

**FINDING OF NO SIGNIFICANT IMPACT**  
**LOWER REDWOOD CREEK FLOODPLAIN AND SALMONID HABITAT**  
**RESTORATION, BANDUCCI SITE**

National Park Service, U.S. Department of the Interior  
Golden Gate National Recreation Area

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**INTRODUCTION**

This Finding of No Significant Impact (FONSI) has been prepared, in accordance with the National Environmental Protection Act (NEPA), for the Lower Redwood Creek Floodplain and Salmonid Habitat Restoration project at the Banducci Site, part of the Golden Gate National Recreation Area in Marin County, CA. This document describes the selected alternative and provides an explanation of why it will have no significant effects on the human environment. The project will restore natural creek processes and enhance habitat for federally listed salmonid species.

A similar project to reconnect a portion of the creek with the floodplain and enhanced salmonid habitat was conducted by the Golden Gate National Recreation Area (GGNRA) in 2003. Both the 2003 project and this project were based on findings in a feasibility analysis and follow-up report that proposed restoration actions in three different reaches of the creek channel. Although the actions in the study had similar geography and purpose, the actions were independent of each other and the NPS determined that they could be conducted separately as distinct projects.

The FONSI, EA and an Errata prepared as a technical attachment to the EA, constitute a complete record of the environmental impact analysis process for this proposal.

**PURPOSE AND NEED FOR ACTION**

The purpose of the proposed action is to restore natural floodplain and creek processes to the project area for the benefit of aquatic and terrestrial fauna and long-term natural resource conditions in the Redwood Creek Watershed.

The project is needed because past land use activities at the Banducci Site have resulted in an obstruction of natural floodplain and creek processes that have reduced the quality of habitat for federally listed salmonids and caused a reduction in floodplain storage area during flood events. The upper reach of Redwood Creek through the project site is incised (deeply cut, with banks that are much higher than can be flooded naturally) due to historic changes in the watershed, and it has not recovered, causing it to be unstable, prone to the erosion of large quantities of sediment in its recovery process, and unsuitable for juvenile salmonid habitat. The upper reach of the creek at the site is unsuitable for juvenile salmonid habitat because the channel bed is virtually flat with few pools, creating summer conditions that are generally too shallow for juvenile salmonids. Winter rearing conditions are poor in this reach because neither the floodplain nor complex cover is available for salmonids to take refuge during high flows. Unless actions are taken, conditions would persist causing further damage to biological and watershed processes.

**ALTERNATIVES**

The EA analyzed two alternatives: Alternative 1 – Proposed Action; and Alternative 2 – No Action. The range of alternatives available to the planning team was limited due to the very specific purpose and need of the project. The planning team considered other treatment options,

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such as a variety of new floodplain widths, but dismissed these options because they did not fully meet the purpose and need of the project. Alternative 2 does not meet the objective of the project but was analyzed to meet NEPA requirements.

### **Alternative 1 - Selected Alternative**

The NPS selects Alternative 1, with modifications as described below, for implementation. Actions are described in three general areas of the site, the Lower Field, the “Upper Alley” of Redwood Creek, and the Upper Field (all actions in the “Old Ballfield” have been eliminated).

#### Actions in the Lower Field

*LEVEE REMOVAL:* Two remnant lengths of levee (150 and 85 linear feet) on the right bank of the creek at the lower (south) end of the main field will be removed. They will be removed to create additional area where flood flows on the Lower Field can re-enter Redwood Creek, reducing the possibility of salmonids getting stranded. The areas where levees will be removed will be replanted with native riparian vegetation.

*FLOODPLAIN MICROTOPOGRAPHY ENHANCEMENTS:* A network of four flow pathways will be excavated over about 10 acres of the Lower Field to enhance the movement of flood flows onto and off the floodplain and provide salmonids with routes back to the creek as floodwaters recede. The flow paths will be shallow and practically imperceptible and approximately 20 to 40 feet wide, and about 1 to 1.5-feet deep. They will add subtle topographic variation to the flat field and provide conditions to support a new diversity of vegetation over time. Edges of the flow paths will be planted with native willows. Fill excavated to create the paths will be placed as a combination of low mounds and low linear features on the field. Large tree trunks will be placed throughout the lower field to also add features which alter flood flow patterns and some of their tips will be slightly embedded in the field.

*EXPANSION OF LOWER DRAINAGE:* The existing drainage ditch on the west side of the site will be widened from about 4 feet to about 20 feet along approximately 150 linear feet of the ditch closest to its confluence with Redwood Creek. This will take place at the southern end of the Lower Field, where pedestrians typically cross the drainage to reach the Lower Field. The actions will expand the winter backwater habitat available to juvenile salmonids, where they can escape the effect of high winter flows in the creek. Pedestrian access will still be available to the side of the current pathway.

*DRAINAGE ENHANCEMENTS:* The natural hydrological connection between two hillside drainages west of the site and the Lower Field will be enhanced by replacing existing culverts under the access road with larger culverts and by filling three segments of a ditch adjacent to the gravel access road on the site. Each segment of ditch to be filled will be about 9 feet by 20 feet, and this will encourage runoff to flow out into the field, as would have occurred before the ditches were constructed for agricultural drainage. The whole ditch will not be filled to avoid losing wetland area. The flow from the larger culverts will meet the new flow pathways on the field to encourage a more natural flow pattern out to the field.

*CONSTRUCTION OF BERM AROUND NEW RED-LEGGED FROG POND:* A 1.2-acre pond will be excavated in the Lower Field to create breeding habitat for the federally threatened California red-legged frog as part of a previously approved project. The new pond would likely result in stranding of the fish. However, this potential effect will be reduced by construction of the berm

around the pond. This project will construct a 1.5-foot-high berm around the edge of the pond to reduce likely sedimentation from overbank flows and prevent fish entrapment in most flood events. The maximum depth of the pond will be 5.5 ft bgs, but some areas will be shallower to allow emergent vegetation to become easily established. Willows will be planted around the edges, and emergent vegetation will be transplanted from nearby areas into the pond. There will be benefits to habitat for both red-legged frogs and salmonids. Most of the 3,200 CY of the excavated material for the pond, except for the surface material contaminated with weed seeds, will be utilized for trail recontouring or trail restoration projects.

#### In-Channel and Floodplain Actions in “Upper Alley”

*INSTALLATION OF ENGINEERED LOG JAMS:* Six engineered log jams (ELJ’s) will be installed in the 580-foot-long reach of the Upper Alley of Redwood Creek. Six ELJ’s will be deflector jams specifically designed to reduce the width of the low flow channel from 20 feet to about 7.5 feet wide, thereby increasing summer habitat for salmonids because the low flow channel will be deeper and more likely to have appropriate levels of dissolved oxygen. Each deflector jam consists of four logs with the rootwads attached. The log structures will extend a maximum of  $\frac{1}{2}$  to  $\frac{3}{4}$  of the width of the active channel. Log structures will be spaced approximately four to five channel widths apart. Logs will be installed by an excavator. Trenches will be excavated in the creekbed to install the logs.

*FLOODPLAIN WIDENING:* The floodplain in the Upper Alley will be widened along about 580 linear feet of channel to expand the average 33 foot-wide floodplain to a minimum 80 foot-wide floodplain. This action will restore a natural floodplain width to a channelized, confined and overly narrow reach of the creek that currently has very little refuge areas for juvenile salmon during high winter flows. The existing high walls of the creek bank will be “terraced,” or excavated, on both the left and right banks. The cuts will extend as deep as 5 feet, but average about 3 feet. About 2,185 CY of fill will be excavated. Of this, 463 CY will be excavated from the left bank. As part of the excavation, three old cars on the bank that once functioned to stabilize the bank during the past agricultural use will be removed and disposed of offsite. All trees are expected to remain in place for this action, unless removal cannot be avoided for construction access. The area will be revegetated with native riparian plant species. A total of 0.43 acres of new floodplain will be created.

*UTILITY POLE RELOCATION:* One PG&E utility pole will be relocated. It is located within the area that will be excavated along the Upper Alley as a new floodplain terrace.

*WELL ABANDONMENT:* A well installed for earlier agricultural use on the right (west) bank at the downstream end of the Upper Alley will be abandoned. The well be abandoned to both protect groundwater quality and the creek water quality and to allow for excavation for the floodplain terrace. The well occurs in an area slated for bank terracing that is also subject to long-term erosion. The well is 50 feet deep and made of 55-gallon drums welded together. Well abandonment methods will follow permit conditions from the Marin County Dept. of Environmental Health.

#### Actions in Upper Field

*REMOVAL OF MONTEREY CYPRESS TREES IN THE WINDROW:* About 28 of the 48 non-native Monterey cypress trees in a windrow along the northern boundary of the Banducci site, that are

encroaching onto adjacent field, will be toppled for use in the Engineered Log Jams (ELJ) in the Upper Alley. These trees will be removed with rootballs attached, so the ELJs can be stabilized in the stream and not move in high flows. NPS reviewed possible tree sources and determined that only trees rooted in deep alluvium would be appropriate for this purpose; the intent is to avoid disturbing soils in shallow areas which could not easily be recontoured. It is possible that some adjacent trees would also be uprooted by the toppling and would therefore also be removed, increasing the total number of trees to be removed to more than 28. Trees at the western edge of the windrow will be prioritized for removal. Limbs from the cut trees would be removed and placed in a slash pile for later burning during the appropriate season. Remaining trunks of felled trees will be placed on the Lower Field as part of the creation of structural and topographic diversity in that area. The tree removal will also facilitate better integration of the new alluvial fan on the Upper Field.

*WELL ABANDONMENT:* An agricultural-era groundwater well adjacent to the eastern edge of the Cypress trees will be abandoned. The well is composed of an 18-inch-diameter corrugated culvert. The well is currently about 14 feet below ground surface. This well will be abandoned following recommendations of the County Department of Environmental Health.

*REBUILD ALLUVIAL FAN AT DRAINAGE/CYPRESS WINDROW:* The former natural contours of the field from the Cypress trees extending south into the Upper Field will be rebuilt using available fill excavated for other project actions. The new contour will slope gently from the base of the hill at the western edge of the site and will be tied into the grade of the adjoining State Parks property. The newly contoured “fan” will extend over a total of 1.3 acres. All fill placement would take place on NPS property. Drainage patterns currently route about a third of the drainage to the north of the trees and the rest to the south. Drainage to each side is expected to remain about the same after project implementation; but immediately after construction, short-term erosion control actions will be taken to encourage flow to spread rather than to create a drainage ditch through the fan. About six small-diameter Eucalyptus trees on the adjacent hillside will be removed as part of this action. The newly placed fill will be revegetated with native coastal scrub species.

*REVEGETATION:* Following grading activities by heavy equipment, NPS and the Golden Gate National Parks Conservancy will work with volunteers to conduct active revegetation, erosion control and non-native plant management to reach project goals for enhanced floodplain habitat. Revegetation goals and strategies for the four action areas of the site have been developed by the Parks Conservancy nursery management staff and NPS vegetation ecologists, with input from Point Reyes Bird Observatory Conservation Science ornithologists.

### **Modifications Included in the Selected Alternative**

Based on public and agency comments and additional design review of project actions, the following modifications were made to the Alternative 1 actions presented in the EA:

- Proposed actions to reconnect the creek with its floodplain on the Old Ballfield were eliminated;
- The proposed widening of the active channel from 20 feet to 30 feet along 75 linear feet of the Upper Alley was eliminated;
- One of seven log jams proposed for installation in the Upper Alley was eliminated;

- The removal of a row of Eucalyptus trees along the site's gravel access road was added.
- The volume of excavated material to be utilized for beneficial use in trail recontouring or restoration projects was increased from about 1,100 cubic yards (CY) to about 3,000 CY.

These changes do not constitute major substantive issues that warrant re-circulation of the EA, nor do they increase the degree of adverse impact described in the EA. The changes to the channel design are design details that do not alter the overall effect or intent of the project. Various changes were supported by both agency and public comment and are not controversial. None of the changes involve issues not already considered in preparing the EA. A summary of the rationale for these modifications is as follows:

Old Ballfield. In lieu of constructing a setback levee, NPS will work with Marin County Department of Public Works to raise the elevation of about 600 linear feet of Muir Woods Road closest to the intersection with Highway 1. NPS is making this change in the Old Ballfield actions due to the added benefit that can be achieved for floodplain function and the habitat of the federally listed salmonids by not constructing the setback levee. The full extent of the floodplain can be regained if the road is raised instead of building infrastructure through a site with high natural resource.

Upper Alley. The proposed action to widen 75 linear feet of the active channel from 20 to about 30 feet wide in the Upper Alley was eliminated based on comments by NMFS that this action presents risks to bank stability and is unnecessary.

Engineered Log Jams (ELJ's). One of seven ELJ's proposed in the EA was eliminated in order to avoid impacts of its installation during construction. The ELJ had been proposed for the downstream area of the Upper Alley to reconfigure an ELJ placed in 2003. Its installation would have entailed dewatering and removing fish from an extensive, complex area downstream of the jam where ELJ's were installed at the base of an eroded meander bend in 2003. The goals of ELJ installation in the Upper Alley can be achieved without the seventh ELJ.

Eucalyptus Tree Removal. The removal of a row of Eucalyptus trees adjacent to the site's access road is added as an action in order to prevent the adjacent floodplain and pond area from becoming infested with Eucalyptus trees. The row of trees to be removed includes 19 mature trees (greater than 18 inches diameter-at-breast height), 24 smaller trees (under 18 inches dbh). The trees would be removed outside of bird-nesting season. The stumps would be covered with landscape fabric to prevent re-sprouting, which has proven to be effective treatment. Herbicides will not be used due to the proximity of the trees to endangered species habitat. Removal of the mature grove will eliminate the need for on-going management to prevent Eucalyptus trees from encroachment into this sensitive restoration area. The Eucalyptus removal will be conducted as funding becomes available. Moreover, tree removal is not a new issue - the EA disclosed the planned removal of up to 28 mature non-native Monterey cypress trees; and as noted above the removal of Eucalyptus trees was included in the restoration actions described for re-contouring of the alluvial fan in the Upper Field.

Fill Removal. The quantity of material to be hauled from the project area to trail rehabilitation or other restoration sites in the Redwood Creek Watershed was increased from the previously stated 1,000 CY to approximately 2,800 CY. Reuse of excavated material for slope recontouring or other rehabilitation is beneficial because it will reduce impacts of trail relocation (or other

similar work) by narrowing the area adjacent to old trails that must be scraped to provide fill to rebuild natural contours. The number of truck trips will increase from about 100 to about 280.

### **Alternative Two: No Action**

Under the No Action Alternative, no excavation, floodplain expansion or Large Woody Debris (LWD) installation would be conducted in the Upper Alley. The Upper Alley would be left to transition through natural processes to a more natural width for the floodplain and low-flow channel. The transition would entail erosion of significant quantities of sediment as the new floodplain and a longer period before suitable winter or summer habitat for salmonids is achieved in that reach of the creek. It would be a longer period of time before more natural sediment dynamics occur in the overly straight and narrow Upper Alley.

Under the No Action Alternative, the Lower Field would persist as a flat, grass-dominated field, susceptible to sheet flows during high flow events that are not as effective for salmonid refugia. The remnant levees on the right bank of the creek in the lower field would remain in place, there would be no enhancements to the lower portion drainage ditch for functioning as winter refugia, there would be no new berms constructed adjacent to the new frog pond, and the drainage from the hillsides would continue to be routed to the drainage ditch instead of to the field.

Under No Action, the berms adjacent to the creek in the Old Ballfield will not be removed and would be left to naturally break down over time. Neither floodplain functions for salmonids nor floodplain storage would be enhanced until the berm naturally broke down.

### **Environmentally Preferred Alternative**

The CEQ Regulations implementing NEPA and the NPS NEPA guidelines require that “the alternative or alternatives which were considered to be environmentally preferable” be identified (Council on Environmental Quality Regulations, Section 1505.2). Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. The Council on Environmental Quality defines the environmentally preferred alternative as “...the alternative that will promote the national environmental policy as expressed in the National Environmental Policy Act’s §101.” Section 101 of the National Environmental Policy Act states that “... it is the continuing responsibility of the Federal Government to ... (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice; (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.”

The Selected Alternative is the environmentally preferred alternative for this project. Alternative 1 (and as modified), compared to No Action, achieves major benefits in natural creek and flood plain function and in both winter and summer habitat for the resident federally listed salmonid species, thereby preserving and enhancing important natural aspects of our national heritage, as described in NEPA Section 101. Actions will enhance natural sediment dynamics in the creek

and provide new areas for sediment deposition, which will contribute to the long term function of the creek downstream, where separate actions are proposed by NPS and Marin County in the Wetland and Creek Restoration at Big Lagoon, Muir Beach. Actions will be hydrologically sustainable, requiring little to no future maintenance or disturbance.

## **PUBLIC INVOLVEMENT**

The NPS conducted public scoping for this project from May 1 to May 31, 2006 and solicited input from the public through direct mailing and presentations. A scoping notice was sent to more than 250 individuals, nearby residents, regulatory and public agencies, Marin County environmental organizations, and other groups and posted on the NPS Planning, Environment, and Public Comment website and the park website. A newspaper notice was also posted in the Marin Independent Journal on May 3 and 4, 2006. During scoping, a public site walk was conducted on May 13, 2006 and project posters and handouts were available at a GGNRA Open House on May 16, 2006. The project was presented at a Muir Beach Community Services District monthly meeting on April 26, 2006 and an Agency Site Walk was held on August 16, 2006. Information on the project was also available at two additional GGNRA Open Houses on September 19 and November 28, 2006. Notices for each of the GGNRA Open Houses were sent to a mailing list of approximately 4,000 individual and organizations.

During the scoping period, multiple individuals supported the project and its benefits to habitat. Public issues of concern focused on location of the setback levee on the Old Ballfield, hillside tributary connections to Redwood Creek, lack of information on new trail connections and a potential increase in mosquito populations. The resident and former farmer of the site stated he is still interested in farming at the site again eventually, particularly in the upper 10 acres of the main field.

The EA was made available for public review and comment during a 30-day period from March 8 to April 6, 2007. Public notice of the availability of the EA was provided to individuals, organizations, and agencies through notification on the park website ([www.nps.gov/goga](http://www.nps.gov/goga)) and the NPS Planning, Environmental and Public Comment website (<http://parkplanning.nps.gov/goga>), mailing of the EA (45 hard copies, 75 CDs), a postcard/email notice (569 notices) and notice in the Marin Independent Journal on March 8 and 9, 2007. The EA was sent to 2 local libraries: the Mill Valley Public Library and the Sausalito Library. A copy for public review was sent to the Muir Beach Community Services District, and a copy is on file at the Muir Woods National Monument library for public viewing.

A public site walk was held on March 23, 2007. An on-site review of the project was held with staff of Mt. Tamalpais State Park on April 9, 2007. A site walk with residents of the site and a Muir Beach Community Services District board member was conducted on March 9, 2007.

A total of five written comments were received on the EA, including one from an individual; three from public agencies (NOAA Fisheries, the California Dept. of Transportation, and the California Dept. of Fish and Game) and one from the Sierra Club Marin Group. Most comments focused on the originally proposed setback levee in the Old Ballfield, which is no longer proposed. Others focused on specific design elements of the channel width, long-term bed elevations, and floodplain elevations; design modifications were made as a result of these comments. One comment supported restoring stands of native wildflowers in the field; this action is not planned as part of project actions. All comments were supportive of the overall project objectives.

As stated above under *Modifications Included in the Selected Alternative*, some changes to the project were made as a result of public comment. Based comments by NOAA's National Marine Fisheries Service (NMFS), the preferred alternative was modified to eliminate actions on the Old Ballfield to reconnect the creek with the floodplain. NPS will not remove the 1,100-foot-long berm on the creekbank or build a new 930-foot-long, 3-foot-high levee on the field closer to Muir Woods Road. Instead, NPS will delay floodplain reconnection actions and will coordinate with Marin County to raise the elevation of the lower 600 linear feet Muir Woods Road, a county-owned road, near the intersection with Highway 1. The proposed action to widen 75 linear feet of the active channel from 20 to about 30 feet wide in the Upper Alley was eliminated based on comments by NMFS that this action presents risks to bank stability and is unnecessary.

After the close of the public comment period on the EA, GGNRA held additional conversations with local interested members of the public about the project actions and about the added action to remove Eucalyptus trees along the gravel access road. One nearby resident voiced opposition to removing both the Eucalyptus trees and the Monterey cypress trees as part of this project.

An additional site walk was held on June 9, 2007, after the close of the public review period, at the request of local residents. The site walk included stops at the Old Ballfield, a creek reference reach, the Monterey cypress trees to be removed, and the Upper Alley. The project manager discussed the project actions at each location. Those persons who attended the walk were supportive of the proposed modifications.

## **AGENCY CONSULTATION**

### *U.S. Army Corps of Engineers*

Pursuant to Section 404 of the Clean Water Act (33U.S.C. 1344), the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material to Waters of the U.S., including wetlands. A delineation of wetlands under the ACOE jurisdiction on the Upper and Lower Field was previously certified by the ACOE in 2003 prior to actions conducted by NPS in 2003. On December 7, 2006, the NPS submitted a proposed jurisdictional delineation for the additional project areas, including the Old Ballfield and the area of the Monterey Cypress in the Upper Field, and an ACOE staff member conducted an on-site review on January 23, 2007, at which time very minor changes were requested. On March 16, 2007, GGNRA submitted a Preconstruction Notification for ACOE Nationwide Permits 27 and 33. Additional correspondence was conducted by phone and email during May and June 2007. In a letter dated July 13, 2007, the USACE determined that the project actions qualify for authorization under Nationwide Permit (NWP) 27, Aquatic Habitat Restoration, Establishment and Enhancement and NWP 33 Temporary Access, Construction, and Dewatering. Special conditions were added to the permits and have been added as project mitigations.

### *Regional Water Quality Control Board*

GGNRA conducted an informal review of proposed actions with the RWQCB through an on-site walk on August 16, 2006 and a meeting on February 19, 2007 to review project designs. On April 5, 2007, GGNRA submitted an application to the RWQCB-San Francisco Bay Region for a 401 Water Quality Certification for the proposed actions. On June 1, 2007, the RWQCB issued Water Quality Certification (File No. 2158.04). The certification requires that no work be conducted within the creek or riparian areas after October 31, water diversions around work in the creekbed, best management practices to reduce sedimentation, and submittal of brief monitoring reports by October 31 of each monitoring year.

### *U.S. Fish and Wildlife Service*

A Biological Assessment to initiate formal Section 7 interagency consultation between NPS and USFWS was submitted to the USFWS in November 2006 for two projects, to both construct the pond at the site for California red-legged frog habitat and to conduct the other actions proposed in this EA. USFWS issued a Biological Opinion on December 22, 2006 for construction of the frog pond as mitigation for 2002 flood reduction actions conducted by NPS at Muir Beach and for proposed creek and floodplain restoration actions on Lower Redwood Creek at the Banducci site. USFWS determined that the level of anticipated take from these actions is not likely to result in jeopardy to the California red-legged frog or result in destruction or adverse modification to its proposed critical habitat. The BO also determined that the proposed actions are not likely to adversely affect the northern spotted owl.

### *NOAA Fisheries*

GGNRA initiated informal consultation with NOAA Fisheries for this project by conducting an on-site scoping walk on August 16, 2006, providing draft project designs in December 2006, and holding a meeting and field walk on February 14, 2007 to review proposed designs. The EA served as a Biological Assessment and was submitted to NOAA Fisheries to initiate formal consultation on March 16, 2007. On March 16, 2007, NOAA Fisheries staff met on site with NPS, a representative of Marin County Department of Public Works, and a Kamman Hydrology and Engineering hydrologist to discuss the project. After additional review, on March 23, 2007, NPS notified NOAA Fisheries by email that the originally proposed actions to remove the Old Ballfield levee and build a set-back levee on the field would no longer be a component of the project. NPS also notified NOAA Fisheries that their suggestion to add backwater features at the downstream end of a ditch next to the road would be included as a project action and that the active channel in the Upper Alley would not be widened. NOAA Fisheries issued a Biological Opinion (BO) on the project on May 30, 2007 (tracking number SWR/2007/02879). The BO included an authorization for incidental take during construction, which may occur due to relocation of fish prior to construction actions. The BO requires dewatering of the construction area and pre-approval of a dewatering plan by NOAA Fisheries prior to implementation.

### *California Coastal Commission*

In accordance with the federal Coastal Zone Management Act of 1972, on April 5, 2007 GGNRA submitted a request for the California Coastal Commission's concurrence with a Negative Determination that actions will not affect coastal zone resources. The California Coastal Commission subsequently notified GGNRA that the project should be considered for a Consistency Determination. On June 13, 2007, GGNRA submitted a letter to the Coastal Commission requesting that the project be considered for a Consistency Determination (CD-026-07), with beneficial impacts on the coastal resources. Coastal Commission staff prepared a report recommending that the commission find the project fully consistent with the policies of the California Coastal Management Program. On July 13, 2007, GGNRA staff presented the project at a Coastal Commission Hearing and the Commission issued a Consistency Determination [CD-026-07] for the project.

### *California Department of Fish and Game*

Since the project area lies entirely within federal property, the project is not regulated by the California Department of Fish and Game (CDFG). However, in an effort to work collaboratively

with regulatory agencies so as to be as protective as possible to California endangered species, the GGNRA has provided updates to the CDFG about this project.

*Advisory Council on Historic Preservation and California State Historic Preservation Officer*  
The GGNRA has a Programmatic Agreement with the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer (SHPO) which allows the park to review undertakings for National Historic Preservation Act conformance as long as such undertakings are found to have No Effect or No Adverse Effect on properties listed in or eligible for listing in the National Register of Historic Places. The GGNRA Preservation Assessment Group Team reviewed the project under the PA. After receiving SHPO's concurrence via email on May 17, 2007 that the site is not eligible for listing on the National Register of Historic Places, the Group Team certified on July 18, 2007 that the project actions will have No Adverse Effect on historic resources and No Adverse Effect on archeological resources, with mitigations enacted in the event of a discovery. Tree removal will not affect any historic or cultural landscapes.

*USDA National Resources Conservation Science*

Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency. The National Resources Conservation Service (NRCS) is the federal agency that enforces this act. The soils at the Banducci site appeared to meet criteria for land of statewide importance and the NPS began consultation with the NRCS. The NRCS notified NPS that it does not consider the land to be farmland of statewide importance due to its lack of a dependable water supply in 8 out of the past 10 years. No further consultation was required.

**WHY THE SELECTED ACTIONS WILL NOT HAVE A SIGNIFICANT EFFECT**

The NPS used the following NEPA criteria and factors defined in 40 CFR §1508.27 to evaluate whether the selected alternative would have a significant effect on the quality of the human environment:

*Impacts that may have both beneficial and adverse aspects and which on balance may be beneficial, but that may still have significant adverse impacts that require analysis in an EIS*

Whether taken individually or as a whole, the impacts of the project do not reach the level of significance. Most of the adverse impacts would be temporary and occur during construction, including those affecting fish habitat, wetlands, noise levels, and traffic. Other adverse impacts would be both short and long term; direct and indirect, and negligible to minor, including those affecting riparian habitat, habitat for songbirds, human health and safety, and land use as farmland. Adverse impacts to federally listed species on site (Coho salmon, steelhead trout, and the California red-legged frog) will be short term, direct and indirect, local and minor to moderate. However, with implementation of mitigation measures and Best Management Practices outlined in the EA, these adverse impacts would be less than significant. There will be no adverse impacts to watershed processes, cultural resources, visual resources, or visitor use and recreation.

The Selected Alternative would also have long-term, minor to major beneficial effects on the human environment. Floodplain expansion and installation of Engineered Log Jams along 580 linear feet of Redwood Creek, and the creation of high flow channels on 6 to 10 acres of floodplain will provide long term beneficial impacts on watershed processes, including floodplain and low-flow

channel processes, channel stability and sediment dynamics, and soils and geology. The same actions would also provide long term beneficial impacts on both winter and summer rearing habitat for Coho salmon and steelhead trout. Together with both active and natural recruitment of native vegetation, these actions will also provide for a long-term increase in the extent, quality and function of riparian habitat by adding 0.43 acres of new riparian habitat and new patches of riparian habitat in patches over the 10 acres of the Lower Field. Actions will not add substantial areas of new wetlands, but the function of seasonal wetlands will be enhanced by added connectivity with both hillside drainages and overbank flows from the creek. A low berm adjacent to a pond to be constructed under a separate project will provide long-term beneficial impacts to habitat for the California red-legged frog, once it is introduced to the site.

The project has many long-term beneficial impacts by creating a functionally integrated landscape: a more natural function as a floodplain along 580-linear feet of channel; increased flood storage area; more natural sediment dynamics; a more natural low-flow channel configuration along 580-linear feet of creek; hydrological connectivity of the site with both hillside drainages and overbank flow from the creek; enhanced winter and summer breeding habitat for salmonids; and a more natural 10-acre floodplain with native vegetation and structural diversity.

*Degree of effect on Public Health or Safety*

Adverse impacts on Public Health and Safety would be negligible. Public health and safety issues were related to mosquito control in the existing ditch and due to the cumulative impacts of pond creation under a separate project. If mosquitoes breed in the new pond, it is likely they will also seek out other bodies of water for breeding. To minimize mosquito production, the Park would monitor mosquito populations and apply *Baccillus thuringensis*, a bacteria functioning as a control agent, if needed.

*Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas*

The project does not contain prime farmland, farmland of local or statewide importance or wild and scenic rivers, nor is the area listed on the National Register of Historic Places. The project area does contain wetlands and habitat for federally listed species; however, project actions in benefits and only short-term adverse impacts as a result of construction.

*Degree to which effects on the quality of the human environment are likely to be highly controversial*

The project actions have not generated public controversy and are not likely to be controversial. Some members of the public do object, however, to the removal of any trees for this or other projects.

*Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks*

The potential impacts are well defined and analyzed in the EA and regulatory agencies have concurred with the impact assessment for species and topics under their jurisdiction through consultation. The degree or possibility that the effects on the human environment will be highly uncertain or will involve unique or unknown risks is remote.

*Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration*

The Selected Alternative will not predetermine or establish a precedent for future actions with significant effects at the site or within the Redwood Creek Watershed and does not represent a decision in principle about a future consideration. Future actions and decisions at the site not identified in this EA will be reviewed in an independent NEPA analysis.

*Whether the action is related to other actions with individually insignificant but cumulatively significant impacts*

The EA considered the cumulative impacts of the selected alternative with several past, present and ongoing future projects. The analysis for all impact topics indicated that the Selected Alternative could result in minimal and not collectively significant cumulative adverse effects, but it could result in long-term cumulative beneficial impacts for natural creek function due to prior actions to reconnect a portion of the floodplain at the site in 2003, planned actions downstream as part of the Wetland and Creek Restoration at Big Lagoon, Muir Beach, and future actions to reconnect the creek with the 7-acre floodplain on the Old Ballfield.

*Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources*

The EA found that the project will not adversely affect any listing on the National Register of Historic Places. NPS made a determination that the site is not eligible for listing on the National Register, and the State Historic Preservation Office has stated they concur with this finding. No known archeological resources occur on the site, but due to sites known to occur in the local watershed and miscellaneous artifacts found previously by farmers at the site, it is possible that archeological resources could be discovered during soil-disturbance activities. With mitigations enacted in the event of a discovery, project actions will have negligible impacts to cultural resources.

*Degree to which the action may adversely affect an endangered or threatened species or its critical habitat*

A Biological Opinion from NOAA Fisheries has determined project actions are likely to result in small direct impacts to fish during construction, but that proposed actions are not likely to result in adverse modification to the Central California Coast Coho salmon or CCC steelhead salmon critical habitat. It found that actions will “greatly improve habitat conditions and hydrologic flow” in the project reach of Redwood Creek and that “by virtue of improved channel design, migration and rearing conditions for adult and juvenile salmonids in future years is expected to improve following construction.” The USFWS determined in a Biological Opinion that the level of anticipated take from these actions is not likely to result in jeopardy to the California red-legged frog or result in destruction or adverse modification to its proposed critical habitat. The BO also determined that the proposed actions are not likely to adversely affect the northern spotted owl.

*Whether the action threatens a violation of Federal, state, or local environmental protection law*

Implementing the Selected Alternative would violate no federal, state or local environmental protection laws. Assessment of the proposed action has been performed pursuant to the National Environmental Policy Act, which requires consideration of environmental protection laws and regulations.

## **IMPAIRMENT**

In addition to reviewing the list of significance criteria, the National Park Service has determined that implementation of the Selected Alternative and mitigation measures will not constitute an impairment to Golden Gate National Recreation Area's resources and values. There would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the park's establishing legislation; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's general management plan or other relevant NPS planning documents. This conclusion is based on a thorough analysis of the environmental impacts described in Lower Redwood Creek Floodplain and Salmonid Habitat Restoration Environmental Assessment, the mitigation measures, agency consultations, considerations of the public comments received, relevant scientific studies, and the professional judgment of the decision-maker guided by the direction in NPS Management Policies 2006.

## **MITIGATION MEASURES**

### **Special Status Species - Fisheries**

- **BIO-1:** If flowing water is present, localized areas within the channel will be dewatered and downstream flows will be maintained. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- **BIO-2:** Measures would be employed to minimize turbidity from discharging waters by directing discharge into a diffuser. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- **BIO-3:** All materials placed for creation of coffer dams would be removed upon completion of activities. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- **BIO-4:** During construction, erosion control materials, such as silt fences with straw wattles at the base, will be placed below any banks where berms are to be removed or graded. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- **BIO-5:** Erosion control materials will be placed on any newly exposed riparian banks. RESPONSIBLE PARTY - *NPS Project Manager*
- **BIO-6:** No in-water construction activities or creek dewatering will occur prior to July. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- **BIO-7:** Prior to any in-stream activities, fish will be removed from project site. Fish will be netted or chased from each individual area where in-channel work will occur. Electrofishing will be used to capture any remaining individuals. Captured fish will be placed in aerated holding containers and transferred to pool habitats outside of the project area. RESPONSIBLE PARTY - *NPS Project Manager*
- **BIO-8:** If flowing water is present, nets and silt fences will be placed at the upstream and downstream limits of the project area to prevent entry of fish into the project area and to prevent dispersal of sediments downstream. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- **NOAA:** Terms and Conditions of NOAA Fisheries Biological Opinion

- All screens used on equipment meant to divert flows must be screened in accordance with the NMFS Fish Screening Criteria for Anadromous Salmonids (<http://swr.nmfs.gov/hcd/fishscrn.pdf>) and the Addendum for Juvenile Fish Screen Criteria for Pump Intakes [<http://swr.nmfs.noaa.gov/hcd/pumpcrit.pdf>]. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- The *Contractor's* plan for water diversion and coffer dams shall be submitted to NOAA Fisheries prior to construction. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- A qualified biologist with expertise in the areas of anadromous salmonid biology shall be responsible for fish collections in a manner which minimizes risks to ESA-listed salmonids. RESPONSIBLE PARTY - *NPS Project Manager*
- A qualified biologist shall monitor the construction site during placement and removal of channel diversions and coffer dams to ensure any effects to ESA-listed salmonids are minimized. RESPONSIBLE PARTY - *NPS Project Manager*
- Captured fish shall be kept in cool, shaded and aerated water protected from excessive noise and overcrowding. To avoid predation, young-of-the-year shall be segregated from larger age class during the fish relocation process. RESPONSIBLE PARTY - *NPS Project Manager*
- If any salmonids are found dead or injured, the biologist shall contact NOAA Fisheries to review the activities resulting in take and determine if additional protective measures are required. RESPONSIBLE PARTY - *NPS Project Manager*
- NOAA: Reasonable and Prudent Measures, per NOAA Fisheries Biological Opinion
  - GGNRA shall ensure that the channel design meets or exceeds the NMFS guidelines for salmonid passage and exceeds the upstream and downstream fish passage potential of the former channel. RESPONSIBLE PARTY - *NPS Project Manager*
  - The GGNRA shall notify NOAA Fisheries in writing of the project commencement date at least 14 days prior to implementation. RESPONSIBLE PARTY - *NPS Project Manager*
  - The GGNRA shall allow NOAA Fisheries or their designee to visit the construction site. RESPONSIBLE PARTY - *NPS Project Manager*
  - A biologist shall monitor in channel activities and sediment control activities and rectify any conditions that adversely affect salmonids. RESPONSIBLE PARTY - *NPS Project Manager*
  - Sediment shall be removed from sediment controls once it has reached one-third of the exposed height of the control. Whenever straw bales are used, they shall be staked into the ground at least 12 cm deep. Catch basins shall be maintained. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
  - *Contractors* must have a supply of erosion control materials on site to facilitate a quick response to unanticipated storm events or emergencies. RESPONSIBLE PARTY - *Contractor*
  - Construction equipment used within the creek channel will be checked each day prior to work within the creek channel and take any action necessary to prevent fluid leaks.

If leaks occur, the spill will be contained and any affected soils will be removed.  
RESPONSIBLE PARTY - *Contractor*

### **Special Status Species – California Red-legged Frog**

- **BIO-9:** Following construction of breeding habitat at the Banducci Site, access roads will be posted with speed limit signs (10 or 15 mph) to minimize vehicle-related injury or mortality to red-legged frogs. RESPONSIBLE PARTY - *NPS Project Manager*
- **BIO-10:** Prior to and during construction activities, a biological monitor will search all work localities for the presence of red-legged frogs. The search area will encompass a 50-foot radius around the work sites. RESPONSIBLE PARTY - *NPS Project Manager*
- **BIO-11:** Should any frogs be observed, activities will cease until the animal is removed and relocated by a Service-approved biologist. Captured frogs shall be relocated to suitable habitat outside of the construction zone, either upstream or downstream of the construction zone. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- **BIO-12:** If erosion control materials are used, only tightly woven fiber netting or non-binded materials (e.g., rice straw) shall be used for erosion control or other purposes at the project site to ensure that the red-legged frog does not get trapped. No plastic mono-filament matting shall be used for erosion control. Revegetation of native species from locally collected propagules will be planted to speed the establishment vegetation which will enhance the habitat. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- **USFWS:** Additional Terms and Conditions, per the USFWS Biological Opinion
  - An education program for the field personnel working on the project shall be conducted prior to groundbreaking to describe the frog, its legal status and measures to take to avoid or reduce effects of construction. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*

### **Other Wildlife**

- **BIO-13:** If woodrat nests are encountered during construction activities, the nests will be avoided, if possible, by establishing a minimum protection buffer of 50 feet around each nest. If nests are identified in areas where heavy equipment operation or excavation is integral to the project design, then the nests would be dismantled prior to grading or vegetation removal activities in a careful, gradual process that would allow any woodrats in the nest to escape into adjacent undisturbed habitat. Surveys will be conducted to determine the likelihood that nests are inhabited, such as a cleared entrance, for example, or recently placed twigs on the nest. A clearly unoccupied nest in an area integral for construction would be dismantled during the routine construction period; however, if the nest appears to be occupied, it would not be dismantled until the non-breeding season of October-November. If young are encountered during nest dismantling, the dismantling activity should be stopped and the material replaced back on the nest and the nest should be left alone and rechecked in 2-3 weeks to see if the young are out of the nest or capable of being out on their own (as determined by a qualified biologist); once the young can fend for themselves, the nest dismantling can continue. Due to the possibility of exposure to hanta virus known to be carried by woodrats, any dismantling or observations of the woodrat nests would be conducted only in a manner that fully protects the health of crews, equipment operators, or surveyors. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*

### **Vegetation**

- **BIO-14:** All vehicles will be brought in cleaned and free of weeds to prevent the spread and/or introduction of invasive plant species. RESPONSIBLE PARTY - *Contractor*
- **BIO-15:** Soils and vegetation contaminated with weed seeds would be segregated and disposed of or treated as appropriate. RESPONSIBLE PARTY - *Contractor*
- **BIO-16:** At the discretion of the project Biological Monitor, restrictions will be placed on the movement or deposition of fill, rock, or other materials containing weed seed or viable plant cuttings to areas relatively free of weeds. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*

### **Cultural Resources**

- **ARCH-1:** If buried cultural resources such as chipped stone or groundstone or human bone are inadvertently discovered during ground-disturbing activities, work should stop in that area and within a 100-foot radius of the find until a qualified archaeologist can assess the significance of the find. RESPONSIBLE PARTY - *NPS Project Manager, Archeological Monitor, Contractor*
- **ARCH-2:** Inadvertent discoveries will be treated in accordance with 36 CFR 800.13 (Protection of Historic Properties: Post-review discoveries). The archaeological resource will be assessed for its eligibility for listing on the NRHP in consultation with the SHPO and the Federated Indians of Graton Rancheria (if it is an indigenous archaeological site) and a determination of the project effects on the property will be made. If the site will be adversely affected, a treatment plan will also be prepared as needed during the assessment of the site's significance. Assessment of inadvertent discoveries may require archaeological excavations or archival research to determine resource significance. Treatment plans will fully evaluate avoidance, project redesign, and data recovery alternatives before outlining actions proposed to resolve adverse effects. RESPONSIBLE PARTY - *NPS Project Manager*
- **ARCH-3:** If human skeletal remains are encountered, protocols under federal law will apply. All work shall stop in the vicinity of the discovery, and the find will be secured and protected in place. The Marin County coroner and Park Archaeologist will both be immediately notified. If a determination finds that the remains are Native American, and that no further coroner investigation of the cause of death is required, they will be treated in accordance with the Native American Graves Protection and Repatriation Regulations at 43 CFR 10.4 (Inadvertent discoveries). RESPONSIBLE PARTY - *NPS Project Manager*

### **Water Quality**

- **RWQCB:** Conditions, per the RWQCB Water Quality Certification
  - No work in the creekbed and riparian areas shall occur after Oct. 31. When work in the flowing stream is unavoidable, stream flow shall be diverted around the work area. Any temporary dam shall only be built from materials such as sandbags or clean gravel which will cause little or no siltation. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
  - The disturbance of sediment or vegetation shall only be the minimum necessary to complete the project. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*

- All appropriate Best Management Practices shall be implemented throughout the project. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- Adequate erosion control measures shall be implemented and maintained during and after construction to reduce sedimentation. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- The discharge of any material to storm drains is prohibited. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- All staging, maintenance and storage of heavy machinery shall be conducted in a manner that no fuel, oil or other petroleum products may run off or be washed by rainfall into the water (also a USACE condition). RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- All material and debris generated as a result of project construction shall be removed from the site and disposed of at appropriate disposal location (also a USACE condition). RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
- USACE: Special Conditions, per the USACE NWP 27 and 33
  - Channel work shall be completed between Jun 15th and October 15th. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
  - Monitoring shall be conducted according to the plan titled “Monitoring Outline for the Lower Redwood Creek Floodplain and Salmonid Habitat Restoration at the Banducci Site, to be Implemented Fall 2007” dated 6/15/07, for five years after project completion. RESPONSIBLE PARTY - *NPS Project Manager*
  - Monitoring reports shall be submitted annually, no later than October 31, to the Corps for five years. RESPONSIBLE PARTY - *NPS Project Manager*
  - Cofferdams and the access road shall be removed immediately upon project completion. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
  - Any waste that enters jurisdictional waters shall be immediately removed. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
  - All BMPs shall be implemented throughout the project site to help minimize sediment disturbance and suspension within the water. RESPONSIBLE PARTY - *NPS Project Manager and Contractor*
  - Any change in the project design, materials, or construction methods, must be approved by the Corps in writing. RESPONSIBLE PARTY - *NPS Project Manager*

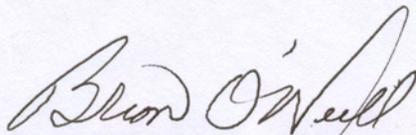
## **CONCLUSION**

Implementation of the Selected Alternative for the Lower Redwood Creek Floodplain and Salmonid Habitat Restoration at the Banducci Site will not have significant impacts on the human environment. The determination is sustained by the analysis in the EA, agency consultations, the inclusion of public review, and the capability of mitigations to reduce or avoid impacts. Adverse environmental impacts that could occur are minor or moderate in intensity, duration, and context. As described in the EA, there are no highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence. There are no previous, planned, or implemented actions, which in combination with the selected alternative would have significant

**CONCLUSION**

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Recommended:



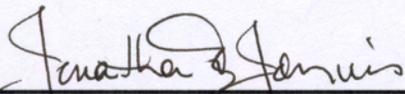
7-25-07

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Brian O'Neill, Superintendent  
Golden Gate National Recreation Area, National Park Service

Date

Approved:



7/27/07

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Jonathan B. Jarvis, Regional Director  
Pacific West Region, National Park Service

Date