

Section 2.6.3, Site-Specific Construction Activities, provides brief descriptions of the general construction activities pertinent to each of the 12 19 Project sites. However, greater detail for each site is provided diagrammatically in Appendix B, Project Plan Sheets and ~~Design Memoranda~~. More specific technical information on the various stages of streambed and road remediation is located in Appendix C, Standard Specifications & Best Management Practices for Disturbed Lands Remediation (“Specifications”). This appendix provides further detail to explain the work proposed.

- **Summary of changes and impacts on significance**
The number of Project sites has been revised to include the M2 road section and watercourse crossings with design details and supplemental information specified in this Supplement added to Appendix B.
- **Findings**
Not applicable.

2.6.3 Site-Specific Construction and Ground-Disturbing Activities

2.6.3n Site M2-0-1.62

Please refer to Appendix B: Project Plan Sheets, “Department of Conservation, California Geological Survey: Big River State Park – Watershed Restoration-Road M2,” for further details on existing conditions and the remedial needs and plans for this proposed Project site and to Appendix C, Standard Specifications & Best Management Practices for Disturbed Lands Remediation, for technical information on site remediation.

- **Summary of changes and impacts on significance**
The number of Project sites has been revised to include the M2 road section and watercourse crossings with design details and supplemental information specified in this Supplement added to Appendix B.
- **Findings**
Not applicable.

2.6.3o Sites M2-0.36, M2-0.41, M2-0.48, M2-0.88, M2-1.06, M2-1.34, AND M2-1.46

Please refer to Appendix B: Project Plan Sheets, “Department of Conservation,

California Geological Survey: Big River State Park – Watershed Restoration-Road M2,” for further details on existing conditions and the remedial needs and plans for this proposed Project site and to Appendix C, Standard Specifications & Best Management Practices for Disturbed Lands Remediation, for technical information on site remediation.

- ***Summary of changes and impacts on significance***
The number of Project sites has been revised to include the M2 road section and watercourse crossings with design details and supplemental information specified in this Supplement added to Appendix B.
- ***Findings***
Not applicable.

IV. BIOLOGICAL RESOURCES.

SENSITIVE PLANTS

In April, May, June, and July 2005, ecologists with DPR, Mendocino District, conducted CNPS protocol-level plant surveys in areas potentially affected by proposed project activities. A plant list compiled during these surveys is available in Appendix A. The Big River unit supports several rare plants and a diversity of habitats that are described below. A list of these species potentially occurring within the project area and an assessment of their habitat is presented in Appendix D.

All project areas shall be surveyed for rare plant species prior to implementation using methodology that follows California Department of Fish and Wildlife’s “Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities” (DFG 2009). Plant surveys will be repeated in all areas where the previous survey was conducted greater than two years prior to project implementation.

V. CULTURAL RESOURCES.

Prior to implementation of project work at Road M2 for the Big River Watershed Restoration Project, State Park staff will conduct appropriate archaeological surveys in those areas where ground-disturbing activities are proposed. Based on the findings of those surveys, staff will develop project protective measures to insure the protection of archaeological resources with the implementation of this project.

- ***Summary of changes and impacts on significance***

The M2 Road was not previously surveyed for rare plants or for culturally sensitive sites. Text has been added to specify that surveys shall occur prior to implementation.

- ***Findings***

The addition of Project activities along the entire M2 Road, and specifically at M2-0.36, M2-0.41, M2-0.48, M2-0.88, M2-1.06, M2-1.34, AND M2-1.46 could result in potentially significant impacts to one or more environmental conditions. All prior mitigation measures, best management practices, permitting requirements, monitoring, and maintenance activities, as specified in the original mitigated negative declaration, continue to apply for the entirety of the Project, including the additional sites described in the Supplement. The inclusion of the mitigations summarized in Chapter 5 in the original mitigated negative, in conjunction with stipulations included within a streambed alteration agreement by the Department of Fish and Wildlife for these Project activities, will reduce potentially significant impacts to a “less than significant” level.

Appendix B

Project Plan Sheets

Department of Conservation, California Geological Survey: Big River State Park – Watershed Restoration- Road M2,



**DEPARTMENT OF CONSERVATION
CALIFORNIA GEOLOGICAL SURVEY**

801 K STREET • Suite 1324 • SACRAMENTO, CALIFORNIA 95814
PHONE 916 / 327-0791 • FAX 916 / 323-9264 • TDD 916 / 324-2555 • WEBSITE conservation.ca.gov

To: Doug Kern
Big River Program Manager
Mendocino Land Trust
P.O. Box 1094
Mendocino, CA 95460

From: Stephen D. Reynolds
Sr. Engineering Geologist
California Geological Survey
801 K Street, Suite 1324
Sacramento, CA 95814

Date: May 5, 2014

Subject: Big River State Park – Watershed Restoration – Rd M2

County: Mendocino

Description: T17N, R17W, Sections 22, 26, 27 MDB&M.

Quadrangles: United States Geological Survey 7.5 minute Quadrangle Series
(Topographic): Mendocino Peak, 1991 (39123C7)

Watershed: Super Planning Watershed: Mouth of Big River – 1113300403

References:

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13. Waananen, A.O. and J.R. Crippen, 1977, *Magnitude and frequency of floods in California*, USGS Water-Resources Investigation 77-21

Introduction

Mendocino Land Trust (MLT) working with California State Parks (CSP) is undertaking watershed restoration activities along the alignment of the M2 haul road (Project). The Project objective is to restore to the extent possible, hydrologic and hydraulic function to that part of the watershed traversed by the abandoned M2 haul road.

During the 21 April 2014 on-site meeting CSP, MLT, and CGS discussed project objectives and desired outcomes. The project will consist of pulling back outboard fill wherever possible, removal of all cross-drain culverts, and removal and stabilization of all water-course crossings. Spoil generated during road decommissioning will be managed on-site.

Due to administrative considerations, this project was placed upon a compressed schedule. Thus, the following design parameters are based on a reconnaissance level examination of haul road M2 and its appurtenant features rather than a more comprehensive evaluation typical of such projects at this point in the design process. As such, volumetric estimates are plus or minus 35 percent, at best.

Field Reconnaissance

CGS conducted a visual inspection of all project features. Basic hand-leveling and pace and compass traverses were conducted to generate approximate slope and grade data. In addition, basic measurements were obtained on the plan, pattern and profile of representative sections of the watercourses. In order to discern cross-drain culverts from actual water-course

crossings each culvert location was evaluated up- and down-stream of the culvert to verify the presence of an actual channel, as opposed to a gully from concentrated runoff, and to collect data on the plan, pattern, and profile of any streams encountered.

Global Positioning System (GPS) data was also gathered to reference locations of Project features. These data were combined with existing CSP LIDAR topography data in a geographical information system (GIS) for use in subsequent analysis.

Project features consist of approximately 1.6 miles of former logging haul road with an average width of 22 feet with grades range from 2 to 16 percent.

Hydrologic features include seven water-course crossings, 7 ditch-relief or cross-drain culverts, one inline ditch culvert, one boggy area, and the hydrologic disconnection of road M2.5. This corresponds to the GIS files provided by CSP (Terra Fuller, personal communication 4-25-2014).

CGS also noted that the majority of the outboard fill was well vegetated and did not exhibit signs of stress¹. For estimating purposes, a value of 2500 feet of outboard fill will be pulled back. This equates to an excavated volume of approximately 10,000 cubic yards.

Soils

Soils in the project area are predominately sandy, clay content running from 10 to 50 percent, and thus not resistant to erosion. Depth of soil ranges from slightly less than 3 feet to over 5 feet, depending on slope.

Table 1 is a summary of soil complexes and key properties occurring within the Project.

Soil Complex Name	Runoff Rating	Erodibility	Geomorphic Position
Shinglemill-Gibney	Very High	Moderate	Upper Slope
Quinliven-Ferncreek	High	High	Mid-Slope
Irmulco-Tramway	Moderate	High	Mid-Slope
Dehaven-Hotel	moderate	High	Lower slope

Source: USDA – Soil Web

Geology

The underlying regional geology is Franciscan Formation, a collection of terrains accreted during subduction of the Pacific Plate beneath the North-American Plate. The terrains in the Franciscan Formation consist of a series of northwest-southeast trending belts. The project lies within the coastal belt which consists of greywacke sandstone (mixed grain types), arkosic sandstone (quartz-feldspar), argillite (shale/slate), greenstone (metamorphosed submarine volcanic rocks), chert, vein quartz, and limestone, listed in decreasing order of abundance Jayco, et al, 2001. In the Project area the dominant bedrock is greywacke sandstone with lesser amounts of shale.

¹ E.g., tension cracking, slumping, leaning or pistol-butted trees.....

Hydrologic Analyses

CGS reviewed existing hydrologic data sets² for the largest drainage (0.88), estimating 2, 5, 10, 25, 50, and 100-year flows. Estimates of flow were used to derive general dimensions for rock armor.

Design Storm Flow

In keeping with general practice, the 100-year storm flow was used for estimating minimum channel dimensions and sizing rock armor. A design flow of 23 cubic feet per second (cfs) was used. A summary of the computations used to estimate the 100-year storm flow is attached.

Earthwork

It is anticipated that all earthwork can be accomplished by conventional means. Given the size and depth (reach) of several of the crossings, it is recommended that an excavator with an excavation reach of 20 feet or better³ be utilized. Excavation volume (spoil) estimates were made based upon reconnaissance –level field measurements (see above) and include a 25 percent bulking or swell factor. Table 3 is a summary of earthwork volumes for hydrologic features.

Earthwork also includes “pulling back” the outboard fill on suitable segments of road. For estimating purposes, a value of 2500 linear feet of outboard fill will be pulled back. This equates to an excavated volume of approximately 10,000 cubic yards.

Road Prism

Road prism treatments will include out-sloping and “pulling back” the outboard fill portion of the road and placing it against the road cut. This is sometimes referred to as a partial re-contour. The objective is to remove potentially unstable outboard fill and place it as a compacted fill in a stable location, the cut portion of the road bed. Additional benefits include buttressing the road cut and decommissioning the inside ditch.

Drainage of remaining road prism will be accomplished through a combination of techniques. For road segments with grades of 8 percent or less the road surface will be out-sloped and dips constructed as needed or at least every 150 feet. For road segments with grades greater than 8 percent, drainage will be achieved through out-sloping in conjunction with water bars. Water bar spacing will be a function of road grade. Table 2 summarizes water-break spacing as a function of road grade for the soils anticipated to be encountered during the project.

² Goodridge, 2002, *Compilation of Climatological Data for the California Department of Water Resources. USGS Water-Resources Investigation 77-21 for estimating flow (regression analyses)*.

³ Typically an excavator rated between 45,000 and 50,000 pounds (Caterpillar, 2014; John Deere, 2014)

Table 2: Water-Break Spacing As Function Of Road Grade

Road Grade (%)	Water Break Spacing (ft)
0 - 5	50
6 - 10	30
11 - 15	20
16 - 20	15

After Keller and Sherar, 2003

Spoil generated during out-sloping and dip construction will be used to decommission the inside ditch and buttress the cut slope.

Crossings

Crossing removal will generate sediment after construction from processes such as landsliding, channel incision, and bank erosion resulting from changes in channel base elevation (Madej, 2001; Switalski and others, 2004). Additional sources of post-removal sediment include soil disturbance from heavy equipment used in the construction, and large, bare slopes formerly covered by crossing fill (PWA, 2005).

Studies of road and crossing removals indicate that sediment production following construction ranges from 5 to 10 percent of the amount of excavated materials even when post-removal erosion control measures are present (Madej, 2001; Harris and others, 2008; Keppeler and others, 2007; PWA, 2005).

Project values for generated sediment would then be on the order of 500 cubic yards (yd³) for a crossing such as M2-0.88 and 40 yd³ for a crossing like M2-0.48. These sediment yield estimates are for ideal conditions, when very rigorous erosion control measures are in place. If partial erosion control is utilized, sediment yields will be considerably higher.

Project crossing removal will entail removal and salvage of surficial organic debris, removal of anthropogenic fill and accumulated sediment associated with the crossing. Slopes will be graded to blend with native slopes. Channel dimensions and grade will be based upon conditions of minimally disturbed channel sections up- and down-stream of the crossing.

In order to inhibit erosion of newly disturbed materials, salvaged organic debris will be placed upon bare slopes and a combination of jute / coir logs and plantings as necessary. Reconstructed channels will be protected with a combination of jute netting, extensive willow planting, and rock armor Figure 2. The extent and location of armor will be based upon conditions encountered during crossing removal. For example, if during crossing removal original channel gravels are encountered and extend the length of the unearthed channel section, then the need for rock armor is greatly diminished. However, if channel deposits are not encountered and just deep, easily eroded soils, then a more robust application of rock armor will be required.

Any trees downed during the process of crossing removal will be retained and incorporated into the new channel as large woody debris (LWD). While these are essentially alpine streams,

if a remnant flood plain is uncovered during excavation, the reconstruction effort will strive to reconnect the channel to that flood plain.

Figures 3 and 4 (attached) are typical drawings for crossing removal and channel restoration.



Figure 2: Typical Post-Removal Erosion Control (flow direction into page, note live willow stakes in voids within armor and anchoring jute netting)

Table 3: Estimates Of Restored Channel Footprint

Crossing Number	Length Existing Culvert (ft)	Length New Channel (ft) ¹
0.34	30	40
0.41	28	40
0.48	40	50
0.88	110	245
1.06	25	45
1.34	36	60
1.46	34	50

1-Based upon estimated footprint of crossing fill

Cross Drains

Cross drains or ditch-relief culverts will be removed and the excavation will be backfilled. Following backfilling, the cross-drain locality will be out-sloped and water breaks constructed as needed.

Table 4: Excavation and Backfill Volumes for Hydrologic Features

Feature ID (road mileage)	Feature	Spoil yd ³	Backfill yd ³
0.08	Cross-drain		3
0.13	Cross-drain		3
0.16	Cross-drain		3
0.2	Cross-drain		3
0.24-0.26	Boggy Area		
0.29	Ditch culvert		3
0.32	Concentrated run-on		
0.36	Water Course Crossing	320	
0.41	Water Course Crossing	530	
0.45	Cross-drain		
0.48	Water Course Crossing	350	
0.74	M2.5 Hydrologic disconnection		200
0.88	Water Course Crossing	5,000	
0.91	Cross-drain		3
1.06	Water Course Crossing	75	
1.32	Cross-drain		3
1.34	Water Course Crossing	200	
1.46	Water Course Crossing	290	
	Bank Volumes	6,765	221
	Excavated Volume	8,456	

Spoil Management

During reconnaissance, CGS noted 16 potential spoil management locations. Potential spoil capacity was estimated using a foot-print from a LIDAR-based topographic map with a minimum five-foot setback and a maximum fill height of six feet.

Table 5: Capacities of Spoil Management Areas

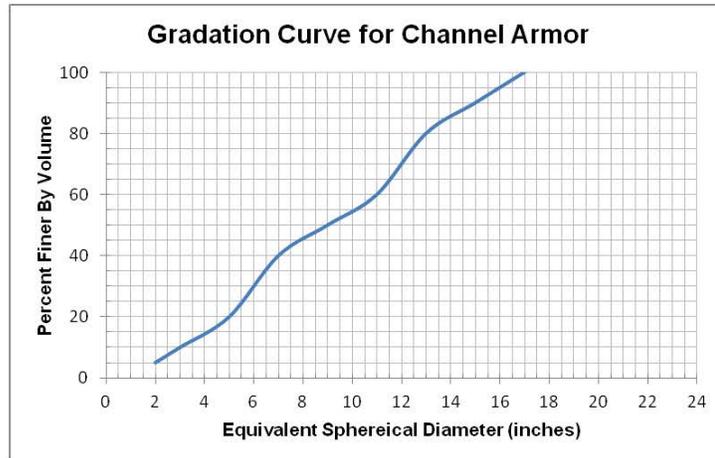
Feature ID (road mileage)	Feature	Spoil Area yd ³
0.07	Spoil Area	1160
0.39-0.40	Thru-cut / spoil area	380
0.44	Spoil Area	290
0.5	Spoil Area	2500
0.58	Spoil Area	1250
0.61	Spoil Area - M2.3	2600
0.64	Spoil Area	480
0.74 - 0.77	Spoil Area - M2.5	1060
1.02 - 1.04	Spoil Area	4850
1.11	Spoil Area	580
1.13	Spoil Area	290
1.17	Spoil Area	1060
1.24	Spoil Area	1160
1.28	Spoil Area	1650
1.36	Spoil Area	950
1.42	Spoil Area - M2.4	5800
Total Volume (yd ³)		26,060

Spoil areas are located rather uniformly along the road alignment, with the largest corresponding to former logging landings. There is more than three times the spoil capacity as there is estimated spoil volume.

Rock Armor

Following USBR and Caltrans protocols an initial estimate of rock size was made for a storm flow of 26 cfs (M2-0.88). The 50th percentile rock (D_{50}) was estimated to be nine inches. Figure 2 is a graph of armor gradation. Standard specifications that are a close match for the armor gradation would be a **50-50 blend of Caltrans Backing Numbers 1 and 3.**

Figure 2: Armor Gradation



Estimates of rock armor requirements for removed water course crossings are provided in Table 3 below. Armor will not be used at cross-drain removal sites because the cross drain will be removed and backfilled with native material, the inside ditch feeding the former cross drain will be backfilled and the road out-sloped.

Table 6: Rock Armor Tonnage By Water Course Crossing

Crossing Designation	Tons (U.S.) Rock Armor
0.34	32
0.41	26
0.88	245
1.06	28
1.34	38
1.46	37

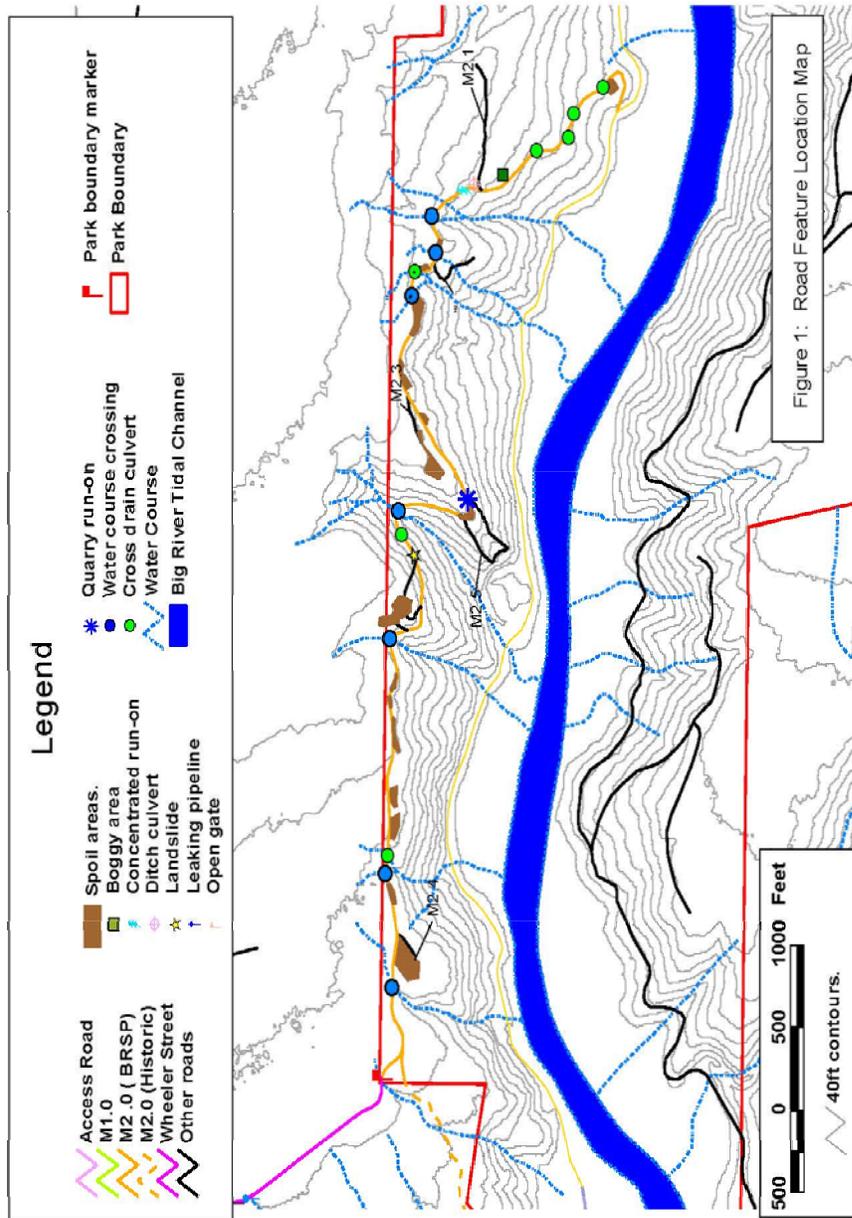
While not all the rock armor may be needed, given the potential for loss of heavy equipment access to the Project due to closure of road M1, it would best to be conservative in volumetric estimates.

The rock armor gradation is sufficiently robust to be used on other projects such as M1-7K culvert upgrades and Nelson Gulch fish Passage Improvement.

Original signed by
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Senior Engineering Geologist
California Geological Survey



Attachments: Location Map
Hydrologic Calculations
Typical Longitudinal Profile
Typical Cross Section with detail



M2-0.88 Flow Estimates

Estimation of Storm Flows by Regression Method
 $Q_{(t)} = C A^P P^H R^G$

Return Period	A	P	H	G	e1	e2	e3		Q (cfs)
2.0	0.040	45.0	1.0	3.5200	0.90	0.89	-0.47	0.1	29.8
5.0	0.040	45.0	1.0	3.0400	0.89	0.91	-0.35	0.1	31.9
10.0	0.040	45.0	1.0	2.2100	0.88	0.93	-0.27	0.1	34.5
25.0	0.040	45.0	1.0	1.6400	0.87	0.94	-0.17	0.1	36.5
50.0	0.040	45.0	1.0	1.3700	0.87	0.96	-0.05	0.1	38.0
100.0	0.040	45.0	1.0	1.2300	0.87	0.97		0.1	40.1

USGS W8177-01: A.O. Waananen & J.R. Cribben, Magnitude and Frequency of Floods in California

Estimation of 100-year Storm Flows by Rational Method

$T_c = 60(11.9 \times L^3) / H^3 \times 0.385$ $WQ = Q - CIA$

Channel Length (miles)	Elevation (infeet) (ft)	Time of Concentration (minutes)				Runoff Coefficient (C)	Production area (in acres)	Drainage Area (in acres)	Q (cfs)	
		I	H	L	T				I	Q
0.16	225.0	0.00	0.04	0.00	0.04	2.15	0.2	0.82	23	5
0.15	225.0	0.00	0.04	0.00	0.04	2.15	0.4	0.82	23	9
0.15	225.0	0.00	0.04	0.00	0.04	2.15	0.6	0.82	23	14

Estimate flow velocity by Manning's Equation
 $V = R^{2/3} S^{1/2} / n$

A	S	R	Vp	n	Q(2)	Q(10)	Q	Q(50)
3.50	0.20	0.70	6.00	0.355	0.79	0.45	6.40	22

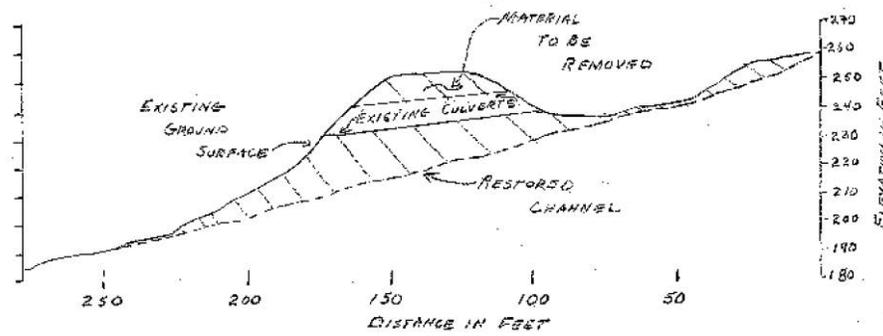


FIGURE 3: TYPICAL
LONGITUDINAL
PROFILE

*

FIGURE 4: TYPICAL CROSS SECTION WITH DETAIL

