RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Hilton Creek Gravel Augmentation Project

EA-17-048

U.S. Department of the Interior
Bureau of Reclamation
South-Central California Area Office

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Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Section 1 Introduction

1.1 Background

Hilton Creek is an ephemeral creek that joins the Santa Ynez River approximately 1,000 feet downstream from the bottom of the Bradbury Dam spillway structure. In 1997, the Bureau of Reclamation (Reclamation) agreed to permanently supply water to Hilton Creek via a water line from Lake. Since 2000, operation of this water supply system has been subject to a Biological Opinion (BiOp) issued by the National Marine Fisheries Service (NMFS) to support a population of steelhead (*Oncorhynchus mykiss*) listed under the Endangered Species Act (NMFS 2000). The current Hilton Creek water supply system (Figure 1) includes the following features: Intake, Pumps, Chute Release Point (CRP), Lower Release Point (LRP), Lower Bifurcation (LB), Upper Bifurcation (UB), Upper Release Points (URP), and an Emergency Backup System (EBS).

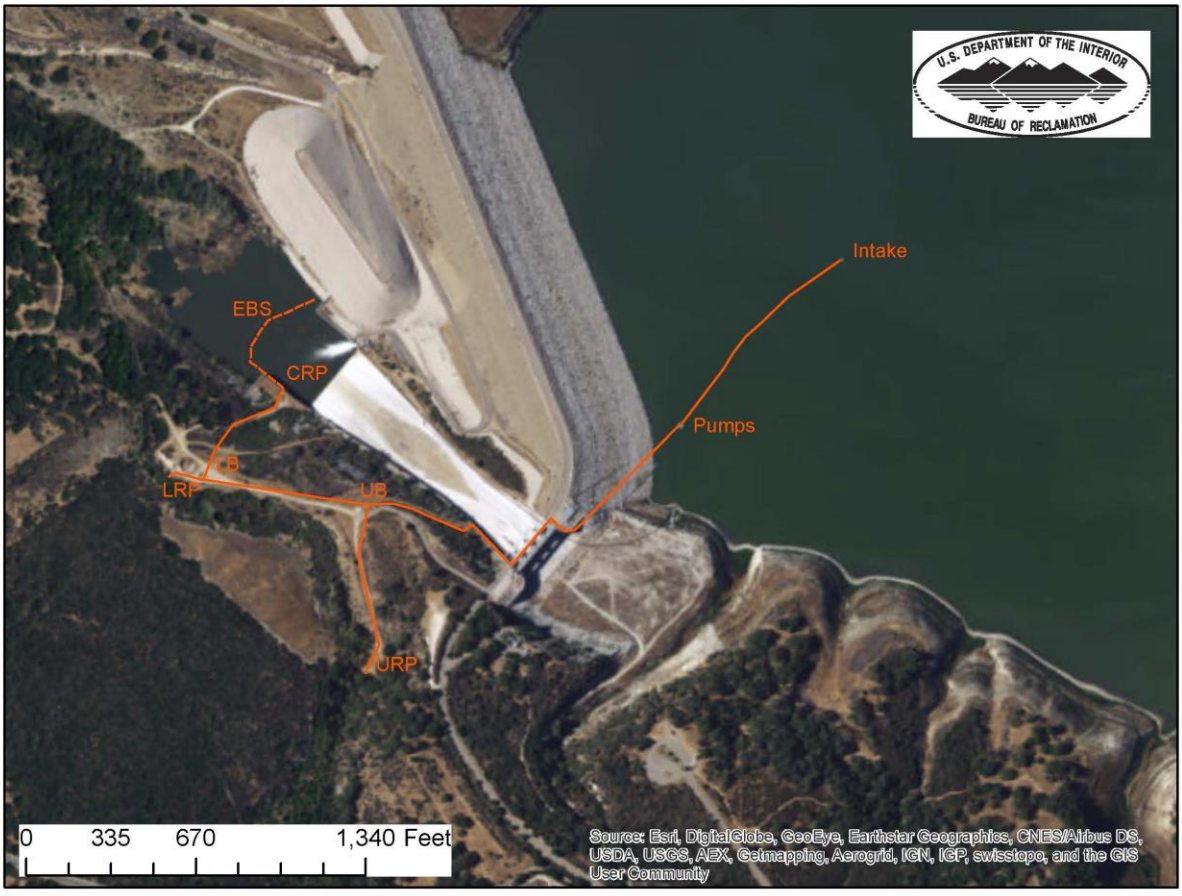

Figure 1 Current Hilton Creek Watering System (approximate)

Through this system, Cachuma Project water is continuously released into Hilton Creek through the Hilton Creek Watering System (HCWS) pursuant to the Cachuma Project Biological Opinion (NMFS 2000). Since activation of the HCWS in 2000, these additional flows have provided rearing opportunities for *O. mykiss* inhabiting Hilton Creek. However, continuous streamflow from the initiation of the HCWS has resulted in rapid growth of riparian vegetation which has stabilized the creek bed and banks, and locked in the bed load. Boulder and cobble material now dominate the substrate with little intermediate to small sized sediments, such as gravels and sands, resulting in limited adequate spawning locations in Hilton Creek for *O. mykiss*.

On August 30, 2017, at the request of NMFS, Reclamation organized a site visit to Hilton Creek and the Lower Santa Ynez River downstream of Bradbury Dam on Reclamation property to examine streambed conditions and discuss possible gravel augmentation. Based on the site visit, it was determined that gravel augmentation within certain identified sites in Hilton Creek should occur as soon as possible in order to optimize habitat for the upcoming spawning season and to gather data on the benefits that could be gained in Hilton Creek for the species.

1.2 Need for the Proposed Action

Hilton Creek is a sediment-starved system with limited spawning gravels and sources of replenishment available for resident rainbow trout and anadromous steelhead (*O. mykiss*). Enhancing the habitat in Hilton Creek for *O. mykiss* reproduction would support recovery efforts for the endangered southern steelhead within the Southern California DPS. Monitoring and data collection on this short-term gravel augmentation project would provide information on the benefits that could be gained in Hilton Creek for the species.

Section 2 Alternatives Including the Proposed Action

This Environmental Assessment considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

Under the No Action alternative, Reclamation would not implement a short-term gravel augmentation project in Hilton Creek. Reclamation would not be able to gather data on the benefits that could be gained in Hilton Creek for the species. *O. mykiss* spawning habitat in Hilton Creek would be unchanged. Reclamation would continue to comply with existing requirements under the Cachuma Project BiOp.

2.2 Proposed Action

Reclamation proposes to conduct a short-term (1-2 month) and one-time per year gravel augmentation project in Hilton Creek as described below. The project would occur in late fall or early winter of 2017-2018 and summer or fall of 2018-2019. The project would consist of manual placement of gravel at specific locations (spot placement) known for *O. mykiss* spawning (i.e., the tail-out of pool habitats). Proposed site locations are included in Figure 2. Monitoring of the project would be conducted over the course of the two years to gather data on the benefits that could be gained in Hilton Creek for the species. The project would be implemented and monitored on Reclamation's behalf by the Fisheries Division of the Cachuma Operation and Maintenance Board (COMB).

2.2.1 Gravel Augmentation

Prior to start of the project, COMB fisheries biologists will survey the project area to establish the locations and amount of gravel needed at each proposed site. COMB fisheries biologists will also perform bank surveys to determine the presence/absence of *O. mykiss* at locations with flowing water and whether or not spawning activity is present. If *O. mykiss* spawning activity is present, gravel augmentation will not be conducted at that site. If spawning activity is not present, COMB fisheries biologists will slowly and carefully approach the proposed site from downstream and strategically place gravel without entering or disturbing the immediate upstream pool habitat. The gravel placement is anticipated to take no more than 15 minutes per site.

Gravel augmentation would occur before or during the start of the rainy season (i.e., November and or December/January) generally prior to the principle spawning season (January-May). Any further addition of gravel would be done on an as needed basis as determined by monitoring of

available gravel for spawning during the 2-year time frame. All gravel placement would occur before spawning is initiated.

Figure 2 Proposed Action Area

Gravel placement would be accomplished by either a temporary high-density polyethylene (HDPE) small culvert (conveyance pipeline) or by carrying five-gallon buckets to the site (see Figure 3). Gravels would be added to the stream during midday to avoid disturbing *O. mykiss* should they be present upstream of the site. No gravel would be added if evidence of spawning activity or a redd site is observed.

A well-graded mix of rounded 0.5 to 2.0 inch pre-washed gravels would be purchased from the Buellflat Quarry in Solvang on the Santa Ynez River and would be delivered in the fall to various Hilton Creek locations along the current access road (areas identified by purple arrows in Figure 2). The gravel mix will be prewashed to minimize sediment loading in the creek. A dump truck would be used to deliver the gravel at the identified staging grounds on the existing access roads. It is estimated that a cumulative total of three to four cubic yards or 2.7 tons (1 dump truck) would be delivered to the URP, LRP and Spawning Pool (Figure 2). Gravel quantities are an estimate and will depend on whether there is upper basin flow and on the magnitude and duration of stormflows that occur before the spawning season.

Initially, the project proposes to physically place an estimated 30 five-gallon buckets of gravel at each of four to five locations within the vicinity of the thalweg, just upstream of the tailwater

control of pools where spawning has historically been observed. During the second year of augmentation, it is estimated that only half of the initial amount of gravel will be needed (i.e., 15 five-gallon buckets at each site) depending on upper basin stormflow mobilization of placed gravels. The URP will most likely be dry during gravel placement. The other proposed locations downstream would have flowing water. In each case, the gravel will be placed just upstream of the tailwater control of the pool and spread in such a way that the downstream flow pattern or the longitudinal stream access for fish moving in or out of that pool remains unchanged. The height of the placed gravels will not exceed the elevation of the tailwater control and will be laid at a minimum thickness of 5 inches.

Figure 3 below shows examples of potential gravel placement locations within Hilton Creek including placement methods using the temporary HDPE delivery pipe from stored gravel at the URP (a+b) and via a five-gallon bucket at the LRP (c) and Spawning Pool (d).

Figure 3 Examples of Potential Gravel Placement Locations and Methods

2.2.2 Monitoring

Gravel Movement

Monitoring gravel transport in Hilton Creek will consist of a series of fixed transects where changes in particle size distributions can be documented. A total of seven transects (five pools and two riffles) will be established in Hilton Creek; two pool sites will be used as "controls" where no gravel will be added to the stream, one will be located above and the other will be located between the augmentation sites. The specific location of transects will be determined

prior to implementation. Accumulated gravel at pool tail-outs (pools) were chosen due to the observed frequencyof *O. mykiss* spawning at those locations. Riffles were chosen because these features are sensitive to increases in sediment supply due to their hydrologic position in water channels (Parker et al., 1982; Dietrich et al., 1989). In addition to the transects, Wolman pebble counts in the area of the transects will be conducted prior to gravel augmentation to establish a baseline as well as after augmentation to document changes over time (Wolman, 1954).

After stormflow events with sufficient magnitude to mobilize the augmented gravel, COMB fisheries staff will carefully survey the seven transects and complete pebble counts to document the change in the cross-section and pebble counts, respectively. In order to avoid disturbing redds and fish, surveys will be conducted at midday when *O. mykiss* are not near the transects, and after the spawning season has ended and fry have emerged from redds. Monitoring after stormflow events, with the knowledge of the magnitude of each event, will assist in determining the rate at which gravel is moving through the system, and how the transport rate is affected by flow magnitude.

Biological Response

Monitoring the success of gravel augmentation in Hilton Creek will include all of the monitoring elements currently being utilized in the creek to track O. *mykiss* populations; specifically redd surveys (spawning habitat - bimonthly January-May), snorkel surveys (spring, summer, fall), and migrant trapping (January-May). Counts and observations for each monitoring activity conducted after gravel augmentation in spawning seasons 2018 and 2019 would be compared and contrasted with available data from previous years. This comparison will help determine if the project was successful in increasing spawning activity and changing the overall population of *O. mykiss* in Hilton Creek. The biological response will be documented through the observation of active and successful spawning during ongoing redd surveys, migrant trapping operations and snorkel surveys.

Spawning Habitat (Redd Surveys)

The gravel augmented sites will be evaluated to determine if the project objectives are being met. To understand how *O. mykiss* use new spawning habitats in Hilton Creek, redd surveys will be conducted in the Project Area using the same NMFS methodology employed in previous years (NMFS' field training course). This includes specific information on each redd such as GPS location, photo, pit and tail spill depths and widths, and substrate size in both the pit and tail spill. Improvements in spawning habitat quantity will be measured by comparing the pre-treatment and post-treatment of gravel augmentation in number of redds observed, new redd sites in locations not observed before, redd size, and instances and locations of any multiple use of redds.

Smolts (Migrant Trapping)

Smolt production will be monitored during the existing migrant trapping activities in the winter and spring. The number of smolts captured will be enumerated and compared to the number of redds documented during previous years to evaluate if additional spawning habitat from gravel augmentation, and its usage, is related to the abundance of smolts.

Juveniles (Snorkel Surveys)

Juvenile abundance will be measured during routine spring, summer, and fall snorkel surveys. Surveys conducted from 2009 to present suggest that juvenile production has been diminishing (possibly from the lack of spawning material), thus the objective of monitoring this life stage is to determine if gravel augmentation will help to increase the total production in the creek. Hilton Creek monitoring will consist of documenting the abundance of juveniles in specific habitat units (pools, runs, and riffles) at or in close proximity to gravel augmented sites and comparing them with observed numbers of fish in these habitats from previous years.

COMB fisheries staff will provide results of the physical and biological monitoring to Reclamation after the end of the spawning season.

2.2.3 Environmental Commitments

Reclamation and COMB shall implement the following environmental protection measures to avoid and/or reduce environmental consequences associated with the Proposed Action (Table 1).

Table 1 Environmental Commitments

Resource	Protection Measure
Biological Resources	Gravel augmentation would generally occur prior to the spawning season (January-May). No gravel would be augmented at sites where there is evidence of *O. mykiss* spawning or presence of a redd.
Biological Resources	Gravel would be placed at mid-day, when *O. mykiss* are in deeper habitats away from augmentation sites, to avoid disturbing fish.
Biological Resources	Gravel would be pre-washed to avoid the introduction of fine sediments into Hilton Creek.
Biological Resources	Gravel would be placed upstream of the tailwater control of pools and would be spread in such a way that the downstream flow pattern and the longitudinal stream access for fish moving in or out of each pool remains unchanged.
Biological Resources	Immediately prior to augmenting gravel, COMB staff would perform bank surveys to determine the presence/absence of *O. mykiss* or whether spawning activity is present. If spawning activity is present, gravel augmentation would not be conducted at that site.
Biological Resources	Monitoring surveys would be conducted at midday when *O. mykiss* are in deeper habitats away from transects, and would be conducted outside the spawning season (i.e., before it begins, or after the spawning season has ended and fry have emerged from redds, in order to avoid disturbance of redds and fish.
Water Resources	All requirements of the Central Coast Regional Water Quality Control Board's Clean Water Act 401 certification will be implemented.
Water Resources	All requirements of the U.S. Army Corps of Engineers Clean Water Act 404 permit will be implemented.

Environmental consequences for resource areas assume the measures specified would be fully implemented. Copies of all reports would be submitted to Reclamation.

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Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

3.1 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment and determined that the Proposed Action did not have the potential to cause direct, indirect, or cumulative adverse effects to the resources listed in Table 2.

Table 2 Resources Eliminated from Further Analysis

Resource	Reason Eliminated
Air Quality	No construction or ground disturbing activities would occur as part of the Proposed Action. No impacts to air quality would occur and a determination of general conformity under the Clean Air Act is not required.
Cultural Resources	No construction or ground disturbing activities would occur as part of the Proposed Action. Reclamation has determined that the Proposed Action does not have the potential to cause effects to historic properties pursuant to 36 CFR Part 800.3(a)(1). See Appendix A for Reclamation's determination.
Environmental Justice	The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease nor would it disproportionately impact economically disadvantaged or minority populations.
Indian Sacred Sites	The Proposed Action would not limit access to ceremonial use of Indian Sacred Sites on federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites. Therefore, there would be no impacts to Indian Sacred Sites as a result of the Proposed Action.
Indian Trust Assets	The Proposed Action would not impact Indian Trust Assets as there are none in the Proposed Action area.
Global Climate Change	No construction or ground disturbing activities would occur as part of the Proposed Action. No greenhouse gas emissions would occur outside of baseline conditions for the area. As such not impacts to global climate change would occur as a result of the project.
Land Use	The Proposed Action is a temporary gravel augmentation project limited to Hilton Creek. There will be no change in land use in the project area.
Water Resources	The temporary gravel augmentation project will be consistent with Clean Water Act permitting. In addition, all gravels will be washed prior to use to avoid sediment loading in the creek.

3.2 Biological Resources

3.2.1 Affected Environment

Reclamation requested an official species list for the entire Action area from the U.S. Fish and Wildlife Service (USFWS) on November 28, 2017 by accessing their database: https://ecos.fws.gov/ipac/ (Consultation Code:08EVEN00-2018-SLI-0104). Reclamation also

requested an official species list for the Lake Cachuma 7½-minute United States Geological Survey (USGS) quadrangle from NMFS on November 30, 2017 via their website: http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html. Reclamation further queried the California Department of Fish and Wildlife, California Natural Diversity Database (CNDDB) for records of protected species within 10 miles of the project location (CNDDB 2017). The two lists, in addition to other information within Reclamation's files were combined to create the following list (Table 3).

Table 3 Federally Listed Threatened and Endangered Species

Species	**Status[1]**	**Effects[2]**	**Potential to occur and summary basis for ESA determination [3]**
Amphibians			
California red-legged frog *Rana draytonii*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Birds			
California condor *Gymnogyps californianus*	E, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Least Bell's vireo *Vireo bellii pusillus*	E, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Southwestern willow flycatcher *Empidonax traillii extimus*	E,X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Fish			
Southern Oregon Northern California Coast Coho ESU[4] *Oncorhynchus kisutch*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Central California Coast Coho ESU[4] *Oncorhynchus kisutch*	E, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
California Coastal Chinook salmon ESU[4] *Oncorhynchus tshawytscha*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Central Valley spring-run Chinook salmon ESU[4] *Oncorhynchus tshawytscha*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Sacramento River winter-run Chinook salmon ESU[4] *Oncorhynchus tshawytscha*	E, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical

Species	Status[1]	Effects[2]	Potential to occur and summary basis for ESA determination [3]
			Habitat.
Northern California steelhead DPS[4] *Oncorhynchus mykiss*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Central California Coast steelhead DPS[4] *Oncorhynchus mykiss*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
South-Central California Coast steelhead DPS[4] *Oncorhynchus mykiss*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Southern California steelhead DPS[4] *Oncorhynchus mykiss*	E, X	NLAA	**Present.** This species has been observed in Hilton Creek and designated Critical Habitat for this species is present within the Proposed Action Area. The Proposed Action would improve spawning habitat for this species, and is *Not Likely to Adversely Affect* the species.
California Central Valley steelhead DPS[4] *Oncorhynchus mykiss*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Eulachon *Thaleichthys pacificus*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Southern DPS[4] Green Sturgeon *Acipenser medirostris*	T, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Invertebrates			
Vernal pool fairy shrimp *Branchinecta lynchi*	T,X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
Black abalone *Haliotis cracherodii*	E, X	NE	**Absent.** This species is not present within the Proposed Action Area and there is no designated Critical Habitat for this species in the Proposed Action Area. The Proposed Action would have *No Effect* on this species or its Critical Habitat.
White abalone *Haliotis sorenseni*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Mammals			
Blue whale *Balaenoptera musculus*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Fin whale *Balaenoptera musculus*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Humpback whale *Megaptera novaeangliae*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect*

Species	Status[1]	Effects[2]	Potential to occur and summary basis for ESA determination [3]
			on this species.
Southern resident killer whale *Orcinus orca*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
North Pacific right whale *Eubalaena japonica*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Sei whale *Balaenoptera borealis*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Sperm whale *Physter macrocephalus*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Guadalupe fur seal *Arctocephalus townsendi*	T	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Stellar Sea lion Critical Habitat *Eumetopias jubatus*	X	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species' Critical Habitat..
Plants			
Gambel's watercress *Rorippa gambellii*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Marsh sandwort *Arenaria paludicola*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Reptiles			
East Pacific green sea turtle *Chelonia mydas*	T	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Olive Ridley sea turtle *Lepidochalys olivacea*	T	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
Leatherback sea turtle *Dermochelys coriacea*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.
North Pacific loggerhead sea turtle *Caretta caretta*	E	NE	**Absent.** This species is not present within the Proposed Action Area. The Proposed Action would have *No Effect* on this species.

1 Status = Status of federally protected species protected under the ESA.
E: Listed as Endangered
T: Listed as Threatened
X: Critical Habitat designated for this species
2 Effects = ESA Effect determination
NE: No Effect anticipated from the Proposed Action to federally listed species or designated critical habitat
NLAA: Proposed Action Not Likely to Adversely Affect federally listed species
3 Definition of Occurrence Indicators
Present: Species recorded in area and suitable habitat present.
Absent: Species not recorded in study area and suitable habitat absent.
4 Acronyms
ESU: Evolutionarily Significant Unit
DPS: Distinct Population Segment

As noted in Table 3 above, the Southern California Steelhead Distinct Population Segment (DPS) are the only listed species present in the Proposed Action area.

Southern California Steelhead

The Southern California Steelhead DPS (*Oncorhynchus mykiss*) is federally listed as an endangered species. The geographic range of this DPS extends from the Santa Maria River, near Santa Maria, to the California-Mexico border. Steelhead are the anadromous, or ocean going form, of the species *O. mykiss*; steelhead adults spawn in freshwater and then migrate to the ocean to grow and sexually mature before returning as adults to reproduce in freshwater (NMFS 2012). Rainbow trout are the resident form of *O. mykiss*, and complete their entire lifecycle in freshwater. Only the anadromous form of *O. mykiss* is protected under the Southern California Steelhead DPS.

Southern California steelhead are categorized as "winter run" because adult migration from the ocean into freshwater rivers and streams generally occurs between December and April (Fukushima and Lesh 1998), after which the steelhead arrive in reproductive condition and spawn shortly thereafter. Adult migration to freshwater depends on physical factors such as the magnitude and duration of instream flows and sand-bar breaching. Adults may migrate several miles, hundreds of miles in some watersheds, to reach their spawning grounds. Once they reach their spawning grounds, females will use their caudal fin to excavate a nest in streambed gravels where they deposit their eggs. Males will then fertilize the eggs and, afterwards, the females cover the nest with a layer of gravel, where the embryos incubate within the gravel. After emerging from the gravel, juvenile steelhead rear in freshwater for one to three years before migrating to the ocean (as smolts), usually in late winter and spring, and grow to reach maturity at age two to five before returning to freshwater to spawn. The timing of emigration is influenced by a variety of parameters such as photoperiod, temperature, breaching of sandbars at the river's mouth and streamflow.

3.2.2 Environmental Consequences

No Action

Under the No Action alternative, Reclamation would not augment gravel in Hilton Creek. Gravels suitable for *O. mykiss* would continue to be scarce in Hilton Creek, which may limit spawning opportunities for the species in the creek. Fisheries monitoring activities conducted under the Cachuma Project BiOp would continue to occur in Hilton Creek.

Proposed Action

Under the Proposed Action, gravel augmentation would occur in Hilton Creek. The amount of gravel suitable for spawning *O. mykiss* would increase, which would improve the quality and quantity of spawning habitat for the species. The current number of suitable spawning locations for *O. mykiss* are limited, as evidenced by observations of *O. mykiss* spawning in marginal habitats and superimposition of redds (pairs of fish using the same spawning location). The proposed gravel augmentation is expected to increase the number and quality of suitable spawning locations for *O. mykiss* throughout Hilton Creek. The gravel augmentation may also increase the production of benthic macroinvertebrates, which are a primary food source of juvenile and adult *O. mykiss*. Researchers have reported increases in juvenile salmonid abundance following gravel augmentation with no negative impacts detected (Palm et al., 2007); therefore the Proposed Action is expected to result in increased production of juvenile *O. mykiss*

in Hilton Creek. Furthermore if the Proposed Action is successful at increasing benthic macroinvertebrate production, *O. mykiss* survivorship in the creek may improve as well.

Conservation measures would be fully implemented during the Proposed Action in order to minimize any potential adverse effects to *O. mykiss*. Gravel augmentation would occur when *O. mykiss* spawning activity is not present in the habitats being augmented; however, *O. mykiss* may still experience some insignificant or discountable level of disturbance during gravel augmentation if any are present in nearby habitats. This disturbance would be temporary in nature and would not rise to the level of take. Gravel would be well washed before being added to the creek to remove fine sediments; however, some small amount of fine sediment would likely still be present on the gravels. The implementation of the conservation measures (Table 1) would reduce the introduction of fine sediment to the creek to an insignificant and discountable level. The biological response to the Proposed Project would be observed during the ongoing Cachuma Project BiOp monitoring efforts, which have existing Endangered Species Act coverage.

Reclamation has determined that the Proposed Action is *Not Likely to Adversely Affect* the endangered Southern California Steelhead DPS or designated Critical Habitat for this species. NMFS concurred with Reclamation's determination on December 6, 2017 (Appendix B).

Cumulative Impacts

The Proposed Action is not expected to result in any cumulative impacts.

Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the Draft Finding of No Significant Impact and Draft Environmental Assessment during a public review period.

4.2 List of Agencies and Persons Consulted

Reclamation has consulted with the following regarding the Proposed Action:

- National Marine Fisheries Service
- U.S. Army Corps of Engineers
- Central Coast Regional Water Quality Control Board.

Reclamation is coordinating with the California Department of Fish and Wildlife and COMB.

4.3 Clean Water Act (33 U.S.C. § 1251 et seq.)

Section 301 of the Clean Water Act (33 U.S.C. § 1311) prohibits the discharge of any pollutants into waters of the United States, except as allowed by permit issued pursuant to various sections of the Clean Water Act.

Section 401

Section 401 of the Clean Water Act (33 U.S.C. § 1341) requires any applicant for an individual Army Corps of Engineers (Corps) dredge and fill discharge permit (see Section 404, below) to first obtain certification from the state that the activity associated with dredging or filling will comply with applicable state effluent and water quality standards. This certification must be approved or waived prior to the issuance of a permit for dredging and filling.

The Central Coast Regional Water Quality Control Board determined that the Project meets eligibility requirements for the Clean Water Act Section 401 General Water Quality Certification for Small Habitat Restoration Projects (Appendix C).

Section 404

Section 404 of the Clean Water Act (33 U.S.C. § 1344) authorizes the Corps to issue permits to regulate the discharge of "dredged or fill materials into waters of the United States". Minor activities such as dredging or filling of wetlands or surface waters would require a permit obtained in compliance with CWA section 404.

The Corps determined that the project falls under Nationwide Permit No. 18: Minor Discharges and that this project is authorized to impact 5 cubic yards (totaling 0.003 acre) of Waters of the U.S. by increasing gravel substrate in Hilton Creek (Appendix D).

4.4 Endangered Species Act (16 U.S.C. § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

On December 4, 2017, Reclamation requested concurrence from NMFS on a Not Likely to Adversely Affect determination for the Proposed Action. On December 6, 2017, Reclamation received concurrence on their determination from NMFS (Appendix B).

Section 5 References

CNDDB (California Natural Diversity Database). 2017. California Department of Fish and Wildlife's Natural Diversity Database, Version 3.1.1. RareFind 3. Last Updated December 2017.

Fukushima, Linda, and E.W. (Joe) Lesh. "Adult and Juvenile Anadromous Salmonid Migration Timing in California Streams." California Fish and Game, vol. 84, no. 3, 1998, pp. 133–145.

NMFS. 2012. Southern California Steelhead Recovery Plan. National Marine Fisheries Service, Southwest Region, Protected Resources Division; Long Beach, CA.