Malibu Creek Ecosystem Restoration Study

Los Angeles and Ventura Counties, California

Appendix H

404(b)(1) Evaluation

U.S. Army Corps of Engineers
Los Angeles District

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THE EVALUATION OF THE EFFECTS OF THE DISCHARGE OF DREDGED OR FILL MATERIAL INTO THE WATERS OF THE UNITED STATES IN SUPPORT OF THE ENVIRONMENTAL ASSESSMENT FOR MALIBU CREEK ECOSYSTEM RESTORATION PROJECT LOS ANGELES AND VENTURA COUNTIES, CALIFORNIA

INTRODUCTION. The following evaluation is provided in accordance with Section 404(b)(1) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) as amended by the Clean Water Act (CWA) of 1977 (Public Law 95-217). Its intent is to succinctly state and evaluate information regarding the effects of discharges of dredged or fill material into the waters of the U.S. As such, it is not meant to stand alone and relies heavily upon information provided in the environmental document to which it is attached. Citation in brackets [] refer to expanded discussion found in the Draft Integrated Feasibility Report (IFR), to which the reader should refer for details.

I. Project Description

a. Location [1.8]

Malibu Creek is located approximately 30 miles (mi) west of downtown Los Angeles, California. Approximately two-thirds of the watershed is located in northwestern Los Angeles County and the remaining one-third is in southeastern Ventura County. The drainage area covers approximately 110 square miles (mi^2) of the Santa Monica Mountains and Simi Hills. Elevations in the watershed range from over 3,100 feet at Sandstone Peak in Ventura County to sea level at Santa Monica Bay. The study area includes the main-stem of Malibu Creek from Malibu Lagoon upstream to Malibu Dam, as well as the Cold Creek and Las Virgenes Creek tributaries above Rindge Dam (portions of the watershed above Malibu Dam were not the focus of the study).

Rindge Dam is located approximately three miles from the mouth of Malibu Creek. The dam is a concrete arch structure 102 feet in height with an arc length of 140 feet at its crest (excluding spillway & rock outcrop) and 80 feet at its base. The spillway is a concrete apron located adjacent to the arch in a bedrock outcrop along the left abutment. The dam is constructed in a steep narrow canyon gorge that is difficult to access. No reservoir currently exists behind Rindge Dam and the sediment impounded behind the dam has filled to the crest of the dam's spillway, nearly 100 feet above the elevation of the original streambed. Smaller barriers to aquatic habitat connectivity in the form of culverts and stream crossings exist on Malibu Creek and its major tributaries between Rindge Dam and Malibu Dam.

The planning objectives for the study are:

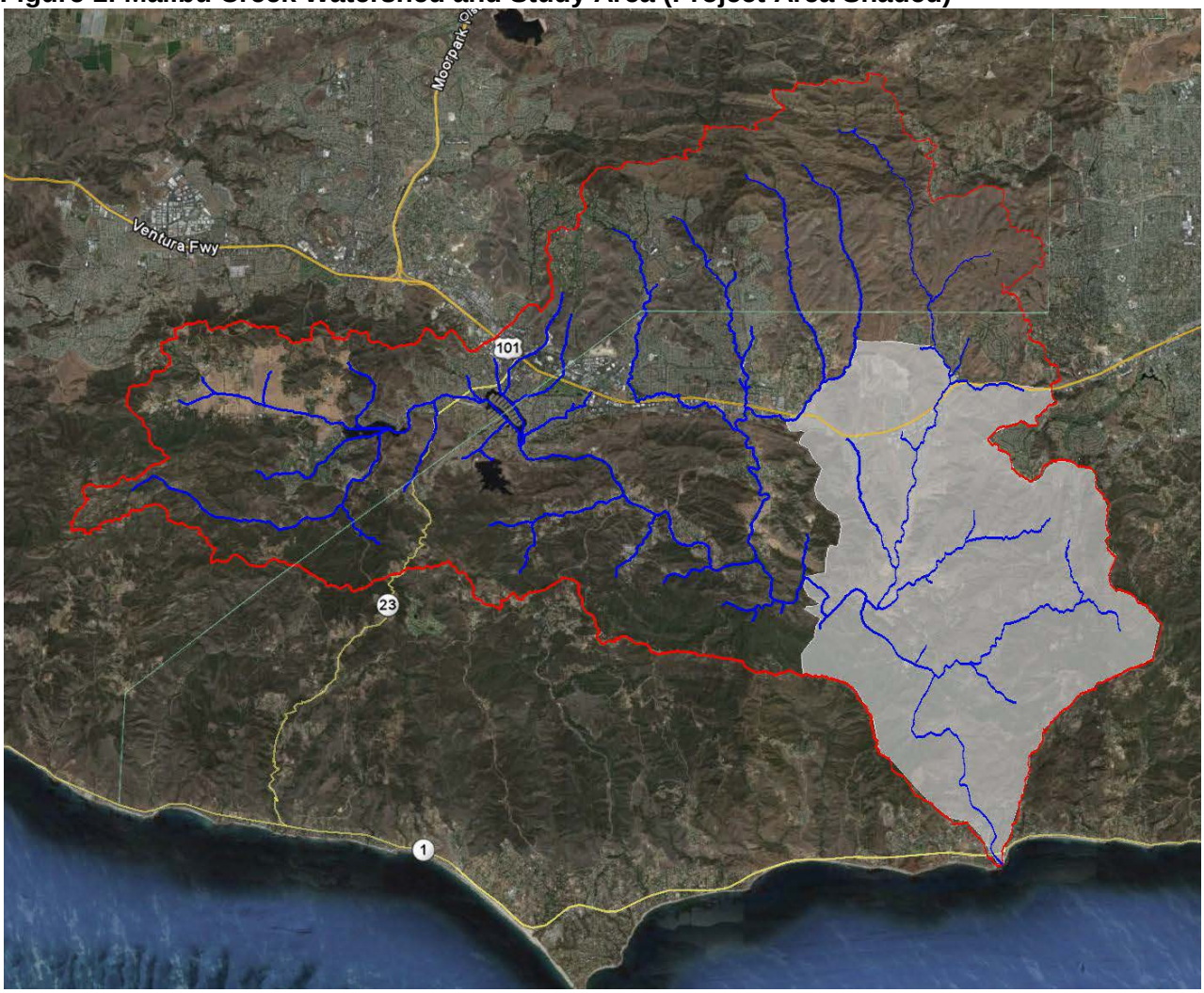
- Establish a more natural sediment transport regime from the watershed to the Southern California shoreline in the vicinity of Malibu Creek within the next several decades.

- Reestablish habitat connectivity along Malibu Creek and tributaries in the next several decades to restore migratory access to former upstream spawning areas for indigenous aquatic species and allow for safe passage for terrestrial species from the Pacific Ocean to the watershed and broader Santa Monica Mountains National Recreation Area.

- Restore aquatic habitat of sufficient quality along Malibu Creek and tributaries to sustain or enhance indigenous populations of aquatic species within the next several decades.

The National Ecosystem Restoration Plan (NER) has been identified as Alternative 2d1, and the likely locally preferred plan (LPP) is Alternative 2b2. Habitat connectivity in lower Malibu Creek is blocked by Rindge Dam. Upstream tributaries also have several smaller barriers to aquatic habitat connectivity. Restoration of natural sediment transport to nourish coastal environments is the other important component. Addressing Rindge Dam is critical to aquatic ecosystem restoration and natural sediment transport regimes within the Malibu Creek watershed, particularly to restore access to quality spawning and rearing habitat for the endangered steelhead and other sensitive species. Figures 1 and 2 show the specific study area as well as the various reaches included in the study area.

Figure 1: Malibu Creek Watershed and Study Area (Project Area Shaded)

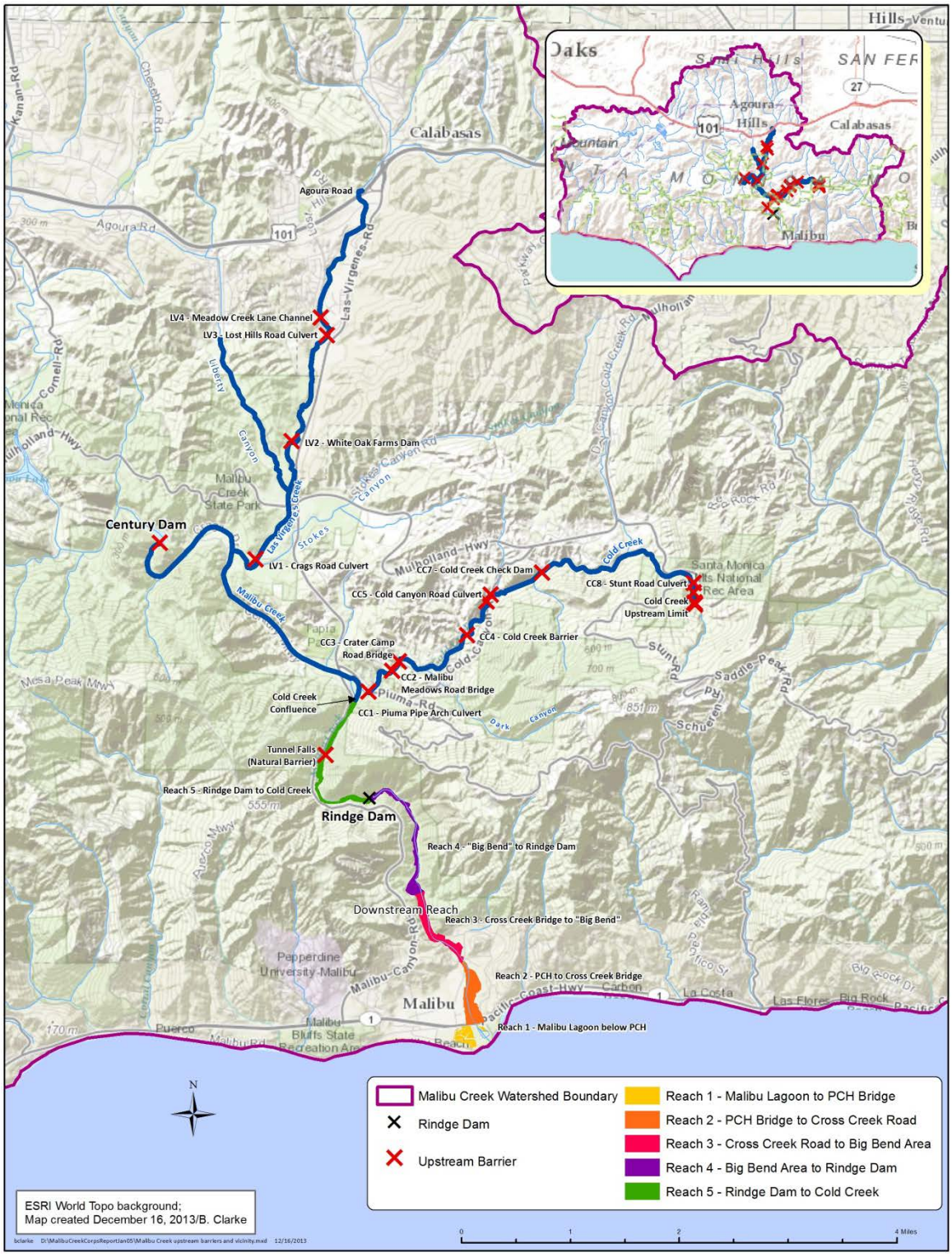


b. General Description [4.4]

The NER includes incremental removal of Rindge Dam's concrete arch over an estimated 7 year construction window, working during the dry seasons. The 780,000 cubic yards (cy) of impounded sediment behind the dam would be mechanically removed using excavators, bulldozers and other similar equipment, and hauled away using 20 cy trucks to offsite locations each construction season.

The likely LPP includes removal of the dam's concrete arch and spillway. Restrictions in the construction schedule due to environmental windows, weather, daily hauling restrictions, and other factors require the removal of sediment and dam and spillway structure to be phased over eight years under the likely LPP. Under both the NER and likely LPP, the dam and/or spillway would be removed concurrently with the removal of impounded sediment. Dam and spillway concrete blocks would be transported to the Calabasas Landfill using 20 cy trucks.

Figure 2: Malibu Creek, Las Virgenes Creek, Cold Creek Aquatic Barriers Project Area



The NER and likely LPP would both require clearing of all the vegetation on the surface of the sediment impoundment area, including mature trees and shrubs, diversion and control of the creek water through construction of a temporary coffer dam and water pipeline, and removal of ground water at the site by drilling and operating dewatering wells. Two access ramps for equipment would be needed: one for trucks traveling southbound and one for northbound trucks. The former access road used to conduct surveys within the study area would be rebuilt to accommodate the southbound truck ramp. Ramp repairs are likely during construction due to storm flows and erosion of portions of the ramps during winter seasons.

It is expected that construction would stop during winter months (October to April) to avoid winter storms. Construction would resume the following year. Clearing and grubbing would occur in the early months, February to March each year prior to the restart of construction. It would take an estimated 7-8 years to restore connectivity of the aquatic habitat under the NER and likely LPP respectively. The northbound truck ramp would be removed at the end of construction and the area restored and replanted. The former access road (southbound truck ramp for construction purposes) would remain after the completion of construction to allow for maintenance access to the canyon bottom.

During the middle years of construction, the sediment excavated would be relatively homogenous beach-compatible sand before yielding to silts, clays, and other fine particles in the final years of excavation. During these middle years of construction, beach compatible materials would be deposited in the vicinity of Malibu Pier for beach nourishment.

Under the NER, the beach compatible sediment would be transported along Malibu Canyon Road to a temporary upland storage site (Upland Site F), stored until the off-season placement period (October - April), trucked to the beach placement site immediately east of Malibu Pier, adjacent to Surfrider Beach (Figure 3), and placed on the beach. Under the likely LPP, the beach compatible sediment would be transported along Malibu Canyon Road to the 101 Freeway to Ventura Harbor where it would be placed onto barges and towed to the nearshore placement site just offshore of the Malibu Pier beach placement location (Figure 3). The offshore placement location displayed in Figure 3 indicates the general area where beach compatible material can be placed, based on the results of sonar and video surveys of habitat and vegetation. The actual placement site would fall within this polygon, chosen to avoid impacts to marine vegetation and ensure placement on open sands. The actual placement site would be much smaller than the red polygon in Figure 3.

Figure 3. Map depicting the approximate shoreline placement (green – NER) and nearshore placement (red – likely LPP) locations.

USACE provided chemical and grain size sediment test results of the Rindge Dam impounded sediment to the Southern California Dredged Material Management Team (SC-DMMT) for review. The SC-DMMT is comprised of representatives from multiple regulatory and government agencies. The results indicate that there is no need for sorting to occur prior to placement. The fine-grained sediment at the bottom of the impounded sediment, as well as the gravel, cobble, and other materials (such as concrete and steel) would be all permanently disposed of at the Calabasas landfill.

For both the NER and likely LPP, aquatic habitat connectivity and overall ecosystem restoration would be expanded upstream by addressing eight barriers along Las Virgenes and Cold Creeks. Modification or removal of upstream barriers substantially expands fish passage to good-to-excellent quality aquatic habitat. Access would increase from 5.5 mi through removal of Rindge Dam alone, to nearly 15 mi of aquatic habitat with the removal of the Las Virgenes and Cold Creek barriers (LV = 4.1 mi; CC = 5 mi). Additional descriptions of barrier modifications are included in Section 4.1.8 of the Draft IFR. Century Dam is the next barrier on Malibu Creek above Rindge Dam. Century Dam is not part of the project and would remain in place.

<u>Monitoring and Adaptive Management/Operations and Maintenance [10]</u>

Monitoring of the Rindge Dam site and impounded sediment area would continue throughout the construction timeframe and would include oversight of environmental commitments based on permits obtained and wet season storm monitoring. Monitoring would include topographic changes, vegetation (including identification and removal of non-native plant species), and indicators of slope stability as impounded sediments are removed. USACE would be involved in monitoring and adaptive management activities for revegetated areas principally in the former

impoundment area, access ramps, and upstream barrier sites; and for other features such as Upland Site F and the beach placement site for approximately 5 years following completion of construction. Wet season monitoring frequency would vary, depending on frequency and severity of storm events. In addition, long term maintenance of the upstream barriers would also be required, including sediment management at upstream barriers (CC2, CC3, LV2, and LV3) possibly up to twice per year to allow for low flow conveyance for the purpose of providing suitable passage for aquatic species. Annual inspections would also be performed as well as monitoring and maintenance of replanted areas for at least 5 years following completion of construction.

Operation and maintenance (O&M) is a responsibility of the California Department of Parks and Recreation (CDPR), and is assumed to occur for the project life. The maintenance of the project would involve repairs of any features when damaged by storms, regular removal of trash and debris as necessary, and maintenance and repair of any required best management practices (BMPs) or features associated with permits (i.e., storm water pollution prevention plan (SWPPP)). Long-term maintenance of the channel is anticipated to be minimal and would continue to be performed by CDPR similar to what is currently performed. Under the NER, maintenance access would be maintained to repair the spillway, as necessary. This would not be required under the likely LPP, as the spillway would be removed. Other potential maintenance under the NER and likely LPP would be limited, and consist primarily of emergency response and repairs under extenuating circumstances such as flood, landslide, or fire. Routine maintenance beyond what is required to maintain access is not expected, as the creek will be restored, natural processes will govern the site post-construction, and the project does not consist of any constructed features requiring O&M. It is anticipated that an annual inspection would be performed, which would involve a team consisting of a biologist, a hydraulic engineer, and a civil design engineer.

c. Authority and Purpose [1.1]

The Malibu Creek Environmental Restoration Feasibility study is prepared in partial response to the Resolution adopted by the House Committee on Public Works and Transportation, dated February 5, 1992, which reads as follows:

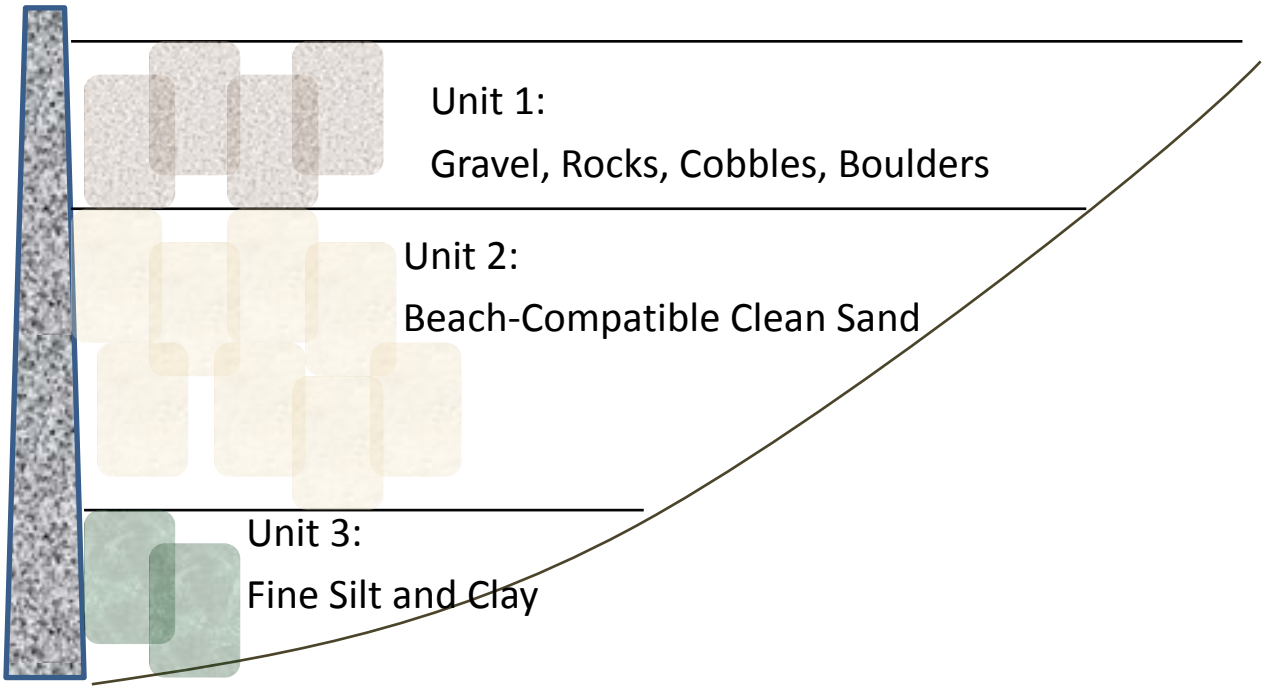
> Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, that the Board of Engineers for Rivers and Harbors is requested to review the report of the Chief of Engineers on Point Mugu to San Pedro Breakwater, California Beach Erosion Control Study, published as House Document 277, Eighty-third Congress, Second Session, and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable at the present time, in the interest of shore protection, storm damage reduction, and other purposes along the shores of Southern California from Point Mugu to the San Pedro Breakwater and nearby areas within Ventura County and Los Angeles County, California.

d. General Description of Dredged or Fill Material [3.2]

(1) General Characteristics of Material (grain size, soil type): The Rindge Dam former reservoir is entirely filled with sediment, with a total of approximately 780,000 cy. The sediment is comprised of the three “Units” based on grain size (Figure 4). The sand-dominant sediment unit, Unit 1, comprises nearly half the total volume of sediment and contains about 73% sand, 22% silt, 5% gravel and rock which equates to approximately 280,000 cy of sand. This material is considered beach compatible and is available for placement along the shoreline. Unit 2 is overlain by a gravel-dominant layer and underlain by Unit 3, a silt-clay dominant layer (Figure 4). Access

ramps would be constructed using appropriately sized materials excavated from the impound area. Upstream barrier removal would not require excavation and removal of any fill materials outside of removal of the barrier structures themselves. Construction at upstream barrier sites would not require the import of any fill materials, but would require minor regrading after construction, as well as revegetation within the construction footprint.

Figure 4: Layers of Impounded Sediment



(2) Quantity of Material (cy): The 780,000 cy of impounded sediment behind the dam would be mechanically removed using excavators, bulldozers and other similar equipment, and hauled away using 20 cy trucks to offsite locations each construction season. The dam concrete arch (and the spillway for the likely LPP) would be removed concurrently with the removal of impounded sediment. Dam arch and spillway concrete blocks would be transported to the Calabasas landfill using 20 cy trucks. Excavated materials would be disposed of, or placed as described in Section b. General Description above. Access ramps would be constructed using appropriately sized materials excavated from the impound area. Upstream barrier removal would not require excavation and removal of any fill materials.

(3) Source of Material: The primary focus of the NER and likely LPP plans, as well as the other alternatives evaluated, is to remove Rindge Dam, the 780,000 cy of accumulated sediment behind Rindge Dam, and modification or removal of smaller upstream aquatic habitat barriers in Las Virgenes and Cold Creeks. The material behind the dam is what has accumulated due to natural sediment transport processes upstream. As a result, discharges of fill material in Malibu Creek would be dominated by temporary discharges associated with use of equipment, access and dewatering to remove the above structures and the associated accumulated sediment. Access ramps would be constructed using appropriately sized materials excavated from the impound area. Discharges would be incidental to fill removal from spillage as trucks are filled and incidental losses during construction. Such discharges would be negligible in volume and are standard for earth moving activities.

e. Description of the Proposed Discharge Site(s) [1.8]

(1) Location (map): See the above Figures 1 and 2.

(2) Size (acres): Rindge Dam is filled to the crest with approximately 780,000 cy of sediment. The project footprint behind and immediately downstream of Rindge Dam consists of approximately 7.5 acres of jurisdictional waters of the U.S. on Malibu Creek. An additional 0.65 acres of impact area occur within jurisdictional waters of the U.S. at the upstream barrier sites on Cold Creek, and 1.7 acres on Las Virgenes Creek.

Beach compatible material mechanically excavated from behind Rindge Dam would be placed on the beach adjacent to Malibu Pier under the NER, or deposited just offshore of the same area under the likely LPP. A total of approximately 280,000 cy of material is anticipated to be beach compatible. The beach placement site is approximately 1.1 acres while the offshore placement area is approximately 11.5 acres. Beach compatible material is physically compatible with the target beach with a similar range of grain sizes and is uncontaminated suitable for unconfined placement in the aquatic environment.

(3) Type of Site (confined, unconfined, open water): Open water including riverine areas in Malibu, Las Virgenes and Cold Creeks, and at the beach nourishment site adjacent to Malibu Pier (NER) or in near shore areas just offshore of Malibu Pier (likely LPP). See Figure 3.

(4) Type(s) of Habitat: The project area includes riverine habitat in Malibu, Las Virgenes and Cold Creeks which supports numerous aquatic organisms and riparian habitat. Discharge of dredged or fill material within riverine and riparian areas would primarily include previously disturbed areas near existing dams and barriers that exhibit low to moderate physical and biological functions.

Under the NER, the beach compatible sediments would be placed directly on the beach adjacent to Malibu Pier. The existing beach at this location has been almost entirely eroded away, and contains only shallow water of varying depth depending on tide and sand until reaching the rip-rap protection along the parking lot. Under the likely LPP, the beach compatible material would be deposited via barge, just offshore of the Malibu Pier beach placement site. Based on surveys of nearshore habitat, the exact offshore placement location would be chosen to avoid any vegetation or sensitive habitats and would be placed directly over open sand.

f. Description of Disposal Method (hydraulic, drag line, etc.)

Discharges of fill material in Malibu Creek and tributaries would be dominated by temporary discharges associated with use of equipment, construction of access roads, temporary stockpiles and dewatering to remove/modify the above structures and accumulated sediment. The existing access road would be repaired using on-site fill material. The additional access ramp to be constructed would consist of on-site fill material, but would be removed at the end of construction.

The 780,000 cy of impounded sediment behind Rindge Dam would be mechanically removed using excavators, bulldozers and other similar equipment, and hauled away using 20 cy trucks to offsite locations each construction season. The dam structure would be removed concurrently with the removal of impounded sediment. Dam and spillway concrete blocks would be transported to the Calabasas landfill using 20 cy trucks. Similar construction methods would be utilized to remove and modify smaller barriers upstream of Rindge Dam in Malibu, Las Virgenes and Cold Creeks.

Under the NER, beach compatible material would be placed during the winter months when recreational demand along Surfrider Beach and Malibu Pier are lowest. Placement would occur Monday – Friday between 9AM and 3PM, likely from October to April. Under the likely LPP, beach compatible material would be placed during the summer to coincide with the low-flow season sediment removal operations occurring at the Rindge Dam site. Since placement is offshore via barge under the likely LPP, placement would occur less frequently and in larger quantities than under the NER.

g. Timing and Duration of Discharge

The NER includes incremental removal of Rindge Dam's concrete arch over an estimated 7-year construction window, working during the dry seasons. Construction related discharges within Malibu Creek and its tributaries would occur during this window. Beach placement would likely occur between October and April, after Labor Day and prior to Memorial Day, and would occur from approximately the second to the sixth years of construction.

The likely LPP would occur over an estimated 8-year construction window during the dry seasons. Construction related discharges within Malibu Creek and its tributaries would occur during this window. The offshore placement of beach compatible material would occur concurrently with construction during the dry summer months. Offshore placement would occur only periodically compared to the daily placement under the NER, as the barge capacity is much greater than the truck capacity utilized for beach placement.

h. Basic and Overall Project Purpose

The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed project, and is used by the USACE to determine whether the activity associated with a discharge is water dependent (i.e., requires access or proximity to or siting within the special aquatic site to fulfill its basic purpose). Establishment of the basic project purpose is necessary only when the proposed activity would discharge dredged or fill material in to a special aquatic site (e.g., wetlands, pool and riffle complex, mudflats, coral reefs). The "basic project purpose" is aquatic ecosystem restoration. Although the proposed project does discharge fill material in a special aquatic site (wetlands), the basic project purpose is water dependent, therefore the rebut-table presumption in the CWA Section 404(b)(1) Guidelines (Guidelines) do not apply. Since all project alternatives to remove Rindge Dam result in discharge to special aquatic sites due to the nature of construction and dam removal within Malibu Creek, there are no practicable alternatives that do not involve a discharge into a special aquatic site.

The overall project purpose serves as the basis for the USACE's 404(b)(1) alternatives analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the goals for the project, and which allows a reasonable range of alternatives to be analyzed. The overall project purpose for the proposed project is to reestablish habitat connectivity, establish a more natural sediment transport regime, and restore aquatic habitat in the Malibu Creek watershed.

i. Alternatives Considered

The final array of alternatives include the No Federal Action Alternative, along with action alternatives that include various combinations of the following features: removal of Rindge Dam arch and impounded sediment (mechanical sediment removal or natural transport), removal of Rindge Dam spillway, removal/modification of upstream barriers (culverts, small dams, and

bridges), and placement beach compatible material (beach or offshore). The action alternatives are broken down into three groups for simplification and clarity: Alternative 2 group which utilizes complete mechanical removal of impounded sediment, Alternative 3 group which includes complete natural transport of all impounded sediment, and Alternative 4 group which uses a mix of both natural and mechanical transport. Within each alternative group, variations exist which include the previously mentioned features in different combinations (upstream barrier removal, spillway removal, and differing sediment placement sites).

All variations of Alternatives 3 and 4 utilize natural sediment transport and include substantially greater impacts to downstream waters of the U.S. as the result of sediment accumulation degrading habitats, including critical habitat for southern California steelhead. These impacts would result in significant sediment accumulation downstream of the dam site relative to the No Federal Action and Alternative 2 variations, particularly in reaches 2 and 3 in the vicinity of Cross Creek Road and the Big Bend (see Figure 2). Sediment transport modeling, as summarized in Appendix B of the IFR, indicates that the increased sediment accumulation as a result of natural transport options would occur for the lower 2.4 miles of Malibu Creek, including within the Malibu Lagoon, a site of over 20 acres of lagoon and marsh habitat. More information on these alternatives is provided in Chapter 5 of the IFR (see specifically Section 5.3 and Section 5.4 for water resource and biological resource impacts).

Variations on Alternative 2 that do not include removal of upstream barriers would be the same as the NER and likely LPP evaluated below, without the impacts associated with the upstream barrier removal. These variations have slightly less temporary impacts to waters of the U.S. but provide substantially lower beneficial environmental impacts than alternatives that include the removal of upstream barriers. All action alternatives would entail discharges of dredged or fill material into waters of the U.S for the restoration of aquatic functions and services within waters of the U.S. The discharge of dredged or fill material would not result in the permanent loss of existing waters of the U.S. All alternatives would have significant impacts to non-aquatic resources (see Chapter 5 of the IFR). The complete final array of alternatives are discussed in detail in Section 4.4 of the IFR.

The NER and likely LPP, both variations of Alternative 2, would result in similar temporary construction impacts to benthic organisms in the channel substrate and the downstream movement of sediment in waters of the U.S. All variations of Alternatives 3 and 4 allow sediment in the reservoir to proceed downstream during storm events, and therefore would result in much greater indirect downstream impacts to sediment transport rates, resulting in substantial accretion in the stream channel. The more coarse-grained sediment transported downstream from the dam site would accumulate in some reaches and redistribute over successive storms in the creek bed, raising the elevation of the bed over time. Modeling results show an average of about 4 feet of sediment deposition in some downstream areas (see Appendix B of the IFR for details). Malibu Lagoon could exhibit over one foot of additional accretion. Some of the sediment would deposit in Malibu Creek reaches in the Serra Retreat and City of Malibu areas. The potential risk of flooding would increase in the residential communities and the commercial areas along Malibu Creek. In addition, the construction of approximately 2,900 linear feet of floodwalls associated with all variations of Alternatives 3 and 4 would substantially increase both temporary and permanent impacts to sediment transport rates and aquatic organisms. Based on the above information, when compared to both the NER and likely LPP, all variations of Alternatives 3 and 4 would result in a substantial increase in direct and indirect impacts to sediment transport rates and benthic organisms in Malibu Creek.

Variations of Alternative 2, which includes both the NER and likely LPP, would result in similar impacts to wildlife in and adjacent to waters of the U.S. All variations of Alternatives 3 and 4 allow sediment in the reservoir to proceed downstream during storm events, and therefore would result in much greater indirect downstream impacts to wildlife in and adjacent to waters of the U.S. Accumulation of sediment under variations of Alternative 3 and 4, as described in Appendix B of the IFR, would result in significant accumulation of sediment downstream of Rindge Dam that would not occur under variations of Alternative 2. This accumulation of sediment under Alternatives 3 and 4 would result in significantly greater impacts to wildlife in and adjacent to waters of the U.S. compared to Alternative 2, which includes significant additional impacts to steelhead and steelhead critical habitat. (For a detailed discussion of the potential impacts of Alternatives 2, 3, and 4 to wildlife, see Section 5.4 of the IFR).

With all variations of Alternatives 3 and 4, the average floodwall height would be approximately 10 feet above ground to address uncertainties in bed and water surface elevations in this reach during peak flow conditions. Considerable work in and adjacent to waters of the U.S. would be required to construct the foundations for the floodwall, with depths extending approximately 25 feet below the existing surface of the channel banks. Sheetpile and concrete would be used for the foundations, which would increase noise in the immediate vicinity of the construction activities. The existing Malibu Creek populations of both the threatened and endangered steelhead and tidewater goby would be at increased risk of disturbance due to accretion in the lagoon. In the reaches between Cross Creek Bridge and PCH, habitat impacts are expected to occur as a result of the floodwalls. Construction of the floodwalls requires a 45-foot wide area to be disturbed along their lengths for a total loss of 6 acres of vegetative cover; an overall 5% reduction in this reach. Maintenance roads for the floodwall would result in the permanent loss of 0.6 acres of vegetative cover (15-ft access road along 1,700 ft of wall requiring construction of a permanent access road), a reduction of 0.5% in vegetative cover. Based on the above information, when compared to all variations of Alternative 2 (including the NER and likely LPP), all variations of Alternatives 3 and 4 would result in a substantial increase in direct and indirect impacts to riparian habitat and wildlife in and adjacent to waters of the U.S.

Alternative 1 (No Federal Action) characterizes the conditions likely to prevail in the study area within the next 50 years if neither the USACE nor the CDPR initiates any action to restore the Malibu Creek riverine ecosystem beyond those currently existing or already planned, including any removal or modification of Rindge Dam for these purposes. Under the No Federal Action alternative, there would be no temporary adverse impacts in waters of the U.S. to physical substrate, sediment type, dredged and fill material movement, physical effects on benthos, water circulation and fluctuation, current patterns, suspended particulate and turbidity levels and effects on biota. With No Federal Action, the existing dam and the accumulated sediment behind the dam would not be removed. As a result, there would be no increase in functions and services in waters of the U.S. in the Malibu Creek watershed over the next 50 years. Without the removal of the dam and the accumulated sediment, the channel substrate elevation and slope would not be reestablished upstream of the dam and would remain in its current state over the next 50 years. Without the reestablishment of the natural substrate elevation and slope, the natural channel morphology would also not be reestablished upstream of the dam, with no increase in riparian habitat along the edge of the active channel and on adjacent terraces. Over the 50 year period, aquatic connectivity would continue to be blocked by the existence of Rindge Dam and barriers on Las Virgenes and Cold Creeks. Without the removal of the accumulated sediment behind the dam, natural turbidity levels, erosion and accretion patterns and general water quality would not be reestablished in the lower reach of Malibu Creek and, aquatic habitat values, including physical, hydrologic and biological functions and services, would remain at the existing impaired

level. The beach would not be nourished and would remain in its current, fully eroded state adjacent to Malibu Pier.

These conditions are referred to as the "existing and future without-project conditions" or the baseline conditions. The "No Federal Action Alternative" is included in compliance with the National Environmental Policy Act and other laws and regulations, and is presented in the final array of alternatives for comparison to action alternatives. The No Federal Action Alternative would not meet the overall project purpose but is provided for comparison purposes.

The NER (Alternative 2d1) includes incremental removal of Rindge Dam's concrete arch over an estimated 7-year construction window, working during the dry seasons. The 780,000 cy of impounded sediment behind the dam would be mechanically removed using excavators, bulldozers and other similar equipment, and hauled away using 20 cy trucks to offsite locations each construction season. The dam would be removed concurrently with the removal of impounded sediment, and the spillway would be left intact. Concrete blocks would be transported to the Calabasas landfill using 20 cy trucks. During the middle of the second construction year, the sediment excavated would hit relatively homogenous beach-compatible sand. The excavation would likely produce beach compatible material through the sixth year before yielding silts, clays, and other fine particles. The beach compatible sediment would be transported along Malibu Canyon Road to a temporary storage site (Upland Site F), stored until the off-season placement period (October – April), trucked to the beach placement site adjacent to Malibu Pier (Figure 3), and placed on the beach. Removal of upstream barriers is included in this alternative.

The likely LPP (Alternative 2b2) differs from the NER (Alternative 2d1) in that it includes removal of both the dam's concrete arch and spillway, and places beach compatible material offshore via barge. During construction, beach compatible material would be trucked to Ventura Harbor and placed on a barge. Once the barge was full, the barge would transport this material offshore of the Malibu Pier area for deposition (Figure 3). Unlike the NER, this placement would occur during summer and only periodically as the barge trips would contain larger but more infrequent loads than the trucks. Under the likely LPP, construction is anticipated to take an additional year. Removal of upstream barriers is included in this alternative.

According to the hydrodynamic model, after removal of Rindge Dam, scour would occur from just above Rindge Dam site in the Tunnel Falls reach to immediately downstream of Rindge Dam. Some deposition would occur in the lower portion of the Cross Creek Bridge to Big Bend reach, and in all lower reaches. While significant sediment deposition is projected to occur in some downstream reaches, the estimated sediment accumulation is similar to the estimated amount of sediment accumulation under the No Federal Action alternative. Based on hydrodynamic models, neither the NER nor likely LPP would result in adverse changes to river stage or induce flooding as a result of this sediment accumulation. In Malibu Lagoon, over 1 foot of sediment would be deposited, similar to levels of sedimentation modeled under the No Federal Action alternative. Deposition amounts in all reaches are less under both the NER and likely LPP than those predicted under the Natural Transport alternatives that were evaluated. By TY 50, the sediment regime would have stabilized such that in each reach less than 1 foot of additional deposition or scour would occur from TY10 to TY50 in most portions of each reach. Water quality in the impounded sediment reach behind the dam should improve due to the reestablishment of pools and riffles with cooler water temperatures, and increased velocities through this reach due to reestablishment of the natural creek slope. Turbidity levels would likely increase beyond the base levels in the first flush storms, but then drop back to background levels.

Based on the above alternatives analysis, the factual determinations below focus on the NER and likely LPP.

II. Factual Determinations

a. Physical Substrate Determinations:

(1) Substrate Elevation and Slope:

Both the NER and likely LPP would both remove 780,000 cy of impounded sediment behind the dam using excavators, bulldozers and other similar equipment, and hauled away using 20 cy trucks to offsite locations each construction season. The dam/spillway would be removed concurrently with the removal of impounded sediment. Dam and spillway concrete blocks would be transported to the Calabasas landfill using 20 cy trucks. The above activities in waters of the U.S. would result in temporary adverse impacts to substrate over an estimated 7-8 year construction period for the NER and likely LPP, respectively. Waters of the U.S. immediately upstream and downstream of the dam and reservoir could also be subjected to temporary impacts during the proposed construction activities. In addition, temporary construction impacts could result in minor increases in sedimentation downstream of the dam, resulting in short-term indirect impacts to slopes and changes in channel morphology. Some access roads would remain in place after the removal of the dam and accumulated sediment to facilitate ongoing monitoring activities. At the conclusion of the required monitoring, the northbound access road would be removed while the southbound access road would remain and waters of the U.S. would be restored to contours similar to those that existed prior to construction of Rindge Dam. With the completion of the proposed construction activities, the dam and accumulated sediment would be removed, restoring channel slope, hydrology and sediment transport in the lower reaches of Malibu Creek. After construction completion, O&M will have no further impacts to substrate elevation and slope beyond those discussed for construction.

Due to the use of equipment and excavation activities in waters of the U.S., removal or modification of barriers, accumulated sediment and culverts upstream of Rindge Dam would result in short-term adverse impacts to channel substrate in waters of the U.S., as described in hydrology and hydraulic studies contained in Appendix B of the IFR. Due to the required construction activities, waters of the U.S. immediately upstream and downstream of existing barriers could also be subjected to temporary impacts in the immediate vicinity of the structures during the proposed construction activities as discussed in Section 5.3 and 5.4 of the IFR. At the conclusion of the construction activities existing barriers and accumulated sediment would be removed or modified, restoring channel substrate, hydrology and sediment transport in both the main-stem of Malibu Creek and tributaries to Malibu Creek.

Beach compatible material would be deposited on the beach adjacent to Malibu Pier under the NER, or just offshore of the same location under the likely LPP. The existing beach would be widened, but would not expect to result in any significant changes to the slope, as wave and tidal action would naturally mobilize beach deposited materials. Under the NER, this placement would occur from October to April, while under the likely LPP this placement would occur during the construction season, roughly March – Nov depending on weather. The two disposal alternatives would result in similar impacts to slopes along the beach adjacent to Malibu Pier, as both options would provide the same quantity and type of material over the same general time frame, and both would result in this material being mobilized and deposited by natural oceanic processes.

The Habitat Evaluation shows that the physical, hydrologic and biological components of the aquatic habitat ecosystem would remain adversely impacted after the first year of construction then quickly rebound after reaches stabilize, and vegetation recovers along the riparian corridor in the area behind Rindge Dam for both the NER and likely LPP. By restoring the hydrologic and sediment regime in lower Malibu Creek, both dam removal alternatives would provide similar increases in functions and services in waters of the U.S. in the Malibu Creek watershed. With the removal of the dam and the accumulated sediment, the channel substrate elevation and slope would be reestablished upstream of the dam. With the reestablishment of the natural substrate elevation and slope, the natural channel morphology would be reestablished upstream of the dam, facilitating increased riparian habitat along the edge of the active channel and on adjacent terraces. With the removal of the accumulated sediment behind the dam, natural turbidity levels, erosion and accretion patterns and general water quality parameters would be reestablished in the lower reach of Malibu Creek. Within ten years, aquatic habitat values, including physical, hydrologic and biological functions and services would increase substantially when compared to the No Federal Action Alternative.

Revegetating temporary impact areas with native riparian species, including 5 years of monitoring and maintenance, would substantially reduce temporary adverse construction impacts to waters of the U.S. resulting in greater substrate stability. Implementing BMPs identified in Section 5.3 and 5.4, and clearly identifying temporary impact areas in waters of the U.S. would reduce but not eliminate temporary adverse construction impacts to substrate in waters of the U.S. BMPs include development and implementation of an erosion control plan, development and implementation of a SWPPP, and water quality monitoring during sediment placement. With the removal of the existing barriers and accumulated sediment, several reaches in Malibu Creek would exhibit substantially higher physical and biological functions with the restoration of channel substrate, hydrology and sediment transport as well as a substantial increase in fish passage. Based on the long-term benefits to substrate in waters of the U.S., no compensatory mitigation would be required for the either the NER or likely LPP.

(2) Sediment Type.

The primary focus of the both the NER and likely LPP is to remove Rindge Dam, the 780,000 cy of accumulated sediment behind Rindge Dam and place beach compatible material in the vicinity of Malibu Pier. Due to substrate disturbance and associated changes in the vertical distribution of sediments upstream of the dam, discharges of dredged or fill material in Malibu Creek would be dominated by temporary adverse impacts associated with use of mechanized equipment, access roads, temporary stockpiles and dewatering to remove or modify the above structures and accumulated sediment. Based on the above, the NER and likely LPP would have minor indirect and direct impacts to sediment type. After construction completion, O&M will have no further impacts to sediment type beyond those discussed for construction.

Geotechnical studies indicate that the 280,000 cy of the accumulated sediment behind Rindge Dam is suitable for beach nourishment and consists primarily of medium to coarse sand. Based on the initial analysis, the accumulated sediments are compatible with existing beach materials, resulting in minor indirect impacts to sediment type at the beach adjacent to Malibu Pier.

Implementing BMPs identified in Section 5.3 and 5.4 (described above) and clearly identifying temporary impact areas in waters of the U.S. would reduce but not eliminate temporary adverse construction impacts to [sediments in] waters of the U.S., which include temporary increases in downstream movement of sediment and modifications to channel morphology. With the removal or modification of the existing barriers and accumulated sediment, several reaches in Malibu

Creek would exhibit substantially higher physical and biological functions with the restoration of channel substrate, hydrology and sediment transport as well as a substantial increase in fish passage.

(3) Dredged/Fill Material Movement.

Both the NER and likely LPP will remove 780,000 cy of impounded sediment behind the dam using excavators, bulldozers and other similar equipment. The above activities in waters of the U.S. would result in minor increases in sedimentation downstream of the dam, resulting in short-term indirect impacts by increasing the downstream movement of sediment. At the conclusion of the proposed construction activities, the dam and accumulated sediment would be removed, restoring the channel substrate, hydrology and sediment transport in the lower reaches of Malibu Creek. After construction completion, O&M is not anticipated to have further effects to dredge or fill material movement beyond those discussed for construction.

Approximately 280,000 cy of accumulated sediment removed from Rindge Dam would be beach compatible sediment. Under the NER, this material would be placed on the beach adjacent to Malibu Pier, and under the likely LPP this material would be placed just offshore of the same location using a barge. Both the likely LPP and NER would result in the deposition of the same quantity (~280,000 cy) and type (mostly sands) of material into the same general area. This sediment would be deposited over roughly the same time frame under both the NER and likely LPP and allowed to enter the natural coastal sediment transport regime.

The NER and the likely LPP would have similar impacts to sediment transport in waters of the U.S., but the NER would remove the dam and spillway over a slightly longer period of time resulting in less intense, but longer duration temporary impacts to waters of the U.S. as sediments enter the stream and are carried downstream. Implementation of water diversions required for construction would temporarily impact sediment transport, but natural sediment transport would be fully restored upon project completion and removal of Rindge Dam.

The Habitat Evaluation shows that the physical, hydrologic and biological components of the aquatic habitat ecosystem would remain adversely impacted after the first year of construction then quickly rebound after reaches stabilize, and vegetation recovers along the riparian corridor in the area behind Rindge Dam for both the NER and likely LPP. By restoring the hydrologic and sediment regime in lower Malibu Creek, both dam removal alternatives would provide similar increases in functions and services in waters of the U.S. in the Malibu Creek watershed. With the removal of the dam and the accumulated sediment, the channel substrate elevation and slope would be reestablished upstream of the dam. With the reestablishment of the natural substrate elevation and slope, the natural channel morphology would be reestablished upstream of the dam, facilitating increased riparian habitat along the edge of the active channel and on adjacent terraces. With the removal of the accumulated sediment behind the dam, natural turbidity levels, erosion and accretion patterns and general water quality would be reestablished in the lower reach of Malibu Creek. Within ten years, aquatic habitat values, including physical, hydrologic and biological functions and services, would increase substantially when compared to the No Federal Action Alternative.

The NER and the likely LPP would dispose of the removed sediment in the same location. The NER would temporarily stockpile material and then place it on the beach while the likely LPP would utilize barges to place the material in the nearshore area just offshore at the same location. The two disposal alternatives would result in similar impacts to littoral transport at Surfrider Beach.

As described previously, implementation of BMPs identified in Section 5.3 and 5.4 will substantially reduce temporary adverse construction impacts to waters of the U.S. and the removal of barriers will substantially increase physical and biological functions within the restoration area. Based on the long-term benefits to substrate and sediment transport in waters of the United States, no compensatory mitigation would be required for either the NER or likely LPP.

(4) Physical Effects on Benthos (burial, changes in sediment type, etc.).

The previously described construction activities in waters of the U.S. would result in temporary adverse impacts to substrate over an estimated 7-8 year construction period for the NER and likely LPP respectively. Waters of the U.S. immediately upstream and downstream of the dam and reservoir could also be subjected to temporary impacts during the proposed construction activities. Temporary construction impacts could result in minor increases in sedimentation downstream of the dam, resulting in short-term indirect impacts by increasing the downstream movement of sediment. Due to construction activities in waters of the U.S, under both the NER and likely LPP, sediment removal and demolition of existing barriers would adversely impact organisms in the existing channel substrate. Adverse impacts would include increased mortality due to excavation of accumulated sediment, substrate disturbance to facilitate removal of barriers and substrate compaction from ongoing construction activities. At the conclusion of the proposed construction activities, the dam and accumulated sediment would be removed, restoring the natural substrate, flow, sediment regime and distribution of organisms in the channel substrate in the lower reach of Malibu Creek. As described previously, implementation of BMPs identified in Section 5 would substantially reduce temporary adverse construction impacts to waters of the U.S., including impacts to benthos, and would substantially increase physical and biological functions after construction, including beneficial impacts to benthic organisms as natural conditions are restored. After construction completion, O&M is not anticipated to have further impacts to benthos beyond those discussed for construction.

Approximately 280,000 cy of accumulated sediment removed from Rindge Dam are expected to be beach compatible sediment. Under the NER, this material will be placed on the beach adjacent to Malibu Pier, and under the likely LPP this material would be placed just offshore of the same location using a barge. Both the likely LPP and NER will result in the deposition of the same quantity (~280,000 cy) and type (mostly sands) of material into the same general area – the nearshore environment adjacent to Malibu Pier. Therefore, both the NER and likely LPP would have similar impacts to benthos in waters of the U.S. The NER would take one less year for completion, and therefore would result in slightly more intense but shorter duration impacts compared to the likely LPP. Deposition of sand onto the beach (NER) or into the nearshore (likely LPP) will bury and smother existing benthic organisms, which are expected to recover quickly after placement is completed. Widened beaches as a result of placement would provide benefits to numerous species, including shorebirds, and exceed any temporary adverse impacts. The tradeoff between a shorter duration but greater intensity of burial under the NER, versus the longer duration but slightly reduced burial intensity under the likely LPP do not differ significantly in the impacts to benthos. Under either option, materials will be rapidly mobilized by wave and tidal action, benthos are expected to recover quickly, and organisms that utilize the shoreline will generally receive the same benefit due to beach widening.

Nearshore surveys using side-scanning sonar and video were utilized to evaluate potential near-shore placement sites in order to avoid sensitive resources. Therefore, no sensitive resources would be directly buried by beach or near-shore nourishment activities.

(5) Actions Taken to Minimize Impacts (Subpart H).

Needed: __X__ YES___ NO

If needed, Taken: __X__ YES____ NO

Revegetating temporary impact areas with native riparian species, including 5 years of monitoring and maintenance, would substantially reduce temporary adverse construction impacts to waters of the United States. Construction activities in Malibu Creek and beach nourishment activities would be monitored for effects on water quality. BMPs, including changes to placement methodologies and timing (e.g. restrict to various tidal stages such as slack water) will be implemented if turbidity exceeds water quality criteria. Nearshore surveys using side-scanning sonar and video were utilized to evaluate potential near-shore placement sites in order to avoid sensitive resources. Therefore, no sensitive resources would be directly buried by beach or near-shore nourishment activities. Implementing BMPs and clearly identifying temporary impact areas in waters of the U.S. would reduce but not eliminate temporary adverse construction impacts to waters of the U.S. With the removal and modification of the existing barriers and accumulated sediment, several reaches in Malibu Creek would exhibit substantially higher physical and biological functions with the restoration of channel substrate, hydrology and sediment transport as well as a substantial increase in fish passage. After construction completion, O&M is not anticipated to have further impacts to waters of the U.S. beyond those discussed for construction. The stream corridor will be restored, and only minor maintenance to maintain an access road outside of waters of the U.S. is anticipated. No other structures requiring maintenance will be constructed, and routine sediment removal is not planned. Based on the long-term benefits to substrate and sediment transport in waters of the United States, no compensatory mitigation would be required for the NER and likely LPP.

b. Water Circulation, Fluctuation and Salinity Determinations:

(1) Water (refer to 40 CFR sections 230.11(b), 230.22 Water, and 230.25 Salinity Gradients; test specified in Subpart G may be required). Consider effects on (salinity, water chemistry, clarity, odor, taste, dissolved gas levels, nutrients, eutrophication and other applicable factors).

During the proposed construction activities in waters of the U.S., sediment removal and demolition of existing barriers would result in temporary impacts to water quality, and may include temporary changes to water clarity, water chemistry, dissolved gases, or nutrients. The above activities in waters of the U.S. would result in temporary adverse impacts to water quality parameters over the estimated 7-8 year construction period under the NER and likely LPP, respectively. In addition, temporary construction impacts could result in minor increases in sedimentation downstream of the dam, resulting in short-term indirect impacts by increasing the downstream movement of sediment. At the conclusion of the proposed construction activities, the dam and accumulated sediment would be removed, restoring the channel substrate, hydrology and sediment transport in the lower reach of Malibu Creek. Upstream barriers would also be removed restoring connectivity and hydrology to the upstream reaches as well. After construction completion, O&M will not have any impacts to water circulation, fluctuation, or salinity.

The placement of beach compatible material under both the NER and likely LPP could also potentially result in localized temporary impacts to water quality parameters during sand placement. The sediment was previously tested for grain size and chemical composition and was approved for placement through the SC-DMMT. While the NER and likely LPP differ in their methods and timing of sediment delivery, the quantity, quality, and makeup of sediments will be

the same for both. In addition, the placement locations would result in temporary impacts to the same vicinity, as natural sediment transport will mobilize the materials regardless of whether they are placed on the shore or just offshore. Any potential impacts to water quality parameters will be temporary, and no long-term, adverse impacts to water quality are expected with the NER or likely LPP.

The Habitat Evaluation shows that the physical, hydrologic and biological components of the aquatic habitat ecosystem would remain adversely impacted after the first year of construction then quickly rebound after reaches stabilize, and vegetation recovers along the riparian corridor in the area behind Rindge Dam for both the NER and likely LPP. By restoring the hydrologic and sediment regime in lower Malibu Creek, both dam removal alternatives would provide similar increases in functions and services in waters of the U.S. in the Malibu Creek watershed. With the removal of the dam and the accumulated sediment, the channel substrate elevation and slope would be reestablished upstream of the dam. With the reestablishment of the natural substrate elevation and slope, the natural channel morphology would be reestablished upstream of the dam, facilitating increased riparian habitat along the edge of the active channel and on adjacent terraces. With the removal of the accumulated sediment behind the dam, natural turbidity levels, erosion and accretion patterns and general water quality parameters would be reestablished in the lower reach of Malibu Creek. Within ten years, aquatic habitat values, including physical, hydrologic and biological functions and services, increase substantially when compared to the No Federal Action Alternative.

As described previously, implementation of BMPs identified in Section 5 of the IFR would substantially reduce temporary adverse construction impacts to waters of the U.S., including impacts to water circulation, fluctuation, and salinity. Removal of barriers would substantially increase physical and biological functions within the project area.

(2) Current Patterns and Circulation (consider items in sections 230.11(b), and 230.23), Current Flow and Water Circulation (current patterns, velocity, stratification and hydrology regime).

During the proposed construction activities in waters of the U.S., both the NER and likely LPP would result in temporary impacts to drainage patterns and flow velocity due within Malibu Creek and its tributaries due to substrate disturbance, water diversions, dewatering, and other in-channel construction activities. The above activities in waters of the U.S. would result in temporary adverse impacts to current and drainage patterns over an estimated 7-8 year construction period for the NER and likely LPP respectively. Waters of the U.S. immediately upstream and downstream of the dam and reservoir could also be subjected to temporary impacts during the proposed construction activities due to scour and sedimentation as the channel bed gradually returns to natural equilibrium. The short-term impacts include temporary increases in downstream movement of sediment and modifications to channel morphology. At the conclusion of the proposed construction activities, the dam and accumulated sediment would be removed. Over time, natural channel morphology, hydrology, sediment transport and drainage patterns in the lower reaches of Malibu Creek would be restored as the streambed reaches equilibrium. Upstream barriers would also be removed restoring hydrology of the upstream reaches. After construction completion, O&M will not have any impacts on water current or circulation patterns.

Beach nourishment adjacent to Malibu Pier (NER), or just offshore of the same location (likely LPP) would result in similar temporary, minor impacts during the placement of sediment. These impacts would occur during the middle years of construction (approximately years 2-6), during excavation of Unit II (Figure 4). Impacts to patterns and circulation would be indirect as sediments accumulate and potentially cause minor changes to current patterns, velocity, or circulation.

These effects would be short term as the sediments would be quickly and naturally mobilized by tidal processes. No long-term or adverse impacts are expected.

(3) Normal Water Level Fluctuations (tides, river stage, etc.) (consider items in 40 CFR sections 230.11(b) and 230.24).

During the proposed construction activities in waters of the United States for both the NER and likely LPP, temporary impacts to river stage and normal water levels could occur within Malibu Creek and its tributaries over an estimated 7-8 year construction period. Waters of the United States immediately upstream and downstream of the dam could be subjected to temporary impacts due to changes in bed elevation due to dam removal and sediment excavation and any subsequent scour or deposition. Based on hydrodynamic models, however, neither the NER nor likely LPP would result in significant changes to river stage or induce flooding. At the conclusion of the proposed construction activities, the dam and accumulated sediment would be removed. Upstream barriers would also be removed restoring hydrology of the upstream reaches. Over time, natural water levels and river stages in Malibu Creek and upstream reaches and tributaries would be restored as the streambed reaches equilibrium. After construction completion, O&M will not result in any water level fluctuations to tide, river, or stage.

Placement of beach compatible material at beach adjacent to Malibu Pier (NER), or offshore of the same location (likely LPP), could result in temporary changes in tide height along the Malibu Pier beach area as the beach increases in width due to beach nourishment. However, no long term, adverse, or significant changes to normal water levels or tides are anticipated

(4) Salinity Gradients (consider items in 40 CFR sections 230.11(b) and 230.25).

Neither the NER nor likely LPP are expected to have an impact on normal water salinity nor are they expected to create salinity gradients. After construction completion, O&M will not have any impacts to salinity gradients.

(5) Actions That Will Be Taken to Minimize Impacts (refer to Subpart H) [5.3]

Needed: __X__ YES ___ NO
If needed, Taken: __X__ YES____ NO

Revegetating temporary impact areas with native riparian species, including 5 years of monitoring and maintenance of all revegetation areas, would substantially reduce temporary adverse construction impacts to waters of the U.S. Maintenance of the stream would continue by CDPR. Construction activities in Malibu Creek and beach nourishment activities would be monitored for effects on water quality. During construction, BMPs would include development and implementation of sediment and erosion control plans, site specific SWPPPs, and monitoring of water quality. Additional BMPs will be implemented if turbidity exceeds water quality criteria. Implementation of these BMPs will ensure that changes in water (clarity and turbidity), water currents and circulation due to sediment movement, and water level fluctuations due to sediment removal and excavation, are minimized to the maximum extent practicable. Implementing BMPs and clearly identifying temporary impact areas in waters of the U.S. would reduce but not eliminate temporary adverse construction impacts to waters of the U.S. With the removal and modification of the existing barriers and accumulated sediment, several reaches in Malibu Creek would exhibit substantially higher physical and biological functions with the restoration of channel substrate, hydrology and sediment transport as well as a substantial increase in fish passage. Based on

the long-term benefits to substrate, current patterns and sediment transport in waters of the U.S., no compensatory mitigation would be required for the NER and likely LPP.

c. Suspended Particulate/Turbidity Determinations:

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site (consider items in sections 230.11(c) and 230.21).

During the middle years of construction (approximately years 2-6), beach compatible materials will be placed in the vicinity of Malibu Pier. Under the NER, these materials will be placed along the beach just east of Malibu Pier (Figure 3) during winter months (likely October – April). Under the likely LPP, the same materials would instead be placed just offshore of the same location via barge (Figure 3) during the construction window (likely March – Nov). The materials proposed for beach nourishment are those found in Unit II of the impounded sediments (Figure 4), and based on chemical and grain sized testing are clean and mostly sands. The results of chemical and grain size testing were presented and approved through the SC-DMMT for beach nourishment. Placement of these materials under both the NER and LPP would result in temporary changes in suspended particulates and turbidity levels. However, any increase in turbidity and suspended materials are expected to dissipate rapidly as the materials are mostly sands and not finer, easily suspended materials. These temporary, minor increases are not expected to be adverse nor significant as the surf zone is naturally an area of high sediment transport, and any increases are not expected to be distinguishable from normal turbidity levels. After construction completion, O&M is not anticipated to have any further effect on turbidity or suspended particulates.

As described previously, implementation of BMPs identified in Section 5.3 and 5.4 of the IFR, will ensure that any temporary adverse construction impacts to waters of the U.S. are minimized. BMPs include development and implementation of sediment and erosion control plans, site specific SWPPPs, and monitoring of water quality.

(2) Effects (degree and duration) on Chemical and Physical Properties of the Water Column (consider environmental values in 40 CFR section 230.21, as appropriate).

Light Penetration	____N/A	__X_ INSIGNIFICANT	____ SIGNIFICANT
Dissolved Oxygen	____N/A	__X_ INSIGNIFICANT	____ SIGNIFICANT
Toxic Metals & Organic	____N/A	__X_ INSIGNIFICANT	____ SIGNIFICANT
Pathogen	____N/A	__X_ INSIGNIFICANT	____ SIGNIFICANT
Aesthetics	____N/A	__X_ INSIGNIFICANT	____ SIGNIFICANT
Others	__X_N/A	____ INSIGNIFICANT	____ SIGNIFICANT

Impacts would be temporary and adverse, but not significant. Sediments are clean and are not carriers of contaminants. BMPs identified in Section 5.3 and 5.4 of the IFR would keep sediment levels entering the water as turbidity to insignificant levels. Based on sediment transport modeling (Appendix B), sedimentation within Malibu Creek would be similar in the No Federal Action scenario and under both the NER and likely LPP. Placement of sediments at either the beach or nearshore locations would not result in turbidity levels that are substantially different than normal surf-zone levels, as described earlier. Therefore, the NER and likely LPP do not result in significantly different impacts than the No Federal Action alternative. After construction completion, O&M is not anticipated to have any effect on chemical or physical properties of the water column.

(3) Effects on Biota (consider environmental values in 40 CFR section 230.21, as appropriate including primary productivity, suspension/filter feeders and sight feeders).

Both the NER and likely LPP would have the same end result, removal of Rindge Dam and the 780,000 cy of impounded sediment behind the dam and removal of additional upstream barriers to provide further aquatic connectivity. The above activities in waters of the U.S. would result in temporary adverse impacts to substrate over an estimated 7-8 year construction period. Waters of the U.S. immediately upstream and downstream of the dam and reservoir could also be subjected to temporary impacts during the proposed construction activities. Some access roads would remain in place after the removal of the dam and accumulated sediment to facilitate ongoing monitoring activities. At the conclusion of the required monitoring, the northbound access road would be removed while the southbound access road is retained for future maintenance access and waters of the U.S. would be restored to pre-project contours. In addition, temporary construction impacts could result in minor increases in sedimentation downstream of the dam, resulting in short-term indirect impacts to substrate. At the conclusion of the proposed construction activities, natural channel morphology, hydrology, sediment transport and drainage patterns in the lower reaches of Malibu Creek would be restored as the streambed reaches equilibrium. After construction completion, O&M is not anticipated to have any further effect on biota.

The lower reaches of Malibu Creek provide habitat for a number of federally listed threatened or endangered species, including southern steelhead trout (*Onchorynchus mykiss*), tidewater goby (*Eucyclogobius newberryi*), least Bell's vireo (*Vireo bellii pusillus*), and California least tern (*Sterna antillarum*). In addition, the 3-mile reach below Rindge Dam is designated as critical habitat for steelhead. Riparian habitat in the vicinity of Rindge Dam is dominated by western sycamore, mulefat, and various willow species, with pockets of coast live oak. The Habitat Evaluation for the lower reaches of Malibu Creek show that several physical and biological functions related to habitat are relatively high, while others, such as hydrology, sediment transport and fish passage, are relatively low. Removal and modification of barriers, accumulated sediment and culverts upstream of Rindge Dam would result in short-term adverse impacts to channel morphology, riparian habitat and wildlife in and adjacent to waters of the U.S.

Waters of the U.S. immediately upstream and downstream of existing barriers could also be subjected to temporary impacts during the proposed construction activities. Furthermore, use of construction equipment would augment noise levels in the vicinity of construction activities, disturbing wildlife in the lower reaches of Malibu Creek. The analysis in the IFR shows that aquatic habitat would remain adversely impacted after the first year of construction then quickly rebound after reaches stabilize, and vegetation recovers along the riparian corridor in the area behind Rindge Dam. Within ten years, both the NER and LPP would increase aquatic habitat values in the lower reaches of Malibu Creek substantially. An addition of nearly 15 miles of aquatic connectivity would also be provided under both the NER and likely LPP, providing a large increase in available habitat for steelhead and other aquatic species. Riparian habitat values would also increase consistently through the future TYs beyond ten years, culminating in approximately 466 annual habitat units at 50 years. Based on the above information, at the conclusion of the construction activities existing barriers and accumulated sediment would be removed, restoring channel morphology, riparian habitat, hydrology and sediment transport in both the main-stem of Malibu Creek and tributaries to Malibu Creek.

Under both the NER and likely LPP, approximately 280,000 cy of accumulated beach compatible sediment removed from Rindge Dam would be utilized for beach nourishment in the vicinity of Malibu Pier. Under the NER, this material would be placed onshore adjacent to Malibu Pier during

the winter months, while under the likely LPP this material would be placed just offshore of the same location during summer months. Beach nourishment activities under both the NER and likely LPP could result in short-term adverse impacts to wildlife in and adjacent to waters of the U.S. during the proposed beach nourishment activities. Beach placement of material would not occur during the grunion spawning season of March to September under the NER, avoiding potential grunion impacts. Under the likely LPP, this material would be placed off-shore and would also avoid any impacts to grunion.

As described previously, implementation of BMPs identified in Section 5.3 and 5.4 of the IFR, and as described above, would ensure that any temporary adverse construction impacts to waters of the U.S. are minimized. Removal of barriers would substantially increase physical and biological functions within the project area. Based on the long-term benefits to biota in waters of the United States, no compensatory mitigation would be required for either the NER or LPP.

(4) Actions taken to Minimize Impacts (Subpart H).

Needed: __X__ YES___ NO

If needed, Taken: __X__ YES____ NO

Revegetating temporary impact areas with native riparian species, including 5 years of monitoring and maintenance, would substantially reduce temporary adverse construction impacts to waters of the U.S. Construction activities in Malibu Creek, at upstream barrier locations, and during beach nourishment activities would be monitored for effects on water quality. BMPs would be implemented if turbidity exceeds water quality criteria, including changes in placement methods and timing for beach/nearshore placement and implementation of site-specific erosion and sediment control methods as developed in project related documents (erosion control plan and SWPPP). No sensitive resources would be directly buried by beach nourishment activities. Implementing BMPs and clearly identifying temporary impact areas in waters of the U.S. would reduce but not eliminate temporary adverse construction impacts to waters of the U.S. With the removal and modification of the upstream existing barriers and accumulated sediment, several reaches in Malibu Creek and its tributaries would exhibit substantially higher physical and biological functions with the restoration of channel substrate, hydrology and sediment transport as well as a substantial increase in fish passage. Based on the long-term benefits to waters of the U.S., no compensatory mitigation would be required for the NER and likely LPP.

d. Contaminant Determinations (consider requirements in 40 CFR section 230.11(d)): The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

(1) Physical characteristics _X_

(2) Hydrography in relation to known or anticipated sources of contaminants _X_

(3) Results from previous testing of the material or similar material in the vicinity of the proposed project _X_

(4) Known, significant sources of contaminants (e.g. pesticides) from land runoff or percolation ___

(5) Spill records for petroleum products or designated (Section 311 of the CWA) hazardous substances ___

(6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources ___

(7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities ___

(8) Other sources (specify) ___

An evaluation of the Geotechnical Report (Appendix D of the IFR) indicates that the proposed beach nourishment material is not a carrier of contaminants and that levels of contaminants are substantively similar in the extraction and disposal sites and are not likely to be constraints.

e. Aquatic Ecosystem and Organism Determinations (use evaluation and testing Procedures in Subpart G, as appropriate).

(1) Plankton

Potential impacts to plankton would be short term and insignificant because the area to be impacted is extremely small. No impacts to plankton as a result of O&M are anticipated.

(2) Benthos

Potential impacts to benthos are described in Section II.a.4 above. No impacts to benthos during O&M are anticipated.

(3) Nekton

Nearshore surveys using side-scanning sonar and video were performed and the offshore placement location under the likely LPP was chosen to avoid any direct impacts to sensitive habitats. The shoreline placement location under the NER is devoid of any existing sensitive habitat or special aquatic sites. While minor amounts of rocky reef exist adjacent to placement sites, these areas are small and isolated. Rocky reef is designated as a Habitat Area of Particular Concern by National Marine Fisheries Service (NMFS), which is a discrete subset of essential fish habitat. Natural tidal processes may transport beach nourishment material into these areas, but complete burial of these rocky reef areas is not anticipated. These areas are already subject to natural sedimentation and scour due to their location in the surf zone, an area of high sediment transport. The additional material placed as a result of either the NER or likely LPP are not expected to significantly impact this resource, and based on previous coordination with NMFS no mitigation related to essential fish habitat is required. No impacts to nekton as a result of O&M are anticipated.

(4) Food Web, Special Aquatic Sites, Threatened and Endangered Species, and Other Wildlife.

Vegetated shallows, in the form of surf grass beds, are located near the vicinity of the sediment placement sites for both the NER and likely LPP. However, there will be no direct placement of sediments on any vegetated shallows under either the NER or likely LPP. Sediment transport evaluations indicated that vegetated areas should not be significantly indirectly impacted by either

plan. Short-term adverse impacts are possible; however these would be insignificant due to the magnitude and duration of expected impacts.

Details related to threatened and endangered species evaluations are contained in section 5.4 of the IFR, and summarized in c.(3) Effects to Biota (above). The USACE has determined that the project would not affect two endangered species found in the vicinity of the beach nourishment activities (California least tern and western snowy plover). While both the NER and likely LPP would provide long-term benefits to steelhead, the USACE will consult over potential short term effects to the species and its critical habitat with the NMFS prior to construction. Significant impacts to other protected and sensitive species that could potentially occur within the project area will be avoided through implementation of the Mitigation Measures and species-specific Conservation Measures detailed in Section 5.4 of the IFR.

Effects on other wildlife species, including food web impacts, have also been evaluated in Section 5.4 of the IFR and are expected to be short term and insignificant. No impacts to food webs, special aquatic sites, protected species, or wildlife are anticipated as a result of O&M after construction completion.

Patches of riverine wetlands are expected to occur on the accumulated sediment behind Rindge Dam, behind other barriers as well in various locations in Malibu Creek and tributaries to Malibu Creek. The NER and likely LPP would have temporary adverse direct and indirect impacts to wetlands during construction activities. Patchily distributed areas of riparian fringe wetlands of undetermined size occur within the riparian zones in Malibu Creek and tributaries. Total acreages of 3-parameter wetlands are expected to be far below the overall acreages of waters of the U.S. found within the project footprint. At the conclusion of the construction activities existing barriers and accumulated sediment would be removed, restoring the channel morphology, riparian and wetland habitat, hydrology and sediment transport in both the main-stem of Malibu Creek and tributaries to Malibu Creek.

(5) Actions to Minimize Impacts (refer to Subpart H).

Revegetating temporary impact areas with native riparian species, including 5 years of monitoring and maintenance all revegetation areas, would substantially reduce temporary adverse construction impacts to waters of the U.S. Maintenance of the stream would continue by CDPR. Construction activities in Malibu Creek and beach nourishment activities would be monitored for effects on water quality. Best management practices would be implemented if turbidity exceeds water quality criteria. No sensitive resources would be directly buried by beach nourishment activities. Implementing best management practices and clearly identifying temporary impact areas in waters of the U.S. would reduce but not eliminate temporary adverse construction impacts to waters of the U.S. With the removal and modification of the existing barriers and accumulated sediment, several reaches in Malibu Creek would exhibit substantially higher physical and biological functions with the restoration of channel substrate, hydrology and sediment transport as well as a substantial increase in fish passage. Based on the long-term benefits to the aquatic ecosystem in waters of the U.S., no compensatory mitigation would be required for the NER and likely LPP.

f. Proposed Disposal Site Determinations:

(1) Mixing Zone Determination (consider factors in 40 CFR section 230.11(f)(2))

Is the mixing zone for each disposal site confined to the smallest practicable zone?

__X__ YES ____ NO

The mixing zone used to demonstrate compliance was the smallest practicable zone.

(2) Determination of Compliance with Applicable Water Quality Standards (present the standards and rationale for compliance or non-compliance with each standard) [2.7].

To satisfy requirements of the Federal CWA, the Corps will submit the Final IFR and appropriate technical documentation to the Los Angeles RWQCB, tasked with implementing the CWA within the region, for their review for CWA Section 401 certification, pursuant to 33 CFR 336.1(a)(1). Upon review of the submittal, the RWQCB would issue a 401 certification. The Corps will continue to coordinate with the RWQCB throughout the CWA process and construction activities. Fill material being placed beach/nearshore under both the NER and likely LPP consist of clean, beach compatible materials that have been previously tested are contaminant free. BMPs would be implemented if turbidity exceeds water quality criteria, including changes in placement methods and timing for beach/nearshore placement. No O&M at the sediment placement sites will be required. Based on this testing, and via implementation of construction related BMPs such as water quality monitoring, all applicable water quality standards will be met.

(3) Potential Effects on Human Use Characteristics.

(a) Municipal and Private Water Supply (refer to 40 CFR section 230.50):

The Rindge family built Rindge Dam as a private water storage and supply facility for the Rindge family ranch and other business concerns between 1924 and 1926. The reservoir, though essentially filled with sediment by the mid-1940s, continued to serve as a water supply district for the Malibu community into the early 1960s. The dam was decommissioned in 1967. The property was purchased by DPR and is now part of Malibu Creek State Park. No reservoir currently exists behind Rindge Dam and the sediment impounded behind the dam has filled to the crest of the dam's spillway, nearly 100 feet above the elevation of the original streambed.

Based on the above information, the reservoir is not currently utilized for municipal or private water supplies and therefore the NER and likely LPP would not impact municipal or private water supplies or water conservation.

(b) Recreational and Commercial Fisheries (refer to 40 CFR section 230.51).

There are no recreational fisheries in Malibu Creek or its tributaries. These areas are located on State Park land with a restriction against fishing. Onshore beach nourishment activities (NER) or nearshore placement activities (likely LPP) may temporarily interfere with shore fishing activities in the immediate vicinity of the construction activities. Impacts associated with the NER and likely LPP would be less than significant.

(c) Water Related Recreation (refer to 40 CFR section 230.52).

During the proposed beach nourishment activities associated with the NER, portions of the beach and the Malibu Pier parking lot would be closed to public use. Impacts would be temporary. In addition, closures would be made during the beach off-season period of October through April, minimizing impacts to recreational beach users. Access to Malibu Pier would be maintained during all closures to allow continued recreational use of this facility. The likely LPP would have

no effect on recreational beach users and no closures would be required for nearshore placement activities. The NER and likely LPP would not impact surfing conditions or other water sports.

In the long term, the beach nourishment would create a wider beach area and greater opportunities for beach activities, enhancing the beach available for recreation users. The wider beach would be a benefit to beach recreation users. Based on the above information, both the NER and likely LPP would result in less than significant impacts to water related recreation.

(d) Aesthetics (refer to 40 CFR section 230.53).

Both the NER and likely LPP would have the same primary focus on the removal of Rindge Dam and the 780,000 cy of impounded sediment behind the dam and removal of additional upstream barriers to provide further aquatic connectivity. As a result, discharges of dredged or fill material in Malibu Creek would be dominated by temporary impacts associated with use of mechanized equipment, access roads, temporary stockpiles and dewatering to remove or modify the above structures and accumulated sediment. With the above activities, there would be short-term adverse impacts to the aesthetics of the aquatic environment due to presence and use of construction equipment in Malibu Creek and tributaries to Malibu Creek. With the removal of Rindge Dam, removal or modification the various barriers and the removal of accumulated sediment, there would be a long-term benefit to the aesthetics of the aquatic environment in Malibu Creek and tributaries to Malibu Creek.

The proposed beach nourishment under both the NER and likely LPP would result in a wider beach for up to 9 years, which would be a beneficial alteration of the visual character of the existing environment. During the construction phase, the visual character of the site would be affected by construction activities and the presence of construction equipment and materials; however, the construction phase is temporary, and as such, would not result in permanent effects to the visual character of the site. In the long term, the resulting wider beach would enhance the view of the beach and result in a visual benefit.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves (refer to 40 CFR section 230.54).

Rindge Dam was decommissioned in 1967 and the property was purchased by CDPR. As a result, Rindge Dam and the filled reservoir area is now part of Malibu Creek State Park. With the proposed construction activities for both the NER and likely LPP, there would be short-term adverse impacts to park areas in the immediate vicinity of Rindge Dam due to presence and use of construction equipment in Malibu Creek and tributaries to Malibu Creek. With the removal of Rindge Dam, the removal and modification of the various barriers and the removal of accumulated sediment, there would be long-term benefits to Malibu Creek State Park.

According to the hydrodynamic model, after removal of Rindge Dam, scour would occur from just above Rindge Dam site in the Tunnel Falls reach to immediately downstream of Rindge Dam. Some deposition would occur in the lower portion of the Cross Creek Bridge to Big Bend reach, and in all lower reaches. While significant sediment deposition is projected to occur in some downstream reaches, the estimated sediment accumulation is similar to the estimated amount of sediment accumulation under the No Federal Action alternative. Based on hydrodynamic models, neither the NER nor likely LPP would result in adverse changes to river stage or induce flooding as a result of this sediment accumulation. In Malibu Lagoon, over 1 foot of sediment would be deposited, similar to levels of sedimentation modeled under the No Federal Action alternative.

The NER and likely LPP would have minimal effects on national and historic monuments, national seashores, wild and scenic rivers, wilderness areas or research sites or similar preserves.

g. Determination of Cumulative Effects on the Aquatic Ecosystem (consider requirements in 40 CFR section 230.11(g)).

The total drainage area for the Malibu Creek watershed covers approximately 110 square miles (mi^2) of the Santa Monica Mountains and Simi Hills. Elevations in the watershed range from over 3,100 feet at Sandstone Peak in Ventura County to sea level at Santa Monica Bay. The Malibu Creek watershed drains the Santa Monica Mountains in northern Los Angeles and southern Ventura Counties. A coastal watershed, it is the largest watershed in the Santa Monica Mountains, and encompasses some of the largest areas of protected open space left in southern California.

Over two-thirds of the watershed is currently undeveloped with one-third of that, over 30 square miles, protected as open space by state, Federal, and other agencies and is projected to remain undeveloped in the foreseeable future. Another 40 square miles could be developed in the future with no more than one dwelling per 20 acres, with other areas unlikely to change based on a combination of steep slopes, ridgelines, and coastal restrictions on development. The watershed has been affected by past anthropogenic activities including residential development, reservoirs, and agricultural operations. Several dams and lakes have been constructed in the watershed for water supply and recreation: Eleanor Dam in 1881, Sherwood Dam in 1904, Crags Dam in 1913, Malibu Dam in 1923, Rindge Dam in 1926, and Westlake Dam in 1965.

There are nearly 30 man-made partial and total aquatic barriers that currently occur upstream of Rindge Dam, including two other large dams, smaller dams, road crossings and culverts. Of these barriers, there are three that are sediment traps. Rindge Dam is filled to the crest with 780,000 cy of sediment. Century Dam has trapped a smaller but relatively significant amount of sediment, located about five miles upstream from Rindge Dam. Malibu Dam, located an additional 1.9 mi upstream from Century Dam has also trapped some sediment, but is maintained as a recreation lake and residential community. A large portion of the watershed is part of Malibu State Park and is managed by CDPR. The park boundary extends from Malibu Lagoon, along Malibu Creek and several tributaries to a large open space area in the middle of the watershed. The park boundaries also extend into many other portions of the Santa Monica Mountains and are connected to Federal lands in the Santa Monica Mountains National Recreation Area.

The USACE's Los Angeles's District (LAD) Regulatory Division study of cumulative impacts in the Malibu Creek watershed, one of the region's largest drainage basins in the Santa Monica Mountains, indicates that most of impacts to waters of the United States occurred prior to the enactment of the CWA (Lilien 2001). The Santa Monica Mountains have high natural resource values that contain 1066 hectares (ha) of aquatic habitat and support a number of federally listed threatened and endangered species. As documented in Lilien 2001, despite their importance, aquatic ecosystems in the Santa Monica Mountains, particularly Malibu Creek, have experienced loss and degradation of aquatic resources and riparian habitat. Regional Condition 6 to the Nationwide Permits (NWPs), which was originally approved in 2002, was developed to ensure that NWPs will have minimal impacts to aquatic resources in the Santa Monica Mountains watersheds, individually and cumulatively, as each individual project proposing to discharge dredged or fill material into waters of the U.S. will be reviewed by the LAD. By requiring project proponents to notify the LAD for projects impacting less than 0.1 acre of jurisdictional waters of the U.S., Regional Condition 6 has allowed the LAD to better monitor the cumulative impacts of activities permitted under NWPs and ensure cumulative impacts in the Malibu Creek watershed do not exceed the minimal impact threshold established in Section 404(e) of the CWA.

Based on the above information, Malibu Creek exhibits cumulative impacts from past construction of dams and reservoirs as well as impervious surfaces associated with residential development and roads. Past projects, including permits issued under Section 404 of the CWA, have resulted in permanent direct and indirect impacts to waters of the United States, including wetlands, with the construction of road culverts, flood control structures and water supply dams. Cumulatively, the above structures have modified peak storm flows, channel morphology, baseflow, sediment transport and reduced riparian and wetland habitat in Malibu Creek and tributaries to Malibu Creek. The addition of impervious surfaces and the associated residential development has also adversely affected water quality parameters in Malibu Creek and Lagoon. In addition, many of the above structures act as partial or total barriers to fish passage, resulting in only 3 mi of Malibu Creek being currently available to steelhead. Because a relatively large percentage of the watershed is protected as open space by state and federal agencies, reasonably foreseeable future impacts would be limited, but some areas in the watershed could exhibit additional low density residential development in open space areas as well as infilling within existing urban areas. Reasonably foreseeable activities in waters of the United States would also include minor impacts associated with maintenance and modification of existing flood control and road structures.

Discharges of fill material in Malibu Creek associated with Rindge Dam concrete and sediment removal, and modification or removal of the upstream aquatic habitat barriers on Cold Creek and Las Virgenes Creek would be dominated by temporary impacts associated with use of mechanized equipment, access roads, temporary stockpiles and dewatering to remove or modify the above structures and accumulated sediment. With the above activities, there would be short-term adverse impacts to the aquatic environment due to presence and use of construction equipment in Malibu Creek and tributaries to Malibu Creek. With the removal of Rindge Dam, removal of the spillway under the likely LPP, removal or modification the various barriers and the removal of accumulated sediment, under either the NER or likely LPP, there would be a long-term benefit to the aquatic environment in Malibu Creek and tributaries to Malibu Creek.

In consideration of the past, present and reasonably foreseeable future projects, neither the NER nor likely LPP would contribute to cumulative impacts to waters of the United States in the Malibu Creek watershed. In terms of long-term benefits to aquatic habitat in the lower reaches of Malibu Creek, both the NER and likely LPP would open 15 river miles to aquatic species and generate 466 annual habitat units at 50 years.

h. Determination of Indirect/Secondary Effects on the Aquatic Ecosystem (consider requirements in section 230.11(h)):

Waters of the U.S. immediately upstream and downstream of the dam and reservoir could be subjected to temporary impacts during the proposed construction activities. In addition, temporary construction impacts could result in minor increases in sedimentation downstream of the dam, resulting in short-term indirect impacts to substrate, hydrology, sediment transport, turbidity levels and water quality.

The NER and the likely LPP would have similar indirect and secondary effects on the aquatic ecosystem within waters of the U.S. along Malibu Creek and its tributaries. Both alternatives would provide similar increases in functions and services in waters of the U.S. in the Malibu Creek watershed upon project completion. Both the NER and likely LPP would result in the removal of the dam, impounded sediment, and upstream barriers and would therefore have the same potential short term impacts during construction and long term benefits after completion. Overall,

the both NER and likely LPP would result in similar indirect impacts to downstream substrate, channel morphology, hydrology, sediment transport, water quality and wildlife in and adjacent to waters of the U.S. After construction completion, O&M is not anticipated to have any indirect or secondary effects on the aquatic ecosystem.

Both the NER and likely LPP would place approximately 280,000 cy of beach compatible material in the vicinity of Malibu Pier. However, the NER and the likely LPP would use different methods and timing for delivery as described previously. While the methods and timing differ, the overall quantity, and composition of the material being deposited is the similar for both the NER and likely LPP. The NER would result in this material deposited over a shorter time period, resulting in shorter duration but more intense deposition, while the likely LPP would have a longer duration of slightly less intense deposition. Therefore, both alternatives would have similar long term, secondary, and indirect effects to the aquatic ecosystem at the placement location in the Pacific Ocean.

III. Findings of Compliance or Non-Compliance with the Restrictions on Discharge:

The final 404(b)(1) evaluation and Findings of Compliance will be included with the final IFR.

Prepared by: Lawrence Smith, Jesse Ray, and Aaron Allen Date: 19 Jan 2017

Appendix H1
Memorandum for the Record: Planning Level Jurisdictional Determination for the Malibu Creek Study Area (including Cold Creek and Las Virgenes Creek)

CESPL-RG-N February 7, 2014

MEMORANDUM FOR THE RECORD
SUBJECT: Planning Level Jurisdictional Determination for the Malibu Creek Study Area (including Cold Creek and Las Virgenes Creek)

1. On February 7, 2014, a planning level jurisdictional determination (JD) was completed for the Malibu Creek Study Area. The focus of the planning level JD was to estimate potential temporary and permanent impacts to waters of the United States associated with the various study components, including the removal of Rindge Dam and the accumulated sediment in the reservoir, removal or modification of barriers in Cold Creek, removal or modification of barriers in Las Virgenes Creek and the potential construction of flood walls downstream of Rindge Dam under Alternatives 3 and 4.

2. The Ordinary High Water Mark (OHWM) is defined at 33 C.F.R. Section 328.3(e) as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." Google Earth was used to estimate the location of the OHWM in multiple locations in the Study Area, including the main-stem of Malibu Creek, Cold Creek and Las Virgenes Creek. The impact area associated with the removal of Rindge Dam and the associated sediment was estimated using the polygon tool in Google Earth. Impact areas for the removal or modification of the various barriers in Cold Creek and Las Virgenes Creek were estimated using the location of the OHWM, the average width of the channel below the OHWM and a construction area that included jurisdictional areas 100 feet above and below the given barrier.

3. Based on a random sample of locations in the main-stem of Malibu Creek, the average width for waters of the United States is approximately 90 feet. Based on a random sample of locations in Las Virgenes Creek, the average width for waters of the United States is approximately 37 feet. Because Cold Canyon is relatively narrow with dense vegetation, the OHWM was difficult to estimate using Google Earth; however, using a limited number of locations where the channel was visible, the average width for waters of the United States is approximately 20 feet.

4. Using Google Earth, the estimated temporary impact area in waters of the United States for the removal of Rindge Dam and the accumulated sediment in the reservoir is approximately 7.5 acres. The 7.5-acre temporary impact area in waters of the United States includes an estimated 6-acre area upstream of the dam and a 1.5-acre area immediately downstream of the dam. The Malibu Creek OHWM is very wide in the vicinity of the Rindge Dam (the jurisdictional channel is over 250 feet wide), which results in a relatively large temporary impact area upstream of the dam.

5. In Las Virgenes Creek, the removal or modification of LV1 (Crags Culvert) would temporarily impact approximately 0.2 acre of waters of the United States. The removal or modification of LV2 (White Oaks Dam) would temporarily impact approximately 1 acre of waters of the United States (the dam increases the width of the channel immediately upstream of the structure). The removal or modification of LV3 (Lost Hills Road Culvert) would temporarily impact approximately 0.3 acre of waters of the United States. The removal or modification of LV4 (Meadow Creek Lane) would temporarily impact approximately 0.2 acre of waters of the United States. Based on the above

estimates, the total impact to waters of the United States in Las Virgenes Creek would be approximately 1.7 acres.

6. In Cold Creek, the removal or modification of CC1 (Piuma Culvert) would temporarily impact 0.1 acre of waters of the United States. The removal or modification of CC2 (Malibu Meadows Road) would temporarily impact approximately 0.15 acre of waters of the United States. The removal or modification of CC3 (Crater Camp) would temporarily impact approximately 0.1 acre of waters of the United States. The removal or modification of CC4 (Cold Creek Barrier) would temporarily impact approximately 0.1 acre of waters of the United States. The removal or modification of CC5 (Cold Canyon Road Culvert) would impact approximately 0.2 acre of waters of the United States. Based on the above estimates, the total impact to waters of the United States in Cold Creek would be approximately 0.65 acre.

7. With Alternatives 3a, 3b, 4a and 4b, two 2,900 linear foot floodwalls would need to be constructed in the lower reach of Malibu Creek (from Cross Creek Road downstream to the Pacific Coast Highway bridge) . Construction of the floodwall requires a 45-foot-wide area and, assuming the entire floodwall impact area is located in waters of the United States, the total impact area would be approximately 6 acres.

8. The above estimates for impacts to waters of the United States should only be utilized for planning purposes. A detailed JD would be required prior to implementing any of the proposed construction activities in waters of the United States. If you have any questions regarding this planning level JD, please contact me at (805) 585-2148.

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
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