RESTORATION ACTIONS WITHIN THE SAN LUIS OBISPO CREEK WATERSHED

UNOCAL OIL SPILL, AVILA BEACH, 1992

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EXECUTIVE SUMMARY

On August 3, 1992 an oil pipeline owned by UNOCAL ruptured and spilled approximately 600 barrels of San Joaquin Valley crude oil onto nearby lands and water in the Avila Beach area. The spill flowed from the pipeline through a gully, down a cliff face, and into marine waters. The spill directly impacted natural resources, which include: vegetation, intertidal and subtidal sediments and biota, fisheries, birds, marine mammals, and other valuable resources. This document is the final Restoration Plan for the San Luis Obispo Creek watershed that is mandated by a State Settlement Agreement and parallel Federal Consent Decree for the above described spill. The San Luis Obispo Superior Court entered a Final Judgment Pursuant to the Stipulated Settlement Agreement (the "State Settlement Agreement") in May of 1996 and the parallel Consent Decree was also entered in or about May of 1996 (collectively the State Settlement Agreement and Consent Decree are referred to as "the settlement").

A draft plan was distributed for public review and comments in March of 1997. A public meeting on the draft plan was held on March 31, 1997 to permit further review of the proposed projects by the local community. Numerous comments were received and are summarized in Appendix D. The final plan is divided into seven sections regarding authority over restoration funds, the purpose of plan, background to resource injuries, background to project alternative selection, proposed projects, project management, and project budgets. All restoration project concepts proposed, including those meeting and not meeting restoration criteria for implementation, are included in Appendices A through C.

Following the settlement, a Trustee Council was formed to ensure coordination and cooperation of the State and Federal natural resource trustees. The Trustee Council is made up of representatives from the California Department of Fish & Game, Office of Spill Prevention and Response (OSPR) and the United States Fish & Wildlife Service (USFWS). The Trustee Council is responsible for expending the funds from the settlement for the expressed purpose of restoring, replacing, rehabilitating, or acquiring the equivalent of the natural resources injured by the oil spill.

The purpose of this restoration plan is to respond to public comments and to inform the public of the projects that were selected for implementation as compensation for injuries to biological resources caused by the spill. Restoration under this plan is being conducted under the authority of the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act and the Oil Pollution Act of 1990.

The resources to be restored under the terms of the settlement will address injuries to geologic and coastal habitat resources, fish and wildlife resources, and recreational use losses. Specific impacts to fisheries, birds, sea otters, and microscopic biota have been documented by State and Federal agencies. The proposed projects in this plan address direct or indirect restoration benefits to these resources, with the exception of restoration for sea otters. Restoration for sea otters is addressed in a separate "Sea Otter Restoration Plan". Compensation for recreational use losses was addressed through Port area and beach enhancements carried out by the Port San Luis Harbor District. Additionally, Unocal was

required to implement a terrestrial revegetation plan above Boulder Cove. This on site terrestrial revegetation project was designed to stabilize soils and minimize siltation into the intertidal community below the drainage area that was revegetated.

The California Department of Fish and Game (CDFG) has determined that the restoration actions in this plan will not cause a substantial, or potentially substantial, adverse change in any of the physical conditions within the areas affected by the projects. Additionally, the CDFG considers these projects to be categorically exempt pursuant to CEQA. The United States Fish and Wildlife Service (USFWS) considers these projects to be categorically exempt from NEPA as well.

The Trustee Council determined that on-site restoration projects in the intertidal zone and adjacent waters would be technically difficult to implement or expensive relative to expected benefits. Consequently, the Trustee Council decided to evaluate off-site projects in and along San Luis Obispo Creek that would be technically feasible and would restore or benefit the same types of resources injured in the Avila Beach spill. This is consistent with the terms of the Settlement. Restoration actions focus on benefiting fisheries, birds, intertidal organisms, and general primary productivity, through overall improvements in the productivity of San Luis Obispo Creek and the estuary. Additionally, biological resources are expected to benefit by the expansion and enhancement of riparian corridors and habitats, the minimizing of sedimentation of the creek and estuary, and the removal of fish migration barriers. However, depending on the availability of restoration funds, consideration will be given to future specific restoration projects that may be identified in the intertidal and adjacent waters that are technically feasible and meet the evaluation criteria.

Alternatives for restoration include the “no project” alternative, cooperation with existing project proponents, and a set of new proposed projects. Proposed restoration projects in this plan have been divided into two broad categories. These categories consist of the following:

- **Riparian Corridor Revegetation** - To reduce sediment delivery to the creek and estuary and expand and improve habitat for native riparian plant species and resident and anadromous fish.
- **Fish Barrier Removal** - To facilitate passage of anadromous and resident fish.

Public and agency input was sought regarding implementation priorities. All public and agency input was reviewed by the Trustee Council, and descriptions of their comments, along with the Trustee Council’s responses and actions, are included.

Primary project management will be the responsibility of the Trustee Council. The Trustee Council will review and approve all projects and invoices for this plan and oversee the local project manager.

The Trustee Council has selected the Land Conservancy of San Luis Obispo County (LCSLOC) as the local project management group for projects undertaken under this plan. The LCSLOC was chosen based on their experience with restoration project implementation, local community involvement, and watershed program development. The LCSLOC will work on behalf of the Trustee Council to assist in project design and permitting, prepare implementation plans, and provide local implementation oversight.

Implementation of restoration projects will begin over a period of approximately three years. An additional monitoring period of at least three to five years will follow each project. Projects not requiring permits will be implemented immediately, while projects requiring additional hydrologic analysis, engineering work, and agency permits will be implemented as the preliminary work is completed. An implementation schedule will be developed for each of the projects chosen by the Trustee Council, and will be available through the LCSLOC.

The State Settlement Agreement and Federal Consent Decree required Unocal to deposit $950,00 into an interest bearing trust account with the National Fish and Wildlife Foundation to be managed by the CDFG. Additionally, the State Settlement and Federal Consent Decree provide guidance on the categories of restoration projects and levels of funding. The settlement allocated $425,000 for riparian corridor revegetation, $250,000 for fish migration barrier removal, and $275,000 for estuarine habitat restoration. Due to the ongoing contaminant cleanup in the vicinity of Avila Beach and the estuary as a result of other pipeline spills by Unocal, referred to as the Avila Beach Remediation Project, the Trustee Council has temporarily set aside the funds for work in the estuary. In addition to the delays caused by the ongoing contaminant cleanup from the Avila Beach Remediation Project, there were other problems associated with the project concept proposals proposed for the estuary. These problems are described in Appendix B1. Restoration funds originally allocated for estuarine habitat restoration will remain available for additional project concepts that meet the Trustee Council's restoration goals as specified in the State Settlement Agreement and Federal Consent Decree.

I. INTRODUCTION

The California Department of Fish and Game (CDFG) and the United States Fish and Wildlife Service (USFWS) are the Natural Resource Trustees designated or authorized pursuant to the Oil Pollution Act of 1990. As Trustees for natural resources, they act on behalf of the public to assess injuries to natural resources following an oil spill, and develop and implement restoration plans to restore injured resources. Additionally, the CDFG is the Trustee for fish, wildlife, and their habitat under State law and the CDFG's Office of Spill Prevention and Response is charged with assessing natural resource damages and restoring injured resources pursuant to the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act.

The Trustee Council distributed the Draft Plan for Restoration Actions within The San Luis Obispo Creek Watershed in March, 1997 to elicit public and agency comments regarding each of the project concepts. Comments received were reviewed by the Trustee Council and were used to modify plans and to select a subset of projects that would be beneficial to natural resources and could be implemented successfully, and had sufficient nexus to resources injured by the spill.

The projects selected by the CDFG and the USFWS in this Restoration Plan are consistent with the Final Judgment pursuant to a Stipulated Settlement Agreement in the State action against Unocal arising from the 1992 pipeline rupture at the Unocal Avila Beach Tank Farm in Avila Beach, California ("State Settlement"). Additionally, a separate Consent Decree, which parallels the terms of the State Settlement, was entered by the United States Government in Federal District Court.

The State Settlement and Federal Consent Decree required Unocal to place $950,000 into the Avila Beach Trust established with the National Fish and Wildlife Foundation. The funds were allocated for riparian corridor revegetation, estuarine habitat enhancement, fish migration barrier removal, and for design, implementation, permitting, and monitoring of the restoration projects. The Trustee Council retains the authority to modify the allocation of funds and to implement other projects deemed reasonable and necessary to restore impacted resources in accordance with the Oil Pollution Act, the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act, and the regulations governing the use of recoveries for natural resource injuries. Ongoing contaminant cleanup in the vicinity of Avila Beach as a result of the Avila Beach Remediation Project, and uncertain levels of disturbance to the estuarine habitat resulting from these cleanup activities, have led the Trustee Council to hold the funds for estuary enhancement in reserve for projects within the San Luis Obispo Creek watershed. The Trustee Council will use the established restoration criteria when selecting any restoration projects.

In addition, the State Settlement and Federal Consent Decree required the sum of $150,000 to be paid to the Port San Luis Harbor District for enhancement of Port area beaches. The Harbor District has used the money to purchase dredging equipment to dredge the area around the boat launch to improve boat access. The dredge spoils will be used to augment the adjacent beach. A sum of $100,000 was paid to the Department of the Interior's Natural Resources Damage Assessment and Restoration Fund for sea otter enhancement projects. A

separate restoration plan has been developed for sea otters that can be obtained from the U.S. Department of Interior Fish and Wildlife Service, Ventura Field Office, 2493 Portola Road, Suite B, Ventura, California 93003, or on the Land Conservancy of San Luis Obispo County (LCSLOC) web site at http://www.slonet.org/vv/land_con .

II. PURPOSE

The purpose of this restoration plan is to notify the public of the restoration alternatives considered and those that were selected by the Trustee Council as compensation for injuries to resources other than the sea otters. The restoration projects in this plan will compensate for injuries that occurred to intertidal resources, birds, and fish. Additional benefits to humans, such as enhanced wildlife viewing, are expected following implementation of the ecological restoration projects. Also, Unocal was required to implement a terrestrial revegetation plan above Boulder Cove. This on site terrestrial revegetation project was designed to stabilize soils and minimize siltation into the intertidal community below the drainage area that was revegetated.

The proposed restoration actions are being conducted under the authority of the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act (Government Code 8670.1 et seq.) and the Oil Pollution Act of 1990 (33 U.S.C. 2701 et seq.). The goal of both acts is to restore injured natural resources such as wildlife, fisheries, and their habitat through implementation of restoration projects and to compensate the public for lost use and enjoyment of natural resources (including public beaches) caused by the discharge of oil into marine waters. These goals are achieved through the implementation of restoration alternatives that restore, rehabilitate, replace, or acquire the equivalent of injured natural resources.

III. BACKGROUND TO RESOURCE INJURIES AND PROPOSED RESTORATION

On August 3, 1992, the rupture of a Union Oil Company of California (Unocal) pipeline near Avila Beach, California, caused a discharge of up to 600 barrels (25,200 gallons) of San Joaquin Valley crude (SJVC) oil to flow along a ravine, down a cliff face, and into a small cove (given the unofficial name of “Boulder Cove”). The discharge resulted in contamination of intertidal and subtidal sediments and biota, fisheries, birds, mammals, and other valuable resources in and about Avila Beach, Olde Port Beach, and Pirates Cove Beach. Prior to the spill, the rocky coast in the Avila Beach area existed in a relatively natural condition.

The pathway of the discharged oil to the impacted resources was: (1) from a broken pipeline; (2) through a ravine; (3) over a 7 - 11 meter high coastal bluff and cliff face; and (4) into Boulder Cove and marine waters. Oil traversed the supertidal zone penetrating the sediments and flowed into the intertidal zone and onto the sea surface. Marine surface waters served as the exposure pathway for injury to resources when tides, currents, wind and swells transported the oil to the south where it contacted kelp beds and offshore rocks and to the east

and west where it contacted rocky headlands and the shoreline of adjacent coves. Chemical fingerprinting of collected oil samples revealed the source and the pathway. Shortly after the spill, oil was observed on the ocean surface extending over about 20,000 square meters within the boomed area described below and an estimated 50,000 square meters outside the boomed area. Spill response personnel observed an additional unquantified amount moving out to sea.

Response and cleanup efforts commenced following the spill. Booms were placed around "No Name", "Boulder", and "Forgotten" Beaches to contain the discharged oil. County health officials closed Avila, Olde Port and Pirates Cove Beaches to the public due to persistent sheen and tar balls on the shoreline. On August 9, 1992, County Health officials opened Olde Port Beach and opened Avila Beach to shore use only. On August 10, 1992, beaches in Avila Bay west of the municipal pier were opened to the public for water contact use. Pirate's Cove Beach was opened on August 25, 1992. The Trustee Council estimated that a total of 160 barrels (6,720 gallons) of oil, after adjusting for water volume and kelp, was recovered during cleanup operations, which ended on or about August 29, 1992.

A. DESCRIPTION OF NATURAL RESOURCE LOSSES

The following discussion pertains to a conservative estimate by the Trustee Council of injuries and recreational impacts that are expected to have occurred as a result of this spill. Impacts from the spill may have directly or indirectly affected a resource or the "services" provided by that resource. For example, surfgrass was directly oiled, reducing its productivity. In addition, the "services" provided by surfgrass, such as habitat for invertebrates, may have also been impacted.

1. Geologic and Coastal Habitat Resources:

The rocky intertidal shores provide habitats and food for a broad diversity of organisms. Sandy beaches also provide habitat for numerous infauna that serve as food for other organisms within the marine ecosystem. Oiling of these habitats, and the methods used to remove the oil from the environment, can have serious short-term and long-term effects on the marine life. In most instances, some level of residual oil persists beyond the period of response cleanup and provides a potential source of chronic pollution.

SJVC oil initially flowed across the intertidal zone and onto the sea surface, but the oil was repeatedly moved across the intertidal by winds, waves, and the rising and falling tides. This resulted in a patchy distribution of oil in the intertidal zone, with some spots heavily fouled and other spots exposed to various degrees of lighter oiling. The intertidal zone includes the strip of land exposed between high and low tides, as well as the supratidal zone, which is uppermost in the intertidal and is subjected to the influence of storm waves and sea spray. The total area of shoreline impacted by the spilled SJVC oil was estimated by multiplying the approximately 6,445 linear meters of oiled shoreline by three meters, a conservative estimate of the average width of the intertidal zone, to derive 19,335 square meters contacted by oil.

The heaviest level of oiling was in Boulder Cove. Although the oil distribution was patchy, all intertidal areas of the cove are believed to have been impacted. Approximately 2,000-2,500 m^2 of intertidal area composed of rocky outcrops, bedrock platforms, large boulders, cobbles, and sand are exposed at low tide. The area supports a diversity of plant and animal life and has extensive beds of surfgrass in sand-lined tidepools.

The levels of petroleum hydrocarbons measured in some sediment and pore water samples from Boulder Cove exceeded concentrations recorded in other laboratory and field studies in which biological injuries resulted from crude oil exposure. The effects of oil contamination on the natural resource services provided by the Boulder Cove intertidal community include the reduction of clean habitat, diminished food supplied by algae and the invertebrates, and a decrease in species abundance and diversity that might affect the overall stability of the intertidal community.

2. Fish and Wildlife Resources:

In addition to the impacts noted above to marine plants, invertebrates, and intertidal habitat, three other categories of biological resources were impacted.

a. Fisheries.

Apart from sport fisheries, which were addressed as recreational losses, a local king salmon fishery was impacted. Since early May 1992, approximately 50,000 state-owned king salmon were being reared in salt water pens near the spill site by Central Coast Salmon Enhancement, Inc. The fish were scheduled for release in mid-August, after growing to a size of one-eighth of a pound. Based on weekly observations, fish losses had been minimal prior to the spill. Following the spill, fish were observed engulfing and expectorating oil saturated fragments of the sorbent material placed in and around the rearing pens.

Fish in the rearing pens began to show obvious symptoms and behaviors associated with vibriosis eight days after oil arrived at the mooring site of the salt water pens. Scuba observations on the sixth day found only 11 dead fish whereas 206 dead fish were found dead on the ninth day.

Vibriosis is caused by a marine bacterium, *Vibrio anguillarum*. This bacterium is always present in the water, but only becomes a problem when the immune system of the fish is compromised. As with many animals, the immune system of fish can become compromised due to external stresses such as an oil spill. The incubation time from infection by *Vibrio anguillarum* to exhibition of symptoms is approximately eight days.

Prior to release, approximately 1,500 of the rearing king salmon had died of vibriosis. Based on *SCUBA* observations, the total loss to vibriosis was estimated at 10,000 fish, which represents 20 percent of the 50,000 fish being reared by Central Coast Salmon Enhancement, Inc..

b. Birds.

At least 77 marine birds of eight categories died due to oiling (Table 1). Four of these birds were California brown pelicans, a Federally listed species. Fourteen seabirds, including seven California brown pelicans, were treated and released from a rehabilitation center. Based on follow-up studies, at least three pelicans died soon after release and it is likely that many of the other rehabilitated seabirds died or suffered reduced reproductive capability and chronic effects (Anderson et al., 1996).

Table 1. Numbers of Birds by Category Collected During the Unocal Avila Beach 1992 Oil Spill

Category	Number Recovered
Alcids	28
Loons	1
Grebes	1
Shearwaters	20
Waterfowl	1
Shorebirds and Gulls	7
Cormorants	15
Pelicans	4
Total	**77**

Twenty-two additional pelicans with varying degrees of oiling were observed roosting in the immediate vicinity of the spill during cleanup activities. Those birds were able to fly and were not captured. Based upon past research, mortality rates for oiled birds are known to be high (Sharp, 1996; Wernham et al., 1997). Those individuals that do survive typically exhibit abnormal behavior and fail to breed at least in the first breeding season following the exposure (Sharp, 1996). Therefore, the impact of this spill on the California brown pelican population is represented by the pelican mortality during and after rehabilitation, and the impaired reproductive potential of those individuals that survived.

As a result of oiling, services that would otherwise be provided by the foregoing seabirds were eliminated or impaired pending natural recovery. Seabirds provide important ecological services in the California inshore marine environment as predators affecting populations of marine fish and invertebrates, as indicators of the health of the marine environment, as food for raptors such as the endangered peregrine falcon (a nest of which is located adjacent to Boulder Cove), and as contributors to energy flow in the marine ecosystem. Marine birds also provide important services to humans as they are observed and enjoyed by many tourists and wildlife enthusiasts.

c. Sea Otters.

Three dead sea otters, a Federally and State listed species, were examined during the spill. Two were determined to have died due to the effects of acute oiling. Oiling was determined to have contributed to the death of the third animal.

Two additional live oiled otters were captured. One was released after determining that certain unrelated facial injuries were too severe to risk the additional stress that could be

caused by rehabilitation activities and that no immediate treatment for the facial injuries was feasible. Nonetheless, the exposure to oil undoubtedly lowered the animal's long-term prognosis. The other otter was transported to the Monterey Bay Aquarium (MBA) for cleaning and rehabilitation. The MBA otter was released in Monterey Bay and survived at least 8 weeks as determined by radio tracking. The prognosis for this animal, based upon the erratic behavior it exhibited and the fate of animals that experienced similar treatment in Alaska following the Exxon Valdez oil spill, was not good (Ballachey et al., 1994).

Additional otters were observed swimming through the oil spill cleanup area following the spill and most likely came in contact with the oil. The actual number of otters exposed to the oil is unknown. At the time of the spill, the local population consisted of approximately 57 adults and three pups. In addition to those otters observed swimming in the oil, others within the local population could have been exposed given that their habitat includes the assessment area between Avila Pier and Pismo Pier.

Sea otters provide important ecological services as they directly influence populations of their marine invertebrate prey, some of which are major herbivores on giant kelp. As a keystone species in the inshore marine environment of California, they influence the species abundance and diversity of all marine animals in the giant kelp community (Kenyon, 1969).

Sea otters are one of the most widely recognized marine wildlife species on the west coast of the United States. They provide valuable services to humans as they are observed and enjoyed by many tourists and wildlife enthusiasts. The recovery of the California sea otter population from near extinction at the turn of the century has slowed in recent years (Anon., 1996). This fact makes the impacts on the population due to the Avila Beach spill more serious.

3. Recreational Losses:

The areas impacted by the spill support a number of recreational activities including: beach use, sport fishing, pleasure boating, jet skiing, surfing, wind surfing, ocean kayaking, wildlife viewing, SCUBA diving, general pier recreation, cycling, and hiking. The impacted areas are not used for commercial fishing, although there is a king salmon salt water rearing pen facility located nearby.

a. Shoreline Recreation

Beach recreation mainly occurs at three beaches in the area: Avila Beach, Olde Port Beach, and Pirates Cove Beach.

Avila Beach is a large popular beach located in downtown Avila Beach. The beach contains playground equipment, barbecue grills, fire pits, picnic tables, and a bathing/changing house with restrooms. Typical daytime activities include sunbathing, wading, boogie boarding, and swimming. People also build bonfires on this beach, primarily on Thursday, Friday and Saturday nights during most of the year. Avila Beach was officially closed for five days.

Olde Port Beach is a smaller, less popular beach immediately north of Avila Beach. Olde Port was officially closed for five days. This beach has a public access boat ramp for small boats such as jet skis, zodiacs, catamarans, and small aluminum boats. Pirates Cove Beach is a small beach with rocky and sandy beach areas and is located to the south of Avila Beach. This is a swimsuit optional beach with no facilities. Pirates Cove Beach is the only clothing optional beach in the San Luis Obispo area. Pirates Cove Beach was officially closed for 21 days.

In addition to general beach recreation, jet skiing, wind surfing, and ocean kayaking also occur in San Luis Obispo Bay. The jet skis are launched at Olde Port Beach. Wind surfing boards are launched from the Avila and Olde Port beaches. Kayaks are mainly launched near Harford Pier and at Olde Port Beach. These activities were lost or precluded while the beaches were closed following the oil spill.

The bluffs overlooking Boulder Cove are also used by some people for viewing birds, seals, whales, and other wildlife. This area was closed to the public from August 4**,** until the end of the cleanup, since this was the staging area for cleanup operations. Consequently, wildlife viewing in this area was lost or precluded during the closure period. The Port San Luis Harbor District received $150,000 in settlement funds to implement projects that will compensate for lost recreation due to the spill.

B. NATURAL RESOURCE DAMAGES

On-site restoration, which would accelerate recovery rates of the injured resources in the intertidal area, was not selected because of factors related to technical feasibility, expected benefits, and cost. In evaluating restoration alternatives for this spill, the Trustee Council considered the following: (1) the allocation of funds in the State Court's Final Judgment pursuant to a Stipulated Settlement Agreement and the parallel Federal Consent Decree; (2) technical feasibility; (3) whether a project would accelerate the rate of natural recovery of the types of natural resources injured in the Avila Beach spill; and (4) whether the project could be implemented at a reasonable cost.

San Luis Obispo Creek is a significant contributor of nutrients necessary to support primary productivity in the near shore marine environment of San Luis Bay. The sources of this primary productivity include: attached macroalgae such as giant kelp (*Macrocystis*) and phytoplankton, which comprise the basis of a healthy food chain in the bay. The attached algae provide food and shelter for a variety of finfish and invertebrates such as salmon, white seabass, rock fish, and abalone. Plankton provides food for forage fish such as top smelt, anchovies, and juvenile rock fish, which in turn provide a food source for numerous marine birds, such as brown pelicans, cormorants, terns, and shearwaters, as well as marine mammals. The creek mouth estuary is a significant habitat for several important forage fish including: shiner perch, sardines, and top smelt, and is also habitat for several sport fish species including steelhead, king salmon and striped bass.

The creek and wetlands are also used by migratory birds (e.g., waterfowl, Black Brant, and shorebirds) as well as resident riparian birds such as great blue herons, cormorants, black-

crowned night herons, and egrets. Studies on the creek corridor indicate that the health of its many co-dependent biological systems would be much improved by projects that stabilize the banks, revegetate the riparian areas, improve water quality by reduction of pollutants and/or cooling the water temperature, increasing the flushing of the estuary, and reducing siltation.

The restoration projects proposed in this plan will benefit injured marine resources in several ways: (1) increased primary productivity in the riparian ecosystem, that will benefit microbiota, macrobiota, and ultimately birds and mammals in the inshore marine environment; (2) enhancement of a wildlife corridor that will enable upstream movements and improved habitat use by coastal and estuarine waterbirds; (3) dramatic improvement of anadromous fish habitat by provision of creek shading (thermal protection), protection from predators, production of food, improvement of spawning habitat, and removal of fish migration barriers; (4) reduction of creekside erosion and associated sediment deposition in the lower reaches of the creek and the marine environment, that would further impact the injured resources through excessive siltation and subsequent loss of habitat; (5) reduction in nonpoint source urban and agricultural runoff, that would otherwise impact the injured marine resources, by the absorption and biodegradation of pollutants by natural biological processes in the riparian ecosystem; and, (6) enhancement of public use activities through recreational and educational opportunities provided by a healthy riparian corridor.

IV. BACKGROUND TO ALTERNATIVE SELECTION

Projects presented in this plan were evaluated for conformity with a watershed based approach to restoration, consideration of applicable State and Federal laws, and a set of established criteria for restoration projects.

A. RESTORATION IN THE CONTEXT OF A WATERSHED APPROACH

The proposed projects in this restoration plan incorporate a watershed based approach to effectively restore and protect aquatic resources. This is consistent with the United States Environmental Protection Agency (EPA) approach to promote watershed based planning efforts. This is also consistent with other activities that have been managed by the LCSLOC, that is already working in the San Luis Obispo Creek watershed.

Emphasis under the watershed approach is directed at all aspects of surface and ground water quality including physical, chemical, and biological parameters.

The alternatives proposed in this document are consistent with these activities.

The watershed approach is action oriented, driven by broad environmental objectives, and involves key stakeholders. The major cornerstones of the approach are public participation, problem identification, and implementation of restoration projects.

1. Public participation and interagency cooperation.

a. San Luis Obispo Creek Watershed Task Force.

A San Luis Obispo Creek Watershed Task Force previously existed and was composed of a group of watershed stakeholders including landowners, agency representatives, and others with an interest in watershed quality. This group discussed watershed issues and promoted cooperative solutions. The Trustee Council, through the LCSLOC, propose to organize a similar group to act as technical support and to provide reviews of detailed restoration project workplans as they are developed and prior to project implementation. Some of the participating groups are listed in Table 2.

Table 2. San Luis Obispo Creek Watershed Task Force Participants.

Landowners and Citizens	County of San Luis Obispo
Regional Water Quality Control Board	Caltrans
California Polytechnic State University	Land Conservancy of San Luis Obispo County
San Luis Obispo County Farm Bureau	Central Coast Salmon Enhancement, Inc.
City of San Luis Obispo	

b. San Luis Obispo County Flood Control - Zone 9 Advisory Committee.

Zone 9 of the San Luis Obispo County Flood Control District encompasses the San Luis Obispo Creek watershed. This advisory group includes representatives from local governments and agricultural interests as well as other stakeholders. They provide guidance to the County Board of Supervisors on flood control issues and policy, and expend funds for projects within the San Luis Obispo Creek watershed. The Land Conservancy of San Luis Obispo County will supply this group with project information necessary to facilitate any possible collaboration with local government agencies.

2. Problem identification within the San Luis Obispo Creek Watershed

a. Channelization, Bank Erosion, and Lack of Vegetation.

The "San Luis Obispo Creek Watershed Hydrologic Survey", prepared by the LCSLOC, provides an overview of hydrologic conditions throughout the watershed. This study focused on identifying sedimentation sources and restoration opportunities.

According to the hydrologic survey, much of the fine sediment load in San Luis Obispo Creek is being delivered directly by eroding stream banks. Areas with poor riparian vegetation exist due to poor land management techniques, urban encroachment, and receding water tables. In some locations, channelization has also replaced vegetation and natural steam meanders resulting in increased water velocities and downstream bank erosion.

The San Luis Obispo Creek Watershed Hydrologic Survey concludes that stabilizing banks and restoring native vegetation are critical steps to establishing a more stable hydrologic system and enhancing riparian habitats. The report also identifies areas where riparian restoration is needed.

b. Degraded Fish Habitat.

The "San Luis Obispo Creek Steelhead Trout Habitat Inventory and Investigation, 1995", prepared by the LCSLOC, addresses habitat for cool-water trout fisheries. According to this inventory, a severe limitation in pool habitat is the greatest obstacle to rehabilitating historic fish populations. In addition, fish migration barriers, embedded spawning gravels, lack of canopy cover, shortage of instream cover, and insufficient bank vegetation are identified as significant problems. This report indicates where fish habitat improvements should be targeted.

c. Nutrient Loading.

"Nutrient Objectives and Best Management Practices for San Luis Obispo Creek", a study prepared by the Coastal Resources Institute, identified excessive nutrient loading as a significant problem within the watershed. This study identified point and non-point sources of nutrients, determined target values to eliminate excessive algal growth, and developed best management practices (BMP's) to enhance water quality.

d. Urban and Agricultural Run-off Pollution.

The San Luis Obispo Creek watershed is also subject to pollution from urban and agricultural run-off. Following rain storms, the City's drainage system delivers pollutants such as oil, grease, litter, and household chemicals into the Creek. Run-off from less populated and agricultural areas may carry other pollutants such as fertilizers, herbicides, and bacteria into waterways. Improved management practices can help reduce these contributions to water quality problems.

3. Identification of Restoration Alternatives

The watershed approach culminates with identification and implementation of restoration projects. Several projects have already been implemented by the LCSLOC as part of their ongoing watershed efforts. The proposed projects in section V describe additional ways to restore resources using a watershed approach.

B. CEQA / NEPA COMPLIANCE

After reviewing the proposed restoration projects, the State Trustee (CDFG) has determined that the restoration actions will not have a substantial, or potentially substantial, adverse change in any of the physical conditions within the areas affected by the projects. Additionally, the State Trustee considers these projects to be categorically exempt pursuant

to: (1) 14 Cal. Code of Regs. section l5304, “Minor alterations to land, water, or vegetation”; (2) 14 Cal. Code of Regs. section 15307, “Actions by regulatory agencies for protection of natural resources”, and (3) 14 Cal Code Regs. section 15308, “Actions by regulatory agencies for protection of the environment”.

The Federal Trustee (U.S. Fish and Wildlife Service) has determined that the proposed projects are categorically excluded from the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 et seq. according to the Department of the Interior’s Departmental Manual, 516 DM 6, Appendix 1, (62 FR 2375, 1/16/97) and 516 DM 2, Appendices 1 and 2. The projects are categorically excluded from NEPA since they are part of a natural resource damage assessment restoration plan prepared under the Oil Pollution Act where only minor or negligible change in the use of the affected areas is planned.

The habitat enhancement portions of the restoration plan are also categorically excluded from NEPA since they involve the construction of new, or the addition of, small structures or improvements for the restoration of wetland, riparian, instream, or native habitats, that result in no or only minor changes in the use of the affected local area. The Trustee Council expects a net environmental benefit as a result of the proposed projects.

C. CRITERIA USED TO EVALUATE RESTORATION PROJECT CONCEPTS

The Trustee Council used evaluation criteria listed below to consider and prioritize the proposed restoration alternatives. Some of the criteria, such as, Feasibility of the Alternative, represent thresholds that must be passed before any further consideration is given to the restoration alternative. The project concepts meeting or surpassing the threshold criteria were further evaluated and prioritized for funding and implementation. Only a subset of all the alternatives considered were approved for implementation. This is because not all proposals met the evaluation criteria.

The list below represents the principal areas of evaluation by the Trustee Council. The criteria are not ranked in order of priority, except that threshold criteria must be met before a project is reviewed using any of the remaining criteria. Additionally, performance criteria will be developed for each project prior to implementation.

1. **Threshold Criteria**

a. Technical feasibility of the alternative

The project must be technically sound. The Trustee Council will consider the level of uncertainty or risk involved in implementing the project. A proven track record demonstrating the success of projects utilizing a similar or identical restoration technique can be used to satisfy this evaluation criterion.

b. Consistency with the Trustee Council’s restoration goals

The proposed alternative must meet the Trustee Council's intent to restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources or the services those resources provided. In addition, a project could provide compensation for the interim loss of those resources and services. However, the Trustee Council will not allocate funds for projects or other protection measures for public natural resources that are required mitigation under State or Federal law.

c. Compliance with laws

The proposed alternatives must comply with all applicable laws.

d. Public health and safety

The proposed alternative cannot pose a threat to the health and safety of the public.

2. **Additional Criteria**

e. Relationship to injured resources and services

Projects that restore, rehabilitate, replace, enhance or acquire the equivalent of the same resources and services injured by the spill are preferred to projects that benefit other comparable resources or services. The Trustee Council considered the types of resources or services injured by the spill and the connection or nexus of project benefits to those injured resources.

f. Avoidance of injury

The proposed alternative should avoid or minimize adverse impacts to the environment and the associated natural resources. These adverse impacts may have resulted from the original oil spill incident or may occur in the future as collateral injuries when implementing, or as a result of implementing, the project alternative. The Trustee Council considered the avoidance of future short-term and long-term injuries as well as mitigating past injuries when evaluating project concepts.

g. Likelihood of success

The Trustee Council considered the potential for success and the level of expected return of resources and resource services. The Trustee Council also considered the ability to monitor and evaluate the success of the project as well as correct any problems that arise during the

course of the proposed alternative. Additionally, the Trustee Council considered the ability to adjust the size of a project and the effects on likelihood of success.

h .Quality of benefits

The Trustee Council considered the quality of services to be provided by a proposed alternative. Projects that were expected to provide high quality service benefits were favored over those that were expected to provide lower quality benefits.

i. Multiple benefits

The Trustee Council considered the extent to which the proposed alternative benefits more than one natural resource or resource service.

j. Time to provide benefits

The Trustee Council considered the time until benefits will be provided to the resources, ecosystem, and/or the public.

k. Duration of benefits

The Trustees Council considered the expected duration of benefits from the proposed alternative. The Trustee Council also considered the method and ability to protect the implemented alternative and resulting benefits over time such as conservation easements, land acquisition, or other types of resource dedication.

l. Opportunities for collaboration

The Trustee Council considered the possibility of matching funds, in-kind services, or volunteer assistance. Coordination with other ongoing or proposed projects was also considered.

m. Benefits relative to costs

The Trustee Council considered the relationship of expected resource and service benefits from each alternative to the expected project costs, seeking the least costly (i.e., most cost efficient) means to deliver an equivalent quality and amount of benefits.

n. Total cost and accuracy of estimate

The Trustee Council evaluated the estimated total cost of each alternative and the probable validity of the estimate. The Trustee Council considered whether the total cost estimates included the cost to design, implement, monitor, and manage the alternative. The validity of the cost estimate was evaluated based on the completeness, accuracy, and reliability of methods used to estimate costs, as well as the track record of the person or entity submitting the cost estimate to accurately estimate costs.

V. PROPOSED PROJECTS

The Trustee Council considered project proposals throughout the San Luis Obispo Creek watershed. All approved projects must be consistent with the Trustee Council restoration goals as specified in the State Settlement Agreement and Federal Consent Decree. Fifty one (51) projects, including 29 described in the Draft Plan or added by the Trustee Council and 22 submitted to the Trustee Council during the public response to the Draft Plan, were carefully evaluated (Appendix A). These were reviewed using the criteria for evaluating restoration projects. From these 51 project proposals, the Trustee Council has developed a set of restoration projects that fall within the categories of restoration identified in the Avila Beach Oil Spill State Settlement Agreement and Federal Consent Decree. The Trustee Council also considered a no-action alternative.

A. NO ACTION ALTERNATIVE

Under the “No Action Alternative”, no actions would be taken to restore, rehabilitate, replace, or acquire the equivalent of intertidal resources, birds, fish, or public uses injured or lost as a result of the spill. This alternative provides no benefits to the public or the injured resources. In contrast, the other alternatives set forth below provide tangible benefits to intertidal resources, birds, fish, and the public.

B. PROJECT PROPOSALS NOT APPROVED FOR IMPLEMENTATION.

A total of 35 project proposals were not approved by the Trustee Council for implementation because they failed to meet the evaluation criteria, were inconsistent with the Trustee Council’s restoration goals as specified in the State Settlement Agreement and Federal Consent Decree, or were not ready for implementation (Appendix B). Others submitted by the public were not approved as separate projects but were incorporated into other projects approved by the Trustee Council for implementation.

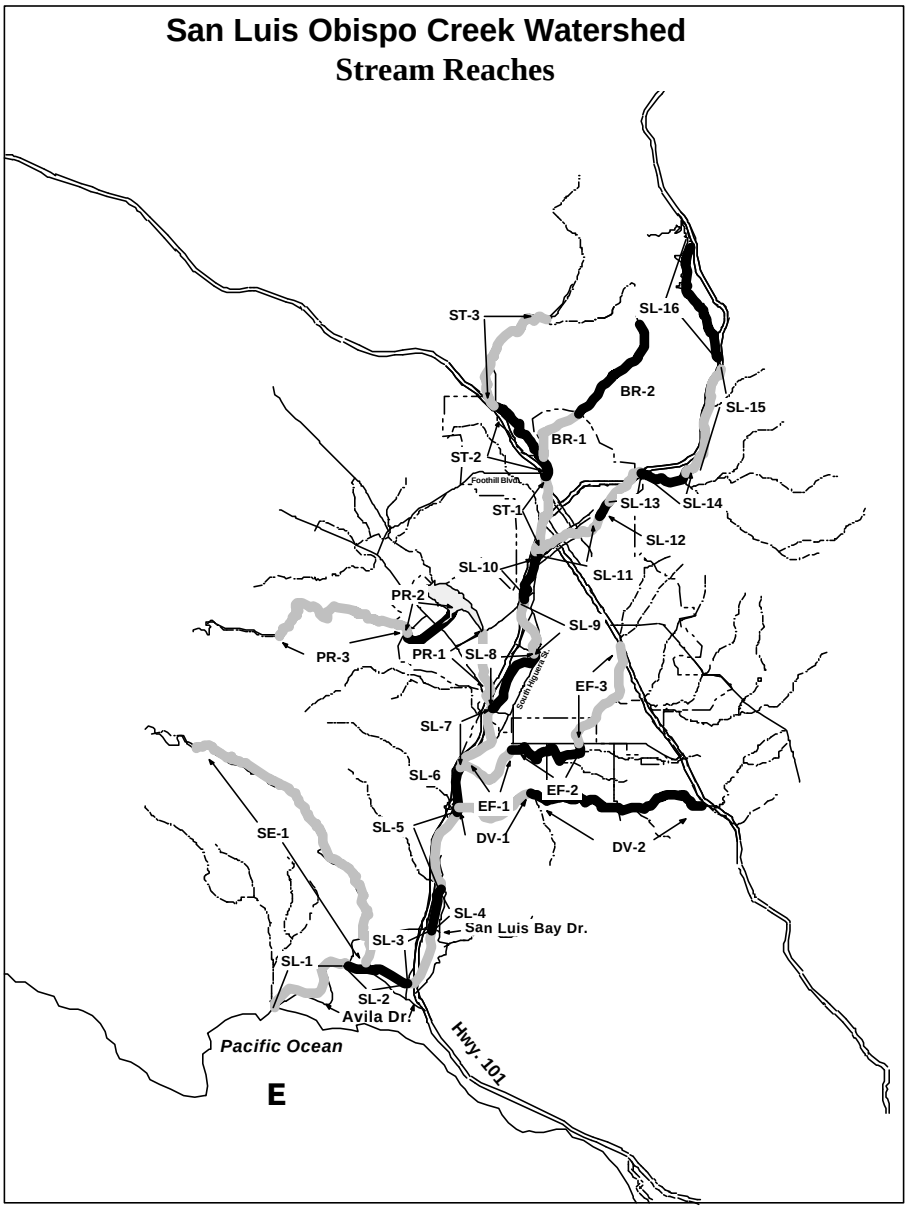
Three Estuarine Habitat Enhancement project proposals presented in the Draft Plan and two submitted during public response were considered but were not approved for funding. Ongoing contaminant cleanup in the vicinity of Avila Beach and in the estuary as a result of the Avila Beach Remediation Project, and uncertain levels of disturbance to the estuarine habitat resulting from these cleanup activities have led the Trustee Council to temporarily set aside the funds allocated for estuary habitat enhancement. There are other problems with these

projects. The existence of levies bordering the estuary and the morphology of the estuary and surrounding land require the Trustee Council to examine other alternatives to bank stabilization beyond those presented in the project concept proposals. Furthermore, the Trustee Council wants to coordinate all restoration projects within the estuary that may be funded by Unocal for impacts caused by the releases of oil and remediation at Avila Beach.

C. PROJECT PROPOSALS APPROVED FOR IMPLEMENTATION

The following projects are subdivided into two categories representing the types of work needed to compensate for the loss of resources that were injured in the 1992 oil spill at Avila Beach. These categories are Riparian Corridor Revegetation, and Fish Barrier Removal. Funding is allocated according to the budget in section VII. Projects were proposed in five streams within the San Luis Obispo Creek watershed: San Luis Obispo Creek, See Canyon Creek, East Fork San Luis Obispo Creek, Prefumo Creek, and Stenner Creek. The streams were classified by stream reach, based on their hydrological and habitat characteristics, and are shown in Figure 1.

Figure 1. Map of San Luis Obispo Creek Watershed Stream Reaches



The Trustee Council considered project proposals on both public and private lands. Most of the land in the watershed that is adjacent to creeks is privately owned. Therefore, most of the proposed projects lie on private property. Where Trustee Council funds are used on private property, agreements will be required of the landowners to ensure protection of the projects. In some cases these agreements are already in process. The Trustee Council does not intend to fund projects unless long term protection is provided in the form of conservation easements or similar agreements from willing landowners. Where long term protection is not provided, the funds will remain in the trust and used to fund a comparable project at a site where the landowner is willing to ensure protection of the project.